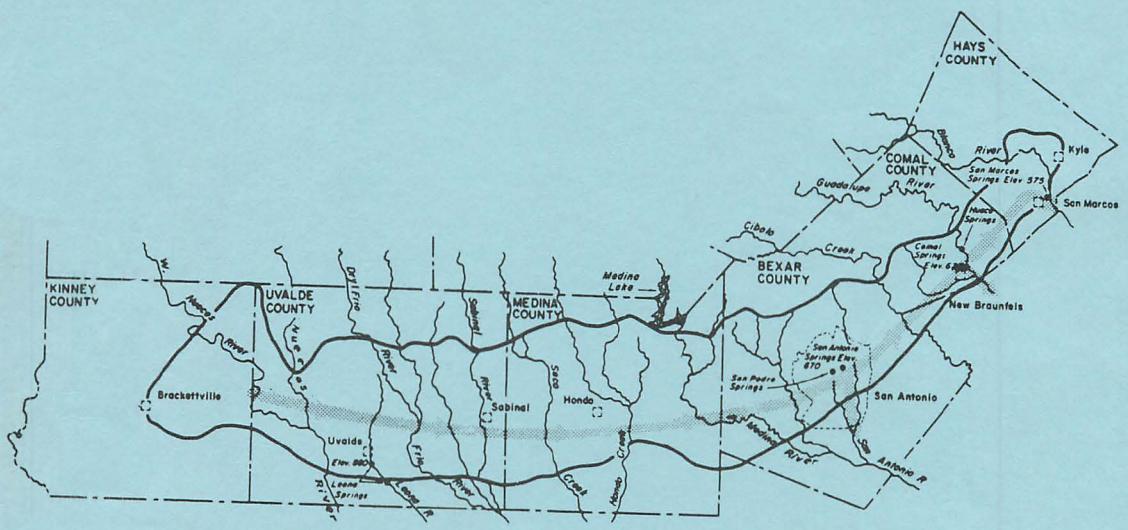
COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1985, WITH 1934–85 SUMMARY

Bulletin 45
Edwards Underground Water District
San Antonio, Texas



Prepared by the U.S. Geological Survey in cooperation with the Edwards Underground Water District

EDWARDS UNDERGROUND WATER DISTRICT

1615 North St. Mary's
San Antonio, Texas 78212

BULLETIN 45

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1985, WITH 1934-85 SUMMARY

Compiled by

G. B. Ozuna, G. M. Nalley,
and M. N. Bowman
U.S. Geological Survey

Prepared by the U.S. Geological Survey in cooperation
with the Edwards Underground Water District

July 1987

CONTENTS

CONTENTS--Continued

ILLUSTRATIONS

(Figs. 1, 2, 3, 5, and 6 also included as plates in pocket at back of report)

TABLES

TABLES--Continued

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1985, WITH 1934-85 SUMMARY

Compiled by

G. B. Ozuna, G. M. Nalley,
and M. N. Bowman
U.S. Geological Survey

ABSTRACT

The average annual ground-water recharge to the Edwards aquifer in the San Antonio area, Texas, from 1934 through 1985 was 604,500 acre-feet. Recharge in 1985 was 1,003,300 acre-feet, which is the seventh highest estimated annual recharge since 1934. A maximum annual recharge of 1,711,200 acre-feet occurred in 1958, and a minimum annual recharge of 43,700 acre-feet occurred in 1956.

The calculated annual discharge by wells and springs in 1985 was 856,500 acre-feet. Annual discharge by wells and springs ranged from a maximum of 960,900 acre-feet in 1977 to a minimum of 388,800 acre-feet in 1955. In 1985, the annual discharge by wells was 522,500 acre-feet. This is near the record high of 529,800 acre-feet in 1984.

Although water levels in many of the wells fluctuated near or above the midpoint between record high and low levels in 1985, the volume of ground water in storage in the aquifer was near average during most of the year. In 1985, substantial increases occurred during the fall and winter, and water levels then remained above average in most of the area.

Analyses of water samples from 94 wells and 3 springs in the Edwards aquifer show that the water quality in the freshwater zone is significantly better than the level established for public water systems. However, trace concentra-

tions of organic compounds were detected in many of the analyses. Analyses of water samples collected from nine wells in Uvalde County showed concentrations of tetrachloroethylene in excess of 5 micrograms per liter. In 1985, samples were collected from wells along the "bad-water" line to detect changes in water quality as the potentiometric head in the Edwards aquifer changed.

INTRODUCTION

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

The calculations of annual recharge are based on data collected from a network of streamflow-gaging stations and on assumptions that relate the runoff characteristics of gaged areas to ungaged areas (Puente, 1978). The basic approach is a water-balance equation in which recharge within a stream basin is the difference between measured streamflow above and below the infiltration area plus the estimated runoff within the infiltration area. Location of the Edwards aquifer and physiographic regions is shown in figure 1, drainage basins are shown in figure 2, and data-collection sites are shown in figure 3.

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

Periodic measurements have been made in observation wells in the Edwards aquifer since 1929 to determine changes in ground-water storage in the aquifer. The first continuous water-stage recorders were installed during the late 1930's. During 1985, periodic water-level measurements were made in 17 wells, and continuous water-stage recorders were in operation on 17 other wells.

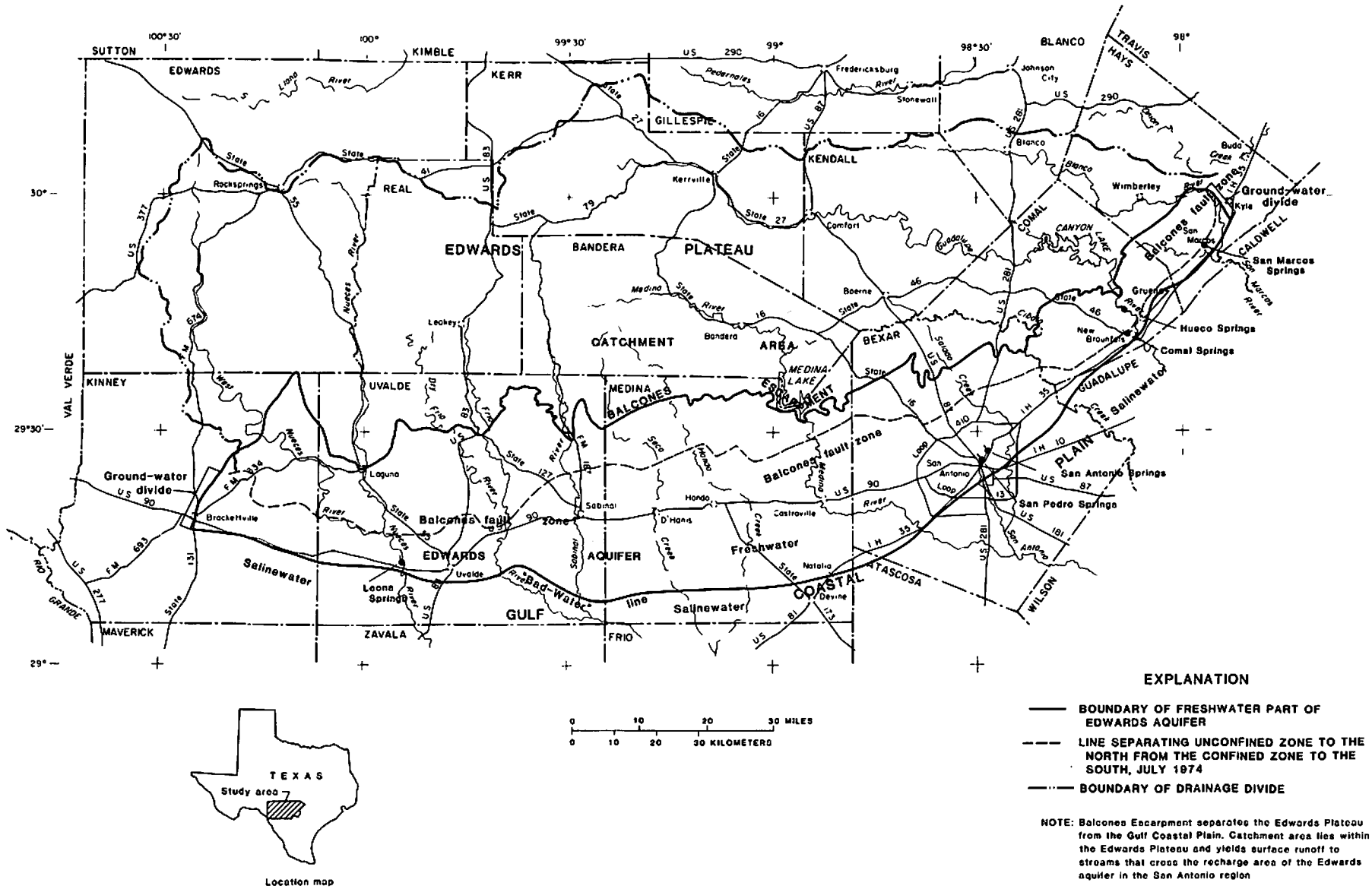


Figure 1.--Location of the Edwards aquifer and physiographic regions in the San Antonio region.

See Plate 1 located in back cover.

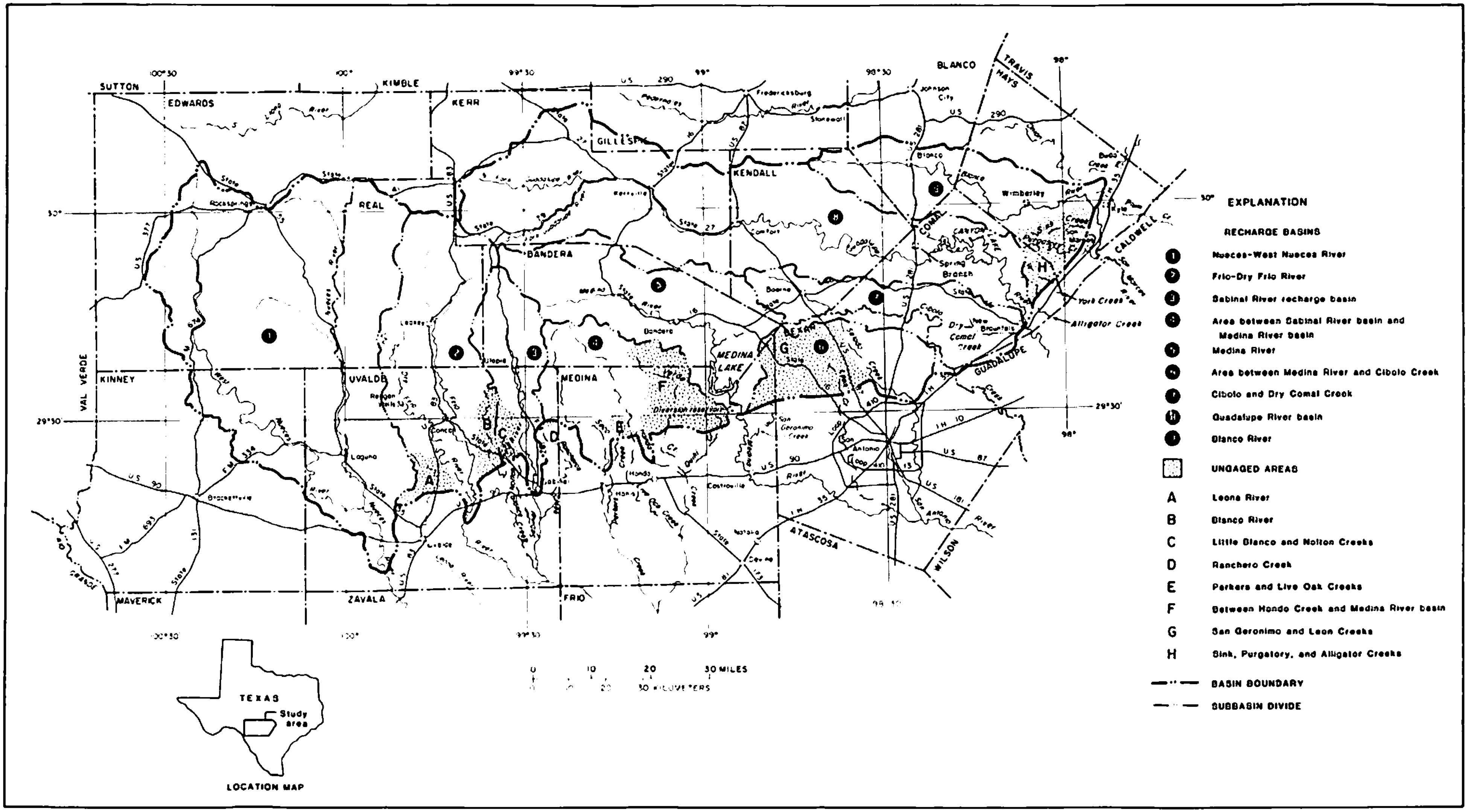


Figure 2.--Delination of surface-drainage basins used to calculate recharge to the Edwards aquifer

See Plate 2 located in back cover.

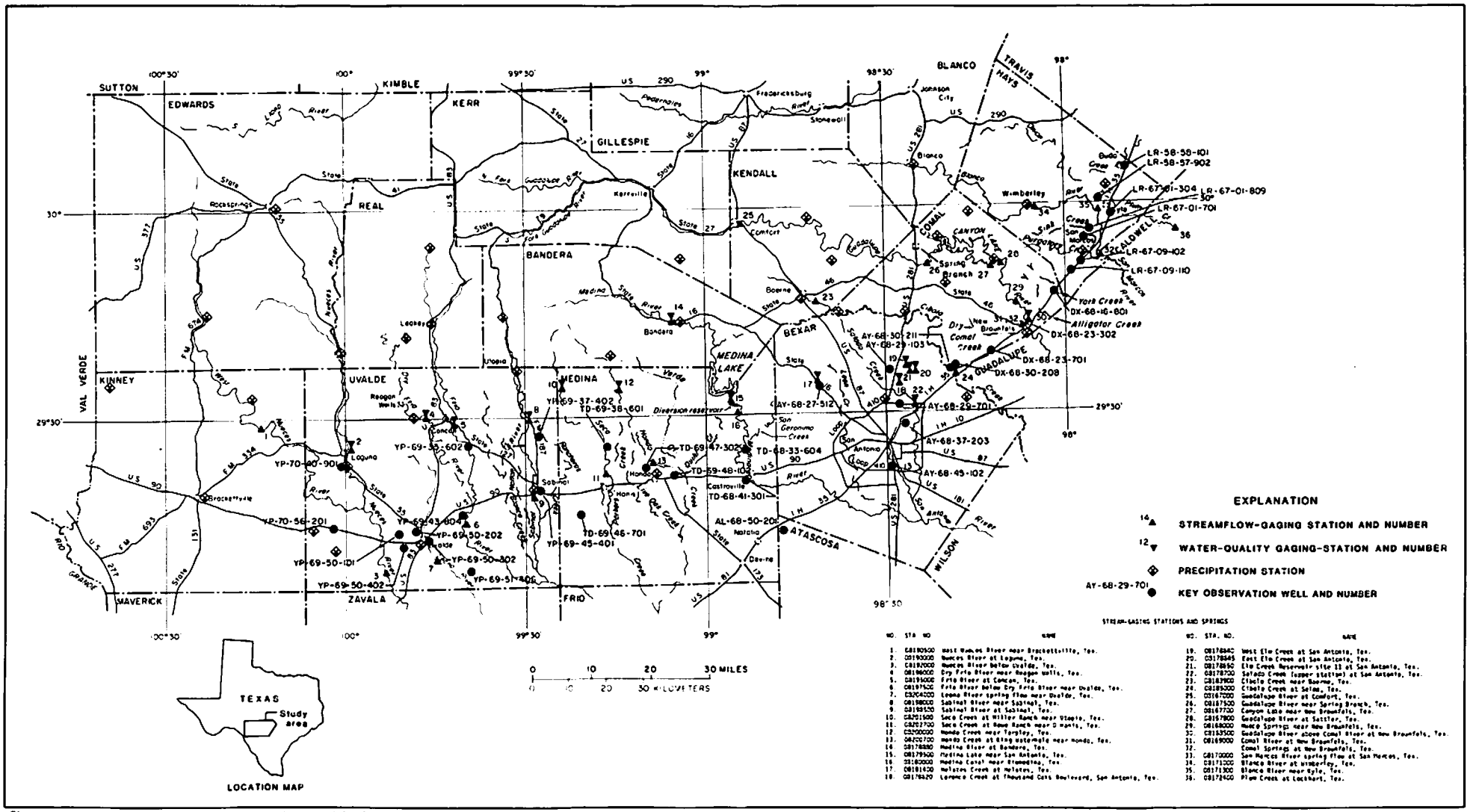


Figure 3.--Location of streamflow, water-quality, precipitation, and ground-water level stations

See Plate 3 located in back cover.

Surface-water data for Texas for the 1985 water year are presented in three volumes, respectively identified by river basins. Data in each volume consist of records of stage, discharge, and water quality of streams and canals and records of stage, contents, and water quality of lakes and reservoirs. Records for a few pertinent stations in bordering states also are included. These data are included in the National Water Data System operated by the Geological Survey in cooperation with State and Federal agencies in Texas.

PRECIPITATION

The annual and long-term average precipitation at selected stations in the San Antonio area for 1982-85 are given in table 1. Annual rainfall for 1982-84 was below average at nearly all of the stations in the San Antonio area, resulting in below average recharge for 1982-84. In 1985, annual rainfall was above average at most stations, resulting in above average recharge for the year.

GROUND-WATER RECHARGE

The infiltration area used for calculating recharge for the Edwards aquifer in the San Antonio area is modified slightly from the area described by Puente (1978) to reflect existing data-collection sites. The delineation of the infiltration area is based on surface- and ground-water divides. Recharge to the Edwards aquifer is derived mainly from seepage from streams that cross the outcrop of the aquifer and, to a lesser extent, from direct infiltration of precipitation on the outcrop. Some recharge also is derived from other aquifers that are hydraulically connected to the Edwards aquifer. Water can move freely between two aquifers either along solution-widened fractures and faults or where the aquifers are in fault contact (Welder and Reeves, 1962, p. 36). Other aquifers that contribute recharge to the Edwards aquifer are, from oldest to youngest, Glen Rose Limestone, Buda Limestone, Eagle Ford Shale, and Austin

Table 1.--Annual and long-term average precipitation at selected stations, 1982-85 [1]

Station	Precipitation (inches)				Long-term average	
	1982	1983	1984	1985	Inches	Years of record
Brackettville	12.62	19.35	16.24	18.93	20.70	94
Uvalde	23.35	--	--	--	24.73	79
Sabinal	18.44	23.33	20.67	23.67	25.64	62
Hondo	21.99	--	--	21.94	28.55	77
San Antonio	22.96	26.11	25.95	41.43	28.65	107
Boerne	27.64	--	26.97	37.77	33.12	88
New Braunfels	21.04	34.13	20.90	37.26	31.69	90
San Marcos	--	36.95	--	33.54	33.70	81

[1] Precipitation data from the U.S. Department of Commerce (1982-85).

Group. Only recharge derived from the land surface is included in this compilation. The amount and significance of recharge from other aquifers is not known, but is believed to be small in comparison to the surface sources.

The calculated annual recharge by basins for 1934-85 and the average annual recharge for 1934-85 are given in table 2. Recharge in the Guadalupe River basin is not included because the amount of net recharge to the aquifer is not significant.

The annual recharge for 1934-85 ranged from 43,700 acre-ft in 1956 to 1,711,200 acre-ft in 1958. The average annual recharge for 1934-85 was 604,500 acre-ft. The annual recharge for 1985 was 1,003,300 acre-ft, which is significantly above the average annual recharge and is the seventh highest estimated annual recharge since 1934.

GROUND-WATER DISCHARGE

The calculated discharge, by county, from the Edwards aquifer during 1934-85 is given in table 3. The calculated discharge by county and by water use in 1985 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 into the alluvial gravels along the stream.

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

Table 2.--Calculated annual recharge to the Edwards aquifer by basin, 1934-85
(in thousands of acre-feet)

Calendar year	Nueces-West Nueces River basin	Frio-Dry Frio River basin[1]	Sabinal River basin[1]	Area between Sabinal River and Medina River basins[1]	Medina Lake	Area between Cibolo Creek and Medina River basins[1]	Cibolo-Dry Comal Creek basin	Blanco River basin[1]	Total
1934	8.6	27.9	7.5	19.9	46.5	21.0	28.4	19.8	179.6
1935	411.3	192.3	56.6	166.2	71.1	138.2	182.7	39.8	1,258.2
1936	176.5	157.4	43.5	142.9	91.6	108.9	146.1	42.7	909.6
1937	28.8	75.7	21.5	61.3	80.5	47.8	63.9	21.2	400.7
1938	63.5	69.3	20.9	54.1	65.5	46.2	76.8	36.4	432.7
1939	227.0	49.5	17.0	33.1	42.4	9.3	9.6	11.1	399.0
1940	50.4	60.3	23.8	56.6	38.8	29.3	30.8	18.8	308.8
1941	89.9	151.8	50.6	139.0	54.1	116.3	191.2	57.8	850.7
1942	103.5	95.1	34.0	84.4	51.7	66.9	93.6	28.6	557.8
1943	36.5	42.3	11.1	33.8	41.5	29.5	58.3	20.1	273.1
1944	64.1	76.0	24.8	74.3	50.5	72.5	152.5	46.2	560.9
1945	47.3	71.1	30.8	78.6	54.8	79.6	129.9	35.7	527.8
1946	80.9	54.2	16.5	52.0	51.4	105.1	155.3	40.7	556.1
1947	72.4	77.7	16.7	45.2	44.0	55.5	79.5	31.6	422.6
1948	41.1	25.6	26.0	20.2	14.8	17.5	19.9	13.2	178.3
1949	166.0	86.1	31.5	70.3	33.0	41.8	55.9	23.5	508.1
1950	41.5	35.5	13.3	27.0	23.6	17.3	24.6	17.4	200.2
1951	18.3	28.4	7.3	26.4	21.1	15.3	12.5	10.6	139.9
1952	27.9	15.7	3.2	30.2	25.4	50.1	102.3	20.7	275.5
1953	21.4	15.1	3.2	4.4	36.2	20.1	42.3	24.9	167.6
1954	61.3	31.6	7.1	11.9	25.3	4.2	10.0	10.7	162.1
1955	128.0	22.1	0.6	7.7	16.5	4.3	3.3	9.5	192.0
1956	15.6	4.2	1.6	3.6	6.3	2.0	2.2	8.2	43.7
1957	108.6	133.6	65.4	129.5	55.6	175.6	397.9	76.4	1,142.6
1958	266.7	300.0	223.8	294.9	95.5	190.9	268.7	70.7	1,711.2
1959	109.6	158.9	61.6	96.7	94.7	57.4	77.9	33.6	690.4
1960	88.7	128.1	64.9	127.0	104.0	89.7	160.0	62.4	824.8
1961	85.2	151.3	57.4	105.4	88.3	69.3	110.8	49.4	717.1
1962	47.4	46.6	4.3	23.5	57.3	16.7	24.7	18.9	239.4
1963	39.7	27.0	5.0	10.3	41.9	9.3	21.3	16.2	170.7
1964	126.1	57.1	16.3	61.3	43.3	35.8	51.1	22.2	413.2
1965	97.9	83.0	23.2	104.0	54.6	78.8	115.3	66.7	623.5
1966	169.2	134.0	37.7	78.2	50.5	44.5	66.5	34.6	615.2
1967	82.2	137.9	30.4	64.8	44.7	30.2	57.3	19.0	466.5
1968	130.8	176.0	66.4	198.7	59.9	83.1	120.5	49.3	884.7
1969	119.7	113.8	30.7	84.2	55.4	60.2	99.9	46.6	610.5
1970	112.6	141.9	35.4	81.6	68.0	68.8	113.8	39.5	661.6
1971	263.4	212.4	39.2	155.6	68.7	81.4	82.4	22.2	925.3
1972	108.4	144.6	49.0	154.6	87.9	74.3	104.2	33.4	756.4
1973	190.6	256.9	123.9	286.4	97.6	237.2	211.7	82.2	1,486.5
1974	91.1	135.7	36.1	115.3	96.2	68.1	76.9	39.1	658.5
1975	71.8	143.6	47.9	195.9	93.4	138.8	195.7	85.9	973.0
1976	150.7	238.6	68.2	182.0	94.5	47.9	54.3	57.9	894.1
1977	102.9	193.0	62.7	159.5	77.7	97.9	191.6	66.7	952.0
1978	69.8	73.1	30.9	103.7	76.7	49.6	72.4	26.3	502.5
1979	128.4	201.4	68.6	203.1	89.4	85.4	266.3	75.2	1,117.8
1980	58.6	85.6	42.6	25.3	88.3	18.8	55.4	31.8	406.4
1981	205.0	365.2	105.6	252.1	91.3	165.0	196.8	67.3	1,448.4
1982	19.4	123.4	21.0	90.9	76.8	22.6	40.1	23.5	417.7
1983	79.2	85.9	20.1	42.9	74.4	31.9	62.5	23.2	420.1
1984	32.4	40.4	8.8	18.1	43.9	11.3	16.9	25.9	197.9
1985	105.9	186.9	50.7	148.5	64.7	136.7	259.2	50.7	1,003.3
AVERAGE	100.9	110.4	37.9	92.9	60.0	65.0	100.8	36.7	[2]604.5

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

Table 3.--Calculated annual discharge from the Edwards aquifer by county, 1934-85
(in thousands of acre-feet)

Year	Kinney-Uvalde Counties	Medina County	Bexar County	Comal County	Hays County	Total	Total spring discharge	Total well discharge
1934	12.6	1.3	109.3	229.1	85.6	437.9	336.0	101.9
1935	12.2	1.5	171.8	237.2	96.9	519.6	415.9	103.7
1936	26.6	1.5	215.2	261.7	93.2	598.2	485.5	112.7
1937	28.3	1.5	201.8	252.5	87.1	571.2	451.0	120.2
1938	25.2	1.6	187.6	250.0	93.4	557.8	437.7	120.1
1939	18.2	1.6	122.5	219.4	71.1	432.8	313.9	118.9
1940	16.1	1.6	116.7	203.8	78.4	416.6	296.5	120.1
1941	17.9	1.6	197.4	250.0	134.3	601.2	464.4	136.8
1942	22.5	1.7	203.2	255.1	112.2	594.7	450.1	144.6
1943	19.2	1.7	172.0	249.2	97.2	539.3	390.2	149.1
1944	11.6	1.7	166.3	252.5	135.3	567.4	420.1	147.3
1945	12.4	1.7	199.8	263.1	137.8	614.8	461.5	153.3
1946	6.2	1.7	180.1	261.9	134.0	583.9	428.9	155.0
1947	13.8	2.0	193.3	256.8	127.6	593.5	426.5	167.0
1948	9.2	1.9	159.2	203.0	77.3	450.6	281.9	168.7
1949	13.2	2.0	165.3	209.5	89.8	479.8	300.4	179.4
1950	17.8	2.2	177.3	191.1	78.3	466.7	272.9	193.8
1951	16.9	2.2	186.9	150.5	69.1	425.6	215.9	209.7
1952	22.7	3.1	187.1	133.2	78.8	424.9	209.5	215.4
1953	27.5	4.0	193.7	141.7	101.4	468.3	238.5	229.8
1954	26.6	6.3	208.9	101.0	81.5	424.3	178.1	246.2
1955	28.3	11.1	215.2	70.1	64.1	388.8	127.8	261.0
1956	59.6	17.7	229.6	33.6	50.4	390.9	69.8	321.1
1957	29.0	11.9	189.4	113.2	113.0	456.5	219.2	237.3
1958	23.7	6.6	199.5	231.8	155.9	617.5	398.2	219.3
1959	43.0	8.3	217.5	231.7	118.5	619.0	384.5	234.5
1960	53.7	7.6	215.4	235.2	143.5	655.4	428.3	227.1
1961	56.5	6.4	230.3	249.5	140.8	683.5	455.3	228.2
1962	64.6	8.1	220.0	197.5	98.8	589.0	321.1	267.9
1963	51.4	9.7	217.3	155.7	81.9	516.0	239.6	276.4
1964	49.3	8.6	201.0	141.8	73.3	474.0	213.8	260.2
1965	46.8	10.0	201.1	194.7	126.3	578.9	322.8	256.1
1966	48.5	10.4	198.0	198.9	15.4	571.2	315.3	255.9
1967	81.1	15.2	239.7	139.1	82.3	557.4	216.1	341.3
1968	58.0	9.9	207.1	238.2	146.8	660.0	408.3	251.7
1969	88.5	13.6	216.3	218.2	122.1	658.7	351.2	307.5
1970	100.9	16.5	230.6	229.2	149.9	727.1	397.7	329.4
1971	117.0	32.4	262.8	168.2	99.1	679.5	272.7	406.8
1972	112.6	28.8	247.7	234.3	123.7	747.1	375.8	371.3
1973	96.5	14.9	273.0	289.3	164.3	838.0	527.6	310.4
1974	133.3	28.6	272.1	286.1	141.1	861.2	483.8	377.4
1975	112.0	22.6	259.0	296.0	178.6	868.2	540.4	327.8
1976	136.4	19.4	253.2	279.7	164.7	853.4	503.9	349.5
1977	156.5	19.9	317.5	295.0	172.0	960.9	580.3	380.6
1978	154.3	38.7	269.5	245.7	99.1	807.3	375.5	431.8
1979	130.1	32.9	294.5	300.0	157.0	914.5	523.0	391.5
1980	151.0	39.9	300.3	220.3	107.9	819.4	328.3	491.1
1981	104.2	26.1	280.7	241.8	141.6	794.4	407.3	387.1
1982	129.2	33.4	305.1	213.2	105.5	786.4	333.3	453.1
1983	107.7	29.7	271.6	186.6	118.5	720.1	301.6	418.5
1984	151.1	46.9	309.7	108.9	85.7	702.3	172.5	529.8
1985	156.9	59.2	295.5	200.0	144.9	856.5	334.0	522.5

Table 4.--Calculated discharge from the Edwards aquifer by county and by water use, 1985

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	14.4	4.4	118.9	0.5	1.6	139.8	156.7
Medina	--	4.8	47.3	--	.7	52.8	59.2
Bexar	1.1	207.2	14.6	10.1	30.6	263.6	295.5
Comal	164.7	10.0	.2	3.0	.6	178.5	200.0
Hays	117.8	8.9	.2	1.1	1.3	129.3	144.9
Total (million gallons per day)	298.0	235.3	181.2	14.7	35.0	764.2	
Total (thousand acre-feet per year)	334.0	263.7	203.1	16.5	39.2		856.5

water for irrigation of about 93,000 acres during 1985. 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 1985 was 856,500 acre-ft. The discharge from wells decreased from 529,800 acre-ft in 1984 to 522,500 acre-ft in 1985. In 1985, about 61 percent of the total discharge was from wells, and approximately 57 percent of this amount was discharged from wells in Bexar County. The discharge from wells in 1985 was almost the same as in 1984, however, spring flow increased by about 94 percent. The total discharge from wells and springs in 1985 was about 22 percent more than in 1984.

The relationship between accumulated recharge and discharge for 1934-85 is shown in figure 4.

WATER LEVELS AND GROUND-WATER STORAGE

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

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

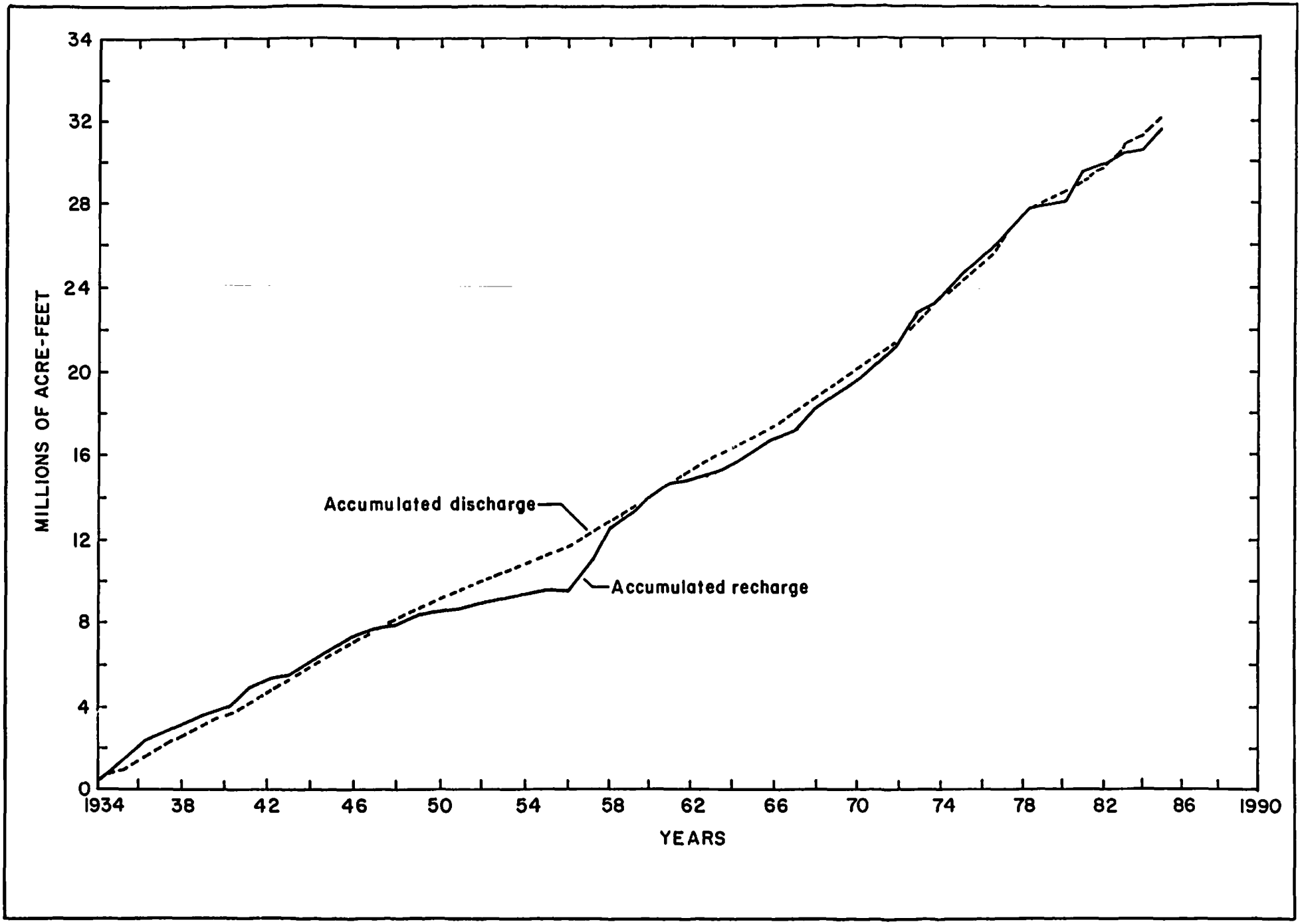


Figure 4.--Accumulated recharge and discharge, 1934-85.

The annual high and low water levels recorded in five selected observation wells in the artesian part of the aquifer during 1982-85 are given in table 5. The general trend in 1985 was upward, reflecting above normal recharge for the months of September through December. The water levels in observation wells in 1985 are given in Appendix A. Water Levels. Although the measured and recorded data show that the water levels during 1985 fluctuated near or above the mid-point when compared with historically recorded high and low measurements, the volume in storage in the aquifer was near average during most of 1985. The data also show that substantial increases occurred during the fall of 1984 and winter of 1985; water levels then remained above average for the remainder of 1985 in most of the wells. During the beginning of the year, recharge was normal and withdrawals were at a record high. However, the volume in storage in the Edwards aquifer was above average during the latter part of 1985.

In 1985, 17 wells were measured periodically, and continuous recorders were in operation on 17 other wells (fig. 3). Water levels in about 80 additional wells are measured annually in the San Antonio area by personnel of the Texas Water Development Board. Tabulations of current and historical water-level measurements are available on computer printout from the Texas Water Development Board in Austin, Texas. These records also are on file in the office of the Geological Survey in San Antonio, Texas.

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

Table 5.--Annual high and low water levels in selected observation wells in the Edwards aquifer, 1982-85
(feet above NGVD of 1929)

Well	1982		1983		1984		1985		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.)	881.80	876.40	877.10	871.30	873.31	856.89	876.90	862.29	886.26 May 1977	811.0 Apr. 1957	1929-32, 1934-85
TD-68-41-301[1] J-1-82 (Medina Co.)	717.08	682.73	698.12	667.65	684.48	641.99	698.94	670.64	737.78 May 1977	622.3 Aug. 1956	1950-85
AY-68-37-203[1,2] J-17 (Bexar Co.)	680.53	647.33	669.92	642.11	656.97	623.17	674.50	644.05	696.5 Oct. 1973	612.5[3] Aug. 1956	1932-85[4]
DX-68-23-302[1] G-49 (Comal Co.)	627.26	623.57	625.64	622.96	624.36	619.61	626.76	623.25	630.17 Apr. 1977	613.3 Aug. 1956	1948-85
LR-67-01-304[1] H-23 (Hays Co.)	584.66	647.33	589.72	560.36	582.53	544.27	591.44	561.75	593.8 Mar. 1968	540.4 July 1978	1937-85

[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.

WATER QUALITY FOR WELLS AND SPRINGS

The water-quality data-collection sites for the area, along with the sites for which data are given in Reeves (1976, 1978), are shown in figure 5. Figure 6 is an inset for the San Antonio area. Although some of the wells are no longer in use, additional samples can be collected at most of the sites in order to detect changes in water quality.

The results of the analyses of water samples that were collected from 94 wells and 3 springs in the Edwards aquifer during 1985 are given in Appendix B. Water Quality. Many of 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 major inorganic constituents; minor elements, including heavy metals; and pesticides. Analyses of samples from the wells and springs in the freshwater zone of the aquifer show that the water is of a significantly better quality than the level established for public water systems (Appendix D. Supplemental Information).

Because of the concern that increased withdrawals from the aquifer may result in the encroachment of mineralized water into the freshwater zone of the aquifer, a program was begun in 1984 to resample wells along the "bad-water" line in order to detect changes in water quality as the head in the aquifer changes. As part of the water-quality program, about 30 samples are collected annually. The analyses will be used as historical reference data to determine changes in water quality if the head in the aquifer declines below the 1956 record low.

The "bad-water" line, which marks the downdip limit of the freshwater (less than 1,000 mg/L dissolved solids), is shown in figure 5. South and southeast of this line, the water from wells is slightly to moderately saline

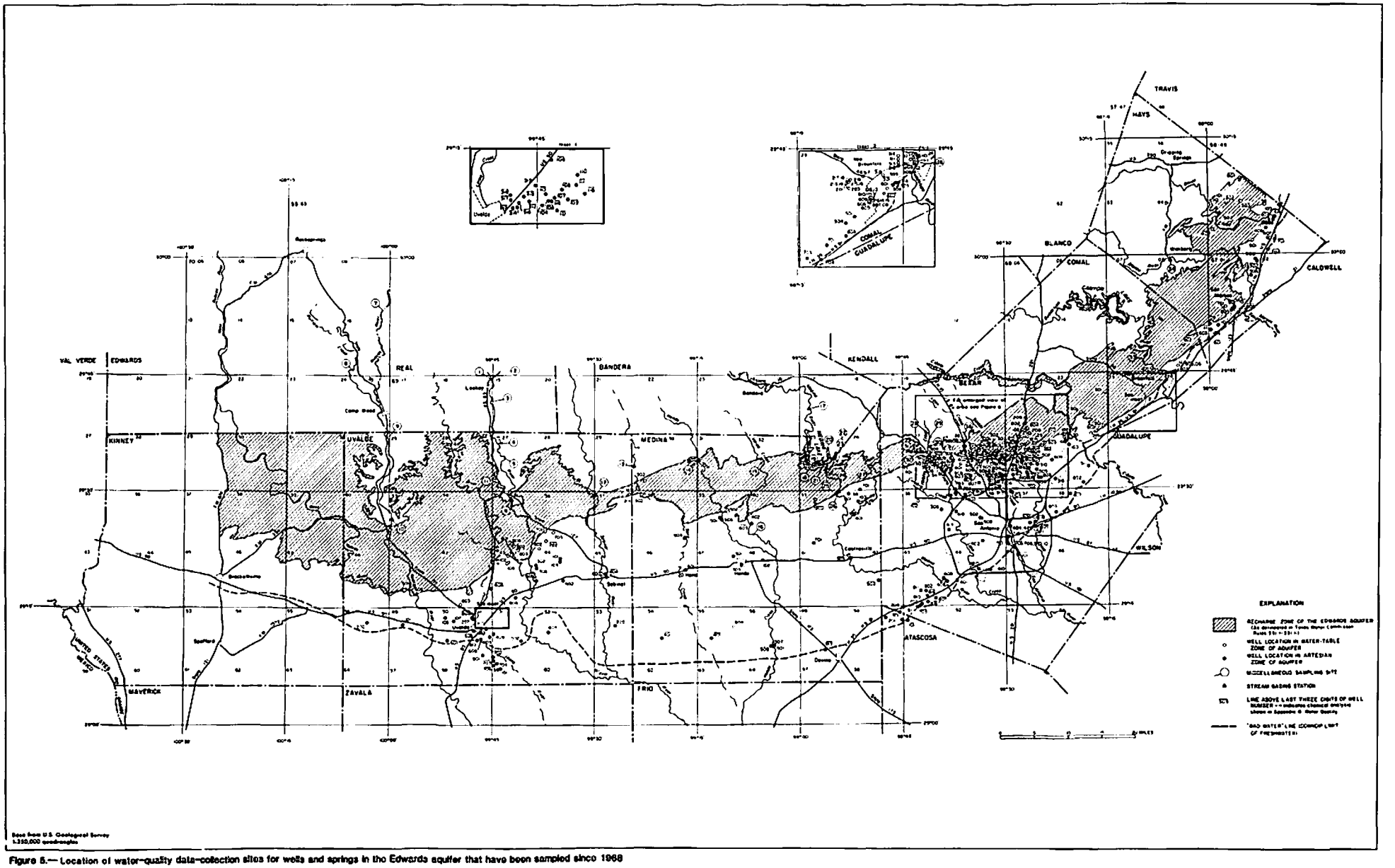


Figure 5.— Location of water-quality data-collection sites for wells and springs in the Edwards aquifer that have been sampled since 1968

See Plate 5 located in back cover.

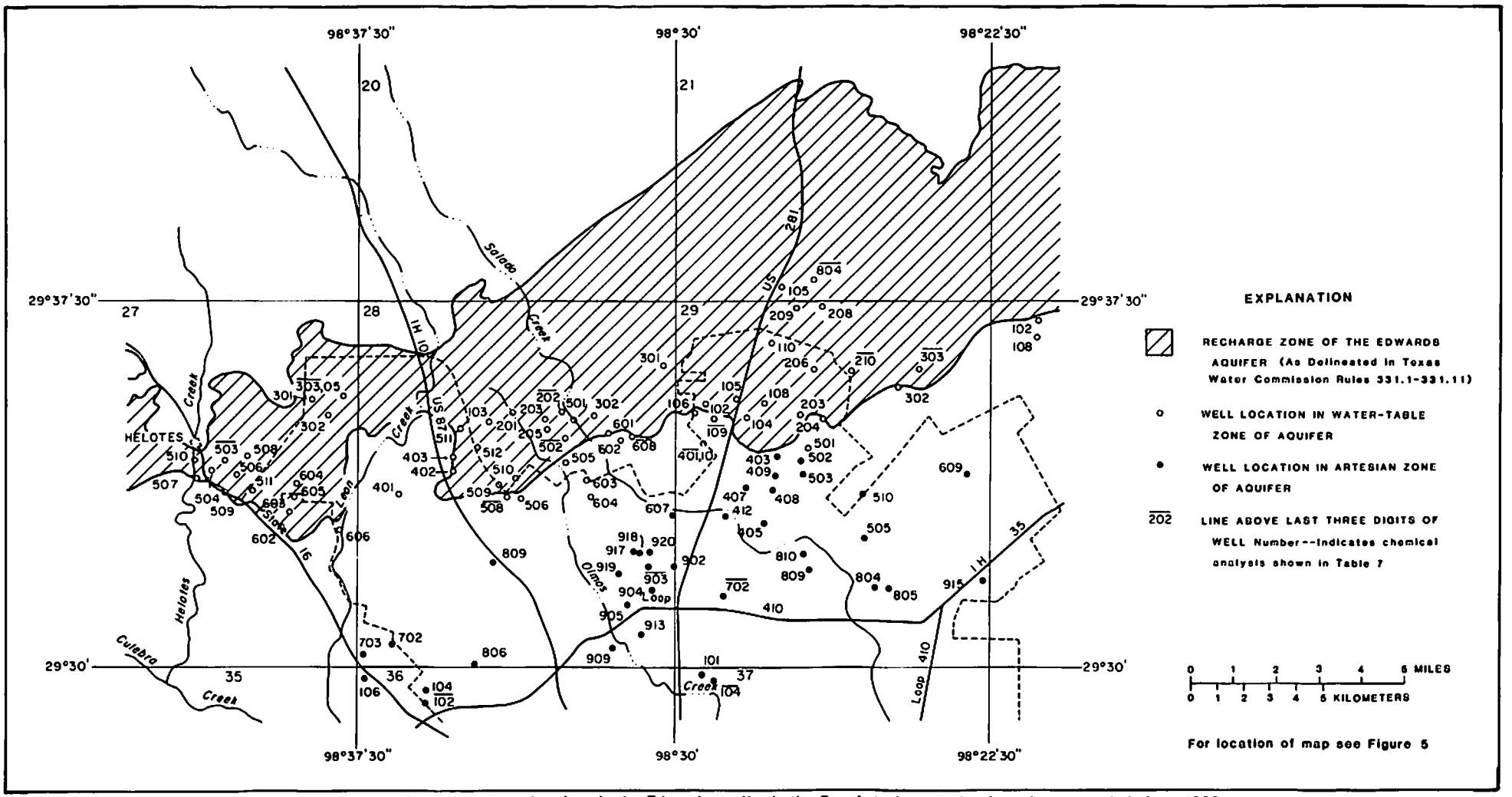


Figure 6.--Location of water-quality data-collection sites for wells and springs in the Edwards aquifer in the San Antonio area that have been sampled since 1968

See Plate 6 located in back cover.

and is high in sulfate and chloride. Water from some wells north of the line and all wells south of the line is charged with hydrogen sulfide gas. For many purposes, the dissolved-solids concentration is a major limitation on the use of water. A general classification of water based on dissolved-solids concentration follows (Winslow and Kister, 1956, p. 5):

Description	Dissolved-solids concentration (mg/L) 1/
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

1/ Milligrams per liter (mg/L) is considered equivalent to parts per million (ppm) for water containing less than 7,000 mg/L dissolved solids.

Water from wells in the freshwater zone near the "bad-water" line generally is more mineralized and has been designated as the transition zone in a previous report by Garza (1962, p. 38). Also, higher concentrations of dissolved solids occur in the lower part of the aquifer in the transition zone and in the slightly to moderately saline zone south and southeast of the "bad-water" line. A well drilled in the transition zone near the "bad-water" line can encounter freshwater in the upper part of the aquifer and slightly saline water in the lower part (Reeves, 1971, p. 5). Comparison of the analyses of samples collected from wells in 1985 with previous analyses indicates no significant change in the quality of water in the freshwater or transition zones.

Samples from 35 wells in the Edwards aquifer were analyzed for purgeable volatile organics in 1985 (Appendix B. Water Quality). The samples were analyzed for, but are not limited to, the following compounds on the U.S. Environmental Protection Agency Priority Pollutant list:

Volatile Organic Compounds

Benzene	1,2-Dichloroethane
Bromoform	1,1-Dichloroethylene
Carbon tetrachloride	1,2-trans-Dichloroethylene
Chlorobenzene	1,2-Dichloropropene
Chlorodibromomethane	Cis-1,3-Dichloropropene
Chloroethane	Trans-1,3-Dichloropropene
2-Chloroethyl vinyl ether	Ethylbenzene
Chloroform	Methylbromide
Dichlorobromomethane	Methylene chloride
Chloromethane	1,1,2,2-Tetrachlorethane
1,1-Dichloroethane	Tetrachloroethylene
Toluene	Trichloroethylene
1,1,1-Trichloroethane	Trichlorofluoromethane
1,1,2-Trichloroethane	Vinyl chloride

Analytical methods used for the determination of the organic compounds are described by Wershaw and others (1983) in "Methods for the Determination of Organic Substances in Water and Fluvial Sediments." Although concentrations for benzene, chloroform, methylene chloride, and toluene are given, these compounds are common solvents used in the laboratory, and their presence in a sample often can be traced to contamination of the sample by laboratory atmosphere.

The volatile organics are determined by purge and trap followed by gas chromatography/mass spectrometry. A water sample is purged with helium and the purgeable organic compounds are carried by the helium and trapped on a porous polymer trap. The trapped compounds are thermally desorbed into the gas chromatograph and detected by mass spectrometry. Data reported below the method detection limit of 3.0 µg/L are provisional in that precision and accuracy are not defined at these lower concentrations; however, the data are qualitatively accurate.

Mass spectra are obtained for every compound that elutes from the gas chromatograph in sufficient concentration to yield a discernible peak. A computerized search is performed for the unknowns using a National Bureau of Standards computer library reference spectra of about 35,000 compounds. Although most common organic compounds can be identified by this method, most of the samples contain compounds that cannot be identified because the concentrations were too low or because reliable library matches could not be obtained.

The Environmental Protection Agency's proposed maximum contaminant levels (MCL's) for eight volatile organic compounds (VOC's) are given in Appendix B. Water Quality. The MCL's were promulgated in the Federal Register on November 13, 1985 (vol. 50, no. 219, p. 46880-46933) as revisions to the National Interim Primary Drinking Water Regulations. The MCL for a ninth VOC (tetrachloroethylene), will be determined after an appropriate public comment period. MCL's are enforceable standards and are set as close to the recommended maximum contaminant levels (RMCL's) as is feasible. MCL's are based upon treatment technologies, costs (affordability), and other feasible factors, such as availability, analytical methods, and treatment technology and costs for achieving various levels of removal.

RMCL's are non-enforceable health goals which are set at levels which would result in no known or anticipated adverse health effects with an adequate margin of safety. RMCL's for substances considered to be probable human carcinogens are set at zero, and RMCL's for substances not treated as probable human carcinogens are based upon chronic toxicity or other data. The final RMCL's for eight volatile synthetic organic chemicals in drinking water are:

Compound 1/	Recommended maximum contaminant level
Benzene	0
Vinylchloride	0
Carbon tetrachloride	0
1,2-Dichloroethane	0
Trichloroethylene	0
1,1-Dichloroethylene	.007 mg/L
1,1,1-Trichloroethane	.20 mg/L
p-Dichlorobenzene	.75 mg/L

1/ The RMCL for tetrachloroethylene was proposed at zero. New toxicological data appear to confirm that zero is appropriate, but the public comment period was reopened for public comment on the new data.

In 1985, no volatile organic compounds were detected in samples from 24 of the 35 wells sampled. Samples from the other 11 wells contained one or more measurable volatile organic compounds. A sample from one well, AY-68-35-102, contained trihalomethanes. The principal source of trihalomethanes in drinking water is chemical interaction of the chlorine (added for disinfection) with

natural humic substances in raw water. Samples from 10 wells contained one or more volatile organic compounds with concentrations equal to or greater than 3 µg/L, and only two compounds, tetrachloroethylene and trichloroethylene, were detected in excess of 5 µg/L. Samples containing the highest concentration of volatile organic compounds were from wells in Uvalde County.

Samples from wells YP-69-50-312, YP-69-50-313, YP-69-50-315, YP-69-50-316, YP-69-51-104, YP-69-51-106, YP-69-51-107, YP-69-51-114, and YP-69-51-115 in Uvalde County contained tetrachloroethylene in excess of 5 µg/L. The source of the tetrachloroethylene is unknown at the present time.

Tritium occurs in the environment as a result of both natural and man-made processes. It is produced naturally by interaction of cosmic radiation with nitrogen and oxygen of the upper atmosphere and enters the hydrologic cycle as part of the water molecules in precipitation. Large amounts of man-made tritium were released to the atmosphere by thermonuclear test explosions during 1953-62. One tritium unit is equal to a concentration of 1 tritium atom per 10^{18} hydrogen atoms and equals 3.2 picocuries per liter (Pearson, 1975). A counting error, commonly reported as 1 standard deviation, is reported with each tritium analysis. This error is calculated so that the true tritium content of the sample has a 67-percent probability of being within the reported range (Maclay and others, 1980).

Tritium in ground water is not significantly affected by chemical processes. Its most important use is in distinguishing between water that entered an aquifer prior to 1953 (prior to thermonuclear testing in the atmosphere) and water in contact with the atmosphere after 1953. Pre-1953 water contains no tritium detectable by normal procedures; post-1953 water contains high levels

of tritium (Drever, 1982). Pre-1953 water in the San Antonio area has been estimated at 6 to 8 tritium units (Thatcher, 1962).

Tritium levels of water from the Edwards aquifer have been determined periodically. Past records and information can be found in studies by Pearson and others (1975) and Maclay and others (1980). Results of most recent analyses are from wells and springs that have historical data. Repeat sampling of the same wells allows comparison of results for detecting changes in time. Appendix B. Water Quality gives results of 17 analyses of samples that have been collected prior to and in 1985, but not analyzed until in 1985. This delay is not expected to affect the accuracy of the data. All data are given corrected to the date of sampling.

SURFACE-WATER DATA

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

Records of streamflow and contents of reservoirs and measurements of spring flow and water quality of streams and reservoirs for selected stations in the vicinity of the Edwards aquifer in the San Antonio area are given in Appendix C. Surface Water. 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 col-

lected at gaging stations throughout the area provide streamflow and water-quality information for areas of different types of utilization and for floods of various magnitudes during all seasons of the year. Data-collection sites are shown in figure 3.

APPENDIX A. WATER LEVELS

Water levels in observation wells in the Edwards aquifer, 1985
(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 1957-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 22, 1985	59.73	Apr. 30, 1985	49.07	July 31, 1985	58.24	Oct. 30, 1985	43.98
Jan. 30	57.50	June 3	59.99	Aug. 30	68.82	Dec. 2	38.73
Feb. 27	55.78	June 28	51.48	Sept. 25	59.10	Dec. 26	38.34
Mar. 25	47.85						

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 1971-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3, 1985	193.10	Mar. 26, 1985	194.96	July 31, 1985	194.06	Oct. 31, 1985	211.78
Jan. 28	195.20	June 25	197.67	Sept. 26	199.62	Dec. 30	185.29
Feb. 26	196.75						

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 1957-85.

Highest 1985 water level 254.99 ft below lsd on Dec. 10; lowest 1985 water level 281.28 ft on Jan. 2.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	280.92	279.34	275.33	273.71	273.20	273.85	263.33	262.03	263.54	262.99	259.94	255.53
10	280.35	279.08	276.10	273.73	273.35	269.36	263.33	262.28	263.60	262.64	259.82	254.99
15	280.17	278.26	274.36	272.92	273.14	269.37	261.98	262.23	263.31	262.77	259.81	255.27
20	279.26	278.55	.....	273.00	272.97	269.28	261.87	262.80	263.25	260.59	259.23	255.76
25	279.07	275.83	.....	273.14	273.15	.....	261.48	263.21	263.29	259.69	258.27	255.81
Eom	278.64	275.43	274.24	272.82	273.65	266.51	261.84	263.19	262.47	259.74	255.40	255.42

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 1952-85.

Highest 1985 water level 103.20 ft below lsd on Dec. 31; lowest 1985 water level 132.81 ft below lsd on Aug. 23.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	128.19	125.24	116.92	114.13	115.92	128.34	.....	122.29	.....	.....	.....	.....
10	.....	.....	117.09	.....	a116.78	115.69	108.21	.....	.....	118.83	.....	.....
15	.....	.....	114.31	.....	.....	117.74	108.50	128.29	.....	.....	.....	.....
20	.....	125.00	111.63	.....	.....	118.52	111.36	130.83	.....	.....	.....	.....
25	a123.30	.....	112.37	116.80	.....	112.09	115.08	131.55	.....	.....	.....	.....
Eom	123.23	117.96	112.12	113.86	122.84	112.76	119.59	129.99	.....	.....	.....	103.20

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 154.16 ft below lsd, Aug. 3, 1984. Records available 1964-85.

Highest 1985 water level 111.60 ft below lsd on Dec. 9; lowest 1985 water level 134.98 ft below lsd on Sept. 5.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	133.76	.....	125.71	122.61	123.26	.....	118.44	126.55	134.98	.....	117.42	112.07
10	133.32	.....	125.53	122.86	125.55	e125.00	117.51	129.51	133.90	.....	117.25	111.70
15	133.09	130.55	124.10	121.36	.....	125.32	117.59	131.26	130.45	.....	117.46	111.76
20	130.90	130.36	122.17	122.14	.....	125.96	119.33	133.31	129.46	.....	117.40	112.09
25	130.48	127.71	.....	123.22	.....	121.82	121.57	133.87	129.19	.....	115.15	112.11
Eom	129.79	126.67	121.69	122.50	128.10	121.67	124.73	133.04	126.66	118.48	112.16	112.16

292845098255401. AY-68-37-203 (J-17)[b/]. Unused artesian well in Edwards aquifer, diam. 6 in., depth 874 ft, cased to 491 ft. Lsd 730.81 ft above msl. Highest water level 34.29 ft below lsd, Oct. 22, 1973; lowest 110.05 ft[c/] below lsd, Aug. 17, 1956. Records available 1932-85[d/].

Highest 1985 water level 56.31 ft below lsd on Dec. 8; lowest 1985 water level 86.76 ft below lsd on Aug. 23.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	81.66	78.52	71.26	68.38	69.85	82.57	65.19	76.61	86.20	72.46	61.74	56.69
10	81.12	77.74	71.28	68.88	73.69	71.27	64.00	80.42	84.42	72.98	61.84	56.54
15	81.36	78.06	69.10	66.50	76.36	72.92	64.40	82.34	78.71	73.41	62.41	56.83
20	77.59	77.82	66.31	67.95	74.05	73.91	67.02	85.03	77.14	67.54	62.43	57.17
25	77.40	73.53	66.70	70.77	73.44	68.02	70.49	85.33	77.67	63.57	60.82	57.37
Eom	76.79	72.55	66.65	68.36	76.86	68.38	74.64	83.54	73.89	62.65	56.69	57.33

See footnotes at end of table.

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 128.19 ft below lsd, June 22, 1981; lowest 169.56 ft below lsd, Oct. 1, 1956. Records available 1936-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	148.09	Apr. 29, 1985	146.66	July 30, 1985	142.78	Oct. 30, 1985	145.13
Feb. 25	146.65	May 29	146.68	Aug. 27	144.75	Nov. 25	134.57
Mar. 25	146.06	June 24	143.78	Sept. 25	146.03	Dec. 27	135.79

294310098080001. DX-68-23-302 (G-49). Unused water-table well in Edwards aquifer, diam. 8 to 3 in., depth 230 ft, cased to 24 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 1948-85.

Highest 1985 water level 15.94 ft below lsd on Dec. 8, 9; lowest 1985 water level 19.45 ft below lsd on Jan. 4.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	19.41	18.90	18.28	17.73	17.76	18.83	17.11	17.93	19.18	18.21	17.15	16.01
10	19.33	18.83	18.20	17.78	17.98	18.11	17.02	18.32	19.14	18.17	17.09	15.95
15	19.23	18.87	18.06	17.61	18.15	18.13	16.95	18.58	18.77	17.82	17.06	15.98
20	18.94	18.83	17.81	17.68	18.23	18.15	17.11	18.85	18.62	17.79	17.03	16.03
25	18.91	18.55	17.72	17.76	18.26	17.77	17.30	19.05	18.60	17.50	16.37	16.03
Eom	18.81	18.43	17.68	17.74	18.42	17.65	17.69	18.97	18.36	17.30	15.98	16.06

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, 1937-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	46.39	Apr. 30, 1985	40.98	July 31, 1985	41.85	Oct. 31, 1985	38.27
Feb. 25	44.92	May 29	43.78	Aug. 27	48.84	Nov. 26	35.24
Mar. 25	40.77	June 24	41.04	Sept. 26	45.81	Dec. 27	33.10

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, 1955-85.

Highest 1985 water level 133.34 ft below lsd on Dec. 12; lowest 1985 water level 155.90 ft below lsd on Sept. 5.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	155.55	152.45	147.98	144.66	145.15	150.72	140.06	147.58	155.90	147.63	139.57	133.70
10	155.14	152.14	147.65	144.95	147.12	146.56	139.13	150.41	155.10	147.56	139.53	133.39
15	154.71	152.25	146.52	143.71	148.64	147.00	139.24	152.18	152.14	147.44	139.54	133.47
20	152.80	152.09	144.51	144.25	148.35	147.64	140.70	154.06	150.92	.....	139.40	133.70
25	152.34	149.98	144.26	145.45	148.23	143.77	142.60	155.03	150.74	.....	137.05	133.76
Eom	151.67	148.96	144.09	144.65	149.44	143.55	145.66	154.36	148.86	140.55	134.02	133.85

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, 1971-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	203.70	May 28, 1985	204.26	Aug. 27, 1985	203.09	Oct. 30, 1985	205.64
Feb. 25	201.02	June 24	196.01	Sept. 9	202.92	Nov. 25	204.14
Mar. 25	200.39	July 30	196.37	Sept. 25	204.97	Dec. 27	194.81
Apr. 29	200.44						

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 167.38 ft below lsd, Aug. 2, 1984. Records available 1937-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	88.10	May 28, 1985	93.28	Aug. 27, 1985	105.05	Oct. 30, 1985	97.51
Feb. 25	86.24	June 24	80.31	Sept. 9	104.86	Nov. 25	97.12
Mar. 25	96.83	July 30	85.58	Sept. 25	105.37	Dec. 27	97.61
Apr. 29	86.29						

295909097523301. LR-67-01-304 (LR-67-02-102) (H-23). Unused artesian well in Edwards aquifer, diam. 5 in., depth 372 fe, 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 1937-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	151.08	Apr. 29, 1985	137.42	July 30, 1985	134.15	Oct. 30, 1985	128.35
Feb. 25	147.05	May 28	136.86	Aug. 27	156.25	Nov. 25	126.56
Mar. 25	132.60	June 24	140.08	Sept. 25	148.96	Dec. 27	128.48

See footnotes at end of table.

295344097575001. LR-67-01-701 (H-75a). Domestic artesian well in Edwards aquifer, diam. 6 in., depth and casing information not available. Lsd 734.40 ft above msl. Highest water level 150.63 ft below lsd, June 22, 1981; lowest 181.35 ft below lsd, Apr. 29, 1985. Records available 1954-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	157.94	Apr. 29, 1985	181.35	June 24, 1985	178.69	Oct. 30, 1985	162.77
Mar. 25	177.44						

295443097554201. LR-67-01-809 (H-49). Domestic water-table well in Edwards aquifer, diam. 34 in., depth and casing information not available. Highest water level 19.73 ft below lsd, June 17, 1981; lowest 27.40 ft below lsd, Sept. 11-18, 16, 26, 28-29, Oct. 3, 6, 1984. Records available 1937, 1950, 1954-55, 1980-85.

Highest 1985 water level 21.17 ft below lsd on July 14; lowest 1985 water level 25.96 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	25.82	25.47	25.39	24.96	25.36	25.81	22.30	22.56	24.20	24.85	25.05	21.86
10	25.76	25.57	25.34	25.03	25.39	24.39	22.15	22.87	24.38	24.93	25.20	21.84
15	25.67	25.61	25.30	25.08	.....	24.51	21.20	23.16	24.42	24.94	25.22	21.95
20	25.49	25.64	25.10	25.18	.....	24.57	21.51	23.42	24.52	24.90	25.20	22.07
25	25.42	25.52	25.03	25.25	.....	22.80	21.83	23.67	24.64	24.90	23.36	22.26
Eom	25.42	25.45	24.97	25.31	25.72	23.15	22.25	23.94	24.77	25.03	21.98	22.41

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, 1974-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1985	119.59	Apr. 29, 1985	119.22	July 30, 1985	116.02	Oct. 30, 1985	118.60
Feb. 25	119.65	May 29	119.83	Aug. 27	117.40	Dec. 27	114.60
Mar. 25	119.23	June 24	117.98	Sept. 25	118.24		

295035097585501. LR-67-09-110. SWT farm well. 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 102.29 ft below lsd, Oct. 6, 1984. Records available 1973-85.

Highest 1985 water level 94.29 ft below lsd on Dec. 4; lowest 1985 water level 101.34 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	101.20	100.75	100.64	100.22	100.39	100.73	97.56	97.20	98.80	99.51	99.71	94.31
10	101.12	100.77	100.59	100.24	.....	98.99	97.12	97.49	98.99	99.60	99.79	94.37
15	100.97	100.82	100.52	100.24	.....	99.11	96.19	97.77	99.10	99.60	99.86	94.68
20	100.81	100.84	100.38	100.27	.....	99.32	96.25	98.03	99.16	99.56	99.86	95.06
25	100.75	100.75	100.32	100.28	.....	98.31	96.48	98.31	99.28	99.56	97.46	95.38
Eom	100.72	100.71	100.24	100.37	100.66	98.52	96.89	98.54	99.40	99.64	94.64	95.69

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, 1954-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1985	168.42	Mar. 27, 1985	147.68	June 27, 1985	154.43	Oct. 30, 1985	143.12
Jan. 30	159.92	Apr. 30	149.70	July 31	157.69	Dec. 2	139.42
Feb. 28	155.67	June 3	167.70	Sept. 25	160.19	Dec. 26	138.88

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 1950-85.

Highest 1985 water level 57.86 ft below lsd on Dec. 12; lowest 1985 water level 86.16 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	85.03	78.56	72.57	67.22	68.82	83.67	70.71	77.10	84.63	73.87	62.43	58.73
10	83.91	78.13	71.87	67.96	73.08	75.58	68.27	80.09	83.56	73.59	61.98	57.90
15	83.15	77.77	70.35	66.75	79.25	77.02	67.95	81.79	80.38	73.75	62.03	58.09
20	81.09	77.27	67.40	67.29	74.42	77.05	69.56	83.16	78.83	69.43	62.16	a58.25
25	79.75	.....	66.93	68.55	72.57	73.28	71.70	84.57	78.28	65.59	61.64	58.10
Eom	78.41	74.02	66.85	68.17	76.12	73.62	74.72	84.17	76.15	63.39	59.48	57.98

See footnotes at end of table.

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 1957-85.

Highest 1985 water level 148.73 ft below lsd on Dec. 30; lowest 1985 water level 171.35 ft below lsd on Jan. 5.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	171.35	168.12	.....	160.67	157.54	154.73	153.78	153.83	155.22	155.76	150.89	149.71
10	171.23	167.90	.....	160.40	157.42	154.52	153.68	154.01	155.30	155.86	150.83	149.38
15	170.54	167.79	163.77	159.83	157.40	154.34	153.60	154.13	155.45	153.40	150.81	149.31
20	169.65	167.53	162.63	159.56	156.04	154.18	153.57	154.43	155.72	150.44	150.80	149.10
25	169.07	166.61	162.10	159.23	155.52	153.92	153.59	154.68	155.78	150.53	150.54	148.98
Eom	168.43	166.23	161.35	158.57	154.97	153.91	153.71	154.99	155.12	150.68	149.74	148.74

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, 1940-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1985	224.02	Apr. 29, 1985	205.30	July 30, 1985	213.94	Nov. 1, 1985	196.99
Feb. 26	215.46	May 31	206.25	Aug. 29	214.50	Dec. 3	194.43
Mar. 25	205.40	June 27	214.05	Sept. 27	213.19	Dec. 27	193.66

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 1960-85.

Highest 1985 water level 234.00 ft below lsd on Dec. 12; lowest 1985 water level 265.81 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	264.05	256.18	.....	243.51	248.85	262.40	249.56	256.60	260.77	250.39	237.93	234.92
10	262.78	255.59	.....	245.59	252.70	255.47	247.16	258.89	259.29	250.23	237.73	234.09
15	261.63	255.11	.....	246.81	258.96	257.95	247.24	259.82	256.06	249.11	237.94	234.136
20	259.31	254.49	.....	246.01	249.45	254.97	249.46	260.54	254.96	244.73	238.17	234.68
25	257.85	252.13	.....	245.74	247.46	251.89	251.38	261.07	254.81	240.38	237.74	234.67
Eom	256.35	250.68	243.08	245.03	254.31	253.20	253.80	260.65	252.60	238.59	235.44	234.43

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 1958-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1985	175.92	Apr. 30, 1985	156.30	July 30, 1985	164.69	Oct. 30, 1985	151.06
Jan. 29	171.07	June 3	170.68	Aug. 29	173.23	Dec. 4	147.07
Feb. 27	163.90	June 26	163.35	Sept. 27	167.30	Dec. 26	146.84
Mar. 26	155.19						

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 1957-85.

Highest 1985 water level 36.55 ft below lsd on Jan. 1; lowest 1985 water level 65.65 ft below lsd on Sept. 6.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	42.26	45.29	46.18	51.91	52.83	53.25	55.03	58.77	65.62	50.94	42.32	53.20
10	42.73	47.48	47.35	53.00	53.19	54.36	55.57	59.86	65.43	51.38	43.83	54.72
15	42.70	.....	48.52	53.75	53.82	54.78	55.92	61.17	64.25	53.31	45.53	56.30
20	41.11	.....	49.74	54.45	.....	55.69	56.44	63.28	65.08	40.21	47.36	57.86
25	41.90	46.73	50.90	54.93	.....	54.20	56.93	65.01	65.30	39.97	49.50	58.92
Eom	43.03	46.33	51.12	53.17	e51.84	54.83	57.84	65.40	53.36	40.94	50.79	59.90

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 385.67 ft below lsd, Dec. 25, 1984. Records available 1974-85.

Highest 1985 water level 336.64 ft below lsd on June 25; lowest 1985 water level 384.23 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	381.67	369.08	360.84	350.78	343.70	337.92	336.91	339.83	344.07	347.14	341.85	339.18
10	379.66	367.49	358.92	349.45	342.63	337.28	337.28	340.42	344.74	347.34	341.23	338.26
15	377.36	366.10	357.43	347.97	342.12	336.93	337.67	341.07	345.56	347.84	340.81	338.08
20	375.45	364.78	355.55	346.88	341.05	336.77	338.14	341.81	346.20	346.68	340.60	337.65
25	373.17	363.28	354.27	345.74	339.97	336.64	338.53	342.58	346.70	344.62	340.16	337.50
Eom	370.88	362.22	352.50	344.95	338.82	336.85	339.23	343.36	347.32	342.56	339.41	336.92

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 305.60 ft below lsd, Dec. 7, 1971. Records available 1971-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1985	297.48	May 31, 1985	184.75	Aug. 29, 1985	268.37	Dec. 3, 1985	179.93
Jan. 28	289.15	June 27	201.04	Sept. 27	250.04	Dec. 27	171.09
Apr. 30	177.86	July 30	248.00	Nov. 1	208.56		

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 to 937 ft. Lsd 954.04 ft above msl. Highest water level 118.64 ft below lsd, May 20, 1977; lowest 290.03 ft below lsd, Oct. 13, 1956. Records available 1956-85.

Highest 1985 water level 187.08 ft below lsd on Dec. 27; lowest 1985 water level 222.80 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	220.10	208.60	201.52	195.10	198.13	205.21	206.27	208.83	f208.35	201.51	190.20	188.41
10	218.40	207.38	200.13	195.11	199.77	207.71	204.71	210.27	f207.37	201.13	189.93	187.67
15	216.47	206.49	198.47	194.14	202.63	208.64	203.09	209.53	205.98	201.02	190.07	187.52
20	214.69	205.80	.....	195.01	198.75	206.90	206.05	f210.79	f205.13	197.12	190.14	187.55
25	212.40	204.59	.....	196.50	195.37	205.72	206.66	208.98	f204.60	192.87	189.70	187.43
Eom	210.10	203.28	195.01	196.70	197.58	206.52	206.88	f208.85	203.32	190.92	188.78	f187.21

291426099510201. YP-69-50-101 (H-4-6). Stock artesian well in Edwards aquifer, diam. 8 in., depth 100 ft, casing information not available. Lsd 950.6 ft above msl. Highest water level 48.15 ft below lsd, May 29, 1980; lowest 126.17 ft below lsd, Mar. 14, 1957. Records available 1929-33, 1935-42, 1944-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1985	71.96	Apr. 29, 1985	63.89	July 30, 1985	64.58	Nov. 1, 1985	60.03
Jan. 28	68.15	May 31	63.24	Aug. 29	64.98	Dec. 3	59.34
Feb. 26	66.12	June 27	64.46	Sept. 26	64.97	Dec. 27	59.47
Mar. 26	64.01						

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 1956-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 26, 1985	57.31	May 31, 1985	53.16	Aug. 29, 1985	54.51	Dec. 3, 1985	47.46
Mar. 26	53.82	June 27	54.21	Sept. 26	54.21	Dec. 27	47.28
Apr. 29	54.42	July 30	54.18	Nov. 1	48.29		

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, 1934-85.

Highest 1985 water level 28.00 ft below lsd on Dec. 31; lowest 1985 water level 42.61 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	41.09	37.79	35.54	33.63	33.81	33.48	34.08	34.90	34.83	32.59	28.92	28.13
10	40.73	37.30	35.10	33.42	34.01	34.14	34.13	35.08	34.62	32.70	.....	28.01
15	40.09	36.89	34.65	33.24	34.38	34.27	34.17	35.13	34.50	32.55	28.61	28.06
20	39.53	36.65	34.26	33.27	34.38	34.28	34.41	35.11	34.43	31.03	28.46	28.05
25	38.95	36.20	34.05	33.40	33.64	34.43	34.40	35.03	34.42	29.46	28.31	28.10
Eom	38.27	35.99	33.78	33.56	33.37	34.22	34.65	34.85	33.72	29.18	28.31	28.00

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, 1961-82, 1984-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1985	54.87	May 31, 1985	50.15	Aug. 29, 1985	53.74	Nov. 1, 1985	46.59
Jan. 28	53.76	June 27	51.20	Sept. 26	53.52	Dec. 27	47.16
Mar. 26	49.86	July 30	53.40				

See footnotes at end of table.

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, 1966-85.

Highest 1985 water level 27.02 ft below lsd on Nov. 1; lowest 1985 water level 34.33 ft[f/] below lsd on Aug. 7.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	31.23	29.77	29.18	29.24	32.05	31.81	32.72	f33.43	f32.80	.....	27.30	27.90
10	30.92	30.12	28.98	29.36	32.85	33.75	32.23	f33.58	32.83	30.72	27.86	28.07
15	30.55	30.30	29.16	29.07	33.78	33.40	32.41	f34.07	32.85	.....	28.05	28.24
20	30.31	30.44	28.95	29.30	32.55	33.14	33.25	33.55	32.59	.....	28.03	f28.75
25	29.92	29.76	29.23	30.50	30.70	33.48	33.06	33.65	f32.33	.....	27.84	f28.70
Eom	29.76	29.53	29.30	31.03	29.93	32.67	33.70	33.41	31.61	.....	27.73	28.73

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 1957-85.

Highest 1985 water level 39.52 ft below lsd on Jan. 1; lowest 1985 water level 42.69 ft below lsd on Sept. 23, 24.

Highest water level for the day, from recorder graph, 1985

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	41.45	42.18	42.02	42.30	42.29	42.40	41.10	42.45	42.52	42.28	42.40	42.50
10	41.75	42.20	42.12	42.28	42.30	42.42	42.05	42.44	42.57	42.45	42.44	42.51
15	41.87	42.25	42.17	42.30	42.33	42.26	40.13	42.50	42.63	42.53	42.46	42.50
20	41.90	42.27	42.20	42.31	42.30	42.35	39.95	42.49	42.68	41.71	42.48	42.51
25	42.03	41.85	42.24	42.32	42.34	42.23	41.96	42.57	42.59	42.17	42.50	42.53
Eom	42.12	41.87	42.28	42.30	42.36	40.73	42.35	42.52	41.80	42.38	42.50	42.54

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 1937-85.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1985	50.35	Mar. 25, 1985	51.93	June 27, 1985	52.86	Sept. 26, 1985	53.37
Jan. 28	51.18	Apr. 29	52.27	July 30	52.97	Dec. 3	46.05
Feb. 26	50.40	May 31	52.33	Aug. 29	53.38	Dec. 27	45.89

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

APPENDIX B. WATER QUALITY

Water-quality data for wells and springs in the Edwards aquifer, 1985

ATASCOSA COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	ALKALINITY FIELD (MG/L AS CACO3)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
AL-68-50-301	04-09-85	1530	2500	420	350	912	7.20	33.0	200	--
AL-68-51-101	07-10-85	1000	2650	1440	37	2060	6.90	38.0	200	--
	07-15-85	1155	2650	295	831	2130	6.80	40.5	197	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
AL-68-50-301	04-09-85	--	--	400	200	110	31	40	2.9	180
AL-68-51-101	07-10-85	--	--	910	710	230	81	120	7.2	640
	07-15-85	--	--	1100	860	280	87	120	7.5	680

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
AL-68-50-301	04-09-85	77	.70	14	580	--	.110	--	<.010	--
AL-68-51-101	07-10-85	240	2.6	17	1500	--	.620	--	<.010	--
	07-15-85	260	.30	17	1600	--	.610	--	<.010	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
AL-68-50-301	04-09-85	--	--	<.10	--	--
AL-68-51-101	07-10-85	--	--	<.10	--	--
	07-15-85	--	--	<.10	--	--

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	ALKALINITY FIELD (MG/L AS CACO3)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
AY-68-21-804	06-07-85	1100	279	67	5.0	570	6.90	24.0	264	--
	06-24-85	1250	279	50	5.0	542	6.90	23.5	270	--
	07-05-85	1230	279	45	5.0	558	6.90	23.5	282	--
AY-68-27-303	06-10-85	1315	354	80	15	517	7.10	23.0	258	--
AY-68-28-202	07-31-85	1145	457	225	75	543	7.50	23.5	257	--
AY-68-28-502	07-31-85	1430	506	62	135	572	7.30	25.0	250	--
AY-68-28-508	07-30-85	1355	396	355	150	448	7.40	23.0	197	--
AY-68-28-608	06-10-85	1105	500	70	10	457	7.00	22.0	216	--
AY-68-28-903	02-13-85	1600	762	60	3500	662	7.30	22.0	310	--
AY-68-29-109	02-13-85	1040	460	160	250	571	7.40	23.0	290	--
AY-68-29-210	06-08-85	1258	329	70	10	558	6.60	23.0	259	--
	06-24-85	1405	329	45	10	547	7.20	23.0	258	--
	07-05-85	1340	329	45	10	551	7.00	23.0	266	--
AY-68-29-303	08-14-85	1355	527	355	--	499	7.20	22.0	221	--
AY-69-29-401	02-13-85	1145	517	45	600	535	7.70	23.5	280	--
AY-68-29-702	08-29-85	0935	872	95	3500	579	7.10	22.0	256	--
AY-68-35-102	08-29-85	1310	796	310	1880	601	6.70	23.0	130	--
AY-68-36-102	08-29-85	1140	786	220	9000	561	7.20	22.0	244	--
AY-68-37-104	08-29-85	1035	995	155	3500	505	7.30	23.5	221	--
AY-68-37-505	07-17-85	1015	840	20	250	502	7.00	27.0	193	--
AY-68-37-506	02-26-85	1045	1400	27	3000	486	7.60	26.5	200	--
AY-68-37-508	02-26-85	1012	1320	25	7640	475	7.40	26.0	200	--
AY-68-37-521	07-23-85	2110	1270	60	--	3320	6.11	32.0	215	--
	07-26-85	1200	1270	60	564	5220	6.70	33.0	233	--
	07-29-85	0900	1270	60	575	5080	6.80	33.0	237	--
	07-30-85	1115	1270	60	576	5280	6.50	33.0	231	--
	08-02-85	1910	1270	240	437	5230	6.60	33.0	232	--
	08-06-85	1755	1270	240	33	6650	6.60	33.0	249	--
	08-07-85	1355	1270	240	44	6060	6.50	33.0	240	--
	08-07-85	2000	1270	240	238	4360	6.61	32.5	224	--
	08-08-85	1730	1270	240	127	2680	6.90	32.0	212	--
AY-68-37-701	02-25-85	1305	1580	1440	3000	492	7.40	27.0	200	--
AY-68-37-705	02-25-85	1010	1790	1440	6500	489	7.20	27.0	190	--
	10-28-85	1430	1790	1440	3000	483	7.40	27.0	195	--
AY-68-38-107	04-03-85	1400	726	360	2000	508	7.30	27.5	198	--
AY-68-43-703	08-14-85	1050	2030	1130	750	1030	7.60	35.0	195	--
AY-68-43-802	07-12-85	1405	1980	365	600	517	6.80	27.5	192	--
AY-68-43-807	02-28-85	1345	2290	1440	700	908	7.10	35.0	192	--
AY-68-43-816	02-27-85	1500	1990	1440	--	1160	7.30	35.5	197	--
AY-68-43-818	07-10-85	1210	1950	550	235	1070	7.80	36.0	196	--
AY-68-45-101	03-04-85	1310	1870	1440	25	5700	6.70	39.0	238	--

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
AY-68-21-804	06-07-85	--	--	290	22	110	2.5	3.4	.80	2.0
	06-24-85	--	--	290	20	110	3.5	3.8	.80	2.6
	07-05-85	--	--	290	6	110	3.1	4.4	.70	2.7
AY-68-27-303	06-10-85	--	--	280	23	96	10	5.5	.90	8.5
AY-68-28-202	07-31-85	--	--	280	20	91	12	6.1	1.1	12
AY-68-28-502	07-31-85	--	--	290	45	85	20	6.5	1.5	31
AY-68-28-508	07-30-85	--	--	220	25	74	8.9	6.1	.90	15
AY-68-28-608	06-10-85	--	--	240	23	83	7.6	4.7	1.5	12
AY-68-28-903	02-13-85	--	--	330	23	110	14	18	1.5	22
AY-68-29-210	06-08-85	--	--	290	30	100	9.5	5.1	.80	27
	06-24-85	--	--	290	31	100	9.4	4.7	.80	24
	07-05-85	--	--	290	23	100	9.4	5.0	.70	20
AY-68-37-521	07-23-85	--	--	1100	910	270	110	250	15	960
	07-26-85	--	--	1700	1500	420	170	380	24	1500
	07-29-85	--	--	1800	1600	430	180	380	28	1400
	07-30-85	--	--	1700	1500	420	170	440	25	1300
	08-02-85	--	--	2000	1800	510	180	400	25	1500
	08-06-85	--	--	2400	2200	600	230	550	33	2000
	08-07-85	--	--	2300	2100	590	210	480	29	1800
	08-07-85	--	--	1600	1300	390	140	320	21	1200
	08-08-85	--	--	1000	810	260	89	200	13	780
AY-68-29-109	02-13-85	--	--	310	22	100	15	7.0	.80	8.1
AY-68-29-303	08-14-85	--	--	250	32	89	7.4	5.2	.70	18
AY-68-29-401	02-13-85	--	--	310	28	95	17	6.4	.80	10
AY-68-29-702	08-29-85	--	--	300	44	97	14	8.4	1.2	24
AY-68-35-102	08-29-85	--	--	300	170	88	20	8.1	1.5	47
AY-68-36-102	08-29-85	--	--	280	40	87	16	9.8	1.4	26
AY-68-37-104	08-29-85	--	--	270	49	80	17	8.8	1.3	25
AY-68-37-505	07-17-85	--	--	250	59	71	18	12	1.2	31
AY-68-37-506	02-26-85	--	--	240	41	70	16	9.0	1.1	21
AY-68-37-508	02-26-85	--	--	230	35	66	17	9.7	1.1	21
AY-68-37-701	02-25-85	--	--	240	45	70	17	10	1.1	23
AY-68-37-705	02-25-85	--	--	240	51	70	16	8.9	1.1	23
	10-28-85	--	--	230	33	63	17	9.9	1.2	23
AY-68-38-107	04-03-85	--	--	250	51	70	18	13	1.4	28
AY-68-43-703	08-14-85	--	--	440	240	120	33	48	3.4	210
AY-68-43-802	07-12-85	--	--	240	51	69	17	11	1.3	30
AY-68-43-807	02-28-85	--	--	400	210	110	30	40	3.0	180
AY-68-43-816	02-27-85	--	--	470	270	130	35	54	3.7	240
AY-68-43-818	07-10-85	--	--	440	240	120	34	50	4.0	220
AY-68-45-101	03-04-85	--	--	2500	2200	620	220	420	24	1900

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
AY-68-21-804	06-07-85	10	<.10	13	300	6.5	--	.050	--	<.010
	06-24-85	7.6	<.10	13	300	2.3	--	.050	--	<.010
	07-05-85	7.3	<.10	13	310	--	--	.030	--	<.010
AY-68-27-303	06-10-85	9.8	<.10	12	300	2.5	--	.020	--	<.010
AY-68-28-202	07-31-85	11	.20	11	300	1.2	--	.020	--	<.010
AY-68-28-502	07-31-85	11	.30	12	320	1.1	--	.020	--	<.010
AY-68-28-508	07-30-85	10	.20	11	240	2.3	--	.010	--	<.010
AY-68-28-608	06-10-85	7.6	.10	11	260	1.2	--	.040	--	<.010
AY-68-29-210	06-08-85	9.1	<.10	12	320	1.4	--	.030	--	<.010
	06-24-85	8.4	<.10	12	310	1.4	--	.040	--	<.010
	07-05-85	8.0	<.10	12	320	1.4	--	.030	--	<.010
AY-68-37-521	07-23-85	470	2.3	16	2200	--	--	--	--	--
	07-26-85	810	2.7	17	3500	--	--	--	--	--
	07-29-85	750	2.6	18	3300	--	--	--	--	--
	07-30-85	810	2.8	18	3300	--	--	--	--	--
	08-02-85	840	2.7	18	3600	--	--	--	--	--
	08-06-85	1200	3.0	20	4800	--	--	--	--	--
	08-07-85	1000	2.9	19	4300	--	--	--	--	--
	08-07-85	670	2.5	17	2900	--	--	--	--	--
	08-08-85	380	2.0	16	1900	--	--	--	--	--
AY-68-28-903	02-13-85	20	.20	14	390	2.1	--	.030	--	<.010
AY-68-29-109	02-13-85	13	.10	13	330	1.5	--	.040	--	<.010
AY-68-29-303	08-14-85	9.7	.20	11	270	--	--	.030	--	<.010
AY-69-29-401	02-13-85	11	.20	13	320	1.4	--	.030	--	<.010
AY-68-29-702	08-29-85	12	.20	11	320	1.7	--	.020	--	<.010
AY-68-35-102	08-29-85	86	.20	12	340	--	--	<.010	--	<.010
AY-68-36-102	08-29-85	15	.20	12	310	--	--	.020	--	<.010
AY-68-37-104	08-29-85	14	.20	13	290	1.9	--	.010	--	<.010
AY-68-37-505	07-17-85	19	.30	13	280	--	.010	--	<.010	--
AY-68-37-506	02-26-85	18	.20	12	270	1.8	--	.020	--	<.010
AY-68-37-508	02-26-85	18	.30	12	270	--	.070	--	<.010	--
AY-68-37-701	02-25-85	18	.30	13	270	--	<.010	--	<.010	--
AY-68-37-705	02-25-85	19	.30	12	260	2.0	--	.070	--	<.010
	10-28-85	21	.30	12	260	1.8	--	.030	--	<.010
AY-68-38-107	04-03-85	21	.30	13	280	1.5	--	.030	--	<.010
AY-68-43-703	08-14-85	100	.80	15	650	--	.180	--	<.010	--
AY-68-43-802	07-12-85	23	.40	12	280	--	.020	--	<.010	--
AY-68-43-807	02-28-85	72	.90	14	570	--	.150	--	<.010	--
AY-68-43-816	02-27-85	110	1.2	15	710	--	.250	--	<.010	--
AY-68-43-818	07-10-85	100	1.0	15	660	--	.260	--	<.010	--
AY-68-45-101	03-04-85	940	3.6	23	4300	--	2.10	--	<.010	--

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
AY-68-21-804	06-07-85	.20	6.3	--	.010	.80
	06-24-85	.30	2.0	--	<.010	.40
	07-05-85	<.10	1.4	--	<.010	.30
AY-68-27-303	06-10-85	.20	2.3	--	<.010	.60
AY-68-28-202	07-31-85	.30	.90	--	<.010	.60
AY-68-28-502	07-31-85	.30	.80	--	<.010	.50
AY-68-28-508	07-30-85	.30	2.0	--	<.010	.70
AY-68-28-608	06-10-85	.20	1.0	--	.020	3.3
AY-68-29-210	06-08-85	.10	1.3	--	<.010	.60
	06-24-85	.10	1.3	--	<.010	.50
	07-05-85	.10	1.3	--	<.010	.70
AY-68-37-521	07-23-85	--	--	--	--	--
	07-26-85	--	--	--	--	--
	07-29-85	--	--	--	--	--
	07-30-85	--	--	--	--	--
	08-02-85	--	--	--	--	--
	08-06-85	--	--	--	--	--
	08-07-85	--	--	--	--	--
	08-07-85	--	--	--	--	--
	08-08-85	--	--	--	--	--
AY-68-28-903	02-13-85	.50	1.6	--	<.010	.20
AY-68-29-109	02-13-85	.40	1.1	--	.010	<.10
AY-68-29-303	08-14-85	--	1.7	--	--	.60
AY-69-29-401	02-13-85	.30	1.1	--	<.010	<.10
AY-68-29-702	08-29-85	.30	1.4	--	<.010	1.2
AY-68-35-102	08-29-85	<.20	1.3	--	<.010	1.2
AY-68-36-102	08-29-85	<.20	2.1	--	<.010	.80
AY-68-37-104	08-29-85	.30	1.6	--	<.010	1.1
AY-68-37-505	07-17-85	--	--	1.3	--	--
AY-68-37-506	02-26-85	.20	1.6	--	<.010	.20
AY-68-37-508	02-26-85	--	--	1.5	--	--
AY-68-37-701	02-25-85	--	--	1.5	--	--
AY-68-37-705	02-25-85	.50	1.5	--	<.010	1.2
	10-28-85	.30	1.5	--	<.005	--
AY-68-38-107	04-03-85	.20	1.3	--	<.010	.60
AY-68-43-703	08-14-85	--	--	<.10	--	--
AY-68-43-802	07-12-85	--	--	1.4	--	--
AY-68-43-807	02-28-85	--	--	<.10	--	--
AY-68-43-816	02-27-85	--	--	<.10	--	--
AY-68-43-818	07-10-85	--	--	<.10	--	--
AY-68-45-101	03-04-85	--	--	<.10	--	--

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
AY-68-21-804	06-07-85	1100	279	67	5.0	1	37	<1	<10	2
	06-24-85	1250	279	50	5.0	<1	42	<1	20	1
	07-05-85	1230	279	45	5.0	<1	43	<1	<10	2
AY-68-27-303	06-10-85	1315	354	80	15	1	44	<1	<10	1
AY-68-28-202	07-31-85	1145	457	225	75	<1	41	<1	<10	2
AY-68-28-502	07-31-85	1430	506	62	135	<1	37	<1	<10	2
AY-68-28-508	07-30-85	1355	396	355	150	<1	33	<1	<10	1
AY-68-28-608	06-10-85	1105	500	70	10	1	33	<1	<10	4
AY-68-28-903	02-13-85	1600	762	60	3500	<1	45	<1	<10	3
AY-68-29-109	02-13-85	1040	460	160	250	<1	37	<1	<10	2
AY-68-29-210	06-08-85	1258	329	70	10	1	39	<1	<10	<1
	06-24-85	1405	329	45	10	<1	39	<1	<10	<1
	07-05-85	1340	329	45	10	<1	45	<1	<10	<1
AY-68-29-303	08-14-85	1355	527	355	--	1	38	<1	<10	2
AY-68-29-401	02-13-85	1145	517	45	600	<1	35	2	<10	3
AY-68-29-702	08-29-85	0935	872	95	3500	1	44	<1	<10	1
AY-68-35-102	08-29-85	1310	796	310	1880	2	39	<1	<10	6
AY-68-36-102	08-29-85	1140	786	220	9000	1	41	<1	<10	1
AY-68-37-104	08-29-85	1035	995	155	3500	1	43	<1	<10	3
AY-68-37-506	02-26-85	1045	1400	--	3000	<1	95	<1	<10	<1
AY-68-37-705	02-25-85	1010	1790	1440	6500	<1	110	<1	<10	<1
	10-28-85	1430	1790	1440	3000	<1	120	<1	<10	3
AY-68-38-107	04-03-85	1400	726	360	2000	<1	140	<1	<10	9

LOCAL IDENT-I-FIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
AY-68-21-804	06-07-85	14	8	2	<.1	--	<1	<1	1200
	06-24-85	6	8	<1	<.1	--	<1	1	840
	07-05-85	5	4	1	<.1	--	<1	<1	940
AY-68-27-303	06-10-85	8	14	2	.1	--	<1	<1	270
AY-68-28-202	07-31-85	14	3	<1	<.1	--	<1	<1	15
AY-68-28-502	07-31-85	4	<1	<1	.1	--	<1	<1	38
AY-68-28-508	07-30-85	<3	1	<1	<.1	--	<1	<1	3
AY-68-28-608	06-10-85	84	11	11	.1	--	<1	<1	290
AY-68-28-903	02-13-85	4	6	<1	<.1	--	<1	<1	13
AY-68-29-109	02-13-85	5	1	<1	<.1	--	<1	<1	12
AY-68-29-210	06-08-85	5	14	2	3.5	--	<1	<1	520
	06-24-85	7	7	<1	<.1	--	<1	<1	510
	07-05-85	28	5	<1	<.1	--	<1	4	460
AY-68-29-303	08-14-85	400	3	2	<.1	--	<1	<1	150
AY-68-29-401	02-13-85	<3	2	<1	<.1	--	<1	<1	<3
AY-68-29-702	08-29-85	4	<1	<1	<.1	--	<1	<1	8
AY-68-35-102	08-29-85	8	<1	<1	1.5	--	<1	<1	15
AY-68-36-102	08-29-85	3	<1	<1	<.1	--	<1	<1	11
AY-68-37-104	08-29-85	<3	<1	1	<.1	--	<1	<1	13
AY-68-37-506	02-26-85	6	<1	<1	<.1	--	<1	<1	24

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	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)
AY-68-37-705	02-25-85	6	<1	<1	<.1	--	<1	<1	9
	10-28-85	<3	1	<1	<.1	--	<1	<1	10
AY-68-38-107	04-03-85	<3	5	<1	<.1	--	1	<1	9

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN)	FLOW RATE, INSTAN-TANEOUS (GPM)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRA-ZINE, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)
AY-68-21-804	07-05-85	1230	279	45	5.0	<.1	<.10	<.010	--	<.1
AY-68-27-503	03-15-85	1500	375	--	--	<.1	<.10	<.010	<.10	<.1
AY-68-28-202	07-31-85	1145	457	225	75	<.1	<.10	<.010	--	<.1
AY-68-28-205	03-18-85	1230	485	--	--	<.1	<.10	<.010	<.10	<.1
AY-68-29-109	03-18-85	1415	460	--	--	<.1	<.10	<.010	<.10	<.1
AY-68-29-210	07-05-85	1340	329	45	10	<.1	<.10	<.010	--	<.1
AY-68-29-401	03-18-85	1500	517	--	--	<.1	<.10	<.010	<.10	<.1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)
AY-68-21-804	07-05-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
AY-68-27-503	03-15-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
AY-68-28-202	07-31-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
AY-68-28-205	03-18-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
AY-68-29-109	03-18-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
AY-68-29-210	07-05-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
AY-68-29-401	03-18-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)
AY-68-21-804	07-05-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
AY-68-27-503	03-15-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
AY-68-28-202	07-31-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
AY-68-28-205	03-18-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
AY-68-29-109	03-18-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
AY-68-29-210	07-05-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
AY-68-29-401	03-18-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
AY-68-21-804	07-05-85	<.01	<.01	<.01	<.01
AY-68-27-503	03-15-85	<.01	<.01	<.01	<.01
AY-68-28-202	07-31-85	<.01	<.01	<.01	<.01
AY-68-28-205	03-18-85	<.01	<.01	<.01	<.01
AY-68-29-109	03-18-85	<.01	<.01	<.01	<.01
AY-68-29-210	07-05-85	<.01	<.01	<.01	<.01
AY-68-29-401	03-18-85	<.01	<.01	<.01	<.01

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

COMAL COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	ALKALINITY FIELD (MG/L AS CACO3)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
DX-68-15-901	03-27-85	1520	--	1440	2240	570	6.90	21.0	265	--
DX-68-16-502	03-29-85	0950	230	10	250	562	7.00	23.0	258	--
DX-68-16-805	03-07-85	1330	--	60	15	563	7.00	24.0	249	--
DX-68-22-902	03-29-85	1410	240	20	520	524	7.00	22.0	251	--
DX-68-23-301	03-06-85	1335	--	--	--	528	7.00	23.5	233	--
DX-68-23-303	03-06-85	1005	1040	--	4700	536	7.50	23.5	232	--
DX-68-23-316	08-27-85	1055	350	40	15	550	6.90	23.0	255	--
DX-68-23-318	03-05-85	1115	620	25	450	3630	7.00	25.5	310	--
DX-68-23-501	03-28-85	1055	210	25	500	541	7.10	24.0	230	--
DX-68-23-602	03-06-85	1050	790	35	2570	521	7.00	23.0	300	--
DX-68-23-701	03-28-85	1216	300	26	10	556	7.30	24.0	231	--
DX-68-23-703	03-07-85	1104	380	39	15	556	7.20	23.0	220	--
DX-68-23-708	07-19-85	1115	380	50	20	2330	6.80	23.5	823	--
DX-68-23-809	07-30-85	1515	720	60	10	661	7.20	24.0	246	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
DX-68-15-901	03-27-85	--	--	290	24	100	9.3	7.2	1.1	16
DX-68-16-502	03-29-85	--	--	290	35	89	17	8.9	1.0	24
DX-68-16-805	03-07-85	--	--	280	32	86	16	8.7	1.2	22
DX-68-22-902	03-29-85	--	--	280	30	91	13	6.5	1.0	10
DX-68-23-301	03-06-85	--	--	270	40	81	17	10	1.4	25
DX-68-23-303	03-06-85	--	--	280	52	84	18	9.7	1.3	30
DX-68-23-316	08-27-85	--	--	280	28	90	14	5.6	1.7	11
DX-68-23-318	03-05-85	--	--	1100	780	220	130	370	23	610
DX-68-23-501	03-28-85	--	--	280	53	85	17	9.7	1.3	22
DX-68-23-602	03-06-85	--	--	270	0	84	15	8.3	1.4	23
DX-68-23-701	03-28-85	--	--	270	41	61	29	17	2.6	33
DX-68-23-703	03-07-85	--	--	250	31	51	30	17	2.2	33
DX-68-23-708	07-19-85	--	--	610	0	80	100	260	23	200
DX-68-23-809	07-30-85	--	--	260	18	51	33	34	3.2	33

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
DX-68-15-901	03-27-85	12	.20	10	310	2.6	--	.040	--	<.010
DX-68-16-502	03-29-85	12	.20	12	320	2.0	--	.030	--	<.010
DX-68-16-805	03-07-85	15	.20	12	310	--	.040	--	<.010	--
DX-68-22-902	03-29-85	11	.10	12	300	3.0	--	.040	--	<.010
DX-68-23-301	03-06-85	15	.20	12	300	2.3	--	.010	--	<.010

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

COMAL COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
DX-68-23-303	03-06-85	15	.20	12	310	2.1	--	.020	--	<.010
DX-68-23-316	08-27-85	11	.20	11	300	--	--	.020	--	<.010
DX-68-23-318	03-05-85	740	3.5	14	2300	--	1.30	--	<.010	--
DX-68-23-501	03-28-85	14	.30	13	300	--	.040	--	<.010	--
DX-68-23-602	03-06-85	14	.20	12	340	2.5	--	.010	--	<.010
DX-68-23-701	03-28-85	23	1.3	12	320	--	.130	--	<.010	--
DX-68-23-703	03-07-85	24	2.1	12	300	--	.070	--	<.010	--
DX-68-23-708	07-19-85	280	4.4	13	1500	--	1.10	--	<.010	--
DX-68-23-809	07-30-85	49	2.3	12	370	--	.170	--	<.010	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
DX-68-15-901	03-27-85	1.1	1.5	--	.010	1.5
DX-68-16-502	03-29-85	.30	1.7	--	.010	.80
DX-68-16-805	03-07-85	--	--	1.7	--	--
DX-68-22-902	03-29-85	1.3	1.7	--	.010	.80
DX-68-23-301	03-06-85	.50	1.8	--	.010	.30
DX-68-23-303	03-06-85	.40	1.7	--	<.010	.20
DX-68-23-316	08-27-85	<.20	1.5	--	<.010	.80
DX-68-23-318	03-05-85	--	--	<.10	--	--
DX-68-23-501	03-28-85	--	--	1.7	--	--
DX-68-23-602	03-06-85	.50	2.0	--	.010	.40
DX-68-23-701	03-28-85	--	--	<.10	--	--
DX-68-23-703	03-07-85	--	--	<.10	--	--
DX-68-23-708	07-19-85	--	--	<.10	--	--
DX-68-23-809	07-30-85	--	--	<.10	--	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)
DX-68-15-901	03-27-85	1520	--	1440	2240	<1	41	<1	10	1
DX-68-16-502	03-29-85	0950	230	10	250	<1	51	<1	10	1
DX-68-22-902	03-29-85	1410	240	20	520	<1	40	<1	<10	1
DX-68-23-301	03-06-85	1335	--	--	--	<1	57	<1	<10	<1
DX-68-23-303	03-06-85	1005	1040	--	4700	<1	60	<1	<10	1
DX-68-23-316	08-27-85	1055	350	40	15	<1	35	<1	<10	<1
DX-68-23-602	03-06-85	1050	790	35	2570	<1	49	<1	<10	2

COMAL COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	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)
DX-68-15-901	03-27-85	6	5	<1	<.1	--	<1	<1	15
DX-68-16-502	03-29-85	7	5	<1	<.1	--	<1	<1	18
DX-68-22-902	03-29-85	18	<1	<1	<.1	--	<1	<1	<3
DX-68-23-301	03-06-85	<3	<1	<1	<.1	--	<1	<1	<3
DX-68-23-303	03-06-85	3	1	<1	<.1	--	<1	<1	21
DX-68-23-316	08-27-85	<3	3	<1	<.1	--	<1	<1	390
DX-68-23-602	03-06-85	13	1	<1	<.1	--	<1	<1	6

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN)	FLOW RATE, INSTAN-TANEOUS (GPM)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRA-ZINE, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)
DX-68-22-901	03-19-85	1330	255	--	--	<.1	<.10	<.010	<.10	<.1
DX-68-23-301	03-06-85	1335	--	--	--	<.1	<.10	<.010	--	<.1
	03-19-85	1200	--	--	--	<.1	<.10	<.010	<.10	<.1
DX-68-23-316	08-27-85	1055	350	40	15	<.1	<.10	<.010	--	<.1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)
DX-68-22-901	03-19-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
DX-68-23-301	03-06-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
	03-19-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
DX-68-23-316	08-27-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)
DX-68-22-901	03-19-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
DX-68-23-301	03-06-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
	03-19-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
DX-68-23-316	08-27-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DX-68-22-901	03-19-85	<.01	<.01	<.01	<.01
DX-68-23-301	03-06-85	<.01	<.01	<.01	<.01
	03-19-85	<.01	<.01	<.01	<.01
DX-68-23-316	08-27-85	<.01	<.01	<.01	<.01

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

HAYS COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	ALKALINITY FIELD (MG/L AS CACO3)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
LR-58-49-801	08-13-85	1000	100	30	--	700	7.10	22.0	334	--
LR-58-57-202	06-19-85	0930	200	30	--	659	7.20	23.5	--	--
	08-09-85	1245	200	30	--	648	7.10	25.5	323	--
LR 58-57-303	08-09-85	1145	315	30	--	604	7.10	24.0	300	--
LR-58-57-402	08-12-85	1345	380	30	--	1480	7.20	23.5	313	--
LR-58-58-403	02-20-85	1159	243	41	800	586	--	20.0	270	--
	08-09-85	1345	243	180	800	598	7.40	23.0	273	--
LR-58-58-701	03-27-85	1110	492	48	10	1620	7.20	23.0	244	--
LR-58-58-707	03-26-85	1510	450	81	15	1510	--	24.0	251	--
LR-67-01-302	07-30-85	1130	360	40	440	708	7.10	25.0	216	--
LR-67-01-801	03-08-85	1215	--	--	--	582	7.20	21.5	250	--
LR-67-01-806	03-08-85	1305	128	305	4700	616	7.10	22.5	260	--
LR-67-09-105	03-07-85	1300	330	1440	500	617	7.20	23.0	251	--
LR-67-09-111	03-29-85	0915	264	1440	350	582	7.00	23.0	255	--
LR-68-16-601	03-06-85	1255	200	50	5.0	1720	7.00	23.5	300	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
LR-58-49-801	08-13-85	--	--	370	33	99	29	6.4	1.6	33
LR-58-57-202	06-19-85	--	--	--	--	--	--	--	--	--
	08-09-85	--	--	330	9	75	35	6.5	1.5	19
LR 58-57-303	08-09-85	--	--	320	16	82	27	6.9	.80	20
LR-58-57-402	08-12-85	--	--	780	470	130	110	18	10	480
LR-58-58-403	02-20-85	--	--	300	26	77	25	6.1	1.2	25
	08-09-85	--	--	290	15	74	25	6.1	1.2	25
LR-58-58-701	03-27-85	--	--	410	160	85	47	190	11	280
LR-58-58-707	03-26-85	--	--	380	130	75	46	170	10	290
LR-67-01-302	07-30-85	--	--	350	130	69	42	9.2	2.0	140
LR-67-01-801	03-08-85	--	--	300	49	85	21	12	1.4	29
LR-67-01-806	03-08-85	--	--	320	59	98	18	13	1.3	26
LR-67-09-105	03-07-85	--	--	310	56	93	18	14	1.4	34
LR-67-09-111	03-29-85	--	--	300	47	91	18	11	1.2	28
LR-68-16-601	03-06-85	--	--	620	320	140	65	130	6.8	260

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
LR-58-49-801	08-13-85	12	.30	11	390	1.1	--	.030	--	<.010
LR-58-57-202	06-19-85	--	--	--	--	1.0	--	.010	--	<.010
	08-09-85	10	.20	12	350	--	--	.020	--	<.010
LR 58-57-303	08-09-85	14	.10	12	340	1.4	--	.030	--	<.010
LR-58-57-402	08-12-85	19	2.9	13	970	--	--	.420	--	<.010

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

HAYS COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
LR-58-58-403	02-20-85	11	.40	11	320	1.8	--	.020	--	<.010
	08-09-85	11	.50	11	320	--	--	.020	--	<.010
LR-58-58-701	03-27-85	220	3.3	13	1000	--	.720	--	<.010	--
LR-58-58-707	03-26-85	170	3.8	12	930	--	.660	--	<.010	--
LR-67-01-302	07-30-85	11	2.6	13	420	--	--	.030	--	<.010
LR-67-01-801	03-08-85	19	.20	18	340	1.5	--	.010	--	<.010
LR-67-01-806	03-08-85	20	.20	13	350	2.0	--	.020	--	<.010
LR-67-09-105	03-07-85	24	.20	12	350	1.9	--	.030	--	<.010
LR-67-09-111	03-29-85	17	.20	12	330	2.2	--	.040	--	<.010
LR-68-16-601	03-06-85	260	1.8	13	1100	--	.370	--	<.010	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
LR-58-49-801	08-13-85	.20	.90	--	<.010	--
LR-58-57-202	06-19-85	.20	.80	--	<.010	--
	08-09-85	<.20	.90	--	<.010	--
LR 58-57-303	08-09-85	.20	1.2	--	<.010	--
LR-58-57-402	08-12-85	.60	<.10	--	<.010	--
LR-58-58-403	02-20-85	.40	1.4	--	.010	--
	08-09-85	<.20	1.4	--	<.010	--
LR-58-58-701	03-27-85	--	--	.12	--	--
LR-58-58-707	03-26-85	--	--	<.10	--	--
LR-67-01-302	07-30-85	<.20	<.10	--	<.010	.40
LR-67-01-801	03-08-85	.40	1.1	--	<.010	.50
LR-67-01-806	03-08-85	.30	1.7	--	<.010	.30
LR-67-09-105	03-07-85	.30	1.6	--	.010	.40
LR-67-09-111	03-29-85	.60	1.6	--	<.010	.70
LR-68-16-601	03-06-85	--	--	<.10	--	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
LR-67-01-302	07-30-85	1130	360	40	440	<1	61	<1	<10	2
LR-67-01-801	03-08-85	1215	--	--	--	<1	44	<1	10	1
LR-67-01-806	03-08-85	1305	128	305	4700	<1	48	<1	<10	<1
LR-67-09-105	03-07-85	1300	330	1440	500	<1	49	<1	<10	<1
LR-67-09-111	03-29-85	0915	264	1440	350	<1	46	<1	<10	1

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

HAYS COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	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)
LR-67-01-302	07-30-85	4	<1	3	<.1	--	<1	<1	23
LR-67-01-801	03-08-85	<3	<1	3	<.1	--	<1	<1	12
LR-67-01-806	03-08-85	5	6	4	<.1	--	<1	<1	4
LR-67-09-105	03-07-85	5	<1	<1	<.1	--	<1	<1	10
LR-67-09-111	03-29-85	<3	3	<1	<.1	--	<1	<1	9

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN)	FLOW RATE, INSTAN-TANEOUS (GPM)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRA-ZINE, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)
LR-67-01-801	03-07-85	1215	--	--	--	<.1	<.10	<.010	--	<.1
LR-67-09-105	03-07-85	1300	330	1440	500	<.1	<.10	<.010	--	<.1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)
LR-67-01-801	03-07-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
LR-67-09-105	03-07-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)
LR-67-01-801	03-07-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
LR-67-09-105	03-07-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
LR-67-01-801	03-07-85	<.01	<.01	<.01	<.01
LR-67-09-105	03-07-85	<.01	<.01	<.01	<.01

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

MEDINA COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	ALKALINITY FIELD (MG/L AS CACO3)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
TD-68-33-202	07-18-85	1300	279	40	20	457	7.10	22.5	189	--
TD-68-41-303	04-01-85	1105	717	40	340	493	7.40	23.5	205	--
TD-68-42-503	04-04-85	1132	1370	14	700	471	7.30	26.0	198	--
TD-68-49-813	04-09-85	1155	3190	1440	200	1180	7.30	43.0	277	--
TD-69-40-403	07-02-85	1125	518	1440	1000	466	7.20	23.0	214	--
TD-69-46-601	04-01-85	1230	1280	210	350	477	7.30	23.5	209	--
TD-69-54-401	04-18-85	1338	2000	18	20	525	7.60	23.5	198	--
TD-69-55-401	07-18-85	1110	2260	1440	1410	534	7.20	24.5	206	--
TD-69-56-508	07-16-85	1140	2710	2880	2700	487	7.60	33.0	197	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
TD-68-33-202	07-18-85	--	--	250	56	80	11	6.4	1.1	28
TD-68-41-303	04-01-85	--	--	230	29	69	15	9.8	1.1	16
TD-68-42-503	04-04-85	--	--	240	40	67	17	8.6	1.2	14
TD-68-49-813	04-09-85	--	--	270	0	66	25	120	6.5	110
TD-69-40-403	07-02-85	--	--	240	29	79	11	5.9	1.0	8.6
TD-69-46-601	04-01-85	--	--	240	33	72	15	7.9	1.1	18
TD-69-54-401	04-18-85	--	--	240	38	68	16	21	1.3	17
TD-69-55-401	07-18-85	--	--	260	53	77	16	12	1.1	18
TD-69-56-508	07-16-85	--	--	230	31	55	22	12	1.4	26

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
TD-68-33-202	07-18-85	11	.10	13	260	1.3	--	.020	--	<.010
TD-68-41-303	04-01-85	19	.20	13	270	2.4	--	.040	--	<.010
TD-68-42-503	04-04-85	18	.20	13	260	2.2	--	.010	--	<.010
TD-68-49-813	04-09-85	180	3.6	23	700	--	--	.550	--	<.010
TD-69-40-403	07-02-85	8.8	.10	13	260	1.6	--	.030	--	<.010
TD-69-46-601	04-01-85	13	.20	13	270	1.8	--	.030	--	<.010
TD-69-54-401	04-18-85	38	.30	12	290	--	.030	--	.020	--
TD-69-55-401	07-18-85	29	.20	12	290	--	.020	--	<.010	--
TD-69-56-508	07-16-85	15	.80	15	270	--	.020	--	<.010	--

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

MEDINA COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
TD-68-33-202	07-18-85	.50	.80	--	<.010	2.8
TD-68-41-303	04-01-85	.30	2.1	--	<.010	.80
TD-68-42-503	04-04-85	.40	1.8	--	<.010	.80
TD-68-49-813	04-09-85	.90	<.10	--	<.010	.90
TD-69-40-403	07-02-85	.20	1.4	--	<.010	.40
TD-69-46-601	04-01-85	.20	1.6	--	<.010	.90
TD-69-54-401	04-18-85	--	--	.30	--	--
TD-69-55-401	07-18-85	--	--	2.5	--	--
TD-69-56-508	07-16-85	--	--	.90	--	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
TD-68-33-202	07-18-85	1300	279	40	20	<1	39	<1	<10	1
TD-68-41-303	04-01-85	1105	717	40	340	<1	55	<1	<10	6
TD-68-42-503	04-04-85	1132	1370	14	700	<1	76	<1	<10	2
TD-69-40-403	07-02-85	1125	518	1440	1000	<1	38	<1	<10	<1
TD-69-46-601	04-01-85	1230	1280	210	350	<1	45	<1	<10	4

LOCAL IDENT-I-FIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
TD-68-33-202	07-18-85	<3	2	<1	.3	--	<1	<1	200
TD-68-41-303	04-01-85	3	4	5	<.1	--	<1	<1	18
TD-68-42-503	04-04-85	4	<1	<1	.2	--	<1	<1	<3
TD-69-40-403	07-02-85	<3	2	<1	<.1	--	<1	7	9
TD-69-46-601	04-01-85	<3	1	<1	3.6	--	<1	<1	12

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)
TD-68-33-202	07-18-85	1300	279	40	20	<.1	<.10	<.010	--	<.1

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

MEDINA COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)
TD-68-33-202	07-18-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)
TD-68-33-202	07-18-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
TD-68-33-202	07-18-85	<.01	<.01	<.01	<.01

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	ALKALINITY FIELD (MG/L AS CACO3)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
YP-69-36-702	07-11-85	1055	538	205	1390	460	7.40	22.5	189	--
YP-69-42-606	07-04-85	1215	525	280	1330	569	7.20	23.5	205	--
YP-69-43-606	08-01-85	1115	698	195	390	517	7.10	24.0	206	--
YP-69-45-404	08-15-85	1405	1490	50	430	586	7.30	23.0	211	--
YP-69-50-203	03-11-85	1153	525	31	1400	554	7.50	23.0	198	--
YP-69-50-312	03-13-85	1155	162	20	15	885	6.70	23.5	288	--
	08-07-85	0935	162	35	--	882	6.90	24.0	296	--
YP-69-50-313	08-06-85	1740	120	35	40	589	7.20	23.5	221	--
YP-69-50-314	08-07-85	0840	300	25	10	538	7.10	24.0	231	--
YP-69-50-315	08-06-85	1552	156	--	--	632	7.20	25.0	278	--
YP-69-50-316	08-06-85	1418	183	--	--	574	7.30	25.0	230	--
YP-69-50-317	08-06-85	1230	199	--	--	498	7.40	24.5	214	--
YP-69-50-318	08-06-85	1115	250	195	20	573	7.00	23.5	235	--
YP-69-50-501	02-14-85	1200	600	1440	1200	1230	7.30	22.5	240	--
YP-69-50-506	03-07-85	1700	525	--	--	--	--	--	--	--
YP-69-51-102	03-11-85	1415	391	35	25	639	7.30	24.6	235	--
YP-69-51-104	03-11-85	1105	430	245	500	824	7.00	24.5	230	--
	08-07-85	1035	430	95	450	821	7.00	24.5	254	--
YP-69-51-106	03-12-85	1650	195	23	15	798	7.00	24.5	257	--
YP-69-51-107	03-11-85	1525	310	30	15	814	7.30	25.0	253	--
	08-06-85	1835	310	20	15	812	7.10	24.5	232	--
YP-69-51-108	03-12-85	1445	240	72	15	1350	6.80	24.5	207	--
YP-69-51-109	03-14-85	1500	--	50	15	696	7.20	24.5	216	--
YP-69-51-110	03-20-85	1210	400	49	15	786	6.90	25.0	231	--
YP-69-51-111	03-13-85	1320	560	60	15	647	6.90	25.5	228	--
YP-69-51-112	03-20-85	1215	250	--	--	1170	6.40	23.5	331	--
YP-69-51-113	03-12-85	1555	200	30	15	857	7.00	24.5	245	--
YP-69-51-114	03-22-85	1330	565	60	500	809	6.80	24.0	248	--
	08-07-85	1115	565	105	200	815	7.10	24.5	258	--
YP-69-51-115	03-20-85	1050	570	60	15	885	6.80	22.5	236	--
YP-69-51-702	07-03-85	1205	1000	1440	2860	2430	7.00	31.5	185	--
YP-69-51-703	07-04-85	1725	1580	595	3500	2740	6.90	33.5	182	--
YP-69-51-704	07-04-85	1845	1640	675	3010	3330	6.90	35.0	178	--
YP-69-51-705	08-15-85	1110	1660	1440	3000	3450	6.90	36.0	177	--
YP-69-52-403	07-03-85	1500	1400	1440	940	3020	6.90	33.0	288	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
YP-69-36-702	07-11-85	--	--	230	37	64	16	9.1	.90	13
YP-69-42-606	07-04-85	--	--	250	48	85	9.9	17	1.0	13
YP-69-43-606	08-01-85	--	--	240	38	81	10	12	1.3	13
YP-69-45-404	08-15-85	--	--	270	57	76	19	16	2.0	61
YP-69-50-203	03-11-85	--	--	270	75	91	11	14	1.1	17

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
YP-69-50-312	03-13-85	--	--	400	120	140	13	33	1.0	31
	08-07-85	--	--	400	100	140	12	32	1.0	30
YP-69-50-313	08-06-85	--	--	270	47	91	9.9	16	1.0	23
YP-69-50-314	08-07-85	--	--	260	25	88	8.6	12	1.1	16
YP-69-50-315	08-06-85	--	--	290	12	100	9.6	14	1.1	15
YP-69-50-316	08-06-85	--	--	260	34	90	9.4	15	1.9	19
YP-69-50-317	08-06-85	--	--	240	30	83	8.9	10	11	21
YP-69-50-318	08-06-85	--	--	280	43	95	9.7	14	1.0	16
YP-69-50-501	02-14-85	--	--	530	290	180	19	56	1.3	92
YP-69-50-506	03-07-85	--	--	280	--	97	9.1	14	1.3	21
YP-69-51-102	03-11-85	--	--	330	94	110	13	14	1.7	75
YP-69-51-104	03-11-85	--	--	380	150	130	14	27	1.1	40
	08-07-85	--	--	380	120	130	13	26	1.3	38
YP-69-51-106	03-12-85	--	--	360	110	120	15	24	1.4	48
YP-69-51-107	03-11-85	--	--	390	130	130	15	25	1.3	42
	08-06-85	--	--	360	130	120	14	25	1.3	48
YP-69-51-108	03-12-85	--	--	510	300	180	14	91	1.4	190
YP-69-51-109	03-14-85	--	--	310	97	110	9.2	30	1.0	37
YP-69-51-110	03-20-85	--	--	360	130	120	15	26	1.7	67
YP-69-51-111	03-13-85	--	--	330	100	110	14	17	1.7	77
YP-69-51-112	03-20-85	--	--	770	440	240	41	75	9.7	470
YP-69-51-113	03-12-85	--	--	390	140	130	15	28	1.4	41
YP-69-51-114	03-22-85	--	--	390	140	130	15	25	1.3	46
	08-07-85	--	--	380	120	130	14	25	1.4	43
YP-69-51-115	03-20-85	--	--	400	170	130	19	32	2.4	160
YP-69-51-702	07-03-85	--	--	1100	900	340	57	140	11	910
YP-69-51-703	07-04-85	--	--	1300	1200	430	65	150	12	1100
YP-69-51-704	07-04-85	--	--	1800	1600	620	67	160	14	1600
YP-69-51-705	08-15-85	--	--	1900	1800	660	71	140	15	1700
YP-69-52-403	07-03-85	--	--	830	540	210	74	360	14	800

LOCAL IDENTIFIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
YP-69-36-702	07-11-85	22	.10	13	250	--	--	.030	--	<.010
YP-69-42-606	07-04-85	46	<.10	14	310	--	--	.030	--	<.010
YP-69-43-606	08-01-85	29	.10	12	280	3.1	--	.020	--	<.010
YP-69-45-404	08-15-85	18	.30	12	330	2.0	--	.040	--	<.010
YP-69-50-203	03-11-85	33	.10	13	300	3.4	--	.010	--	<.010
YP-69-50-312	03-13-85	78	.20	16	490	--	--	--	--	--
	08-07-85	76	.30	14	480	--	--	--	--	--
YP-69-50-313	08-06-85	35	.20	13	320	--	--	.040	--	<.010
YP-69-50-314	08-07-85	25	.30	13	300	--	--	.040	--	<.010
YP-69-50-315	08-06-85	28	.20	13	350	2.4	--	.040	--	<.010

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	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)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
YP-69-50-316	08-06-85	34	.20	12	320	--	--	--	--	--
YP-69-50-317	08-06-85	21	.20	12	300	--	--	--	--	--
YP-69-50-318	08-06-85	30	.10	13	320	3.0	--	.040	--	<.010
YP-69-50-501	02-14-85	200	.20	17	710	--	.040	--	<.010	--
YP-69-50-506	03-07-85	28	.10	13	--	--	<.010	--	<.010	--
YP-69-51-102	03-11-85	19	.90	17	390	.40	--	.030	--	<.010
YP-69-51-104	03-11-85	77	.50	22	450	4.0	--	.030	--	<.010
	08-07-85	78	.50	15	450	--	--	--	--	--
YP-69-51-106	03-12-85	70	.60	17	450	3.3	--	.030	--	<.010
YP-69-51-107	03-11-85	75	.50	17	460	3.8	--	.040	--	<.010
	08-06-85	71	.50	16	430	--	--	--	--	--
YP-69-51-108	03-12-85	200	1.1	32	830	3.4	--	.050	--	<.010
YP-69-51-109	03-14-85	71	1.5	20	410	--	--	--	--	--
YP-69-51-110	03-20-85	68	.90	17	450	2.7	--	.040	--	<.010
YP-69-51-111	03-13-85	31	1.0	17	410	.90	--	<.010	--	<.010
YP-69-51-112	03-20-85	83	2.0	9.5	1100	2.9	--	.500	--	<.010
YP-69-51-113	03-12-85	97	.50	17	480	3.4	--	.040	--	<.010
YP-69-51-114	03-22-85	72	.60	17	460	3.3	--	.040	--	<.010
	08-07-85	75	.60	16	460	--	--	--	--	--
YP-69-51-115	03-20-85	52	1.2	17	560	.80	--	.030	--	<.010
YP-69-51-702	07-03-85	230	1.9	18	1800	--	--	--	--	--
YP-69-51-703	07-04-85	250	2.1	18	2100	--	.710	--	<.010	--
YP-69-51-704	07-04-85	260	2.0	19	2800	--	.890	--	<.010	--
YP-69-51-705	08-15-85	270	2.0	18	3000	--	.720	--	<.010	--
YP-69-52-403	07-03-85	400	2.7	18	2100	--	--	--	--	--

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
YP-69-36-702	07-11-85	<.20	2.0	--	<.010	17
YP-69-42-606	07-04-85	<.10	3.5	--	<.010	.60
YP-69-43-606	08-01-85	.30	2.8	--	.020	1.0
YP-69-45-404	08-15-85	.20	1.8	--	.010	.70
YP-69-50-203	03-11-85	.70	2.7	--	<.010	.80
YP-69-50-312	03-13-85	--	--	--	--	--
	08-07-85	--	--	--	--	--
YP-69-50-313	08-06-85	<.20	2.7	--	<.010	.80
YP-69-50-314	08-07-85	<.20	1.5	--	<.010	1.1
YP-69-50-315	08-06-85	.30	2.1	--	.010	2.1
YP-69-50-316	08-06-85	--	--	--	--	--
YP-69-50-317	08-06-85	--	--	--	--	1.3
YP-69-50-318	08-06-85	.30	2.7	--	<.010	1.7
YP-69-50-501	02-14-85	--	--	5.0	--	--
YP-69-50-506	03-07-85	--	--	2.9	--	.30

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
YP-69-51-102	03-11-85	.20	.20	--	<.010	.90
YP-69-51-104	03-11-85	.40	3.6	--	<.010	.30
	08-07-85	--	--	--	--	--
YP-69-51-106	03-12-85	.60	2.7	--	<.010	.30
YP-69-51-107	03-11-85	.60	3.2	--	.010	.30
	08-06-85	--	--	--	--	.70
YP-69-51-108	03-12-85	.70	2.7	--	.010	.70
YP-69-51-109	03-14-85	--	--	--	--	--
YP-69-51-110	03-20-85	.20	2.5	--	<.010	.20
YP-69-51-111	03-13-85	.20	.70	--	.020	.20
YP-69-51-112	03-20-85	.70	2.2	--	<.010	7.3
YP-69-51-113	03-12-85	.70	2.7	--	<.010	.20
YP-69-51-114	03-22-85	.20	3.1	--	<.010	.50
	08-07-85	--	--	--	--	--
YP-69-51-115	03-20-85	.10	.70	--	<.010	.30
YP-69-51-702	07-03-85	--	--	--	--	--
YP-69-51-703	07-04-85	--	--	<.10	--	--
YP-69-51-704	07-04-85	--	--	<.10	--	--
YP-69-51-705	08-15-85	--	--	<.10	--	--
YP-69-52-403	07-03-85	--	--	--	--	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
YP-69-36-702	07-11-85	1055	538	205	1390	<1	43	<1	<10	1
YP-69-42-606	07-04-85	1215	525	280	1330	<1	69	<1	<10	<1
YP-69-43-606	08-01-85	1115	698	195	390	<1	55	<1	<10	3
YP-69-45-404	08-15-85	1405	1490	50	430	4	57	<1	<10	1
YP-69-50-203	03-11-85	1153	525	31	1400	<1	61	1	<10	4
YP-69-50-312	03-13-85	1155	162	23	15	<1	95	1	<10	2
YP-69-50-313	08-06-85	1740	120	35	40	<1	70	<1	<10	<1
YP-69-50-314	08-07-85	0840	300	25	10	<1	79	<1	<10	1
YP-69-50-315	08-06-85	1552	156	--	--	<1	72	<1	<10	1
YP-69-50-316	08-06-85	1418	183	--	--	<1	62	1	<10	1
YP-69-50-317	08-06-85	1230	199	--	--	<1	56	<1	<10	2
YP-69-50-318	08-06-85	1115	250	195	20	<1	64	<1	<10	4
YP-69-51-102	03-11-85	1415	565	35	25	<1	90	<1	<10	3
YP-69-51-104	03-11-85	1105	430	245	500	<1	120	<1	10	3
YP-69-51-106	03-12-85	1650	195	23	15	<1	110	1	<10	2
YP-69-51-107	03-11-85	1525	310	30	15	1	110	<1	<10	3
YP-69-51-108	03-12-85	1445	240	72	15	<1	94	<1	<10	6
YP-69-51-110	03-20-85	1210	400	49	15	<1	110	<1	<10	4
YP-69-51-111	03-13-85	1320	560	60	15	<1	81	<1	<10	11
YP-69-51-112	03-20-85	1215	250	--	--	<1	43	1	<10	1
YP-69-51-114	03-22-85	1330	565	60	500	<1	120	<1	10	2
YP-69-51-115	03-20-85	1050	570	60	15	<1	78	<1	<10	9

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	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)	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)
YP-69-36-702	07-11-85	<3	2	<1	<.1	--	<1	<1	6
YP-69-42-606	07-04-85	5	3	<1	.2	--	<1	<1	9
YP-69-43-606	08-01-85	<3	<1	<1	<.1	--	<1	<1	11
YP-69-45-404	08-15-85	28	4	2	<.1	--	<1	<1	14
YP-69-50-203	03-11-85	<3	2	<1	<.1	--	<1	<1	18
YP-69-50-312	03-13-85	5	2	<1	<.1	--	<1	<1	54
YP-69-50-313	08-06-85	12	<1	<1	.2	--	<1	<1	21
YP-69-50-314	08-07-85	19	<1	<1	<.1	--	<1	1	10
YP-69-50-315	08-06-85	4	<1	4	.1	--	<1	<1	19
YP-69-50-316	08-06-85	6	<1	5	1.7	--	<1	<1	160
YP-69-50-317	08-06-85	<3	3	11	.1	--	<1	<1	82
YP-69-50-318	08-06-85	17	2	<1	<.1	--	<1	<1	38
YP-69-51-102	03-11-85	5	1	<1	<.1	--	<1	3	40
YP-69-51-104	03-11-85	<3	2	3	<.1	--	<1	<1	11
YP-69-51-106	03-12-85	10	1	<1	<.1	--	<1	<1	26
YP-69-51-107	03-11-85	10	1	<1	<.1	--	<1	<1	27
YP-69-51-108	03-12-85	7	4	1	<.1	--	3	<1	44
YP-69-51-110	03-20-85	3	<1	<1	<.1	--	1	<1	280
YP-69-51-111	03-13-85	<3	23	<1	<.1	--	1	<1	190
YP-69-51-112	03-20-85	8	<1	160	.7	--	<1	<1	460
YP-69-51-114	03-22-85	13	2	2	<.1	--	<1	<1	25
YP-69-51-115	03-20-85	8	<1	<1	<.1	--	<1	<1	120

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN)	FLOW RATE, INSTAN-TANEOUS (GPM)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRA-ZINE, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)
YP-69-36-702	07-11-85	1055	538	205	1390	<.1	<.10	<.010	--	<.1
YP-69-42-606	07-04-85	1215	525	280	1330	<.1	<.10	<.010	--	<.1
YP-69-43-606	08-01-85	1115	698	195	390	<.1	<.10	<.010	--	<.1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)
YP-69-36-702	07-11-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
YP-69-42-606	07-04-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010
YP-69-43-606	08-01-85	<.010	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010

Water-quality data for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)
YP-69-36-702	07-11-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
YP-69-42-606	07-04-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1
YP-69-43-606	08-01-85	<.010	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
YP-69-36-702	07-11-85	<.01	<.01	<.01	<.01
YP-69-42-606	07-04-85	<.01	<.01	<.01	<.01
YP-69-43-606	08-01-85	<.01	<.01	<.01	<.01

Analyses for volatile organic compounds for wells and springs in the Edwards aquifer, 1985

BEXAR COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	DI-CHLORO-BROMO-METHANE TOTAL (UG/L)	CARBON-TETRA-CHLO-RIDE TOTAL (UG/L)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L)	BROM-OFORM TOTAL (UG/L)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L)
AY-68-27-503	03-15-85	1500	375	--	--	*	*	*	*	*
AY-68-28-202	07-31-85	1145	457	225	75	*	*	*	*	*
AY-68-28-508	07-30-85	1355	396	355	150	*	*	*	*	*
AY-68-28-903	02-13-85	1600	762	60	3500	*	*	*	*	*
AY-68-29-702	08-29-85	0935	872	95	3500	*	*	*	*	*
AY-68-35-102	08-29-85	1310	796	310	1880	13	*	*	13	9.7
AY-68-36-102	08-29-85	1140	786	220	9000	*	*	*	*	*
AY-68-37-104	08-29-85	1035	995	155	3500	*	*	*	*	*
AY-68-37-705	10-28-85	1430	1790	1440	3000	*	*	*	*	*

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORO-FORM TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	CHLORO-BENZENE TOTAL (UG/L)	CHLORO-ETHANE TOTAL (UG/L)	ETHYL-BENZENE TOTAL (UG/L)	METHYL-BROMIDE TOTAL (UG/L)	METHYL-ENE CHLO-RIDE TOTAL (UG/L)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L)
AY-68-27-503	03-15-85	*	*	*	*	*	*	*	*	*
AY-68-28-202	07-31-85	*	*	*	*	*	*	*	*	*
AY-68-28-508	07-30-85	*	*	*	*	*	*	*	*	*
AY-68-28-903	02-13-85	*	*	*	*	*	*	*	*	3.0
AY-68-29-702	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-35-102	08-29-85	22	*	*	*	*	*	*	*	*
AY-68-36-102	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-37-104	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-37-705	10-28-85	*	*	*	*	*	*	*	*	*

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TRI-CHLORO-FLOURO-METHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2,2 TETRA-CHLORO-ETHANE TOTAL (UG/L)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L)	1,2-TRANSDI CHLORO-ETHYL-ENE TOTAL (UG/L)	1,3-DI-CHLORO-PROPENE TOTAL (UG/L)
AY-68-27-503	03-15-85	*	*	*	*	*	*	*	*	*
AY-68-28-202	07-31-85	*	*	*	*	*	*	*	*	*
AY-68-28-508	07-30-85	*	*	*	*	*	*	*	*	*
AY-68-28-903	02-13-85	*	*	*	*	*	*	*	*	*
AY-68-29-702	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-35-102	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-36-102	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-37-104	08-29-85	*	*	*	*	*	*	*	*	*
AY-68-37-705	10-28-85	*	*	*	*	*	*	*	*	*

* - Not detected.

Analyses for volatile organic compounds for wells and springs in the Edwards aquifer, 1985--Continued

BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	2-CHLOROETHYLVINYLETHER TOTAL (UG/L)	DICHLORODIFLUOROMETHANE TOTAL (UG/L)	VINYL CHLORIDE TOTAL (UG/L)	TRICHLOROETHYLENE TOTAL (UG/L)
AY-68-27-503	03-15-85	*	*	*	*
AY-68-28-202	07-31-85	*	--	*	*
AY-68-28-508	07-30-85	*	--	*	*
AY-68-28-903	02-13-85	*	*	*	*
AY-68-29-702	08-29-85	*	*	*	*
AY-68-35-102	08-29-85	*	*	*	*
AY-68-36-102	08-29-85	*	*	*	*
AY-68-37-104	08-29-85	*	*	*	*
AY-68-37-705	10-28-85	*	*	*	*

* - Not detected.

Analyses for volatile organic compounds for wells and springs in the Edwards aquifer, 1985--Continued

HAYS COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	DI-CHLORO-BROMO-METHANE TOTAL (UG/L)	CARBON-TETRA-CHLORIDE TOTAL (UG/L)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L)	BROM-OFORM TOTAL (UG/L)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L)
LR-58-49-801	08-13-85	1000	100	30	--	*	*	*	*	*
LR-58-57-202	08-09-85	1245	200	30	--	*	*	*	*	*
LR 58-57-303	08-09-85	1145	315	30	--	*	*	*	*	*
LR-58-57-402	08-12-85	1345	380	30	--	*	*	*	*	*
LR-58-58-403	08-09-85	1345	390	180	800	*	*	*	*	*

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORO-FORM TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	CHLORO-BENZENE TOTAL (UG/L)	CHLORO-ETHANE TOTAL (UG/L)	ETHYL-BENZENE TOTAL (UG/L)	METHYL-BROMIDE TOTAL (UG/L)	METHYL-ENE CHLO-RIDE TOTAL (UG/L)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L)
LR-58-49-801	08-13-85	*	*	*	*	*	*	*	*	*
LR-58-57-202	08-09-85	*	*	*	*	*	*	*	*	*
LR 58-57-303	08-09-85	*	*	*	*	*	*	*	*	*
LR-58-57-402	08-12-85	*	*	*	*	*	*	*	*	*
LR-58-58-403	08-09-85	*	*	*	*	*	*	*	*	*

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TRI-CHLORO-FLOURO-METHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2,2 TETRA-CHLORO-ETHANE TOTAL (UG/L)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L)	1,2-TRANSDI CHLORO-ETHYL-ENE TOTAL (UG/L)	1,3-DI-CHLORO-PROPENE TOTAL (UG/L)
LR-58-49-801	08-13-85	*	*	*	*	*	*	*	*	*
LR-58-57-202	08-09-85	*	*	*	*	*	*	*	*	*
LR-58-57-303	08-09-85	*	*	*	*	*	*	*	*	*
LR-58-57-402	08-12-85	*	*	*	*	*	*	*	*	*
LR-58-58-403	08-09-85	*	*	*	*	*	*	*	*	*

LOCAL IDENT-I-FIER	DATE OF SAMPLE	2-CHLORO-ETHYL-VINYL-ETHER TOTAL (UG/L)	DI-CHLORO-DI-FLUORO-METHANE TOTAL (UG/L)	VINYL CHLO-RIDE TOTAL (UG/L)	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L)
LR-58-49-801	08-13-85	*	*	*	*
LR-58-57-202	08-09-85	*	*	*	*
LR 58-57-303	08-09-85	*	*	*	*
LR-58-57-402	08-12-85	*	*	*	*
LR-58-58-403	08-09-85	*	*	*	*

* - Not detected.

Analyses for volatile organic compounds for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	DI-CHLORO-BROMO-METHANE TOTAL (UG/L)	CARBON-TETRA-CHLO-RIDE TOTAL (UG/L)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L)	BROM-OFORM TOTAL (UG/L)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L)
YP-69-43-606	08-01-85	1115	698	195	390	*	*	*	*	*
YP-69-50-203	03-11-85	1153	525	31	1400	*	*	*	*	*
YP-69-50-312	03-13-85	1155	162	23	15	*	*	*	*	*
	08-07-85	0935	162	35	--	*	*	*	*	*
YP-69-50-313	08-06-85	1740	120	35	40	*	4.0	*	*	*
YP-69-50-314	08-07-85	0840	300	25	10	*	*	*	*	*
YP-69-50-315	08-06-85	1552	156	--	--	*	*	*	*	*
YP-69-50-316	08-06-85	1418	183	--	--	*	*	*	*	*
YP-69-50-317	08-06-85	1230	199	--	--	*	*	*	*	*
YP-69-50-318	08-06-85	1115	250	195	20	*	*	*	*	*
YP-69-51-102	03-11-85	1415	391	--	--	*	*	*	*	*
YP-69-51-104	03-11-85	1105	430	245	500	*	*	*	*	*
	08-07-85	1035	430	95	450	*	*	*	*	*
YP-69-51-106	03-12-85	1650	195	23	15	*	*	*	*	*
YP-69-51-107	03-11-85	1525	310	30	15	*	*	*	*	*
YP-69-51-108	03-12-85	1445	240	72	15	*	*	*	*	*
YP-69-51-109	03-20-85	1405	--	--	--	*	*	*	*	*
YP-69-51-110	03-20-85	1210	400	49	15	*	*	*	*	*
YP-69-51-111	03-13-85	1320	560	60	15	*	*	*	*	*
YP-69-51-112	03-20-85	1215	250	--	--	*	*	*	*	*
YP-69-51-113	03-12-85	1555	200	30	15	*	*	*	*	*
YP-69-51-114	03-11-85	1415	565	35	25	*	*	*	*	*
	03-22-85	1330	565	60	500	*	*	*	*	*
	08-07-85	1115	565	105	200	*	*	*	*	*
YP-69-51-115	03-20-85	1050	570	60	15	*	*	*	*	*
	08-06-85	1835	570	20	15	*	*	*	*	*

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORO-FORM TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	CHLORO-BENZENE TOTAL (UG/L)	CHLORO-ETHANE TOTAL (UG/L)	ETHYL-BENZENE TOTAL (UG/L)	METHYL-BROMIDE TOTAL (UG/L)	METHYL-ENE CHLO-RIDE TOTAL (UG/L)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L)
YP-69-43-606	08-01-85	*	*	*	*	*	*	*	*	*
YP-69-50-203	03-11-85	*	*	*	*	*	*	*	*	*
YP-69-50-312	03-13-85	*	*	*	*	*	*	*	*	29
	08-07-85	*	*	*	*	*	*	*	*	29
YP-69-50-313	08-06-85	32	6.7	*	*	*	*	*	*	8.6
YP-69-50-314	08-07-85	*	*	*	*	*	*	*	*	*
YP-69-50-315	08-06-85	*	*	*	*	*	*	*	*	62
YP-69-50-316	08-06-85	*	*	*	*	*	*	*	*	21
YP-69-50-317	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-50-318	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-51-102	03-11-85	*	*	*	*	*	*	*	*	*
YP-69-51-104	03-11-85	*	*	*	*	*	*	*	*	<6.4
	08-07-85	*	*	*	*	*	*	*	*	5.9
YP-69-51-106	03-12-85	*	*	*	*	*	*	*	*	6.3
YP-69-51-107	03-11-85	*	*	*	*	*	*	*	*	12

* - Not detected.

Analyses for volatile organic compounds for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORO-FORM TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	CHLORO-BENZENE TOTAL (UG/L)	CHLORO-ETHANE TOTAL (UG/L)	ETHYL-BENZENE TOTAL (UG/L)	METHYL-BROMIDE TOTAL (UG/L)	ENE CHLO-RIDE TOTAL (UG/L)	CHLORO-ETHYL-ENE TOTAL (UG/L)
YP-69-51-108	03-12-85	*	*	*	*	*	*	*	*	*
YP-69-51-109	03-20-85	*	*	*	*	*	*	*	*	*
YP-69-51-110	03-20-85	*	*	*	*	*	*	*	*	*
YP-69-51-111	03-13-85	*	*	*	*	*	*	*	*	*
YP-69-51-112	03-20-85	*	*	*	*	*	*	*	*	*
YP-69-51-113	03-12-85	*	*	*	*	*	*	*	*	*
YP-69-51-114	03-11-85	*	*	*	*	*	*	*	*	*
	03-22-85	*	*	*	*	*	*	*	*	10
	08-07-85	*	*	*	*	*	*	*	*	5.7
YP-69-51-115	03-20-85	*	*	*	*	*	*	*	*	*
	08-06-85	*	*	*	*	*	*	*	*	8.6

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TRI-CHLORO-FLOURO-METHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2,2 TETRA-CHLORO-ETHANE TOTAL (UG/L)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L)	1,2-TRANSDI CHLORO-ETHYL-ENE TOTAL (UG/L)	1,3-DI-CHLORO-PROPENE TOTAL (UG/L)
YP-69-43-606	08-01-85	*	*	*	*	*	*	*	*	*
YP-69-50-203	03-11-85	*	*	*	*	*	*	*	*	*
YP-69-50-312	03-13-85	*	*	*	*	*	*	*	*	*
	08-07-85	*	*	*	*	*	*	*	*	*
YP-69-50-313	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-50-314	08-07-85	*	*	*	*	*	*	*	*	*
YP-69-50-315	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-50-316	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-50-317	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-50-318	08-06-85	*	*	*	*	*	*	*	*	*
YP-69-51-102	03-11-85	*	*	*	*	*	*	*	*	*
YP-69-51-104	03-11-85	*	*	*	*	*	*	*	*	*
	08-07-85	*	*	*	*	*	*	*	*	*
YP-69-51-106	03-12-85	*	*	*	*	*	*	*	*	*
YP-69-51-107	03-11-85	*	*	*	*	*	*	*	*	*
YP-69-51-108	03-12-85	*	*	*	*	*	*	*	*	*
	03-20-85	*	*	*	*	*	*	*	*	*
YP-69-51-110	03-20-85	*	*	*	*	*	*	*	*	*
YP-69-51-111	03-13-85	*	*	*	*	*	*	*	*	*
YP-69-51-112	03-20-85	*	*	*	*	*	*	*	*	*
YP-69-51-113	03-12-85	*	*	*	*	*	*	*	*	*
YP-69-51-114	03-11-85	*	*	*	*	*	*	*	*	*
	03-22-85	*	*	*	*	*	*	*	*	*
	08-07-85	*	*	*	*	*	*	*	*	*
YP-69-51-115	03-20-85	*	*	*	*	*	*	*	*	*
	08-06-85	*	*	*	*	*	*	*	*	*

* - Not detected.

Analyses for volatile organic compounds for wells and springs in the Edwards aquifer, 1985--Continued

UVALDE COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	2-CHLOROETHYLVINYLETHER TOTAL (UG/L)	DICHLORODIFLUOROMETHANE TOTAL (UG/L)	VINYL CHLORIDE TOTAL (UG/L)	TRICHLOROETHYLENE TOTAL (UG/L)
YP-69-43-606	03-01-85	*	*	*	*
YP-69-50-203	03-11-85	*	*	*	*
YP-69-50-312	03-13-85	*	*	*	*
	08-07-85	*	--	*	*
YP-69-50-313	08-06-85	*	--	*	6.1
YP-69-50-314	08-07-85	*	--	*	*
YP-69-50-315	08-06-85	*	--	*	*
YP-69-50-316	08-06-85	*	--	*	*
YP-69-50-317	08-06-85	*	--	*	*
YP-69-50-318	08-06-85	*	--	*	*
YP-69-51-102	03-11-85	*	*	*	*
YP-69-51-104	03-11-85	*	*	*	*
	08-07-85	*	--	*	*
YP-69-51-106	03-12-85	*	*	*	*
YP-69-51-107	03-11-85	*	*	*	*
YP-69-51-108	03-12-85	*	*	*	*
	03-20-85	*	*	*	*
YP-69-51-110	03-20-85	*	*	*	*
YP-69-51-111	03-13-85	*	*	*	*
YP-69-51-112	03-20-85	*	*	*	*
YP-69-51-113	03-12-85	*	*	*	*
YP-69-51-114	03-11-85	*	*	*	*
	03-22-85	*	*	*	*
	08-07-85	*	--	*	*
YP-69-51-115	03-20-85	*	*	*	*
	08-06-85	*	--	*	*

* - Not detected.

Analyses for tritium from wells and springs in the Edwards aquifer

[Tritium unit = 1 tritium atom per 10^{18} hydrogen atoms]

Well number	Date sampled	Tritium units	± Standard deviation
AY-68-27-515	05-23-85	11.3	--
AY-68-29-109	05-25-76	4.8	0.8
	05-23-85	4.3	.4
AY-68-37-701	06-12-85	2.6	.4
AY-68-42-210	06-14-85	4.8	.4
DX-68-15-901	06-03-80	14.8	.8
	04-16-85	10.4	--
DX-68-23-301	06-03-80	6.6	.7
	11-26-84	5.0	.5
LR-67-01-801			
(Deep orifice)	11-26-84	7.1	.5
(Johnny orifice)	11-26-84	9.5	.6
(Total spring flow)	03-07-85	12.9	.7
TD-68-38-902	06-11-85	1.0	.4
TD-69-40-402	06-10-76	8.9	.8
TD-69-40-901	04-17-85	7.8	.5
TD-69-47-301	04-17-85	3.8	.4
TD-69-48-102	06-14-76	3.6	.8
YP-69-35-804	04-17-85	10.4	--

Summary of standards for selected water-quality constituents and properties for public water systems [1]

[µg/L, microgram per liter; mg/L, milligram per liter; °C, degree Celsius]

Constituent [2]	Maximum contaminant level [3]	Secondary maximum contaminant level [4]
	Inorganic chemicals and related properties	
pH (standard units)	--	6.5 - 8.5
Arsenic (As)	50 µg/L	--
Barium (Ba)	1,000 µg/L	--
Cadmium (Cd)	10 µg/L	--
Chloride (Cl)	--	250 mg/L
Chromium (Cr)	50 µg/L	--
Copper (Cu)	--	1,000 µg/L
Iron (Fe)	--	300 µg/L
Lead (Pb)	50 µg/L	--
Manganese (Mn)	--	50 µg/L
Mercury (Hg)	2 µg/L	--
Nitrate (as N)	10 mg/L	--
Selenium (Se)	10 µg/L	--
Silver (Ag)	50 µg/L	--
Sulfate (SO_4)	--	250 mg/L
Zinc (Zn)	--	5,000 µg/L
Dissolved solids	--	500 mg/L
Fluoride [5]		
Average of maximum daily air temperature (°C)		
12.0 and below	2.4 mg/L	--
12.1 - 14.6	2.2 mg/L	--
14.7 - 17.6	2.0 mg/L	--
17.7 - 21.4	1.8 mg/L	--
21.5 - 26.2	1.6 mg/L	--
26.3 - 32.5	1.4 mg/L	--

Summary of standards for selected water-quality constituents and properties for public water systems--Continued [1]

Constituent [2]	Maximum contaminant level [3]	Secondary maximum contaminant level [4]
	Organic chemicals	
Chlorinated hydrocarbons		
Endrin	0.2 µg/L	--
Lindane	4 µg/L	--
Methoxychlor	100 µg/L	--
Toxaphene	5 µg/L	--
Chlorophenoxys		
2,4-D	100 µg/L	--
Silvex	10 µg/L	--
	Volatile organic compounds [6]	
Trichloroethylene	.005	--
Carbon tetrachloride	.005	--
Vinyl chloride	.001	--
1,2-Dichloroethane	.005	--
Benzene	.005	--
1,1-Dichloroethylene	.007	--
1,1,1-Trichloroethane	.20	--
p-Dichlorobenzene	.75	--

1 Public water system.--A system for the provision of piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.
2 Constituent.--Any physical, chemical, biological, or radiological substance or matter in water.
3 Maximum contaminant level.--The maximum permissible level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system. Maximum contaminant levels are those levels set by the U.S. Environmental Protection Agency (1976) in the National Interim Primary Drinking Water Regulations. These regulations deal with contaminants that may have a significant direct impact on the health of the consumer and are enforceable by the U.S. Environmental Protection Agency.
4 Secondary maximum contaminant level.--The advisable maximum level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system. Secondary maximum contaminant levels are those levels proposed by the Environmental Protection Agency (1977a) in the National Secondary Drinking Water Regulations. These regulations deal with contaminants that may not have a significant direct impact on the health of the consumer, but their presence in excessive quantities may affect the esthetic qualities of the water and may discourage the use of a drinking-water supply by the public.
5 Fluoride.--The maximum contamination level for fluoride depends on the annual average of the maximum daily air temperatures for the location in which the public water system is situated.
6 Proposed maximum contaminant levels (U.S. Environmental Protection Agency, 1985). The maximum contaminant level for tetrachloroethylene will be proposed later.

APPENDIX C. SURFACE WATER

Streamflow, spring flow, reservoir contents, and water-quality data for streams, October 1984 to September 1985

08167000 GUADALUPE RIVER AT COMFORT, TX

LOCATION.--Lat 29°58'10", long 98°53'33", Kendall County, Hydrologic Unit 12100201, on right bank at downstream side of southbound bridge on Interstate Highway 10, at Comfort, 0.5 mi downstream from Cypress Creek, and at mile 396.2.

DRAINAGE AREA.--839 mi².

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 1632: 1958. WSP 1732: 1939(M). WSP 2123: Drainage area, 1944(M), 1952(M), 1957(M), 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 1,371.83 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939 to June 2, 1980, water-stage recorder at site 0.4 mi upstream at datum 0.22 ft higher.

REMARKS.--Estimated daily discharges: Jan. 1-15 and May 18 to June 2. Records good. Many small diversions above station for irrigation. Several observations of water temperature were made during the year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--46 years (water years 1940-85), 185 ft³/s (134,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft³/s Aug. 2, 1978 (gage height, 40.90 ft), from high-water mark in well, from rating curve extended above 74,000 ft³/s on basis of current-meter measurement of 124,000 ft³/s at gage height 32.47 ft and slope-area measurement of 182,000 ft³/s at gage height 38.4 ft, made at former gaging station "near Comfort" 5 mi upstream; no flow at times in 1952-57, 1963-64. All stages are at site and datum then in use.
Maximum stage since at least 1848, that of Aug. 2, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 40.3 ft, from report by U.S. Army Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft, from floodmark, and from information by State Department of Highways and Public Transportation. Flood of July 16, 1900, reached about the same stage as that of July 1, 1932, from information by local residents. All stages are at site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	0800	*43,900	*19.88	May 17	1300	8,760	10.51
Feb. 23	1200	3,170	6.28				

Minimum daily discharge, 21 ft³/s Oct. 1, 2, and 4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	177	92	2470	263	469	293	272	190	138	94	62
2	21	158	91	880	260	405	286	301	189	105	76	55
3	23	141	89	488	254	386	282	297	189	99	84	57
4	21	130	85	362	248	371	278	272	184	122	74	54
5	23	119	95	330	248	338	275	255	180	135	72	52
6	26	109	98	300	246	329	265	241	402	132	74	154
7	60	106	73	260	247	343	263	232	266	170	72	150
8	31	102	87	240	246	339	259	229	149	156	70	130
9	27	104	86	212	230	329	262	225	184	156	68	118
10	25	98	86	195	228	323	266	200	185	148	69	103
11	34	89	87	180	230	318	287	222	158	143	70	115
12	62	85	87	165	222	293	278	223	170	649	69	95
13	53	83	133	150	226	316	287	216	167	285	67	91
14	69	82	156	140	225	676	398	209	165	226	64	113
15	59	80	158	180	218	447	305	192	164	199	63	103
16	50	80	440	250	216	429	278	181	158	175	63	97
17	47	80	240	387	215	386	262	8600	152	167	61	94
18	41	98	199	383	215	358	252	3500	199	160	61	93
19	38	107	176	359	215	352	183	1100	271	156	61	91
20	37	93	162	240	212	390	267	560	179	147	61	88
21	139	91	152	231	214	373	268	370	167	138	61	87
22	214	90	140	257	215	349	259	300	212	129	60	87
23	177	83	133	303	1520	327	251	262	209	122	55	82
24	137	83	127	295	932	314	235	244	175	107	51	79
25	256	129	122	293	547	315	227	225	174	108	44	79
26	218	127	114	285	442	308	229	210	165	106	40	78
27	279	122	114	281	380	378	235	202	159	105	54	76
28	1180	109	135	272	382	338	234	199	154	102	56	75
29	395	102	153	269	---	318	237	196	148	97	55	107
30	255	99	144	279	---	314	250	194	143	92	65	160
31	202	---	11500	278	---	297	---	191	---	82	84	---
TOTAL	4220	3156	15554	11214	9296	11228	7951	20120	5607	4856	2018	2825
MEAN	136	105	502	362	332	362	265	649	187	157	65.1	94.2
MAX	1180	177	11500	2470	1520	676	398	8600	402	649	94	160
MIN	21	80	73	140	212	293	183	181	143	82	40	52
AC-FT	8370	6260	30850	22240	18440	22270	15770	39910	11120	9630	4000	5600

CAL YR 1984 TOTAL 34187.0 MEAN 93.4 MAX 11500 MIN 1.8 AC-FT 67810
WTR YR 1985 TOTAL 98045.0 MEAN 269 MAX 11500 MIN 21 AC-FT 194500

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

LOCATION.--Lat 29°23'00", long 98°23'00", Comal County, Hydrologic Unit 12100201, at downstream side of bridge on Ranch Road 311, 1.9 mi southeast of Spring Branch Post Office, 7.5 mi downstream from Curry Creek, and at mile 334.4.

DRAINAGE AREA.--1,315 mi².

PERIOD OF RECORD.--June 1922 to current year.
Water-quality records.--Chemical Biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 1562: 1923-24, 1926, 1927-28(M), 1929, 1930(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 948.10 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 14, 1981, at site 220 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Mar. 16 to Apr. 13, June 25 to July 11, and July 16 to Aug. 24. Records good except those for periods of estimated daily discharges, which are fair. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. A satellite telemeter is located at station.

AVERAGE DISCHARGE.--63 years, 310 ft³/s (224,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 160,000 ft³/s Aug. 3, 1978 (gage height, 45.25 ft, from floodmark), from rating curve extended above 55,600 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1951-52, 1954-56, and 1963-64.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, about 53 ft in 1869; flood in July 1900 reached a stage of about 49 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 1	0300	32,000	26.39	June 22	1900	5,230	9.34
May 18	0900	7,540	11.58	July 12	0800	4,970	9.06
June 6	0300	*47,500	*30.65				

Minimum daily discharge, 17 ft³/s Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	418	128	17000	455	913	520	475	295	330	195	121
2	18	263	122	2280	443	913	500	451	279	320	200	128
3	18	227	116	1470	432	808	495	467	274	350	185	105
4	19	203	116	1110	432	765	490	459	262	310	178	99
5	20	180	118	921	432	677	480	427	3800	300	172	99
6	22	164	121	782	432	617	470	401	17400	300	167	114
7	761	153	129	684	416	617	450	382	1830	285	163	225
8	263	144	122	624	416	624	440	363	936	300	159	215
9	86	137	120	596	405	596	445	354	568	290	154	179
10	49	131	118	534	395	582	460	344	502	280	150	179
11	71	125	115	472	374	522	465	318	438	270	144	185
12	62	118	116	484	364	460	470	334	438	2320	142	192
13	50	113	122	522	360	534	470	339	432	1690	139	165
14	102	111	131	554	360	1590	921	346	421	692	139	176
15	84	110	248	603	345	1440	757	319	400	575	134	266
16	76	107	2110	684	340	1130	589	303	369	470	135	195
17	64	105	942	861	340	990	534	371	340	410	132	165
18	55	111	617	861	331	880	502	3980	443	370	130	145
19	51	106	484	816	326	790	486	1320	1010	350	128	153
20	48	129	418	700	326	810	427	700	548	330	125	140
21	44	122	378	632	326	810	490	575	443	315	127	128
22	49	115	334	589	340	760	506	534	2180	300	123	125
23	249	113	308	575	2140	690	503	466	1540	290	117	125
24	182	116	294	561	2930	640	468	421	624	275	112	118
25	159	131	267	554	1570	610	442	478	560	260	105	116
26	700	145	255	528	1020	580	439	443	510	250	103	112
27	707	167	255	528	843	730	436	374	440	235	93	116
28	797	154	258	502	757	750	428	355	400	225	85	121
29	1270	147	260	490	---	670	432	350	370	215	105	449
30	554	131	357	484	---	630	431	336	350	210	105	515
31	370	---	3420	472	---	570	---	317	---	205	103	---
TOTAL	7017	4496	12899	38473	17650	23698	14946	17102	38402	13322	4249	5171
MEAN	226	150	416	1241	630	764	498	552	1280	430	137	172
MAX	1270	418	3420	17000	2930	1590	921	3980	17400	2320	200	515
MIN	17	105	115	472	326	460	427	303	262	205	85	99
AC-FT	13920	8920	25590	76310	35010	47000	29650	33920	76170	26420	8430	10260

CAL YR 1984 TOTAL 38899.8 MEAN 106 MAX 3420 MIN 1.1 AC-FT 77160
WTR YR 1985 TOTAL 197425.0 MEAN 541 MAX 17400 MIN 17 AC-FT 391600

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°52'07", long 98°11'55", Comal County, Hydrologic Unit 12100201 in intake structure of Canyon Dam on Guadalupe River, 12 mi northwest of New Braunfels, and at mile 303.0.

DRAINAGE AREA --1,432 mi².

PERIOD OF RECORD.--July 1962 to current year. Prior to October 1970, published as Canyon Reservoir.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Sept. 24, 1964, nonrecording gage at present site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 6,830 ft long, consisting of the main dam 4,410 ft long, an earthen dike 210 ft long, a 1,260-foot-long uncontrolled broad-crested-type spillway, and a 950-foot concrete and earthen nonoverflow section. Deliberate impoundment began June 16, 1964, and main part of dam was completed in August 1964. The flood-control outlet works consist of a 10.0-foot-diameter conduit controlled by two 5.7 by 10.0-foot hydraulically operated slide gates. The lake was built for water conservation and flood control. Capacity table beginning Oct. 1, 1974, is based on a sedimentation survey of August 1972. Small diversions above the lake for irrigation. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	974.0	-
Crest of spillway	943.0	736,700
Top of conservation pool	909.0	382,000
Lowest gated outlet (invert)	775.0	240

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 588,400 acre-ft Aug. 4, 1978 (elevation, 930.61 ft); minimum observed since conservation pool first reached in April 1968, 311,200 acre-ft Nov. 24, 1984 (elevation, 899.85 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 405,000 acre-ft July 14 at 0800 hours (elevation, 911.73 ft); minimum daily, 311,200 acre-ft Nov. 24 at 1600 hours (elevation, 899.85 ft).

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

899.0	305,100	905.0	349,900	911.0	398,700
901.0	319,600	907.0	365,800	913.0	415,900
903.0	334,500	909.0	382,000		

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	314400	320000	311600	345900	335300	340300	342900	333000	332500	397700	389900	374100
2	314200	318600	311400	348600	334500	340500	342400	333000	331800	397200	388800	373800
3	314100	317700	311100	348900	333700	340600	342000	332800	331000	400200	387600	373400
4	314100	316700	311100	349200	332900	340600	341600	332700	330300	400900	386400	373200
5	313900	315700	311000	349200	332000	341100	341100	332500	336600	401000	385100	373000
6	314200	314700	310900	348800	331100	340800	340500	332200	380100	401100	383800	373000
7	316100	314300	310700	348300	330400	340600	339900	332000	383600	401000	383000	373000
8	316600	314000	310500	347700	329400	340400	339200	332100	385000	400700	382500	372900
9	316800	313800	310300	347300	328800	340000	338500	331900	385400	400000	382100	372900
10	316800	313600	310300	346500	328000	339700	338300	331400	385700	399400	381600	373200
11	317600	313400	310200	345700	327200	339300	337900	331000	385900	398700	381000	374200
12	317700	313100	310100	345300	327300	338900	337300	330600	385800	403200	380600	374200
13	317900	313000	310500	344900	327300	338600	336800	330400	385600	404700	380300	374800
14	318600	312900	310500	344300	327300	340200	336900	330100	385600	404800	380100	375000
15	318800	312900	311500	343800	327300	341400	336600	329900	385500	404600	379800	375100
16	318800	312600	313800	343800	327300	342000	336000	329700	385300	404200	379500	375100
17	318500	312700	315300	343700	327300	342200	335400	330100	385000	403800	379100	375000
18	318500	312800	315600	343600	327300	342500	334700	335200	386700	403100	378800	374900
19	318000	312300	315800	343400	327300	342800	334100	336600	388000	402600	378600	374600
20	317900	312000	315800	342600	327300	343600	333200	337100	388400	401900	378200	374300
21	317900	311800	315800	342200	327400	343400	332500	337200	388500	401000	377800	374100
22	317700	310900	315400	341700	327700	343400	332500	337000	393800	400300	377500	373700
23	318000	311300	315000	341200	333400	343500	332500	336700	396400	399400	377100	373400
24	318100	312100	314700	340800	337800	343300	332400	336500	398000	398500	376700	373300
25	318000	312000	314000	340200	339200	343100	332400	336100	399100	397400	376300	373000
26	318500	312100	313600	339600	339700	343400	332500	335900	399500	396500	376000	372600
27	319300	312000	313300	339200	339800	343500	332300	335400	399700	395600	375600	372200
28	319900	311600	312900	338300	340200	343700	332400	335000	399300	394400	375100	372400
29	321300	311600	312600	337700	---	343500	332400	334400	398800	393300	374900	375000
30	321500	311600	312900	337100	---	343600	332500	333900	398300	392100	374600	375500
31	320900	---	314100	336200	---	343300	---	333200	---	391100	374300	---
MAX	321500	320000	315800	349200	340200	343700	342900	337200	399700	404800	389900	375500
MIN	313900	310900	310100	336200	327200	338600	332300	329700	330300	391100	374300	372200
(†)	901.18	899.91	900.25	903.22	903.74	904.15	902.73	902.83	910.95	910.09	908.06	908.21
(‡)	+6400	-9300	+2500	+22100	+4000	+3100	-10800	+700	+65100	-7200	-16800	+1200

CAL YR 1984 MAX 344600 MIN 310100 ‡ -27500
WTR YR 1985 MAX 404800 MIN 310100 ‡ +61000

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

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 upstream from Horseshoe Falls, 0.8 mi north of Sattler, 1.8 mi downstream from Canyon Dam, 2.3 mi upstream from Heiser Hollow, 11.2 mi north of New Braunfels, and at mile 301.2.

DRAINAGE AREA.--1,436 mi², of which 1,432 mi² is above Canyon Dam.

PERIOD OF RECORD.--March 1960 to current year.
Water-quality records.--Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 2123: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated since July 21, 1962, by Canyon Lake (station 08167700) 1.8 mi upstream. Small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--23 years (water years 1962-85) since regulation began at Canyon Lake, 385 ft³/s (278,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s Oct. 29, 1960 (gage height, 12.20 ft). Maximum discharge since closure of Canyon Dam on July 21, 1962, 5,850 ft³/s Aug. 5, 1978 (gage height, 8.31 ft); no flow July 31 to Aug. 6, 1962 (result of closure of Canyon Dam), and part of Jan. 29, 30, Feb. 1, 1965 (result of closure while constructing present control).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 (stage unknown) has not been exceeded since that date; flood in July 1900 (stage unknown) exceeded 39 ft; maximum stage since at least 1904, 39 ft in July 1932 and June 1935, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 866 ft³/s Mar. 19 at 2400 hours, June 6 at 1100 hours (gage height, 6.04 ft); minimum daily, 1.8 ft³/s Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	772	155	482	837	818	856	483	614	763	784	195
2	7.7	706	155	635	837	818	856	482	614	763	781	195
3	8.2	649	155	791	837	818	856	482	614	702	781	171
4	8.3	649	155	795	837	737	856	482	614	627	781	143
5	8.3	649	155	800	837	182	851	482	456	621	781	143
6	8.2	563	155	800	837	809	847	491	322	616	781	143
7	9.6	309	155	803	837	847	847	512	290	614	539	143
8	21	309	155	809	837	856	847	513	550	714	376	143
9	43	239	151	809	837	856	847	518	549	791	360	143
10	48	155	157	809	837	856	847	518	544	791	360	146
11	50	155	157	809	663	856	847	518	542	790	360	160
12	51	155	157	809	390	856	847	518	542	807	357	142
13	51	155	157	809	380	856	847	518	542	800	292	142
14	52	155	157	809	380	856	839	477	529	793	247	146
15	75	155	157	809	380	856	837	442	518	791	247	143
16	99	155	158	809	380	856	837	442	518	800	247	143
17	99	155	227	809	380	856	837	442	518	792	247	186
18	99	157	365	809	380	856	837	438	520	791	247	224
19	99	157	365	809	380	857	837	437	526	791	241	224
20	99	157	365	809	380	866	837	437	524	791	241	224
21	100	157	401	809	380	866	837	535	524	791	241	224
22	101	155	476	809	380	859	613	614	524	791	241	224
23	170	155	476	809	380	856	423	614	524	791	241	192
24	277	156	476	837	380	856	473	614	524	791	241	157
25	268	157	476	837	530	860	476	614	596	791	241	157
26	262	157	476	837	818	866	476	614	670	791	238	157
27	251	155	476	837	818	866	476	614	710	792	213	157
28	251	155	476	837	818	866	476	614	763	791	195	157
29	251	155	476	837	---	866	476	614	763	791	195	173
30	353	155	478	837	---	865	478	614	763	791	195	162
31	714	---	482	837	---	856	---	614	---	791	195	---
TOTAL	3936.1	8113	8982	24746	16967	25650	22116	16307	16807	23650	11486	5059
MEAN	127	270	290	798	606	827	737	526	560	763	371	169
MAX	714	772	482	837	837	866	856	614	763	807	784	224
MIN	1.8	155	151	482	380	182	423	437	290	614	195	142
AC-FT	7810	16090	17820	49080	33650	50880	43870	32340	33340	46910	22780	10030

CAL YR 1984 TOTAL 37961.2 MEAN 104 MAX 772 MIN 1.1 AC-FT 75300
WTR YR 1985 TOTAL 183819.1 MEAN 504 MAX 866 MIN 1.8 AC-FT 364600

GUADALUPE RIVER BASIN

08168000 HUECO SPRINGS NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°45'34", long 98°08'24", Comal County, Hydrologic Unit 12100202, two springs located 1,700 ft upstream from mouth of unnamed tributary which enters the Guadalupe River at Slumber Falls, and 4.2 mi 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 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 1984 TO SEPTEMBER 1985

Date	Discharge (ft^3/s)	Date	Discharge (ft^3/s)	Date	Discharge (ft^3/s)
Oct. 16, 1984	9.86	Feb. 25, 1985	81.2	July 16, 1985	93.8
Dec. 10	.00	Apr. 16	89.5	Sept. 12	67.1
Jan. 17, 1985	69.0	June 4	40.0		

08168500 GUADALUPE RIVER ABOVE COMAL RIVER AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'53", long 98°06'35", Comal County, Hydrologic Unit 12100202, on right bank at New Braunfels, 1.1 mi upstream from Comal River, 21.9 mi downstream from Canyon Lake, and at mile 281.1.

DRAINAGE AREA.--1,518 mi².

PERIOD OF RECORD.--December 1927 to current year.

REVISED RECORDS.--WSP 898: 1935. WSP 1562: 1932. WSP 2123: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 586.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversions for irrigation below station 08167800 and above this station. Since July 21, 1962, flow is largely regulated by Canyon Lake (station 08167700) 21.9 mi upstream. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft³/s (269,500 acre-ft/yr); 23 years (water years 1963-85) regulated, 473 ft³/s (342,700 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,000 ft³/s June 6 at 1500 hours (gage height, 6.80 ft); minimum daily, 2.6 ft³/s Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	877	153	575	1040	1040	979	566	635	920	920	258
2	9.0	832	153	664	1030	1030	977	549	633	918	918	255
3	5.2	710	156	991	1030	1030	978	542	631	1010	919	250
4	3.2	711	164	991	1030	1010	979	537	629	1420	919	206
5	2.7	708	165	983	1030	517	978	529	574	1110	918	202
6	2.8	701	157	979	1030	925	972	524	1520	991	918	204
7	4.2	336	157	972	1030	992	968	555	634	915	790	201
8	11	305	160	966	1030	991	967	556	800	928	485	198
9	16	296	161	966	1030	990	966	557	738	1060	454	196
10	36	161	157	960	1040	976	981	550	701	1040	449	199
11	62	157	157	956	922	962	972	546	676	1020	441	233
12	64	157	158	975	437	954	962	544	665	1240	438	219
13	63	157	165	980	435	954	974	537	654	1110	416	206
14	94	161	160	981	443	1000	958	536	645	1060	322	212
15	95	161	161	1010	442	1010	954	462	637	1020	318	216
16	115	161	184	1050	445	1000	954	458	629	1000	316	208
17	120	164	197	1080	450	1000	954	515	626	986	316	213
18	120	169	335	1090	454	993	954	488	648	972	313	208
19	123	161	429	1080	458	991	954	480	720	964	309	288
20	120	161	420	1060	458	1020	950	475	666	953	308	287
21	121	163	412	1050	463	1000	947	514	658	943	306	287
22	124	161	463	1040	465	1000	835	638	689	937	305	284
23	131	161	501	1050	528	996	519	635	695	930	305	276
24	296	166	500	1050	556	991	563	634	705	926	306	210
25	299	173	492	1060	655	991	562	631	738	922	306	208
26	309	157	492	1040	1030	991	571	631	864	924	303	205
27	290	154	492	1050	1030	997	558	631	862	930	294	200
28	284	156	493	1040	1040	991	556	629	948	927	261	209
29	281	153	492	1040	---	991	556	627	933	921	261	287
30	281	153	499	1050	---	986	552	622	926	920	260	269
31	707	---	569	1040	---	979	---	629	---	919	257	---
TOTAL	4191.7	8843	9354	30819	21031	30298	25550	17327	22079	30836	14351	6974
MEAN	135	295	302	994	751	977	852	559	736	995	463	232
MAX	707	877	569	1090	1040	1040	981	638	1520	1420	920	288
MIN	2.6	153	153	575	435	517	519	458	574	915	257	196
AC-FT	8310	17540	18550	61130	41710	60100	50680	34370	43790	61160	28470	13830

CAL YR 1984 TOTAL 41360.0 MEAN 113 MAX 877 MIN 2.6 AC-FT 82040
WTR YR 1985 TOTAL 221653.7 MEAN 607 MAX 1520 MIN 2.6 AC-FT 439600

08169000 COMAL RIVER AT NEW BRAUNFELS, TX

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

DRAINAGE AREA. -130 mi². Normal flow of river comes from springs; drainage area not applicable.

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

REVISED RECORDS.- WSP 2123: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. The flow from Comal Springs emerges from the Edwards and associated limestones in the Balcones Fault Zone. Except during periods of rainfall, flow of river is primarily from Comal Springs about 1.0 mi upstream. Flow is affected at times by cleanup operations by the city of New Braunfels at Landa Park Lake and at times by discharge from the flood-detention pools of five floodwater-retarding structures with a combined detention capacity of 17,580 acre-ft. These structures control runoff from 74.6 mi² above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--53 years (water years 1933-85), 294 ft³/s (213,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,800 ft³/s May 11, 1972 (gage height, 36.55 ft, from floodmark), from rating curve extended above 13,000 ft³/s on basis of contracted-opening measurements on Blieders and Dry Comal Creeks and unit rainfall-runoff studies; no flow from Comal Springs from June 13 to Nov. 3, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood information begins with flood of July 8, 1869, which reached a stage of 36.91 ft, from painted and dated marks in old Remmert Brewery 0.5 mi downstream; the flood of Oct. 17, 1870, reached a stage of 37.65 ft at same site (probably some backwater from Guadalupe River).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
June 6	1600	1,700	6.67	July 3	2300	2,330	7.72
July 3	0300	1,310	6.02	July 4	1400	*3,860	*9.96

Minimum daily discharge, 54 ft³/s Oct. 1, 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	147	156	187	222	230	254	262	230	262	254	204
2	54	147	159	187	222	226	255	254	222	250	246	204
3	55	147	157	184	219	230	258	254	222	872	250	197
4	57	150	156	186	222	226	258	254	211	1760	254	194
5	63	147	156	191	219	230	254	254	219	484	246	194
6	65	147	153	194	219	230	254	250	736	326	246	197
7	76	147	153	194	222	222	254	250	352	299	242	204
8	78	147	156	194	222	230	254	242	246	290	246	204
9	80	147	159	197	222	234	254	234	242	282	234	197
10	84	147	159	194	226	234	262	238	238	286	234	197
11	107	147	159	197	222	234	262	234	238	282	230	246
12	96	147	159	201	219	230	262	238	234	299	230	219
13	118	147	165	204	219	230	262	242	242	290	222	222
14	128	147	162	215	222	246	270	249	242	282	222	215
15	117	147	162	234	222	246	266	234	238	282	226	219
16	117	147	184	242	222	246	262	234	238	274	219	219
17	115	153	177	238	222	250	258	252	242	278	222	219
18	115	153	174	215	222	250	258	230	258	278	219	222
19	166	153	174	215	219	250	262	234	242	274	219	222
20	128	150	171	211	219	258	258	234	242	278	208	226
21	123	150	171	211	222	250	258	234	238	278	211	226
22	169	150	171	215	226	258	258	238	258	270	211	226
23	156	153	171	215	252	254	258	238	282	262	201	226
24	144	166	174	219	234	254	254	230	320	262	211	226
25	139	172	174	219	226	258	258	242	290	266	211	226
26	147	159	177	219	226	258	262	238	262	260	211	222
27	144	156	171	222	226	258	258	238	266	266	208	222
28	144	153	174	222	236	258	258	234	259	266	208	230
29	144	156	171	222	---	258	262	234	258	262	208	286
30	141	156	174	222	---	266	256	234	254	254	204	246
31	143	---	218	222	---	258	---	227	---	250	208	---
TOTAL	3467	4535	5197	6488	6271	7562	7759	7460	8021	10824	6961	6557
MEAN	112	151	168	209	224	244	259	241	267	349	225	219
MAX	169	172	218	242	252	266	270	262	736	1760	254	286
MIN	54	147	153	184	219	222	254	227	211	250	201	194
AC-FT	6880	9000	10310	12870	12440	15000	15390	14800	15910	21470	13810	13010

CAL YR 1984 TOTAL 46117 MEAN 126 MAX 270 MIN 26 AC-FT 91470
WTR YR 1985 TOTAL 81102 MEAN 222 MAX 1760 MIN 54 AC-FT 160900

GUADALUPE RIVER BASIN

COMAL SPRINGS AT NEW BRAUNFELS, TX

LOCATION.--Lat 29 42'21", long 98 07'20", Comal County, Hydrologic unit 12100202, on right bank 200 ft upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi 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 National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--58 years (water years 1928-85), 284 ft^3/s, 206,800 acre-ft/yr.

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	147	156	187	222	230	254	262	230	262	254	204
2	54	147	159	187	222	226	255	254	222	242	246	204
3	55	147	157	184	219	230	258	254	222	266	250	197
4	57	150	156	186	222	226	258	254	211	304	254	194
5	62	147	153	191	219	230	254	254	211	326	246	194
6	63	147	153	194	219	230	254	250	266	317	246	197
7	72	147	153	194	222	222	254	246	290	299	242	204
8	78	147	156	194	222	230	254	242	246	290	246	204
9	80	147	159	197	222	234	254	234	242	282	234	197
10	84	147	159	194	226	234	262	238	238	286	234	197
11	92	147	159	197	222	234	262	234	238	282	230	215
12	96	147	159	201	219	230	262	238	234	299	230	219
13	105	147	165	204	219	230	258	242	238	290	222	222
14	117	147	162	211	222	242	270	242	242	282	222	215
15	117	147	162	226	222	246	266	234	238	282	226	219
16	117	147	177	226	222	246	262	234	238	274	219	219
17	115	153	177	226	222	250	258	238	234	278	222	219
18	115	150	174	215	222	250	258	230	242	278	219	222
19	133	153	174	215	219	250	258	234	242	274	219	222
20	128	150	171	211	219	258	258	234	242	278	208	226
21	123	150	171	211	222	250	258	234	238	278	211	226
22	133	150	171	215	222	258	258	238	250	270	211	226
23	144	153	171	215	242	254	258	234	274	262	201	226
24	144	156	174	219	234	254	254	230	278	262	211	226
25	139	165	174	219	226	258	254	242	286	266	211	226
26	141	159	177	219	226	258	258	238	262	260	211	222
27	144	156	171	222	226	258	254	238	266	266	208	222
28	144	153	174	222	236	258	258	234	259	266	208	230
29	144	156	171	222	---	258	258	234	258	262	208	250
30	141	156	174	222	---	266	256	234	254	254	204	246
31	143	---	191	222	---	258	---	227	---	250	208	---
TOTAL	3334	4515	5160	6448	6257	7558	7735	7431	7391	8587	6961	6490
MEAN	108	150	166	208	223	244	258	240	246	277	225	216
MAX	144	165	191	226	242	266	270	262	290	326	254	250
MIN	54	147	153	184	219	222	254	227	211	242	201	194

CAL YR 1984 TOTAL 45923 MEAN 126 MAX 238 MIN 26 AC-FT 91,088
WTR YR 1985 TOTAL 77867 MEAN 213 MAX 326 MIN 54 AC-FT 154,449

08170000 SAN MARCOS RIVER SPRINGFLOW AT SAN MARCOS, TX

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

DRAINAGE AREA.--93.0 mi². 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 Septemberer 1956, published as San Marcos River at San Marcos; records include some surface runoff. Periodic measurements of springflow were made at this location outside periods of records since Nov. 14, 1894, and are published as miscellaneous measurements.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 536.82 ft above National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 1.2 mi upstream, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder near present site, datum relations unknown.

REMARKS.--No estimated daily discharges. Records good. Flow slightly regulated by utilities dam about 1.5 mi upstream. Flow is affected at times by discharge from the flood-detention pool of one floodwater-retarding structure with a detention capacity of 8,580 acre-ft. This structure controls runoff from 33.6 mi². Entire flow of river is from San Marcos springs, about 1.8 mi upstream, except during periods of local runoff. San Marcos springs emerge from the Edwards and associated limestones in the Balcones Fault Zone. There is small diversion for operation of State fish hatchery, some of which is returned above gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years (water years 1957-85), 164 ft³/s (118,800 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 284 ft³/s June 23; maximum gage height, 18.67 ft June 6 at 1500 hours (flood runoff), from floodmark; minimum daily spring discharge, 72 ft³/s Oct. 2, 3.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	99	100	132	141	162	167	169	140	213	226	192
2	72	100	100	132	141	162	167	160	138	209	226	192
3	72	100	100	131	141	158	168	158	136	224	219	192
4	74	100	102	127	141	157	167	158	135	275	214	191
5	74	100	104	125	144	156	167	157	144	280	213	190
6	75	98	99	124	145	154	167	152	192	250	212	194
7	82	99	100	124	144	156	167	153	272	250	212	190
8	78	100	101	122	144	157	166	157	233	244	208	188
9	79	101	101	122	147	157	167	159	202	246	206	186
10	74	99	99	121	148	157	172	158	191	238	208	189
11	81	99	100	120	147	158	177	157	184	236	208	186
12	83	98	102	122	147	157	172	157	179	283	206	186
13	82	95	105	125	147	158	174	156	177	279	202	188
14	90	96	104	136	145	168	175	167	173	250	202	189
15	89	96	105	132	147	174	172	159	172	242	201	188
16	88	95	110	139	148	168	172	156	170	238	199	188
17	85	96	114	145	149	163	169	159	167	233	199	186
18	86	100	125	145	149	162	169	157	177	231	196	185
19	89	96	120	145	152	163	170	154	194	230	199	183
20	89	94	121	140	153	175	170	154	178	228	195	178
21	93	95	120	139	154	167	170	156	173	231	196	178
22	89	98	118	139	154	163	168	156	223	243	195	179
23	89	100	119	139	156	162	168	153	284	242	195	179
24	95	101	119	140	163	163	167	150	246	240	194	177
25	93	107	119	140	164	166	167	152	236	238	195	174
26	100	101	119	140	158	166	174	150	230	240	192	172
27	100	99	122	147	154	172	166	150	226	236	192	177
28	100	100	126	141	154	170	166	149	221	232	190	179
29	99	100	124	144	---	167	164	149	218	232	186	188
30	99	100	124	144	---	172	164	145	216	231	191	179
31	98	---	127	141	---	169	---	141	---	227	191	---
TOTAL	2672	2962	3449	4163	4177	5059	5069	4808	5827	7471	6268	5543
MEAN	86.2	98.7	111	134	149	163	169	155	194	241	202	185
MAX	100	107	127	147	164	175	177	169	284	283	226	194
MIN	72	94	99	120	141	154	164	141	135	209	186	172
AC-FT	5300	5880	6840	8260	8290	10030	10050	9540	11560	14820	12430	10990

CAL YR 1984 TOTAL 36471 MEAN 99.6 MAX 135 MIN 64 AC-FT 72340
WTR YR 1985 TOTAL 57468 MEAN 157 MAX 284 MIN 72 AC-FT 114000

08171000 BLANCO RIVER AT WIMBERLEY, TX

LOCATION.--Lat 29°59'39", long 98°05'19", Hays County, Hydrologic Unit 12100203, on left bank at downstream side of highway, near left end of bridge on Ranch Road 12, 0.3 mi southeast of Wimberley, 2,200 ft downstream from Cypress Creek, and at mile 29.0.

DRAINAGE AREA.--355 mi².

PERIOD OF RECORD.--August 1924 to September 1926, June 1928 to current year.

REVISED RECORDS.--WSP 1562: 1929, 1930-31(M), 1935-36(M), 1938(M), 1941-42(M), 1947(M), 1949(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 797.23 ft above National Geodetic Vertical Datum of 1929. Aug. 6, 1924, to Sept. 30, 1926, nonrecording gage at site 1,030 ft upstream at datum 5.00 ft higher. From June 6, 1928, to June 12, 1975, nonrecording gage at site 1,000 ft upstream at datum 5.00 ft higher.

REMARKS.--Estimated daily discharges: Aug. 4-27. Records good. Many small diversions above station. Several observations of water temperature were made during the year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--59 years (water years 1925-26, 1929-85), 123 ft³/s (4.71 in/yr), 89,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113,000 ft³/s May 28, 1929 (gage height, 33.3 ft, from floodmark), present site and datum, from rating curve extended above 30,000 ft³/s on basis of slope-area measurements of 95,000 and 113,000 ft³/s; minimum, 0.6 ft³/s Aug. 16, 1956.
Maximum stage since at least 1869, that of May 28, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 reached a stage of 25 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 23	0600	7,440	10.57	June 22	2130	3,690	8.14
June 6	0800	*44,200	*23.03				

Minimum daily discharge, 13 ft³/s Oct. 1-5.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	66	40	449	201	520	276	142	69	238	111	56
2	13	60	41	311	197	421	266	138	66	222	108	56
3	13	59	39	301	193	393	262	123	66	486	105	56
4	13	60	39	304	193	381	256	116	66	543	102	54
5	13	54	39	285	200	342	248	114	250	369	100	54
6	14	50	36	267	197	323	233	109	14400	309	97	63
7	57	50	36	250	185	322	224	105	1270	287	95	54
8	47	49	38	236	174	328	214	108	679	256	93	54
9	59	44	39	229	170	306	210	102	500	242	91	56
10	34	40	39	215	170	295	217	97	401	227	89	61
11	74	38	38	195	163	287	220	94	345	209	87	70
12	66	38	36	197	156	276	217	91	304	470	85	82
13	65	37	44	218	151	269	207	91	273	364	83	70
14	112	37	40	233	150	477	219	96	254	305	81	62
15	81	37	44	279	146	467	235	97	237	254	79	55
16	60	35	369	343	146	432	203	93	218	232	81	52
17	47	33	287	430	146	397	185	92	198	211	78	54
18	37	38	199	383	142	375	174	86	261	198	76	55
19	31	33	166	358	139	369	169	89	516	186	74	56
20	27	33	149	318	137	445	163	89	330	174	72	56
21	48	32	132	293	136	397	156	86	262	165	71	56
22	80	30	120	294	136	368	158	83	879	158	69	52
23	119	30	113	293	2480	355	156	82	776	150	67	50
24	133	37	110	288	701	336	152	81	453	148	66	47
25	110	50	102	273	478	324	148	80	412	141	65	47
26	110	44	97	254	422	313	150	78	400	134	63	47
27	102	44	97	253	384	361	145	76	339	127	62	44
28	90	44	98	240	380	334	139	75	307	123	61	44
29	83	44	105	227	---	311	134	75	278	120	61	104
30	76	43	130	227	---	338	129	73	254	116	60	86
31	72	---	770	214	---	293	---	69	---	112	58	---
TOTAL	1899	1289	3632	8657	8473	11155	5865	2930	25063	7276	2490	1753
MEAN	61.3	43.0	117	279	303	360	196	94.5	835	235	80.3	58.4
MAX	133	66	770	449	2480	520	276	142	14400	543	111	104
MIN	13	30	36	195	136	269	129	69	66	112	58	44
CFSM	.17	.12	.33	.79	.85	1.01	.55	.27	2.35	.66	.23	.17
IN.	.20	.14	.38	.91	.89	1.17	.61	.31	2.63	.76	.26	.18
AC-FT	3770	2560	7200	17170	16810	22130	11630	5810	49710	14430	4940	3480

CAL YR 1984	TOTAL	14269	MEAN	39.0	MAX	770	MIN 10	CFSM .11	IN 1.50	AC-FT	28300	
WTR YR 1985	TOTAL	80482	MEAN	220	MAX	14400	MIN 13	CFSM .62	IN 8.43	AC-FT	159600	

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 downstream from Tarbutton Ranch House (Hatchett Ranch), 2.2 mi southwest of Kyle, 4.2 mi downstream from Halifax Creek, and 6.3 mi upstream from bridge on U.S. Highway 81.

DRAINAGE AREA.--412 mi².

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 above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. 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 that crosses the basin upstream from this station and below the station at Wimberley. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 146 ft³/s (4.81 in/yr), 105,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,000 ft³/s May 2, 1958 (gage height, 36.3 ft, from floodmark), from rating curve extended above 37,000 ft³/s on basis of slope-area measurement of 139,000 ft³/s and slope-conveyance study; no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 23	1000	5,500	13.70	June 22	1330	3,190	11.55
June 6	1030	*50,700	a*29.43				

a From floodmark.

Minimum daily discharge, no flow Oct. 1-11.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	18	17	612	194	500	290	132	61	272	95	37
2	.00	16	16	334	189	431	278	135	59	254	90	36
3	.00	15	16	306	184	385	267	119	58	313	87	35
4	.00	14	18	306	184	373	259	111	57	985	83	34
5	.00	14	19	294	186	342	250	104	62	533	80	35
6	.00	13	18	272	187	317	235	101	16200	408	77	48
7	.00	12	16	254	173	313	226	97	1640	365	75	38
8	.00	12	17	233	160	319	216	99	852	335	72	33
9	.00	11	17	225	154	302	210	116	601	315	70	33
10	.00	10	18	212	160	288	217	95	470	295	67	35
11	.00	9.6	18	196	150	280	229	90	399	271	66	45
12	11	9.9	18	196	141	271	216	87	357	569	64	56
13	13	9.6	23	214	135	260	206	86	328	451	62	78
14	36	9.2	26	223	132	408	206	93	311	365	61	54
15	37	8.9	24	266	129	512	233	87	293	297	59	55
16	16	8.3	155	315	124	433	202	86	269	259	60	40
17	8.9	8.0	332	430	123	401	184	86	248	232	56	41
18	5.6	11	182	387	121	370	169	80	268	210	54	40
19	3.1	12	148	359	117	365	163	81	659	194	52	40
20	2.0	8.9	124	328	115	455	160	81	417	182	51	37
21	2.0	9.2	109	297	116	419	158	76	330	170	49	35
22	11	9.6	97	293	118	376	156	73	1100	160	48	34
23	38	9.2	89	289	2100	363	154	72	1190	151	46	33
24	70	9.9	84	286	880	343	147	71	550	142	45	31
25	51	27	78	272	508	327	144	71	486	134	44	30
26	45	21	75	251	431	314	150	68	454	127	43	30
27	40	18	76	245	387	352	138	67	385	120	41	28
28	35	18	77	235	368	346	133	69	349	115	40	30
29	28	18	77	220	---	315	130	67	321	109	40	73
30	24	18	98	214	---	350	125	64	297	104	41	92
31	21	---	519	206	---	311	---	63	---	100	40	---
TOTAL	497.60	388.3	2601	8770	7966	11141	5851	2727	29071	8537	1858	1266
MEAN	16.1	12.9	83.9	283	285	359	195	88.0	969	275	59.9	42.2
MAX	70	27	519	612	2100	512	290	135	16200	985	95	92
MIN	.00	8.0	16	196	115	260	125	63	57	100	40	28
CFSM	.04	.03	.20	.69	.69	.87	.47	.21	2.35	.67	.15	.10
IN.	.04	.04	.23	.79	.72	1.01	.53	.25	2.62	.77	.17	.11
AC-FT	987	770	5160	17400	15800	22100	11610	5410	57660	16930	3690	2510

CAL YR 1984 TOTAL 6679.86 MEAN 18.3 MAX 519 MIN .00 CFSM .04 IN .60 AC-FT 13250
WTR YR 1985 TOTAL 80673.90 MEAN 221 MAX 16200 MIN .00 CFSM .54 IN 7.28 AC-FT 160000

08172400 PLUM CREEK AT LOCKHART, TX

LOCATION.--Lat 29°55'22", long 97°40'44", Caldwell County, Hydrologic Unit 12100203, on right bank 548 ft upstream from bridge on U.S. Highway 183, 2.7 mi north of Lockhart, 3.7 mi upstream from Town Creek, 5.0 mi downstream from Brushy Creek, and 30.4 mi upstream from mouth.

DRAINAGE AREA.--112 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 431.19 ft above National Geodetic Vertical Datum of 1929. Apr. 30, 1959, to July 25, 1968, at site 548 ft downstream at present datum.

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

AVERAGE DISCHARGE.--26 years, 45.8 ft³/s (33,180 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
June 7	0100	4,040	15.71	July 4	2200	2,750	a15.12
June 23	0300	*5,260	a*16.09				

a From floodmark.

Minimum daily discharge, no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.02	50	5.3	20	13	38	.11	32	1.2	.00
2	.00	.00	.00	24	4.8	22	11	9.7	.08	21	.94	.00
3	.00	.00	.00	20	4.0	17	9.7	5.8	.06	152	.72	.00
4	.00	.00	.00	29	4.1	16	8.8	4.3	.03	1440	.47	.00
5	.00	.00	.00	20	4.4	15	8.2	3.5	.02	892	.23	.00
6	.00	.00	.00	16	5.2	12	7.3	3.0	889	359	.17	.00
7	.00	.00	.00	13	5.3	9.6	9.2	2.5	1430	285	.07	.00
8	.00	.00	.00	11	5.1	6.9	8.4	35	411	235	.03	.00
9	.00	.00	.00	9.5	4.7	6.2	7.5	151	289	166	.00	.00
10	.00	.00	.00	8.2	4.8	5.7	7.0	33	190	93	.00	.00
11	.00	.00	.00	7.2	8.3	5.2	176	20	126	50	.00	.00
12	.00	.00	.00	7.1	13	4.7	143	15	95	599	.00	.00
13	.00	.00	.00	7.8	10	4.3	60	12	79	119	.00	.00
14	.00	.00	.00	40	8.2	12	50	32	65	71	.00	.00
15	.00	.00	.00	67	6.9	33	29	22	51	46	.00	.00
16	.00	.00	1.9	108	6.0	28	21	15	35	31	.00	.00
17	.00	.00	8.9	99	5.1	21	16	11	24	21	.00	.00
18	.00	.00	15	38	4.6	15	13	8.7	87	15	.00	.00
19	.00	.00	25	24	4.2	12	10	6.7	69	12	.00	.00
20	.00	.00	12	17	3.8	385	8.7	5.3	23	9.8	.00	.00
21	.00	.00	7.3	13	3.8	208	7.5	4.5	17	8.3	.00	.00
22	.00	.00	4.8	8.8	4.1	91	6.9	4.5	590	6.5	.00	.00
23	.00	.00	3.5	7.9	18	51	6.3	4.1	1700	5.2	.00	.00
24	.00	.00	2.8	7.5	68	33	5.4	3.2	415	4.4	.00	.00
25	.00	3.5	2.1	6.9	27	24	4.7	2.6	312	3.7	.00	.00
26	.00	.46	1.7	6.3	16	20	5.3	2.0	219	3.1	.00	.00
27	.00	.11	1.6	6.3	11	18	5.3	1.5	144	2.5	.00	.00
28	.00	.05	1.8	6.7	9.8	17	5.1	1.2	108	1.9	.00	.00
29	.00	.04	2.0	6.9	---	16	5.2	.83	70	1.6	.00	.02
30	.00	.03	2.3	5.9	---	14	5.2	.43	47	1.3	.00	2.8
31	.00	---	50	5.6	---	14	---	.21	---	1.3	.00	---
TOTAL	.00	4.19	142.72	697.6	275.5	1156.6	673.7	458.57	7485.30	4688.6	3.83	2.82
MEAN	.000	.14	4.60	22.5	9.84	37.3	22.5	14.8	250	151	.12	.094
MAX	.00	3.5	50	108	68	385	176	151	1700	1440	1.2	2.8
MIN	.00	.00	.00	5.6	3.8	4.3	4.7	.21	.02	1.3	.00	.00
AC-FT	.00	8.3	283	1380	546	2290	1340	910	14850	9300	7.6	5.6

CAL YR 1984 TOTAL 470.79 MEAN 1.29 MAX 54 MIN .00 AC-FT 934
WTR YR 1985 TOTAL 15589.43 MEAN 42.7 MAX 1700 MIN .00 AC-FT 30920

08178620 LORENCE CREEK AT THOUSAND OAKS BOULEVARD, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°35'24", long 98°27'47", Bexar County, Hydrologic Unit 123100301, on right bank 30 ft upstream from Thousand Oaks Boulevard and 4.2 mi upstream from mouth.

DRAINAGE AREA.--4.05 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1980 to current year.

GAGE.--Digital recorders (stage and rainfall), concrete control, and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929. (Gage removed Sept. 5-30, 1984.)

REMARKS.--Water-discharge records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 5.90 ft May 6, 1982 (discharge not determined); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
June 6	Unknown	Unknown	*5.29	June 22	1550	550	2.82

No flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
JAN										
14...	1230	.07	87	8.6	4.0	--	--	12.0	92	8.5
FEB										
23...	1000	.76	226	8.0	16.5	600	59	--	--	2.7
JUN										
06...	1335	50	119	8.6	22.0	600	750	8.3	97	3.6
06...	1400	150	103	8.6	22.0	400	520	8.3	97	4.0
06..	1825	10	150	7.1	29.0	250	140	7.4	99	3.9
22...	1250	10	159	--	--	140	86	--	--	3.1
22...	1312	534	70	7.9	25.5	--	--	6.9	--	--
JUL										
03...	1700	--	84	8.1	21.0	230	320	8.2	94	5.0

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)
JAN										
14...	--	K4800	--	--	--	--	--	--	--	38
FEB										
23...	13000	98000	110	10	39	1.9	5.3	.2	4.8	95
JUN										
06..	50000	90000	53	12	20	.80	1.7	.1	4.1	41
06...	54000	90000	48	5	18	.80	1.6	.1	4.1	43
06...	K28000	84000	68	--	25	1.3	2.4	.1	5.5	--
22...	20000	105000	71	5	26	1.4	3.2	.2	4.8	66
22...	--	--	--	--	--	--	--	--	--	--
JUL										
03...	80000	120000	35	5	13	.70	1.4	.1	3.5	30

GUADALUPE RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
JAN										
14...	--	--	--	--	--	--	--	--	--	--
FEB										
23...	18	5.6	.10	13	140	180	12	4.7	.080	4.8
JUN										
06..	15	2.2	.10	10	79	2780	328	.58	.220	.80
06...	10	2.0	<.10	8.9	71	1670	260	.59	.110	.70
06...	14	3.0	<1.0	11	--	158	34	.94	.060	1.0
22...	13	3.2	<.10	12	100	46	7	.77	.030	.80
22...	--	--	--	--	--	--	--	--	--	--
JUL										
03...	9.8	1.8	<.10	7.9	56	1010	180	.37	.030	.40

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
JAN									
14...	--	--	--	--	--	--	--	--	--
FEB									
23...	4.8	.180	13	13	1.0	.220	.130	17	11
JUN									
06...	--	.520	1.4	1.9	--	.590	--	78	--
06...	--	.280	.92	1.2	--	.470	--	50	--
06..	--	.140	2.0	2.1	--	.330	--	12	--
22...	--	.070	.83	.90	--	.240	--	23	--
22...	--	--	--	--	--	--	--	--	--
JUL									
03...	--	.100	1.3	1.4	--	.340	--	33	--

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
FEB							
23...	1000	<1	16	<1	<10	2	50
JUN							
06...	1335	2	14	<1	<10	6	56
06...	1400	2	10	<1	<10	5	130
JUL							
03...	1700	<1	9	<1	<10	3	190

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB						
23...	<1	7	3.2	<1	<1	13
JUN						
06...	3	2	<.1	<1	<1	7
06...	6	2	<.1	<1	<1	<3
JUL						
03...	<1	6	<.1	<1	<1	6

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
JUN										
06...	1335	<.1	<.10	<.01	<.1	<.01	<.01	.01	.38	<.01
06...	1400	<.1	<.10	<.01	<.1	<.01	<.01	.01	.33	.01
JUL										
03...	1700	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.31	.01

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

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

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
JUN										
06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
06...	<.01	<.01	<.01	<.01	<.01	<.01	.01	<.01	<.01	<.01
JUL										
03...	<.01	<.01	<.01	<.01	<.01	<.01	.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
06...	<.01	<.01	<.1	<1	<.01	.03	<.01	<.01	<.01
06...	<.01	<.01	<.1	<1	<.01	.02	<.01	.02	<.01
JUL									
03...	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01

08178640 WEST ELM CREEK AT SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°37'23", long 98°26'29", Bexar County, Hydrologic Unit 12100301, at mid-channel, 1.8 mi upstream from mouth of East Elm Creek, 2.1 mi upstream from Farm Road 1604, and 7.0 mi north of San Antonio International Airport.

DRAINAGE AREA.--2.45 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1976 to current year.

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

REMARKS.--Water-discharge records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,000 ft³/s Nov. 1, 1977 (gage height, 5.82 ft); maximum gage height, 6.88 ft May 6, 1982; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 7	1015	122	3.85	June 18	1745	350	4.50
14	0150	260	4.30	22	0615	3,050	6.58
22	0955	265	4.31	July 3	1510	2,000	6.10
Dec. 12	0020	295	4.36	12	0550	245	4.26
Apr. 13	1805	2,050	6.11	Sept. 29	0955	780	5.17
June 6	1355	*3,950	*6.92				

No flow most of time.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DEC											
30...	1752	.14	68	8.4	21.1	200	140	7.6	--	2.0	--
31-31	0520	13	92	--	--	150	85	--	--	5.0	K47000
31-31	0550	16	97	--	--	200	85	--	--	2.8	K40000
31-31	0620	23	112	--	--	200	180	--	--	2.2	22500
31...	1035	9.1	199	8.5	18.5	100	75	7.9	87	2.4	K130000
FEB											
23...	0248	26	98	--	--	800	450	--	--	9.0	K140000
23...	0348	9.9	115	--	--	1200	610	--	--	5.1	K84000
23...	0448	6.5	137	--	--	700	530	--	--	6.0	K98000
23...	1030	9.9	166	7.8	15.5	150	43	--	--	4.3	58000
23...	1230	1.4	175	7.9	17.0	150	36	--	--	3.7	K31000
MAR											
14-14	0449	5.7	112	--	--	150	53	--	--	--	60000
14-14	0549	7.2	126	--	--	450	69	--	--	3.9	32000
14...	0609	6.3	131	7.7	13.0	250	100	9.4	91	3.2	K17000
JUN											
05...	1830	8.4	116	--	--	130	63	--	--	4.8	--
06...	1430	380	117	7.4	22.0	140	110	7.8	91	2.6	K24000
06...	1620	62	147	--	--	150	75	--	--	3.6	--
06...	1720	26	176	--	--	130	27	--	--	--	<1
22...	0423	7.0	80	--	--	60	130	--	--	3.4	K4000
22...	0523	290	125	--	--	200	380	--	--	3.9	K32000
22...	0620	750	157	--	--	150	150	--	--	3.5	K6000

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	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	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
DEC											
30...	--	--	--	--	--	--	--	--	--	--	--
31-31	--	--	--	--	--	--	--	--	--	--	--
31-31	--	--	--	--	--	--	--	--	--	--	--
31-31	--	--	--	--	--	--	--	--	--	--	--
31...	K480000	93	16	35	1.4	2.3	.1	5.2	77	20	3.7
FEB											
23...	K230000	--	--	--	--	--	--	--	--	--	--
23...	K340000	--	--	--	--	--	--	--	--	--	--
23...	K430000	49	7	18	.90	3.4	.2	3.9	42	13	5.7
23...	K370000	--	--	--	--	--	--	--	--	--	--
23...	K350000	88	11	33	1.3	2.6	.1	3.8	77	18	3.3
MAR											
14-14	86000	--	--	--	--	--	--	--	--	--	--
14-14	74000	--	--	--	--	--	--	--	--	--	--
14...	50000	56	13	21	.90	2.3	.1	4.0	43	15	3.5
JUN											
05..	--	--	--	--	--	--	--	--	--	--	--
06...	K39000	56	5	21	.80	1.4	.0	3.4	51	8.2	1.9
06...	--	66	9	25	.90	1.6	.0	3.8	57	12	2.2
06...	42000	77	12	29	1.1	1.8	.0	3.9	65	17	2.6
22...	K2000	--	--	--	--	--	--	--	34	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
22...	--	66	--	25	.90	2.4	.1	4.3	--	15	3.5

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	SOLIDS, VOLATILE, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
DEC											
30...	--	--	--	138	26	.18	--	.020	--	.20	--
31-31	--	--	--	94	13	.07	--	.030	--	.10	--
31-31	--	--	--	202	24	.17	--	.030	--	.20	--
31-31	--	--	--	1190	29	.17	--	.030	--	.20	--
31...	<.10	11	120	37	20	.27	--	.030	--	.30	--
FEB											
23...	--	--	--	1020	104	.45	--	.050	--	.50	--
23...	--	--	--	988	120	.57	--	.030	--	.60	--
23...	<.10	6.1	76	536	72	.68	--	.020	--	.70	.61
23...	--	--	--	62	8	.37	--	.030	--	.40	.36
23...	<.10	9.8	120	49	9	.37	--	.030	--	.40	.35
MAR											
14-14	--	8.5	--	83	12	.76	.72	.040	.030	.80	.75
14-14	--	--	--	200	36	.86	--	.040	--	.90	--
14...	<.10	5.7	78	115	19	.86	--	.040	--	.90	--
JUN											
05...	--	--	--	83	20	.55	--	.050	--	.60	--
06...	<.10	8.5	76	412	80	.56	--	.040	--	.60	--
06...	<1.0	10	90	186	24	.75	--	.050	--	.80	--
06...	<1.0	11	110	41	13	.87	--	.030	--	.90	--
22...	--	--	--	474	90	.26	--	.040	--	.30	--
22...	--	--	--	460	100	.56	--	.040	--	.60	--
22...	<.10	7.8	--	214	36	.74	--	.060	--	.80	--

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

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
DEC											
30...	.100	--	.30	--	.40	--	.160	--	6.8	--	--
31-31	.130	--	.37	--	.50	--	.170	--	8.3	--	--
31-31	.110	--	.59	--	.70	--	.210	--	8.6	--	--
31-31	.090	--	.61	--	.70	--	.220	--	10	--	--
31...	.090	--	1.0	--	1.1	--	.180	--	14	--	--
FEB											
23...	.500	--	2.9	--	3.4	--	.850	--	--	5.8	>11
23...	.100	--	5.4	--	5.5	--	--	--	35	8.0	--
23...	.110	--	3.3	--	3.4	1.1	.640	.180	--	--	--
23...	.150	--	.75	--	.90	1.0	.130	.120	--	--	--
23...	.110	--	.59	--	.70	.40	.100	.040	11	9.6	--
MAR											
14-14	.180	.190	.92	.51	1.1	.70	.260	--	8.2	6.7	--
14-14	.160	--	1.1	--	1.3	--	.300	--	--	--	--
14...	.140	--	1.3	--	1.4	--	.310	--	8.9	--	--
JUN											
05...	.170	--	1.2	--	1.4	--	.260	--	9.8	--	--
06...	.110	--	1.9	--	2.0	--	.220	--	16	--	--
06...	.110	--	1.2	--	1.3	--	.150	--	14	--	--
06...	.090	--	1.2	--	1.3	--	.110	--	11	--	--
22...	.240	--	1.3	--	1.5	--	.240	--	15	--	--
22...	.190	--	1.7	--	1.9	--	.390	--	38	--	--
22...	.200	--	.90	--	1.1	--	.330	--	15	--	--

DATE	TIME	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)
DEC							
31-31	0520	<1	15	<1	<10	4	8
31-31	0550	<1	14	<1	<10	6	27
31-31	0620	--	--	<1	--	--	--
FEB							
23...	0248	<1	15	<1	<10	3	250
23...	1230	<1	15	<1	<10	6	69
MAR							
14-14	0449	<1	200	<1	<10	1	50
JUN							
06...	1430	2	10	<1	<10	6	62
22...	0423	<1	6	1	<10	1	130
22...	0523	<1	16	2	<10	4	120

DATE	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
DEC						
31-31	<1	4	<.1	<1	<1	6
31-31	<1	4	<.1	<1	<1	<3
31-31	--	--	--	--	--	--
FEB						
23...	1	4	90	<1	<1	15
23...	3	4	2.0	<1	<1	16
MAR						
14-14	<1	<10	--	<1	<1	20
JUN						
06...	4	5	<.1	<1	<1	6
22...	<1	2	<.1	<1	1	15
22...	2	2	.1	<1	<1	5

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AMETRYNE TOTAL	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	CYANAZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
DEC										
31-31	0520	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
31-31	0550	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
FEB										
23...	0248	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1230	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
MAR										
14-14	0449	<.1	<.10	<.01	<.10	3.0	<.1	<.10	<.01	<.01
JUN										
06...	1430	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
22...	0423	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
22...	0523	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	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)
DEC										
31-31	<.01	.18	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
31-31	<.01	.23	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
FEB										
23...	<.01	.15	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	<.01	.02	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
MAR										
14-14	<.01	1.2	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN										
06...	<.01	.23	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
22...	<.01	.76	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
22...	<.01	.67	<.01	<.01	<.01	<.01	<.01	<.01	.01	.01

DATE	METHOMYL TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	PROPAZINE TOTAL (UG/L)
DEC										
31-31	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
31-31	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
FEB										
23...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
MAR										
14-14	<2.0	<.01	<.01	<.01	<.01	<.01	<.1	<.1	<.1	<.10
JUN										
06...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
22...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
22...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC										
31-31	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
31-31	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
FEB										
23...	--	--	--	--	<1	<.01	.62	<.01	<.01	<.01
23...	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
MAR										
14-14	<2.0	<2.0	.10	<.1	<1	<.01	.73	<.01	<.01	<.01
JUN										
06...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
22...	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
22...	--	--	--	--	<1	<.01	--	--	--	--

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 upstream from West Elm Creek, 2.4 mi upstream from Farm Road 1604, and 6.9 mi north of San Antonio International Airport.

DRAINAGE AREA.--2.33 mi².

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.

REMARKS.--Water-discharge records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480 ft³/s May 6, 1982 (gage height, 7.96 ft); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Apr. 13	1940	107	4.94	June 22	0635	*322	*7.03
June 6	1440	260	6.45	July 3	1740	302	6.84

No flow most of time.

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
FEB										
23...	1240	1.9	130	7.6	17.5	70	26	8.4	--	3.2
JUN										
22...	0507	12	79	--	--	100	29	--	--	5.2
22...	0607	250	72	--	--	100	24	--	--	3.5
22...	0704	280	96	--	--	50	26	--	--	--
22...	1053	24	143	7.3	24.5	100	4.1	7.3	90	3.0
JUL										
03...	1610	47	60	--	--	80	44	--	--	3.9
03...	1710	260	82	--	--	90	24	--	--	2.5
03...	1810	242	80	--	--	80	38	--	--	2.2

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)
FEB										
23...	K6200	88000	58	3	21	1.3	1.3	.0	4.6	55
JUN										
22..	26000	85000	33	0	12	.70	.70	.0	4.1	33
22...	16000	11000	--	--	--	--	--	--	--	28
22...	11000	32000	46	5	17	.83	1.2	.0	3.6	41
22...	K6000	K12000	70	--	26	1.2	1.1	.0	3.9	--
JUL										
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

08178645 EAST ELM CREEK AT SAN ANTONIO TX--Continued

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

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-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)
FEB									
23...	8.0	2.2	<.10	14	85	84	14	.27	.030
JUN									
22...	4.6	1.5	<.10	12	55	51	16	.28	.020
22...	--	--	--	--	--	70	20	.48	.020
22...	6.5	1.5	<.10	13	68	56	13	.18	.020
22...	8.9	1.5	<.10	17	--	8	5	--	.010
JUL									
03...	--	--	--	--	--	130	44	.38	.020
03...	--	--	--	--	--	54	36	.28	.020
03...	--	--	--	--	--	100	46	.57	.030

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
FEB									
23...	.30	.090	1.2	1.3	.70	.010	<.010	15	15
JUN									
22...	.30	.070	1.5	1.6	--	.080	--	13	--
22...	.50	.080	1.4	1.5	--	.090	--	20	--
22...	.20	.060	1.1	1.2	--	.080	--	16	--
22...	<.10	.030	.87	.90	--	.030	--	17	--
JUL									
03...	.40	.100	1.2	1.3	--	.120	--	--	--
03...	.30	.080	1.2	1.3	--	.080	--	--	--
03...	.60	.110	.79	.90	--	.070	--	--	--

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
FEB							
23...	1240	<1	10	<1	<10	4	58
JUN							
22...	0507	<1	16	<1	<10	2	68
22...	0607	<1	17	<1	<10	2	41

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB						
23...	3	7	.4	<1	<1	14
JUN						
22...	7	3	<.1	<1	<1	14
22...	3	2	.1	<1	<1	10

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
FEB										
23...	1240	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01
JUN										
22..	0507	<.1	<.10	<.01	<.1	<.01	<.01	<.01	--	<.01
22...	0607	<.1	<.10	<.01	<.1	<.01	<.01	<.01	--	<.01

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

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB										
23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN										
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.19	<.01
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.12	<.01

DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB									
23...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUN									
22...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
22...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01

08178650 ELM CREEK RESERVOIR SITE 11 AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

LOCATION.--Lat 29°36'11", long 98°25'50", Bexar County, Hydrologic Unit 12100301, located on left bank on upstream side of dam, 2.4 mi east of U.S. Highway 281, 0.7 mi upstream from highway 1604, and 8.0 mi upstream from mouth.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: March to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
FEB										
23...	1400	--	155	--	19.0	450	70	8.3	4.8	K26000
JUN										
07...	1514	10	149	--	--	120	43	8.1	3.6	K4000
22...	1750	--	112	--	--	90	43	--	2.7	10000
JUL										
05...	1505	--	131	7.8	31.0	--	--	--	--	--

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
FEB										
23...	K560000	69	11	26	1.0	2.8	.2	4.2	58	16
JUN										
07...	33000	69	13	26	1.1	1.3	.0	4.3	57	15
22...	30000	54	8	20	.90	.90	.0	4.0	46	12
JUL										
05...	--	61	2	23	.90	.90	.0	3.6	59	5.8

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
FEB									
23...	3.9	<.10	8.9	98	76	4	.47	.030	.50
JUN									
07...	2.0	<.10	9.9	94	76	24	.36	.040	.40
22...	1.1	<.10	12	79	45	7	.47	.030	.50
JUL									
05...	1.4	<.10	12	83	--	--	.27	.030	.30

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
FEB									
23...	.49	.090	2.2	2.3	.40	.270	.080	16	11
JUN									
07...	--	.130	.77	.90	--	.160	--	13	--
22...	--	.090	1.1	1.2	--	.430	--	16	--
JUL									
05...	--	.090	.71	.80	--	.080	--	9.1	8.9

08178650 ELM CREEK RESERVOIR NO.11 AT SAN ANTONIO, TX--Continued

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

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
FEB							
23...	1400	<1	11	<1	<10	2	78
JUN							
07...	1514	2	13	<1	<10	3	67
22...	1750	<1	9	<1	<10	2	77
JUL							
05...	1505	<1	22	<1	<10	3	77

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB						
23...	<1	2	1.7	<1	<1	11
JUN						
07...	5	15	<.1	<1	<1	9
22...	2	4	<.1	<1	<1	8
JUL						
05...	4	10	<.1	<1	<1	18

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
FEB										
23...	1400	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.06	<.01
JUN										
07...	1514	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.35	<.01
22...	1750	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.09	<.01
JUL										
05...	1505	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.10	<.01

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB										
23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN										
07..	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.10	<.01
JUL										
05...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB									
23...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUN									
07..	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01
22...	<.01	.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUL									
05...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01

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

LOCATION.--Lat 29°30'57", long 98°25'51", Bexar County, Hydrologic Unit 12100301, on right bank at downstream side of eastbound bridge on Interstate Highway 410 in San Antonio, 1.0 mi west of Northeast School, 1.1 mi upstream from Perrin-Beitel Creek, and 2.7 mi east of San Antonio International Airport.

DRAINAGE AREA.--137 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder with concrete control. Datum of gage is 684.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of eleven floodwater-retarding structures with a combined detention capacity of 26,770 acre-ft. These structures control runoff from 74.6 mi² above this station. Recording rain gage located at station with four additional recording rain gages located in watershed.

AVERAGE DISCHARGE.--25 years, 9.25 ft³/s (6,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s May 12, 1972 (gage height, 15.22 ft), from rating curve extended above 8,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1853, 23 to 24 ft in October 1913. Flood in September 1921 reached a stage of 18 ft, and flood of Sept. 27, 1946, reached a stage of 18.2 ft, and are the second and third highest since 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
June 6	1800	1,910	7.21	July 3	1930	*7,550	*10.64
June 22	1000	2,580	7.90	Sept. 29	1700	564	4.93

Minimum daily discharge, no flow for many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	19	.16	5.3	.38	.56	.02	1.0	.34	.03
2	.00	.00	.00	4.3	.17	2.4	.18	.26	.00	3.6	.14	.00
3	.00	.00	.00	3.2	.24	.36	.16	.32	.00	1360	.11	.00
4	.00	.08	.19	3.9	.31	.27	.16	.19	.00	679	.09	.06
5	.00	.09	.96	2.9	.48	.17	.16	.14	7.4	79	.07	.22
6	.08	.07	.10	2.4	.29	.14	.14	.65	457	26	.07	3.5
7	24	.07	.04	2.3	.19	.14	.23	4.3	213	15	.06	.18
8	7.1	.07	.02	2.2	.16	.40	2.1	4.3	35	12	.05	.10
9	.95	.06	.00	2.0	.16	1.5	2.9	.78	15	11	.03	.06
10	.42	.06	.00	1.8	.16	1.6	11	.16	7.5	10	1.0	.01
11	31	.04	.05	.88	.26	1.8	9.5	.12	7.6	13	1.5	7.6
12	13	.04	.09	2.5	.64	1.8	4.5	.11	7.1	19	1.5	1.1
13	4.5	.05	5.1	4.3	.11	1.8	22	.11	5.6	25	1.6	.96
14	56	.05	.29	22	3.1	52	45	1.5	1.3	14	.32	.24
15	11	4.8	1.0	19	.32	25	9.6	.27	.16	9.7	.11	.09
16	3.0	5.6	27	16	.17	10	5.1	.15	.11	6.7	.06	.06
17	.26	.19	10	8.9	.13	5.9	3.9	12	.09	1.3	.02	.02
18	.10	1.9	2.7	3.2	.11	4.5	3.4	5.9	7.5	.85	.00	4.8
19	.44	.19	.46	3.3	.11	4.0	3.0	3.4	11	.75	.00	2.3
20	.04	.11	.17	1.3	.11	9.2	2.6	2.8	2.5	2.4	.00	.17
21	.00	.05	.17	.26	1.7	4.8	2.6	2.6	5.0	2.6	.00	.09
22	.03	.01	.18	.40	3.2	3.7	2.6	1.9	984	2.6	.03	.05
23	1.9	.00	.22	.41	43	3.4	2.5	.31	415	2.5	.13	.01
24	.57	4.8	.24	1.5	30	3.3	2.3	.83	23	2.6	.96	.00
25	.19	19	.40	1.6	5.4	3.2	7.0	.86	20	2.5	4.2	.00
26	4.3	.82	.28	1.9	3.2	2.9	13	.22	11	2.2	.12	.00
27	1.1	.13	.13	6.4	2.6	2.9	4.7	.15	7.9	1.9	.20	.00
28	.22	.07	.47	2.7	8.1	2.9	3.6	.12	4.8	.31	.42	.44
29	.10	.04	.16	2.5	---	2.9	5.4	.10	1.9	.14	.38	192
30	.05	.01	28	.50	---	2.3	3.2	.07	1.8	.60	.37	32
31	.02	---	65	.21	---	1.9	---	.03	---	.13	.10	---
TOTAL	160.37	38.40	143.42	143.76	104.58	162.48	172.91	45.21	2252.28	2307.38	13.98	246.09
MEAN	5.17	1.28	4.63	4.64	3.74	5.24	5.76	1.46	75.1	74.4	.45	8.20
MAX	56	19	65	22	43	52	45	12	984	1360	4.2	192
MIN	.00	.00	.00	.21	.11	.14	.14	.03	.00	.13	.00	.00
AC-FT	318	76	284	285	207	322	343	90	4470	4580	28	488

CAL YR 1984 TOTAL 488.49 MEAN 1.33 MAX 65 MIN .00 AC-FT 969
WTR YR 1985 TOTAL 5790.86 MEAN 15.9 MAX 1360 MIN .00 AC-FT 11490

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: November 1971 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: May 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT												
09...	1150	.77	190	7.8	23.5	350	190	6.0	72	3.9	K59	K5500
MAR												
14...	0908	60	261	7.8	13.5	500	510	9.0	88	4.0	17000	88000
JUN												
22...	1050	31	122	7.8	24.5	200	400	7.5	92	1.4	K50000	--
24...	1455	22	448	7.6	27.0	30	51	6.2	79	--	6200	9400

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT												
09...	82	18	30	1.6	4.8	.2	4.7	64	22	5.7	.30	6.1
MAR												
14...	97	33	35	2.3	10	.5	8.3	64	41	11	.40	7.5
JUN												
22...	54	10	20	.90	2.2	.1	4.2	44	15	2.9	<.10	8.3
24...	190	38	70	3.8	11	.4	16	153	59	12	.40	15

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
09...	110	122	24	.38	.020	.40	.100	.40	.50	.310	8.8
MAR											
14...	150	614	102	.77	.030	.80	.050	1.2	1.2	.540	11
JUN											
22...	80	548	172	.38	.020	.40	.070	1.0	1.1	.500	24
24...	280	60	15	.36	.040	.40	.180	.72	.90	.170	7.3

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
OCT							
09...	1150	2	35	<1	20	4	48
MAR							
14...	0908	1	37	<1	<10	2	31
JUN							
22...	1050	5	5	18	<10	15	150

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT						
09...	5	<1	<.1	<1	<1	11
MAR						
14...	<1	<1	<.1	<1	<1	10
JUN						
22.	8	6	<.1	<1	<1	13

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

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. 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)	DIELDRIN TOTAL (UG/L)
OCT										
09...	1150	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.10	<.01
MAR										
14...	0908	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.37	.01
JUN										
22...	1050	<.1	<.10	<.01	.1	<.01	<.01	<.01	.50	<.01

DATE	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)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
OCT										
09...	<.01	<.01	<.01	<.01	<.01	<.01	.04	<.01	<.01	<.01
MAR										
14...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN										
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.19	<.01

DATE	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT									
09..	<.01	<.01	<.1	<1	<.01	.05	<.01	<.01	<.01
MAR									
14...	<.01	<.01	<.1	<1	<.01	.01	<.01	<.01	<.01
JUN									
22...	<.01	.01	<.1	<1	<.01	.03	<.01	<.01	<.01

08178880 MEDINA RIVER AT BANDERA, TX

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank, 40 ft downstream from centerline of State Highway 173 at Bandera, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

DRAINAGE AREA.--427 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,189.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-19, Dec. 31, 1982, to Jan. 16, 1983, Jan. 28, Feb. 4 to Mar. 6, July 7-10, Nov. 10-19, Dec. 1, 18-22, Dec. 24, 1983, to Jan. 23, 1984, Jan. 26 to Feb. 29, Mar. 2-7, Mar. 9 to Apr. 2, and Apr. 6-15, 17, 19-22, 1984. Records good except those for estimated daily discharges, which are fair. Several small diversions upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft³/s Dec. 31, 1984 (gage height, 16.09 ft); minimum daily, 2.2 ft³/s Aug. 7, 11, 13, 14, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1880, 46.62 ft Aug. 2, 1978.

EXTREMES FOR WATER YEAR 1983.--Maximum discharge, 708 ft³/s June 6 at 1000 hours (gage height, 6.98 ft); minimum daily, 14 ft³/s Sept. 22-30.

EXTREMES FOR WATER YEAR 1984.--Maximum discharge, 376 ft³/s Nov. 5 at 1900 hours (gage height, 5.86 ft); minimum daily, 2.2 ft³/s Aug. 7, 11, 13, 14.

EXTREMES FOR CURRENT YEAR.-Maximum discharge, 10,400 ft³/s Dec. 31 at 1100 hours (gage height, 16.09 ft); minimum daily, 4.9 ft³/s Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	26	53	37	37	31	61	36	48	103	29	18
2	30	30	49	43	37	30	56	34	47	97	27	18
3	31	32	46	39	34	29	55	34	46	92	25	16
4	32	28	46	34	30	29	54	33	46	87	25	17
5	34	30	47	32	45	58	53	33	194	80	25	20
6	37	30	46	34	39	120	53	32	262	76	26	20
7	43	30	45	35	32	74	53	34	148	71	29	21
8	61	29	43	35	34	70	51	32	124	67	32	18
9	49	29	41	35	38	65	50	28	106	63	44	43
10	41	29	45	34	35	62	50	28	94	59	38	45
11	35	29	46	33	43	58	50	30	85	56	32	39
12	39	27	45	32	54	54	49	33	82	54	36	34
13	46	25	44	31	48	52	48	38	75	50	31	29
14	37	26	42	30	37	52	46	37	84	50	27	26
15	33	26	41	30	47	59	45	39	167	53	25	25
16	30	27	39	33	66	62	44	39	305	56	24	24
17	29	28	39	38	100	64	46	41	243	61	24	23
18	28	28	39	43	70	58	45	41	195	56	23	21
19	27	29	38	43	44	54	42	36	176	59	23	23
20	26	28	38	42	39	53	42	120	158	56	23	21
21	26	29	37	48	45	51	41	104	141	52	23	17
22	26	29	37	47	39	48	42	88	128	49	22	14
23	26	30	37	46	37	53	43	68	119	46	23	14
24	26	31	38	43	36	53	42	60	112	42	25	14
25	26	31	37	42	35	52	40	57	217	41	27	14
26	26	52	36	40	34	97	37	54	158	38	26	14
27	26	91	40	39	34	69	37	52	165	37	25	14
28	26	100	41	38	33	66	36	51	143	34	22	14
29	25	74	42	37	---	62	36	50	125	33	21	14
30	25	60	39	37	---	62	36	49	113	31	17	14
31	27	---	35	38	---	62	---	48	---	30	18	---
TOTAL	1003	1093	1291	1168	1202	1809	1383	1459	4106	1779	817	644
MEAN	32.4	36.4	41.6	37.7	42.9	58.4	46.1	47.1	137	57.4	26.4	21.5
MAX	61	100	53	48	100	120	61	120	305	103	44	45
MIN	25	25	35	30	30	29	36	28	46	30	17	14
AC-FT	1990	2170	2560	2320	2380	3590	2740	2890	8140	3530	1620	1280

CAL YR 1982	TOTAL	-	MEAN	-	MAX	-	MIN	-	AC-FT	-
WTR YR 1983	TOTAL	17754	MEAN	48.6	MAX	305	MIN	14	AC-FT	35220

08178880 MEDINA RIVER AT BANDERA, TX--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	34	56	39	74	34	30	20	15	9.1	5.8	5.2
2	16	35	51	44	68	37	27	22	15	8.3	4.5	7.0
3	16	34	56	55	62	37	28	21	15	7.9	3.8	6.6
4	16	43	56	46	60	37	29	18	15	7.2	3.7	14
5	15	189	51	42	58	36	30	18	16	7.0	3.9	11
6	15	291	48	40	60	35	36	17	55	7.7	3.0	9.6
7	14	197	45	49	65	37	41	16	25	7.0	2.2	8.5
8	14	157	45	110	69	38	50	15	19	6.1	2.8	7.5
9	108	142	45	170	74	36	57	14	20	5.5	3.1	6.6
10	54	135	45	140	64	44	64	14	22	5.5	3.5	6.6
11	37	122	43	120	68	50	60	15	21	4.7	2.2	5.7
12	39	110	39	96	78	60	50	13	22	5.0	2.5	5.2
13	31	102	39	88	67	74	40	12	21	5.2	2.2	4.7
14	33	98	38	77	62	80	32	13	19	4.6	2.2	4.7
15	33	92	36	73	59	66	28	13	17	4.0	2.5	5.2
16	31	86	36	68	55	61	26	14	17	3.8	3.9	4.7
17	31	80	36	66	52	56	28	16	14	3.5	7.0	4.3
18	30	76	35	66	50	54	26	23	14	3.5	6.6	4.3
19	28	70	34	64	50	52	23	22	14	3.7	3.9	3.9
20	49	67	35	60	48	50	21	20	13	5.2	3.5	4.3
21	92	67	37	58	45	48	19	21	12	6.5	3.5	8.0
22	107	67	42	58	50	46	21	29	11	5.5	4.7	8.5
23	80	85	34	60	44	40	22	28	11	4.7	3.9	9.6
24	62	80	32	54	41	34	22	25	12	3.9	3.9	9.1
25	53	73	35	54	41	31	21	24	9.0	6.0	3.1	7.0
26	46	69	35	52	43	30	22	19	8.7	8.6	3.1	6.2
27	41	63	37	52	37	29	21	18	8.5	12	4.3	5.7
28	38	63	43	54	36	27	19	20	8.2	13	4.7	6.2
29	37	61	49	58	36	26	20	19	9.6	7.5	4.3	7.0
30	36	61	44	60	---	26	20	18	9.6	5.7	4.3	7.0
31	35	---	38	65	---	27	---	16	---	5.8	4.3	---
TOTAL	1253	2849	1295	2138	1616	1338	933	573	488.6	193.7	116.9	203.9
MEAN	40.4	95.0	41.8	69.0	55.7	43.2	31.1	18.5	16.3	6.25	3.77	6.80
MAX	108	291	56	170	78	80	64	29	55	13	7.0	14
MIN	14	34	32	39	36	26	19	12	8.2	3.5	2.2	3.9
AC-FT	2490	5650	2570	4240	3210	2650	1850	1140	969	384	232	404

CAL YR 1983 TOTAL 19764.0 MEAN 54.1 MAX 305 MIN 14 AC-FT 39200
WTR YR 1984 TOTAL 12998.1 MEAN 35.5 MAX 291 MIN 2.2 AC-FT 25780

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	58	29	1010	176	252	231	234	176	95	40	27
2	6.2	50	28	816	176	242	224	191	172	91	40	25
3	6.7	47	26	659	172	238	221	170	168	94	42	20
4	7.1	43	26	593	170	229	212	158	163	96	46	20
5	7.1	37	31	549	169	218	211	147	159	96	43	22
6	6.8	32	31	496	163	213	201	138	181	94	40	87
7	6.6	31	31	453	151	217	191	129	224	90	42	97
8	4.9	30	31	427	146	214	190	125	176	97	39	69
9	5.4	30	32	391	144	205	186	121	168	94	38	53
10	8.1	28	31	360	142	198	187	120	164	89	38	45
11	17	26	29	324	136	192	185	118	157	85	36	39
12	14	26	29	327	130	188	178	126	151	210	38	39
13	11	26	51	324	128	187	180	129	148	146	38	50
14	22	26	54	285	124	373	186	138	146	112	36	39
15	14	25	53	217	119	295	179	119	145	98	36	35
16	8.8	25	162	250	117	294	166	113	139	91	35	34
17	6.5	25	117	294	114	285	158	1120	129	81	35	34
18	6.0	28	120	299	112	286	152	547	167	76	34	34
19	8.2	28	110	285	113	282	148	424	130	69	34	33
20	11	27	102	269	111	288	146	358	123	69	30	33
21	11	29	96	245	115	277	143	332	117	72	31	32
22	13	29	87	233	117	273	143	313	126	65	32	33
23	24	28	80	228	431	268	137	289	128	62	32	33
24	23	26	75	221	342	260	127	271	131	62	32	31
25	50	32	69	216	262	256	121	261	122	59	31	31
26	54	31	65	208	240	252	119	247	116	54	31	30
27	100	36	68	210	223	371	118	230	110	52	31	29
28	91	34	91	204	231	291	116	219	106	49	27	29
29	99	33	87	203	---	270	214	206	102	48	26	96
30	81	31	96	199	---	260	235	192	99	43	26	134
31	68	---	3710	180	---	244	---	183	---	41	28	---
TOTAL	797.9	957	5647	10975	4774	7918	5205	7468	4343	2580	1087	1313
MEAN	25.7	31.9	182	354	171	255	174	241	145	83.2	35.1	43.8
MAX	100	58	3710	1010	431	373	235	1120	224	210	46	134
MIN	4.9	25	26	180	111	187	116	113	99	41	26	20
AC-FT	1580	1900	11200	21770	9470	15710	10320	14810	8610	5120	2160	2600

CAL YR 1984 TOTAL 15003.0 MEAN 41.0 MAX 3710 MIN 2.2 AC-FT 29760
WTR YR 1985 TOTAL 53064.9 MEAN 145 MAX 3710 MIN 4.9 AC-FT 105300

08178880 MEDINA RIVER AT BANDERA, TX--Continued

WATER-QUALITY RECORDS

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank 40 ft downstream from centerline of State Highway 173, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1982 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
FEB												
26..	1020	1120	501	8.8	14.0	10	7.0	7.6	75	.7	--	370
APR												
30...	1255	247	502	7.8	23.0	25	45	8.2	99	1.6	K1100	K2300
AUG												
22...	1300	245	568	7.9	29.5	7	2.0	7.2	98	.9	K32	K22

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
FEB												
26...	280	87	84	18	5.8	.2	1.1	197	68	11	.20	9.4
APR												
30...	260	85	79	16	5.8	.2	1.6	179	77	9.8	.30	10
AUG												
22..	280	110	79	21	8.5	.2	1.4	172	110	12	.20	13

DATE	SOLIDS, SUM OF 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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
FEB											
26...	320	10	5	.89	.010	.90	.120	.48	.60	.060	1.3
APR											
30...	310	56	21	--	<.010	.70	.050	.55	.60	.010	2.0
AUG											
22..	350	8	6	--	<.010	.10	.050	.15	.20	<.010	2.0

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	DIS-SOLVED (UG/L AS FE)
FEB								
26...	1020	<1	27	1	<10	2	8	
AUG								
22...	1300	<1	50	<1	<10	<1	4	

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB						
26...	<1	<1	3.9	<1	1	22
AUG						
22...	<1	3	<.1	<1	<1	21

08178880 MEDINA RIVER AT BANDERA, TX--Continued

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. 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)	DIELDRIN TOTAL (UG/L)
FEB										
26...	1020	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01
AUG										
22...	1300	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01

DATE	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)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
FEB										
26...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG										
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB									
26...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
AUG									
22...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX

LOCATION.--Lat 29°32'24", long 98°56'01", Medina County, Hydrologic Unit 12100302, at gate-operating platform, 576 ft from left end of Medina Dam on Medina River, 4.2 mi upstream from Medina diversion dam, 13 mi north of Castroville, 28 mi west of San Antonio, and 70.4 mi upstream from mouth. Water-quality sampling site at the center of low-water bridge 0.6 mi downstream.

DRAINAGE AREA.--634 mi².

PERIOD OF RECORD.--May 1913 to current year. Prior to October 1965, monthend contents only.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Nonrecording gage read once daily if stage changing materially, otherwise intermittently. Datum of gage is 7.80 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a gravity-type concrete dam, 1,580 ft long. The dam was completed and storage began May 7, 1913. The uncontrolled spillway is a cut through natural rock 880 ft long, with a 3-foot-wide cutoff wall, located near right end of dam. The dam and lake are owned and operated by Bexar-Medina-Atascosa Counties Water Improvement District No. 1, that has a permit (from the Texas Department of Water Resources) to irrigate 150,000 acres annually. An undetermined amount of water from the lake enters the Edwards and associated limestones in the Balcones Fault Zone, part of which is above and part below the dam. Water is released downstream to Medina Diversion Reservoir where it is diverted into Medina Canal by the Water District. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam	1,084.0	-
Crest of spillway	1,072.0	254,000
Water-supply outlet pipes (invert)	966.5	4,780
Lowest gated outlet (invert)	920.0	0

COOPERATION.--Capacity table, based on survey made prior to June 1912, and gage-height record were provided by the Bexar-Medina-Atascosa Counties Water Improvement District No. 1.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 288,800 acre-ft Sept. 16, 1919, (gage height, 1,078.0 ft); minimum observed since lake first filled, 780 acre-ft about Apr. 11, 1948, (gage height, 944.0 ft).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 145,700 acre-ft July 13, 14, (gage height, 1,048.8 ft); minimum, 65,840 acre-ft Oct. 10, (gage height, 1,021.4 ft).

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

1,021.0	64,910	1,035.0	100,200	1,045.0	132,200
1,025.0	74,220	1,040.0	114,500	1,049.0	146,400
1,030.0	85,860				

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68170	68630	67930	80740	96460	104800	121600	130500	141400	143600	141800	130800
2	67930	68870	67930	81900	96460	105300	122300	130500	141400	143600	141400	130500
3	67470	68630	68170	81900	96750	105900	122700	130800	141400	143600	141400	130100
4	67240	69100	68400	82370	97040	106500	123000	131200	141400	143600	141100	129400
5	67000	68630	68630	83070	97900	107100	123000	131200	141100	143600	140700	129000
6	66770	68630	67930	83530	97610	107100	123700	131200	141100	143600	140000	129000
7	66300	68630	67930	84000	98180	107600	124400	131200	141400	143900	139700	128700
8	66070	68630	67930	84230	98470	107900	125100	131200	142200	143600	139300	128300
9	66070	68400	67930	84700	98760	108500	124800	131500	142200	143900	139300	128300
10	65840	68170	67930	85390	99040	108500	124800	131500	142200	143900	139000	128000
11	66300	67930	68170	86150	99330	108800	125100	131500	142200	143900	138600	127600
12	66300	67700	67930	86430	99330	109100	125500	131500	143200	144300	137900	127600
13	66300	67700	68170	87010	99620	109400	125900	131200	142900	145700	137500	127600
14	66300	67700	68170	87010	99620	110500	126200	131500	142500	145700	137200	127300
15	66300	67700	68400	87580	99620	111700	126600	131500	142900	145300	137200	127300
16	66300	68170	68630	87870	99330	112500	126900	130800	142900	145300	136500	127300
17	66540	67930	68870	88440	99330	113400	127300	131900	142500	145300	136500	127300
18	66300	67930	69100	89010	99330	113400	127300	135800	142500	145000	135800	126900
19	66070	67930	69330	89870	99330	113700	127600	136500	143600	145000	135400	126900
20	66070	67930	69330	91020	99330	114200	128000	137200	143600	144600	134400	126600
21	66540	67930	69560	91020	99620	114500	128000	137900	143600	144600	134400	126600
22	66300	67700	69560	91590	99620	115900	128000	138300	143600	144300	134400	126200
23	66770	67700	69800	92170	100200	116300	128300	139000	143600	143900	133700	125900
24	66770	67700	69800	92740	101900	117400	128700	139300	143900	143900	133700	126200
25	66540	67700	69800	93020	102500	117700	128700	139700	143900	143600	133300	125500
26	67000	67930	70030	93600	103100	118100	128700	140400	143900	143200	132900	125100
27	67700	67930	70030	94170	103600	118800	128700	140400	143900	143200	132600	124800
28	67930	67930	70260	94740	103900	119800	129400	140700	143900	143200	131900	124800
29	67930	67930	70500	94740	---	120500	129400	141100	143900	142500	132200	125100
30	68170	67930	70500	95320	---	120900	129800	141100	143900	142500	131900	125900
31	68170	---	70960	95600	---	121600	---	141400	---	142200	131500	---
MAX	68170	69100	70960	95600	103900	121600	129800	141400	143900	145700	141800	130800
MIN	65840	67700	67930	80740	96460	104800	121600	130500	141100	142200	131500	124800
(†)	1022.4	1022.3	1023.6	1033.4	1036.3	1042.0	1044.3	1047.6	1048.3	1047.8	1044.8	1043.2
(‡)	-460	-240	+3030	+24640	+8300	+17700	+8200	+11300	+2500	-1700	-10700	-5600

CAL YR 1984 MAX 149600 MIN 65840 (‡) +57270
WTR YR 1985 MAX 145700 MIN 65840 (‡) -78640

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

08180000 MEDINA CANAL NEAR RIOMEDINA, TX

LOCATION (revised).--Lat 29°30'19" long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal 350 ft downstream from head of canal and diversion dam, 4.6 mi downstream from Medina Dam, 4.7 mi north of Riomedina, and 25 mi northwest of San Antonio.

PERIOD OF RECORD. -March 1922 to May 1934, July 1957 to current year.

REVISED RECORDS.--WSP 568: 1922. WSP 1712: 1922(M), 1924, 1926.

GAGE.--Water-stage recorder. Elevation of gage is 910 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those for Feb. 13 to Mar. 31 and May 1 to July 27, which are fair. Station is above all diversions from canal. Canal diverts from right end of Medina Diversion Dam 1,900 ft upstream from gage for irrigation downstream near Lacoste and Natalia. Prior to November 1984, double-barrel flume in canal 54 ft downstream from gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--39 years (water years 1923-33, 1958-85), 42.6 ft³/s (30,860 acre-ft/yr).

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	.43	.00	.00	.00	.00	44	.00	98	80	57	22
2	67	.00	.00	.00	.00	.00	48	00	98	117	57	22
3	58	.00	.00	.00	.00	.00	42	14	98	42	57	22
4	63	.00	.00	.00	.00	.00	42	30	133	13	48	26
5	67	.00	.00	.00	.00	.00	42	26	76	.00	48	32
6	68	.00	.00	.00	.00	16	42	33	.00	.00	48	30
7	43	.00	.00	.00	.00	50	33	38	.00	.00	38	30
8	48	4.2	.00	.00	.00	57	26	71	00	16	38	30
9	8.9	18	.00	.00	.00	57	35	113	16	33	38	30
10	29	28	.00	.00	.00	27	20	166	40	42	38	29
11	5.2	34	.00	.00	.00	7.6	.00	166	47	71	38	26
12	.00	33	.00	.00	.00	17	00	166	57	98	38	26
13	.00	24	.00	.00	13	22	.00	113	71	88	38	13
14	.00	14	.00	.00	26	11	00	94	71	117	38	.00
15	.00	6.5	.00	.00	28	.00	.00	117	101	140	37	.00
16	.00	2.0	.00	.00	30	.00	.00	117	140	121	37	2 3
17	.00	.00	.00	.00	32	.00	.00	38	140	107	37	13
18	.00	.00	.00	.00	33	.00	.00	.00	140	88	37	19
19	.00	.00	.00	.00	33	.00	.00	.00	140	121	37	17
20	.00	.00	.00	.00	36	.00	.00	.00	117	128	37	17
21	4.1	.00	.00	.00	33	.00	18	.00	98	113	37	13
22	23	.00	.00	.00	38	.00	38	.00	66	135	26	12
23	15	.00	.00	.00	38	.00	52	.00	47	153	26	26
24	1.4	.00	.00	.00	19	.00	71	.00	47	153	26	52
25	.00	.00	.00	.00	.00	28	71	.00	54	153	26	57
26	.00	.00	.00	.00	.00	57	16	.00	71	153	26	63
27	.00	.00	.00	.00	.00	63	.00	38	66	166	26	63
28	.00	.00	.00	.00	.00	57	.00	52	66	63	26	63
29	.00	.00	.00	.00	---	47	.00	52	80	57	26	26
30	.31	.00	.00	.00	---	33	00	63	80	57	26	.00
31	.89	---	.00	.00	---	33	---	80	---	57	26	---
TOTAL	575.80	164.13	.00	.00	359.00	582.60	640.00	1587.00	2258.00	2682.00	1138	781.30
MEAN	18.6	5.47	.000	.000	12.8	18.8	21.3	51.2	75.3	86.5	36.7	26.0
MAX	74	34	.00	.00	38	63	71	166	140	166	57	63
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	26	.00
AC-FT	1140	326	.00	.00	712	1160	1270	3150	4480	5320	2260	1550

CAL YR 1984 TOTAL 26793.93 MEAN 73.2 MAX 160 MIN .00 AC-FT 53150
WTR YR 1985 TOTAL 10767.83 MEAN 29.5 MAX 166 MIN .00 AC-FT 21360

08181400 HELOTES CREEK AT HELOTES, TX

LOCATION.--Lat 29°34'42", long 98°41'29", Bexar County, Hydrologic Unit 12100302, 42 ft to left and 44 ft downstream from centerline of bridge on State Highway 16, 0.1 mi northwest of Helotes, and 8.6 mi upstream from mouth.

DRAINAGE AREA.--15.0 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WRD TX-73-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 1,014.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Feb. 22-25. Records fair. An undetermined amount of flow is diverted for domestic use above station, and some flow enters the Edwards and associated limestones through the Balcones fault zone in the vicinity of the gage. A recording rain gage is located at station and two additional recording rain gages are located in the watershed above station.

AVERAGE DISCHARGE.--17 years, 4.02 ft³/s (3.64 in/yr), 2,910 acre-ft/yr.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Mar. 14	0600	197	2.55	June 5	2300	*3,910	*7.35

Minimum daily discharge, no flow most of year.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	12	6.4	.00	.00	.78	.00	.00
2	.00	.00	.00	.00	.00	11	4.7	.00	.00	.56	.00	.00
3	.00	.00	.00	.00	.00	11	2.5	.00	.00	2.7	.00	.00
4	.00	.00	.00	.00	.00	7.3	.81	.00	.00	2.7	.00	.00
5	.00	.00	.00	.00	.00	4.3	.00	.00	159	1.8	.00	.00
6	.00	.00	.00	.00	.00	2.9	.00	.00	361	1.9	.00	.00
7	1.5	.00	.00	.00	.00	3.1	.00	.00	136	1.5	.00	.00
8	.00	.00	.00	.00	.00	.99	.00	.00	73	1.3	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	44	1.1	.00	.00
10	.00	.00	.00	.00	.00	.00	.73	.00	26	.81	.00	.00
11	1.1	.00	.00	.00	.00	.00	1.3	.00	18	.68	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	13	4.2	.00	.00
13	.00	.00	.00	.00	.00	.76	.22	.00	10	.89	.00	.02
14	.03	.00	.00	.10	.00	119	1.2	.00	7.9	.44	.00	.00
15	.00	.00	.00	.00	.00	132	.89	.00	6.6	.21	.00	.00
16	.00	.00	.00	4.4	.00	120	.00	.00	5.1	.09	.00	.00
17	.00	.00	.00	9.7	.00	95	.00	.28	4.1	.02	.00	.00
18	.00	.00	.00	9.1	.00	79	.00	.00	5.7	.00	.00	.00
19	.00	.00	.00	7.5	.00	65	.00	.00	5.5	.00	.00	.00
20	.00	.00	.00	3.9	.00	71	.00	.00	3.2	.00	.00	.00
21	.00	.00	.00	2.1	.00	49	.00	.00	3.0	.00	.00	.00
22	.14	.00	.00	.84	49	41	.00	.00	3.0	.00	.00	.00
23	.02	.00	.00	.10	58	33	.00	.00	3.8	.00	.00	.00
24	.15	.11	.00	.00	32	27	.00	.08	3.6	.00	.00	.00
25	.04	.00	.00	.00	20	24	.00	.00	3.1	.00	.03	.00
26	9.2	.00	.00	.00	11	21	.00	.00	2.8	.00	.00	.00
27	12	.00	.00	.00	9.6	21	.00	.00	2.4	.00	.00	.00
28	2.1	.00	.00	.00	15	16	.00	.00	2.0	.00	.00	.00
29	.00	.00	.00	.00	---	13	.61	.00	1.5	.00	.00	.70
30	.00	.00	.00	.00	---	13	.09	.00	1.1	.00	.00	.00
31	.00	---	.00	.00	---	8.3	---	.00	---	.00	.00	---
TOTAL	26.28	.11	.00	37.74	194.60	1000.65	19.45	.36	904.40	21.68	.03	.72
MEAN	.85	.004	.000	1.22	6.95	32.3	.65	.012	30.1	.70	.001	.024
MAX	12	.11	.00	9.7	58	132	6.4	.28	361	4.2	.03	.70
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.06	.000	.000	.08	.46	2.15	.04	.001	2.01	.05	.000	.002
IN.	.07	.00	.00	.09	.48	2.48	.05	.00	2.24	.05	.00	.00
AC-FT	52	.2	.00	75	386	1980	39	.7	1790	43	.06	1.4

CAL YR 1984	TOTAL	27.32	MEAN .075	MAX 12	MIN .00	CFSM .005	IN .07	AC-FT 54		
WTR YR 1985	TOTAL	2206.02	MEAN 6.04	MAX 361	MIN .00	CFSM .40	IN 5.47	AC-FT 4380		

08183900 CIBOLO CREEK NEAR BOERNE, TX

LOCATION.--Lat 29°46'26", long 98°41'50" Kendall County, Hydrologic Unit 12100304, on left bank 0.6 mi upstream from Southern Pacific Lines bridge, 0.9 mi downstream from Menger Creek, and 2.5 mi southeast of Boerne.

DRAINAGE AREA.--68.4 mi².

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

REVISED RECORDS.--WDR TX-73-1 1964-65, 1966(P), 1968-72(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,339.61 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 31 to Jan. 22. Records good except those for estimated daily discharges, which are poor. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 8,850 acre-ft. These structures control runoff from 34.0 mi². Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 27.2 ft³/s (5.40 in/yr), 19,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft³/s Sept. 27, 1964 (gage height, 19.15 ft, from floodmark) from rating curve extended above 2,500 ft³/s on basis of slope-area measurement at 12,000 ft³/s and contracted-opening measurement of 36,400 ft³/s; no flow at times in 1962-64, 1966-67, 1971, and 1984.
Maximum stage since at least 1892 that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Second highest flood in 1952 reached a stage of 16.3 ft (discharge, 25,600 ft³/s) from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	Unknown	*3,000	*Unknown	June 22	1700	1,510	4.83
Feb. 23	0200	900	4.20	Sept. 29	1030	1,360	4.88

Minimum daily discharge, 0.03 ft³/s Oct. 1, 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	6.9	3.3	250	13	39	39	26	12	33	28	3.1
2	.04	3.4	3.7	80	13	32	37	23	11	30	22	2.4
3	.05	3.2	3.6	50	13	31	36	20	10	36	19	2.3
4	.04	3.1	3.7	38	14	31	36	19	10	48	19	2.0
5	.05	3.1	4.3	30	14	29	36	18	22	36	18	2.2
6	.03	3.0	3.2	25	14	28	35	17	174	31	15	4.7
7	.14	2.8	3.2	21	13	34	34	17	32	28	13	2.7
8	.15	3.0	3.5	18	12	33	33	18	23	25	13	2.3
9	.06	3.1	4.1	16	12	33	33	23	19	24	11	2.0
10	.08	3.1	4.2	14	12	33	37	21	16	22	11	1.9
11	1.0	2.9	3.9	12	12	32	40	24	14	20	11	3.4
12	.43	3.0	3.8	11	11	29	36	22	13	244	9.6	3.4
13	.32	3.0	7.5	9.5	11	56	38	23	12	114	8.9	3.0
14	5.9	3.0	4.5	8.2	12	150	42	26	11	65	8.6	2.7
15	.80	3.2	5.5	9.2	11	73	37	20	11	45	7.7	2.1
16	.42	3.3	42	10	11	66	35	18	10	36	7.2	1.7
17	.33	3.4	6.5	12	11	57	34	80	9.5	30	7.3	1.5
18	.31	5.8	5.5	13	11	53	32	51	22	26	7.0	2.4
19	.28	3.4	4.7	15	11	51	31	36	54	24	5.4	2.0
20	.24	2.9	4.4	14	11	57	32	27	30	22	5.1	1.4
21	.32	3.0	4.4	13	13	51	30	23	24	18	4.8	1.0
22	.57	3.1	4.3	12	13	50	31	20	225	18	5.2	1.1
23	1.4	3.1	4.2	14	210	52	30	17	92	19	4.2	2.0
24	1.6	6.7	4.2	14	45	52	28	37	57	18	3.9	2.1
25	1.7	7.3	4.0	14	37	53	27	33	96	17	4.2	1.9
26	25	3.5	4.4	14	31	51	28	25	104	15	6.5	1.6
27	11	3.1	6.2	15	28	58	27	20	64	16	5.5	1.4
28	5.4	2.9	5.4	14	41	59	27	17	50	18	5.1	5.1
29	3.1	3.0	5.1	14	---	55	73	15	41	22	4.7	195
30	2.4	3.2	4.8	13	---	51	32	14	37	27	3.9	20
31	10	---	900	14	---	41	---	13	---	27	3.4	---
TOTAL	73.19	107.5	1072.1	806.9	660	1520	1046	763	1305.5	1154	298.2	280.4
MEAN	2.36	3.58	34.6	26.0	23.6	49.0	34.9	24.6	43.5	37.2	9.62	9.35
MAX	25	7.3	900	250	210	150	73	80	225	244	28	195
MIN	.03	2.8	3.2	8.2	11	28	27	13	9.5	15	3.4	1.0
CFSM	.04	.05	.51	.38	.35	.72	.51	.36	.64	.54	.14	.14
IN.	.04	.06	.58	.44	.36	.83	.57	.41	.71	.63	.16	.15
AC-FT	145	213	2130	1600	1310	3010	2070	1510	2590	2290	591	556

CAL YR 1984 TOTAL 2026.57 MEAN 5.54 MAX 900 MIN .00 CFSM .08 IN 1.10 AC-FT 4020
WTR YR 1985 TOTAL 9086.79 MEAN 24.9 MAX 900 MIN .03 CFSM .36 IN 4.94 AC-FT 18020

08185000 CIBOLO CREEK AT SELMA, TX

LOCATION.--Lat 29°35'38", long 98°18'39", Bexar-Guadalupe County line, Hydrologic Unit 12100304, on right bank 0.6 mi downstream from Missouri-Kansas-Texas Railroad Co. bridge and 0.9 mi upstream from bridge on Interstate Highway 35 at Selma.

DRAINAGE AREA.--274 mi².

PERIOD OF RECORD.--March 1946 to current year. Figures for water year 1960 in WSP 1813 are in error and should be disregarded.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 728.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversion above station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08183900. Considerable flow of Cibolo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between this station and the station near Boerne (station 08183900).

AVERAGE DISCHARGE.--39 years, 14.9 ft³/s (10,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft³/s July 16, 1973 (gage height, 26.2 ft, from floodmark), from rating curve extended above 16,000 ft³/s on basis of field estimate of 54,000 ft³/s and contracted-opening measurement of 65,000 ft³/s; no flow most of time.
Maximum stage since at least 1869, that of July 16, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 26 ft occurred in 1889, but stage for flood in 1913 is unknown, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
June 6	1900	*32,700	a*19.42	July 4	0200	1,900	6.82
June 22	2200	1,100	5.85				

a From floodmark.

Minimum daily discharge, no flow most of year.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	138	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	918	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	172	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	8490	85	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	1300	46	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	144	20	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	26	6.1	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.15	.19	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	1.1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	2.0	.00	.00	.00	.00	.00	.00	.00	107	.00	.00	.00
23	2.7	.00	.00	.00	.00	.00	.00	.00	503	.00	.00	.00
24	.28	.00	.00	.00	.00	.00	.00	.00	142	.00	.00	.00
25	.08	.00	.00	.00	.00	.00	.00	.00	57	.00	.00	.00
26	.27	.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00
27	.13	.00	.00	.00	.00	.00	.00	.00	.52	.00	.00	.00
28	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	40.61	.00	.00	.00	.00	.00	.00	.00	10785.67	1385.29	.00	.00
MEAN	1.31	.000	.000	.000	.000	.000	.000	.000	360	44.7	.000	.000
MAX	34	.00	.00	.00	.00	.00	.00	.00	8490	918	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	81	.00	.00	.00	.00	.00	.00	.00	21390	2750	.00	.00

CAL YR 1984 TOTAL 40.61 MEAN .11 MAX 34 MIN .00 AC-FT 81
WTR YR 1985 TOTAL 12211.57 MEAN 33.5 MAX 8490 MIN .00 AC-FT 24220

NUECES RIVER MAIN STEM

08190000 NUECES RIVER AT LAGUNA, TX

LOCATION.--Lat 29°25'42" long 99°59'49", Uvalde County, Hydrologic Unit 12110101, on right bank 0.5 mi downstream from Sycamore Creek, 1.0 mi northeast of Laguna, and at mile 370.8.

DRAINAGE AREA.--737 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1562: 1930, 1931(M), 1932, 1939. WDR TX-83-3: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--62 years, 148 ft³/s (2.73 in/yr), 107,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307,000 ft³/s Sept. 24, 1955, (gage height, 29.95 ft, in gage well, 32.7 ft, from floodmarks), from rating curve extended above 40,000 ft³/s on basis of float measurement of 110,000 ft³/s and slope-area measurements of 213,000 and 307,000 ft³/s; minimum, 2.6 ft³/s Mar. 14-16, 1957.
Maximum stage since at least 1866, that of Sept. 24, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1913 reached a stage of about 29 ft, discharge 210,000 ft³/s; flood of Sept. 21, 1923, reached a stage of about 26.5 ft, discharge 160,000 ft³/s; from information by local residents. Discharges based on rating curve mentioned above.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	1330	*53,700	*18.53	July 3	1330	4,400	7.25
Feb. 23	1400	1,810	5.88	Sept. 29	2100	1,580	5.73
June 12	2200	830	4.49				

Minimum daily discharge, 13 ft³/s Oct. 2-9.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	50	61	3670	199	375	153	233	101	116	92	43
2	13	48	59	1450	196	342	150	217	97	112	89	43
3	13	50	58	894	196	316	148	184	94	1060	86	42
4	13	51	59	719	193	296	146	167	92	714	83	41
5	13	49	61	608	187	273	139	159	94	397	81	41
6	13	50	58	542	180	259	136	154	94	285	78	44
7	13	52	58	464	173	255	196	151	92	238	78	41
8	13	53	59	396	168	242	214	151	90	212	75	40
9	13	53	59	351	166	236	169	198	88	197	72	39
10	14	52	58	322	164	232	165	167	84	186	70	39
11	29	53	59	297	155	227	160	154	82	174	68	39
12	21	53	60	303	151	217	154	150	278	167	65	39
13	45	54	65	311	151	217	154	147	416	161	65	40
14	38	55	62	297	147	215	150	140	239	151	62	41
15	31	56	64	314	144	208	146	133	176	142	60	40
16	28	56	63	349	143	209	142	129	151	135	59	41
17	26	55	64	365	141	200	139	129	137	129	57	41
18	26	56	63	346	139	192	136	191	155	122	56	40
19	26	56	61	324	140	190	136	173	134	115	56	40
20	26	57	61	296	138	190	137	154	123	117	55	40
21	24	57	61	285	137	181	140	156	119	116	54	39
22	24	58	60	265	144	177	137	150	115	113	53	38
23	24	58	60	260	966	172	130	139	111	110	52	36
24	29	64	60	256	820	168	123	133	147	114	51	34
25	28	64	58	247	653	165	120	127	160	125	50	33
26	36	63	59	235	529	165	121	123	141	118	50	32
27	72	63	60	234	438	172	118	120	135	111	48	31
28	98	65	60	226	392	167	120	117	132	105	47	34
29	79	64	61	217	---	163	228	112	125	102	46	431
30	62	61	377	211	---	157	237	108	121	96	44	907
31	53	---	17800	205	---	152	---	104	---	93	44	---
TOTAL	957	1676	19928	15259	7350	6730	4544	4670	4123	6133	1946	2429
MEAN	30.9	55.9	643	492	263	217	151	151	137	198	62.8	81.0
MAX	98	65	17800	3670	966	375	237	233	416	1060	92	907
MIN	13	48	58	205	137	152	118	104	82	93	44	31
CFSM	.04	.07	.84	.64	.34	.28	.20	.20	.18	.26	.08	.11
IN.	.05	.08	.97	.74	.36	.33	.22	.23	.20	.30	.09	.12
AC-FT	1900	3320	39530	30270	14580	13350	9010	9260	8180	12160	3860	4820

CAL YR 1984	TOTAL	33268	MEAN	90.9	MAX	17800	MIN 13	CFSM .12	IN 1.62	AC-FT	65990	
WTR YR 1985	TOTAL	75745	MEAN	208	MAX	17800	MIN 13	CFSM .27	IN 3.69	AC-FT	150200	

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC 31...	1624	28400	218	7.4	17.5	500	600	--	--	2.6	21000	26000
JAN 23...	0900	260	412	7.8	12.0	--	--	--	--	--	--	--
MAR 06..	1830	257	423	7.3	16.0	--	--	--	--	--	--	--
MAY 02...	1015	220	425	7.9	21.0	3	.60	8.3	95	1.2	K17	--
AUG 29...	1100	44	429	7.4	27.0	3	.30	7.7	100	.9	K7	K9

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
DEC 31...	100	10	34	4.5	2.5	.1	2.7	94	11	4.9	<.10	8.7
JAN 23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06. .	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	220	29	64	14	7.4	.2	1.0	189	17	12	.20	11
AUG 29...	220	23	62	15	8.5	.3	.90	194	16	13	.10	13

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-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)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
DEC 31...	120	1460	83	1.4	.010	1.4	.060	3.9	4.0	.370	52	7.8
JAN 23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	240	2	1	--	<.010	1.5	.010	.49	.50	.010	.7	--
AUG 29...	240	1	1	--	<.010	.80	.010	.39	.40	<.010	1.0	--

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
DEC 31...	1624	<1	22	<1	<10	4	73
AUG 29...	1100	<1	56	<1	<10	1	4

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
DEC 31...	<1	8	<.1	<1	<1	3
AUG 29...	<1	<1	<.1	<1	<1	9

08190000 NUECES RIVER AT LAGUNA, TX--Continued

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AMETRYNE TOTAL	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	CYANAZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
DEC 31...	1624	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
JAN 23...	0900	--	--	--	<.10	<.10	--	<.10	--	--
MAR 06...	1830	<.1	<.10	<.01	<.10	<.10	<.1	<.10	<.01	<.01
AUG 29...	1100	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	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)
DEC 31...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JAN 23...	--	--	--	--	--	--	--	--	--	--
MAR 06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 29..	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHOMYL TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	PROPAZINE TOTAL (UG/L)
DEC 31...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
JAN 23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
MAR 06...	<2.0	<.01	<.01	<.01	<.01	<.01	<.1	<.1	<.1	<.10
AUG 29...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC 31...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
JAN 23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
MAR 06...	<2.0	<2.0	<.10	<.1	<1	<.01	<.01	<.01	<.01	<.01
AUG 29...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX

LOCATION.- Lat 29°28'21", long 100°14'10", Kinney County Hydrologic Unit 12110102, at Wilson Ranch on Farm Road 3199, 1.3 mi upstream from Miguel Canyon, 16.0 mi northeast of Brackettville, and 40.2 mi upstream from mouth.

DRAINAGE AREA.--694 mi².

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

REVISED RECORDS.--WSP 1312: 1949(M). WDR TX-83-3: Drainage area.

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

REMARKS.--Estimated daily discharges Oct. 1 to Dec. 30, Feb. 10-24, Feb. 27 to June 20, June 23 to July 2, 16-25, and July 27 to Sept. 30. Records good except those for estimated daily discharges and those below 1 ft³/s, which are poor. In ordinary years, a large part of streamflow is lost by seepage into the Balcones fault zone of the Edwards and associated limestones above station. No known diversion above station. Three observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years (water years 1940-50, 1957-85), 35.9 ft³/s (26,010 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	1600	*24,600	a*16.26	No other peak greater than base discharge.			

a From floodmark.

Minimum daily discharge, 0.07 ft³/s Oct. 1-12.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.30	.14	1150	5.1	2.6	1.3	.69	.52	2.7	2.2	.34
2	.07	.25	.14	208	5.1	2.4	1.2	.68	.51	2.7	2.1	.33
3	.07	.22	.14	123	5.0	2.3	1.2	.67	.51	47	1.9	.32
4	.07	.20	.14	96	4.4	2.3	1.2	.66	.50	12	1.7	.31
5	.07	.18	.14	79	4.2	2.2	1.1	.65	.50	14	1.6	.30
6	.07	.16	.14	67	4.1	2.2	1.1	.64	.49	16	1.5	.30
7	.07	.15	.14	50	3.6	2.1	1.1	.63	.48	14	1.4	.30
8	.07	.15	.14	41	3.4	2.1	1.0	.63	.47	13	1.3	.30
9	.07	.15	.14	30	3.2	2.1	1.0	.63	.46	12	1.2	.30
10	.07	.15	.14	20	3.1	2.1	.95	.63	.45	10	1.1	.30
11	.07	.15	.14	13	2.9	2.0	.90	.62	.45	8.8	1.1	.30
12	.07	.15	.14	11	2.8	2.0	.90	.62	.44	7.4	.95	.30
13	.08	.15	.15	12	2.7	2.0	.90	.61	.44	6.6	.90	.30
14	.08	.15	.15	9.2	2.6	1.9	.85	.61	.43	5.7	.85	.30
15	.08	.15	.15	10	2.5	1.9	.85	.60	.43	4.9	.80	.30
16	.08	.14	.16	15	2.5	1.9	.84	.60	.42	4.7	.78	.30
17	.08	.14	.16	25	2.4	1.8	.84	.60	.42	4.4	.75	.30
18	.08	.14	.17	26	2.3	1.8	.83	.60	.41	4.3	.70	.29
19	.08	.14	.17	23	2.3	1.7	.81	.60	.41	4.2	.65	.29
20	.08	.14	.17	17	2.2	1.7	.80	.60	.41	4.0	.63	.29
21	.08	.14	.18	14	2.2	1.7	.80	.59	4.8	4.0	.58	.29
22	.08	.14	.18	12	2.2	1.6	.79	.58	3.9	3.9	.55	.29
23	.08	.14	.19	10	2.1	1.6	.78	.57	3.6	3.8	.53	.29
24	.08	.14	.19	9.2	2.1	1.6	.78	.56	3.5	3.8	.50	.29
25	.08	.14	.20	8.2	3.9	1.5	.77	.55	3.4	3.8	.50	.29
26	.09	.14	.20	7.8	3.8	1.5	.77	.54	3.2	4.8	.48	.29
27	.09	.14	.20	7.3	3.2	1.5	.75	.54	3.1	4.3	.45	.29
28	1.0	.14	.20	7.0	2.7	1.4	.73	.53	3.0	3.7	.43	.28
29	.80	.14	.20	6.7	---	1.4	.71	.53	2.9	3.2	.40	.28
30	.45	.14	.20	6.3	---	1.4	.70	.52	2.8	2.8	.38	.28
31	.35	---	5090	5.5	---	1.3	---	.52	---	2.4	.35	---
TOTAL	4.66	4.76	5094.90	2119.2	88.6	57.6	27.25	18.60	43.35	238.9	29.26	8.94
MEAN	.15	.16	164	68.4	3.16	1.86	.91	.60	1.45	7.71	.94	.30
MAX	1.0	.30	5090	1150	5.1	2.6	1.3	.69	4.8	47	2.2	.34
MIN	.07	.14	.14	5.5	2.1	1.3	.70	.52	.41	2.4	.35	.28
AC-FT	9.2	9.4	10110	4200	176	114	54	37	86	474	58	18

CAL YR 1984	TOTAL	5111.81	MEAN	14.0	MAX	5090	MIN	.00	AC-FT	10140
WTR YR 1985	TOTAL	7736.02	MEAN	21.2	MAX	5090	MIN	.07	AC-FT	15340

08192000 NUECES RIVER BELOW UVALDE, TX

LOCATION.--Lat 29°07'25", long 99°53'40" Uvalde County, Hydrologic Unit 12110103, on right bank at McDaniel Ranch, 5.7 mi upstream from bridge on U.S. Highway 83, 8.8 mi southwest of Uvalde, 18.2 mi downstream from West Nueces River, and at mile 338.7.

DRAINAGE AREA.--1,861 mi².

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

REVISED RECORDS.--WSP 1732: 1956(M). WDR TX-83-3: Drainage area.

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

REMARKS.--Estimated daily discharges: Jan. 23 to Feb. 10. Records good. Part of flow of Nueces River enters Edwards and associated limestones in the Balcones Fault Zone that crosses basin downstream from Laguna (station 08190000) and upstream from this station. At low stage, most of headwater flow enters this formation. Many small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years, 119 ft³/s (86,220 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189,000 ft³/s Sept. 24, 1955 (gage height, 24.61 ft, from floodmark), from rating curve extended above 34,000 ft³/s on basis of conveyance study and slope-area measurement of peak flow; no flow at times in 1951-57.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1836, 40.4 ft June 14, 1935, from floodmark (discharge at former site, 616,000 ft³/s, by slope-area measurement). Large floods also occurred in 1901 and 1913, stages unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum(*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 11	0900	287	4.33	July 4	0600	1,130	5.18
Dec. 31	2030	*44,600	*14.92	Sept. 29	1600	7,920	9.60
Feb. 24	0600	894	4.95				

Minimum daily discharge, 2.4 ft³/s Oct. 1-8.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	11	8.4	10100	130	282	94	56	50	39	36	29
2	2.4	11	8.4	2780	125	259	92	67	48	39	35	29
3	2.4	11	8.4	1100	120	243	90	79	47	39	35	29
4	2.4	11	8.4	680	120	227	86	80	47	593	35	28
5	2.4	11	8.4	474	120	208	86	76	47	300	35	29
6	2.4	10	8.2	364	115	194	81	72	46	191	33	41
7	2.4	10	8.1	300	115	189	79	68	44	139	32	29
8	2.4	10	8.3	263	115	184	79	66	44	109	32	29
9	3.1	10	8.4	250	110	175	99	65	43	94	32	28
10	3.1	9.6	8.4	233	110	170	101	62	42	83	31	28
11	77	9.5	8.4	204	109	163	92	63	40	76	31	27
12	16	9.5	8.4	203	104	158	88	65	45	70	31	27
13	48	9.5	9.8	212	101	153	86	63	43	65	30	28
14	24	9.5	9.0	203	101	150	81	60	40	61	30	28
15	14	9.5	8.4	203	96	154	79	59	39	56	30	27
16	12	9.5	8.3	212	94	149	77	58	38	53	30	27
17	11	9.5	8.4	230	94	142	74	57	38	51	29	28
18	11	8.9	8.4	243	92	136	70	60	40	48	28	27
19	11	8.9	8.4	232	90	131	68	55	42	47	28	27
20	11	9.3	8.4	196	90	126	67	59	42	46	28	25
21	11	9.1	8.4	170	90	122	65	65	42	44	28	25
22	11	8.9	8.4	164	90	119	63	62	42	43	28	25
23	11	8.4	8.4	160	149	115	62	59	46	43	28	25
24	11	9.7	8.4	155	714	111	61	67	44	43	27	24
25	11	9.6	8.4	150	652	108	61	63	43	42	27	24
26	34	9.0	8.4	150	465	105	60	59	43	39	27	23
27	18	8.3	8.2	145	361	104	59	56	46	39	27	23
28	13	8.8	8.2	140	306	105	58	54	42	38	26	24
29	13	9.0	8.0	140	---	104	58	53	41	37	26	1890
30	12	9.0	11	135	---	99	57	52	40	36	26	729
31	12	---	14800	135	---	96	---	51	---	36	27	---
TOTAL	417.4	288.0	15055.1	20326	4978	4781	2273	1931	1294	2639	928	3382
MEAN	13.5	9.60	486	656	178	154	75.8	62.3	43.1	85.1	29.9	113
MAX	77	11	14800	10100	714	282	101	80	50	593	36	1890
MIN	2.4	8.3	8.0	135	90	96	57	51	38	36	26	23
AC-FT	828	571	29860	40320	9870	9480	4510	3830	2570	5230	1840	6710

CAL YR 1984	TOTAL	18793.2	MEAN	51.3	MAX	14800	MIN 2.1	AC-FT 37280
WTR YR 1985	TOTAL	58292.5	MEAN	160	MAX	14800	MIN 2.4	AC-FT 115600

08195000 FRIO RIVER AT CONCAN, TX

LOCATION.- Lat 29°29'18", long 99°42'16 Uvalde County, Hydrologic Unit 12110106, on left bank 0.7 mi southeast of Concan Post Office, 15 mi upstream from Dry Frio River, and 222.8 mi upstream from mouth.

DRAINAGE AREA.--389 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to September 1929, October 1930 to current year.

REVISED RECORDS.--WSP 1342: Drainage area. WSP 1512: 1926, 1931-32, 1934(M), 1935-36. WSP 1712: 1958. WSP 1923: 1954(M), 1957(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,203.71 ft above National Geodetic Vertical Datum of 1929. Oct. 26, 1923, to July 28, 1924, nonrecording gage at site 86 ft upstream at datum 5.08 ft lower. July 29, 1924, to Oct. 3, 1930, nonrecording gage, and Oct. 4, 1930, to May 18 1939, water-stage recorder, at site 130 ft downstream at present datum.

REMARKS.--Estimated daily discharges Jan. 2-9. Records good. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--60 years (water years 1925-29, 1931-85), 113 ft³/s (3.94 in/yr), 81,870 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162,000 ft³/s July 1, 1932 (gage height, 34.44 ft, from floodmarks), from rating curve extended above 44,000 ft³/s on basis of flow-over-dam measurement of 56,600 ft³/s and slope-area measurement of 162,000 ft³/s; no flow Aug. 5, 1956, to Jan 6, 1957.
Maximum stage since at least 1869, that of July 1, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 28	0030	705	4.95	May 18	0530	670	4.91
Dec. 31	0800	*47,500	*21.59	Sept. 29	0900	723	4.96
Feb. 23	1400	887	5.14				

Minimum daily discharge. 13 ft³/s Oct. 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	125	75	1600	263	275	178	174	126	91	72	46
2	13	114	75	830	259	264	176	159	120	89	72	45
3	14	108	73	610	253	256	174	150	118	159	70	44
4	14	102	74	550	249	246	175	144	116	142	70	44
5	14	96	76	510	244	238	171	138	116	116	67	44
6	16	93	72	470	238	234	167	133	122	107	66	50
7	17	91	72	440	230	236	167	130	121	105	65	54
8	18	88	71	410	223	233	167	130	114	104	64	54
9	16	86	70	380	219	228	162	131	105	104	63	52
10	18	82	70	350	217	223	161	124	106	103	63	50
11	30	80	70	320	208	218	162	122	105	102	62	49
12	30	79	70	333	203	217	161	122	116	102	60	68
13	69	78	75	342	199	213	156	122	128	104	59	65
14	79	77	74	318	195	222	154	118	113	98	59	61
15	43	75	74	322	190	216	150	114	107	97	58	53
16	35	75	72	343	189	214	147	114	104	94	57	52
17	33	75	73	394	185	207	144	185	100	93	56	54
18	32	78	75	402	181	203	137	396	98	91	56	54
19	31	75	75	386	180	198	134	229	102	92	55	54
20	31	75	75	366	180	196	133	196	104	107	53	54
21	32	74	73	352	180	193	129	194	99	91	52	53
22	32	73	72	343	181	190	133	171	97	88	51	53
23	34	72	72	337	465	189	129	160	142	88	51	52
24	38	78	72	328	426	185	125	161	111	90	50	51
25	38	84	71	319	327	185	124	190	101	89	50	50
26	107	79	72	310	289	183	126	157	97	85	51	49
27	143	74	74	306	270	248	126	150	99	82	50	50
28	457	73	78	298	266	200	122	144	101	79	50	52
29	239	74	76	292	---	191	192	139	96	77	48	225
30	168	75	629	286	---	186	189	132	94	75	48	138
31	140	---	17500	273	---	180	---	129	---	75	47	---
TOTAL	1995	2508	20250	13120	6709	6667	4571	4858	3278	3019	1795	1820
MEAN	64.4	83.6	653	423	240	215	152	157	109	97.4	57.9	60.7
MAX	457	125	17500	1600	465	275	192	396	142	159	72	225
MIN	13	72	70	273	180	180	122	114	94	75	47	44
CFSM	.16	.21	1.61	1.04	.59	.53	.38	.39	.27	.24	.14	.15
IN.	.18	.23	1.86	1.21	.62	.61	.42	.45	.30	.28	.16	.17
AC-FT	3960	4970	40170	26020	13310	13220	9070	9640	6500	5990	3560	3610

CAL YR 1984	TOTAL	33968.0	MEAN	92.8	MAX	17500	MIN	5.8	CFSM	.23	IN	3.12	AC-FT	67380
WTR YR 1985	TOTAL	70590.0	MEAN	193	MAX	17500	MIN	13	CFSM	.48	IN	6.48	AC-FT	140000

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN											
11..	1355	307	466	8.2	14.0	5	.50	9.6	95	--	64
23...	1130	337	446	8.0	10.5	--	--	--	--	--	--
MAR											
06...	1515	235	445	7.6	16.0	--	--	--	--	--	--
MAY											
01...	1130	176	427	8.0	22.5	4	1.4	8.0	95	1.4	K100
AUG											
28...	1720	50	390	7.7	29.0	3	.40	7.4	99	.6	K22

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
JAN										
11...	96	230	20	69	14	6.8	.2	.90	210	17
23...	--	--	--	--	--	--	--	--	--	--
MAR										
06...	--	240	--	71	15	7.0	.2	.90	--	18
MAY										
01...	K130	220	29	65	13	6.6	.2	1.1	187	14
AUG										
28...	K13	210	24	59	15	8.0	.2	1.0	185	16

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
JAN										
11...	11	.10	11	260	1	1	<.010	--	2.4	--
23...	--	--	--	--	--	--	--	--	--	--
MAR										
06...	12	.20	11	--	--	--	--	<.010	--	1.6
MAY										
01...	11	.20	11	230	3	2	<.010	--	1.1	--
AUG										
28...	13	.10	14	240	4	2	<.010	--	.40	--

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
JAN										
11...	.010	--	.29	.30	--	<.010	--	--	1.3	--
23...	--	--	--	--	--	--	--	--	--	--
MAR										
06...	--	<.010	--	--	.40	--	<.010	<.010	--	.8
MAY										
01...	.010	--	.39	.40	--	<.010	--	--	1.4	--
AUG										
28...	.010	--	.19	.20	--	<.010	--	--	1.1	--

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

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN							
11...	1355	<1	45	<1	<10	<1	4
AUG							
28...	1720	<1	42	<1	<10	<1	9

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN						
11...	<1	<1	<.1	<1	<1	9
AUG						
28...	<1	4	<.1	<1	<1	9

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME-TRYNE TOTAL	ATRA-ZINE, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	CYAN-AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN										
11..	1355	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1130	--	--	--	<.10	<.10	--	<.10	--	--
MAR										
06...	1515	<.1	<.10	<.01	<.10	<.10	<.1	<.10	<.01	<.01
AUG										
28...	1720	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)
JAN										
11...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
MAR										
06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG										
28...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHO-MYL TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PROME-TONE TOTAL (UG/L)	PROME-TRYNE TOTAL (UG/L)	PRO-PAZINE TOTAL (UG/L)
JAN										
11..	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
MAR										
06...	<2.0	<.01	<.01	<.01	<.01	<.01	<.1	<.1	<.1	<.10
AUG										
28...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA-ZINE TOTAL (UG/L)	SIME-TRYNE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN										
11...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
MAR										
06...	<2.0	<2.0	<.10	<.1	<1	<.01	<.01	<.01	<.01	<.01
AUG										
28...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX

LOCATION.--Lat 29°30'16", long 99°46'52", Uvalde County, Hydrologic Unit 12110106, on right bank 2.3 mi upstream from bridge on U.S. Highway 83, 3.1 mi upstream from Rocky Creek, 4.3 mi southeast of Reagan Wells, and 25.9 mi upstream from mouth.

DRAINAGE AREA.--126 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1712: 1953. WSP 1923: 1955(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,335.2 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation datum.

REMARKS.--Estimated daily discharges: Nov. 10 to Dec. 11, Dec. 14 to Jan. 9, and Jan. 12-22. Records good except those for Nov. 10 to Dec. 11 and Jan. 12-22, which are fair, and Dec. 14 to Jan. 9, which are poor. There are several small diversions above station.

AVERAGE DISCHARGE.--33 years, 34.4 ft³/s (3.71 in/yr), 24,920 acre-ft/yr.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	1700	324	3.64	June 23	1130	244	3.64
Dec. 31	Unknown	*16,190	*16.85	July 3	1545	1,580	5.38

Minimum daily discharge, 5.7 ft³/s Oct. 1.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	50	19	385	59	59	41	118	36	34	24	8.5
2	6.3	44	19	235	56	56	40	96	35	32	22	8.1
3	7.5	41	18	150	54	54	38	80	32	503	21	8.0
4	7.9	37	18	130	53	51	38	72	31	426	20	7.8
5	9.8	34	17	118	51	48	37	67	30	191	20	8.0
6	11	31	17	110	50	47	37	62	34	111	19	9.5
7	15	30	17	100	46	48	37	59	32	94	18	11
8	16	29	17	95	44	47	38	56	29	83	18	10
9	21	29	16	90	43	47	36	54	28	76	17	9.8
10	23	28	16	86	41	47	36	53	27	70	17	9.9
11	15	27	16	82	40	46	37	51	25	65	16	9.8
12	13	26	16	80	38	44	36	48	38	61	15	11
13	21	26	16	79	37	43	36	47	60	57	15	12
14	17	26	16	78	36	47	35	44	41	52	14	12
15	13	25	16	78	35	46	35	43	36	49	13	10
16	12	25	16	84	34	47	35	41	32	45	13	10
17	10	24	16	92	34	46	34	38	31	42	13	10
18	9.8	24	15	96	34	44	32	80	29	39	12	10
19	9.4	23	15	93	34	44	32	92	30	38	12	9.9
20	9.4	23	15	89	34	43	32	70	29	53	12	9.9
21	9.0	22	15	86	34	43	32	73	29	49	12	9.8
22	8.6	22	14	83	34	43	32	67	29	46	11	9.6
23	8.6	21	14	80	78	41	32	59	122	42	11	9.4
24	12	21	14	80	72	40	30	57	106	41	11	9.4
25	14	21	14	76	69	38	32	53	61	38	10	9.3
26	36	20	15	72	62	65	31	50	50	35	9.8	8.7
27	161	20	15	70	57	91	30	48	46	32	9.3	8.4
28	146	20	16	69	59	51	29	46	44	30	9.2	9.1
29	82	19	17	65	---	47	81	43	39	28	9.1	278
30	64	19	200	64	---	44	94	40	36	27	9.1	109
31	56	---	4250	60	---	43	---	37	---	26	8.9	---
TOTAL	850.0	807	4915	3155	1318	1500	1145	1844	1227	2515	441.4	655.9
MEAN	27.4	26.9	159	102	47.1	48.4	38.2	59.5	40.9	81.1	14.2	21.9
MAX	161	50	4250	385	78	91	94	118	122	503	24	278
MIN	5.7	19	14	60	34	38	29	37	25	26	8.9	7.8
CFSM	.23	.23	1.36	.87	.40	.41	.33	.51	.35	.69	.12	.19
IN.	.27	.26	1.56	1.00	.42	.48	.36	.59	.39	.80	.14	.21
AC-FT	1690	1600	9750	6260	2610	2980	2270	3660	2430	4990	876	1300

CAL YR 1984 TOTAL 7850.01 MEAN 21.4 MAX 4250 MIN .04 CFSM .18 IN 2.50 AC-FT 15570
WTR YR 1985 TOTAL 20373.30 MEAN 55.8 MAX 4250 MIN 5.7 CFSM .48 IN 6.48 AC-FT 40410

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
10...	1250	93	447	8.0	14.5	5	1.1	9.3	94	--	41	89
23...	1100	82	420	8.0	9.0	--	--	--	--	--	--	--
MAY												
01...	1310	134	389	7.8	24.0	5	.90	7.8	96	1.1	100	300
AUG												
28...	1540	12	391	7.4	30.0	3	.30	7.4	102	.7	K10	K19

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
10...	220	16	65	13	6.3	.2	.70	200	16	11	.10
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	200	30	61	12	5.4	.2	.50	172	15	10	.20
AUG											
28...	190	23	57	12	7.0	.2	.70	169	15	10	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
10...	9.5	240	1	1	<.010	1.8	.010	.59	.60	<.010	1.5
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	9.8	220	5	3	<.010	1.0	.030	.37	.40	<.010	1.2
AUG											
28...	12	220	7	5	<.010	.20	.010	.19	.20	<.010	1.1

DATE	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							
10...	1250	<1	44	<1	<10	<1	3
AUG							
28...	1540	<1	50	<1	<10	4	6

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN						
10...	1	<1	<.1	1	<1	10
AUG						
28...	1	3	<.1	<1	<1	8

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AMETRYNE TOTAL	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	CYANAZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN										
10...	1250	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1100	--	--	--	<.10	<.10	--	<.10	--	--
AUG										
28...	1540	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	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)
JAN										
10...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG										
28...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHOMYL TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	PROPAZINE TOTAL (UG/L)
JAN										
10...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG										
28..	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN										
10...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG										
28...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

08197500 FRIO RIVER BELOW DRY FRIO RIVER NEAR UVALDE, TX

LOCATION.--Lat 29°14'44", long 99°40'27", Uvalde County, Hydrologic Unit 12110106, on right bank 1.1 mi upstream from Farm Road 1023, 5.7 mi downstream from Dry Frio River, 6.3 mi downstream from bridge on U.S. Highway 90, 7.2 mi northeast of Uvalde, and 194.5 mi upstream from mouth.

DRAINAGE AREA.--631 mi².

PERIOD OF RECORD.--September 1952 to current year. Sum of records published as Frio River at Knippa and Dry Frio River at Knippa for period September 1952 to September 1953 is equivalent to record for this station.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.47 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Concan (station 08195000) and this station. Most of low flow enters this formation. Many diversions for irrigation above station. Satellite telemeter is located at station.

AVERAGE DISCHARGE.--33 years, 30.0 ft³/s (21,740 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	1330	*58,500	a*20.29	Sept. 29	1730	1,430	6.00

a From floodmark.

Minimum discharge, no flow most of year.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	3000	.08	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	884	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	505	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	329	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	243	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	186	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	146	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	116	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	98	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	75	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	56	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	57	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	78	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	65	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	56	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	63	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	81	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	105	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	97	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	78	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	63	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	56	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	53	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	49	32	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	39	30	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	25	1.5	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	16	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	9.5	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	3.2	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.63	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	22000	.27	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	22000.00	6632.60	63.58	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	710	214	2.27	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	22000	3000	32	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	43640	13160	126	.00	.00	.00	.00	.00	.00	.00

CAL YR 1984	TOTAL	22000.00	MEAN 60.1	MAX 22000	MIN .00	AC-FT	43640	
WTR YR 1985	TOTAL	28696.18	MEAN 78.6	MAX 22000	MIN .00	AC-FT	56920	

08198000 SABINAL RIVER NEAR SABINAL, TX

LOCATION.--Lat 29°29'27", long 99°29'33", Uvalde County, Hydrologic Unit 12110106, on right bank 108 ft upstream from concrete dam, 2.3 mi downstream from mouth of Onion Creek, 12.5 mi north of Sabinal, and 41.6 mi upstream from mouth.

DRAINAGE AREA.--206 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1312: 1943(M), 1944(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 1,131.20 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 9, 1971, at site 0.3 mi downstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 1-9. Records good. There are several small diversions above station for irrigation.

AVERAGE DISCHARGE.--43 years, 56.0 ft³/s (3.69 in/yr), 40,580 acre-ft/yr.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1892, about 33 ft July 2, 1932, from information by local residents. There is a legend that a flood in the middle 1800's reached a stage of nearly 63 ft, see flood history for station 08198500.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	0500	*9,850	*11.91	No other peak greater than base discharge.			

Minimum daily discharge, 0.14 ft³/s Oct. 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	20	28	473	145	141	127	117	81	44	24	10
2	.18	19	27	283	142	139	124	106	78	45	24	11
3	.17	19	27	235	141	138	124	99	75	43	23	10
4	.16	19	27	204	141	133	123	94	77	46	23	10
5	.15	18	28	186	138	130	121	92	78	44	22	10
6	.14	18	27	176	132	130	116	90	87	42	22	22
7	.17	17	26	171	129	130	115	88	82	42	22	16
8	.19	17	26	167	124	130	115	87	77	40	20	12
9	.20	17	27	165	124	130	115	92	75	40	20	11
10	1.6	18	27	154	124	127	115	84	71	40	20	10
11	4.3	18	27	148	115	127	115	81	67	40	19	10
12	15	18	27	149	113	125	113	81	65	40	18	24
13	12	18	33	159	113	124	107	81	68	40	18	18
14	19	18	30	152	111	142	108	79	68	39	18	13
15	15	18	29	155	107	138	105	77	65	35	18	10
16	8.7	19	29	172	105	135	102	77	62	34	17	10
17	6.0	19	32	182	105	131	99	95	59	33	16	10
18	4.3	22	35	186	105	127	97	155	57	31	16	10
19	4.1	22	35	183	105	127	96	124	60	30	14	9.7
20	4.1	22	37	176	102	125	97	113	60	30	14	9.6
21	3.7	22	37	175	102	124	94	117	58	32	13	9.6
22	3.8	23	38	175	103	124	93	107	58	30	13	9.6
23	4.1	23	39	175	199	124	90	101	59	30	12	9.6
24	4.1	25	39	172	162	119	85	97	55	32	13	8.2
25	6.1	32	39	171	148	121	85	100	54	31	12	8.1
26	6.6	26	39	168	141	123	85	99	52	29	14	8.1
27	7.9	26	42	168	136	178	84	97	51	27	13	8.3
28	35	26	43	161	136	151	81	93	50	27	12	9.9
29	31	27	45	161	---	139	162	90	48	26	12	122
30	22	29	107	160	---	135	138	88	47	24	11	62
31	20	---	3330	147	---	128	---	83	---	24	11	---
TOTAL	239.94	635	4382	5709	3548	4095	3231	2984	1944	1090	524	501.7
MEAN	7.74	21.2	141	184	127	132	108	96.3	64.8	35.2	16.9	16.7
MAX	35	32	3330	473	199	178	162	155	87	46	24	122
MIN	.14	17	26	147	102	119	81	77	47	24	11	8.1
CFSM	.04	.10	.68	.89	.62	.64	.52	.47	.32	.17	.08	.08
IN.	.04	.11	.79	1.03	.64	.74	.58	.54	.35	.20	.09	.09
AC-FT	476	1260	8690	11320	7040	8120	6410	5920	3860	2160	1040	995

CAL YR 1984 TOTAL 9425.00 MEAN 25.8 MAX 3330 MIN .14 CFSM .13 IN 1.70 AC-FT 18690
WTR YR 1985 TOTAL 28883.64 MEAN 79.1 MAX 3330 MIN .14 CFSM .38 IN 5.22 AC-FT 57290

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
09...	1547	163	517	7.8	15.0	5	1.0	9.6	98	--	100	230
23...	1330	189	480	8.0	10.5	--	--	--	--	--	--	--
MAY												
01...	0926	117	455	8.0	22.0	5	1.9	8.3	98	1.7	K160	570
AUG												
23..	1130	13	434	7.7	28.0	3	--	7.7	101	.9	K160	52

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
09..	240	28	72	14	7.0	.2	1.0	210	30	10	.20
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	240	42	76	12	6.5	.2	.80	198	25	11	.20
AUG											
23...	210	31	63	13	8.8	.3	1.1	180	26	12	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
09...	12	270	2	2	<.010	1.3	.010	--	<.20	<.010	1.0
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	12	260	5	2	<.010	.70	.030	.37	.40	.010	.9
AUG											
23...	16	250	--	1	<.010	.20	.020	.28	.30	.010	6.0

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN							
09...	1547	<1	44	<1	<10	<1	4
AUG							
23...	1130	<1	49	<1	<10	<1	10

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN						
09...	<1	<1	<.1	1	<1	4
AUG						
23...	<1	4	<.1	<1	<1	14

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AMETRYNE TOTAL	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	CYANAZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN										
09...	1547	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1330	--	--	--	<.10	<.10	--	<.10	--	--
AUG										
23...	1130	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	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)
JAN										
09..	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG										
23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHOMYL TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	PROPAZINE TOTAL (UG/L)
JAN										
09...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG										
23...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SINAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN										
09...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG										
23...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

08198500 SABINAL RIVER AT SABINAL, TX

LOCATION.--Lat 29°18'05", long 99°28'46", Uvalde County, Hydrologic Unit 12110106, on left bank 80 ft downstream from bridge on U.S. Highway 90, 1,100 ft downstream from Southern Pacific Lines railroad bridge, 0.8 mi west of Sabinal, 5.8 mi upstream from Ranchero Creek, and 223 mi upstream from mouth.

DRAINAGE AREA.--241 mi².

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

REVISED RECORDS.--WDR TX-83-3 Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.17 ft above National Geodetic Vertical Datum of 1929. Prior to July 29, 1958, nonrecording gage, and July 29, 1958, to Mar. 19, 1964, water-stage recorder at site 80 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 15-30, June 6 to July 8, and July 12-31. Records good. There are several small diversions for irrigation above station. Most of the Sabinal River low flow enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin upstream from this station and downstream from the Sabinal River near Sabinal (station 08198000). Several observations of water temperature were made during the year. A satellite telemeter is located at station.

AVERAGE DISCHARGE.--33 years, 30.8 ft³/s (22,310 acre-ft/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 40 ft Aug. 24, 1919, from information by local residents. Flood of July 2, 1932, reached a stage of 31 ft (discharge, 60,000 ft³/s), from information by Southern Pacific Lines. There is a legend that a flood in 1858 covered the townsite of Sabinal. The stage would have been 70 to 80 ft, which seems unlikely. However, it is possible that a flood occurred in 1858 that covered part or the townsite and was higher than any flood since that date.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	0930	13,900	a*19.10	Mar. 27	2330	109	5.29
Feb. 23	2030	127	5.42				

a From floodmark.

Minimum daily discharge, 0.09 ft³/s Oct. 1-4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	1.5	1.1	615	47	47	35	5.6	6.8	2.4	1.2	.85
2	.09	1.5	1.1	274	49	46	33	13	6.5	2.4	1.2	.91
3	.09	1.6	1.1	196	48	39	30	10	6.0	2.4	1.1	.86
4	.09	2.0	1.1	151	47	36	29	8.4	5.0	2.3	1.1	.86
5	.11	2.0	1.2	120	44	34	28	6.7	4.6	2.3	1.0	1.0
6	.12	2.2	1.1	97	40	33	26	6.0	4.4	2.3	.96	1.4
7	.12	2.3	1.2	81	36	34	23	5.8	4.3	2.2	.90	.93
8	.12	2.5	1.4	68	33	35	22	7.6	4.3	2.2	.93	.92
9	.15	2.5	1.4	61	31	33	23	11	4.3	2.7	.92	.93
10	.16	1.9	1.1	54	30	30	24	9.0	4.2	2.4	.92	.90
11	.76	1.8	1.1	47	29	28	25	9.4	4.2	2.4	.95	.88
12	.22	1.7	1.1	49	27	28	23	9.9	4.1	2.3	.89	.93
13	.62	1.9	1.7	63	25	27	20	9.7	4.0	2.2	.86	.93
14	.60	2.0	1.4	59	24	38	18	9.3	3.9	2.2	.92	.84
15	.52	2.0	1.2	55	23	51	15	9.1	3.9	2.1	.87	.92
16	.56	1.7	1.2	65	20	51	13	8.9	3.8	2.1	.85	.92
17	.58	1.6	1.2	83	19	45	11	11	3.7	2.0	.87	.84
18	.65	1.7	1.2	95	18	39	8.5	11	3.7	2.0	.85	.82
19	.72	1.4	1.2	92	17	37	7.3	8.5	3.6	2.0	.84	.86
20	.85	1.3	1.2	85	16	37	6.6	8.3	3.5	1.9	.83	.85
21	.86	1.8	1.2	78	15	33	6.3	7.5	3.3	1.9	.85	.88
22	.99	1.8	1.2	78	15	32	6.0	5.1	3.1	1.9	.85	.88
23	1.0	1.7	1.2	81	41	31	6.1	5.0	3.0	1.9	.82	.85
24	1.1	2.8	1.2	82	88	28	6.1	6.5	2.9	3.0	.85	.86
25	1.3	2.0	1.2	75	62	26	6.1	5.9	2.8	2.4	.85	.93
26	1.3	1.5	1.2	66	50	23	6.1	5.9	2.8	2.0	.87	.97
27	1.5	1.1	1.2	64	43	38	5.9	6.6	2.7	1.9	.93	1.1
28	1.3	1.1	1.2	59	39	82	5.7	7.4	2.6	1.8	.93	1.3
29	.76	1.2	1.2	53	---	53	5.7	7.4	2.6	1.8	.93	6.8
30	.91	1.2	10	52	---	45	5.4	7.3	2.5	1.7	.98	1.7
31	1.4	---	2560	49	---	40	---	7.2	---	1.7	.90	---
TOTAL	19.64	53.3	2605.1	3147	976	1179	479.8	250.0	117.1	66.8	28.72	34.62
MEAN	.63	1.78	84.0	102	34.9	38.0	16.0	8.06	3.90	2.15	.93	1.15
MAX	1.5	2.8	2560	615	88	82	35	13	6.8	3.0	1.2	6.8
MIN	.09	1.1	1.1	47	15	23	5.4	5.0	2.5	1.7	.82	.82
AC-FT	39	106	5170	6240	1940	2340	952	496	232	132	57	69

CAL YR 1984 TOTAL 2872.93 MEAN 7.85 MAX 2560 MIN .09 AC-FT 5700
WTR YR 1985 TOTAL 8957.08 MEAN 24.5 MAX 2560 MIN .09 AC-FT 17770

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX

LOCATION.--Lat 29°34'10", long 99°14'47", Medina County, Hydrologic Unit 12110107, on left bank 460 ft downstream from bridge on Ranch Road 462, 6.3 mi southeast of Tarpley, and 16.6 mi northwest of Hondo.

DRAINAGE AREA.--95.6 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1712: 1957. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft above National Geodetic Vertical Datum of 1929, from Magnolia Oil Company datum.

REMARKS.--Estimated daily discharges: Oct. 12-21. Records good except those for estimated daily discharges, which are fair. There are several small diversions for irrigation above station.

AVERAGE DISCHARGE.--33 years, 38.1 ft³/s (5.41 in/yr), 27,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft³/s June 17, 1958 (gage height, 28.2 ft, from floodmark), from rating curve extended above 2,600 ft³/s on basis of slope-area measurements of 18,600 and 69,800 ft³/s; no flow at times in 1952-57, 1962-64, 1967, 1971, and 1984.
Maximum stage since at least 1907, that of June 17, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1932 reached a stage of about 26 ft (discharge, 58,500 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 30	2230	*12,700	*12.56	Apr. 29	1000	1,090	4.10
Feb. 23	0130	1,680	4.77	May 17	0200	5,370	7.75
Mar. 13	2130	2,710	5.62				

Minimum daily discharge, no flow Oct. 1-11.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	6.5	4.1	238	60	91	70	153	86	38	14	6.2
2	.00	5.9	4.1	182	58	85	69	62	80	37	13	5.9
3	.00	6.5	3.8	152	57	84	65	59	79	38	12	5.6
4	.00	6.8	4.1	124	56	77	65	57	76	38	12	5.3
5	.00	6.5	5.5	110	54	70	63	55	75	35	12	5.5
6	.00	5.9	4.1	96	51	69	60	54	89	34	11	14
7	.00	5.6	3.1	86	48	72	59	53	87	34	10	5.0
8	.00	6.2	2.7	78	47	66	57	52	71	32	10	3.8
9	.00	6.2	3.5	70	47	64	56	50	66	31	9.6	3.5
10	.00	5.6	3.8	65	49	62	58	49	63	31	9.3	3.5
11	.00	5.3	3.5	62	43	59	56	48	60	29	9.3	3.5
12	2.5	5.3	3.5	74	42	58	54	47	59	33	9.0	3.3
13	9.3	5.3	11	76	42	322	54	49	58	33	8.6	3.8
14	3.5	5.3	11	69	40	298	54	60	56	30	8.6	3.5
15	2.1	5.3	8.2	82	39	110	50	46	54	29	8.6	2.9
16	1.4	7.3	10	116	38	106	47	44	51	26	9.0	2.9
17	1.2	4.7	9.3	128	38	102	46	972	49	25	7.9	2.9
18	1.0	5.6	9.6	130	38	98	45	302	54	24	7.6	4.1
19	.90	4.4	9.3	126	38	98	46	224	55	23	7.2	3.1
20	.80	4.4	9.3	112	39	97	46	199	49	23	6.8	2.9
21	.60	4.4	9.3	102	39	88	46	188	46	24	6.5	2.9
22	.50	4.4	9.0	98	42	86	45	170	75	23	6.8	2.5
23	1.4	4.1	8.2	97	308	84	42	155	78	21	6.5	2.3
24	1.4	6.1	8.2	90	100	80	40	150	51	26	6.5	2.1
25	2.9	10	7.9	85	91	79	39	142	46	20	6.2	2.3
26	4.3	5.6	7.9	80	86	79	40	130	45	20	6.2	2.3
27	13	4.4	9.2	82	84	124	40	122	42	18	5.9	2.1
28	5.9	4.1	15	72	94	86	38	114	41	18	5.6	2.5
29	4.1	4.1	13	70	---	80	263	106	40	16	5.6	98
30	4.7	4.4	941	69	---	82	68	98	38	16	5.7	3.6
31	5.9	---	822	62	---	72	---	94	---	14	6.8	---
TOTAL	67.40	166.2	1974.2	3083	1768	3028	1781	4104	1819	839	263.8	211.8
MEAN	2.17	5.54	63.7	99.5	63.1	97.7	59.4	132	60.6	27.1	8.51	7.06
MAX	13	10	941	238	308	322	263	972	89	38	14	98
MIN	.00	4.1	2.7	62	38	58	38	44	38	14	5.6	2.1
CFSM	.03	.06	.74	1.15	.73	1.13	.69	1.53	.70	.31	.10	.08
IN.	.03	.07	.85	1.33	.76	1.31	.77	1.77	.78	.36	.11	.09
AC-FT	134	330	3920	6120	3510	6010	3530	8140	3610	1660	523	420

CAL YR 1984 TOTAL 3033.27 MEAN 8.29 MAX 941 MIN .00 CFSM .10 IN 1.31 AC-FT 6020
WTR YR 1985 TOTAL 19105.40 MEAN 52.3 MAX 972 MIN .00 CFSM .61 IN 8.24 AC-FT 37900

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
08...	1224	75	470	8.3	11.0	5	1.0	10.8	100	--	--	--
09...	1026	70	468	8.1	12.5	--	--	10.2	99	--	50	92
23...	1640	98	442	8.1	9.0	--	--	--	--	--	--	--
APR												
30...	1412	68	419	8.0	25.0	40	20	7.9	99	2.1	K1360	K565
AUG												
22...	1600	7.2	382	7.8	32.0	3	.90	9.1	128	1.0	240	K28

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
JAN												
08...	240	43	81	9.8	5.5	.2	1.4	200	32	9.1	.20	10
09...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
30...	220	40	71	9.2	5.7	.2	1.5	176	32	9.4	.30	9.9
AUG												
22...	180	43	53	11	9.1	.3	1.1	135	33	15	.20	16

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
08...	270	1	--	--	<.010	1.0	.010	.29	.30	<.010	1.4
09...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	240	33	17	.49	.010	.50	.050	.55	.60	.010	1.5
AUG											
22...	220	2	2	--	<.010	<.10	.040	.36	.40	<.010	1.7

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN							
08...	1224	<1	33	<1	<10	1	3
AUG							
22...	1600	1	35	<1	<10	<1	5

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN						
08...	<1	<1	<.1	1	<1	9
AUG						
22...	<1	3	<.1	<1	<1	11

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

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

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AMETRYNE TOTAL	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	CYANAZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN										
08...	1224	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1640	--	--	--	<.10	<.10	--	<.10	--	--
AUG										
22...	1600	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	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)
JAN										
08...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG										
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHOMYL TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	PROPAZINE TOTAL (UG/L)
JAN										
08...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG										
22...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN										
08...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG										
22...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

08200700 HONDO CREEK AT KING WATERHOLE NEAR HONDO, TX

LOCATION.--Lat 29°23'26", long 99°09'04", Medina County, Hydrologic Unit 12110107, on left bank 0.3 mi downstream from county road low-water crossing, 3.1 mi north of Hondo, 7.8 mi upstream from Verde Creek, and 55.4 mi upstream from mouth.

DRAINAGE AREA.--149 mi².

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 897.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Most of the low flow of Hondo Creek enters Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Tarpley (station 08200000) and this station. Small diversions above station for irrigation, amounts unknown. Satellite telemeter located at station.

AVERAGE DISCHARGE.--25 years, 13.1 ft³/s (9,490 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 31	0300	*9,900	a*8.33	May 17	0630	4,280	6.11

a From floodmark.

Minimum daily discharge, no flow most of year.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	60	.00	.00	.00	.00	.00	.00	.02	.02
2	.00	.00	.00	22	.00	.00	.00	.00	.00	.00	.02	.02
3	.00	.00	.00	10	.00	.00	.00	.00	.00	.00	.02	.02
4	.00	.00	.00	2.0	.00	.00	.00	.00	.00	.00	.02	.02
5	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.02	.02
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
14	.00	.00	.00	.00	.00	76	.00	.00	.00	.00	.02	.02
15	.00	.00	.00	.00	.00	5.9	.00	.00	.00	.00	.02	.02
16	.00	.00	.00	.00	.00	1.3	.00	.00	.00	.00	.02	.02
17	.00	.00	.00	.00	.00	.05	.00	508	.00	.00	.02	.02
18	.00	.00	.00	.00	.00	.00	.00	76	.03	.00	.02	.02
19	.00	.00	.00	.00	.00	.00	.00	43	.00	.00	.02	.02
20	.00	.00	.00	.00	.00	.00	.00	18	.00	.00	.02	.02
21	.00	.00	.00	.00	.00	.00	.00	8.2	.00	.00	.02	.02
22	.00	.00	.00	.00	.00	.00	.00	.88	.00	.00	.02	.02
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.02	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.02	.00
31	.00	---	969	.00	---	.00	---	.00	---	.02	.02	---
TOTAL	.00	.00	969.00	94.04	.00	83.25	.00	654.08	.03	.02	.62	.48
MEAN	.000	.000	31.3	3.03	.000	2.69	.000	21.1	.001	.001	.020	.016
MAX	.00	.00	969	60	.00	76	.00	508	.03	.02	.02	.02
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
AC-FT	.00	.00	1920	187	.00	165	.00	1300	.06	.04	1.2	1.0

CAL YR 1984 TOTAL 1074.28 MEAN 2.94 MAX 969 MIN .00 AC-FT 2130
WTR YR 1985 TOTAL 1801.52 MEAN 4.94 MAX 969 MIN .00 AC-FT 3570

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX

LOCATION.--Lat 29°34'23", long 99°24'10" Medina County, Hydrologic Unit 12110107, on right bank 200 ft upstream from county road crossing, 4.5 mi downstream from Cascade Creek, 7.9 mi southeast of Utopia, and 58.0 mi upstream from mouth.

DRAINAGE AREA.--45.0 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,265.8 ft above National Geodetic Vertical Datum of 1929, from Magnolia Oil Company datum, adjustment unknown.

REMARKS.--Estimated daily discharges: Apr. 7-14. Records good. No known diversion above station.

AVERAGE DISCHARGE.--24 years, 18.0 ft³/s (5.43 in/yr), 13,040 acre-ft/yr.

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 30	2300	*2,840	*5.01	Apr. 29	0900	1,500	4.14
Feb. 23	0030	843	3.53				

Minimum daily discharge, 0.07 ft³/s Oct. 1-4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	9.9	4.3	118	37	57	43	45	31	11	3.1	1.4
2	.07	8.2	4.3	88	36	55	40	36	29	11	3.1	1.4
3	.07	7.9	4.3	77	37	54	38	34	28	10	2.8	1.4
4	.07	7.0	4.3	69	38	51	39	33	28	11	2.8	1.6
5	.08	6.8	6.2	63	33	50	39	30	28	11	2.8	1.3
6	.09	6.2	4 7	59	32	50	37	28	39	9.6	2.8	4.2
7	12	6.1	4.3	54	29	50	36	27	29	9.3	2.6	1.9
8	2.2	5.9	4.3	51	28	48	35	27	29	8.4	2.6	1.3
9	2.7	5.7	4.3	46	28	47	34	25	24	8.3	2.4	1.3
10	2.2	4.9	4.3	46	27	44	33	22	25	7.7	2.4	1.3
11	9.9	4.9	4.3	43	24	44	32	21	21	7.8	2.0	1.4
12	6.0	4.9	4.3	44	24	43	31	21	21	9.3	2.0	1.7
13	7.7	4.9	15	45	24	41	30	22	21	7.8	2.0	1.5
14	28	4.9	7.7	46	22	70	29	22	20	6.9	1.9	1.5
15	6.5	4.9	7.0	51	21	51	27	19	19	6.3	2.0	1.3
16	4.7	4.9	7.5	58	21	54	26	19	18	6.1	2.2	1.3
17	3.7	4.6	7.0	63	21	51	24	116	17	5.6	1.8	1.3
18	3.3	5.3	7.0	64	20	52	24	110	17	5.3	1.8	1.3
19	2.9	4.6	6.5	64	20	52	24	72	18	5.3	1.8	1.3
20	2.6	4.3	6.5	60	19	51	23	65	17	5.3	1.8	1.4
21	2.3	4.3	6.5	59	19	46	21	63	16	5.2	1.7	1.4
22	3.1	4.3	6.5	57	33	46	21	56	23	4.6	2.0	1.4
23	3.1	4.3	6.5	56	140	46	21	53	24	4.7	1.5	1.3
24	2.6	6.2	6.5	54	67	44	19	50	18	6.1	1.5	1 2
25	2.6	9.1	6.2	54	61	43	18	49	17	4.5	1.6	1.2
26	3.6	5.3	6.1	47	59	43	18	44	15	3.9	2.2	1.2
27	8.8	4.6	6.4	47	57	65	18	42	15	3.9	1.4	1.1
28	8.7	4.3	12	44	59	48	17	38	15	3.9	1.3	1.2
29	19	4.3	14	44	---	48	173	38	13	3.6	1.4	12
30	9.5	4.3	250	45	---	45	45	36	12	3.4	1.4	12
31	11	---	1600	40	---	43	---	34	---	3.3	1.4	---
TOTAL	169.15	167.8	2038.8	1756	1036	1532	1015	1297	647	210.1	64.1	65.1
MEAN	5.46	5.59	65.8	56.6	37.0	49.4	33.8	41.8	21.6	6.78	2.07	2.17
MAX	28	9.9	1600	118	140	70	173	116	39	11	3.1	12
MIN	.07	4.3	4.3	40	19	41	17	19	12	3.3	1.3	1.1
CFSM	.13	.13	1.53	1.31	.86	1.15	.78	.97	.50	.16	.05	.05
IN.	.15	.14	1.76	1.52	.89	1.32	.88	1.12	.56	.18	.06	.06
AC-FT	336	333	4040	3480	2050	3040	2010	2570	1280	417	127	129

CAL YR 1984 TOTAL 2873.68 MEAN 7.85 MAX 1600 MIN .04 CFSM .18 IN 2.48 AC-FT 5700
WTR YR 1985 TOTAL 9998.05 MEAN 27.4 MAX 1600 MIN .07 CFSM .64 IN 8.63 AC-FT 19830

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

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUC-TANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
09...	1127	46	516	8.2	14.0	5	1.0	10.0	101	--	K130	140
23...	1600	52	482	8.0	10.0	--	--	--	--	--	--	--
APR												
30...	1545	55	447	8.0	27.0	5	1.9	7.4	--	1.5	200	320
AUG												
23...	1430	1.6	360	8.1	34.0	10	--	9.5	140	1.3	K890	K8

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
09...	250	38	81	11	6.0	.2	1.0	210	37	11	.20
23...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	230	51	75	11	5.9	.2	1.3	182	43	10	.30
AUG											
23...	170	52	49	11	8.6	.3	1.2	116	47	15	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
09...	11	280	2	2	<.010	1.3	<.010	--	.20	<.010	1.1
23...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	11	270	5	2	<.010	.70	.050	.35	.40	<.010	1.0
AUG											
23..	15	220	--	1	<.010	.10	.030	.37	.40	.010	5.9

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN							
09...	1127	<1	35	<1	<10	<1	3
AUG							
23...	1430	<1	32	<1	<10	<1	4

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN						
09...	<1	<1	<.1	1	<1	9
AUG						
23...	<1	3	<.1	<1	<1	16

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME-TRYNE TOTAL	ATRA-ZINE, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	CYAN-AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN										
09...	1127	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1600	--	--	--	<.10	<.10	--	<.10	--	--
AUG										
23...	1430	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

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

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

DATE	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)
JAN										
09...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG										
23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHO-MYL TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PROME-TONE TOTAL (UG/L)	PROME-TRYNE TOTAL (UG/L)	PRO-PAZINE TOTAL (UG/L)
JAN										
09...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG										
23...	--	<.01	.02	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA-ZINE TOTAL (UG/L)	SIME-TRYNE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN										
09...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG										
23...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

08202700 SECO CREEK AT ROWE RANCH NEAR D'HANIS, TX

LOCATION.--Lat 29°21'43", long 99°17'05", Medina County, Hydrologic Unit 12110107, on left bank 2.9 mi north of D'Hanis and 8.0 mi downstream from Rocky Creek.

DRAINAGE AREA.--168 mi².

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

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

REMARKS.--No estimated daily discharges. Records good. All of low flow of Seco Creek enters Edwards and associated limestones in the Balcones fault zone, that crosses the basin between Miller Ranch (station 08201500) and this station. No known diversion above station.

AVERAGE DISCHARGE.--24 years (water years 1962-85), 7.95 ft³/s (5,760 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage Height (ft)	Date	Time	Discharge (ft³/s)	Gage Height (ft)
Dec. 31	0200	*11,800	a*17.43	No other peak greater than base discharge.			

a From floodmark.

Minimum daily discharge, no flow most of year.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	11	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	1.9	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	1.2	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.69	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	2.3	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	77	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	3.3	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	2.0	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	1.2	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.63	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	2.7	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	1740	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	1742.70	15.17	.00	86.67	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	56.2	.49	.000	2.80	.000	.000	.000	.000	.000	.000
MAX	.00	.00	1740	11	.00	77	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	3460	30	.00	172	.00	.00	.00	.00	.00	.00

CAL YR 1984 TOTAL 1742.70 MEAN 4.76 MAX 1740 MIN .00 AC-FT 3460
WTR YR 1985 TOTAL 1844.54 MEAN 5.05 MAX 1740 MIN .00 AC-FT 3660

08204000 LEONA RIVER SPRING FLOW NEAR UVALDE, TX

LOCATION.--Lat 29°09'15", long 99°44'35", Uvalde County, Hydrologic Unit 12110106 at old road crossing on White's Ranch, 2.0 mi downstream from Cooks Slough, and 4.7 mi 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 above 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, 7,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--(1939 to current year) Maximum measured spring discharge, 82 ft^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 1984 TO SEPTEMBER 1985

Date	Discharge (ft^3/s)	Date	Discharge (ft^3/s)	Date	Discharge (ft^3/s)
Oct. 22, 1984	0.00	Mar. 5, 1985	10.3	Aug. 2, 1985	3.57
Dec. 12	.00	Apr. 16	12.8	Sept. 25	7.94
Jan. 10, 1985	.00	June 7	8.10		

APPENDIX D. SUPPLEMENTAL INFORMATION

DEFINITIONS OF TERMS

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

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

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

total-coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C (degrees Celsius). In the laboratory these bacteria are defined as the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C $\pm$ 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL (milliliters) of sample.

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

fecal-streptococcal bacteria are bacteria found in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°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.

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 microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids concentration in the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens) 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" in the REVISED RECORDS paragraph to refer to State annual basic-data reports.

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

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

METRIC CONVERSIONS

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

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 (Mgal/d)	0.04381	cubic meters per second (m^3/s)
square miles (mi^2)	2.590	square kilometers (km^2)

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

PREVIOUS AND RELATED STUDIES

The Geological Survey and the Texas Water Development Board 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 Water Development Board 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 Water Development Board and the Edwards Underground Water District, began a continuing program to collect historical-reference data for detecting pollution and for determining changes in the quality of water in the Edwards aquifer. The results of the study from August 1968 to August 1969 were reported by Reeves and Blakey (1970), and the results from August 1968 to April 1972 were reported by Reeves, Rawson, and Blakey (1972). A progress report for August 1968 to January 1975 was made by Reeves (1976). Compilations of water-quality data for February 1975 to September 1977 were reported by Reeves (1978), for October 1977 to September 1978 and October 1978 to December 1979 were reported by Reeves, Maclay, Grimm, and Davis (1980, 1981), for January 1980 to December 1980 were reported by Reeves, Maclay, and Davis (1982), for January 1981 to December 1981 were reported by Reeves, Maclay, and Ozuna (1984), for January 1982 to December 1982 were reported by Reeves and Ozuna (1985), and for January 1983 to December 1984 were reported by Reeves and Ozuna (1986).

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

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

WELL-NUMBERING SYSTEM

The well-numbering system in Texas was developed by the Texas Water Development Board 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: AL, Atascosa; 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.

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.

Drever, J. I., 1982, The geochemistry of natural waters: Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 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.

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, 1964, 1966, Ground-water discharge from the Edwards and associated limestones, 1955-62, 1963, 1965, San Antonio area, Texas: Edwards Underground Water District Bulletin 2, 4 p.; Bulletin 5, 3 p.; Bulletin 11, 4 p.

_____1963, 1964, Records of precipitation, aquifer head, and ground-water discharge to the Edwards and associated limestones, 1960-62, 1963, San Antonio area, Texas: Edwards Underground Water District Bulletin 3, 7 p.; Bulletin 6, 7 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.

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, 1978, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1975, 1976: U.S. Geological Survey Open-File Reports 77-221, 91 p.; 78-164, 132 p.

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, 1972, Annual compilation and analysis of hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1969, 1970: U.S. Geological Survey open-file reports, 109 p.; 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.

Pearson, F. J., Jr., Rettman, P. L., and Wyerman, T. A., 1975, Environmental tritium in the Edwards aquifer, central Texas, 1963-71: U.S. Geological Survey Open-File Report 74-362, 12 p.

Perez, Roberto, 1981, 1982, 1983, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1978, 1979-80, 1981: U.S. Geological Survey Open-File Reports 81-922, 91 p.; 82-158, 125 p.; 83-35, 58 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 80-743, 100 p.

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, 1970, 1971, 1972, 1973, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1968, 1969, 1970, 1971, 1972: Edwards Underground Water District Bulletin 20, 5 p.; Bulletin 23, 7 p.; Bulletin 26, 7 p.; Bulletin 29, 8 p.; Bulletin 31, 8 p.

_____1971, 1972, 1974, Records of precipitation, water levels, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1970, 1971, 1972-73: Edwards Underground Water District Bulletin 27, 11 p.; Bulletin 30, 11 p.; 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.

Rappmund, R. A., 1974, 1975, 1976, 1977, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1973, 1974, 1975, 1976: Edwards Underground Water District Bulletin 32, 9 p.; Bulletin 34, 8 p.; Bulletin 35, 7 p.; 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., 1971, Results of test drilling at the San Marcos Fish Hatchery, Texas: U.S. Geological Survey open-file report, 11 p.

Reeves, R. D., 1976, 1978, Chemical and bacteriological quality of water at selected sites in the San Antonio area, Texas, August 1968-January 1975, February 1975-September 1977: Edwards Underground Water District reports, 122 p.; 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., and Davis, M. F., 1982, Records of ground-water recharge and discharge, 1934-80; water levels, 1978-80; and chemical quality of water, 1980, for the Edwards aquifer in the San Antonio area, Texas: Edwards Underground Water District Bulletin 40, 128 p.

Reeves, R. D., Maclay, R. W., Grimm, K. C., and Davis, M. F., 1980, 1981, Records of ground-water recharge and discharge, 1934-78, 1934-79; water levels, 1975-78, 1977-79; and chemical quality of water, 1977-78, 1979, for the Edwards aquifer in the San Antonio area, Texas: Edwards Underground Water District Bulletin 38, 53 p.; Bulletin 39, 133 p.

Reeves, R. D., Maclay, R. W., and Ozuna, G. B., 1984, Records of ground-water recharge and discharge, 1934-81; water levels, 1979-81; and chemical quality of water, 1981, for the Edwards aquifer in the San Antonio area, Texas: Edwards Underground Water District Bulletin 41, 133 p.

Reeves, R. D., and Ozuna, G. B., 1985, Records of ground-water recharge and discharge, 1934-82, water levels, 1980-82; and chemical quality of water, 1982, for the Edwards aquifer in the San Antonio area, Texas: Edwards Underground Water District Bulletin 42, 131 p.

_____1986, Compilation of hydrologic data for the Edwards aquifer, San Antonio area, Texas, 1983-84, with 1934-84 summary: Edwards Underground Water District Bulletin 43-44, 235 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, 1967, 1968, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1964, 1966, 1967: Edwards Underground Water District Bulletin 8, 4 p.; Bulletin 14, 4 p.; Bulletin 17, 4 p.

_____1966, 1967, 1968, 1969, 1970, Records of precipitation, aquifer head, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1965, 1966, 1967, 1968, 1969: Edwards Underground Water District Bulletin 12, 8 p.; Bulletin 15, 9 p.; Bulletin 18, 9 p.; Bulletin 21, 9 p.; 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.

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.

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.

Thatcher, L. L., 1962, The distribution of tritium fallout in precipitation over North America: International Association of Scientific Hydrology Bulletin, v. 7, p. 48-58.

_____1974, 1975, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1972, 1973: U.S. Geological Survey open-file reports, 102 p.; 127 p.

U.S. Department of Commerce, 1982, 1983, 1984, 1985, Climatological data, annual summary for Texas, 1982, 1983, 1984, 1985: National Oceanic and Atmospheric Administration, Environmental Data and Information Service, v. 87, no. 13; v. 88, no. 13; v. 89, no. 13; v. 90, no. 13.

U.S. Environmental Protection Agency, 1976, National interim primary drinking water regulations: Office of Water Supply, EPA-570/9-76-003, 159 p.

_____1977, National secondary drinking water regulations: Federal Register, v. 42, no. 62, pt. I, p. 17143-17147.

_____ 1985, National primary drinking water regulations: Federal Register, v. 50, no. 219, pt. III, p. 46880-46932.

U.S. Geological Survey, 1970, 1974 [1975], Surface water supply of the United States 1961-65, 1966-70, Part 8, Western Gulf of Mexico basins, vol. 2, Basins from Lavaca River to Rio Grande: U.S. Geological Survey Water-Supply Papers 1923, 786 p.; 2123, 861 p.

_____1971, 1976, Ground-water levels in the United States 1965-69, 1970-74, South-Central States: U.S. Geological Survey Water-Supply Papers 1979, 158 p.; 2172, 172 p.

_____1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, Water resources data for Texas, water years 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984: U.S. Geological Survey Water-Data Reports TX-75-1, v. 1-3; TX-76-1, TX-76-2, TX-76-3; TX-77-1, TX-77-2, TX-77-3; TX-78-1, TX-78-2, TX-78-3; TX-79-1, TX-79-2, TX-79-3; TX-80-1, TX-80-2, TX-80-3; TX-81-1, TX-81-2, TX-81-3; TX-82-1, TX-82-2, TX-82-3; TX-83-1, TX-83-2, TX-83-3; TX-84-1, TX-84-2; TX-84-3.

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

Wershaw, R. L., Fishman, M. J., Grabbe, R. R., and Lowe, L. E., 1983, Methods for the determination of organic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, ch. A3, 173 p.

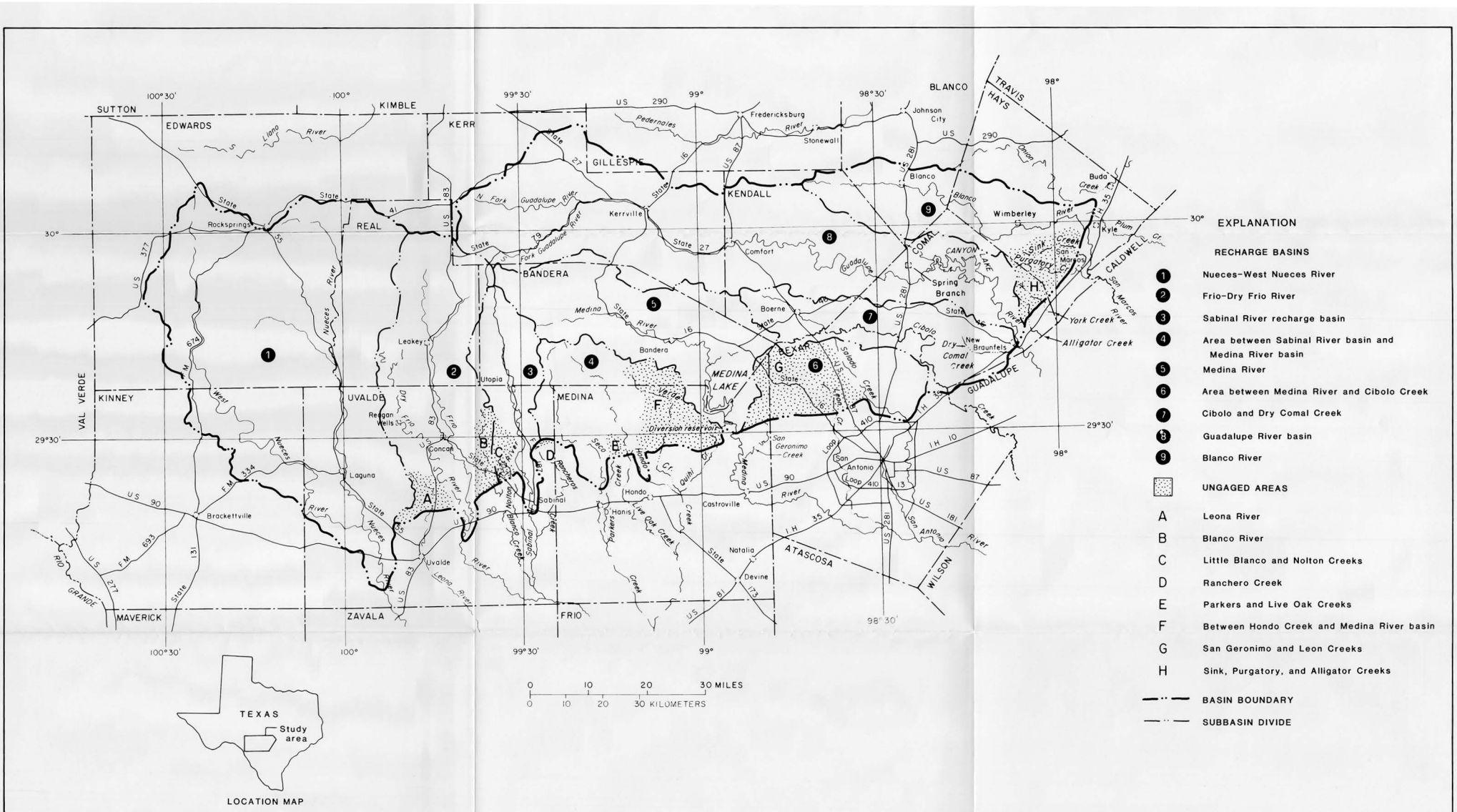


Plate 2.--Delination of surface-drainage basins used to calculate recharge to the Edwards aquifer

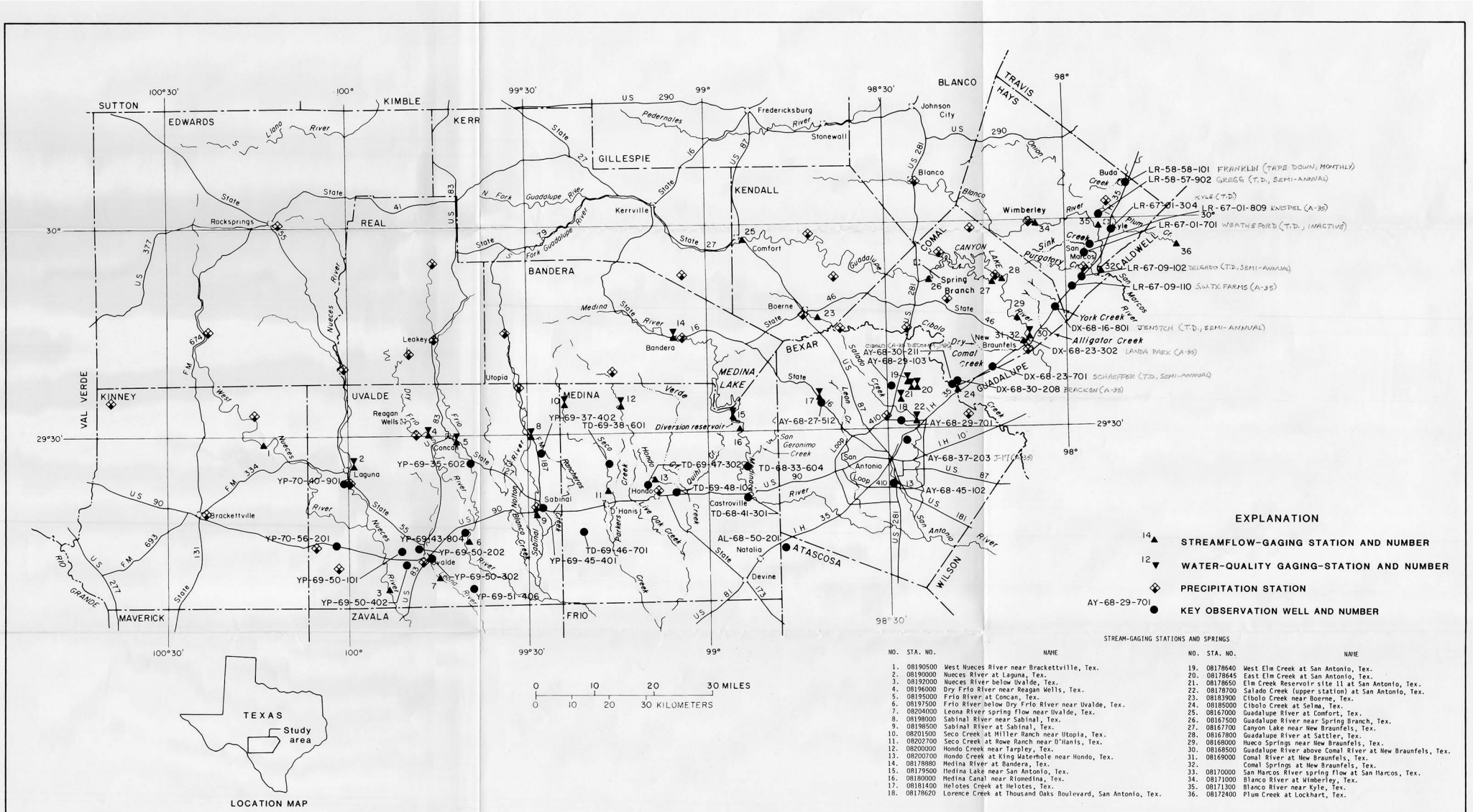


Plate 3.--Location of streamflow, water-quality, precipitation, and ground-water level stations

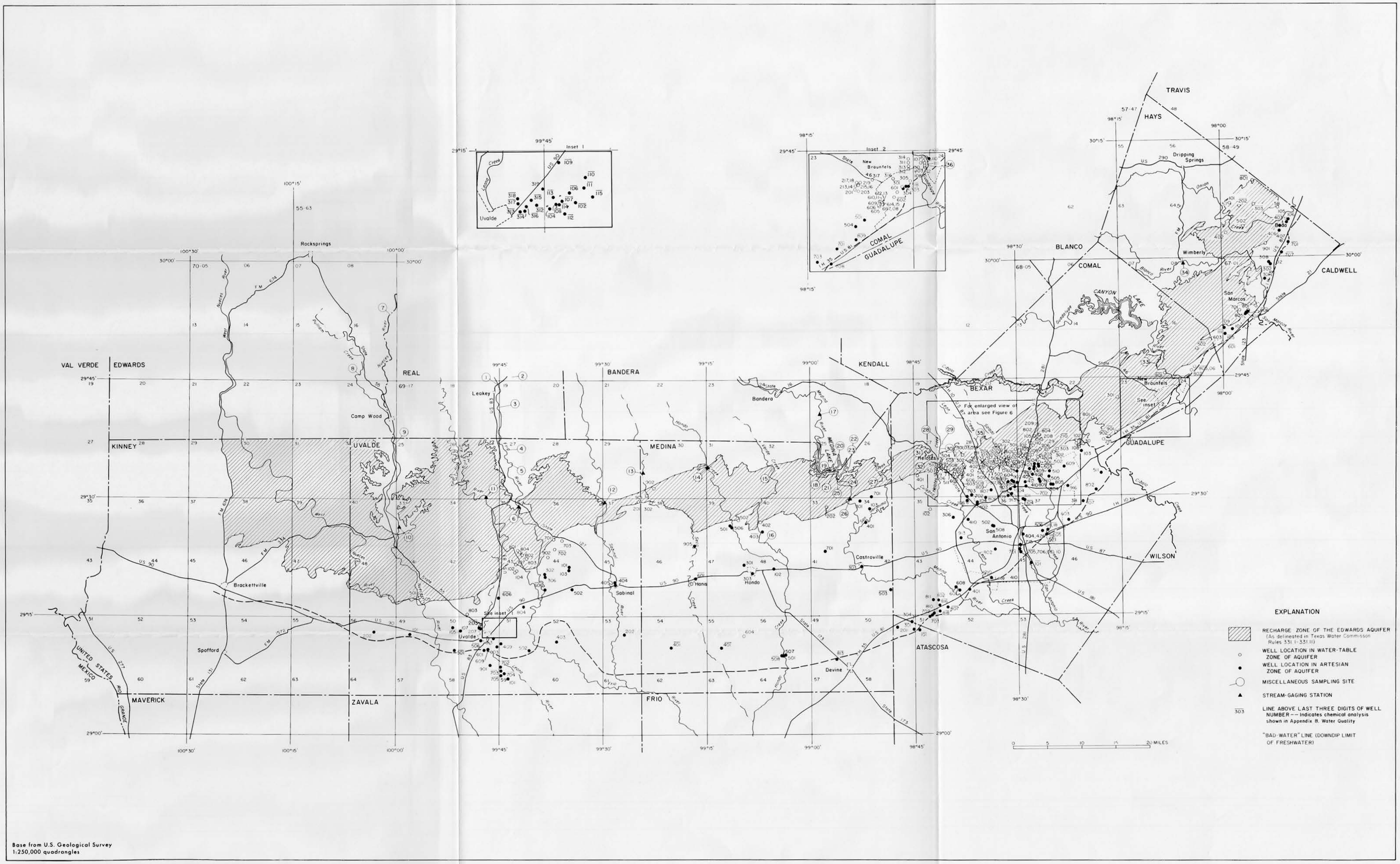


Plate 5.-- Location of water-quality data-collection sites for wells and springs in the Edwards aquifer that have been sampled since 1968

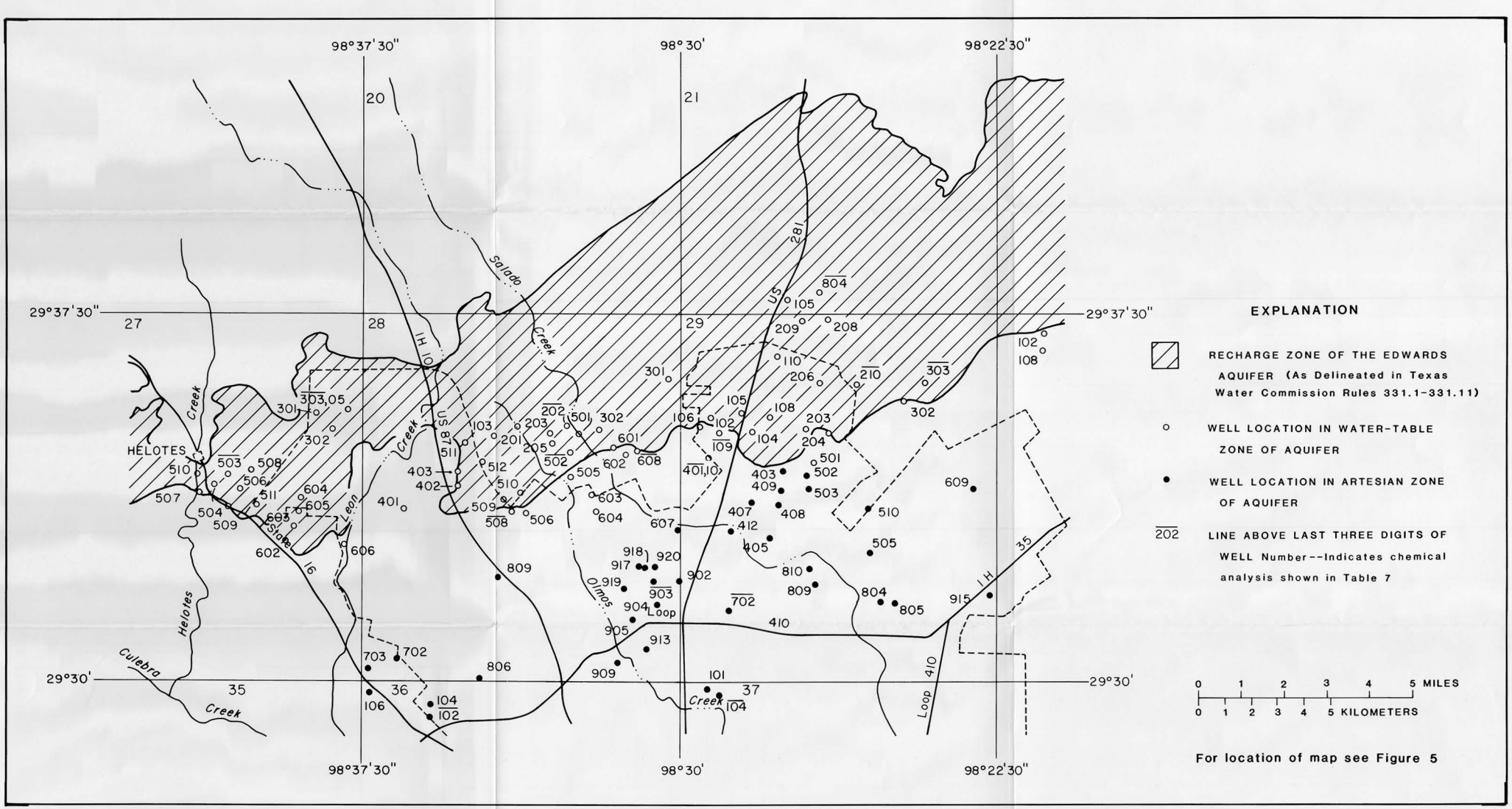


Figure 6.--Location of water-quality data-collection sites for wells and springs in the Edwards aquifer in the San Antonio area that have been sampled since 1968

Note: Large-format versions of the plates for this report are available at:

http://www.edwardsaquifer.org/documents/1987_Ozuna-etal_1985HydrologicData-Plates.pdf