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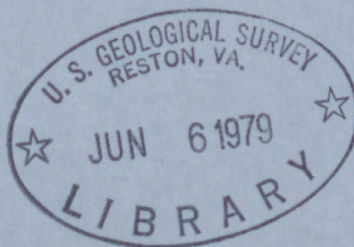
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Hydrologic Data for Urban Studies in the Austin, Texas Metropolitan Area, 1977



U.S. GEOLOGICAL SURVEY

OFR/WRD 79-271



*Prepared in cooperation with the City of Austin and the
Texas Department of Water Resources*

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no. 79-271

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R. M. Slade, Jr., J. D. Gordon, and R. N. Mitchell

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OFR/WRD 79-271



Reports - Open file Series, no. 79-271

*Prepared in cooperation with the City of Austin and the
Texas Department of Water Resources*

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FEBRUARY 1979

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

Reproduced by the Texas Department of Water Resources
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Austin, TX 78701

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HYDROLOGIC DATA FOR URBAN STUDIES IN THE
AUSTIN, TEXAS METROPOLITAN AREA

1977

By

R. M. Slade, Jr., J. D. Gordon, and R. N. Mitchell
U.S. Geological Survey

INTRODUCTION

Hydrologic investigations of urban watersheds in Texas were begun by the U.S. Geological Survey in 1954. Studies are now in progress in Austin, Dallas and Dallas County, Fort Worth, Houston, and San Antonio.

The Geological Survey, in cooperation with the Texas Department of Water Resources, began hydrologic studies in the Austin urban area in 1954. In cooperation with the city of Austin, the program was expanded in 1975 to include additional streamflow and rainfall gaging stations, and the collection of water-quality data.

The objectives of the Austin urban hydrology study are as follows:

1. To determine, on the basis of historical data and hydrologic analyses, the magnitude and frequency of flood peaks and flood volume.
2. To determine the effect of urban development on flood peaks and volume.
3. To ascertain the variation in water quality for different seasons from selected basins of varying urban development.

This report presents the basic hydrologic data collected in the Austin urban area for the 1977 water year (Oct. 1, 1976 to Sept. 30, 1977). To facilitate the publication and distribution of this report at the earliest feasible time, certain material has been included that does not conform to the formal publication standards of the U.S. Geological Survey.

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

From		Multiply by	To obtain	
Unit	Abbrevia- tion		Unit	Abbrevia- tion
inch	--	25.4	millimeter	mm
foot	--	.3048	meter	m
mile	--	1.609	kilometer	km
square mile	mi ²	2.590	square kilometer	km ²
cubic foot per second	ft ³ /s	.2832	cubic meter per second	m ³ /s
foot per mile	ft/mi	.189	meter per kilometer	m/km
acre-foot	--	1233	cubic meter	m ³
		.001233	cubic hectometer	hm ³

Additional explanations of terms related to streamflow, water quality, and other hydrologic data used in this report are defined in the U.S. Geological Survey annual report Water resources data for Texas, TX-76-3, 1977.

LOCATION AND DESCRIPTION OF THE AREA

The Austin study area is about 80 miles northeast of San Antonio and about 160 miles northwest of Houston. The study area extends from the Hill Country at the eastern edge of the Edwards Plateau across the Balcones Fault Escarpment to the Blackland Prairie of Texas. The land surface decreases in altitude from about 1,100 feet above mean sea level in the northwest to about 420 feet above mean sea level in the southeast.

Slopes generally range from 2 to 15 percent; slopes greater than 5 percent are present along the eastern edge of the Edwards Plateau, average about 5 percent within the Balcones Escarpment, and are less than 5 percent east of the escarpment and along the flood plain and alluvial terraces of the Colorado River and its tributaries.

Soils overlying the hard limestone in the western half of the study area are in general poorly developed thin calcareous clays, clay loams, and stony clays. Bedrock is locally exposed. Soils on the soft limestones and shales of the Balcones Escarpment are generally dark brown calcareous clays, clay loams, or silty clay loams 6 inches or more deep. Soils on the shaly formation in the eastern part of the area are dark gray to olive calcareous clays and clay loams, 12 inches or more deep. Soils on the flood plain and terraces of the Colorado River and its tributaries are dark gray to red-brown, calcareous, noncalcareous, sandy loams, silty clay loams, clay loams, and gravelly sands 12 inches or more deep.

Detailed descriptions of the soils in the Austin urban study area can be found in Soil Survey of Travis County, U.S. Dept. of Agriculture, 1974.

The major streams in the study area are the Colorado River, Onion Creek, Barton Creek, Walnut Creek, Bull Creek, Boggy Creek, Shoal Creek, and Waller Creek. Throughout the year, low flow for some of the smaller streams in the predominantly urban areas is partly sustained by return flow from industrial and residential users; during the summer months the low flow is partly sustained by drainage from municipal and private swimming pools.

The climate of the Austin urban area is characterized by short mild winters, long moderately hot summers, moderately high humidity, and prevailing southerly winds. Records of the National Weather Service show that the mean annual temperature (based on the period 1941-70) is 70.6°F (21.5°C); the mean maximum temperature for July is 95°F (35.0°C); and the mean minimum temperature for January is 41°F (5.0°C). The average growing season is about 270 days.

The average rainfall (based on the period 1941-70) is 32.49 inches and is generally well distributed throughout the year; however, individual storms may cause flooding in any season. The major storms usually occur during the months of April-May and September-October.

DATA COLLECTION METHODS

The drainage basins and locations of hydrologic-instrument installations and water-quality sampling sites in the Austin urban study area are shown on figure 1. The locations of hydrologic instruments and data-collection sites in the individual drainage basins are shown on figures 5-15.

Precipitation Data

Precipitation data are based on 24 recording rain gages. The gages are distributed throughout the drainage basins to measure total precipitation and to define rainfall intensities.

Precipitation at individual gages and weighted precipitation in each study basin is given in the section "Compilation of data." Weighted-mean precipitation equations are shown in table 1.

Rainfall for the current water year was evenly distributed over the area. Individual station totals ranged from 24.74 inches at gage 6-WLN in the Walnut Creek basin to 35.33 inches at gage 1-WLN in the same basin. The mean water-year total of all the rain gages is 29.83 inches as compared with the 30-year average (1941-70) of 32.49 inches at the Austin Municipal Airport rain gage operated by the National Weather Service. Daily and monthly precipitation data at individual gages in the study area are given in the section "Compilation of data."

Few storms of wide distribution produced rainfall totals of over 2 inches during the year. The most significant storm of the year occurred on April 15 (figure 2); rainfall totals for this storm ranged from 1.40 inches to 3.53 inches. Widespread showers also fell on the entire study area on April 19-20 (figure 3). This two-day storm produced rainfall totals ranging from 0.41 to 2.17 inches.

The storms of April 15 and April 19-20 were analyzed for all stations except for those stations where rainfall distribution was uneven, where the quality of recorded data was poor, or where the stage-discharge relationships were poorly defined. Other less significant storms were arbitrarily selected for analyses based on the discharge magnitude, quality of recorded data, and distribution of rainfall.

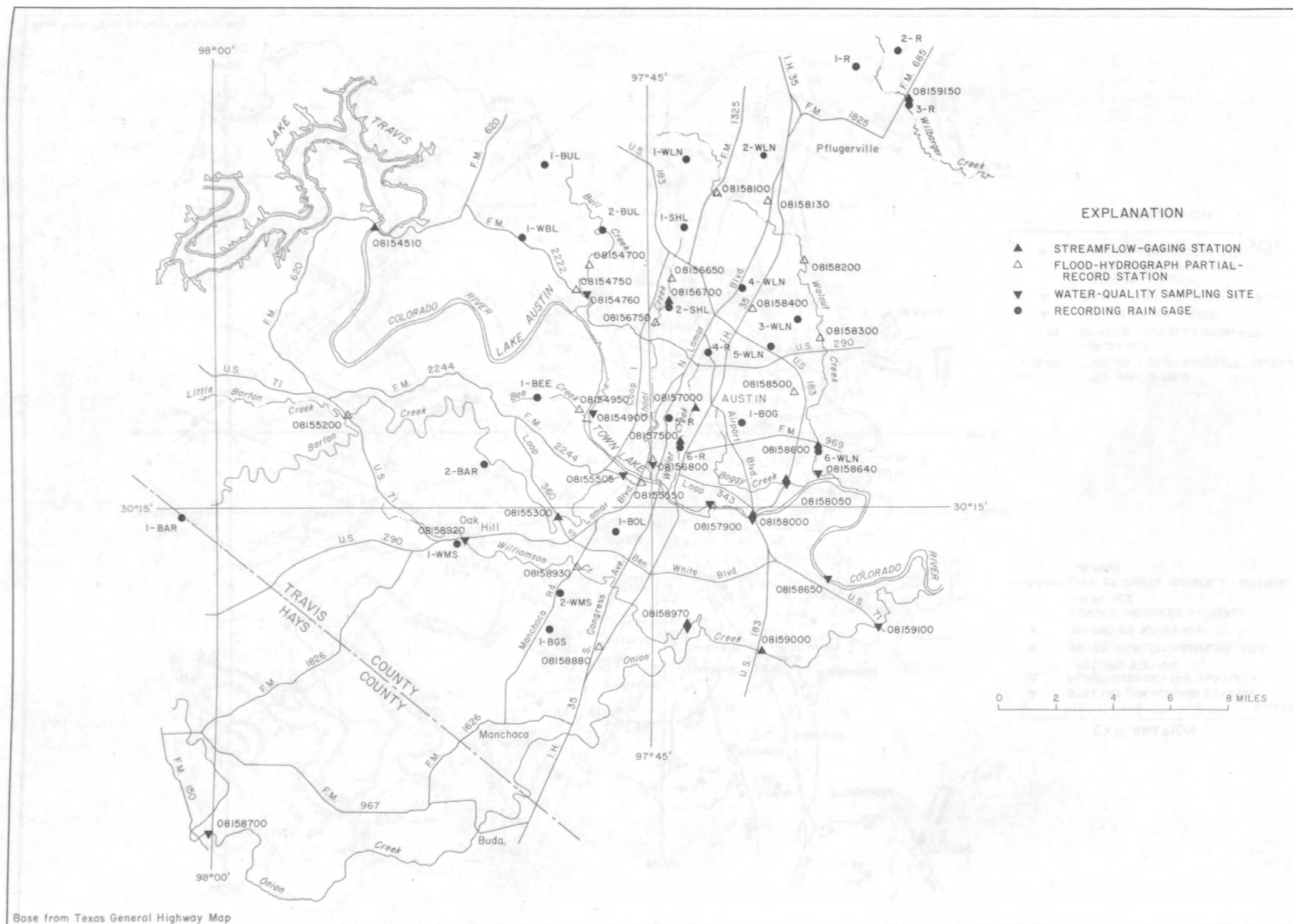


FIGURE 1.-Locations of hydrologic-instrument installations and water-quality sampling sites in the Austin urban study area

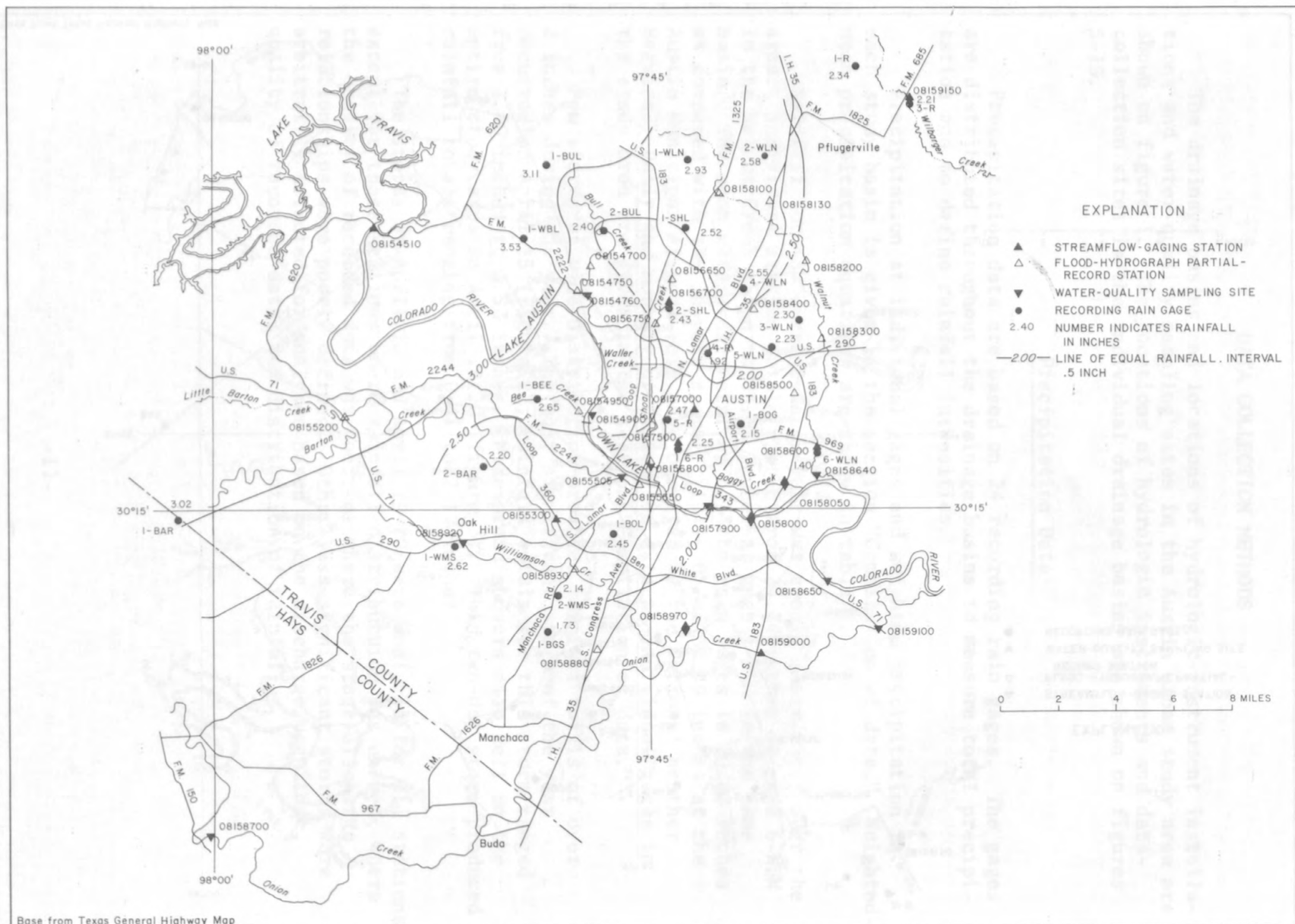


FIGURE 2.-Rainfall for the storm of April 15, 1977, on drainage basins in the Austin urban study area

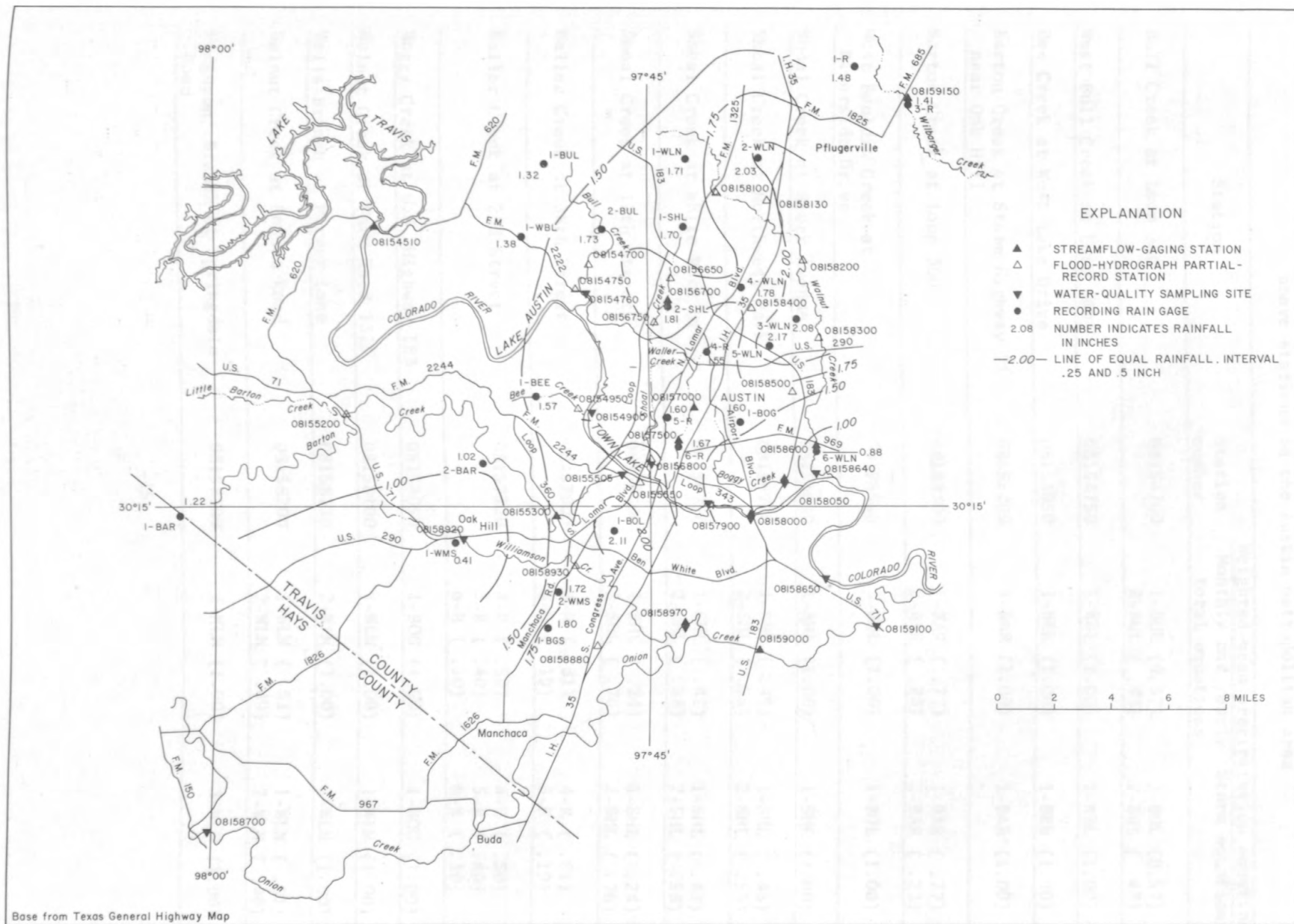


FIGURE 3.-Rainfall for the storm of April 19-20, 1977, on drainage basins in the Austin urban study area

Table 1.--Weighted-mean precipitation equations for drainage basins
above stations in the Austin metropolitan area

Station	Station number	Weighted-mean precipitation equation	
		Monthly and yearly total equations	Storm equations
Bull Creek at Loop 360	08154700	1-BUL (0.57) 2-BUL (.43)	1-BUL (0.57) 2-BUL (.43)
West Bull Creek at Loop 360	08154750	1-WBL (1.00)	1-WBL (1.00)
Bee Creek at West Lake Drive	08154950	1-BEE (1.00)	1-BEE (1.00)
Barton Creek at State Highway 71 near Oak Hill	08155200	1-BAR (1.00)	1-BAR (1.00)
Barton Creek at Loop 360	08155300	1-BAR (.77) 2-BAR (.23)	1-BAR (.77) 2-BAR (.23)
West Bouldin Creek at Riverside Drive	08155550	1-BOL (1.00)	1-BOL (1.00)
Shoal Creek at Steck Avenue	08156650	1-SHL (1.00)	1-SHL (1.00)
Shoal Creek at Northwest Park	08156700	1-SHL (.45) 2-SHL (.55)	1-SHL (.45) 2-SHL (.55)
Shoal Creek at White Rock Drive	08156750	1-SHL (.42) 2-SHL (.58)	1-SHL (.42) 2-SHL (.58)
Shoal Creek at 12th Street	08156800	1-SHL (.24) 2-SHL (.76)	1-SHL (.24) 2-SHL (.76)
Waller Creek at 38th Street	08157000	4-R (.81) 5-R (.19)	4-R (.81) 5-R (.19)
Waller Creek at 23d Street	08157500	4-R (.50) 5-R (.40) 6-R (.10)	4-R (.50) 5-R (.40) 6-R (.10)
Boggy Creek at U.S. Highway 183	08158050	1-BOG (1.00)	1-BOG (1.00)
Walnut Creek at Farm Road 1325	08158100	1-WLN (1.00)	1-WLN (1.00)
Wells Branch at Parmer Lane	08158130	2-WLN (1.00)	2-WLN (1.00)
Walnut Creek at Dessau Road	08158200	1-WLN (.51) 2-WLN (.49)	1-WLN (.51) 2-WLN (.49)
Ferguson Branch at Springdale Road	08158300	3-WLN (1.00)	3-WLN (1.00)

Table 1.--Weighted-mean precipitation equations for drainage basins
above stations in the Austin metropolitan area--Continued

Station	Station number	Weighted-mean precipitation equation	
		Monthly and yearly total equations	Storm equations
Little Walnut Creek at Interstate Highway 35	08158400	1-SHL (.34) 4-WLN (.66)	1-SHL (.34) 4-WLN (.66)
Little Walnut Creek at Manor Road	08158500	1-SHL (.15) 4-WLN (.43) 5-WLN (.42)	1-SHL (.15) 4-WLN (.43) 5-WLN (.42)
Walnut Creek at Webberville Road	08158600	1-WLN (.25) 2-WLN (.21) 3-WLN (.25) 4-WLN (.15) 5-WLN (.09) 6-WLN (.05)	1-WLN (.25) 2-WLN (.21) 3-WLN (.28) 4-WLN (.15) 5-WLN (.11)
Boggy Creek (South) at Circle S Road	08158880	1-BGS (1.00)	1-BGS (1.00)
Williamson Creek at Manchaca Road	08158930	1-WMS (.73) 2-WMS (.27)	1-WMS (.73) 2-WMS (.27)
Williamson Creek at Jimmy Clay Road	08158970	1-WMS (.50) 2-WMS (.50)	1-WMS (.50) 2-WMS (.50)
Wilbarger Creek near Pflugerville	08159150	1-R (.66) 3-R (.34)	1-R (.66) 3-R (.34)

Runoff Data

Runoff data are based on discharge measurements and stage records at 10 continuous-record streamflow gaging stations and 16 flood-hydrograph partial-record streamflow gaging stations. Streamflow data for continuous-record gaging stations, and for flood-hydrograph partial-record stations for the 1977 water year are presented in downstream order in the section "Compilation of data."

Rainfall and runoff for the 1977 water year for the continuous-record gaging stations in the Austin urban study area are summarized in table 2. Runoff varied from 3.63 inches for the Williamson Creek gage to 9.28 inches for the Waller Creek at 23rd Street gage, which was 11 percent and 33 percent of the basin's annual weighted-mean rainfall, respectively. Detailed storm rainfall and runoff records for each gaging station are shown in the section "Compilation of data."

Water-Quality Data

Water-quality data for the Austin urban study area are presented in downstream order with the streamflow data in the section "Compilation of data." The locations of water-quality data-collection sites at Town Lake are shown on figure 4. A complete tabulation of data including laboratory analyses for the 1977 water year for the Colorado River basin are given in Water resources data for Texas, TX 77-3, 1977.

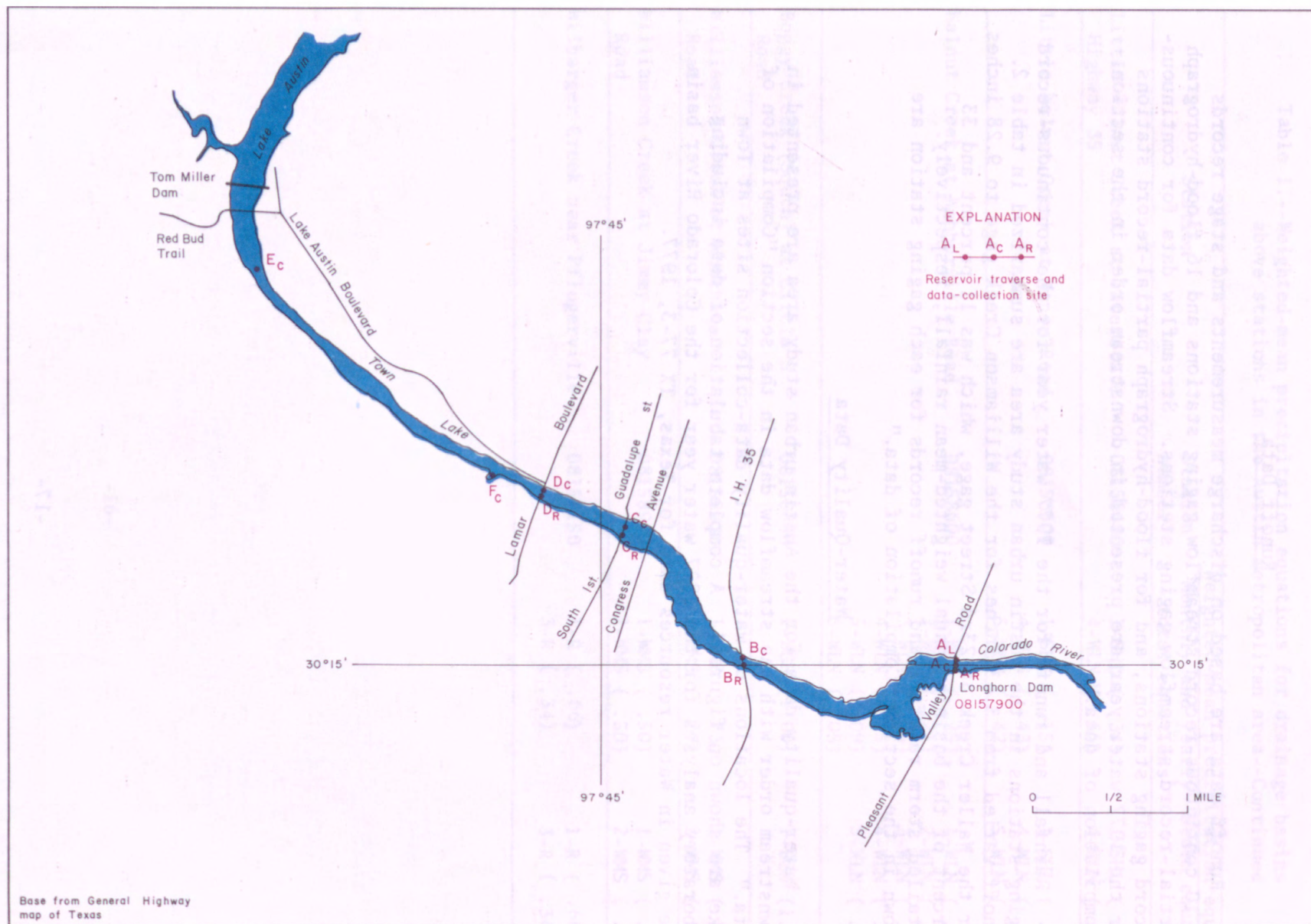


FIGURE 4.-Locations of the water-quality data-collection sites on Town Lake

Table 2.--Rainfall and runoff data for the continuous-record gaging stations in the Austin urban study area, 1977 water year

STATION	Weighted- mean rainfall (inches)	Total runoff (inches)	Ratio of runoff to rainfall
Shoal Creek at Northwest Park, Austin, Texas (08156700)	28.32	3.75	0.13
Waller Creek at 38th Street, Austin, Texas (08157000)	27.60	6.70	.32
Waller Creek at 23rd Street, Austin, Texas (08157500)	27.87	9.28	.33
Walnut Creek at Webberville Road, Austin, Texas (08158600)	32.22	6.64	.21
Williamson Creek at Jimmy Clay Road, Austin, Texas (08158970)	32.95	3.63	.11
Wilbarger Creek nr Pflugerville, Texas (08159150)	28.24	6.78	.24

NOTE: See "Remarks" paragraph of station descriptions in the section "Compilation of data" for information about regulation or diversion.

SELECTED REFERENCES

- U.S. Dept. of Agriculture, 1974, Soil survey of Travis County, Texas: U.S. Dept. of Agr., Soil Conservation Service, 123 p.
- U.S. Dept. of Commerce, Natl. Oceanic and Atmospheric Adm. Environmental Data Service, 1973, Monthly normals of temperature, precipitation, and heating and cooling degree days, 1941-70, Texas: Climatography of the United States, no. 81 (by State).
- U.S. Geological Survey, 1977, Water resources data for Texas, TX 77-1, TX 77-2, and TX 77-3: U.S. Geol. Survey rept.

COLORADO RIVER BASIN

08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX

LOCATION.--Lat 30°23'30", long 97°54'28". Travis County, Hydrologic Unit 12090205, at the downstream side of Mansfield Dam, 12.9 mi (20.8 km) northwest of the State Capitol at Austin, and at mile 318.0 (511.7 km).

DRAINAGE AREA.--38,130 mi² (98,760 km²), approximately of which 12,880 mi² (33,360 km²) probably is noncontributing.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--None. Daily discharge record is based on daily releases from Lake Travis.

REMARKS.--Records fair.

COOPERATION.--All records of releases were furnished by the Lower Colorado River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 25,300 ft³/s (716 m³/s) Apr. 17-19, 1977; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 25,300 ft³/s (716 m³/s) Apr. 17-19; no flow at times.

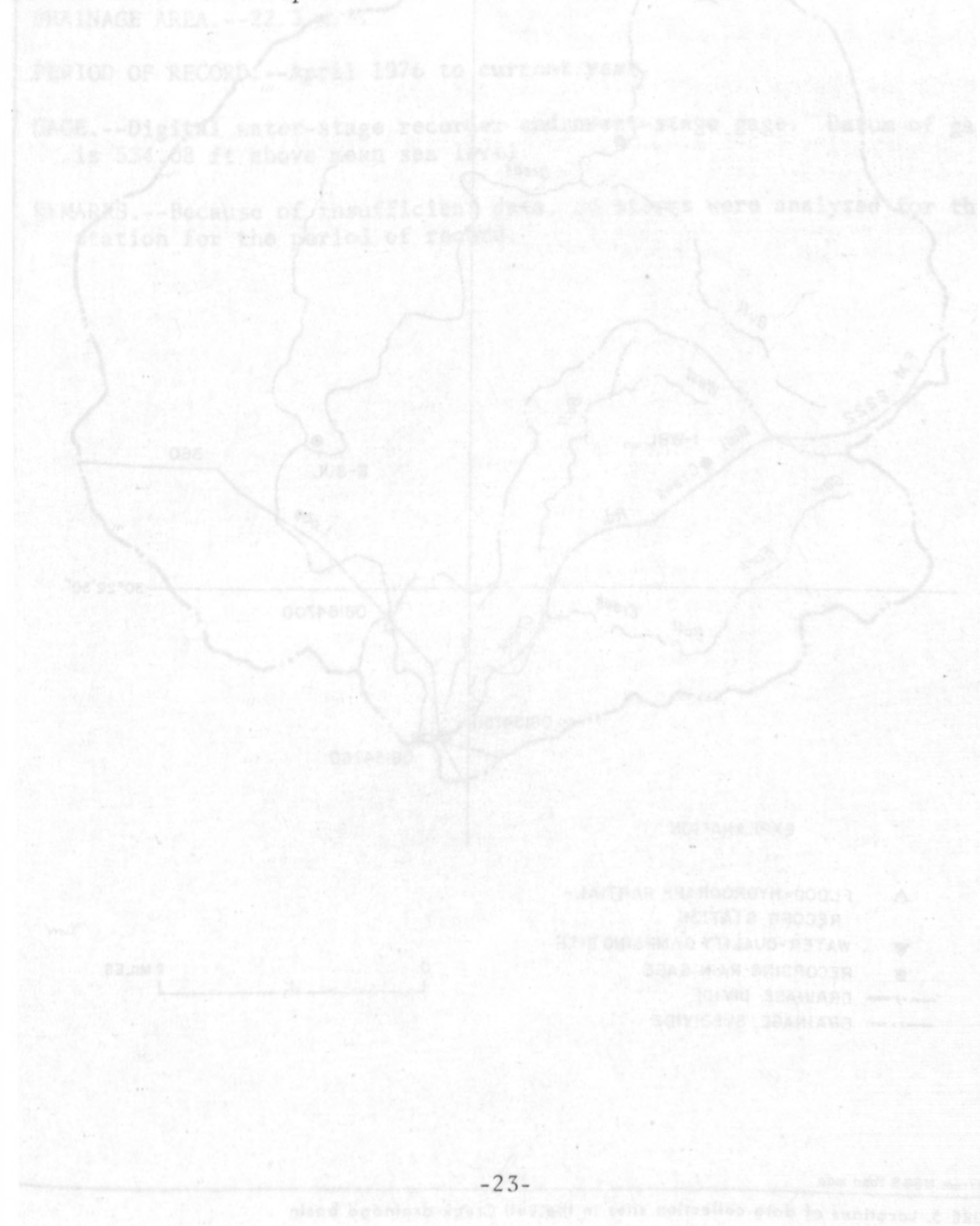
DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2210	.00	2180	792	2770	1510	3260	20300	5530	2290	1450	1950
2	1980	.00	.00	1540	1700	1070	3180	20300	5530	2360	1520	2180
3	2250	.00	.00	1960	666	1230	3080	9240	5530	2260	1430	1910
4	1550	.00	.00	696	211	1380	3080	5440	5500	2240	2050	2380
5	503	.00	.00	842	126	1260	3400	5440	5340	1930	1790	2190
6	.00	.00	1360	1810	126	1160	3140	5290	5370	2040	1780	1940
7	.00	.00	1520	380	126	1370	2840	5440	5530	1640	1900	1920
8	.00	.00	937	210	795	1290	1550	5440	5530	1860	2030	1900
9	174	.00	1590	1720	940	487	1570	5440	5530	1360	1920	2260
10	.00	.00	954	2550	1430	499	1580	5440	3960	1580	1690	2230
11	.00	.00	940	2520	1960	581	1820	5440	3030	1730	1280	2120
12	.00	.00	896	1370	1900	482	1740	5440	3030	1480	1680	2300
13	.00	515	918	322	1540	526	1660	5440	2990	1760	2350	1190
14	172	.00	1760	367	1980	672	1580	5440	3030	1360	1850	1020
15	.00	333	1810	364	1980	756	8490	5440	3180	1350	2280	1060
16	.00	.00	809	342	1860	669	25200	5440	3030	1320	2000	1070
17	.00	249	1840	2570	1520	910	25300	5440	3030	1590	2160	1160
18	180	.00	.00	2480	189	913	25300	5440	3030	1580	1890	1120
19	.00	.00	1180	2910	126	904	25300	5440	3030	1070	2130	983
20	.00	.00	1100	1050	126	513	9200	5440	2760	2040	1870	940
21	.00	.00	1350	178	126	915	8140	5440	2610	1140	2160	900
22	.00	924	414	255	946	966	15300	5440	2460	863	2020	966
23	.00	1770	266	249	932	484	12800	5440	1970	813	2030	821
24	.00	1850	311	225	789	779	8650	9640	2110	862	1910	805
25	.00	659	.00	461	365	806	5440	12400	2350	1100	2320	958
26	.00	855	.00	982	905	770	5440	7480	2060	1080	1920	1580
27	.00	2230	330	998	1150	2080	5440	5500	2280	1220	2230	1060
28	.00	3090	241	981	1180	3270	5370	5530	2110	1230	1850	782
29	.00	3540	512	638	---	2920	5440	5530	2440	1540	2090	1010
30	.00	3090	.00	946	---	2960	12100	5530	2040	1390	2010	1310
31	.00	---	939	1990	---	2930	---	5530	---	1590	1880	---
TOTAL	9019.00	19105.00	24157.00	34698	28464	37062	236390	215630	105920	47668	59470	44015
MEAN	291	637	779	1119	1017	1196	7880	6956	3531	1538	1918	1467
MAX	2250	3540	2180	2910	2770	3270	25300	20300	5530	2360	2350	2380
MIN	.00	.00	.00	178	126	482	1550	5290	1970	813	1280	782
AC-FT	17890	37890	47920	68820	56460	73510	468900	427700	210100	94550	118000	87300
CAL YR 1976	TOTAL	448051.00	MEAN	1224	MAX	5090	MIN	.00	AC-FT	888700		
WTR YR 1977	TOTAL	861598.00	MEAN	2361	MAX	25300	MIN	.00	AC-FT	1709000		

BULL CREEK DRAINAGE BASIN

The locations of data-collection sites in the Bull Creek drainage basin are shown on figure 5.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.



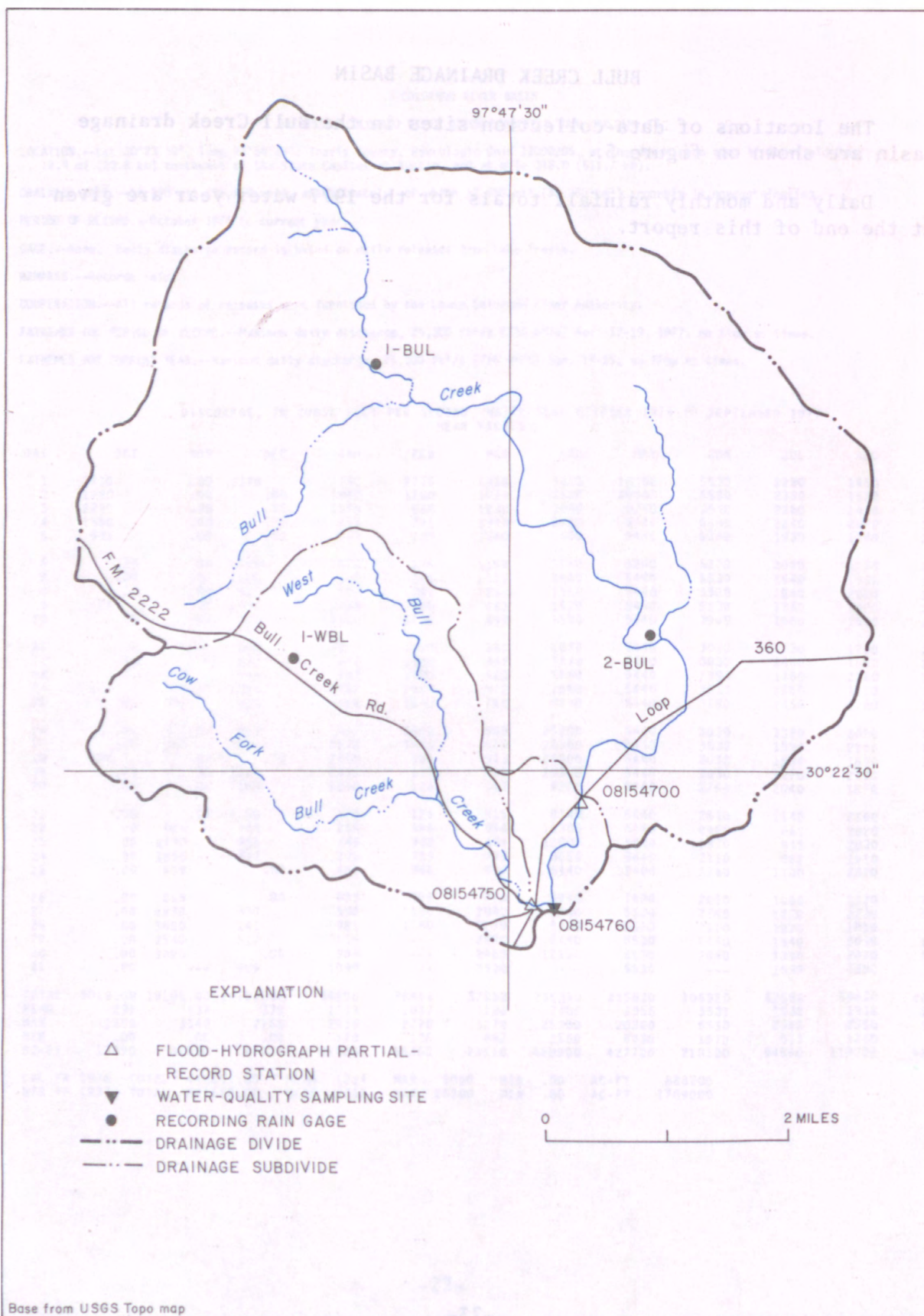


FIGURE 5.-Locations of data-collection sites in the Bull Creek drainage basin

08154700 Bull Creek at Loop 360 near Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°22'19", long 97°47'04", Travis County, Hydrologic unit 12090205, on downstream side of the bridge at Loop 360 and 7.1 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--22.3 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 534.08 ft above mean sea level.

REMARKS.--Because of insufficient data, no storms were analyzed for this station for the period of record.

08154750 West Bull Creek at Loop 360 near Austin, TX
(Flood-hydrograph partial-record station)

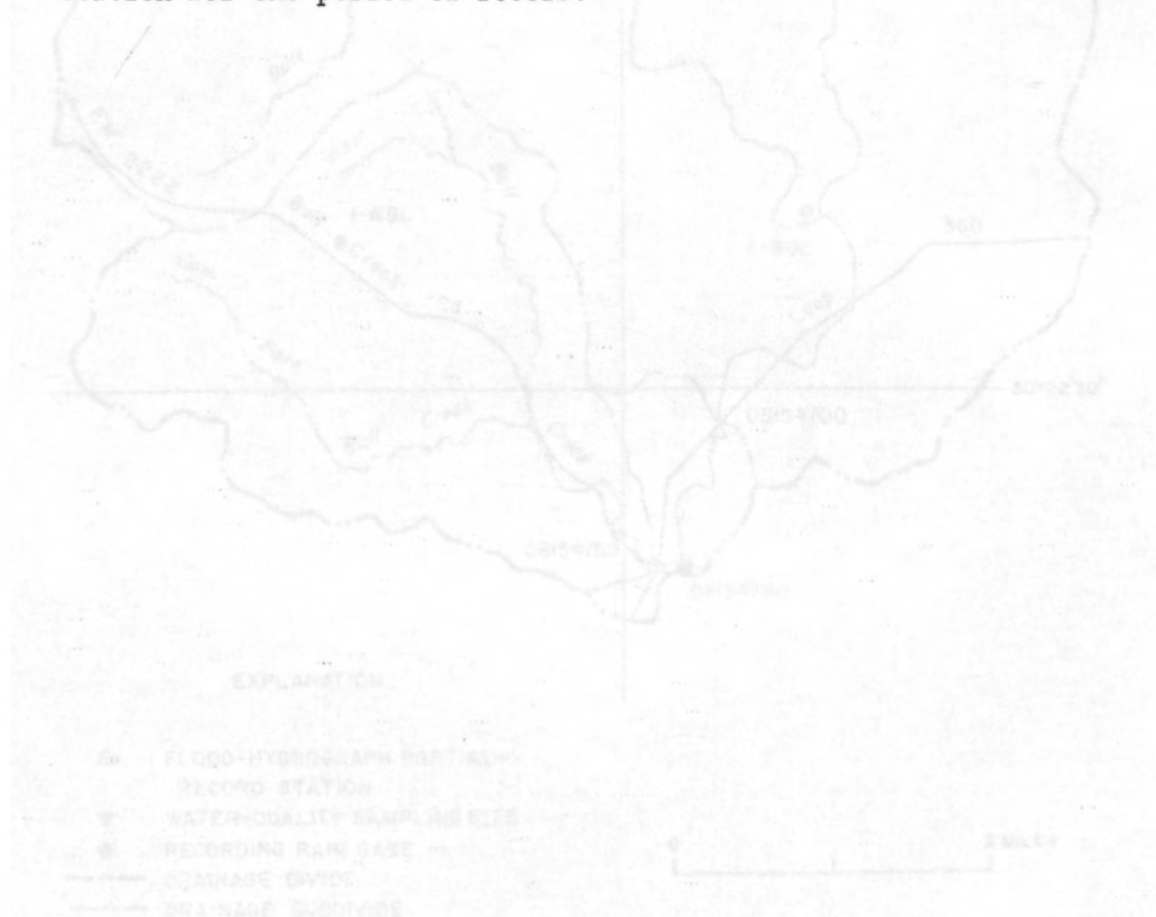
LOCATION.--Lat 30°21'34", long 97°47'24", Travis County, Hydrologic Unit 12090205, access road culvert, 150 ft north of the intersection of Farm Road 2222 and northbound Loop 360 access road, and 6.5 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--6.77 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 505.64 ft above mean sea level.

REMARKS.--Because of insufficient data, no storms were analyzed for this station for the period of record.



COLORADO RIVER BASIN

08154760 BULL CREEK AT FARM ROAD 2222 NEAR AUSTIN, TX
(Reconnaissance partial-record station)

LOCATION.--Lat 30°21'33", long 97°47'16", Travis County, Hydrologic Unit 12090205, low-water crossing at Farm Road 2222, 50 ft (15 m) west of Lakewood Drive, and 6.5 mi (10.5 km) northwest of State capitol in Austin.

DRAINAGE AREA.--30.42 mi² (78.79 km²).

PERIOD OF RECORD.--Occasional discharge measurements and water-quality data: January 1975 to current year.

DISCHARGE AND WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)
NOV 02...	0835	1.1	661	8.1	13.0	0	2	10.0	98	.3	2000	58
JAN 03...	0900	1.8	588	8.4	5.6	5	1	12.2	98	.3	590	20
MAR 01...	1050	1.9	537	8.2	12.0	5	1	10.1	97	.4	2000	9
APR 15...	0930	8.0	292	8.0	16.5	0	380	9.4	99	3.0	39000	4300
MAY 16...	1117	5.1	515	8.1	22.0	5	10	8.6	101	.6	12000	80
JUL 11...	0835	.18	523	8.0	26.0	5	20	7.3	91	1.4	7200	33
SEP 21...	1045	7.6	387	7.8	24.5	10	25	7.6	93	1.2	32000	1100

DATE	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHORUS (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
NOV 02...	130	280	54	73	23	34	.9	1.9	272	0	65	42
JAN 03...	40	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	24	--	--	--	--	--	--	--	--	--	--	--
APR 15...	33000	150	38	42	10	4.8	.2	1.8	132	0	30	7.3
MAY 16...	500	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	240	--	--	--	--	--	--	--	--	--	--	--
SEP 21...	560	180	69	52	11	9.7	.3	2.8	130	0	67	16

DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
NOV 02...	.2	9.2	383	3	1	.21	.00	.00	.24	.01	5.6
JAN 03...	--	--	--	2	1	.22	.00	.01	.10	.00	3.4
MAR 01...	--	--	--	3	1	.18	.00	.01	.25	.00	2.2
APR 15...	.1	5.8	167	654	116	.23	.01	.06	.93	.12	12
MAY 16...	--	--	--	14	1	.10	.00	.01	.52	.01	4.9
JUL 11...	--	--	--	25	3	.03	.01	.05	.48	.02	3.4
SEP 21...	.2	8.3	231	23	4	.30	.01	.09	.08	.05	6.6

COLORADO RIVER BASIN

08154760 BULL CREEK AT FARM ROAD 2222 NEAR AUSTIN, TX.--Continued

WATER QUALITY DATA WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

		DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)						
DATE	TIME												
NOV 02...	0935	0	100	0	0	0	10						
APR 15...	0930	1	0	0	1	0	10						
SEP 21...	1045	1	100	0	0	2	20						
DATE	TIME	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MANG- NESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)						
NOV 02...		0	0	.2	0	0	10						
APR 15...		0	10	.0	0	0	10						
SEP 21...		0	3	.0	0	0	10						
DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLO- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	
NOV 02...	0835	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	
APR 15...	0930	.0	.00	.00	.0	.00	.00	.00	.02	.00	.00	.00	
MAY 16...	1117	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	
SEP 21...	1045	.0	.00	.00	.0	.00	.00	.00	.33	.00	.00	.00	
DATE	TIME	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 02...		.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
APR 15...		.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
MAY 16...		.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
SEP 21...		.00	.00	.01	.00	.00	.00	.00	0	.00	.00	.01	.00

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX

LOCATION.--Lat 30°18'53", long 97°47'10", Travis County, Hydrologic Unit 12090205, at city of Austin Waterplant No. 2 and 1.5 mi (2.4 km) upstream from Tom Miller Dam on the Colorado River at Austin.

DRAINAGE AREA.--38,240 mi² (99,040 km²), of which 11,900 mi² (30,800 km²) probably is noncontributing.

PERIOD OF RECORD.--Chemical analyses: October 1964 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1964 to current year.

WATER TEMPERATURES: October 1964 to current year.

REMARKS.--No water-discharge records available.

EXTREMES FOR PERIOD OF DAILY RECORDS.--

SPECIFIC CONDUCTANCE (1964-75): Maximum daily, 982 micromhos Aug. 15-17, 1974; minimum daily, 311 micromhos June 19, 1968.

WATER TEMPERATURES (1964-75): Maximum daily, 32.0°C Aug. 24, 1965; minimum daily, 9.0°C Jan. 30, 1966, Jan. 9, 11, 1968, and Jan. 5, 1969.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG)	DIS-SOLVED SODIUM (NA) (MG/L)
OCT 18...	1410	526	8.1	21.5	210	51	46	23	29
JAN 14...	1325	546	8.4	9.5	200	44	42	24	32
FEB 15...	1345	542	8.6	12.0	210	48	47	22	45
MAR 17...	1325	561	8.2	17.0	210	48	47	23	33
MAY 16...	1340	498	8.0	20.0	180	37	41	20	27
JUN 16...	1330	485	7.9	23.0	180	40	42	18	27
JUL 19...	1355	507	7.7	25.0	210	60	52	19	28
AUG 16...	1350	528	7.8	25.0	200	51	45	21	29
SEP 16...	1430	551	7.9	25.0	200	44	47	20	32
DATE	SODIUM ADSORPTION RATIO	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SI02) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)
OCT 18...	.9	3.2	193	0	32	50	.2	10	289
JAN 14...	1.0	3.6	186	4	37	57	.2	8.7	300
FEB 15...	1.4	3.2	181	7	39	77	.3	7.8	338
MAR 17...	1.0	3.2	200	0	39	58	.2	7.1	309
MAY 16...	.9	3.3	180	0	33	46	.2	8.1	267
JUN 16...	.9	3.4	170	0	34	51	.2	8.3	268
JUL 19...	.8	3.3	180	0	39	56	.4	9.3	296
AUG 16...	.9	3.5	180	0	38	57	.2	10	292
SEP 16...	1.0	3.5	190	0	37	58	.2	9.9	301

COLORADO RIVER BASIN
08154900 LAKE AUSTIN AT AUSTIN, TX.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	516	508	---	---	531	524	---	---	495	484	509	538
2	520	---	525	---	---	555	557	533	---	486	---	538
3	514	---	535	---	514	526	557	531	---	491	511	538
4	516	509	536	550	509	550	554	525	487	---	---	539
5	---	512	540	---	519	500	557	516	484	496	532	543
6	---	520	537	551	511	---	---	---	495	---	---	---
7	516	510	514	---	526	547	550	516	484	---	---	---
8	519	512	---	544	521	558	---	---	488	489	515	547
9	520	---	537	535	528	---	521	507	486	---	518	---
10	---	510	532	546	531	---	554	---	---	---	518	547
11	519	512	518	---	511	552	557	---	489	---	518	544
12	---	513	509	543	---	552	557	---	489	---	---	529
13	516	511	532	539	---	---	498	---	487	---	521	---
14	516	505	533	539	---	552	544	---	486	---	522	540
15	519	518	---	---	---	552	557	492	---	---	527	550
16	514	515	---	540	---	552	531	500	486	---	---	---
17	519	515	---	537	554	558	544	---	486	---	522	546
18	520	515	---	538	557	555	537	498	486	500	529	543
19	---	519	---	---	---	---	544	495	---	503	530	542
20	---	---	---	542	554	---	531	485	482	499	527	---
21	519	515	---	538	531	552	544	486	482	---	---	544
22	526	---	---	538	538	---	544	---	487	---	529	546
23	---	---	---	543	---	---	---	495	484	---	529	---
24	530	520	---	542	549	558	---	495	485	---	531	544
25	520	---	---	---	556	552	---	495	485	501	---	542
26	519	508	---	---	538	558	554	488	486	507	532	542
27	521	515	---	544	---	562	544	495	488	511	531	543
28	---	---	546	539	556	552	544	495	487	508	531	546
29	520	532	---	532	---	---	544	495	485	510	533	---
30	520	532	538	533	---	---	---	490	489	---	---	550
31	521	---	---	546	---	550	---	---	---	---	537	---
MEAN	519	515	531	541	533	548	545	502	487	499	525	543

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	16.5	---	---	10.0	13.5	---	---	19.5	24.0	25.5	24.5
2	24.0	---	13.0	---	---	14.5	14.0	16.0	---	23.5	---	24.5
3	24.0	---	10.0	---	9.5	14.0	15.0	15.5	---	23.5	25.0	24.5
4	20.0	---	13.0	9.0	9.5	13.5	15.0	18.5	19.5	---	---	24.5
5	---	16.5	12.0	---	9.5	13.5	14.0	18.5	20.0	24.0	26.0	24.5
6	---	16.5	13.0	9.5	9.5	---	---	---	20.5	---	---	---
7	23.5	17.0	13.0	---	10.5	13.0	14.5	19.0	19.5	---	---	---
8	23.5	16.5	---	9.5	10.0	13.5	---	---	19.5	23.5	25.5	24.0
9	23.0	---	---	9.5	10.0	---	14.5	19.0	20.0	---	24.0	---
10	---	17.0	13.0	9.5	10.0	---	14.5	---	---	---	23.5	24.0
11	22.0	17.0	13.0	---	10.0	13.5	14.5	---	21.0	---	24.5	24.0
12	---	16.5	13.0	10.5	---	14.0	15.0	---	21.0	---	---	24.0
13	21.5	15.0	13.0	10.0	---	---	16.5	---	21.0	---	26.5	---
14	22.0	14.5	13.0	10.0	---	14.5	15.0	---	20.5	---	26.5	25.0
15	22.0	14.0	---	---	---	16.0	14.5	19.0	---	---	25.5	24.5
16	21.0	14.0	---	9.5	---	15.5	16.5	18.5	21.0	---	---	---
17	21.5	13.5	---	9.0	11.0	16.0	14.0	---	21.5	---	25.5	24.0
18	21.5	13.0	---	9.5	11.5	16.0	15.0	18.0	21.5	25.5	25.5	23.5
19	---	13.0	---	---	---	---	15.5	18.0	---	24.5	23.5	23.5
20	---	---	---	9.0	13.0	---	15.5	18.5	22.0	24.0	24.5	---
21	20.0	14.0	---	9.5	13.0	11.0	14.0	18.5	23.0	---	---	26.0
22	16.5	---	---	9.0	13.5	---	15.0	---	21.0	---	25.5	24.0
23	---	---	---	10.0	---	---	---	19.0	23.0	---	25.0	---
24	19.5	14.0	---	10.0	13.5	15.5	---	19.0	23.0	---	25.5	24.5
25	19.0	---	---	---	14.0	16.5	---	19.5	23.0	25.0	---	23.5
26	14.5	13.0	---	---	13.5	16.5	15.0	18.5	23.0	25.5	25.5	26.5
27	18.5	14.5	---	10.5	---	16.5	15.5	18.5	21.0	25.5	26.0	27.0
28	---	---	13.0	10.5	13.5	16.5	16.5	19.5	23.5	25.0	24.5	27.0
29	18.5	18.0	---	10.5	---	---	18.0	19.5	24.0	25.5	26.0	---
30	16.5	13.5	12.0	10.0	---	---	---	19.0	22.0	---	---	26.5
31	18.0	---	---	9.0	---	15.0	---	---	---	---	25.0	---
MEAN	21.0	15.0	12.5	9.5	11.5	14.5	15.0	18.5	21.5	24.5	25.0	24.5

BEE CREEK DRAINAGE BASIN

The locations of data-collection sites in the Bee Creek drainage basin are shown on figure 6.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.

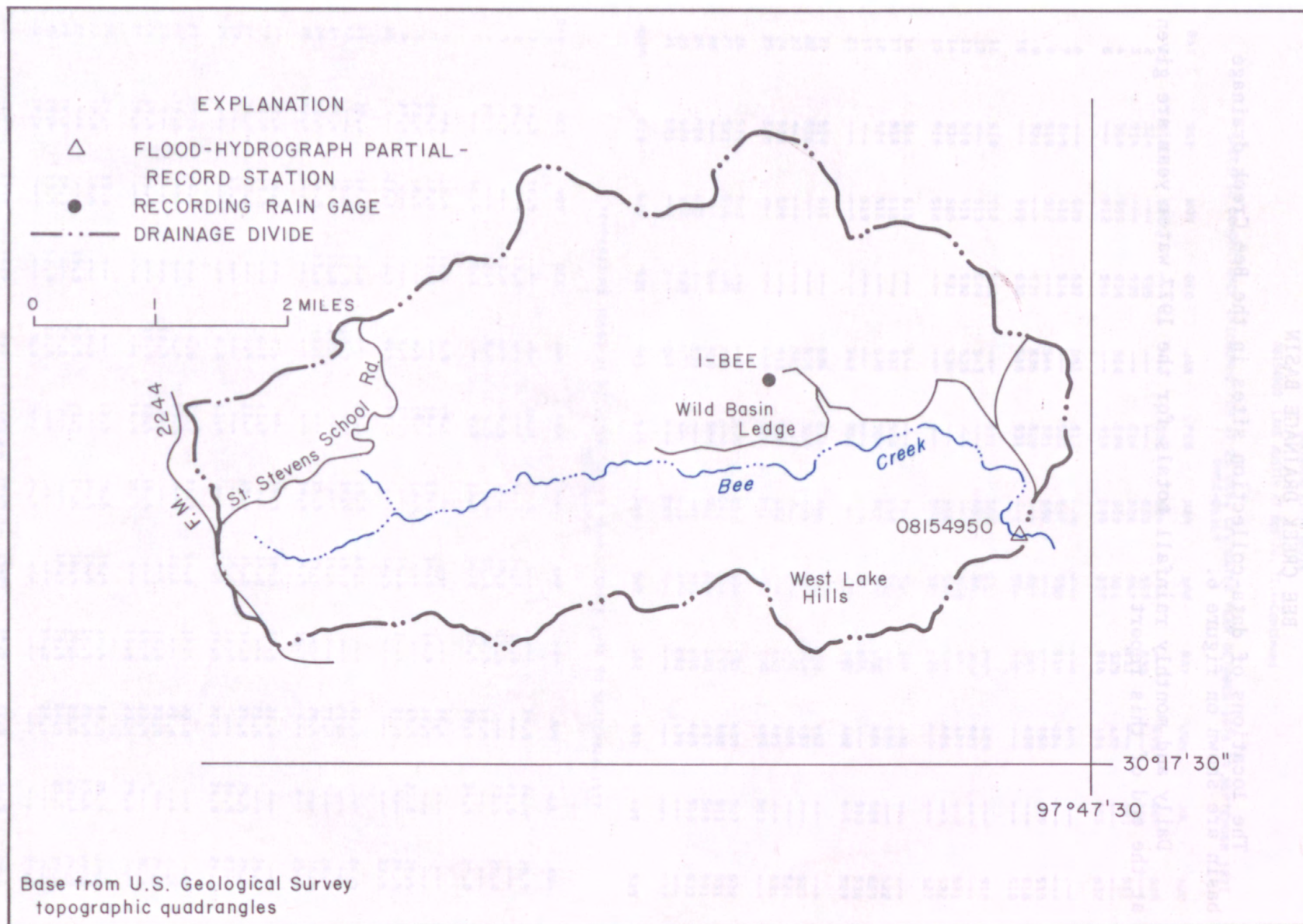


FIGURE 6.-Locations of data-collection sites in the Bee Creek drainage basin

08154950 Bee Creek at West Lake Drive near Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°18'11", long 97°47'43", Travis County, Hydrologic
Unit 12090205, on downstream side of the culvert on West Lake
Drive and 3.8 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--3.28 mi .

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage
is 499.72 ft above mean sea level.

REMARKS.--Because of insufficient data, no storms were analyzed for this
station for the period of record.

BARTON CREEK DRAINAGE BASIN

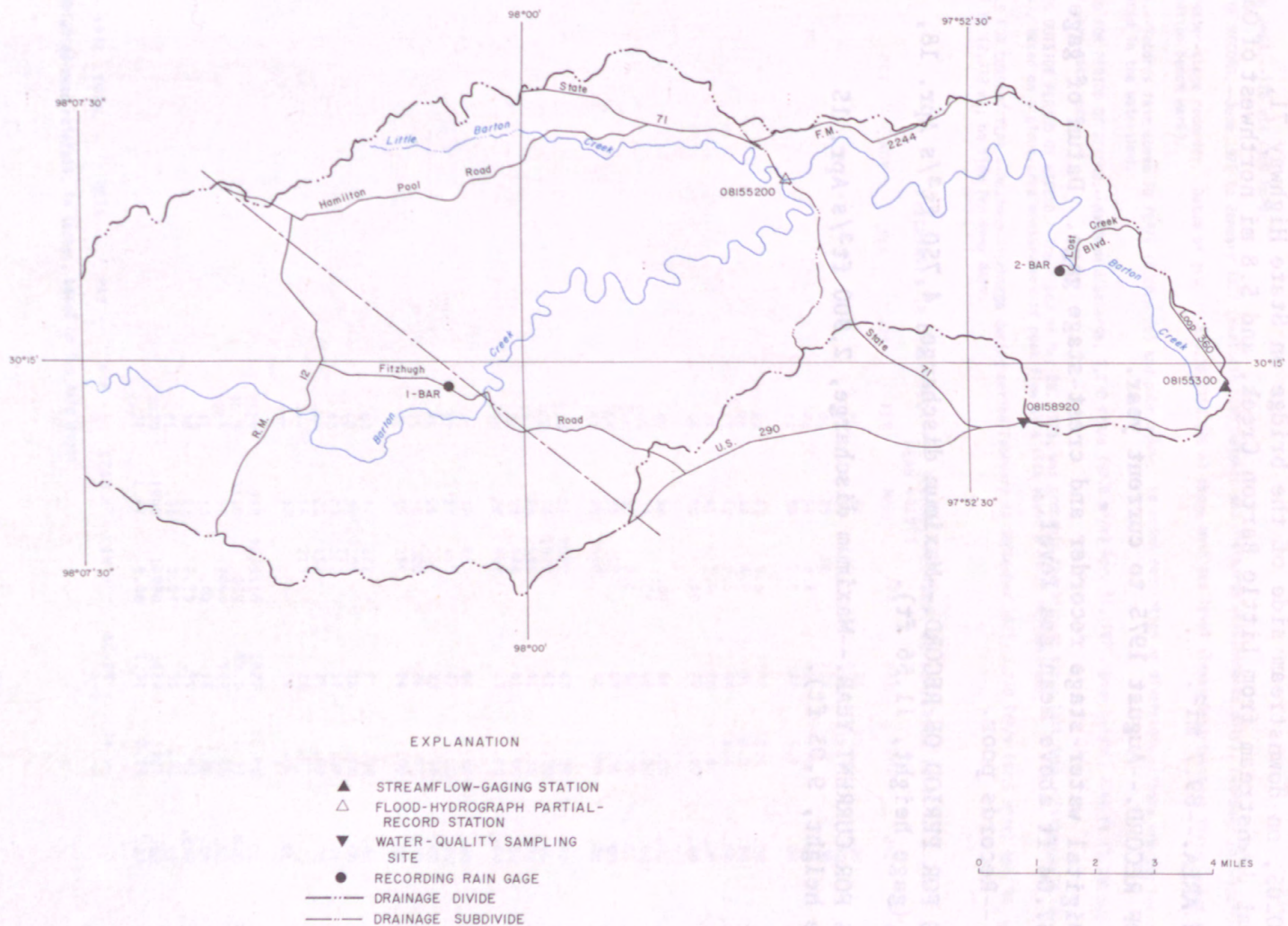
The locations of data-collection sites in the Barton Creek drainage basin are shown on figure 7.

Rainfall recorded for the 1977 water year was 30.93 inches at station 1-BAR, and 31.33 inches at station 2-BAR. Total runoff from the drainage basin was not determined for the entire year.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.

Because of insufficient data, no storms were analyzed for this basin during the 1977 water year.





Base from U.S. Geological Survey
topographic quadrangles

FIGURE 7.—Locations of data-collection sites in the Barton Creek drainage basin

08155200 Barton Creek at State Highway 71 near Oak Hill, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°17'46", long 96°55'31", Travis County, Hydrologic Unit 12090205, on downstream side of the bridge on State Highway 71, 0.1 mi downstream from Little Barton Creek, and 5.8 mi northwest of Oak Hill.

DRAINAGE AREA.--89.7 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 737.04 ft above mean sea level.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,750 ft³/s Apr. 18, 1976 (gage height, 11.56 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,900 ft³/s Apr. 15 (gage height, 9.03 ft).

COLORADO RIVER BASIN

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX

LOCATION.--Lat 30°14'40", long 97°48'07", Travis County, Hydrologic Unit 12090205, on Loop 360, 0.9 mi (1.4 km) west of the intersection of Ben White and Lamar Boulevards, and 4.3 mi (6.9 km) southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--June 1975 to January 1977 (periodic gage heights and discharge measurements only), February to September 1977.

GAGE.--Water-stage recorder. Datum of gage is 510.32 (155.546 m) above mean sea level (Texas Department of Highways and Public Transportation bench mark).

REMARKS.--Records fair above 10 ft³/s (0.28 m³/s) and poor below. No known regulation or diversions. There are two recording rain gages located in the watershed.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,270 ft³/s (92.6 m³/s) Apr. 15, 1977, gage height, 7.67 ft (2.338 m); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 28, 1929, was probably the highest since that date, discharge 39,400 ft³/s (1,120 m³/s), based on a slope-area measurement of peak flow at a site about 2 mi (3 km) upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period February to September 1977, 3,270 ft³/s (92.6 m³/s) Apr. 15, gage height, 7.67 ft (2.338 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, FEBRUARY TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					46	54	11	156	15	.00	.00	.00
2					45	53	11	136	15	.00	.00	.00
3					45	55	10	126	11	.00	.00	.00
4					44	59	8.6	117	7.8	.00	.00	.00
5					44	53	7.0	107	5.9	.00	.00	.00
6					42	47	5.5	100	4.4	.00	.00	.00
7					42	44	4.0	91	2.9	.00	.00	.00
8					42	42	2.5	84	1.4	.00	.00	.00
9					41	41	1.0	78	.60	.00	.00	.00
10					44	40	.50	72	.00	.00	.00	.00
11					149	38	.00	66	.00	.00	.00	.00
12					265	34	.00	62	.00	.00	.00	.00
13					184	31	6.0	57	.00	.00	.00	.00
14					164	29	19	53	.00	.00	.00	.00
15					145	28	1650	48	.00	.00	.00	.00
16					134	26	2000	43	.00	.00	.00	.00
17					125	24	1020	41	.00	.00	.00	.00
18					117	24	596	41	.00	.00	.00	.00
19					108	22	444	41	.00	.00	.00	.00
20					100	20	852	39	.00	.00	.00	.00
21					95	19	608	44	.00	.00	.00	.00
22					92	17	450	42	.00	.00	.00	.00
23					85	16	354	33	.00	.00	.00	.00
24					75	16	300	28	.00	.00	.00	.00
25					71	16	259	24	.00	.00	.00	.00
26					67	17	222	21	.00	.00	.00	.00
27					60	21	192	18	.00	.00	.00	.00
28					58	23	172	16	.00	.00	.00	.00
29					---	23	157	15	.00	.00	.00	.00
30					---	16	213	14	.00	.00	.00	.00
31					---	12	---	14	.00	.00	.00	---
TOTAL					2529	960	9575.10	1827	64.00	.00	.00	.00
MEAN					90.3	31.0	319	58.9	2.13	.000	.000	.000
MAX					265	59	2000	156	15	.00	.00	.00
MIN					41	12	.00	14	.00	.00	.00	.00
CFSM					.78	.27	2.75	.51	.02	.000	.000	.000
IN.					.81	.31	3.07	.59	.02	.00	.00	.00
AC-FT					5020	1900	18990	3620	127	.00	.00	.00
(††)					2.34	1.47	8.56	1.31	2.15	.03	.16	2.52

WTR YR 1977 TOTAL - MEAN - MAX - MIN - CFSM - IN - AC-FT - †† -

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

COLORADO RIVER BASIN

08155505 BARTON CREEK BELOW BARTON SPRINGS AT AUSTIN, TX
(Reconnaissance partial-record station)

LOCATION.--Lat 30°15'50", long 97°46'03", Travis County, Hydrologic Unit 12090205, 800 ft (240 m) upstream from bridge on Barton Springs Road and 1.8 mi (2.9 km) southwest of State Capitol at Austin.

DRAINAGE AREA.--125.3 mi² (324.5 km²).

PERIOD OF RECORD.--Occasional discharge measurements and water-quality data: January 1975 to current year.

DISCHARGE AND WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

		INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML)
DATE	TIME			(UNITS)								
NOV 03...	1403	97	581	7.2	21.0	0	0	8.0	92	0	300	58
JAN 04...	1100	98	582	7.2	7.5	0	0	9.4	81	.2	1500	270
MAR 02...	1315	147	478	7.8	16.0	0	1	8.9	93	.4	490	3
APR 15...	1215	807	286	7.5	17.5	20	200	8.2	88	3.2	22000	4900
15...	1330	1080	290	7.6	17.5	20	280	8.1	87	3.1	34000	8100
18...	1310	688	491	7.9	19.5	0	3	9.1	102	.8	4400	150
MAY 18...	1250	144	502	7.6	22.5	0	0	7.8	92	.3	2800	38
JUL 12...	1005	95	602	7.2	22.0	0	0	7.3	86	.2	2600	88
SEP 22...	1045	72	622	7.3	21.5	0	0	7.8	91	.0	3500	54
DATE	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML)	HARD- NESS (CA+MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
NOV 03...	31	290	35	85	20	11	.3	1.2	316	0	18	17
JAN 04...	110	--	--	--	--	--	--	--	--	--	--	--
MAR 02...	34	--	--	--	--	--	--	--	--	--	--	--
APR 15...	41000	--	--	--	--	--	--	--	--	--	--	--
15...	42000	140	12	41	9.1	4.9	.2	2.4	156	0	11	8.3
18...	840	--	--	--	--	--	--	--	--	--	--	--
MAY 18...	140	250	25	68	19	8.9	.2	1.0	272	0	20	15
JUL 12...	110	--	--	--	--	--	--	--	--	--	--	--
SEP 22...	320	300	30	84	22	14	.4	1.3	330	0	22	32
DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITU- ENTS) (MG/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	VOL. NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	
NOV 03...	.2	9.8	318	1	0	1.3	.00	.01	.09	.01	5.2	
JAN 04...	--	--	--	1	1	.83	.00	.01	.03	.01	2.2	
MAR 02...	--	--	--	1	1	.38	.00	.01	.10	.00	1.6	
APR 15...	--	--	--	308	38	.38	.01	.04	1.1	.09	8.5	
15...	.1	7.3	161	440	68	.37	.01	.04	1.3	.12	15	
18...	--	--	--	4	0	.37	.00	.01	.23	.01	5.2	
MAY 18...	.2	8.9	275	0	0	.68	.00	.01	.21	.01	1.7	
JUL 12...	--	--	--	0	0	1.7	.01	.00	.03	.00	1.4	
SEP 22...	.2	12	350	0	0	.74	.00	.00	.03	.01	1.7	

COLORADO RIVER BASIN

08155505 BARTON CREEK BELOW BARTON SPRINGS AT AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
NOV 03...	1403	0	100	0	0	0	0
APR 15...	1330	1	0	0	4	0	20
MAY 18...	1250	0	0	0	0	0	0
SEP 22...	1045	0	200	0	0	0	20

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV 03...	0	0	.2	0	0	10
APR 15...	0	10	.0	0	0	0
MAY 18...	0	0	.0	0	0	5
SEP 22...	0	1	.0	1	0	0

DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLOR- INATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
NOV 03...	1403	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
APR 15...	1330	.0	.00	.00	.0	.00	.00	.00	.01	.00	.00	.00
MAY 18...	1250	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
SEP 22...	1045	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 03...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
APR 15...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
MAY 18...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
SEP 22...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00

WEST BOULDIN CREEK DRAINAGE BASIN

The locations of data-collection sites in the West Bouldin Creek drainage basin are shown on figure 8.

A summary of storm rainfall and runoff is shown in table 3.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.

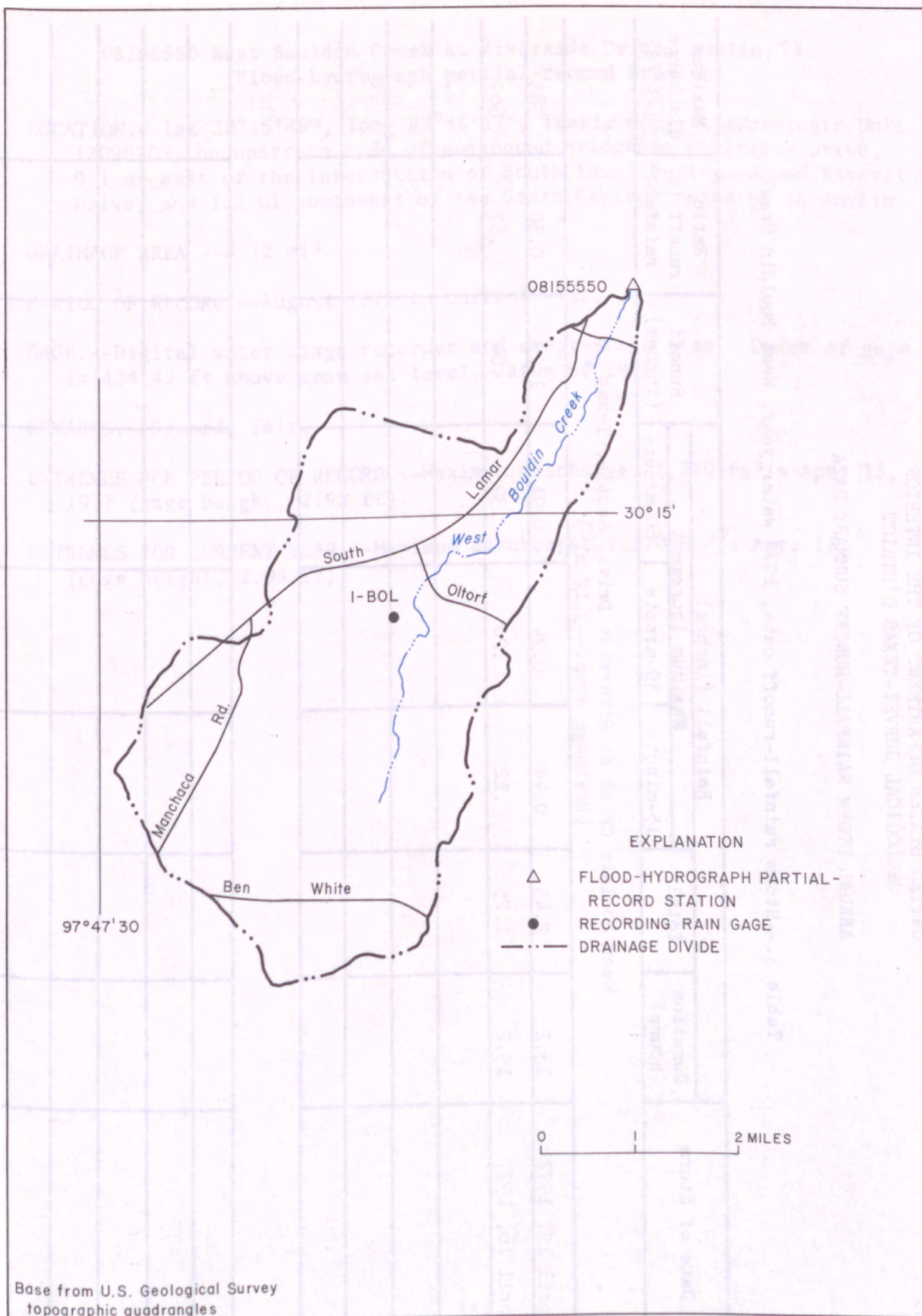


FIGURE 8.-Locations of data-collection sites in the West Bouldin Creek drainage basin

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 3.--Storm rainfall-runoff data, 1977 water year, West Bouldin Creek

[illegible]

08155550 West Bouldin Creek at Riverside Drive, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°15'49", long 97°45'17", Travis County, Hydrologic Unit 12090205, on upstream side of eastbound bridge on Riverside Drive, 0.1 mi east of the intersection of South Lamar Boulevard and Riverside Drive, and 1.2 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--3.12 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 434.42 ft above mean sea level, datum of 1929.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,320 ft³/s Apr. 13, 1977 (gage height, 2.93 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,320 ft³/s Apr. 13 (gage height, 2.93 ft).

STATION NO. 08155550									
STORM RAINFALL AND RUNOFF RECORD									
1977 WATER YEAR									
WEST BOULDER CREEK AT RIVERSIDE DRIVE, AUSTIN, TX									
STORM OF APRIL 15, 1977									
DATE & TIME		G A G E N U M B E R					ACCUM. WEIGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF IN.
							IN.	FT ³ /S	IN.
APR. 15									
0000		0.0					0.0	0.0	0.0
0455		0.0					0.0	0.0	0.0
0500		0.01					0.01	0.0	0.0
0505		0.04					0.03	0.0	0.0
0510		0.07					0.07	0.0	0.0
0515		0.21					0.21	0.0	0.0
0520		0.32					0.32	0.0	0.0
0525		0.51					0.51	0.0	0.0
0530		0.63					0.63	2.0	0.0001
0535		0.75					0.75	60.0	0.0026
0540		0.81					0.81	120.0	0.0075
0545		0.86					0.86	200.0	0.0158
0550		0.89					0.89	300.0	0.0282
0555		0.90					0.90	444.0	0.0466
0600		0.90					0.90	459.0	0.0656
0605		0.94					0.94	393.0	0.0819
0610		0.95					0.95	346.0	0.0962
0615		0.96					0.96	281.0	0.1136
0625		0.97					0.97	294.0	0.1319
0630		0.98					0.98	281.0	0.1493
0640		1.01					1.01	275.0	0.1664
0645		1.01					1.01	281.0	0.1780
0650		1.02					1.02	256.0	0.1939
0700		1.02					1.02	239.0	0.2137
0710		1.04					1.04	160.0	0.2336
0730		1.05					1.05	140.0	0.2625
0800		1.09					1.09	100.0	0.2998
0900		1.12					1.12	60.0	0.3172
0910		1.22					1.22	50.0	0.3234
0930		1.26					1.26	60.0	0.3358
1000		1.32					1.32	100.0	0.3731
1100		1.35					1.35	70.0	0.4078
1200		1.35					1.35	50.0	0.4327
1300		1.42					1.42	30.0	0.4476
1400		1.51					1.51	30.0	0.4587
1430		1.58					1.58	55.0	0.4678
1440		1.68					1.68	70.0	0.4736
1450		1.81					1.81	90.0	0.4811
1500		1.99					1.99	150.0	0.4935

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 15, 1977										ACCUM.	DISCHARGE	ACCUM.
WEST BOULDIN CREEK AT RIVERSIDE DRIVE, AUSTIN, TX										WEIGHTED	IN	RUNOFF
DATE & TIME	1801			GAGE	NUMBER					PRECIP.	FT ³ /S	IN.
IN.												
APR. 15												
1510	2.02									2.02	250.0	0.5142
1520	2.06									2.06	340.0	0.5423
1530	2.06									2.06	346.0	0.5710
1540	2.08									2.08	307.0	0.6027
1555	2.17									2.17	359.0	0.6325
1600	2.19									2.19	353.0	0.6544
1610	2.27									2.27	346.0	0.6830
1620	2.35									2.35	407.0	0.7167
1630	2.42									2.42	444.0	0.7535
1640	2.43									2.43	516.0	0.7855
1645	2.43									2.43	566.0	0.8089
1650	2.43									2.43	583.0	0.8330
1655	2.43									2.43	566.0	0.8565
1700	2.43									2.43	540.0	0.8788
1705	2.43									2.43	475.0	0.8985
1710	2.43									2.43	507.0	0.9300
1720	2.43									2.43	499.0	0.9713
1730	2.43									2.43	459.0	1.0093
1740	2.44									2.44	407.0	1.0429
1750	2.44									2.44	353.0	1.0722
1800	2.44									2.44	294.0	1.0965
1810	2.45									2.45	220.0	1.1511
1900	2.45									2.45	120.0	1.2058
2000	2.45									2.45	20.0	1.2157
2100	2.45									2.45	8.0	1.2197
2200	2.45									2.45	4.0	1.2227
2400	2.45									2.45	1.0	1.2231

STORM RAINFALL AND RUNOFF RECORD									
STA. NO. 0A155550								1977 WATER YEAR	
WEST BOULDTN CREEK AT RIVERSIDE DRIVE, AUSTIN, TX						STORM OF APRIL 16, 1977		ACCUM.	DISCHARGE
						WEIGHTED	IN	ACCUM.	RUNOFF
DATE & TIME						PRECIP.	FT ³ /S	IN.	IN.
						IN.			
APR. 16									
0000		0.0				0.0	1.0	0.0010	
0350		0.0				0.0	0.2	0.0011	
0355		0.01				0.01	0.2	0.0012	
0515		0.02				0.02	0.2	0.0013	
0530		0.09				0.09	0.3	0.0014	
0600		0.14				0.14	0.5	0.0015	
0630		0.22				0.22	0.5	0.0016	
0700		0.27				0.27	3.0	0.0027	
0800		0.37				0.37	5.0	0.0046	
0830		0.42				0.42	10.0	0.0071	
0900		0.55				0.55	15.0	0.0095	
0910		0.60				0.60	20.0	0.0112	
0920		0.67				0.67	30.0	0.0137	
0930		0.75				0.75	50.0	0.0178	
0940		0.80				0.80	150.0	0.0302	
0950		0.85				0.85	244.0	0.0504	
1000		0.92				0.92	294.0	0.0748	
1010		0.99				0.99	393.0	0.1073	
1020		1.01				1.01	437.0	0.1435	
1030		1.05				1.05	516.0	0.1862	
1040		1.07				1.07	507.0	0.2282	
1050		1.11				1.11	499.0	0.2695	
1100		1.19				1.19	566.0	0.3046	
1105		1.20				1.20	583.0	0.3287	
1110		1.21				1.21	540.0	0.3623	
1120		1.23				1.23	609.0	0.4127	
1130		1.24				1.24	609.0	0.4631	
1140		1.24				1.24	540.0	0.5078	
1150		1.24				1.24	507.0	0.5497	
1200		1.24				1.24	437.0	0.5859	
1210		1.24				1.24	380.0	0.6174	
1220		1.24				1.24	340.0	0.6455	
1230		1.24				1.24	287.0	0.6693	
1240		1.24				1.24	250.0	0.6900	
1250		1.24				1.24	210.0	0.7074	
1300		1.24				1.24	200.0	0.7405	
1330		1.24				1.24	150.0	0.7777	
1400		1.24				1.24	100.0	0.8150	
1500		1.24				1.24	20.0	0.8249	

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 08155550												
WEST BOULDIN CREEK AT RIVERSIDE DRIVE, AUSTIN, TX												
STORM OF APRIL 16, 1977												
DATE & TIME										ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT ³ /S	ACCUM. RUNOFF IN.
		1801										
APR. 16												
1600		1.24								1.24	8.0	0.8289
1700		1.24								1.24	4.0	0.8319
1900		1.25								1.25	2.0	0.8338
2100		1.25								1.25	1.0	0.8351
2400		1.25								1.25	0.5	0.8355

SHOAL CREEK DRAINAGE BASIN

The locations of data-collection sites in the Shoal Creek drainage basin are shown on figure 9.

Rainfall recorded for the 1977 water year was 28.76 inches at station 1-SHL and 27.96 at 2-SHL.

A summary of storm rainfall and runoff for the basin is shown in table 4.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.

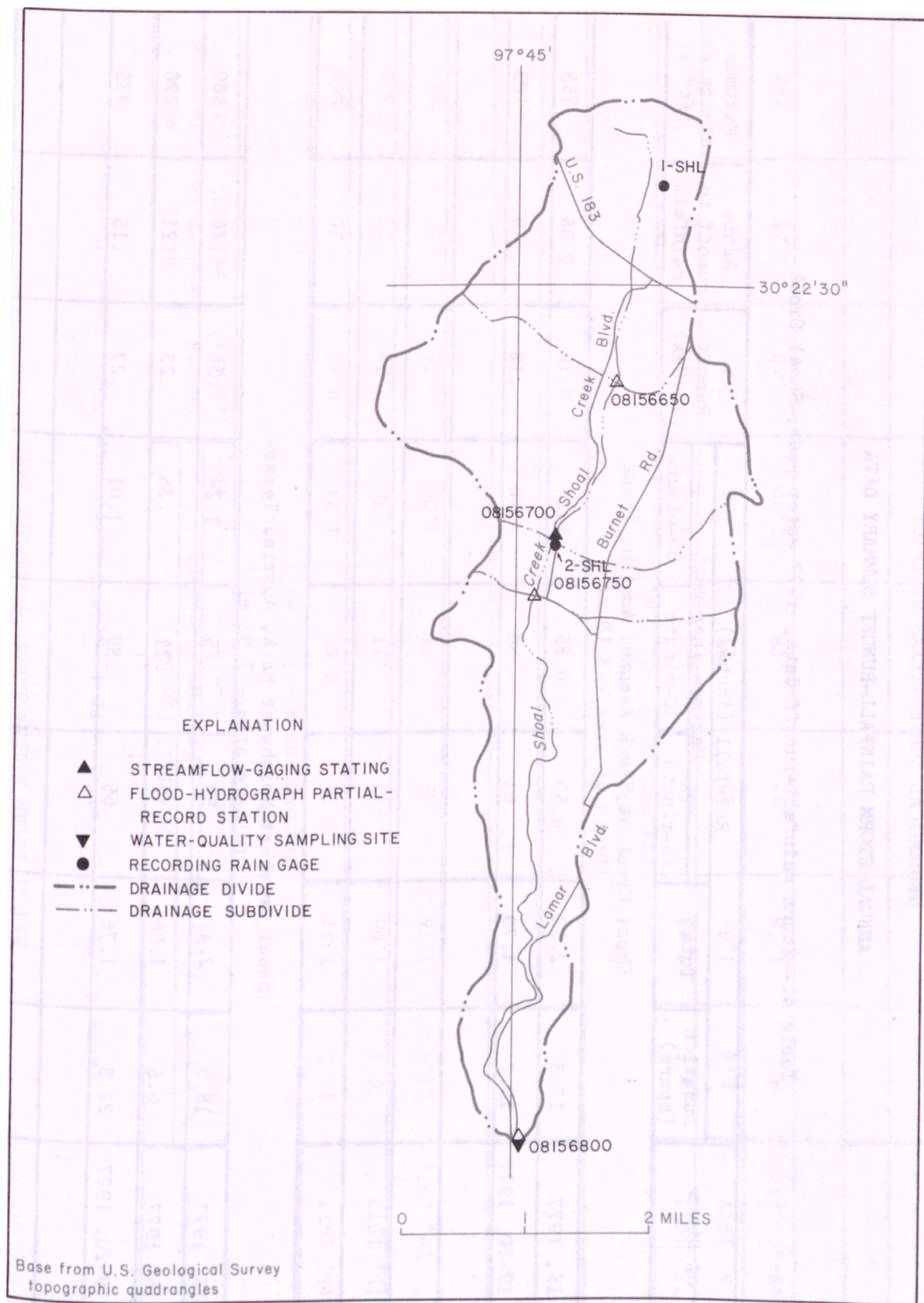


FIGURE 9.-Locations of data-collection sites in the Shoal Creek drainage basin

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 4.--Storm rainfall-runoff data, 1977 water year, Shoal Creek

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft ³ /s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Shoal Creek at Steck Avenue, Austin, Texas (Drainage area.--3.19 mi ²)								
April 15, 1977	13.3	2.52	0.59	0.85	1.24	0.19	0.08	255
April 19-20, 1977	15.7	1.70	.61	.80	.90	.18	.10	103
Shoal Creek at Northwest Park, Austin, Texas (Drainage area.--7.03 mi ²)								
April 15, 1977	18.6	2.47	.59	.85	1.24	.38	.16	580
April 16, 1977	6.5	1.06	.12	.21	.36	.23	.21	290
April 19-20, 1977	21.8	1.76	.65	.89	1.01	.27	.15	435

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 4.--Storm rainfall-runoff data, 1977 water year, Shoal Creek--Continued

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft ³ /s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Shoal Creek at White Rock Drive, Austin, Texas (Drainage area.--7.56 mi ²)								
April 15, 1977	18.1	2.47	0.59	0.85	1.24	0.50	0.20	660
April 16, 1977	6.3	1.06	.12	.21	.36	.29	.27	363
April 19-20, 1977	21.6	1.76	.65	.89	1.00	.36	.21	504
Shoal Creek at 12th Street, Austin, Texas (Drainage area.--12.8 mi ²)								
April 15, 1977	18.5	2.45	.59	.85	1.24	.48	.20	999
April 16, 1977	6.8	1.06	.13	.21	.36	.32	.30	596
April 19-20, 1977	21.8	1.78	.65	.89	1.00	.40	.23	732

08156650 Shoal Creek at Steck Avenue, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°21'55", long 97°44'11", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Steck Avenue, 0.5 mi west of the intersection of Burnet Road and Steck Avenue, and 6.3 mi north of the State Capitol Building in Austin.

DRAINAGE AREA.--3.19 mi².

PERIOD OF RECORD.--April 1975 to current year. Periodic measurements only, November 1974 to April 1975.

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 703.00 ft above mean sea level, datum of 1929.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,590 ft³/s Nov. 23, 1974 (gage height, 4.34 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 255 ft³/s Apr. 15 (gage height, 2.41 ft).

STATION NO. 08156650		STORM RAINFALL AND RUNOFF RECORD					1977 WATER YEAR		
SHOAL CREEK AT STECK AVE., AUSTIN, TEXAS					STORM OF APRIL 15, 1977		ACCUM. WEIGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF IN.
DATE & TIME	ISAL						IN.	FT ³ /S	IN.
APR. 15									
0000	0.0						0.0	0.1	0.0001
0410	0.0						0.0	0.1	0.0002
0415	0.01						0.01	0.1	0.0002
0510	0.03						0.03	0.5	0.0004
0515	0.06						0.06	11.0	0.0008
0520	0.12						0.12	43.0	0.0025
0525	0.19						0.19	67.0	0.0052
0530	0.27						0.27	79.0	0.0084
0535	0.48						0.48	100.0	0.0125
0540	0.72						0.72	96.0	0.0164
0545	0.86						0.86	111.0	0.0209
0550	0.95						0.95	255.0	0.0312
0555	1.02						1.02	127.0	0.0363
0600	1.12						1.12	113.0	0.0409
0605	1.17						1.17	91.0	0.0446
0610	1.27						1.27	88.0	0.0482
0615	1.30						1.30	93.0	0.0519
0620	1.32						1.32	106.0	0.0562
0625	1.32						1.32	103.0	0.0604
0630	1.32						1.32	91.0	0.0641
0635	1.32						1.32	84.0	0.0675
0640	1.32						1.32	75.0	0.0720
0650	1.34						1.34	73.0	0.0779
0700	1.34						1.34	65.0	0.0819
0705	1.34						1.34	69.0	0.0847
0710	1.35						1.35	65.0	0.0886
0720	1.37						1.37	51.0	0.0927
0730	1.38						1.38	44.0	0.0972
0745	1.38						1.38	38.0	0.1018
0800	1.38						1.38	27.0	0.1051
0815	1.38						1.38	22.0	0.1073
0825	1.39						1.39	17.0	0.1084
0830	1.40						1.40	24.0	0.1098
0840	1.40						1.40	21.0	0.1111
0845	1.40						1.40	25.0	0.1131
0900	1.44						1.44	20.0	0.1155
0915	1.44						1.44	16.0	0.1175
0930	1.46						1.46	16.0	0.1188
0935	1.55						1.55	19.0	0.1195

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 08156650												
SHOAI CREEK AT STECK AVE., AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	G A G F				N U M B E R					PRECIP.		
	1SHL									IN.	FT ³ /S	IN.
APR. 15												
0940	1.56									1.56	14.0	0.1201
0945	1.58									1.58	18.0	0.1216
1000	1.74									1.78	27.0	0.1243
1010	1.81									1.81	26.0	0.1275
1030	1.83									1.83	30.0	0.1317
1045	1.83									1.83	28.0	0.1351
1100	1.85									1.85	21.0	0.1389
1130	1.86									1.86	11.0	0.1416
1200	1.86									1.86	11.0	0.1443
1230	1.86									1.86	12.0	0.1472
1300	1.90									1.90	11.0	0.1499
1330	1.91									1.91	8.0	0.1518
1400	1.92									1.92	7.0	0.1531
1415	1.94									1.94	6.5	0.1539
1430	1.95									1.95	11.0	0.1559
1500	1.97									1.97	11.0	0.1579
1515	2.05									2.05	11.0	0.1592
1530	2.17									2.17	13.0	0.1608
1545	2.24									2.24	14.0	0.1625
1600	2.30									2.30	24.0	0.1669
1630	2.33									2.33	28.0	0.1737
1700	2.42									2.42	21.0	0.1788
1730	2.52									2.52	21.0	0.1839
1800	2.52									2.52	15.0	0.1893
1900	2.52									2.52	6.0	0.1922
2000	2.52									2.52	2.0	0.1932
2100	2.52									2.52	1.0	0.1937
2200	2.52									2.52	0.5	0.1941
2400	2.52									2.52	0.2	0.1942

STA. NO. 0R156650		STORM RAINFALL AND RUNOFF RECORD					1977 WATER YEAR		
SHOAL CREEK AT STECK AVE., AUSTIN, TEXAS		STORM OF APRIL 19-20, 1977					ACCUM. WEIGHTED	DISCHARGE	ACCUM.
DATE & TIME		G A G E N U M B E R					PRECIP. IN.	IN FT ³ /S	RUNOFF IN.
APR. 19		1SHL							
0000	0.0						0.0	0.1	0.0005
2120	0.0						0.0	0.1	0.0010
2125	0.02						0.02	0.1	0.0011
2150	0.07						0.07	1.0	0.0012
2155	0.12						0.12	2.0	0.0013
2200	0.51						0.51	5.0	0.0015
2205	0.65						0.65	13.0	0.0020
2210	0.73						0.73	16.0	0.0026
2215	0.81						0.81	19.0	0.0034
2220	0.87						0.87	21.0	0.0042
2225	0.88						0.88	21.0	0.0051
2230	0.91						0.91	21.0	0.0059
2235	0.94						0.94	18.0	0.0067
2240	0.95						0.95	21.0	0.0075
2245	0.95						0.95	71.0	0.0104
2250	0.96						0.96	88.0	0.0140
2255	1.02						1.02	88.0	0.0175
2300	1.04						1.04	91.0	0.0231
2310	1.08						1.08	84.0	0.0282
2315	1.10						1.10	77.0	0.0313
2320	1.11						1.11	81.0	0.0345
2325	1.12						1.12	79.0	0.0377
2330	1.12						1.12	84.0	0.0411
2335	1.13						1.13	103.0	0.0453
2340	1.13						1.13	86.0	0.0488
2345	1.14						1.14	98.0	0.0528
2350	1.15						1.15	81.0	0.0577
2400	1.19						1.19	84.0	0.0628
APR. 20									
0000	1.19						1.19	84.0	0.0628
0010	1.21						1.21	79.0	0.0709
0020	1.22						1.22	71.0	0.0766
0030	1.24						1.24	59.0	0.0826
0045	1.25						1.25	51.0	0.0888
0100	1.27						1.27	48.0	0.0975
0130	1.29						1.29	36.0	0.1063
0200	1.30						1.30	28.0	0.1131
0230	1.30						1.30	21.0	0.1182
0300	1.30						1.30	16.0	0.1279
0500	1.30						1.30	5.0	0.1315

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 19-20, 1977										ACCUM.	DISCHARGE	ACCUM.
STATION: SHOAL CREEK AT STECK AVE., AUSTIN, TEXAS										WEIGHTED	IN	RUNOFF
DATE & TIME	INCH									PRECIP.	FT ³ /S	IN.
APR. 20												
0600	1.30									1.30	2.0	0.1325
0700	1.30									1.30	1.0	0.1330
0800	1.33									1.33	0.5	0.1332
0900	1.38									1.38	0.5	0.1334
0930	1.42									1.42	1.0	0.1337
1000	1.53									1.53	5.0	0.1349
1030	1.61									1.61	11.0	0.1375
1100	1.68									1.68	16.0	0.1405
1115	1.69									1.69	16.0	0.1424
1130	1.69									1.69	18.0	0.1446
1145	1.69									1.69	21.0	0.1471
1200	1.69									1.69	18.0	0.1504
1230	1.69									1.69	15.0	0.1532
1245	1.69									1.69	25.0	0.1562
1300	1.70									1.70	17.0	0.1593
1330	1.70									1.70	15.0	0.1629
1400	1.70									1.70	13.0	0.1677
1500	1.70									1.70	9.0	0.1720
1600	1.70									1.70	5.0	0.1745
1700	1.70									1.70	2.0	0.1754
1800	1.70									1.70	1.0	0.1762
2000	1.70									1.70	0.5	0.1767
2200	1.70									1.70	0.2	0.1768
2400	1.70									1.70	0.1	0.1769

COLORADO RIVER BASIN

08156700 SHOAL CREEK AT NORTHWEST PARK, AUSTIN, TX

LOCATION.--Lat 30°20'50", long 97°44'41", Travis County, Hydrologic Unit 12090205, at Northwest Park in Austin, 400 ft (122 m) upstream from Shoal Creek Boulevard bridge, 0.5 mi (0.8 km) west of intersection of Burnet Road and Justin Lane, and 5.0 mi (8.0 km) north of State Capitol Building in Austin.

DRAINAGE AREA.--7.03 mi² (18.21 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 661.34 ft (201.576 m), revised, above mean sea level (city of Austin bench mark).

REMARKS.--Records good. The city of Austin diverts water into the channel above gage during the summer months from a swimming pool at Northwest Park. There is some diversion into and out of the drainage area by storm sewers. This station is part of a hydrologic project to study the rainfall-runoff relationship for the Austin urban area. There are two digital recording rain gages located in the watershed. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,620 ft³/s (45.9 m³/s) Apr. 28, 1976, gage height, 7.50 ft (2.286 m); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since 1885, occurred Apr. 22, 1915, stage and discharge unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 580 ft³/s (16.4 m³/s) Apr. 15, gage height, 5.38 ft (1.640 m), no other peak above base of 500 ft³/s (14.2 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	.82	.25	.43	1.7	.45	.60	.32	.27	.07	.00	.00
2	.19	.25	.25	1.5	2.7	.56	.75	.27	.13	.06	.00	.00
3	.18	.23	.25	.62	1.9	17	.65	.32	.11	.06	.00	.00
4	9.6	.25	.25	.53	.49	.36	1.4	.38	.10	.04	.00	.00
5	7.0	.23	7.4	.47	.46	.25	.69	.56	.11	.06	.00	.00
6	.30	.19	2.0	.79	.45	.27	.64	.70	.11	.03	.00	.00
7	.51	.17	.37	.44	.44	.27	.60	.50	.08	.04	.00	.00
8	.42	.17	.32	.79	.68	.25	.56	.51	.06	.04	.00	.00
9	.23	.16	.93	1.6	.42	.25	.60	1.1	.08	.04	.00	.02
10	.21	.15	20	.53	15	.25	.64	1.1	.08	.03	.00	.01
11	.19	.12	21	.51	45	.24	.64	.38	.11	.03	.00	.00
12	.17	1.7	3.0	1.5	2.9	.25	.90	.29	.10	.02	.00	3.4
13	.16	5.8	1.1	9.5	1.2	.30	5.0	.23	.12	.02	.00	17
14	.19	.15	1.1	.91	.69	.24	.81	.23	.08	.03	.00	.42
15	12	.11	.77	.80	.60	.23	72	.23	.48	.03	.00	.07
16	1.6	.10	.65	.94	.48	.64	43	.27	.13	.04	.00	.05
17	.25	.18	.60	1.0	.45	.95	2.6	.48	.08	.95	.00	.04
18	.19	.12	.57	1.1	.39	.90	1.1	.22	.08	.16	.00	.03
19	10	9.3	1.5	1.3	.39	1.3	22	.62	.07	.07	.00	32
20	.36	.27	.74	1.5	.36	1.2	29	1.1	.07	.04	.00	.70
21	.22	.25	.72	1.5	.36	.83	2.5	14	.84	.05	.00	.09
22	.21	.25	.60	10	.36	.91	1.1	.24	.19	.04	.00	.06
23	1.8	.27	.60	2.3	.34	.69	.64	1.3	3.9	.02	.00	.05
24	10	.28	.55	.83	.36	.93	.51	.15	.23	.03	.00	.03
25	.44	6.8	.50	.77	.42	1.0	.43	.07	.11	.01	.00	.02
26	.29	.76	.46	.67	.39	4.3	.37	.09	.09	.00	.00	.02
27	.31	.22	.45	.62	.36	5.2	.32	.12	.07	.00	.27	.00
28	5.0	.36	.44	.53	.39	1.2	.28	.13	.08	.00	.07	.00
29	87	.26	.53	.56	---	.34	3.2	.13	.07	.00	.01	.00
30	1.1	.25	.42	2.1	---	.38	4.6	.12	.07	.00	.01	.00
31	.37	---	.42	.65	---	.49	---	.21	---	.00	.00	---
TOTAL	150.68	30.17	68.74	47.29	79.68	42.43	198.13	26.37	8.10	2.01	.36	54.01
MEAN	4.86	1.01	2.22	1.53	2.85	1.37	6.60	.85	.27	.065	.012	1.80
MAX	87	9.3	21	10	45	17	72	14	3.9	.95	.27	32
MIN	.16	.10	.25	.43	.34	.23	.28	.07	.06	.00	.00	.00
CFSM	.69	.14	.32	.22	.41	.20	.94	.12	.04	.009	.002	.26
IN.	.80	.16	.36	.25	.42	.22	1.05	.14	.04	.01	.00	.29
AC-FT	299	60	136	94	158	84	393	52	16	4.0	.7	107
(††)	5.81	1.79	2.41	1.90	2.51	1.82	6.61	1.31	.82	.26	.25	2.83

CAL YR 1976 TOTAL 1087.90 MEAN 2.97 MAX 205 MIN .00 CFSM .42 IN 5.76 AC-FT 2160 †† 38.65
WTR YR 1977 TOTAL 707.97 MEAN 1.94 MAX 87 MIN .00 CFSM .28 IN 3.75 AC-FT 1400 †† 28.32

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

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08156700												
SHOAL CREEK AT NORTHWEST PARK, AUSTIN, TEXAS										STORM OF APRIL 15, 1977		
DATE & TIME										ACCUM. WEIGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF IN.
										IN.	FT ³ /S	IN.
APR. 15												
0000	0.0	0.0								0.0	2.6	0.0011
0400	0.0	0.01								0.01	0.8	0.0015
0430	0.01	0.01								0.01	0.8	0.0016
0500	0.03	0.01								0.02	0.8	0.0017
0515	0.06	0.03								0.04	5.0	0.0019
0520	0.12	0.09								0.10	80.0	0.0034
0525	0.19	0.15								0.17	155.0	0.0062
0530	0.27	0.26								0.26	230.0	0.0104
0535	0.48	0.44								0.46	326.0	0.0164
0540	0.72	0.58								0.64	422.0	0.0242
0545	0.86	0.75								0.80	518.0	0.0337
0550	0.95	0.84								0.89	539.0	0.0436
0555	1.02	0.94								0.98	559.0	0.0538
0600	1.12	1.06								1.09	580.0	0.0645
0605	1.17	1.14								1.15	553.0	0.0747
0610	1.27	1.16								1.21	527.0	0.0843
0615	1.30	1.18								1.23	500.0	0.0981
0625	1.32	1.20								1.25	383.0	0.1122
0635	1.32	1.21								1.26	289.0	0.1228
0645	1.34	1.21								1.27	220.0	0.1329
0700	1.34	1.22								1.27	169.0	0.1422
0715	1.37	1.25								1.30	148.0	0.1504
0730	1.38	1.25								1.31	121.0	0.1604
0800	1.38	1.26								1.31	69.0	0.1680
0830	1.40	1.27								1.33	48.0	0.1733
0900	1.44	1.31								1.37	46.0	0.1783
0930	1.46	1.42								1.44	49.0	0.1819
0940	1.56	1.44								1.49	72.0	0.1846
0950	1.60	1.51								1.55	115.0	0.1878
0955	1.64	1.61								1.62	146.0	0.1904
1000	1.78	1.65								1.71	178.0	0.1953
1010	1.81	1.66								1.73	167.0	0.2015
1020	1.83	1.66								1.74	154.0	0.2071
1030	1.83	1.67								1.74	137.0	0.2134
1045	1.83	1.68								1.75	105.0	0.2192
1100	1.85	1.69								1.76	94.0	0.2244
1115	1.85	1.69								1.76	78.0	0.2287
1130	1.86	1.69								1.77	61.0	0.2337
1200	1.86	1.69								1.77	39.0	0.2380

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08156700												
SHOAL CREEK AT NORTHWEST PARK, AUSTIN, TEXAS										STORM OF APRIL 15, 1977		
DATE & TIME										ACCUM. WEIGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF IN.
1SHL 2SHL										IN.	FT ³ /S	IN.
APR. 15												
1230	1.86	1.69								1.77	32.0	0.2416
1300	1.90	1.72								1.80	31.0	0.2467
1400	1.92	1.75								1.83	25.0	0.2515
1445	1.95	1.77								1.85	26.0	0.2544
1500	1.97	1.87								1.91	38.0	0.2565
1515	2.05	1.97								2.01	123.0	0.2621
1525	2.14	2.11								2.12	166.0	0.2682
1535	2.18	2.16								2.17	191.0	0.2752
1545	2.24	2.19								2.21	198.0	0.2843
1600	2.30	2.21								2.25	165.0	0.2934
1615	2.32	2.24								2.28	128.0	0.3005
1630	2.33	2.28								2.30	123.0	0.3072
1645	2.37	2.35								2.36	141.0	0.3150
1700	2.42	2.40								2.41	169.0	0.3243
1715	2.52	2.41								2.46	150.0	0.3326
1730	2.52	2.41								2.46	121.0	0.3426
1800	2.52	2.41								2.46	86.0	0.3521
1830	2.52	2.42								2.46	60.0	0.3587
1900	2.52	2.42								2.46	45.0	0.3661
2000	2.52	2.42								2.46	29.0	0.3725
2100	2.52	2.42								2.46	20.0	0.3780
2230	2.52	2.43								2.47	12.0	0.3820
2400	2.52	2.43								2.47	8.4	0.3834

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08156700												
SHOAL CREEK AT NORTHWEST PARK, AUSTIN, TEXAS										STORM OF APRIL 16, 1977		
DATE & TIME										ACCUM. WEIGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF IN.
										IN.	FT ³ /S	IN.
APR. 16												
0000	0.0	0.0								0.0	8.4	0.0032
0330	0.01	0.0								0.00	3.9	0.0056
0530	0.01	0.0								0.00	2.9	0.0063
0545	0.01	0.02								0.02	3.0	0.0065
0600	0.10	0.04								0.07	3.6	0.0068
0630	0.10	0.05								0.07	7.9	0.0077
0700	0.13	0.11								0.12	15.0	0.0101
0800	0.18	0.19								0.19	20.0	0.0134
0830	0.21	0.22								0.22	22.0	0.0159
0900	0.26	0.29								0.28	32.0	0.0185
0915	0.32	0.34								0.33	47.0	0.0211
0930	0.39	0.41								0.40	67.0	0.0248
0945	0.44	0.47								0.46	90.0	0.0298
1000	0.51	0.55								0.53	121.0	0.0364
1015	0.57	0.62								0.60	139.0	0.0441
1030	0.62	0.71								0.67	189.0	0.0545
1045	0.74	0.83								0.79	265.0	0.0691
1100	0.81	0.88								0.85	279.0	0.0845
1115	0.91	0.93								0.92	281.0	0.1000
1130	0.95	1.03								0.99	290.0	0.1159
1145	1.02	1.05								1.04	279.0	0.1313
1200	1.05	1.06								1.06	237.0	0.1509
1230	1.05	1.06								1.06	160.0	0.1685
1300	1.05	1.06								1.06	108.0	0.1804
1330	1.05	1.06								1.06	72.0	0.1884
1400	1.05	1.06								1.06	54.0	0.1973
1500	1.05	1.06								1.06	33.0	0.2046
1600	1.05	1.06								1.06	22.0	0.2119
1800	1.05	1.06								1.06	14.0	0.2180
2000	1.05	1.06								1.06	9.2	0.2241
2400	1.05	1.06								1.06	5.5	0.2265

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08156700												
SHOAL CREEK AT NORTHWEST PARK, AUSTIN, TEXAS										STORM OF APRIL 19-20, 1977		
										ACCUM.	DISCHARGE	ACCUM.
										WEIGHTED	IN	RUNOFF
DATE & TIME										PRECIP.		
										IN.	FT ³ /S	IN.
APR. 19												
0000	0.0	0.0							0.0	0.8	0.0012	
1345	0.0	0.01							0.01	0.7	0.0025	
1700	0.0	0.01							0.01	0.7	0.0029	
1900	0.0	0.06							0.03	0.7	0.0031	
1915	0.0	0.08							0.04	0.7	0.0031	
1920	0.0	0.21							0.12	0.7	0.0031	
1925	0.0	0.52							0.29	0.7	0.0032	
1930	0.0	0.64							0.37	0.7	0.0032	
1935	0.0	0.86							0.47	0.7	0.0032	
1945	0.0	0.97							0.53	0.7	0.0032	
2000	0.0	1.04							0.57	0.7	0.0033	
2015	0.0	1.09							0.60	0.7	0.0033	
2030	0.0	1.13							0.62	0.7	0.0033	
2045	0.0	1.18							0.65	0.7	0.0034	
2100	0.0	1.19							0.65	0.7	0.0034	
2115	0.0	1.22							0.67	0.7	0.0034	
2130	0.03	1.27							0.71	0.7	0.0035	
2145	0.06	1.27							0.73	0.7	0.0035	
2155	0.12	1.27							0.75	4.6	0.0036	
2200	0.51	1.27							0.93	6.6	0.0038	
2205	0.65	1.27							0.99	69.0	0.0050	
2210	0.73	1.27							1.03	131.0	0.0074	
2215	0.81	1.27							1.06	193.0	0.0110	
2220	0.87	1.27							1.09	274.0	0.0185	
2230	0.91	1.27							1.11	435.0	0.0345	
2240	0.95	1.27							1.13	395.0	0.0490	
2250	0.96	1.27							1.13	344.0	0.0617	
2300	1.04	1.27							1.17	281.0	0.0746	
2315	1.10	1.27							1.19	247.0	0.0882	
2330	1.12	1.27							1.20	230.0	0.1072	
2400	1.19	1.27							1.23	173.0	0.1215	
APR. 20												
0000	1.19	1.27							1.23	173.0	0.1215	
0030	1.24	1.31							1.28	156.0	0.1435	
0100	1.27	1.35							1.31	113.0	0.1559	
0130	1.29	1.36							1.33	90.0	0.1658	
0200	1.30	1.36							1.33	66.0	0.1767	
0300	1.30	1.37							1.34	36.0	0.1847	
0400	1.30	1.37							1.34	25.0	0.1929	
0600	1.30	1.37							1.34	13.0	0.1987	

STORM RAINFALL AND RUNOFF RECORD									
STATION NO. 08156700					1977 WATER YEAR				
SHOAL CREEK AT NORTHWEST PARK, AUSTIN, TEXAS					STORM OF APRIL 19-20, 1977				
DATE & TIME		G A G E N U M B E R			WEIGHTED PRECIP.		DISCHARGE IN		ACCUM. RUNOFF
		1SHL	2SHL		IN.		FT ³ /S		IN.
APR. 20									
0800		1.33	1.42			1.38	9.0		0.2016
0900		1.34	1.48			1.43	16.0		0.2043
0930		1.42	1.54			1.49	19.0		0.2059
0945		1.49	1.60			1.55	20.0		0.2070
1000		1.53	1.65			1.60	29.0		0.2094
1030		1.61	1.74			1.68	56.0		0.2155
1100		1.68	1.80			1.75	75.0		0.2238
1130		1.69	1.81			1.76	68.0		0.2313
1200		1.69	1.81			1.76	54.0		0.2402
1300		1.70	1.81			1.76	33.0		0.2475
1400		1.70	1.81			1.76	24.0		0.2514
1600		1.70	1.81			1.76	15.0		0.2610
1800		1.70	1.81			1.76	9.5		0.2673
2100		1.70	1.81			1.76	6.0		0.2712
2400		1.70	1.81			1.76	4.3		0.2727

08156750 Shoal Creek at White Rock Drive, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°20'21", long 97°44'50", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on White Rock Drive, 0.6 mi west of intersection of Burnet Road and Koenig Lane, and 4.5 mi north of the State Capitol Building in Austin.

DRAINAGE AREA.--7.56 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 642.60 ft above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,750 ft³/s Apr. 28, 1975 (gage height, 10.60 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 660 ft³/s Apr. 15 (gage height, 8.31 ft).

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 15, 1977										ACCUM.	DISCHARGE	ACCUM.
G A G E N U M B E R										WEIGHTED	IN	RUNOFF
DATE & TIME	ISHL	PSHL								PRECIP.	FT ³ /S	IN.
										IN.		IN.
APR. 15												
0000	0.0	0.0								0.0	0.8	0.0003
0400	0.0	0.01								0.01	0.8	0.0007
0500	0.03	0.01								0.02	0.8	0.0008
0515	0.06	0.03								0.04	1.5	0.0009
0520	0.12	0.09								0.10	17.0	0.0012
0525	0.19	0.15								0.17	39.0	0.0018
0530	0.27	0.26								0.26	70.0	0.0030
0535	0.48	0.44								0.46	97.0	0.0047
0540	0.72	0.58								0.64	129.0	0.0069
0545	0.86	0.75								0.80	366.0	0.0132
0550	0.95	0.84								0.89	598.0	0.0234
0555	1.02	0.94								0.97	660.0	0.0346
0600	1.12	1.06								1.09	623.0	0.0453
0605	1.17	1.14								1.15	634.0	0.0561
0610	1.27	1.16								1.21	630.0	0.0723
0620	1.32	1.19								1.24	602.0	0.0928
0630	1.32	1.21								1.26	531.0	0.1155
0645	1.34	1.21								1.26	372.0	0.1346
0700	1.34	1.22								1.27	276.0	0.1558
0730	1.38	1.25								1.30	200.0	0.1763
0800	1.38	1.26								1.31	138.0	0.1904
0830	1.40	1.27								1.32	87.0	0.1993
0900	1.44	1.31								1.36	81.0	0.2076
0930	1.46	1.42								1.44	95.0	0.2141
0940	1.56	1.44								1.49	91.0	0.2172
0950	1.60	1.51								1.55	127.0	0.2216
1000	1.78	1.65								1.70	139.0	0.2275
1015	1.82	1.66								1.73	234.0	0.2395
1030	1.83	1.67								1.74	218.0	0.2563
1100	1.85	1.69								1.76	157.0	0.2723
1130	1.86	1.69								1.76	124.0	0.2851
1200	1.86	1.69								1.76	83.0	0.2978
1300	1.90	1.72								1.80	48.0	0.3113
1445	1.95	1.77								1.85	38.0	0.3191
1500	1.97	1.87								1.91	48.0	0.3216
1515	2.05	1.97								2.00	91.0	0.3262
1530	2.17	2.12								2.14	169.0	0.3349
1545	2.24	2.19								2.21	252.0	0.3478
1600	2.30	2.21								2.25	262.0	0.3680

STATION NO. 08156750									
STORM RAINFALL AND RUNOFF RECORD									
1977 WATER YEAR									
SHOAL CREEK AT WHITE ROCK DRIVE, AUSTIN, TEXAS									
STORM OF APRIL 15, 1977									
DATE & TIME	1SHL	2SHL	GAGE	NUMBER			PRECIP.	DISCHARGE	ACCUM.
							IN.	FT ³ /S	IN.
APR. 15									
1630	2.33	2.28					2.30	198.0	0.3832
1645	2.37	2.35					2.36	191.0	0.3930
1700	2.42	2.40					2.41	207.0	0.4036
1715	2.52	2.41					2.46	230.0	0.4154
1730	2.52	2.41					2.46	211.0	0.4316
1800	2.52	2.41					2.46	149.0	0.4468
1830	2.52	2.42					2.46	114.0	0.4585
1900	2.52	2.42					2.46	85.0	0.4716
2000	2.52	2.42					2.46	51.0	0.4873
2200	2.52	2.43					2.47	27.0	0.4983
2400	2.52	2.43					2.47	10.0	0.5004

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 16, 1977										ACCUM.	DISCHARGE	ACCUM.
STATION NO. 08156750										WEIGHTED	IN	RUNOFF
SHOAL CREEK AT WHITE ROCK DRIVE, AUSTIN, TEXAS										PRECIP.	FT ³ /S	IN.
DATE & TIME	1SHL	2SHL	GAGE	NUMBER						IN.		IN.
APR. 16												
0000	0.0	0.0								0.0	10.0	0.0036
0330	0.01	0.0								0.00	5.0	0.0064
0530	0.01	0.0								0.00	1.0	0.0066
0540	0.01	0.0								0.00	1.0	0.0067
0550	0.03	0.03								0.03	1.0	0.0067
0600	0.10	0.04								0.07	5.0	0.0073
0700	0.13	0.11								0.12	12.0	0.0091
0730	0.14	0.14								0.14	21.0	0.0113
0800	0.18	0.19								0.19	30.0	0.0144
0830	0.21	0.22								0.22	31.0	0.0175
0900	0.26	0.29								0.28	36.0	0.0203
0915	0.32	0.34								0.33	45.0	0.0226
0930	0.39	0.41								0.40	73.0	0.0264
0945	0.44	0.47								0.46	110.0	0.0311
0955	0.48	0.53								0.51	141.0	0.0359
1005	0.54	0.57								0.56	163.0	0.0414
1015	0.57	0.62								0.60	191.0	0.0480
1025	0.61	0.67								0.64	218.0	0.0554
1035	0.66	0.74								0.71	242.0	0.0637
1045	0.74	0.83								0.79	257.0	0.0725
1055	0.80	0.86								0.83	318.0	0.0833
1105	0.83	0.90								0.87	343.0	0.0950
1115	0.91	0.93								0.92	355.0	0.1072
1125	0.94	0.98								0.96	360.0	0.1195
1135	0.95	1.03								1.00	357.0	0.1317
1145	1.02	1.05								1.04	363.0	0.1472
1200	1.05	1.06								1.06	349.0	0.1650
1215	1.05	1.06								1.06	301.0	0.1805
1230	1.05	1.06								1.06	257.0	0.2002
1300	1.05	1.06								1.06	191.0	0.2198
1330	1.05	1.06								1.06	139.0	0.2340
1400	1.05	1.06								1.06	101.0	0.2496
1500	1.05	1.06								1.06	58.0	0.2615
1600	1.05	1.06								1.06	41.0	0.2741
1800	1.05	1.06								1.06	23.0	0.2835
2000	1.05	1.06								1.06	10.0	0.2896
2400	1.05	1.06								1.06	0.0	0.2896

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08156750												
SHOAL CREEK AT WHITE ROCK DRIVE, AUSTIN, TEXAS										STORM OF APRIL 19-20, 1977		
DATE & TIME										ACCUM. WGTGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF IN.
										IN.	FT ³ /S	IN.
APR. 19												
0000	0.0	0.0								0.0	0.8	0.0011
1345	0.0	0.01								0.01	0.8	0.0025
1700	0.0	0.01								0.01	0.8	0.0030
1900	0.0	0.05								0.03	0.8	0.0031
1915	0.0	0.08								0.05	0.8	0.0032
1920	0.0	0.21								0.12	0.8	0.0032
1925	0.0	0.52								0.30	0.8	0.0032
1930	0.0	0.68								0.39	0.8	0.0032
1935	0.0	0.86								0.50	0.8	0.0032
1940	0.0	0.92								0.53	0.8	0.0032
1945	0.0	0.97								0.56	0.8	0.0033
2000	0.0	1.04								0.60	0.8	0.0033
2030	0.0	1.13								0.66	0.8	0.0034
2100	0.0	1.19								0.69	1.0	0.0035
2115	0.0	1.22								0.71	1.2	0.0035
2130	0.03	1.27								0.75	1.5	0.0036
2150	0.07	1.27								0.77	2.0	0.0037
2200	0.51	1.27								0.95	19.0	0.0042
2205	0.65	1.27								1.01	51.0	0.0051
2210	0.73	1.27								1.04	110.0	0.0070
2215	0.81	1.27								1.08	134.0	0.0104
2225	0.88	1.27								1.11	244.0	0.0187
2235	0.94	1.27								1.13	504.0	0.0360
2245	0.95	1.27								1.14	478.0	0.0564
2300	1.04	1.27								1.17	410.0	0.0774
2315	1.10	1.27								1.20	337.0	0.0946
2330	1.12	1.27								1.21	313.0	0.1107
2345	1.14	1.27								1.22	284.0	0.1252
2400	1.19	1.27								1.24	249.0	0.1380
APR. 20												
0000	1.19	1.27								1.24	249.0	0.1380
0030	1.24	1.31								1.28	223.0	0.1672
0100	1.27	1.35								1.32	184.0	0.1863
0130	1.29	1.36								1.33	151.0	0.2018
0200	1.30	1.36								1.33	118.0	0.2199
0300	1.30	1.37								1.34	61.0	0.2324
0400	1.30	1.37								1.34	42.0	0.2453
0600	1.30	1.37								1.34	22.0	0.2521
0700	1.30	1.37								1.34	18.0	0.2558
0800	1.33	1.42								1.38	18.0	0.2585

STATION NO. 08156750									
STORM RAINFALL AND RUNOFF RECORD									
1977 WATER YEAR									
SHOAL CREEK AT WHITE ROCK DRIVE, AUSTIN, TEXAS									
STORM OF APRIL 19-20, 1977									
DATE & TIME	1SHL	2SHL	GAGF	NUMBER			ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT ³ /S	ACCUM. RUNOFF IN.
APR. 20									
0830	1.36	1.46					1.42	18.0	0.2604
0900	1.38	1.48					1.44	20.0	0.2624
0930	1.42	1.54					1.49	26.0	0.2644
0945	1.49	1.60					1.55	31.0	0.2660
1000	1.53	1.65					1.60	37.0	0.2679
1015	1.55	1.69					1.63	44.0	0.2702
1030	1.61	1.74					1.69	80.0	0.2743
1045	1.65	1.78					1.73	100.0	0.2794
1100	1.68	1.80					1.75	110.0	0.2850
1115	1.69	1.81					1.76	125.0	0.2914
1130	1.69	1.81					1.76	118.0	0.3005
1200	1.69	1.81					1.76	93.0	0.3100
1230	1.69	1.81					1.76	81.0	0.3183
1300	1.70	1.81					1.76	58.0	0.3273
1400	1.70	1.81					1.76	42.0	0.3359
1500	1.70	1.81					1.76	33.0	0.3460
1700	1.70	1.81					1.76	20.0	0.3542
1900	1.70	1.81					1.76	10.0	0.3583
2100	1.70	1.81					1.76	8.0	0.3624
2400	1.70	1.81					1.76	5.0	0.3640

COLORADO RIVER BASIN

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°16'35", long 97°45'00", Travis County, Hydrologic Unit 12090205, at downstream side of bridge on 12th Street and 0.6 mi (1.0 km) west of the State Capitol Building in Austin.

DRAINAGE AREA (revised).--12.8 mi² (33.2 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1975 to current year. Periodic discharge measurements only: November 1974 to current year.

GAGE.--Flood-hydrograph recorder and crest-stage gage. Datum of gage is 455.33 ft (138.785 m) above mean sea level.

REMARKS.--Additional storm rainfall-runoff data for this site can be obtained from the report "Hydrologic Data for Urban Studies in the Austin, Texas Metropolitan Area, 1977."

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,800 ft³/s (136 m³/s) Nov. 23, 1974, gage height, 15.0 ft (4.57 m), from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 999 ft³/s (28.3 m³/s) Apr. 15, gage height, 8.50 ft (2.591 m), no peak above base of 1,000 ft³/s (28.3 m³/s).

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1975 to current year. Water temperatures: January 1975 to current year.

WATER QUALITY DATA: WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL./100 ML)	FECAL COLIFORM (COL./100 ML)
NOV 02...	0940	4.0	707	7.8	12.0	0	1	9.6	92	.1	8800	2200
JAN 03...	0930	4.3	661	8.0	4.0	5	5	11.8	93	1.2	16000	1500
FEB 11...	0845	322	178	8.1	13.0	50	600	9.9	97	13	45000	4400
11...	1515	92	318	7.8	15.5	20	150	9.3	96	6.2	480000	100000
12...	0755	22	660	8.0	12.0	5	2	9.2	88	1.1	100000	42000
14...	0855	1.8	887	8.0	9.5	0	0	10.0	90	.3	45000	3100
MAR 01...	1005	.35	869	8.2	10.0	0	0	15.0	138	.7	14000	760
APR 15...	1005	150	149	8.0	16.0	60	400	8.2	85	5.9	110000	34000
SEP 20...	1200	23	398	7.8	26.5	20	8	6.6	84	1.2	180000	37000
DATE	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (P) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
NOV 02...	400	310	120	110	7.9	28	.7	3.6	226	0	99	48
JAN 03...	1900	--	--	--	--	--	--	--	--	--	--	--
FEB 11...	130000	80	8	29	1.8	3.5	.2	2.2	88	0	12	4.7
11...	100000	--	--	--	--	--	--	--	--	--	--	--
12...	11000	--	--	--	--	--	--	--	--	--	--	--
14...	880	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	420	--	--	--	--	--	--	--	--	--	--	--
APR 15...	240000	62	5	22	1.7	3.2	.2	2.6	70	0	13	4.1
SEP 20...	6000	160	59	56	4.3	14	.5	4.0	120	0	57	25
DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	
NOV 02...	.3	8.1	416	2	0	.82	.00	.01	.21	.04	4.0	
JAN 03...	--	--	--	15	3	.11	.00	.00	.17	.03	5.3	
FEB 11...	.1	4.2	101	1520	208	.34	.02	.19	11	1.0	27	
11...	--	--	--	262	62	1.2	.02	.28	1.1	.47	11	
12...	--	--	--	6	4	2.3	.02	.11	.45	.13	4.6	
14...	--	--	--	0	0	2.4	.02	.02	2.7	.05	3.6	
MAR 01...	--	--	--	1	1	.60	.01	.02	.33	.01	2.0	
APR 15...	.1	2.8	84	572	204	.41	.02	.17	1.8	.51	14	
SEP 20...	.2	6.9	227	10	2	.53	.01	.01	.29	.13	5.5	

COLORADO RIVER BASIN

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX.--Continued

WATER QUALITY DATA: WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
NOV 02...	0940	7	0	0	14	1	50
FEB 11...	0845	4	0	0	0	3	20
APR 15...	1005	42	0	0	2	2	20
SEP 20...	1200	53	100	0	0	3	60

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV 02...	0	0	.3	0	0	10
FEB 11...	0	0	.0	0	0	0
APR 15...	2	20	.0	0	0	10
SEP 20...	0	1	.0	0	0	10

DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
NOV 02...	0940	.0	.00	.00	.0	.00	.00	.00	.02	.01	.00	.00
FEB 11...	0845	.1	.00	.00	.2	.16	.13	.43	.13	.05	.00	.00
APR 15...	1005	.0	.00	.00	.1	.11	.02	.16	.61	.05	.00	.00
SEP 20...	1200	.0	.00	.00	.2	.00	.00	.00	.39	.01	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 02...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
FEB 11...	.02	.01	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
APR 15...	.00	.00	.01	.00	.00	.00	.00	0	.00	.04	.11	.02
SEP 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.05	.00

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 15, 1977										ACCUM.	DISCHARGE	ACCUM.
STATION NO. 08156800										WEIGHTED	IN	RUNOFF
SHOAL CREEK AT 12TH STREET, AUSTIN, TEXAS										PRECIP.	FT ³ /S	IN.
DATE & TIME	1SHL	2SHL	G	A	G	F	N	U	M	B	E	R
APR. 15												
0000	0.0	0.0								0.0	2.0	0.0005
0400	0.0	0.01								0.01	1.7	0.0010
0500	0.03	0.01								0.01	1.4	0.0011
0515	0.06	0.03								0.04	4.9	0.0012
0525	0.19	0.15								0.16	40.0	0.0018
0530	0.27	0.26								0.26	57.0	0.0024
0535	0.48	0.44								0.45	122.0	0.0036
0540	0.72	0.58								0.61	187.0	0.0055
0545	0.86	0.75								0.78	252.0	0.0081
0550	0.95	0.84								0.87	308.0	0.0112
0555	1.02	0.94								0.96	363.0	0.0148
0600	1.12	1.06								1.07	419.0	0.0212
0610	1.27	1.16								1.19	513.0	0.0315
0620	1.32	1.19								1.22	647.0	0.0446
0630	1.32	1.21								1.24	822.0	0.0653
0645	1.34	1.21								1.24	999.0	0.0956
0700	1.34	1.22								1.25	935.0	0.1238
0715	1.37	1.25								1.28	825.0	0.1488
0730	1.38	1.25								1.28	635.0	0.1776
0800	1.38	1.26								1.29	322.0	0.1971
0830	1.40	1.27								1.30	206.0	0.2096
0900	1.44	1.31								1.34	153.0	0.2189
0930	1.46	1.42								1.43	133.0	0.2242
0940	1.56	1.44								1.47	134.0	0.2269
0950	1.60	1.51								1.53	140.0	0.2291
0955	1.64	1.61								1.62	146.0	0.2305
1000	1.78	1.65								1.68	152.0	0.2336
1015	1.82	1.66								1.70	143.0	0.2379
1030	1.83	1.67								1.71	144.0	0.2423
1045	1.83	1.68								1.72	167.0	0.2473
1100	1.85	1.69								1.73	191.0	0.2531
1115	1.85	1.69								1.73	194.0	0.2590
1130	1.86	1.69								1.73	226.0	0.2658
1145	1.86	1.69								1.73	207.0	0.2721
1200	1.86	1.69								1.73	178.0	0.2802
1230	1.86	1.69								1.73	124.0	0.2877
1300	1.90	1.72								1.76	101.0	0.2968
1400	1.92	1.75								1.79	75.0	0.3037
1430	1.95	1.77								1.81	68.0	0.3067

STORM RAINFALL AND RUNOFF RECORD											
STA. NO. 08156800				1977 WATER YEAR							
SHOAL CREEK AT 12TH STREET, AUSTIN, TEXAS				STORM OF APRIL 15, 1977							
DATE & TIME		G A G F		PRECIP.		DISCHARGE		ACCUM.		ACCUM.	
				IN.		FT ³ /S		IN.		IN.	
APR. 15											
1445	1.95	1.77		1.81	74.0	0.3090					
1500	1.97	1.87		1.89	118.0	0.3126					
1515	2.05	1.97		1.99	150.0	0.3171					
1530	2.17	2.12		2.13	178.0	0.3225					
1545	2.24	2.19		2.20	201.0	0.3286					
1600	2.30	2.21		2.23	204.0	0.3378					
1630	2.33	2.28		2.29	333.0	0.3580					
1700	2.42	2.40		2.40	396.0	0.3820					
1730	2.52	2.41		2.44	302.0	0.4002					
1800	2.52	2.41		2.44	245.0	0.4151					
1830	2.52	2.42		2.44	228.0	0.4289					
1900	2.52	2.42		2.44	169.0	0.4442					
2000	2.52	2.42		2.44	95.0	0.4557					
2100	2.52	2.42		2.44	68.0	0.4660					
2230	2.52	2.43		2.45	53.0	0.4756					
2400	2.52	2.43		2.45	40.0	0.4793					

STA. NO. 08156800				STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR		
SHOAL CREEK AT 12TH STREET, AUSTIN, TEXAS				STORM OF APRIL 16, 1977				ACCUM. WEIGHTED PRECIP.	DISCHARGE IN FT ³ /S	ACCUM. RUNOFF IN.
DATE & TIME	1SHL	2SHL	G A G E	N U M B E R				IN.		IN.
APR. 16										
0000	0.0	0.0						0.0	40.0	0.0085
0330	0.01	0.0						0.00	22.0	0.0145
0430	0.01	0.0						0.00	19.0	0.0165
0515	0.01	0.0						0.00	17.0	0.0178
0545	0.01	0.02						0.02	20.0	0.0187
0600	0.10	0.04						0.05	20.0	0.0196
0630	0.10	0.05						0.06	23.0	0.0210
0700	0.13	0.11						0.11	26.0	0.0225
0730	0.14	0.14						0.14	31.0	0.0244
0800	0.18	0.19						0.19	34.0	0.0265
0830	0.21	0.22						0.22	36.0	0.0287
0900	0.24	0.29						0.28	53.0	0.0311
0915	0.32	0.34						0.34	62.0	0.0329
0930	0.39	0.41						0.41	82.0	0.0354
0945	0.44	0.47						0.46	109.0	0.0387
1000	0.51	0.55						0.54	143.0	0.0431
1015	0.57	0.62						0.61	206.0	0.0493
1030	0.62	0.71						0.69	290.0	0.0566
1040	0.69	0.81						0.78	369.0	0.0622
1045	0.74	0.83						0.81	408.0	0.0663
1050	0.78	0.84						0.83	424.0	0.0727
1100	0.81	0.88						0.86	455.0	0.0819
1110	0.88	0.91						0.90	495.0	0.0919
1120	0.92	0.95						0.94	530.0	0.1026
1130	0.95	1.03						1.01	560.0	0.1167
1145	1.02	1.05						1.04	571.0	0.1340
1200	1.05	1.06						1.06	596.0	0.1520
1215	1.05	1.06						1.06	587.0	0.1698
1230	1.05	1.06						1.06	547.0	0.1946
1300	1.05	1.06						1.06	410.0	0.2194
1330	1.05	1.06						1.06	286.0	0.2368
1400	1.05	1.06						1.06	201.0	0.2550
1500	1.05	1.06						1.06	114.0	0.2688
1600	1.05	1.06						1.06	84.0	0.2841
1800	1.05	1.06						1.06	59.0	0.2983
2000	1.05	1.06						1.06	43.0	0.3088
2200	1.05	1.06						1.06	33.0	0.3167
2400	1.05	1.06						1.06	27.0	0.3200

STA. NO. 08156800				STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR		
SHOAL CREEK AT 12TH STREET, AUSTIN, TEXAS				STORM OF APRIL 19-20, 1977				ACCUM.	DISCHARGE	ACCUM.
DATE & TIME	G A G E			N U M B E R			WEIGHTED	IN	RUNOFF	
	1SHL	PSHL					PRECIP.			
							IN.	FT ³ /S	IN.	
APR. 19										
0000	0.0	0.0					0.0	3.9	0.0032	
1345	0.0	0.01					0.01	2.5	0.0058	
1700	0.0	0.01					0.01	2.3	0.0064	
1800	0.0	0.04					0.03	2.3	0.0067	
1900	0.0	0.06					0.05	2.0	0.0068	
1915	0.0	0.08					0.06	2.0	0.0069	
1920	0.0	0.21					0.16	2.0	0.0069	
1925	0.0	0.52					0.40	2.0	0.0069	
1930	0.0	0.68					0.52	2.0	0.0069	
1935	0.0	0.86					0.65	2.0	0.0070	
1945	0.0	0.97					0.74	2.0	0.0070	
2000	0.0	1.04					0.79	2.0	0.0071	
2020	0.0	1.10					0.84	2.0	0.0072	
2040	0.0	1.17					0.89	2.0	0.0073	
2100	0.0	1.19					0.90	2.0	0.0073	
2120	0.0	1.23					0.93	2.0	0.0074	
2140	0.05	1.27					0.98	5.1	0.0076	
2155	0.12	1.27					0.99	31.0	0.0082	
2200	0.51	1.27					1.09	43.0	0.0087	
2205	0.65	1.27					1.12	71.0	0.0094	
2210	0.73	1.27					1.14	98.0	0.0104	
2215	0.81	1.27					1.16	126.0	0.0123	
2225	0.88	1.27					1.18	134.0	0.0156	
2240	0.95	1.27					1.19	217.0	0.0233	
2300	1.04	1.27					1.21	590.0	0.0441	
2315	1.10	1.27					1.23	643.0	0.0636	
2330	1.12	1.27					1.23	732.0	0.0858	
2345	1.14	1.27					1.24	693.0	0.1067	
2400	1.19	1.27					1.25	576.0	0.1242	
APR. 20										
0000	1.19	1.27					1.25	576.0	0.1242	
0030	1.24	1.31					1.29	429.0	0.1588	
0100	1.27	1.35					1.33	339.0	0.1794	
0130	1.29	1.36					1.34	271.0	0.1958	
0200	1.30	1.36					1.35	231.0	0.2167	
0300	1.30	1.37					1.35	140.0	0.2337	
0400	1.30	1.37					1.35	91.0	0.2502	
0600	1.30	1.37					1.35	62.0	0.2634	
0730	1.30	1.37					1.35	51.0	0.2695	
0800	1.33	1.42					1.40	52.0	0.2727	

STA. NO. 08156800				STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR					
SHOAL CREEK AT 12TH STREET, AUSTIN, TEXAS				STORM OF APRIL 19-20, 1977				ACCU. WEIGHTED		DISCHARGE IN		ACCU. RUNOFF	
DATE & TIME		G A G F		N U M B E R		PRECIP. IN.		FT ³ /S		IN.			
1SHL		2SHL											
APR. 20													
0830	1.36	1.46				1.44	53.0	0.2759					
0900	1.38	1.48				1.46	54.0	0.2792					
0930	1.42	1.54				1.51	58.0	0.2818					
0945	1.49	1.60				1.57	62.0	0.2837					
1000	1.53	1.65				1.62	64.0	0.2866					
1030	1.61	1.74				1.71	83.0	0.2916					
1100	1.63	1.80				1.77	96.0	0.2974					
1130	1.69	1.81				1.78	138.0	0.3058					
1200	1.69	1.81				1.78	167.0	0.3159					
1230	1.69	1.81				1.78	153.0	0.3251					
1300	1.70	1.81				1.78	127.0	0.3367					
1400	1.70	1.81				1.78	86.0	0.3471					
1500	1.70	1.81				1.78	70.0	0.3598					
1700	1.70	1.81				1.78	56.0	0.3733					
1900	1.70	1.81				1.78	45.0	0.3856					
2130	1.70	1.81				1.78	35.0	0.3962					
2400	1.70	1.81				1.78	30.0	0.4007					

WALLER CREEK DRAINAGE BASIN

The locations of data-collection sites in the Waller Creek drainage basin are shown on figure 10.

Rainfall recorded for the 1977 water year was 27.30 inches at station 4-R, 30.07 inches at station 5-R, and 27.47 inches at station 6-R. Total runoff from the basin as measured at the 23rd Street station (08157500) was 9.28 inches

A summary of storm rainfall and runoff is shown in table 5.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.

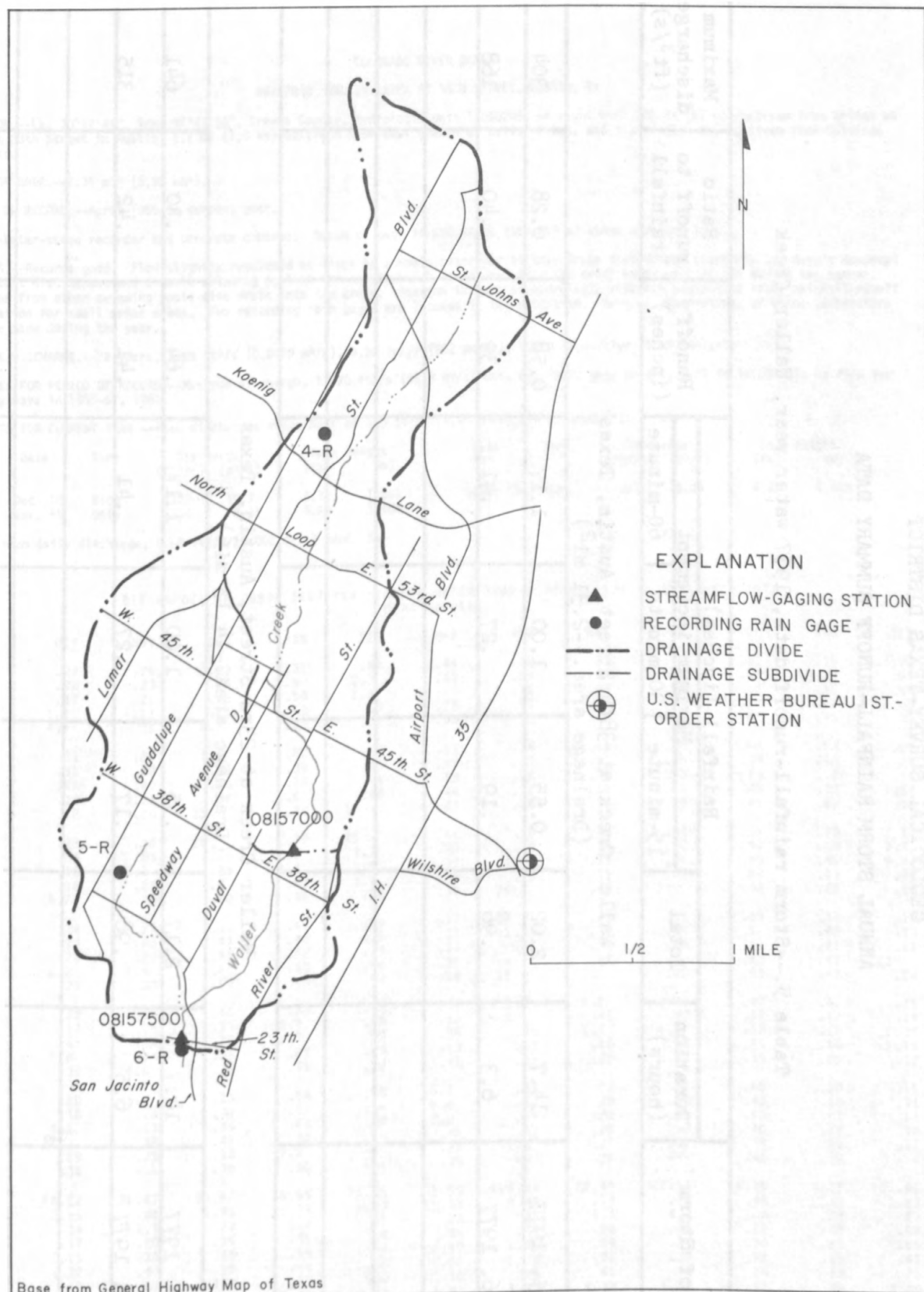


FIGURE 10.-Locations of data-collection sites in the Waller Creek drainage basin

TX-35
6/69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 5.--Storm rainfall-runoff data, 1977 water year, Waller Creek

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft ³ /s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Waller Creek at 38th Street, Austin, Texas (Drainage area.--2.31 mi ²)								
April 15, 1977	14.7	2.02	0.55	1.00	1.17	0.58	0.28	304
April 16, 1977	6.3	.96	.19	.27	.41	.39	.40	168
Waller Creek at 23rd Street, Austin, Texas (Drainage area.--4.13 mi ²)								
April 15, 1977	14.7	2.17	.55	1.00	1.17	.64	.30	641
April 16, 1977	6.5	.98	.17	.27	.41	.41	.42	315

COLORADO RIVER BASIN

08157000 WALLER CREEK AT 38TH STREET, AUSTIN, TX

LOCATION.--Lat 30°17'49", long 97°43'36", Travis County, Hydrologic Unit 12090205, on right bank 200 ft (61 m) upstream from bridge at East 38th Street in Austin, 1.1 mi (1.8 km) upstream from West Branch of Waller Creek, and 3.3 mi (5.3 km) upstream from Colorado River.

DRAINAGE AREA.--2.31 mi² (5.98 km²).

PERIOD OF RECORD.--April 1955 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 555.44 ft (169.298 m) above mean sea level.

REMARKS.--Records good. Flow slightly regulated at times by a small reservoir at Holy Cross High School (formerly St. Mary's Academy) on East 41st Street and a small swimming pool at the school which is drained into the creek every week or two during the summer. Water from other swimming pools also drain into the creek. Station is part of hydrologic research project to study rainfall-runoff relation for small urban areas. Two recording rain gages are located in the watershed. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 1.69 ft³/s (0.0479 m³/s), 9.94 in/yr (252 mm/yr), 1,220 acre-ft/yr (1.50 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,970 ft³/s (55.8 m³/s) Oct. 29 1960, gage height, 7.77 ft (2.368 m); no flow for many days in 1955-57, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s (8.50 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 10	2100	*379 10.7	5.12 1.561	Sept. 19	1645	321 9.09	4.93 1.503
Apr. 15	0615	304 8.61	4.87 1.484				

Minimum daily discharge, 0.08 ft³/s (0.002 m³/s) Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.26	.29	.31	.87	.44	.36	.57	.56	.51	.19	.09
2	.20	.23	.26	1.9	2.2	.48	.64	.49	.56	.51	.39	.09
3	.17	.21	.26	.50	1.4	13	.35	.43	.58	.52	.45	.09
4	6.1	.21	.26	.40	.53	.78	.77	.41	.57	.51	.42	.09
5	4.7	.21	6.7	.35	.50	.56	.32	.40	.56	.52	.45	.08
6	.21	.22	1.6	.82	.47	.51	.36	.41	.30	.48	.42	.09
7	.32	.20	.41	.39	.46	.49	.33	.39	.49	.49	.40	.10
8	.44	.20	.35	.78	.84	.48	.34	.38	.53	.53	.18	.15
9	.19	.21	.32	1.6	.46	.44	.35	.36	.51	.48	.32	.17
10	.18	.20	23	.34	12	.45	.35	.35	.55	.44	.42	.16
11	.18	.20	15	.37	41	.44	.35	.41	.55	.21	.40	.11
12	.21	.85	2.3	1.7	3.7	.39	.39	.34	.52	.43	.58	1.7
13	.18	5.2	.89	8.4	1.5	.39	4.6	.35	.28	.45	.41	9.7
14	.18	.26	1.0	.69	1.1	.39	.69	.32	.54	.44	.41	.33
15	9.7	.24	.62	.56	.90	.39	36	.32	3.7	.44	.22	.13
16	.74	.24	.53	.47	.84	.37	24	.32	.59	.43	.31	.12
17	.23	.68	.47	.45	.75	.37	1.3	.39	.54	1.5	.42	.12
18	.21	.27	.47	.42	.69	.37	.84	.33	.56	.23	.41	.11
19	8.8	7.5	1.4	.40	.64	.35	14	.84	.77	.41	.42	23
20	.25	.38	.54	.43	.58	.36	18	1.1	.26	.42	.42	.28
21	.22	.26	.40	.39	.55	.36	3.2	9.1	.73	.43	.41	.15
22	.17	.24	.39	9.2	.58	.36	1.4	.40	.97	.42	.17	.14
23	.81	.24	.38	1.7	.50	.36	.89	1.7	4.3	.42	.10	.18
24	7.8	.26	.36	.67	.50	.43	.73	.37	.88	.41	.10	.14
25	.30	4.6	.36	.61	.50	.41	.65	.30	.63	.19	.09	.12
26	.20	1.2	.33	.54	.45	3.2	.57	.31	.51	.40	.10	.11
27	.18	.28	.32	.51	.44	5.4	.57	.29	.26	.43	.10	.11
28	4.1	.61	.36	.45	.44	2.0	.49	.29	.54	.45	.23	.11
29	34	.46	.47	.40	---	.42	.47	.28	.50	.45	.12	.10
30	.69	.35	.33	2.2	---	.35	1.5	.27	.50	.38	.12	.11
31	.34	---	.30	.60	---	.35	---	.26	---	.45	.10	---
TOTAL	82.22	26.47	60.67	38.55	75.39	35.09	114.81	22.48	23.34	14.38	9.28	37.98
MEAN	2.65	.88	1.96	1.24	2.69	1.13	3.83	.73	.78	.46	.30	1.27
MAX	34	7.5	23	9.2	41	13	36	9.1	4.3	1.5	.58	23
MIN	.17	.20	.26	.31	.44	.35	.32	.26	.26	.19	.09	.08
CFSM	1.15	.38	.85	.54	1.17	.49	1.66	.32	.34	.20	.13	.55
IN.	1.32	.43	.98	.62	1.21	.56	1.85	.36	.38	.23	.15	.61
AC-FT	163	53	120	76	150	70	228	45	46	29	18	75
(††)	5.68	1.75	2.77	1.88	2.72	1.83	5.20	1.12	1.50	.06	.09	3.00
CAL YR 1976	TOTAL 677.22		MEAN 1.85	MAX 69	MIN .14	CFSM .80	IN 10.90	AC-FT 1340	†† 36.11			
WTR YR 1977	TOTAL 540.66		MEAN 1.48	MAX 41	MIN .08	CFSM .64	IN 8.70	AC-FT 1070	†† 27.60			

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

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
WALLER CREEK AT 34TH STREET, AUSTIN, TEXAS										STORM OF APRIL 15, 1977		
DATE & TIME		4-R		5-R		G A G F		N U M B E R		WEIGHTED PRECIP.	DISCHARGE	ACCUM. RUNOFF
		IN.		FT ³ /S		IN.				IN.	FT ³ /S	IN.
APR. 15												
0000		0.0	0.0							0.0	0.6	0.0007
0325		0.02	0.0							0.02	0.9	0.0020
0430		0.03	0.01							0.03	0.8	0.0024
0445		0.09	0.01							0.07	0.8	0.0025
0450		0.14	0.01							0.12	0.8	0.0025
0455		0.20	0.01							0.16	0.8	0.0026
0500		0.32	0.02							0.26	0.9	0.0026
0505		0.44	0.04							0.36	0.9	0.0027
0510		0.57	0.06							0.47	1.0	0.0027
0515		0.68	0.14							0.58	1.1	0.0028
0520		0.79	0.30							0.70	15.0	0.0036
0525		0.91	0.51							0.83	30.0	0.0053
0530		0.94	0.66							0.89	44.0	0.0078
0535		0.97	0.85							0.95	79.0	0.0122
0540		1.02	1.04							1.02	114.0	0.0186
0545		1.02	1.14							1.04	149.0	0.0352
0600		1.05	1.19							1.08	282.0	0.0825
0615		1.07	1.22							1.10	304.0	0.1335
0630		1.09	1.23							1.12	261.0	0.1773
0645		1.11	1.25							1.14	164.0	0.2048
0700		1.13	1.26							1.15	107.0	0.2317
0730		1.14	1.28							1.17	70.0	0.2552
0800		1.14	1.30							1.17	37.0	0.2676
0830		1.16	1.34							1.19	23.0	0.2753
0900		1.17	1.35							1.20	19.0	0.2801
0915		1.20	1.44							1.25	16.0	0.2828
0930		1.26	1.48							1.30	17.0	0.2856
0945		1.31	1.56							1.36	21.0	0.2891
1000		1.33	1.57							1.38	34.0	0.2977
1030		1.35	1.60							1.40	43.0	0.3085
1045		1.35	1.60							1.40	44.0	0.3196
1115		1.35	1.61							1.40	40.0	0.3330
1145		1.35	1.61							1.40	25.0	0.3435
1230		1.36	1.62							1.41	15.0	0.3498
1300		1.38	1.66							1.43	12.0	0.3548
1345		1.42	1.70							1.47	9.0	0.3586
1415		1.44	1.72							1.49	10.0	0.3619
1445		1.54	1.83							1.60	10.0	0.3639
1450		1.58	1.88							1.64	14.0	0.3646

TA. NO. 08157900				STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR			
ALLER CREEK AT 34TH STREET, AUSTIN, TEXAS				STORM OF APRIL 15, 1977				ACCUM.	DISCHARGE	ACCUM.	
DATE & TIME				G A G F N U M B E R				WEIGHTED	IN	RUNOFF	
								PRECIP.			
								IN.	FT ³ /S	IN.	
APR. 15											
1455	1.64	2.05						1.72	19.0	0.3657	
1500	1.66	2.11						1.75	23.0	0.3676	
1510	1.72	2.16						1.80	42.0	0.3723	
1520	1.72	2.21						1.81	56.0	0.3786	
1530	1.74	2.22						1.83	65.0	0.3877	
1545	1.75	2.25						1.84	86.0	0.4021	
1600	1.76	2.28						1.86	118.0	0.4219	
1615	1.80	2.32						1.90	109.0	0.4402	
1630	1.87	2.38						1.97	100.0	0.4569	
1645	1.91	2.44						2.01	91.0	0.4722	
1700	1.91	2.45						2.01	81.0	0.4926	
1730	1.91	2.45						2.01	73.0	0.5171	
1800	1.92	2.46						2.02	56.0	0.5358	
1830	1.92	2.47						2.02	33.0	0.5469	
1900	1.92	2.47						2.02	21.0	0.5575	
2000	1.92	2.47						2.02	11.0	0.5685	
2200	1.92	2.47						2.02	4.1	0.5741	
2400	1.92	2.47						2.02	2.3	0.5756	

COLORADO RIVER BASIN

08157500 WALLER CREEK AT 23D STREET, AUSTIN, TX

LOCATION.--Lat 30°17'08", long 97°44'01", Travis County, Hydrologic Unit 12090205, on San Jacinto Boulevard, 50 ft (15 m) upstream from bridge on East 23d Street in Austin, and 2.1 mi (3.4 km) upstream from Colorado River.

DRAINAGE AREA.--4.13 mi² (10.70 km²).

PERIOD OF RECORD.--December 1954 to current year.

Water-quality records: Periodic chemical, biochemical, and pesticide analyses: October 1970 to September 1971.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 509.95 ft (155.433 m) above mean sea level.

REMARKS.--Records good. Some regulation by small dam upstream. Diversion of city water into channel during the summer months from municipal and private swimming pools. Some diversions into and out of drainage area by storm sewers. Station is part of a hydrologic research project to study rainfall-runoff relation for small urban areas. Three recording rain gages are located in watershed. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 3.57 ft³/s (0.101 m³/s), 11.74 in/yr (298 mm/yr), 2,590 acre-ft/yr (3.19 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,020 ft³/s (114 m³/s) Oct. 11, 1973, gage height, 9.00 ft (2.743 m); minimum daily, 0.2 ft³/s (0.006 m³/s) at times in 1955-57.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since 1885 occurred Apr. 22, 1915, stage unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 641 ft³/s (18.2 m³/s) Apr. 15, gage height, 4.43 ft (1.350 m), no peak above base of 800 ft³/s (22.7 m³/s); minimum daily, 0.30 ft³/s (0.008 m³/s) Sept. 25, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.48	.72	.64	.66	1.7	.97	.83	1.2	.81	.73	.75	.42
2	.41	.65	.60	3.9	4.3	1.0	1.4	1.1	.88	.70	.43	.41
3	.41	.62	.61	.96	2.7	24	.79	1.0	.90	.68	.60	.37
4	14	.64	.58	.77	1.0	1.6	1.9	.98	.81	.65	.60	.36
5	7.8	.63	13	.70	.94	1.1	.74	.98	.82	.73	.69	.32
6	.55	.61	4.0	1.6	.93	1.0	.79	.93	.79	.73	.57	.35
7	1.1	.59	.82	.73	.92	1.0	.77	.90	.77	.68	.55	.34
8	.88	.59	.74	2.0	1.7	1.0	.84	.85	.82	.68	.52	.78
9	.44	.61	.70	2.8	.89	1.0	.80	.89	.84	.61	.48	1.0
10	.43	.59	41	1.1	23	.98	.76	.82	.85	.58	.68	.64
11	.52	.66	26	1.2	68	.94	.80	.93	.86	.54	.67	.42
12	.49	2.4	4.6	3.7	5.5	.86	.82	.77	.76	.51	1.1	4.0
13	.55	11	1.8	15	3.0	.85	13	.77	.71	.64	.67	15
14	.51	.68	2.2	1.2	2.3	.90	1.7	.75	.86	.64	.62	.92
15	20	.62	1.3	.98	1.8	.87	72	.76	8.7	.65	.61	.44
16	1.8	.64	1.1	.87	1.7	.87	45	.77	.86	.58	.48	.36
17	.52	1.7	.97	.86	1.5	.88	3.0	1.2	.75	1.8	.62	.39
18	.51	.85	.95	.82	1.5	.89	2.0	.80	.78	.64	.68	.36
19	17	15	2.6	.81	1.3	.78	24	1.6	.99	.53	.73	36
20	.80	.91	1.0	.82	1.3	.81	29	2.3	.61	.67	.72	.82
21	.64	.65	.83	.78	1.2	.95	5.7	16	.97	.59	.64	.43
22	.57	.67	.82	18	1.2	.85	2.9	1.4	2.5	.65	.54	.39
23	2.4	.63	.78	3.3	1.1	.78	1.9	2.1	8.3	.54	.36	.36
24	16	.64	.75	1.2	1.1	.98	1.6	.93	1.2	.53	.38	.34
25	.90	9.6	.74	1.1	1.1	.85	1.4	.76	.84	.75	.36	.30
26	.64	2.4	.68	1.1	.98	6.4	1.2	.73	.73	.76	.37	.31
27	.69	.66	.68	1.0	.97	12	1.2	.70	.57	.65	.44	.30
28	9.3	1.2	.69	.91	.99	3.1	1.1	.66	.67	.65	.55	.34
29	60	.78	.83	.85	---	.93	1.1	.65	.72	.87	.39	.34
30	1.2	.76	.68	5.1	---	.81	2.4	.66	.70	.63	.49	.32
31	.87	---	.62	1.1	---	.79	---	.89	---	.60	.42	---
TOTAL	162.41	58.70	113.31	75.92	134.62	70.74	221.44	45.78	41.37	21.19	17.71	67.13
MEAN	5.24	1.96	3.66	2.45	4.81	2.28	7.38	1.48	1.38	.68	.57	2.24
MAX	60	15	41	18	68	24	72	16	8.7	1.8	1.1	36
MIN	.41	.59	.58	.66	.89	.78	.74	.65	.57	.51	.36	.30
CFSM	1.27	.48	.89	.59	1.17	.55	1.79	.36	.33	.17	.14	.54
IN.	1.46	.53	1.02	.68	1.21	.64	1.99	.41	.37	.19	.16	.60
AC-FT	322	116	225	151	267	140	439	91	82	42	35	133
(††)	5.82	1.75	2.81	2.00	2.71	1.88	5.26	1.11	1.39	.12	.06	2.96

CAL YR 1976 TOTAL 1281.16 MEAN 3.50 MAX 121 MIN .35 CFSM .85 IN 11.54 AC-FT 2540 †† 37.06
WTR YR 1977 TOTAL 1030.32 MEAN 2.82 MAX 72 MIN .30 CFSM .68 IN 9.28 AC-FT 2040 †† 27.87

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

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
WALLER CREEK AT 23RD STREET, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	4-R	5-R	6-R	G A G F	NUMBER					PRECIP.		
										IN.	FT ³ /S	IN.
APR. 15												
0000	0.0	0.0	0.0							0.0	1.0	0.0006
0325	0.02	0.0	0.0							0.01	1.1	0.0016
0430	0.03	0.01	0.0							0.02	1.6	0.0020
0445	0.09	0.01	0.0							0.05	1.6	0.0021
0450	0.14	0.01	0.0							0.07	1.6	0.0021
0455	0.20	0.01	0.0							0.10	1.6	0.0022
0500	0.32	0.02	0.0							0.17	1.6	0.0022
0505	0.44	0.04	0.0							0.24	1.6	0.0023
0510	0.57	0.06	0.0							0.31	1.6	0.0023
0515	0.68	0.14	0.0							0.40	1.6	0.0024
0520	0.79	0.30	0.0							0.51	43.0	0.0037
0525	0.91	0.51	0.0							0.66	85.0	0.0064
0530	0.94	0.66	0.08							0.74	126.0	0.0103
0535	0.97	0.85	0.16							0.84	262.0	0.0185
0540	1.02	1.04	0.26							0.95	399.0	0.0310
0545	1.02	1.14	0.39							1.00	535.0	0.0477
0550	1.02	1.17	0.52							1.03	570.0	0.0655
0555	1.04	1.18	0.67							1.06	606.0	0.0845
0600	1.05	1.19	0.80							1.08	641.0	0.1045
0605	1.06	1.20	0.93							1.10	599.0	0.1232
0610	1.07	1.21	1.07							1.13	558.0	0.1407
0615	1.07	1.22	1.08							1.13	516.0	0.1730
0630	1.09	1.23	1.11							1.15	440.0	0.2142
0645	1.11	1.25	1.11							1.17	340.0	0.2461
0700	1.13	1.26	1.13							1.18	211.0	0.2758
0730	1.14	1.28	1.14							1.20	109.0	0.2963
0800	1.14	1.30	1.15							1.20	69.0	0.3092
0830	1.16	1.34	1.18							1.23	46.0	0.3178
0900	1.17	1.35	1.21							1.25	41.0	0.3236
0915	1.20	1.44	1.23							1.30	40.0	0.3274
0930	1.26	1.48	1.24							1.35	39.0	0.3310
0945	1.31	1.56	1.27							1.41	60.0	0.3366
1000	1.33	1.57	1.33							1.43	92.0	0.3496
1030	1.35	1.60	1.36							1.45	64.0	0.3616
1100	1.35	1.61	1.40							1.46	64.0	0.3796
1200	1.35	1.61	1.40							1.46	36.0	0.3914
1245	1.38	1.64	1.40							1.49	23.0	0.3990
1345	1.42	1.70	1.46							1.54	25.0	0.4072
1430	1.46	1.74	1.51							1.58	24.0	0.4117

STATION NO. 0A157500											
STORM RAINFALL AND RUNOFF RECORD											
1977 WATER YEAR											
WALLER CREEK AT 23RD STREET, AUSTIN, TEXAS											
STORM OF APRIL 15, 1977											
DATE & TIME	G A G F			NUMBER				ACCUM. PRECIP. IN.	DISCHARGE IN. FT ³ /S	ACCUM. RUNOFF IN.	
	0-R	S-R	6-R								
APR. 15											
1445	1.54	1.83	1.52				1.65	33.0	0.4137		
1450	1.58	1.88	1.52				1.69	58.0	0.4156		
1455	1.64	2.05	1.54				1.79	82.0	0.4181		
1500	1.66	2.11	1.57				1.83	107.0	0.4231		
1510	1.72	2.16	1.63				1.89	200.0	0.4325		
1515	1.72	2.20	1.71				1.91	246.0	0.4402		
1520	1.72	2.21	1.79				1.92	229.0	0.4474		
1525	1.74	2.22	1.88				1.95	212.0	0.4540		
1530	1.74	2.22	1.91				1.95	195.0	0.4631		
1540	1.75	2.24	1.97				1.97	169.0	0.4737		
1550	1.75	2.26	1.97				1.98	150.0	0.4831		
1600	1.76	2.28	1.99				1.99	139.0	0.4940		
1615	1.80	2.32	2.02				2.03	145.0	0.5076		
1630	1.87	2.38	2.05				2.09	160.0	0.5226		
1645	1.91	2.44	2.12				2.14	186.0	0.5400		
1700	1.91	2.45	2.20				2.15	182.0	0.5656		
1730	1.91	2.45	2.24				2.16	105.0	0.5853		
1800	1.92	2.46	2.25				2.17	80.0	0.6078		
1900	1.92	2.47	2.25				2.17	42.0	0.6236		
2000	1.92	2.47	2.25				2.17	21.0	0.6354		
2200	1.92	2.47	2.25				2.17	9.0	0.6422		
2400	1.92	2.47	2.25				2.17	5.3	0.6442		

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STA. NO. 08157500

STORM RAINFALL AND RUNOFF RECORD

1977 WATER YEAR

WALLER CREEK AT 23RD STREET, AUSTIN, TEXAS

STORM OF APRIL 16, 1977

DATE & TIME	G A G F			N U M B E R	ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT ³ /S	ACCUM. RUNOFF IN.
	4-W	5-R	6-P				
APR. 16							
0000	0.0	0.0	0.0		0.0	5.3	0.0050
0500	0.01	0.0	0.0		0.00	2.8	0.0079
0530	0.06	0.06	0.0		0.05	2.8	0.0084
0600	0.10	0.06	0.04		0.08	6.8	0.0097
0630	0.15	0.13	0.08		0.13	15.0	0.0125
0700	0.19	0.18	0.16		0.18	32.0	0.0185
0730	0.23	0.23	0.21		0.23	34.0	0.0249
0800	0.24	0.27	0.25		0.25	36.0	0.0316
0830	0.27	0.31	0.28		0.29	41.0	0.0374
0845	0.31	0.35	0.31		0.33	45.0	0.0416
0900	0.38	0.43	0.34		0.40	60.0	0.0463
0910	0.42	0.49	0.38		0.44	78.0	0.0512
0920	0.46	0.54	0.40		0.49	98.0	0.0573
0930	0.51	0.57	0.45		0.53	119.0	0.0629
0935	0.53	0.60	0.48		0.55	127.0	0.0668
0940	0.56	0.63	0.51		0.58	135.0	0.0711
0945	0.58	0.66	0.54		0.61	143.0	0.0778
0955	0.62	0.72	0.60		0.66	166.0	0.0882
1005	0.70	0.80	0.64		0.73	201.0	0.1007
1015	0.76	0.93	0.72		0.82	249.0	0.1202
1030	0.80	0.96	0.84		0.87	315.0	0.1448
1040	0.84	0.96	0.91		0.89	297.0	0.1634
1050	0.90	0.96	0.95		0.93	281.0	0.1810
1100	0.94	0.96	0.98		0.95	268.0	0.2019
1115	0.96	0.96	1.05		0.97	312.0	0.2312
1130	0.96	0.96	1.13		0.98	294.0	0.2587
1145	0.96	0.96	1.16		0.98	241.0	0.2814
1200	0.96	0.96	1.17		0.98	204.0	0.3101
1230	0.96	0.96	1.18		0.98	132.0	0.3348
1300	0.96	0.96	1.18		0.98	86.0	0.3510
1330	0.96	0.96	1.18		0.98	63.0	0.3628
1400	0.96	0.96	1.18		0.98	43.0	0.3749
1500	0.96	0.96	1.18		0.98	23.0	0.3835
1600	0.96	0.96	1.18		0.98	14.0	0.3914
1800	0.96	0.96	1.18		0.98	8.7	0.3979
2000	0.96	0.96	1.18		0.98	6.6	0.4053
2400	0.96	0.96	1.18		0.98	4.6	0.4088

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX

LOCATION.--Lat 30°14'56", long 97°43'03", Travis County, Hydrologic Unit 12090205, at Longhorn Dam on the Colorado River at Austin, 1.5 mi (2.4 km) downstream from Interstate Highway 35, and 2.3 mi (3.7 km) southeast of the State Capitol in Austin.

DRAINAGE AREA.--38,390 mi² (99,430 km²), approximately, of which 12,880 mi² (33,360 km²) probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: February 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL STREPTOCOCCI (COL. PER 100 ML)
DEC 28...	1100	554	8.0	17.0	0	1	9.4	100	.4	680	12	6
APR 26...	1050	550	8.1	17.0	0	2	10.3	110	.2	400	16	6
AUG 23...	1035	535	7.7	27.5	5	2	5.4	69	.9	1900	--	--

DATE	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
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DEC 28...	210	36	49	22	26	.8	3.0	216	0	35	48
APR 26...	220	50	49	23	29	.9	3.4	204	0	37	53
AUG 23...	200	52	49	19	30	.9	3.4	180	0	37	54

DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
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DEC 28...	.3	8.4	298	1	0	.26	.00	.02	.25	.03	5.8
APR 26...	.2	8.7	304	2	0	.16	.00	.02	.30	.00	5.5
AUG 23...	.2	9.7	291	--	--	.25	.01	.05	.36	.01	2.8

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
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DEC 28...	1100	1	0	0	10	7	40
APR 26...	1050	--	--	--	--	--	0
AUG 23...	1035	0	300	0	0	4	50

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
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DEC 28...	3	0	.0	0	0	10
APR 26...	--	0	--	--	--	--
AUG 23...	0	0	.0	0	0	10

POLY-
CHLORINATED
NAPH-

DATE	TIME	TOTAL PCB (UG/L)	TOTAL THALLENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLORDANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DIAZINON (UG/L)	TOTAL DIELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
DEC 28...	1100	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
AUG 23...	1035	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTACHLOR (UG/L)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALATHION (UG/L)	TOTAL METHYL PARATHION (UG/L)	TOTAL METHYL TRITHION (UG/L)	TOTAL PARATHION (UG/L)	TOTAL TOXAPHENE (UG/L)	TOTAL TRITHION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
DEC 28...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 23...	.00	.00	.00	.00	.00	.00	.00	0	.00	.15	.00	.00

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX
(National stream-quality accounting network)

LOCATION.--Lat 30°14'40", long 97°41'39", Travis County, Hydrologic Unit 12090205, on right bank 1,000 ft (305 m) upstream from upstream bridge on U.S. Highway 183 in Austin, 1.4 mi (2.3 km) downstream from Longhorn Dam, and at mile 290.3 (467.1 km).

DRAINAGE AREA.--38,400 mi² (99,500 km²), approximately, of which 12,880 mi² (33,360 km²) probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1898 to current year. Records of daily discharge for Dec. 13-26, 1914, and Feb. 9-17, 1915, published in WSP 408, have been found unreliable and should not be used.

REVISED RECORDS.--WSP 508: 1915(M). WSP 528: 1900(M), 1918(M). WSP 548: 1901-16. WSP 1342: Drainage area. WSP 1562: 1908, 1929(M), 1936.

GAGE.--Water-stage recorder. Datum of gage is 402.27 ft (122.612 m) above mean sea level. Prior to June 19, 1939, all records collected at or near Congress Avenue Bridge 3.9 mi (6.3 km) upstream at datum 19.6 ft (5.97 m) higher; prior to June 18, 1915, nonrecording gages, recording gages thereafter; June 20, 1939, to Oct. 16, 1963, at site 1,000 ft (305 m) downstream from present site at datum 5.0 ft (1.52 m) higher.

REMARKS.--Water-discharge records good. National Weather Service gage-height telemetering device at station. Since 1937, at least 10 percent of drainage area regulated by reservoirs. Flow largely regulated by Lake Travis (station 08154500). The city of Austin reported that 71,600 acre-ft (88.3 km³) was diverted for municipal use above station and 37,610 acre-ft (46.4 km³) of treated sewage was returned below station. Many other diversions above Lake Buchanan for irrigation, municipal supplies, and oilfield operations.

AVERAGE DISCHARGE.--38 years (water years 1899-1936) unregulated, 2,711 ft³/s (76.78 m³/s), 1,964,000 acre-ft/yr (2.42 km³/yr); 41 years (water years 1937-77) regulated, 2,069 ft³/s (58.59 m³/s), 1,499,000 acre-ft/yr (1.85 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 481,000 ft³/s (13,600 m³/s) June 15, 1935, gage height, 50 ft (15.2 m), present site and datum, from floodmark; minimum daily, 10 ft³/s (0.28 m³/s) Dec. 17, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1833, 51 ft (15.5 m) July 7, 1869, present site and datum (adjusted to present site on basis of record for flood of June 15, 1935), determined from information concerning stage at former site furnished by Dean T. U. Taylor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 34,300 ft³/s (971 m³/s) Apr. 16, gage height, 22.23 ft (6.776 m); minimum daily, 111 ft³/s (3.14 m³/s) Nov. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2310	146	2510	1020	3040	1650	3290	22300	5900	2650	1680	2340
2	2310	135	165	1740	1990	1360	3500	22200	5920	2790	1690	2220
3	2340	131	140	1710	885	1760	3320	11900	5890	2370	1710	2260
4	2000	131	141	1020	482	1590	3320	5540	5900	2630	2000	2420
5	921	130	224	1050	331	1610	3310	5410	5640	2480	2080	2390
6	146	134	1490	1990	354	1480	3430	5340	5680	2090	2060	2370
7	142	132	1650	590	374	1610	3030	5480	5910	2120	2060	2280
8	125	111	1240	350	1090	1500	1870	5240	5910	2000	2130	2470
9	134	129	1710	1670	1050	727	1860	5400	5890	1850	2090	2360
10	131	151	1320	2950	1830	737	1860	5420	4990	1780	2020	2600
11	127	133	1500	2370	2880	779	1890	5490	3550	1880	2060	2730
12	127	127	1110	1560	2520	780	1810	5330	3610	1850	1380	2780
13	131	826	1190	665	2200	745	2070	5130	3650	1760	2270	1960
14	127	131	1980	566	2550	950	1830	5310	3520	1700	2460	890
15	308	472	2000	579	2460	967	7450	5300	3660	1740	2350	1220
16	161	139	1030	833	2220	919	29400	5300	3670	1730	2370	1290
17	125	329	2000	2660	1960	1170	31500	5300	3600	1740	2300	1340
18	113	142	234	2360	551	1170	30100	5310	3820	1760	2330	1250
19	278	258	1340	3430	468	1130	29800	5320	3490	1460	2260	1540
20	129	153	1230	1290	428	725	22300	5320	3290	2290	2280	1250
21	118	148	1570	387	454	1170	7390	5470	3070	1260	2300	1320
22	122	1140	672	627	1270	1190	16800	5330	2750	1130	2300	1250
23	128	1930	446	518	1300	691	14500	5320	2720	1030	2260	1010
24	250	2050	525	459	1110	1010	10200	8110	2650	1020	2280	1020
25	131	955	207	711	628	1010	5490	13800	2590	1030	2280	1120
26	124	1080	185	1290	1190	1060	5700	8640	2480	1290	2290	1830
27	129	2250	526	1330	1460	2210	5660	5780	2730	1400	2300	1240
28	173	3350	467	1270	1440	3350	5510	5860	2500	1340	2310	978
29	1220	3060	683	960	---	3400	5480	5960	2630	1620	2320	1280
30	180	3520	191	1220	---	2780	10700	5880	2510	1830	2310	1230
31	154	---	1120	2130	---	3400	---	5880	---	1680	2340	---
TOTAL	14914	23523	30796	41305	38515	44630	274370	223370	120120	55300	66870	52238
MEAN	481	784	993	1332	1376	1440	9146	7205	4004	1784	2157	1741
MAX	2340	3520	2510	3430	3040	3400	31500	22300	5920	2790	2460	2780
MIN	113	111	140	350	331	691	1810	5130	2480	1020	1380	890
AC-FT	29580	46660	61080	81930	76390	88520	544200	443100	238300	109700	132600	103600
CAL YR 1976	TOTAL	536446	MEAN	1466	MAX	5690	MIN	36	AC-FT	1064000		
WTR YR 1977	TOTAL	985951	MEAN	2701	MAX	31500	MIN	111	AC-FT	1956000		

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1947 to current year. Sediment records: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURES: October 1947 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 737 micromhos Jan. 12, 1964; minimum daily, 243 micromhos Dec. 2, 1953.

WATER TEMPERATURES (1947-76): Maximum daily, 31.0°C on several days during summer months; minimum daily, 6.0°C Jan. 28, 1948, Feb. 4, 1949.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 598 micromhos Sept. 2; minimum daily, 384 micromhos Nov. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIO-CHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT 12...	1546	113	499	8.5	26.0	1	1	14.2	178	1.1
NOV 09...	0838	128	526	7.5	22.0	2	1	5.4	64	.4
DEC 14...	1145	3030	525	7.7	13.5	2	6	10.6	105	.3
JAN 17...	1216	3410	550	7.9	11.0	1	4	11.2	105	.2
FEB 15...	0754	2560	541	7.6	13.0	2	8	10.6	104	.3
MAR 07...	1450	2050	543	8.0	17.0	1	1	11.4	121	.6
APR 12...	1048	2910	554	8.2	18.0	0	2	10.6	115	.2
MAY 18...	1005	5300	489	7.7	20.0	5	7	9.3	106	.1
JUN 13...	1610	3820	492	7.4	25.0	0	3	9.6	119	.5
JUL 18...	0945	241	529	7.5	28.0	4	2	7.4	95	.4
AUG 16...	0810	192	544	7.4	27.5	2	1	5.8	74	.2
SEP 07...	0835	264	550	7.8	27.0	3	0	6.3	80	.6
DATE	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL STREPTOCOCCI (KF AGAR) (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)
OCT 12...	7000	620	29	210	44	48	21	25	.8	3.0
NOV 09...	15000	2300	140	230	30	61	19	20	.6	2.3
DEC 14...	10000	1500	280	200	40	47	21	27	.8	3.0
JAN 17...	1800	330	94	220	47	52	22	27	.8	3.1
FEB 15...	6800	1200	620	210	42	49	21	28	.8	3.2
MAR 07...	330	9	17	--	--	--	--	--	--	--
APR 12...	210	27	44	210	44	46	23	29	.9	3.5
MAY 18...	6000	190	500	190	40	43	19	26	.8	3.1
JUN 13...	10000	1700	240	180	41	41	19	27	.9	3.3
JUL 18...	32000	1600	110	210	50	51	19	32	1.0	3.6
AUG 16...	44000	330	300	210	50	51	21	30	.9	3.4
SEP 07...	19000	70	1400	200	43	50	18	28	.9	3.3

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	RICAR- BONATE (MCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	VOL. NON- FILT- RABLE RESIDUE (MG/L)
OCT										
12...	182	8	29	44	.6	9.3	280	278	1	0
NOV										
09...	244	0	27	31	.4	8.9	295	290	0	0
DEC										
14...	200	0	32	49	.2	8.6	290	286	12	0
JAN										
17...	212	0	35	49	.1	8.3	302	301	10	2
FEB										
15...	204	0	35	50	.2	7.7	296	295	24	3
MAR										
07...	--	--	--	--	--	--	--	--	2	0
APR										
12...	202	0	35	54	.2	8.0	338	298	3	0
MAY										
18...	178	0	32	45	.2	6.7	277	263	11	2
JUN										
13...	170	0	37	47	.2	7.5	278	266	4	0
JUL										
18...	190	0	37	51	.2	9.8	300	297	2	1
AUG										
16...	200	0	38	53	.2	9.6	302	305	2	1
SEP										
07...	190	0	34	45	.2	10	289	282	1	0

DATE	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS- PENDE SEDIM- ENT (MG/L)	SUS- PENDE SEDIM- ENT (T/DAY)	SUS. SED. SIEVE DIAM. & FINER THAN .062 MM
OCT									
12...	.04	.00	.01	.25	.01	2.2	1	.31	75
NOV									
09...	.26	.01	.05	--	.02	3.1	2	.69	10
DEC									
14...	.21	.00	.04	.12	.03	3.4	30	245	56
JAN									
17...	.33	.00	.02	.21	.01	2.4	16	147	49
FEB									
15...	.20	.00	.04	.20	.03	4.0	6	41	63
MAR									
07...	.12	.00	.02	.07	.01	6.8	8	44	84
APR									
12...	.19	.00	.02	.24	.01	4.5	13	102	19
MAY									
18...	.27	.00	.01	.04	.15	4.0	12	172	82
JUN									
17...	.24	.01	.03	.07	.05	2.2	6	62	58
JUL									
18...	.30	.01	.02	.26	.01	2.8	2	1.3	58
AUG									
16...	.08	.01	--	--	.04	2.4	3	1.6	83
SEP									
07...	.17	.01	--	--	.01	3.0	4	2.9	90

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)
OCT 12...	1546	2	2	--	100	0	0	10	0
FEB 15...	0754	2	1	--	0	2	2	50	0
JUN 13...	1610	0	0	--	0	<10	1	20	0
AUG 14...	0810	0	1	200	100	<10	1	0	10

DATE	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)
OCT 12...	0	0	6	4	50	0	2	2	10
FEB 15...	0	0	1	1	370	10	4	0	30
JUN 13...	<50	0	<10	2	140	20	<100	1	10
AUG 14...	<50	1	20	1	30	10	<100	2	20

DATE	DIS-SOLVED MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT 12...	10	.1	.1	0	0	--	0	30	10
FEB 15...	0	.1	.1	0	0	--	0	10	0
JUN 13...	8	.4	.0	1	0	--	0	6	0
AUG 14...	20	.0	.0	0	0	<10	0	10	2

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 12,76 1546	NOV 9,76 0838	JAN 17,77 1216	FEB 15,77 0754	MAY 18,77 1005					
TOTAL CELLS/ML	410	360	72	310	170					
DIVERSITY: DIVISION	0.8	1.5	1.4	1.0	0.9					
..CLASS	0.8	1.5	1.4	1.6	0.9					
...ORDER	0.8	2.0	1.6	1.8	0.9					
...FAMILY	2.7	2.8	2.0	2.4	2.2					
....GENUS	2.9	2.8	2.0	2.5	2.6					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
...COELASTRUM	--	-	45	12	--	-	--	-	55#	32
...MICRACTINIACEAE										
...MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
...ANKISTRODES MUS	--	-	3	1	--	-	3	1	--	-
...CHODATELLA	--	-	--	-	--	-	--	-	--	-
...FRANCEIA	--	-	--	-	--	-	--	-	7	4
...OOCYSTIS	--	-	8	2	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
...SCENEDESMUS	--	-	62#	17	--	-	*	0	27#	16
...TETRASTRUM	--	-	--	-	--	-	--	-	27#	16
..CLADOPHORALES										
...CLADOPHORACEAE										
...CLADOPHORA	--	-	--	-	--	-	--	-	--	-
...TETRASPORALES										
...PALMELLACEAE										
...GLOFOCYSTIS	--	-	25	7	--	-	--	-	--	-
...VOLVOCELES										
...CHLAMYDOMONADACEAE	--	-	--	-	--	-	--	-	--	-
...CARTERIA	83#	20	6	2	--	-	--	-	--	-
...CHLAMYDOMONAS	10	2	--	-	--	-	--	-	--	-
...CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-
...VOLVOCEACEAE										
...GONIUM	--	-	--	-	--	-	--	-	--	-
...PANDORINA	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
...CYCLOTELLA	--	-	8	2	3	5	3	1	--	-
...MFLOSIRA	--	-	--	-	--	-	6	2	--	-
...PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	10	2	--	-	--	-	--	-	7	4
...COCCONEIS	--	-	--	-	--	-	--	-	14	8
...RHOICOSPHEINIA	21	5	3	1	--	-	11	4	--	-
...CYMBELLACEAE										
...AMPHORA	--	-	--	-	--	-	--	-	*	0
...CYMBELLA	41	10	--	-	--	-	--	-	7	4
...FRIITHEMIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
...DIATOMA	--	-	--	-	--	-	17	6	--	-
...FRAGILARIACEAE									*	0
...FRAGILARIA	--	-	--	-	--	-	--	-	--	-
...SYNEDRA	52	13	17	5	--	-	17	6	--	-
...GOMPHONEMACEAE									*	0
...GOMPHONEMA	72#	17	28	8	--	-	--	-	*	0
...NAVICULACEAE							*	0	--	-
...MASTOGLOIA	--	-	--	-	--	-	--	-	--	-
...NAVICULA	62	15	6	2	10	14	11	4	*	0
...NITZSCHIA										
...NITZSCHIA	62	15	11	3	14#	19	34	11	27#	16
...SURIPELLACEAE									*	0
...SURIPELLA	--	-	--	-	--	-	--	-	*	0
CHRYSOPHYCEAE										
..CHRYSONOMADALES										
...OCHROMONADACEAE										
...DINORRYON	--	-	--	-	--	-	84#	28	--	-

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

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 12,76 1546	NOV 9,76 0838	JAN 17,77 1216	FEB 15,77 0754	MAY 18,77 1005	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCCOCCALES						
...CHROCCOCCACEAE						
...ANACYSTIS	--	-	--	-	--	-
...HORMOGONALES						
...OSCILLATORIAEAE						
...LYNGBYA	--	-	--	-	--	-
...OSCILLATORIA	--	-	140# 39	35# 48	120# 38	--
EUGLENOPHYTA (EUGLENOIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
...CHROOMONAS	--	-	--	-	--	-
...CRYPTOMONODACEAE						
...CRYPTOMONAS	--	-	--	-	10	14
..EUGLENOPHYCEAE						
...EUGLENALES						
...FIJGLENACEAE						
...EUGLENA	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...GLENODINIACEAE						
...GLENODINIUM	--	-	--	-	0	

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

PHYTOPLANKTON ANALYSES: OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUN 13,77 1610	JUL 18,77 0945	AUG 16,77 0810	SEP 7,77 0835				
TOTAL CELLS/ML	850	320	480	23				
DIVERSITY: DIVISION	1.2	1.5	1.2	1.0				
..CLASS	1.2	1.5	1.3	1.0				
..ORDER	1.9	2.4	1.7	1.4				
..FAMILY	2.7	2.8	2.5	2.5				
..GENUS	3.0	0.0	3.0	2.5				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
..CHLOROCOCCALES								
..CHARACIACEAE								
..SCHROEDERIA	7	1	--	--	--	--	--	--
..COELASTRACEAE								
..COELASTRUM	170#	20	--	--	--	--	--	--
..MICRACTINIACEAE								
..MICRACTINIUM	--	--	--	--	18	4	--	--
..OOCYSTACEAE								
..ANKISTRODESUS	--	--	5	2	--	--	--	--
..CHODATELLA	7	1	--	--	--	--	--	--
..FRANCEIA	--	--	--	--	--	--	--	--
..OOCYSTIS	28	3	5	2	--	--	--	--
..TETRAEDRON	7	1	--	--	5	1	--	--
..SCENEDESMACEAE								
..SCENEDESMUS	70	8	10	3	32	7	6#	29
..TETRASTRUM	--	--	--	--	--	--	--	--
..CLADOPHORALES								
..CLADOPHORACEAE								
..CLADOPHORA	--	--	100#	32	--	--	--	--
..TETRASPORALES								
..PALMELLACEAE								
..GLOEOCYSTIS	--	--	--	--	--	--	--	--
..VOLVOCALES								
..CHLAMYDOMONADACEAE	--	--	10	3	--	--	--	--
..CARTERIA	7	1	--	--	120#	24	--	--
..CHLAMYDOMONAS	63	7	--	--	23	5	3	14
..CHLOROGONIUM	7	1	--	--	--	--	--	--
..VOLVOCAEAE								
..GONIUM	63	7	--	--	83#	17	--	--
..PANDORINA	110	13	82#	25	74#	15	--	--
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
..CENTRALES								
..COSCINODISCACEAE								
..CYCLOTELLA	--	--	--	--	--	--	--	--
..MFLOSIRA	--	--	--	--	--	--	--	--
..PENNALES								
..ACHNANTHACEAE								
..ACHNANTHES	7	1	--	--	--	--	--	--
..COCCONEIS	14	2	--	--	--	--	3	14
..RHOICOSPHEA	--	--	--	--	--	--	--	--
..CYMBELLACEAE								
..AMPHORA	--	--	5	2	--	--	--	--
..CYMBELLA	--	--	10	3	--	--	--	--
..EPITHEMIA	--	--	--	--	--	--	3	14
..DIATOMACEAE								
..DIATOMA	--	--	5	2	--	--	--	--
..FRAGILARIACEAE								
..FRAGILARIA	--	--	--	--	14	3	--	--
..SYNEDRA	--	--	--	--	--	--	--	--
..GOMPHONEMACEAE								
..GOMPHONEMA	--	--	--	--	--	--	3	14
..NAVICULACEAE								
..MASTOGLOIA	--	--	--	--	--	--	--	--
..NAVICULA	--	--	5	2	--	--	--	--
..NITZSCHIAEAE								
..NITZSCHIA	28	3	10	3	5	1	3	14
..SURIPELLACEAE								
..SURIPELLA	--	--	--	--	--	--	--	--
..CHRYSOPHYCEAE								
..CHRYSOMONADALES								
..OCHROMONADACEAE								
..DINORRYON	--	--	--	--	--	--	--	--

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

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUN 13.77 1610	JUL 18.77 0945	AUG 16.77 0810	SEP 7.77 0835
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)				
..CYANOPHYCEAE				
...CHROCOCCALES				
...CHROCOCCACEAE				
...ANACYSTIS	--	-	--	-
...HORMOGONALES				
...OSCILLATORIACEAE				
...LYNGBYA	--	-	51# 16	--
...OSCILLATORIA	250# 30	--	--	-
EUGLENOPHYTA (EUGLENOIDS)				
..CRYPTOPHYCEAE				
...CRYPTOMONADALES				
...CRYPTOCHRYSIDACEAE				
...CHROOMONAS	--	-	--	-
...CRYPTOMONODACEAE				
...CRYPTOMONAS	7	1	10	3
..EUGLENOPHYCEAE				
...EUGLENALES				
...EUGLENACEAE	--	-	--	-
...EUGLENA			5	1
PYRRHOPHYTA (FIRE ALGAE)				
..DINOPHYCEAE				
...PERIDINIALES				
...GLENODINIAEAE				
...GLENODINIUM	--	-	10	3

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

MONTHLY AND ANNUAL MEANS AND LOADS FOR WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

MONTH	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1976.....	14914	516	280	11400	44	1760	30	1220	200
NOV. 1976.....	23523	486	260	16800	41	2590	28	1790	190
DEC. 1976.....	30796	511	280	23100	43	3590	30	2490	200
JAN. 1977.....	41305	519	280	31500	44	4910	31	3420	200
FEB. 1977.....	38515	509	280	28900	43	4480	30	3100	200
MAR. 1977.....	44630	545	300	35700	46	5590	33	3920	210
APR. 1977.....	274370	531	290	215000	45	33400	31	23300	200
MAY 1977.....	223370	503	270	164000	43	25700	29	17700	190
JUNE 1977.....	120120	489	270	86800	41	13300	28	9170	190
JULY 1977.....	55300	497	270	40500	42	6250	29	4330	190
AUG. 1977.....	66870	524	290	51600	44	8020	31	5600	200
SEPT 1977.....	52238	542	300	41700	46	6490	32	4560	210
TOTAL	985951	**	**	747000	**	116000	**	80600	**
WTD.AVG.	2701.24	515	280	**	44	**	30	**	200

COLORADO RIVER BASIN

08158000 COLORADO RIVER AT AUSTIN, TX.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	528	434	522	439	533	559	491	540	494	455	496	545
2	516	550	549	533	540	552	502	537	490	483	506	598
3	511	485	463	485	544	559	491	520	488	499	508	544
4	489	415	443	557	452	516	497	518	489	490	465	512
5	516	399	508	569	509	544	514	509	490	508	516	534
6	523	441	489	467	435	534	518	515	486	506	521	547
7	544	559	511	471	487	560	502	518	489	489	516	550
8	477	463	504	541	457	555	463	502	487	491	523	544
9	495	526	540	457	477	552	471	500	488	496	519	531
10	507	384	526	521	485	491	480	502	487	493	521	539
11	425	430	499	530	491	485	491	500	488	499	519	535
12	499	457	490	551	423	480	554	497	483	495	491	539
13	514	534	540	525	516	500	532	495	492	493	523	541
14	473	401	478	546	507	526	522	491	485	494	520	524
15	438	535	523	424	543	535	463	487	481	496	523	536
16	521	585	530	442	428	557	528	485	485	492	520	541
17	554	506	496	525	514	561	546	482	483	508	524	550
18	581	481	510	554	486	555	544	487	482	498	527	544
19	521	509	496	547	455	550	542	489	487	506	542	546
20	519	415	500	530	505	552	536	483	496	483	531	507
21	505	413	468	457	510	539	546	477	490	495	530	539
22	498	471	540	514	551	542	535	487	483	503	527	535
23	509	538	553	475	557	545	528	483	482	510	536	536
24	500	495	556	425	562	552	540	484	499	505	530	550
25	505	506	475	493	560	538	530	485	489	502	532	547
26	569	521	396	526	562	545	528	486	490	516	544	546
27	564	500	553	542	557	565	532	487	491	507	540	542
28	570	425	565	508	568	555	540	490	518	510	536	544
29	560	500	525	551	---	547	538	489	509	511	538	550
30	507	475	483	546	---	550	535	496	491	513	532	544
31	546	---	538	559	---	551	---	486	---	505	538	---
MEAN	516	478	509	510	508	540	518	497	490	498	522	541

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	15.5	10.5	9.5	---	12.0	---	---	18.0	21.5	24.5	24.0
2	23.0	---	11.0	9.0	8.0	13.0	---	14.5	18.5	22.0	24.5	24.0
3	---	---	11.0	---	9.0	12.0	---	14.5	18.5	22.0	24.5	23.5
4	---	18.0	12.0	8.5	9.5	13.0	---	14.5	---	22.0	24.5	---
5	21.5	18.0	12.0	11.0	---	13.0	12.0	19.5	19.0	22.0	24.5	---
6	24.0	17.0	14.5	---	10.5	12.0	12.0	---	18.5	22.0	24.5	24.0
7	20.5	17.0	11.0	---	---	11.5	---	16.5	19.0	22.0	23.5	---
8	19.5	17.0	11.0	---	11.0	10.5	---	16.5	18.5	22.0	24.0	23.0
9	19.5	17.0	11.5	---	10.0	---	---	16.5	---	22.0	23.5	---
10	18.0	17.0	---	---	---	11.0	---	16.5	19.0	23.0	24.0	---
11	19.0	17.0	---	7.0	10.5	14.0	---	16.5	19.0	23.5	24.0	---
12	19.0	17.0	11.0	7.0	10.0	13.0	14.0	16.5	---	22.0	23.0	---
13	19.5	---	10.5	---	10.0	14.0	14.5	16.5	---	22.0	24.5	23.0
14	---	14.5	---	---	10.0	14.0	---	16.5	19.5	25.5	23.5	23.5
15	---	13.5	10.5	---	10.0	16.5	---	16.5	21.0	23.5	23.5	---
16	---	13.0	11.0	---	10.0	14.0	---	12.0	---	23.5	24.0	---
17	---	13.0	11.5	---	10.0	15.5	14.0	16.5	---	24.0	24.0	24.0
18	---	13.0	---	6.5	13.0	15.0	---	16.5	---	24.0	24.0	24.0
19	---	13.0	---	6.5	10.0	15.0	14.5	---	---	24.0	23.5	---
20	18.5	13.5	12.0	6.5	11.0	15.0	---	19.5	---	24.0	23.0	24.5
21	---	14.0	10.5	---	---	15.5	14.5	19.5	21.0	---	23.5	24.0
22	---	16.0	10.5	9.5	12.0	14.5	14.5	---	20.5	23.5	23.5	---
23	---	12.0	11.0	---	12.0	15.0	---	---	---	23.5	23.0	---
24	---	---	11.5	11.0	12.0	14.5	13.5	18.5	---	---	23.0	---
25	---	12.0	11.5	10.0	12.0	---	---	18.0	---	24.5	23.5	---
26	---	---	---	9.5	12.0	---	14.0	16.5	---	24.5	23.5	---
27	18.0	13.5	---	9.5	12.0	14.5	15.0	17.0	---	24.5	23.5	25.0
28	---	---	---	10.0	11.0	14.0	15.0	18.0	21.0	24.5	23.5	24.5
29	---	---	12.0	10.0	11.0	14.5	---	18.0	21.5	25.5	23.5	---
30	---	---	11.5	8.5	---	14.5	15.5	18.0	21.5	25.5	23.5	---
31	---	10.5	---	9.5	---	14.5	---	18.0	---	---	24.0	---
MEAN	19.5	15.0	11.5	9.0	10.5	14.0	14.0	17.0	19.5	23.5	24.0	24.0

BOGGY CREEK DRAINAGE BASIN

The location of data-collection sites in the Boggy Creek drainage basin are shown in figure 11.

Annual rainfall for the 1977 water year as measured at station 1-BOG was 28.88 inches. Total runoff from the drainage basin was not determined for the entire year.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.

Because of insufficient data, no storms were analyzed for this basin during the 1977 water year.

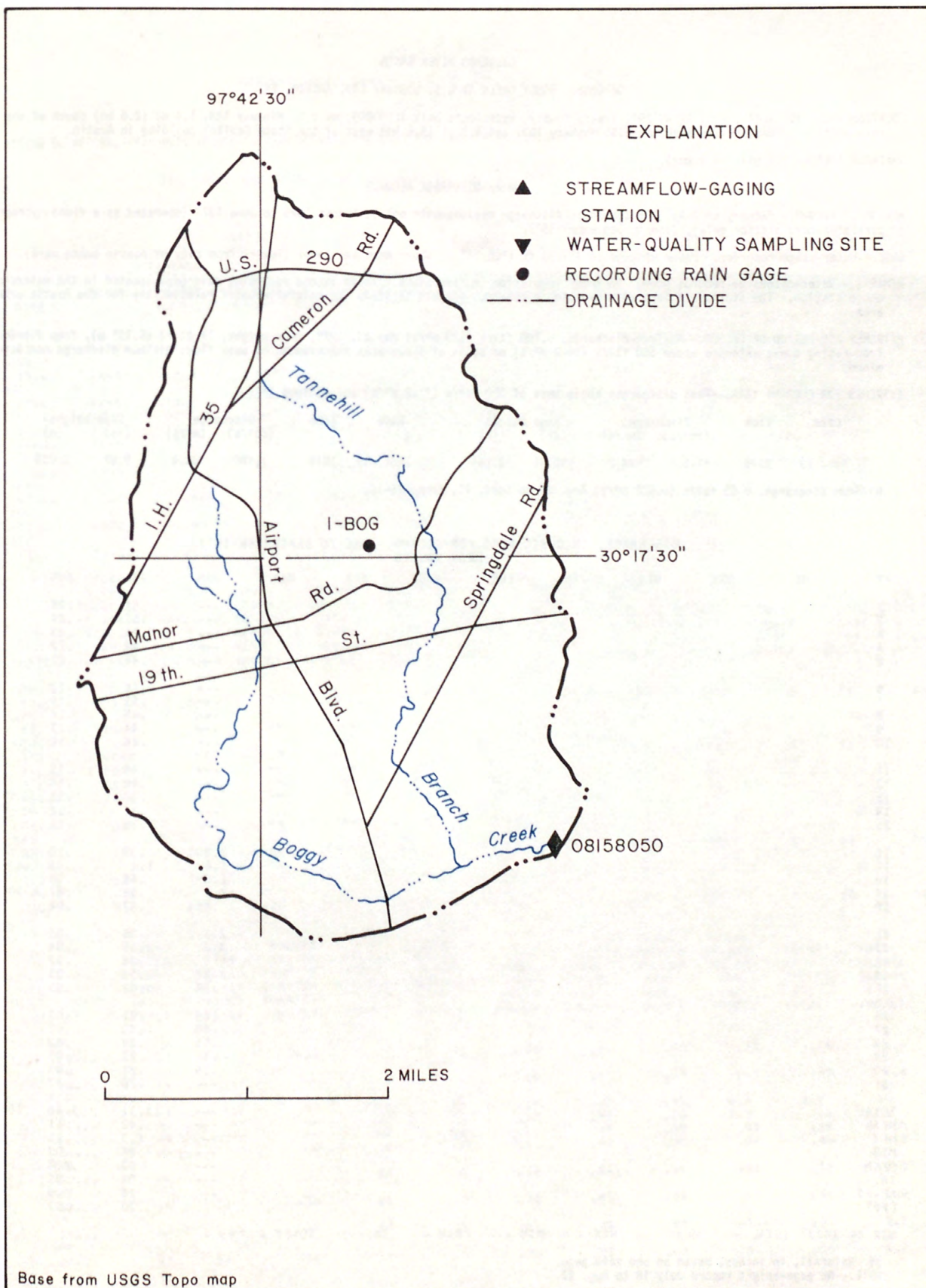


FIGURE 11.-Locations of data-collection sites in the Boggy Creek drainage basin

COLORADO RIVER BASIN

08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX

LOCATION.--Lat 30°15'47", long 97°40'20", Travis County, Hydrologic Unit 12090205, on U.S. Highway 183, 1.6 mi (2.6 km) south of the intersection of Webberville Road and U.S. Highway 183, and 4.1 mi (6.6 km) east of the State Capitol Building in Austin.

DRAINAGE AREA.--13.1 mi² (33.9 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January to July 1975 (periodic discharge measurements only), August 1975 to June 1977 (operated as a flood-hydrograph partial-record station only), June to September 1977.

GAGE.--Water-stage recorder. Datum of gage is 411.29 ft (125.361 m) above mean sea level (levels from city of Austin bench mark).

REMARKS.--Water-discharge records poor. No known regulation or diversions. There is one recording rain gage located in the watershed above station. The station is part of a hydrologic research project to study the rainfall-runoff relationship for the Austin urban area.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft³/s (173 m³/s) May 23, 1975, gage height, 17.03 ft (5.191 m), from floodmark, from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of slope-area measurement of peak flow; minimum discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 750 ft³/s (21.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 19	2345	*1,560 44.2	10.71 3.264	Sept. 19	1815	1,180 33.4	9.97 3.039

Minimum discharge, 0.03 ft³/s (0.001 m³/s) Aug. 23 to Sept. 11, Sept. 15-18.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									---	.57	.25	.03
2									---	.57	.24	.03
3									---	.45	.23	.03
4									---	.44	.22	.03
5									---	.44	.21	.03
6									---	.46	.20	.03
7									---	.51	.19	.03
8									---	.45	.18	.92
9									---	.44	.17	.03
10									---	.46	.16	.03
11									---	.45	.15	.03
12									---	.46	.14	.56
13									---	.38	.13	50
14									---	.37	.12	7.5
15									---	.36	.11	.03
16									3.1	.35	.10	.03
17									1.6	1.3	.09	.03
18									1.3	.49	.08	.03
19									2.2	.38	.07	100
20									.86	.37	.06	8.0
21									2.3	.36	.05	.08
22									3.3	.35	.04	.08
23									24	.34	.03	.08
24									3.8	.33	.03	.07
25									.88	.32	.03	.07
26									.69	.31	.03	.07
27									.68	.30	.03	.06
28									.55	.29	.03	.06
29									.56	.28	.03	.06
30									.59	.27	.03	.05
31									---	.26	.03	---
TOTAL									---	13.11	3.46	168.08
MEAN									---	.42	.11	5.60
MAX									---	1.3	.25	100
MIN									---	.26	.03	.03
CFSM									---	.03	.008	.43
IN.									---	.04	.01	.48
AC-FT									---	.26	6.9	333
(††)									---	.20	.07	2.55

WTR YR 1977 TOTAL - MEAN - MAX - MIN - CFSM - IN - AC-FT - †† -

†† Rainfall, in inches, based on one rain gage.

NOTE.--No gage-height record July 18 to Aug. 23.

COLORADO RIVER BASIN

08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Periodic chemical, biochemical, and pesticide analyses: January 1975 to current year.

DISCHARGE AND WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL.-MF/100 ML)	
NOV 03...	1150	6.3	735	8.1	17.0	0	0	9.9	105	.2	3000	330	
JAN 03...	1240	2.6	639	8.1	7.1	5	3	11.8	100	1.9	56000	1500	
FEB 11...	1245	493	157	8.2	15.0	50	1200	9.6	98	5.2	400000	41000	
11...	1725	67	347	7.9	16.0	30	200	8.3	86	5.0	540000	72000	
12...	1030	19	669	8.2	13.0	10	20	9.6	94	.8	42000	6800	
14...	1105	17	843	8.1	12.5	5	3	9.8	95	.4	26000	2500	
MAR 02...	1354	2.6	695	8.4	17.5	5	15	16.5	177	4.9	100000	8000	
MAY 17...	1300	.68	733	8.1	23.0	0	20	10.7	127	.8	30000	1900	
JUL 11...	1320	.45	666	7.6	30.5	5	5	13.6	181	.8	50000	3200	
SEP 21...	1345	.08	542	8.1	30.0	5	4	7.2	96	.6	20000	1500	
DATE	100 ML	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (P) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
NOV 03...	170	320	73	110	10	34	.8	3.5	296	0	71	49	
JAN 03...	1500	--	--	--	--	--	--	--	--	--	--	--	
FEB 11...	190000	67	3	24	1.8	3.7	.2	3.0	78	0	12	3.2	
11...	120000	--	--	--	--	--	--	--	--	--	--	--	
12...	8400	--	--	--	--	--	--	--	--	--	--	--	
14...	2200	--	--	--	--	--	--	--	--	--	--	--	
MAR 02...	310	--	--	--	--	--	--	--	--	--	--	--	
MAY 17...	780	300	64	100	11	37	.9	2.5	282	0	81	50	
JUL 11...	520	--	--	--	--	--	--	--	--	--	--	--	
SEP 21...	840	220	38	72	9.4	24	.7	3.8	220	0	45	36	
DATE	(MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	
NOV 03...	.3	14	438	1	0	.77	.01	.01	.23	.08	2.4		
JAN 03...	--	--	--	4	1	.30	.01	.03	.45	.07	4.8		
FEB 11...	.1	7.1	93	3320	388	.37	.02	.15	4.4	1.7	40		
11...	--	--	--	462	70	.97	.02	.22	1.5	.46	26		
12...	--	--	--	44	13	1.5	.01	.05	.51	.14	5.4		
14...	--	--	--	6	2	1.3	.01	.05	.58	.09	5.2		
MAR 02...	--	--	--	26	4	.12	.01	.04	.81	.12	3.6		
MAY 17...	.4	13	434	25	1	.70	.01	.02	--	.06	1.8		
JUL 11...	--	--	--	11	3	.07	.01	.01	.19	.04	3.3		
SEP 21...	.3	13	312	8	0	.36	.01	.01	.04	.06	4.2		

COLORADO RIVER BASIN

08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
NOV 03...	1150	6	100	0	0	0	0
FEB 11...	1245	7	0	0	2	3	30
MAY 17...	1300	2	0	0	10	1	10
SEP 21...	1345	20	200	0	0	1	10

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV 03...	0	10	.2	0	0	10
FEB 11...	0	0	.0	0	0	0
MAY 17...	0	10	.0	0	0	5
SEP 21...	0	10	.0	1	0	10

DATE	TIME	POLY-CHLORINATED NAPH-THALENES (UG/L)	TOTAL PCB (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR-DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
NOV 03...	1150	.00	.0	.00	.0	.00	.00	.00	.03	.00	.00	.00
FEB 11...	1245	.00	.1	.00	.2	.35	.25	1.0	.14	.03	.04	.00
MAY 17...	1300	.00	.0	.00	.0	.00	.01	.02	.02	.00	.00	.00
SEP 21...	1345	.00	.0	.00	.0	.00	.00	.00	.15	.00	.00	.00

DATE	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA-THION (UG/L)	TOTAL METHYL PARA-THION (UG/L)	TOTAL METHYL TRI-THION (UG/L)	TOTAL PARA-THION (UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL TRI-THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 03...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
FEB 11...	.01	.01	.00	.00	.00	.00	.00	1	.00	.00	.09	.00
MAY 17...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
SEP 21...	.00	.00	.00	.00	.00	.00	.00	1	.00	.00	.01	.00

WALNUT CREEK DRAINAGE BASIN

The locations of data-collection sites in the Walnut Creek basin are shown in figure 12.

Rainfall recorded for the 1977 water year at stations 1-WLN, 2-WLN, 3-WLN, 4-WLN, 5-WLN, and 6-WLN was 35.33 inches, 32.47 inches, 31.30 inches, 31.44 inches, 31.02 inches, and 24.74 inches, respectively. Total runoff from the basin as measured at the Webberville station (08158600) was 6.64 inches.

A summary of storm rainfall and runoff is shown in table 6.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.



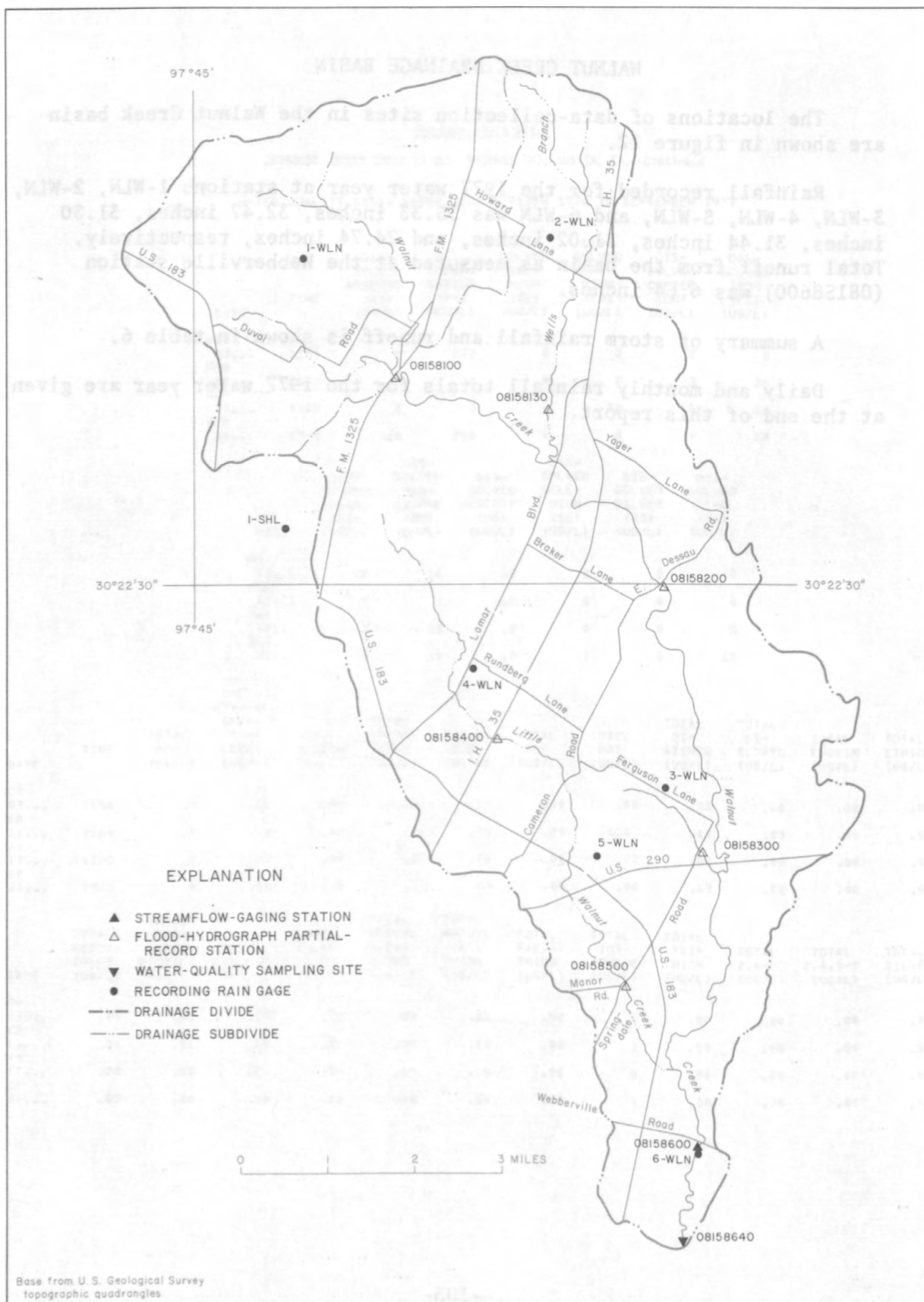


FIGURE 12.-Locations of data-collection sites in the Walnut Creek drainage basin

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 6.--Storm rainfall-runoff data, 1977 water year, Walnut Creek

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft ³ /s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			

Walnut Creek at F.M. 1325, Austin, Texas
(Drainage area.--12.6 mi²)

April 15, 1977	13.2	2.93	0.50	0.90	1.38	0.07	0.02	74
April 19-20, 1977	25.9	1.71	.63	.77	.93	.15	.09	216

Walnut Creek at Dessau Road, Austin, Texas
(Drainage area.--26.2 mi²)

April 15-16, 1977	33.7	3.89	.51	.90	1.38	.26	.07	390
April 19-20, 1977	20.1	1.87	.91	1.14	1.27	.49	.26	1,440

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 6.--Storm rainfall-runoff data, 1977 water year, Walnut Creek--Continued

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft ³ /s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			

Little Walnut Creek at I. H. 35, Austin, Texas
(Drainage area.--5.57 mi²)

April 15, 1977	16.2	2.54	0.60	0.88	1.28	0.69	0.27	834
April 19-20, 1977	5.9	1.35	.61	.82	1.01	.83	.61	1,200

Little Walnut Creek at Manor Road, Austin, Texas
(Drainage area.--12.1 mi²)

April 15, 1977	14.5	2.41	.60	.88	1.28	.63	.26	818
April 16, 1977	13.4	1.07	.14	.20	.38	.45	.42	794
April 19-20, 1977	17.5	1.93	.80	1.12	1.37	.82	.43	1,010

GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 6.--Storm rainfall-runoff data, 1977 water year, Walnut Creek--Continued

[illegible]

08158100 Walnut Creek at Farm Road 1325 near Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°24'35", long 97°42'41", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Farm Road 1325 and 9.5 mi north of the State Capitol Building in Austin.

DRAINAGE AREA.--12.6 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 670.62 ft above mean sea level.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 533 ft³/s Apr. 18, 1976 (gage height, 6.63 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 216 ft³/s Apr. 15 (gage height, 4.42 ft).

STATION NO. 08158100									
STORM RAINFALL AND RUNOFF RECORD									
1977 WATER YEAR									
WALNUT CREEK AT FM 1325, AUSTIN, TEXAS									
STORM OF APRIL 15, 1977									
DATE & TIME		G A G F		N U M B E R		ACCUM. WEIGHTED PRECIP.		DISCHARGE IN	
						IN.		FT ³ /S	
								IN.	
APR. 15									
0000	0.0					0.0		0.1	0.0000
0015	0.0					0.0		0.1	0.0001
0045	0.02					0.02		0.1	0.0001
0050	0.03					0.03		0.1	0.0001
0055	0.07					0.07		0.1	0.0001
0500	0.16					0.16		0.2	0.0001
0505	0.35					0.35		0.3	0.0001
0510	0.50					0.50		0.4	0.0001
0515	0.66					0.66		0.5	0.0001
0520	0.80					0.80		0.6	0.0001
0525	0.96					0.96		0.7	0.0001
0530	1.06					1.06		0.8	0.0001
0535	1.19					1.19		0.9	0.0001
0540	1.24					1.24		1.0	0.0001
0545	1.32					1.32		1.3	0.0001
0550	1.38					1.38		1.6	0.0001
0555	1.45					1.45		2.0	0.0002
0600	1.49					1.49		4.0	0.0002
0615	1.51					1.51		7.0	0.0006
0645	1.52					1.52		9.0	0.0010
0700	1.55					1.55		11.0	0.0015
0730	1.55					1.55		23.0	0.0027
0750	1.55					1.55		23.0	0.0036
0810	1.56					1.56		35.0	0.0047
0820	1.57					1.57		45.0	0.0061
0840	1.60					1.60		53.0	0.0082
0900	1.61					1.61		45.0	0.0106
0930	1.78					1.78		35.0	0.0120
0940	1.89					1.89		34.0	0.0127
0950	2.18					2.18		32.0	0.0138
1015	2.20					2.20		28.0	0.0158
1100	2.23					2.23		22.0	0.0172
1115	2.22					2.22		22.0	0.0179
1130	2.22					2.22		28.0	0.0187
1145	2.22					2.22		42.0	0.0200
1200	2.22					2.22		50.0	0.0216
1215	2.22					2.22		51.0	0.0231
1230	2.24					2.24		48.0	0.0253
1300	2.26					2.26		42.0	0.0279

STORM RAINFALL AND RUNOFF RECORD									
STA. NO. 08158100					1977 WATER YEAR				
WALNUT CREEK AT FM 1325, AUSTIN, TEXAS					STORM OF APRIL 15, 1977				
DATE & TIME					G A G E N U M B E R				
INCH					PRECIP. IN.				
INCH					ACCUM. DISCHARGE ACCUM. IN. FT ³ /S IN.				
APR. 15									
1330	2.27				2.27	36.0	0.0301		
1400	2.31				2.31	29.0	0.0319		
1430	2.33				2.33	23.0	0.0333		
1500	2.44				2.44	19.0	0.0342		
1515	2.52				2.52	18.0	0.0348		
1530	2.65				2.65	18.0	0.0356		
1600	2.71				2.71	18.0	0.0367		
1630	2.79				2.79	17.0	0.0377		
1700	2.92				2.92	22.0	0.0391		
1730	2.93				2.93	28.0	0.0404		
1745	2.93				2.93	35.0	0.0415		
1800	2.93				2.93	44.0	0.0428		
1815	2.93				2.93	57.0	0.0446		
1830	2.93				2.93	69.0	0.0467		
1845	2.93				2.93	73.0	0.0489		
1900	2.93				2.93	74.0	0.0524		
1930	2.93				2.93	70.0	0.0567		
2000	2.93				2.93	58.0	0.0602		
2030	2.93				2.93	45.0	0.0630		
2100	2.93				2.93	36.0	0.0663		
2200	2.93				2.93	23.0	0.0691		
2300	2.93				2.93	16.0	0.0711		
2400	2.93				2.93	12.0	0.0718		

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STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 08158100												
WALNUT CREEK AT FM 1325, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 19-20, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME										PRECIP.		
		IN.								IN.	FT ³ /S	IN.
APR. 19												
0000		0.0								0.0	3.7	0.0030
0100		0.01								0.01	3.7	0.0076
0200		0.02								0.02	3.7	0.0093
0300		0.04								0.04	3.7	0.0097
0400		0.05								0.05	3.7	0.0099
0500		0.09								0.09	3.7	0.0100
0600		0.20								0.20	3.7	0.0101
0700		0.54								0.54	3.7	0.0101
0800		0.72								0.72	3.7	0.0101
0900		0.79								0.79	4.0	0.0102
1000		0.83								0.83	8.0	0.0103
1100		0.86								0.86	12.0	0.0104
1200		0.89								0.89	16.0	0.0106
1300		0.91								0.91	20.0	0.0108
1400		0.94								0.94	24.0	0.0110
1500		0.96								0.96	58.0	0.0116
1600		0.99								0.99	92.0	0.0125
1700		1.02								1.02	126.0	0.0138
1800		1.03								1.03	156.0	0.0154
1900		1.06								1.06	186.0	0.0173
2000		1.09								1.09	216.0	0.0196
2100		1.10								1.10	213.0	0.0228
2200		1.13								1.13	206.0	0.0270
2300		1.14								1.14	193.0	0.0310
2400		1.16								1.16	187.0	0.0348
2500		1.18								1.18	187.0	0.0387
APR. 20												
0000		1.18								1.18	187.0	0.0387
0100		1.22								1.22	178.0	0.0479
0200		1.24								1.24	155.0	0.0542
0300		1.28								1.28	141.0	0.0615
0400		1.31								1.31	127.0	0.0693
0500		1.31								1.31	110.0	0.0760
0600		1.31								1.31	92.0	0.0817
0700		1.31								1.31	77.0	0.0864
0800		1.31								1.31	64.0	0.0904
0900		1.31								1.31	51.0	0.0935
1000		1.31								1.31	42.0	0.0961
1100		1.31								1.31	36.0	0.0994
1200		1.31								1.31	27.0	0.1027

STORM RAINFALL AND RUNOFF RECORD												
STA. NO. 08158100				1977 WATER YEAR								
WALNUT CREEK AT FM 1325, AUSTIN, TEXAS				STORM OF APRIL 19-20, 1977						ACCUM.	DISCHARGE	ACCUM.
DATE & TIME				G A G E N U M B E R						WEIGHTED	IN	RUNOFF
										PRECIP.	FT ³ /S	IN.
										IN.		
APR. 20												
0700	1.32									1.32	20.0	0.1052
0800	1.34									1.34	17.0	0.1068
0830	1.38									1.38	17.0	0.1078
0900	1.41									1.41	17.0	0.1088
0930	1.43									1.43	16.0	0.1098
1000	1.53									1.53	16.0	0.1108
1030	1.59									1.59	16.0	0.1118
1100	1.68									1.68	18.0	0.1129
1130	1.70									1.70	23.0	0.1143
1200	1.70									1.70	32.0	0.1173
1300	1.70									1.70	39.0	0.1221
1400	1.70									1.70	38.0	0.1267
1500	1.71									1.71	33.0	0.1308
1600	1.71									1.71	27.0	0.1341
1700	1.71									1.71	22.0	0.1368
1800	1.71									1.71	17.0	0.1389
1900	1.71									1.71	14.0	0.1406
2000	1.71									1.71	13.0	0.1422
2100	1.71									1.71	11.0	0.1436
2200	1.71									1.71	10.0	0.1448
2300	1.71									1.71	9.0	0.1459
2400	1.71									1.71	8.0	0.1464

08158130 Wells Branch at Parmer Lane near Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°24'31", long 97°40'52", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Parmer Lane and 10 mi north of State Capitol Building in Austin.

DRAINAGE AREA.--3.85 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 654.77 ft above mean sea level.

REMARKS.--Because of insufficient data, no storms were analyzed for this station for period of record.

08158200 Walnut Creek at Dessau Road, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°22'30", long 97°39'37", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Dessau Road and 8.4 mi northeast of the State Capitol Building in Austin.

DRAINAGE AREA.--26.2 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 553.44 ft above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, unknown June 10, 1975 (gage height, 15.48 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,440 ft³/s Apr. 19 (gage height, 9.30 ft).

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08158200 WALNUT CREEK AT DESSAU ROAD, AUSTIN, TEXAS										STORM OF APRIL 15-16, 1977		
DATE & TIME										WEIGHTED PRECIP.	DISCHARGE IN	ACCUM. RUNOFF
G A G E N U M B E R										IN.	FT ³ /S	IN.
1WLN	2WLN											
APR. 15												
0000	0.0	0.0								0.0	12.0	0.0016
0425	0.01	0.0								0.01	12.0	0.0033
0445	0.02	0.03								0.02	12.0	0.0034
0455	0.07	0.07								0.07	12.0	0.0035
0500	0.16	0.12								0.14	12.0	0.0036
0505	0.35	0.22								0.29	12.0	0.0036
0510	0.50	0.36								0.43	12.0	0.0037
0515	0.66	0.43								0.55	12.0	0.0038
0520	0.80	0.49								0.65	20.0	0.0039
0525	0.94	0.62								0.79	25.0	0.0040
0530	1.06	0.85								0.96	30.0	0.0041
0535	1.14	1.00								1.10	40.0	0.0043
0540	1.24	1.08								1.16	50.0	0.0046
0545	1.32	1.13								1.23	66.0	0.0049
0550	1.38	1.20								1.29	95.0	0.0054
0555	1.45	1.27								1.36	124.0	0.0060
0600	1.49	1.34								1.42	153.0	0.0075
0615	1.51	1.39								1.45	126.0	0.0093
0630	1.52	1.40								1.46	137.0	0.0114
0645	1.52	1.40								1.46	113.0	0.0130
0700	1.55	1.42								1.49	93.0	0.0144
0715	1.55	1.42								1.49	79.0	0.0156
0730	1.55	1.42								1.49	166.0	0.0193
0800	1.55	1.42								1.49	127.0	0.0230
0830	1.57	1.46								1.52	99.0	0.0259
0900	1.61	1.49								1.55	74.0	0.0276
0915	1.64	1.55								1.60	69.0	0.0286
0930	1.70	1.62								1.70	67.0	0.0293
0935	1.70	1.64								1.72	69.0	0.0296
0940	1.70	1.65								1.77	71.0	0.0300
0945	2.11	1.70								1.91	73.0	0.0303
0950	2.10	1.83								2.01	75.0	0.0309
1000	2.10	1.95								2.07	80.0	0.0319
1015	2.20	1.96								2.08	87.0	0.0331
1030	2.20	1.96								2.08	94.0	0.0345
1045	2.21	1.99								2.10	93.0	0.0360
1100	2.22	2.00								2.11	98.0	0.0382
1130	2.22	2.00								2.11	80.0	0.0405
1200	2.22	2.00								2.11	96.0	0.0434

STORM RAINFALL AND RUNOFF RECORD									
STA. NO. 08158200				1977 WATER YEAR					
WALNUT CREEK AT DESSAU ROAD, AUSTIN, TEXAS				STORM OF APRIL 15-16, 1977				ACCUM.	DISCHARGE
DATE & TIME				G A G E N U M B E R				WEIGHTED PRECIP. IN.	IN FT ³ /S
				1WLN	2WLN				IN.
APR. 16									
1030	3.71	3.29						3.50	69.0
1035	3.78	3.31						3.55	76.0
1040	3.81	3.33						3.57	83.0
1050	3.86	3.37						3.62	101.0
1055	3.88	3.45						3.67	111.0
1100	3.91	3.53						3.72	122.0
1110	3.96	3.58						3.77	149.0
1120	3.99	3.61						3.80	180.0
1130	4.01	3.66						3.84	213.0
1145	4.03	3.71						3.87	275.0
1200	4.04	3.72						3.88	305.0
1230	4.04	3.72						3.88	347.0
1300	4.04	3.72						3.88	371.0
1330	4.04	3.72						3.88	376.0
1400	4.05	3.72						3.89	390.0
1430	4.05	3.72						3.89	354.0
1500	4.05	3.72						3.89	296.0
1600	4.05	3.72						3.89	195.0
1700	4.05	3.72						3.89	129.0
1800	4.05	3.72						3.89	93.0
2000	4.05	3.72						3.89	50.0
2200	4.05	3.72						3.89	30.0
2400	4.05	3.72						3.89	20.0

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 04158200												
WALNUT CREEK AT DESSAU ROAD, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 19-20, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	1 WLN	2 WLN	G A G F	NUMBER						PRECIP.	FT ³ /S	IN.
										IN.		
APR. 19												
0000	0.0	0.0								0.0	15.0	0.0089
0000	0.01	0.0								0.01	15.0	0.0184
0130	0.05	0.03								0.04	15.0	0.0192
0145	0.07	0.05								0.06	20.0	0.0195
0200	0.09	0.08								0.09	22.0	0.0197
0205	0.20	0.10								0.15	32.0	0.0199
0210	0.54	0.30								0.42	45.0	0.0201
0215	0.72	0.62								0.67	62.0	0.0204
0220	0.79	1.01								0.90	122.0	0.0210
0225	0.85	1.11								0.97	181.0	0.0219
0230	0.86	1.19								1.02	241.0	0.0231
0235	0.89	1.24								1.06	327.0	0.0247
0240	0.91	1.26								1.08	413.0	0.0267
0245	0.94	1.28								1.11	499.0	0.0292
0250	0.96	1.30								1.13	661.0	0.0324
0255	0.99	1.33								1.16	822.0	0.0365
0300	1.02	1.35								1.18	984.0	0.0462
0315	1.09	1.42								1.25	1200.0	0.0639
0330	1.13	1.46								1.29	1270.0	0.0827
0345	1.15	1.48								1.31	1420.0	0.1037
0400	1.18	1.51								1.34	1440.0	0.1197
APR. 20												
0000	1.18	1.51								1.34	1440.0	0.1197
0015	1.22	1.55								1.38	1390.0	0.1455
0030	1.23	1.57								1.40	1350.0	0.1655
0045	1.25	1.59								1.42	1250.0	0.1840
0100	1.28	1.62								1.45	1090.0	0.2082
0130	1.31	1.64								1.47	911.0	0.2351
0200	1.31	1.64								1.47	726.0	0.2673
0300	1.31	1.64								1.47	499.0	0.2968
0400	1.31	1.64								1.47	350.0	0.3279
0600	1.31	1.64								1.47	186.0	0.3444
0700	1.32	1.65								1.48	148.0	0.3553
0830	1.38	1.67								1.52	113.0	0.3628
0915	1.42	1.69								1.55	106.0	0.3668
0945	1.49	1.76								1.62	111.0	0.3700
1015	1.55	1.85								1.70	124.0	0.3737
1045	1.64	1.95								1.79	141.0	0.3779
1115	1.69	2.01								1.85	163.0	0.3839
1200	1.70	2.01								1.85	205.0	0.3945

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 0815R200												
WALNUT CREEK AT DESSAU ROAD, AUSTIN, TEXAS										STORM OF APRIL 19-20, 1977		
DATE & TIME										ACCUM. PRECIP. IN.	DISCHARGE IN FT ³ /S	ACCUM. RUNOFF IN.
APR. 20												
1300	1.70	2.02								1.86	253.0	0.4095
1400	1.70	2.02								1.86	232.0	0.4232
1500	1.71	2.02								1.86	197.0	0.4348
1600	1.71	2.03								1.87	166.0	0.4496
1800	1.71	2.03								1.87	118.0	0.4635
2000	1.71	2.03								1.87	91.0	0.4743
2200	1.71	2.03								1.87	79.0	0.4836
2400	1.71	2.03								1.87	70.0	0.4878

08158300 Ferguson Branch at Springdale Road, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°19'53", long 97°39'12", Travis County, Hydrologic Unit 12090205, on downstream side of culvert on Springdale Road and 6.5 mi northeast of the State Capitol Building in Austin.

DRAINAGE AREA.--1.63 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 509.64 ft above mean sea level.

REMARKS.--Because of insufficient data, no storms were analyzed for this station for the period of record.

08158400 Little Walnut Creek at Interstate Highway 35, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°20'57", long 97°41'34", Travis County, Hydrologic Unit 12090205, on downstream frontage road bridge on Interstate Highway 35 and 5.9 mi north of the State Capitol Building in Austin.

DRAINAGE AREA.--5.57 mi².

PERIOD OF RECORD.--May 1975 to current year. Periodic measurements only, November 1974 to May 1975.

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 628.75 ft above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,700 ft³/s Nov. 23, 1974 (gage height, 9.46 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,200 ft³/s Apr. 19 (gage height, 3.70 ft).

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
LITTLE WALNUT CREEK AT IH-35, AUSTIN, TEXAS										STORM OF APRIL 15, 1977		
DATE & TIME	G A G F			N U M B E R			ACCUM. WEIGHTED	DISCHARGE IN	ACCUM. RUNOFF			
	1SHL	4WLN					PRECIP. IN.	FT ³ /S	IN.			
APR. 15												
0000	0.0	0.0					0.0	4.0	0.0026			
0435	0.01	0.0					0.00	4.0	0.0051			
0440	0.03	0.0					0.01	4.0	0.0053			
0450	0.03	0.02					0.02	4.0	0.0055			
0500	0.03	0.04					0.04	4.0	0.0056			
0505	0.03	0.04					0.04	6.0	0.0057			
0510	0.03	0.06					0.05	10.0	0.0060			
0515	0.06	0.10					0.09	16.0	0.0064			
0520	0.12	0.22					0.19	22.0	0.0069			
0525	0.19	0.38					0.32	36.0	0.0077			
0530	0.27	0.62					0.50	50.0	0.0089			
0535	0.48	0.82					0.70	79.0	0.0107			
0540	0.72	0.92					0.85	116.0	0.0134			
0545	0.86	0.98					0.94	145.0	0.0167			
0550	0.95	1.05					1.02	244.0	0.0224			
0555	1.02	1.15					1.11	399.0	0.0316			
0600	1.12	1.31					1.25	518.0	0.0437			
0605	1.17	1.32					1.27	637.0	0.0584			
0610	1.27	1.33					1.31	738.0	0.0755			
0615	1.30	1.36					1.34	792.0	0.1031			
0625	1.32	1.36					1.35	834.0	0.1321			
0630	1.32	1.37					1.35	774.0	0.1680			
0645	1.34	1.38					1.37	621.0	0.2112			
0700	1.34	1.40					1.38	499.0	0.2459			
0715	1.37	1.40					1.39	370.0	0.2716			
0730	1.38	1.41					1.40	262.0	0.2929			
0750	1.38	1.41					1.40	175.0	0.3091			
0810	1.38	1.43					1.41	132.0	0.3213			
0830	1.40	1.45					1.43	95.0	0.3301			
0850	1.42	1.48					1.46	81.0	0.3376			
0910	1.44	1.50					1.48	78.0	0.3449			
0930	1.46	1.52					1.50	72.0	0.3507			
0945	1.58	1.59					1.59	68.0	0.3554			
1000	1.78	1.76					1.77	89.0	0.3627			
1020	1.83	1.78					1.80	127.0	0.3715			
1030	1.83	1.78					1.80	140.0	0.3845			
1100	1.85	1.82					1.83	120.0	0.3984			
1120	1.85	1.82					1.83	103.0	0.4079			
1140	1.86	1.82					1.83	81.0	0.4155			

STA. NO. 08158400				STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR			
LITTLE WALNUT CREEK AT HW-35, AUSTIN, TEXAS				STORM OF APRIL 15, 1977				ACCUM.	DISCHARGE	ACCUM.	
DATE & TIME		G A G E		N U M B E R		WEIGHTED	IN	RUNOFF			
		ISHL	AWLN			PRECIP.					
						IN.	FT ³ /S	IN.			
APR. 15											
1200		1.86	1.82			1.83	78.0	0.4299			
1300		1.90	1.85			1.87	72.0	0.4500			
1400		1.92	1.91			1.91	66.0	0.4683			
1500		1.97	2.00			1.99	60.0	0.4801			
1525		2.14	2.22			2.19	78.0	0.4874			
1540		2.24	2.33			2.30	158.0	0.5002			
1600		2.30	2.35			2.33	224.0	0.5184			
1615		2.32	2.36			2.35	196.0	0.5365			
1640		2.34	2.39			2.37	153.0	0.5490			
1650		2.37	2.44			2.42	150.0	0.5663			
1730		2.52	2.53			2.53	178.0	0.5952			
1800		2.52	2.53			2.53	140.0	0.6147			
1830		2.52	2.54			2.53	95.0	0.6279			
1900		2.52	2.54			2.53	75.0	0.6418			
1950		2.52	2.54			2.53	58.0	0.6566			
2050		2.52	2.55			2.54	43.0	0.6746			
2250		2.52	2.55			2.54	30.0	0.6878			
2400		2.52	2.55			2.54	20.0	0.6910			

STORM RAINFALL AND RUNOFF RECORD												1977 WATER YEAR					
LITTLE WALNUT CREEK AT IH-35, AUSTIN, TEXAS												STORM OF APRIL 19-20, 1977			ACCUM.	DISCHARGE	ACCUM.
DATE & TIME		ISHL		4WLN		G A G F		N U M B E R		PRECIP.		WEIGHTED	IN	RUNOFF			
												IN.	FT ³ /S	IN.			
APR. 19																	
0000		0.0		0.0							0.0		6.0	0.0168			
2010		0.0		0.01							0.01		6.0	0.0341			
2040		0.0		0.02							0.01		6.0	0.0350			
2115		0.0		0.03							0.02		6.0	0.0357			
2130		0.03		0.04							0.04		6.0	0.0360			
2140		0.05		0.05							0.05		6.0	0.0362			
2145		0.06		0.05							0.05		6.0	0.0364			
2150		0.07		0.10							0.09		6.0	0.0365			
2155		0.12		0.38							0.29		10.0	0.0367			
2200		0.51		0.47							0.48		15.0	0.0371			
2205		0.65		0.54							0.61		22.0	0.0376			
2210		0.73		0.69							0.70		45.0	0.0386			
2215		0.81		0.85							0.84		153.0	0.0422			
2220		0.87		0.92							0.90		231.0	0.0475			
2225		0.88		0.96							0.93		325.0	0.0551			
2230		0.91		0.98							0.96		528.0	0.0673			
2235		0.94		1.00							0.98		744.0	0.0846			
2240		0.95		1.03							1.00		946.0	0.1065			
2245		0.95		1.06							1.02		1000.0	0.1297			
2250		0.96		1.07							1.03		1040.0	0.1538			
2255		1.02		1.09							1.07		1020.0	0.1774			
2300		1.04		1.12							1.09		1070.0	0.2023			
2305		1.06		1.13							1.11		1130.0	0.2284			
2310		1.08		1.15							1.13		1170.0	0.2556			
2315		1.10		1.17							1.15		1200.0	0.2973			
2325		1.12		1.19							1.17		1160.0	0.3511			
2335		1.13		1.20							1.18		1060.0	0.4002			
2345		1.14		1.22							1.19		965.0	0.4562			
2400		1.19		1.26							1.24		822.0	0.5133			
APR. 20																	
0000		1.19		1.26							1.24		822.0	0.5133			
0030		1.24		1.30							1.28		594.0	0.6039			
0045		1.25		1.33							1.30		513.0	0.6396			
0100		1.27		1.35							1.32		435.0	0.6698			
0115		1.29		1.37							1.34		357.0	0.6988			
0135		1.29		1.37							1.34		273.0	0.7273			
0200		1.30		1.37							1.35		218.0	0.7551			
0230		1.30		1.37							1.35		153.0	0.7764			
0300		1.30		1.37							1.35		110.0	0.7917			
0330		1.30		1.37							1.35		75.0	0.8021			

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 19-20, 1977										ACCUM.	DISCHARGE	ACCUM.
G A G E N U M B E R										WEIGHTED	IN	RUNOFF
DATE & TIME	1SHL	4#LN								PRECIP.	FT ³ /S	IN.
APR. 20												
0400	1.30	1.37								1.35	60.0	0.8104
0430	1.30	1.37								1.35	40.0	0.8160
0500	1.30	1.37								1.35	30.0	0.8223
0600	1.30	1.37								1.35	20.0	0.8253

08158500 Little Walnut Creek at Manor Road, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°18'34", long 97°40'04", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Manor Road and 4.9 mi northeast of the State Capitol Building in Austin.

DRAINAGE AREA.--12.1 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 473.82 ft above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,940 ft³/s May 25, 1976 (gage height, 8.74 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,010 ft³/s Apr. 19 (gage height, 5.95 ft).

STA. NO. 08158500						STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR		
LITTLE WALNUT CREEK AT MANOR ROAD, AUSTIN, TEXAS						STORM OF APRIL 15, 1977				ACCUM.	DISCHARGE	ACCUM.
DATE & TIME		G A C F			N U M B E R		W E I G H T E D	I N	R U N O F F			
		1SHI	4WLM	5WLM			PRECIP.	FT ³ /S				
							IN.				IN.	
=====												
APR. 15												
0000		0.0	0.0	0.0			0.0	5.0	0.0014			
0430		0.01	0.0	0.0			0.00	5.0	0.0030			
0450		0.03	0.02	0.0			0.01	5.0	0.0031			
0500		0.03	0.04	0.0			0.02	5.0	0.0032			
0505		0.03	0.04	0.0			0.02	5.0	0.0033			
0510		0.03	0.06	0.0			0.03	5.0	0.0033			
0515		0.06	0.10	0.0			0.05	5.0	0.0034			
0520		0.12	0.22	0.01			0.12	5.0	0.0034			
0525		0.19	0.38	0.02			0.20	20.0	0.0037			
0530		0.27	0.62	0.02			0.32	70.0	0.0044			
0535		0.48	0.82	0.02			0.43	122.0	0.0057			
0540		0.72	0.92	0.05			0.52	166.0	0.0075			
0545		0.86	0.98	0.10			0.59	211.0	0.0097			
0550		0.95	1.05	0.14			0.65	340.0	0.0134			
0555		1.02	1.15	0.27			0.76	470.0	0.0184			
0600		1.12	1.31	0.48			0.93	599.0	0.0248			
0605		1.17	1.32	0.59			0.99	636.0	0.0316			
0610		1.27	1.33	0.70			1.06	674.0	0.0387			
0615		1.30	1.36	0.82			1.12	711.0	0.0463			
0620		1.32	1.36	0.99			1.20	726.0	0.0541			
0625		1.32	1.36	1.11			1.25	740.0	0.0620			
0630		1.32	1.37	1.13			1.26	755.0	0.0781			
0645		1.34	1.38	1.18			1.29	694.0	0.0966			
0655		1.34	1.39	1.18			1.29	743.0	0.1204			
0715		1.37	1.40	1.20			1.31	818.0	0.1597			
0740		1.38	1.41	1.21			1.32	725.0	0.1945			
0800		1.38	1.41	1.21			1.32	593.0	0.2261			
0830		1.40	1.45	1.25			1.36	405.0	0.2521			
0900		1.44	1.48	1.29			1.39	256.0	0.2685			
0930		1.46	1.52	1.31			1.42	191.0	0.2807			
1000		1.78	1.76	1.35			1.59	165.0	0.2913			
1030		1.83	1.78	1.53			1.68	176.0	0.3025			
1100		1.85	1.82	1.58			1.72	219.0	0.3201			
1145		1.86	1.82	1.58			1.73	223.0	0.3343			
1200		1.86	1.82	1.58			1.73	207.0	0.3509			
1300		1.90	1.85	1.58			1.74	122.0	0.3626			
1330		1.91	1.86	1.59			1.75	91.0	0.3685			
1400		1.92	1.91	1.61			1.79	80.0	0.3761			
1500		1.97	2.00	1.64			1.84	70.0	0.3817			

STORM RAINFALL AND RUNOFF RECORD												
STA. NO. 08158500				1977 WATER YEAR								
LITTLE WALNUT CREEK AT MADISON ROAD, AUSTIN, TEXAS				STORM OF APRIL 15, 1977						ACCUM.	DISCHARGE	ACCUM.
DATE & TIME				PRECIP.						IN.	IN	RUNOFF
				G A G E						IN.	FT ³ /S	IN.
				N U M B E R								
APR. 15												
1515	2.05	2.11	1.65							1.91	86.0	0.3840
1525	2.14	2.22	1.70							1.99	189.0	0.3891
1540	2.24	2.34	1.77							2.08	247.0	0.3983
1600	2.30	2.35	2.02							2.20	327.0	0.4105
1615	2.32	2.36	2.04							2.22	400.0	0.4233
1630	2.33	2.37	2.05							2.23	382.0	0.4356
1645	2.37	2.41	2.05							2.25	395.0	0.4461
1655	2.41	2.44	2.05							2.29	484.0	0.4538
1700	2.42	2.52	2.06							2.31	529.0	0.4651
1715	2.52	2.53	2.11							2.35	526.0	0.4820
1730	2.52	2.53	2.21							2.39	488.0	0.5054
1800	2.52	2.53	2.22							2.40	405.0	0.5313
1830	2.52	2.54	2.22							2.40	360.0	0.5544
1900	2.52	2.54	2.23							2.41	277.0	0.5810
2000	2.52	2.54	2.23							2.41	161.0	0.6016
2100	2.52	2.54	2.23							2.41	99.0	0.6143
2200	2.52	2.55	2.23							2.41	75.0	0.6239
2300	2.52	2.55	2.23							2.41	60.0	0.6316
2400	2.52	2.55	2.23							2.41	50.0	0.6348

STA. NO. 08158500						STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR		
LITTLE WALNUT CREEK AT HANOR ROAD, AUSTIN, TEXAS						STORM OF APRIL 16, 1977				ACCUM.	DISCHARGE	ACCUM.
DATE & TIME		G A C F				N U M B E R				WEIGHTED	IN	RUNOFF
		1SHL	4WLN	5WLN						PRECIP.	FT ³ /S	
										IN.		IN.
APR. 16												
0000		0.0	0.0	0.0					0.0	50.0	0.0181	
0540		0.01	0.02	0.0					0.01	15.0	0.0239	
0600		0.10	0.03	0.01					0.03	15.0	0.0252	
0700		0.15	0.07	0.07					0.08	20.0	0.0277	
0800		0.18	0.11	0.16					0.14	25.0	0.0301	
0830		0.21	0.17	0.17					0.18	40.0	0.0327	
0900		0.26	0.25	0.25					0.25	70.0	0.0372	
0930		0.39	0.37	0.33					0.36	95.0	0.0433	
1000		0.51	0.50	0.44					0.48	172.0	0.0497	
1005		0.54	0.53	0.47					0.51	188.0	0.0517	
1010		0.55	0.54	0.50					0.52	205.0	0.0539	
1015		0.57	0.56	0.52					0.54	221.0	0.0563	
1020		0.59	0.58	0.54					0.56	243.0	0.0588	
1025		0.61	0.60	0.55					0.58	266.0	0.0617	
1030		0.62	0.65	0.57					0.61	288.0	0.0648	
1035		0.66	0.69	0.58					0.64	322.0	0.0682	
1040		0.69	0.71	0.61					0.66	356.0	0.0720	
1045		0.74	0.73	0.64					0.69	390.0	0.0762	
1050		0.78	0.76	0.68					0.73	416.0	0.0806	
1055		0.80	0.77	0.72					0.75	442.0	0.0853	
1100		0.81	0.80	0.74					0.78	468.0	0.0903	
1105		0.83	0.83	0.76					0.80	509.0	0.0957	
1110		0.88	0.87	0.79					0.84	549.0	0.1016	
1115		0.91	0.90	0.82					0.87	590.0	0.1079	
1120		0.92	0.93	0.84					0.89	620.0	0.1145	
1125		0.94	0.96	0.86					0.91	650.0	0.1214	
1130		0.95	0.97	0.88					0.93	680.0	0.1287	
1135		0.95	0.98	0.90					0.94	699.0	0.1362	
1140		1.01	0.99	0.95					0.98	719.0	0.1438	
1145		1.02	1.00	1.02					1.01	738.0	0.1517	
1150		1.03	1.01	1.04					1.03	756.0	0.1598	
1155		1.05	1.01	1.06					1.04	773.0	0.1680	
1200		1.05	1.01	1.07					1.04	791.0	0.1849	
1215		1.05	1.01	1.10					1.05	794.0	0.2103	
1230		1.05	1.01	1.10					1.05	785.0	0.2480	
1300		1.05	1.01	1.10					1.05	683.0	0.2918	
1330		1.05	1.01	1.10					1.05	526.0	0.3255	
1400		1.05	1.01	1.10					1.05	392.0	0.3506	
1430		1.05	1.02	1.11					1.06	281.0	0.3685	

=====												
STA. NO. 08158500				STORM RAINFALL AND RUNOFF RECORD						1977 WATER YEAR		
=====												
LITTLE WALNUT CREEK AT MANOR ROAD, AUSTIN, TEXAS								STORM OF APRIL 16, 1977		ACCUM.	DISCHARGE	ACCUM.
										WEIGHTED	IN	PUNOFF
DATE & TIME								PRECIP.				
								IN.		FT ³ /S	IN.	
=====												
APR. 16												
1500	1.05	1.02	1.11					1.06	219.0	0.3896		
1600	1.05	1.02	1.11					1.06	126.0	0.4057		
1700	1.05	1.02	1.11					1.06	86.0	0.4167		
1800	1.05	1.02	1.11					1.06	76.0	0.4265		
1900	1.05	1.02	1.12					1.07	56.0	0.4336		
2000	1.05	1.02	1.12					1.07	40.0	0.4388		
2100	1.05	1.02	1.12					1.07	30.0	0.4426		
2200	1.05	1.02	1.12					1.07	25.0	0.4458		
2300	1.05	1.02	1.12					1.07	20.0	0.4484		
2400	1.05	1.02	1.12					1.07	15.0	0.4493		
=====												

STATION NO. 08158500									
STORM RAINFALL AND RUNOFF RECORD									
1977 WATER YEAR									
LITTLE WALNUT CREEK AT MANOR ROAD, AUSTIN, TEXAS									
STORM OF APRIL 19-20, 1977									
DATE & TIME	G A G E					PRECIP.	ACCUM.	DISCHARGE	ACCUM.
	1SHL	4H LN	5W LN	NUM	R F R				
						IN.	IN.	FT ³ /S	IN.
APR. 19									
0000	0.0	0.0	0.0			0.0		14.0	0.0179
2000	0.0	0.0	0.0			0.0		10.0	0.0311
2030	0.0	0.01	0.0			0.00		10.0	0.0317
2100	0.0	0.02	0.0			0.01		10.0	0.0323
2130	0.03	0.04	0.01			0.03		12.0	0.0328
2140	0.05	0.05	0.02			0.04		12.0	0.0330
2145	0.06	0.05	0.03			0.04		13.0	0.0332
2150	0.07	0.10	0.16			0.12		15.0	0.0333
2155	0.12	0.38	0.35			0.33		20.0	0.0336
2200	0.51	0.47	0.41			0.45		50.0	0.0341
2205	0.65	0.59	0.48			0.55		199.0	0.0362
2210	0.73	0.69	0.77			0.73		319.0	0.0396
2215	0.81	0.85	1.10			0.95		440.0	0.0443
2220	0.87	0.92	1.28			1.06		565.0	0.0503
2225	0.88	0.96	1.31			1.09		690.0	0.0577
2230	0.91	0.98	1.33			1.12		815.0	0.0664
2235	0.94	1.00	1.35			1.14		857.0	0.0755
2240	0.95	1.03	1.37			1.16		900.0	0.0852
2245	0.95	1.06	1.40			1.19		942.0	0.0952
2250	0.96	1.07	1.41			1.20		959.0	0.1054
2255	1.02	1.09	1.42			1.22		976.0	0.1159
2300	1.04	1.12	1.45			1.25		993.0	0.1371
2315	1.10	1.17	1.49			1.29		996.0	0.1689
2330	1.12	1.19	1.51			1.31		1010.0	0.2067
2350	1.15	1.23	1.55			1.35		980.0	0.2380
2400	1.19	1.26	1.59			1.39		972.0	0.2640
APR. 20									
0000	1.19	1.26	1.59			1.39		972.0	0.2640
0030	1.24	1.30	1.63			1.43		921.0	0.3385
0100	1.27	1.35	1.68			1.48		803.0	0.3899
0130	1.29	1.37	1.69			1.49		644.0	0.4312
0200	1.30	1.37	1.69			1.49		499.0	0.4631
0230	1.30	1.37	1.69			1.49		362.0	0.4863
0300	1.30	1.37	1.69			1.49		299.0	0.5150
0400	1.30	1.37	1.69			1.49		264.0	0.5488
0500	1.30	1.37	1.69			1.49		205.0	0.5751
0600	1.30	1.37	1.70			1.50		157.0	0.5952
0700	1.30	1.38	1.72			1.51		122.0	0.6108
0800	1.33	1.39	1.73			1.52		94.0	0.6228
0900	1.38	1.42	1.76			1.56		85.0	0.6337

STORM RAINFALL AND RUNOFF RECORD									
1977 WATER YEAR									
LITTLE WALNUT CREEK AT HANCOCK ROAD, AUSTIN, TEXAS					STORM OF APRIL 19-20, 1977				
DATE & TIME	ISHL	QWLN	SWLN	G A G E	N U M B E R	PRECIP.	ACCUM.	DISCHARGE	ACCUM.
						IN.		IN	RUNOFF
								FT ³ /S	IN.
APR. 20									
1000	1.54	1.60	1.97			1.74		85.0	0.6446
1100	1.68	1.76	2.13			1.90		163.0	0.6655
1200	1.69	1.77	2.15			1.92		209.0	0.6856
1230	1.69	1.77	2.15			1.92		213.0	0.6992
1300	1.70	1.77	2.15			1.92		209.0	0.7193
1400	1.70	1.78	2.16			1.93		180.0	0.7423
1500	1.70	1.78	2.16			1.93		147.0	0.7612
1600	1.70	1.78	2.16			1.93		118.0	0.7763
1700	1.70	1.78	2.16			1.93		94.0	0.7943
1900	1.70	1.78	2.17			1.93		56.0	0.8087
2100	1.70	1.78	2.17			1.93		35.0	0.8199
2400	1.70	1.78	2.17			1.93		15.0	0.8228

COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX

LOCATION.--Lat 30°16'59", long 97°39'17", Travis County, Hydrologic Unit 12090205, on left bank 190 ft (58 m) downstream from bridge on Farm Road 969, 0.8 mi (1.3 km) downstream from Little Walnut Creek, 2.8 mi (4.5 km) upstream from Colorado River, and 5.2 mi (8.4 km) east of the State Capitol Building in Austin.

DRAINAGE AREA.--51.3 mi² (132.9 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 425.96 ft (129.833 m) above mean sea level.

REMARKS.--Records fair. No known regulation or diversion. Station is part of hydrologic research project to study rainfall-runoff relation for urban areas. Six recording rain gages are located in watershed. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--11 years, 23.4 ft³/s (0.663 m³/s), 6.19 in/yr (157 mm/yr), 16,950 acre-ft/yr (20.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s) Nov. 23, 1974, gage height, 26.16 ft (7.974 m); no flow at times in 1967 and 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1891, that of Nov. 23, 1974; 25.56 ft (7.791 m) occurred on Oct. 11, 1973, discharge 10,000 ft³/s (283 m³/s); and 24 ft (7.3 m) occurred on June 15, 1935 (backwater from Colorado River). A flood in 1919 reached a stage of 22 ft (6.7 m), from information by local residents.

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

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 29	1030	762 21.6	8.97 2.734	Apr. 20	0200	*2,520 71.4	14.04 4.279
Feb. 11	1230	2,170 61.5	13.22 4.029	Apr. 30	0145	752 21.3	8.93 2.722
Apr. 15	1900	983 27.8	9.80 2.987	Sept. 19	1930	927 26.3	9.60 2.926
Apr. 16	1245	1,720 48.7	12.05 3.673				

Minimum discharge, 0.18 ft³/s (0.005 m³/s) Aug. 25 to Sept. 6, Sept. 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	12	9.4	16	23	24	12	48	11	3.7	.72	.18
2	5.4	9.9	8.8	22	27	24	12	41	11	3.5	.50	.18
3	5.2	9.8	8.2	19	34	114	11	37	10	3.1	.43	.22
4	19	8.4	8.0	17	24	41	13	35	9.3	2.9	.46	.18
5	31	7.3	49	16	22	28	10	30	8.5	2.7	.38	.18
6	8.9	6.9	25	17	22	25	9.7	29	8.1	2.5	.38	.21
7	7.2	6.5	13	15	21	24	9.4	28	7.6	2.3	.38	.38
8	8.6	6.4	12	15	22	23	9.4	26	7.4	2.1	.38	.31
9	6.8	6.0	11	20	20	21	9.1	25	7.1	2.1	.38	.31
10	6.4	6.3	17	15	121	21	9.1	23	6.6	1.8	.31	.31
11	6.2	6.3	135	14	656	21	8.2	22	16	1.8	.31	.31
12	6.2	8.1	76	18	155	19	8.0	21	11	1.6	.31	1.5
13	5.9	28	55	87	104	18	16	19	7.4	1.5	.26	32
14	5.9	8.0	47	34	83	17	13	19	6.2	1.5	.24	4.3
15	26	6.7	40	24	64	17	379	18	21	1.4	.24	.60
16	19	6.1	34	21	56	16	450	18	13	1.5	.18	.39
17	8.6	7.5	31	20	51	16	104	17	7.1	3.7	.33	.31
18	7.3	6.2	28	20	45	15	61	17	6.1	3.1	.38	.24
19	33	48	34	19	40	14	122	18	5.6	1.4	.38	106
20	14	12	28	18	36	13	755	25	4.9	1.3	.40	15
21	9.4	9.7	24	18	34	13	129	67	6.9	1.2	.38	1.6
22	8.4	8.5	24	50	34	13	84	22	6.9	1.2	.31	1.0
23	9.0	8.2	23	59	31	12	62	19	26	1.2	.31	.71
24	38	8.0	21	29	28	13	51	16	14	1.0	.31	.71
25	14	30	21	26	28	14	43	15	7.0	.93	.23	1.2
26	10	28	20	25	26	26	42	14	5.6	.72	.18	.56
27	9.3	12	20	24	25	37	41	13	5.1	.72	.18	.46
28	14	11	19	22	25	28	35	12	4.5	.88	.18	.22
29	244	10	18	21	---	15	34	12	4.4	.93	.18	.24
30	29	9.7	18	28	---	13	157	12	4.1	.93	.18	.24
31	15	---	16	24	---	12	---	11	---	.73	.18	---
TOTAL	636.6	351.5	893.4	773	1857	707	2698.9	729	269.4	55.94	9.97	170.05
MEAN	20.5	11.7	28.8	24.9	66.3	22.8	90.0	23.5	8.98	1.80	.32	5.67
MAX	244	48	135	87	656	114	755	67	26	3.7	.72	106
MIN	5.2	6.0	8.0	14	20	12	8.0	11	4.1	.72	.18	.18
CFSM	.40	.23	.56	.49	1.29	.44	1.75	.46	.18	.04	.006	.11
IN.	.46	.25	.65	.56	1.35	.51	1.96	.53	.20	.04	.01	.12
AC-FT	1260	697	1770	1530	3680	1400	5350	1450	534	111	20	337
(††)	6.00	2.27	2.74	2.03	2.73	2.12	7.11	1.61	2.29	.10	.09	2.13

CAL YR 1976	TOTAL	8210.00	MEAN 22.4	MAX 1220	MIN 1.9	CFSM .44	IN 5.95	AC-FT 16280	†† 41.59
WTR YR 1977	TOTAL	9151.76	MEAN 25.1	MAX 755	MIN .18	CFSM .49	IN 6.64	AC-FT 18150	†† 32.22

†† Weighted-mean rainfall, in inches, based on six rain gages.
NOTE.--No gage-height record Nov. 16 to Dec. 15.

COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL.-MF (COL./100 ML)
NOV 04...	1315	8.4	657	8.0	16.5	0	1	9.6	101	.2	1000	88
JAN 03...	1150	16	634	8.0	6.0	0	1	11.9	98	.8	9500	240
FEB 11...	1000	1220	339	7.9	13.5	10	1900	10.0	99	13	72000	8000
11...	1615	683	335	8.0	15.0	20	750	9.1	93	5.2	28000	15000
12...	0910	155	570	8.1	12.0	5	80	10.4	100	1.4	2400	2100
14...	0945	75	667	8.0	11.0	0	20	10.2	95	.7	8400	600
MAR 01...	1250	24	646	8.0	13.0	0	2	10.1	99	.6	840	60
MAY 16...	1400	16	590	7.9	22.0	0	1	7.7	91	.5	2800	680
JUL 11...	1130	1.8	584	7.5	27.5	0	0	7.8	100	.3	35000	240
SEP 20...	1300	6.9	322	7.8	26.0	20	160	6.9	86	2.6	270000	31000

DATE	FECAL STREP-TOCOCOCCUS AGAR (COL. PER 100 ML)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
NOV 04...	160	300	85	110	6.4	26	.7	2.8	264	0	66	41
JAN 03...	460	--	--	--	--	--	--	--	--	--	--	--
FEB 11...	81000	140	36	51	3.3	11	.4	3.6	128	0	50	11
11...	140000	--	--	--	--	--	--	--	--	--	--	--
12...	9200	--	--	--	--	--	--	--	--	--	--	--
14...	1700	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	96	--	--	--	--	--	--	--	--	--	--	--
MAY 16...	460	260	60	95	5.6	22	.6	2.1	244	0	58	31
JUL 11...	840	--	--	--	--	--	--	--	--	--	--	--
SEP 20...	26000	130	40	47	3.0	11	.4	3.8	110	0	40	14

DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
NOV 04...	.4	9.6	392	2	1	.73	.01	.01	.18	.00	2.0
JAN 03...	--	--	--	3	0	.31	.00	.02	.27	.01	3.6
FEB 11...	.4	9.2	203	4230	456	.64	.01	.15	4.5	1.5	32
11...	--	--	--	1780	216	.67	.02	.12	8.1	.76	22
12...	--	--	--	197	34	1.4	.01	.08	.86	.18	12
14...	--	--	--	29	4	1.5	.00	.07	.64	.02	3.2
MAR 01...	--	--	--	3	1	1.2	.01	.02	.27	.01	9.0
MAY 16...	.4	8.3	343	1	1	1.0	.00	.01	.30	.01	5.0
JUL 11...	--	--	--	1	1	.29	.01	.01	.19	.01	2.5
SEP 20...	.3	6.9	180	225	34	.70	.01	.00	.40	.21	9.7

COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED CHROMIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
NOV 04...	1315	1	100	0	0	0	0
FEB 11...	1000	1	0	0	1	4	30
MAY 16...	1400	0	0	0	10	1	20
SEP 20...	1300	8	0	0	0	1	20

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV 04...	0	10	.2	0	0	0
FEB 11...	0	0	.0	1	0	10
MAY 16...	1	8	.0	0	0	5
SEP 20...	2	10	.0	0	0	0

DATE	TIME	TOTAL PCB (UG/L)	POLY-CHLORINATED NAPHTHALENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLORDANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DIAZINON (UG/L)	TOTAL DIELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
NOV 04...	1315	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
FEB 11...	1000	.0	.00	.00	.0	.00	.01	.02	.03	.01	.00	.00
MAY 16...	1400	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
SEP 20...	1300	.0	.00	.00	.0	.00	.00	.00	.06	.00	.00	.00

DATE	TOTAL HEPTACHLOR (UG/L)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALATHION (UG/L)	TOTAL METHYL PARATHION (UG/L)	TOTAL METHYL TRIETHION (UG/L)	TOTAL PARATHION (UG/L)	TOTAL TOXAPHENE (UG/L)	TOTAL TRIETHION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 04...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
FEB 11...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
MAY 16...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
SEP 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.03	.03	.00

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC 15...	1330	39	7.1	42	4.4

STORM RAINFALL AND RUNOFF RECORD											1977 WATER YEAR		
STATION NO. 08158600													
WALNUT CREEK AT HERBENVILLE ROAD, AUSTIN, TEXAS											ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15-17, 1977											WEIGHTED	IN	RUNOFF
DATE & TIME	1WLN	2WLN	3WLN	4WLN	5WLN	PRECIP.	IN.	FT ³ /S	IN.				
APR. 15													
0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0006				
0415	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0013				
0430	0.01	0.01	0.0	0.0	0.0	0.0	0.0	9.7	0.0014				
0445	0.02	0.03	0.01	0.0	0.0	0.0	0.01	9.7	0.0014				
0455	0.07	0.07	0.01	0.03	0.0	0.0	0.04	9.7	0.0015				
0500	0.16	0.12	0.01	0.04	0.0	0.0	0.07	9.7	0.0015				
0505	0.35	0.22	0.02	0.04	0.0	0.0	0.15	9.7	0.0015				
0510	0.50	0.36	0.04	0.06	0.0	0.0	0.22	9.7	0.0015				
0515	0.66	0.43	0.06	0.10	0.0	0.0	0.29	9.7	0.0016				
0520	0.80	0.49	0.09	0.22	0.01	0.0	0.36	9.8	0.0016				
0525	0.96	0.62	0.18	0.38	0.02	0.0	0.48	9.9	0.0016				
0530	1.06	0.85	0.40	0.62	0.02	0.0	0.65	10.0	0.0016				
0535	1.19	1.00	0.63	0.82	0.02	0.0	0.81	11.0	0.0017				
0540	1.24	1.08	0.72	0.92	0.05	0.0	0.88	11.0	0.0017				
0545	1.32	1.13	0.82	0.98	0.10	0.0	0.95	12.0	0.0017				
0550	1.38	1.20	0.96	1.05	0.14	0.0	1.04	13.0	0.0017				
0555	1.45	1.27	1.02	1.15	0.27	0.0	1.12	14.0	0.0018				
0600	1.49	1.34	1.05	1.31	0.48	0.0	1.20	15.0	0.0018				
0605	1.50	1.37	1.08	1.32	0.59	0.0	1.23	24.0	0.0019				
0610	1.50	1.38	1.09	1.33	0.70	0.0	1.25	33.0	0.0020				
0615	1.51	1.39	1.09	1.36	0.82	0.0	1.27	42.0	0.0021				
0625	1.52	1.40	1.10	1.36	1.11	0.0	1.31	311.0	0.0037				
0635	1.52	1.40	1.10	1.37	1.16	0.0	1.32	515.0	0.0063				
0645	1.52	1.40	1.11	1.38	1.18	0.0	1.32	652.0	0.0104				
0700	1.55	1.42	1.12	1.40	1.19	0.0	1.34	757.0	0.0161				
0715	1.55	1.42	1.12	1.40	1.20	0.0	1.34	785.0	0.0220				
0730	1.55	1.42	1.12	1.41	1.21	0.0	1.34	837.0	0.0283				
0745	1.55	1.42	1.12	1.41	1.21	0.0	1.34	908.0	0.0352				
0800	1.55	1.42	1.15	1.41	1.21	0.0	1.35	890.0	0.0453				
0830	1.57	1.46	1.19	1.45	1.25	0.0	1.39	673.0	0.0554				
0900	1.61	1.49	1.20	1.48	1.29	0.0	1.42	610.0	0.0624				
0915	1.64	1.55	1.21	1.50	1.30	0.0	1.44	576.0	0.0667				
0930	1.78	1.62	1.24	1.52	1.31	0.0	1.50	514.0	0.0699				
0940	1.89	1.65	1.33	1.52	1.33	0.0	1.57	477.0	0.0723				
0950	2.18	1.83	1.39	1.68	1.33	0.0	1.72	443.0	0.0746				
1000	2.19	1.95	1.40	1.76	1.35	0.0	1.76	414.0	0.0772				
1015	2.20	1.96	1.41	1.78	1.45	0.0	1.78	398.0	0.0802				
1030	2.20	1.96	1.42	1.78	1.53	0.0	1.79	386.0	0.0846				
1100	2.22	2.00	1.42	1.82	1.58	0.0	1.82	381.0	0.0903				

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 08158600												
WALNUT CREEK AT WERRERVILLE ROAD, AUSTIN, TEXAS										STORM OF APRIL 15-17, 1977		
										ACCUM.	DISCHARGE	ACCUM.
										WEIGHTED	IN	RUNOFF
										PRECIP.		
										IN.	FT ³ /S	IN.
												</

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 08158600												
WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15-17, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	G A G F			NUMBER			PRECIP.			IN.	FT ³ /S	IN.
	1WLN	2WLN	3WLN	4WLN	5WLN							
APR. 16												
1050	3.86	3.37	3.24	3.31	2.91					3.40	387.0	0.3209
1100	3.91	3.53	3.28	3.35	2.97					3.47	456.0	0.3238
1115	3.98	3.60	3.39	3.45	3.05					3.55	605.0	0.3284
1130	4.01	3.66	3.46	3.52	3.11					3.61	842.0	0.3379
1200	4.04	3.72	3.48	3.56	3.30					3.66	1260.0	0.3569
1230	4.04	3.72	3.48	3.56	3.33					3.67	1580.0	0.3748
1245	4.04	3.72	3.48	3.56	3.33					3.67	1720.0	0.3943
1315	4.04	3.72	3.49	3.56	3.33					3.67	1690.0	0.4199
1345	4.04	3.72	3.49	3.56	3.33					3.67	1510.0	0.4484
1430	4.05	3.72	3.49	3.57	3.34					3.67	1240.0	0.4811
1530	4.05	3.72	3.49	3.57	3.34					3.67	950.0	0.5170
1700	4.05	3.72	3.49	3.57	3.34					3.67	678.0	0.5528
1900	4.05	3.72	3.49	3.57	3.35					3.67	383.0	0.5760
2100	4.05	3.72	3.49	3.57	3.35					3.67	235.0	0.5937
2400	4.05	3.72	3.49	3.57	3.35					3.67	165.0	0.6087
APR. 17												
0000	4.05	3.72	3.49	3.57	3.35					3.67	165.0	0.6087
0600	4.05	3.73	3.49	3.57	3.35					3.68	116.0	0.6372
1200	4.05	3.73	3.49	3.57	3.35					3.68	95.0	0.6544
1800	4.05	3.73	3.49	3.57	3.35					3.68	85.0	0.6698
2400	4.05	3.73	3.49	3.57	3.35					3.68	74.0	0.6765

STA. NO. 08158600							STORM RAINFALL AND RUNOFF RECORD					1977 WATER YEAR		
WALNUT CREEK AT WERRERVILLE ROAD, AUSTIN, TEXAS							STORM OF APRIL 19-20, 1977					ACCUM.	DISCHARGE	ACCUM.
DATE & TIME	G A G E						N U M B E R		WEIGHTED	TN	RUNOFF			
	1WLN	2WLN	3WLN	4WLN	5WLN			PRECIP.	IN.	FT ³ /S	IN.			
APR. 19														
0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0098			
1300	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.00	45.0	0.0193			
1400	0.01	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.01	50.0	0.0216			
1600	0.01	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.01	48.0	0.0245			
1800	0.01	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.01	48.0	0.0274			
2000	0.01	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.01	46.0	0.0295			
2100	0.04	0.03	0.02	0.02	0.0	0.02	0.0	0.0	0.02	42.0	0.0306			
2145	0.07	0.05	0.03	0.05	0.03	0.05	0.03	0.03	0.05	42.0	0.0312			
2200	0.09	0.08	0.11	0.47	0.41	0.47	0.41	0.41	0.19	48.0	0.0315			
2205	0.20	0.10	0.23	0.59	0.48	0.59	0.48	0.48	0.28	52.0	0.0316			
2210	0.54	0.30	0.50	0.69	0.77	0.69	0.77	0.77	0.53	56.0	0.0317			
2215	0.72	0.62	0.82	0.85	1.10	0.85	1.10	1.10	0.79	60.0	0.0319			
2220	0.79	1.01	1.12	0.92	1.28	0.92	1.28	1.28	1.00	66.0	0.0321			
2225	0.84	1.11	1.22	0.96	1.31	0.96	1.31	1.31	1.07	73.0	0.0322			
2230	0.86	1.19	1.24	0.98	1.33	0.98	1.33	1.33	1.11	79.0	0.0326			
2245	0.94	1.28	1.30	1.06	1.40	1.06	1.40	1.40	1.18	398.0	0.0356			
2300	1.02	1.35	1.36	1.12	1.45	1.12	1.45	1.45	1.25	1100.0	0.0481			
2330	1.13	1.46	1.43	1.19	1.51	1.19	1.51	1.51	1.33	1660.0	0.0732			
2400	1.18	1.51	1.50	1.26	1.59	1.26	1.59	1.59	1.40	1990.0	0.0957			
APR. 20														
0000	1.18	1.51	1.50	1.26	1.59	1.26	1.59	1.59	1.40	1990.0	0.0957			
0030	1.23	1.57	1.55	1.30	1.63	1.30	1.63	1.63	1.45	2100.0	0.1349			
0100	1.28	1.62	1.59	1.35	1.68	1.35	1.68	1.68	1.49	2360.0	0.1706			
0130	1.31	1.64	1.61	1.37	1.69	1.37	1.69	1.69	1.51	2440.0	0.2074			
0200	1.31	1.64	1.61	1.37	1.69	1.37	1.69	1.69	1.51	2520.0	0.2455			
0230	1.31	1.64	1.61	1.37	1.69	1.37	1.69	1.69	1.51	2430.0	0.2822			
0300	1.31	1.64	1.61	1.37	1.69	1.37	1.69	1.69	1.51	2220.0	0.3325			
0400	1.31	1.64	1.62	1.37	1.69	1.37	1.69	1.69	1.52	1490.0	0.3775			
0500	1.31	1.64	1.62	1.37	1.69	1.37	1.69	1.69	1.52	986.0	0.4073			
0600	1.31	1.64	1.62	1.37	1.70	1.37	1.70	1.70	1.52	702.0	0.4285			
0700	1.32	1.65	1.63	1.38	1.72	1.38	1.72	1.72	1.53	518.0	0.4441			
0800	1.34	1.65	1.64	1.39	1.73	1.39	1.73	1.73	1.54	396.0	0.4561			
0900	1.41	1.68	1.68	1.42	1.76	1.42	1.76	1.76	1.58	320.0	0.4658			
1000	1.54	1.82	1.88	1.60	1.97	1.60	1.97	1.97	1.75	290.0	0.4723			
1030	1.59	1.89	1.99	1.70	2.08	1.70	2.08	2.08	1.84	302.0	0.4769			
1100	1.66	1.99	2.04	1.76	2.13	1.76	2.13	2.13	1.91	352.0	0.4835			
1145	1.70	2.01	2.06	1.77	2.15	1.77	2.15	2.15	1.93	464.0	0.4958			
1245	1.70	2.02	2.06	1.77	2.15	1.77	2.15	2.15	1.93	683.0	0.5113			
1315	1.70	2.02	2.07	1.78	2.15	1.78	2.15	2.15	1.93	730.0	0.5223			
1345	1.70	2.02	2.07	1.78	2.16	1.78	2.16	2.16	1.93	685.0	0.5327			

STORM RAINFALL AND RUNOFF RECORD											
STATION NO. 0815A600						1977 WATER YEAR					
WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TEXAS						STORM OF APRIL 19-20, 1977					
DATE & TIME						PRECIP.		DISCHARGE		ACCUM.	
						IN.		FT ³ /S		IN.	
APR. 20											
1415	1.71	2.02	2.07	1.78	2.16	1.94	612.0	0.5442			
1500	1.71	2.02	2.07	1.78	2.16	1.94	569.0	0.5592			
1600	1.71	2.03	2.08	1.78	2.16	1.94	484.0	0.5739			
1700	1.71	2.03	2.08	1.78	2.16	1.94	412.0	0.5925			
1900	1.71	2.03	2.08	1.78	2.17	1.94	289.0	0.6100			
2100	1.71	2.03	2.08	1.78	2.17	1.94	234.0	0.6277			
2400	1.71	2.03	2.08	1.78	2.17	1.94	181.0	0.6359			

COLORADO RIVER BASIN

08158640 WALNUT CREEK AT SOUTHERN PACIFIC RAILROAD BRIDGE, AUSTIN, TX
(Reconnaissance partial-record station)

LOCATION.--Lat 30°15'58", long 97°39'24", Travis County, Hydrologic Unit 12090205, at Southern Pacific Railroad bridge, 1.2 mi (1.9 km) south of Webberville Road, and 5.0 mi (8.0 km) east of the State Capitol in Austin.

DRAINAGE AREA.--53.5 mi² (138.6 km²).

PERIOD OF RECORD.--Periodic chemical, biochemical, and pesticide analyses: January 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL.-MF (COL./100 ML)	
NOV 03...	1000	23	757	7.6	14.5	10	5	9.4	95	7.6	0	0	
JAN 03...	1030	27	745	7.9	5.5	5	6	11.6	95	2.9	0	0	
FEB 11...	1105	1360	318	8.0	13.5	20	1600	9.6	95	13	74000	5600	
11...	1650	569	354	7.9	17.0	20	750	9.0	96	12	35000	14000	
12...	1002	152	618	8.0	13.0	10	65	9.4	92	7.8	4400	480	
14...	1025	78	724	8.0	12.0	0	20	9.7	93	7.1	6400	110	
MAR 01...	1400	29	730	8.0	16.5	10	4	9.6	101	16	0	0	
MAY 17...	1130	23	710	7.7	22.5	5	3	5.9	69	25	4	0	
JUL 11...	1115	13	606	7.1	27.5	5	2	3.6	46	8.7	20000	31	
SEP 20...	1420	37	588	7.7	28.0	15	50	6.6	85	10	22000	2800	
DATE	100 ML	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
NOV 03...	0	230	53	77	10	59	1.7	6.5	220	0	79	70	
JAN 03...	2	--	--	--	--	--	--	--	--	--	--	--	
FEB 11...	66000	140	31	49	3.3	11	.4	3.6	128	0	42	11	
11...	250000	--	--	--	--	--	--	--	--	--	--	--	
12...	600	--	--	--	--	--	--	--	--	--	--	--	
14...	380	--	--	--	--	--	--	--	--	--	--	--	
MAR 01...	0	--	--	--	--	--	--	--	--	--	--	--	
MAY 17...	9	250	47	87	8.1	46	1.3	4.2	248	0	73	50	
JUL 11...	170	--	--	--	--	--	--	--	--	--	--	--	
SEP 20...	1900	130	41	31	13	64	2.4	6.4	110	0	78	71	
DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)		
NOV 03...	2.1	10	422	19	13	2.0	.26	2.2	2.2	3.5	7.2		
JAN 03...	--	--	--	11	10	.30	.08	1.6	7.5	2.0	13		
FEB 11...	.4	9.6	193	3880	344	.54	.02	.37	12	1.4	32		
11...	--	--	--	1750	236	.66	.02	.58	5.3	1.0	29		
12...	--	--	--	150	33	1.2	.03	2.0	1.8	.90	6.8		
14...	--	--	--	35	5	1.2	.06	3.0	1.1	1.3	7.3		
MAR 01...	--	--	--	8	6	.96	.14	3.6	3.8	1.9	9.4		
MAY 17...	1.2	9.6	402	7	3	.85	.95	3.4	3.3	2.0	7.8		
JUL 11...	--	--	--	7	3	.62	.68	.44	.76	4.3	6.8		
SEP 20...	1.4	9.5	329	78	14	.13	.03	.69	2.5	5.0	10		

COLORADO RIVER BASIN

08158640 WALNUT CREEK AT SOUTHERN PACIFIC RAILROAD BRIDGE, AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

		DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)
DATE	TIME						
NOV 03...	1000	1	0	1	0	4	0
FEB 11...	1105	2	0	0	1	3	20
MAY 17...	1130	1	0	0	0	1	220
SEP 20...	1420	4	0	0	0	2	20

		DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
DATE							
NOV 03...		2	10	.2	0	0	10
FEB 11...		0	0	.0	1	0	0
MAY 17...		0	6	.0	0	0	10
SEP 20...		1	1	.0	0	0	0

DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALORIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
NOV 03...	1000	.0	.00	.00	.0	.00	.00	.00	.11	.00	.00	.00
FEB 11...	1105	.0	.00	.00	.0	.00	.01	.02	.05	.00	.00	.00
MAY 17...	1130	.0	.00	.00	.0	.00	.00	.00	.13	.00	.00	.00
SEP 20...	1420	.0	.00	.00	.0	.00	.00	.00	.17	.00	.00	.00

DATE	TIME	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 03...	.00	.00	.00	.00	.00	.00	.00	.00	0	.00	--	--	--
FEB 11...	.00	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
MAY 17...	.00	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.01	.00
SEP 20...	.00	.00	.00	.00	.00	.00	.00	.00	0	.00	.03	.01	.00

COLORADO RIVER BASIN

08158650 COLORADO RIVER BELOW AUSTIN, TX
(Low-flow partial-record station)

LOCATION.--Lat 30°12'28", Long 97°38'15", Travis County, Hydrologic Unit 12090205, at bridge on Farm Road 973, 0.3 mi (0.5 km) northeast of intersection of State Highway 71 and Farm Road 973, 8.8 mi (14.2 km) downstream from Govalle Sewage Treatment Plant outfall, and 9.6 mi (15.4 km) downstream from gaging station at Austin.

PERIOD OF RECORD.--Periodic chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: October 1974 to current year.

DISCHARGE AND WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	RIO-CHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMF-DIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. / 100 ML)
OCT 13...	1032	735	606	7.5	23.0	4	2	6.0	71	2.8	300	61
NOV 09...	1000	145	607	7.4	18.5	5	3	5.8	64	5.4	460	76
DEC 14...	1036	500	548	7.6	13.0	3	9	8.8	86	2.2	6200	48
JAN 17...	1030	3300	558	7.9	12.0	1	30	9.6	92	2.4	770	7
FEB 15...	0918	510	567	7.6	12.0	4	8	9.6	92	2.2	3300	240
MAR 07...	1405	3450	570	7.7	17.0	2	15	8.8	94	3.2	510	16
APR 12...	1357	1650	575	8.1	20.0	1	6	9.7	110	1.1	33000	2400
MAY 18...	1347	5700	489	7.6	20.5	5	5	8.8	100	.5	6800	110
JUN 14...	1035	2900	502	7.5	24.5	0	4	7.8	95	1.4	9600	190
JUL 18...	1150	295	519	7.9	28.0	2	3	8.4	108	1.2	35000	3000
AUG 16...	0915	450	535	7.5	26.5	4	3	7.0	89	1.4	34000	290
SEP 06...	1239	300	548	7.9	27.0	5	2	7.1	90	1.0	44000	360
DATE	FECAL STREPTOCOCCI (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT 13...	51	210	37	52	20	36	1.1	4.4	214	0	40	55
NOV 09...	40	--	--	--	--	--	--	--	--	--	--	--
DEC 14...	27	210	38	51	20	28	.8	3.3	209	0	36	48
JAN 17...	9	--	--	--	--	--	--	--	--	--	--	--
FEB 15...	140	230	48	54	22	28	.8	3.4	217	0	38	50
MAR 07...	5	--	--	--	--	--	--	--	--	--	--	--
APR 12...	38	210	46	49	22	31	.9	3.8	204	0	37	56
MAY 18...	1300	--	--	--	--	--	--	--	--	--	--	--
JUN 14...	1400	190	39	45	18	28	.9	3.5	180	0	33	47
JUL 18...	130	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	690	200	43	50	18	31	1.0	3.7	190	0	37	55
SEP 06...	1000	--	--	--	--	--	--	--	--	--	--	--

COLORADO RIVER BASIN

08158650 COLORADO RIVER BELOW AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SI02) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	VOL. NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA- NITRO- GEN (N) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT 13...	1.0	9.6	324		1	.23	.11	.89	1.7	1.3	3.6
NOV 09...	--	--	--	*6	2	.34	.14	1.2	2.0	1.2	5.1
DEC 14...	.4	9.2	299	15	0	.46	.07	.37	.19	.25	15
JAN 17...	--	--	--	63	4	.38	.03	.51	.44	.26	2.6
FEB 15...	.3	8.2	311	12	2	.37	.04	.37	.38	.21	4.2
MAR 07...	--	--	--	31	3	.28	.04	.66	.34	.29	7.2
APR 12...	.2	8.3	308	12	2	.36	.03	.17	.42	.20	5.1
MAY 18...	--	--	--	11	2	.29	.01	.09	--	.05	3.8
JUN 14...	.2	7.6	271	14	2	.28	.03	.21	.09	.17	4.7
JUL 18...	--	--	--	4	0	.35	.04	.16	.32	.14	3.0
AUG 16...	.2	9.7	298	6	2	.12	.03	.07	.43	.18	2.7
SEP 06...	--	--	--	4	0	.24	.04	.19	.11	.16	3.2

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)
OCT 13...	1032	2	9	2	0	3	0
FEB 15...	0918	1	100	0	0	2	10
JUN 14...	1035	2	0	1	0	2	30
AUG 16...	0915	0	0	1	0	1	20

DATE	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT 13...	0	21	.1	0	0	10
FEB 15...	0	0	.1	0	0	0
JUN 14...	1	0	.0	0	0	0
AUG 16...	4	0	.0	0	0	8

DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
OCT 13...	1032	.0	.00	.00	.0	.00	.00	.00	.10	.00	.00	.00
FEB 15...	0918	.0	.00	.00	.0	.00	.00	.00	.03	.00	.00	.00
JUN 14...	1035	.0	.00	.00	.0	.00	.00	.00	.02	.00	.00	.00
AUG 16...	0915	.0	.00	.00	.0	.00	.00	.00	.02	.00	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
OCT 13...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.01	.00
FEB 15...	.00	.00	.00	.00	.00	.00	.00	0	.00	.05	.00	.00
JUN 14...	.00	.00	.00	.00	.00	.00	.00	0	.00	.21	.01	.00
AUG 16...	.00	.00	.00	.00	.00	.00	.00	0	.00	.19	.00	.00

COLORADO RIVER BASIN

08158700 ONION CREEK NEAR DRIFTWOOD, TX
(Reconnaissance partial-record station)

LOCATION.--Lat 30°05'00", long 98°00'20", Hays County, Hydrologic Unit 12090205, at bridge at lower crossing on Farm Road 150, 3.2 mi (5.1 km) southeast of Driftwood, and 10 mi (16 km) west of Buda.

PERIOD OF RECORD.--Occasional discharge measurements: April 1958, November 1961 to current year. Occasional water-quality data: January 1974 to current year.

DISCHARGE AND WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	HARDNESS (CA+MG) (MG/L)
OCT 12...	1154	7.7	459	7.6	19.0	0	0	9.0	100	.7	240
NOV 08...	1240	50	457	8.1	16.5	0	0	9.9	104	.3	240
DEC 13...	1329	94	490	7.8	12.0	0	1	10.6	102	.2	250
JAN 20...	0919	64	500	7.8	7.0	0	0	11.5	97	.2	260
FEB 14...	1622	195	508	7.8	16.5	0	1	9.7	102	.0	260
MAR 10...	0958	74	584	7.7	15.0	0	0	9.8	100	.7	240
APR 11...	1318	31	458	8.1	21.0	0	0	9.8	113	.6	240
MAY 19...	1235	83	469	7.7	22.0	0	0	8.6	101	.1	250
JUN 16...	0915	24	449	8.0	26.0	0	0	7.7	96	.6	230
JUL 21...	0830	4.6	420	7.9	27.5	0	1	7.2	92	.5	210
AUG 15...	1017	1.2	406	7.7	27.5	0	0	6.7	86	.2	190
SEP 09...	1000	2.1	376	8.0	26.0	0	1	7.1	89	.8	190

DATE	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED PHOSPHATE (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
OCT 12...	31	68	16	7.5	.2	1.2	250	0	23	12	.3
NOV 08...	20	69	16	6.9	.2	1.1	266	0	18	10	.3
DEC 13...	24	73	17	6.9	.2	.9	278	0	23	11	.2
JAN 20...	38	78	17	7.3	.2	1.0	276	0	26	11	.1
FEB 14...	21	77	16	7.0	.2	1.0	289	0	23	10	.2
MAR 10...	19	68	17	7.8	.2	.9	269	0	26	12	.2
APR 11...	40	67	18	8.4	.2	1.1	246	0	28	13	.1
MAY 19...	30	72	16	7.1	.2	1.0	263	0	26	12	.2
JUN 16...	31	65	16	7.7	.2	1.1	240	0	30	15	.2
JUL 21...	28	57	16	8.6	.3	1.2	220	0	27	16	.2
AUG 15...	27	50	16	8.9	.3	1.3	200	0	27	14	.2
SEP 09...	30	48	16	8.1	.3	1.4	190	0	27	17	.2

COLORADO RIVER BASIN

08158700 ONION CREEK NEAR DRIFTWOOD, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	VOL. NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT 12...	8.9	260	0	0	.01	.00	.00	.10	.00	.6
NOV 08...	8.1	261	0	0	.04	.00	.00	.16	.01	.8
DEC 13...	8.5	278	7	1	.19	.00	.01	.02	.02	2.5
JAN 20...	7.6	284	1	0	.23	.00	.00	.04	.01	2.8
FEB 14...	8.1	285	1	0	.25	.00	.01	.06	.01	3.8
MAR 10...	7.7	272	0	0	.13	.00	.00	.02	.00	7.1
APR 11...	8.4	265	1	0	.04	.00	.01	.12	.00	5.2
MAY 19...	7.5	271	0	0	.17	.00	.00	--	.00	1.5
JUN 16...	8.8	262	0	0	.04	.01	.01	.00	.04	1.4
JUL 21...	11	245	0	0	.01	.01	.00	.10	.02	2.7
AUG 15...	13	229	0	0	.01	.00	.01	.39	.03	1.5
SEP 09...	12	223	1	0	.03	.00	.01	.19	.00	2.1

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)
OCT 12...	1154	0	0	14	0	0	0
FEB 14...	1622	0	100	0	0	0	0
JUN 16...	0915	0	0	0	0	0	30
AUG 15...	1017	0	0	1	0	0	10

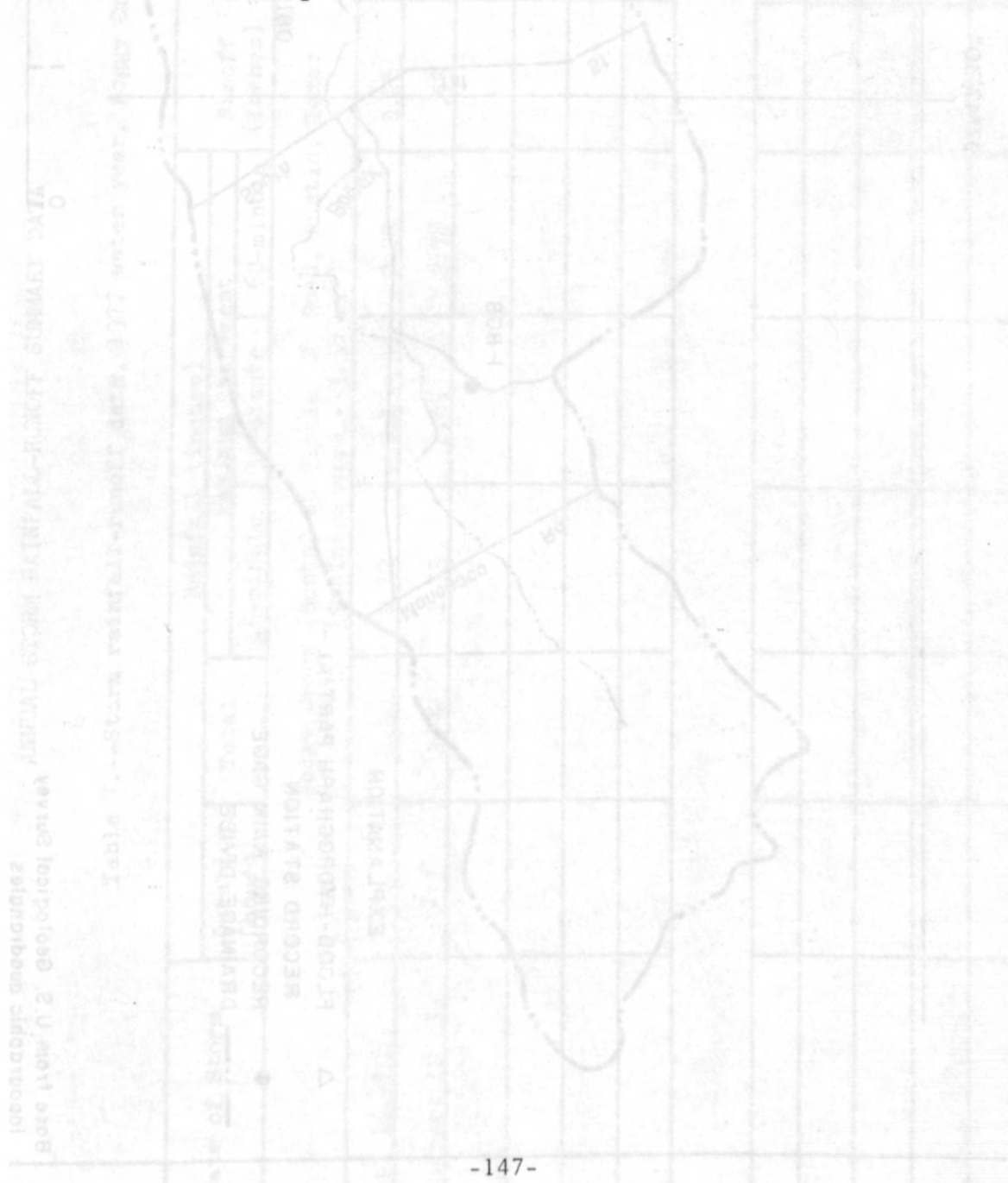
DATE	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT 12...	3	20	.0	0	0	10
FEB 14...	0	10	.1	1	0	0
JUN 16...	0	8	.0	0	0	0
AUG 15...	2	0	.0	0	0	10

BOGGY CREEK (SOUTH) DRAINAGE BASIN

The locations of data-collection sites in the Boggy Creek (south) drainage basin are shown in figure 13.

A summary of storm rainfall and runoff is shown in table 7.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.



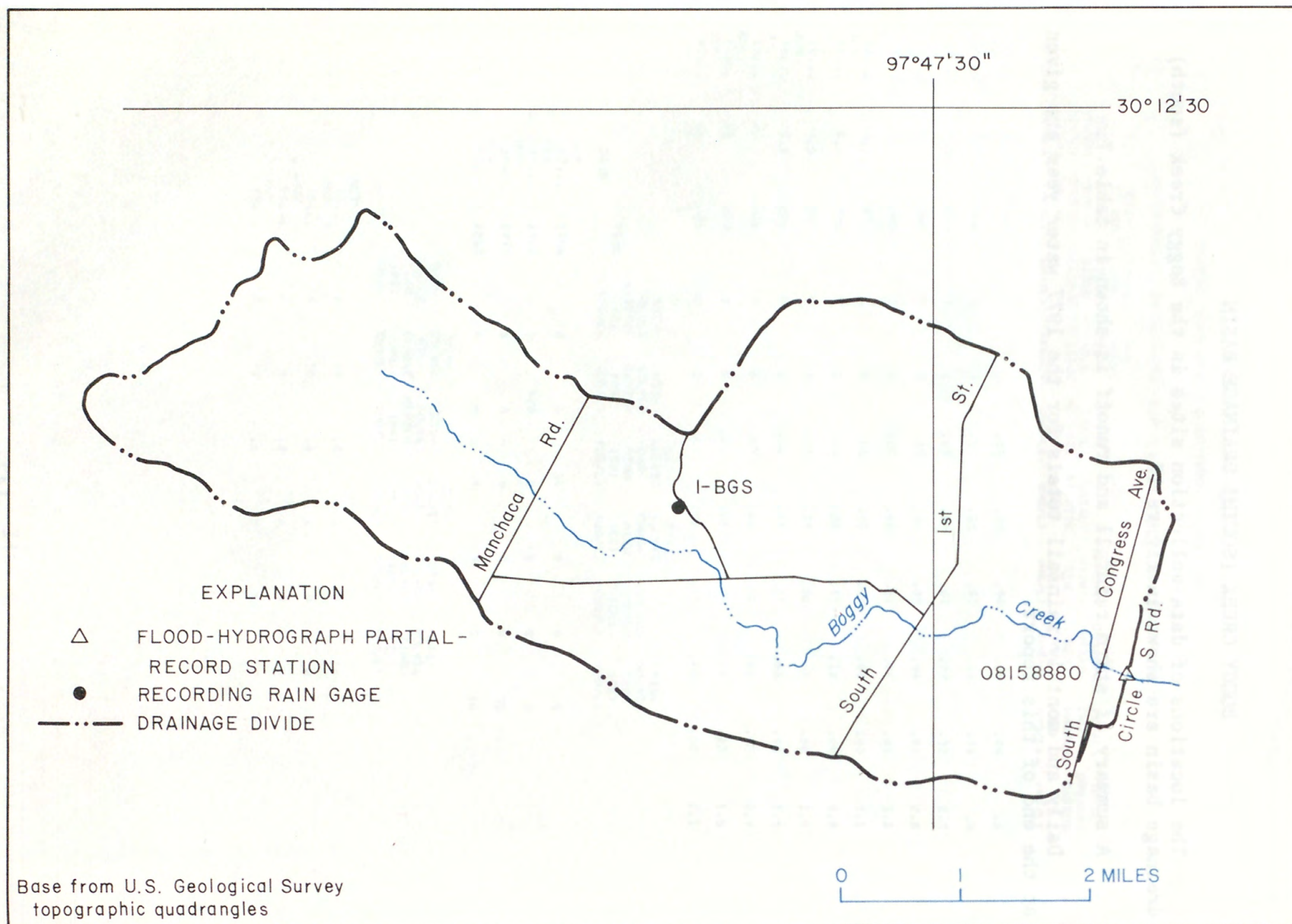


FIGURE 13.-Locations of data-collection sites in the Boggy Creek (south) drainage basin

GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 7.--Storm rainfall-runoff data, 1977 water year, Boggy Creek (South)

[illegible]

08158880 Boggy Creek (south) at Circle S Road, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°10'50", long 97°46'55", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Circle S Road and 7.0 mi south of the State Capitol Building in Austin.

DRAINAGE AREA.--3.58 mi².

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

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 591.66 ft above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,670 ft³/s Sept. 19, 1977 (gage height, 7.72 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,670 ft³/s Sept. 19 (gage height, 7.72 ft).

STA. NO. 08158880					STORM RAINFALL AND RUNOFF RECORD					1977 WATER YEAR				
ROGGY CREEK (SOUTH) AT CIRCLE S ROAD, AUSTIN, TEXAS					STORM OF APRIL 16, 1977					ACCUM.	DISCHARGE	ACCUM.		
DATE & TIME		G A G F			N U M B E R			WEIGHTED	PRECIP.	IN	FT ³ /S	RUNOFF		
		I R G S						IN.				IN.		
APR. 16														
0000		0.0						0.0		0.5		0.0005		
0500		0.03						0.03		0.5		0.0011		
0515		0.09						0.09		0.5		0.0011		
0520		0.16						0.16		0.5		0.0012		
0525		0.19						0.19		0.5		0.0012		
0545		0.23						0.23		1.0		0.0014		
0630		0.37						0.37		10.0		0.0074		
0830		0.59						0.59		22.0		0.0177		
0840		0.63						0.63		30.0		0.0199		
0850		0.68						0.68		38.0		0.0226		
0900		0.73						0.73		46.0		0.0259		
0910		0.77						0.77		54.0		0.0298		
0920		0.83						0.83		63.0		0.0344		
0930		0.88						0.88		77.0		0.0413		
0945		0.91						0.91		84.0		0.0504		
1000		0.95						0.95		87.0		0.0598		
1015		0.99						0.99		89.0		0.0695		
1030		1.02						1.02		90.0		0.0792		
1045		1.14						1.14		97.0		0.0897		
1100		1.18						1.18		126.0		0.1011		
1110		1.20						1.20		138.0		0.1160		
1130		1.20						1.20		126.0		0.1387		
1200		1.20						1.20		94.0		0.1591		
1230		1.20						1.20		72.0		0.1746		
1300		1.20						1.20		63.0		0.1951		
1400		1.20						1.20		46.0		0.2250		
1600		1.20						1.20		20.0		0.2466		
1900		1.20						1.20		3.0		0.2518		
2400		1.20						1.20		0.5		0.2523		

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08158880												
BUGGY CREEK (SOUTH) AT CIRCLE S ROAD, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF SEPTEMBER 19, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	G A G E N U M B E R									PRECIP.		
	IRGS									IN.	FT ³ /S	IN.
SEPT. 19												
0000	0.0									0.0	0.1	0.0003
1545	0.0									0.0	0.1	0.0007
1550	0.26									0.26	0.1	0.0007
1555	0.66									0.66	0.1	0.0007
1600	1.27									1.27	46.0	0.0023
1605	1.81									1.81	150.0	0.0078
1610	2.39									2.39	338.0	0.0200
1615	2.64									2.64	773.0	0.0478
1620	2.76									2.76	1470.0	0.1009
1625	2.78									2.78	1670.0	0.1611
1630	2.78									2.78	1300.0	0.2080
1635	2.78									2.78	1050.0	0.2459
1640	2.78									2.78	852.0	0.2920
1650	2.78									2.78	530.0	0.3302
1700	2.78									2.78	376.0	0.3641
1715	2.79									2.79	329.0	0.3997
1730	2.83									2.83	283.0	0.4303
1745	2.87									2.87	197.0	0.4516
1800	2.91									2.91	135.0	0.4736
1830	2.92									2.92	72.0	0.4891
1900	2.92									2.92	43.0	0.5217
2200	2.92									2.92	10.0	0.5304
2300	2.92									2.92	3.0	0.5317
2400	2.92									2.92	1.0	0.5319

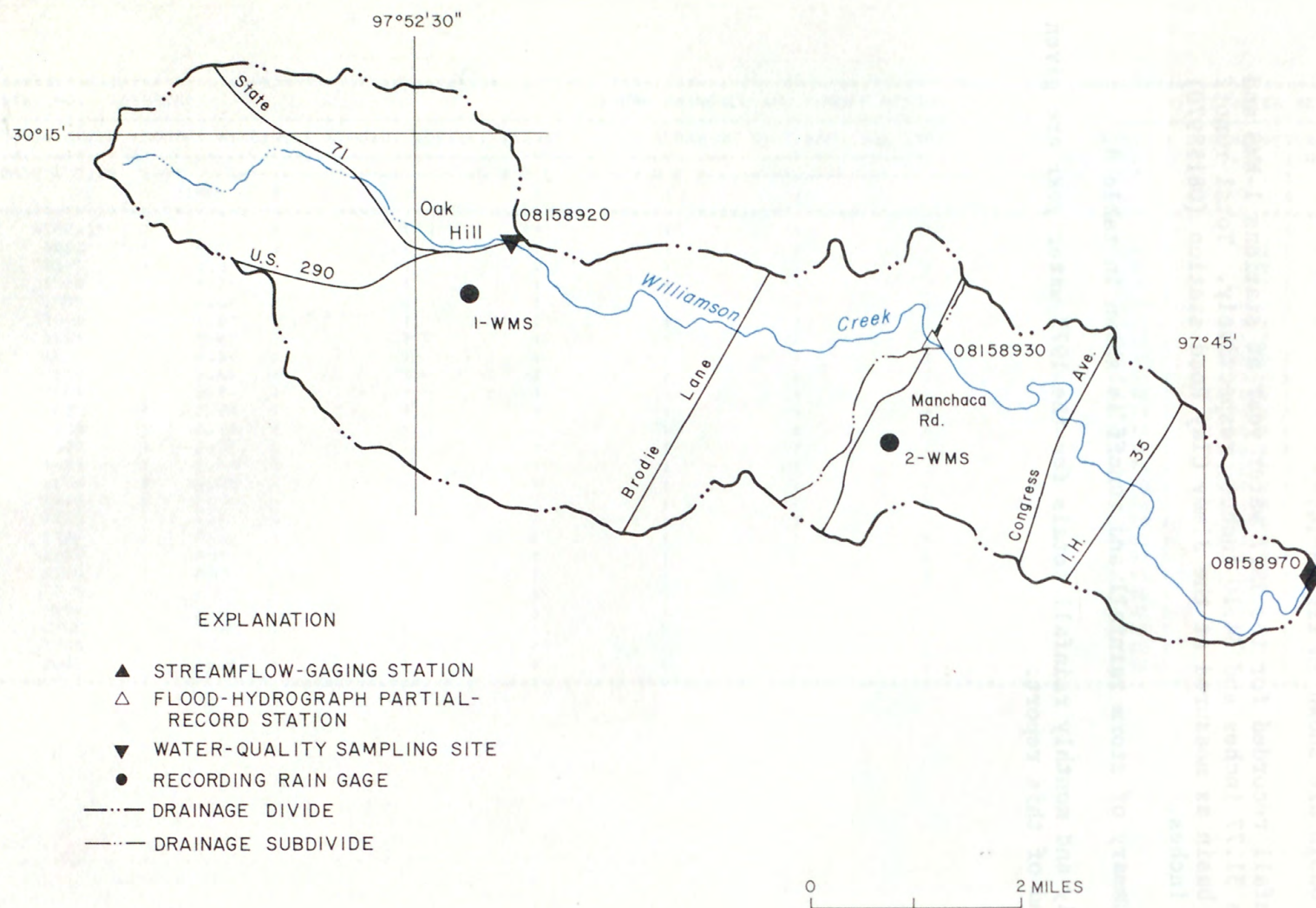
WILLIAMSON CREEK DRAINAGE BASIN

The locations of data-collection sites in the Williamson Creek drainage basin are shown in figure 14.

Rainfall recorded for the 1977 water year at stations 1-WMS and 2-WMS was 31.77 inches and 34.10 inches, respectively. Total runoff from the basin as measured at the Jimmy Clay Road station (08158970) was 3.63 inches.

A summary of storm rainfall and runoff is shown in table 8.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.



Base from U.S. Geological Survey
topographic quadrangles

FIGURE 14.-Locations of data-collection sites in the Williamson Creek drainage basin

TX-35
6/69

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 8.--Storm rainfall-runoff data, 1977 water year, Williamson Creek

Date of Storm	Rainfall (inches)					Runoff (inches)	Ratio runoff to rainfall	Maximum discharge (ft ³ /s)
	Duration (hours)	Total	Maximum increment					
			15-minute	30-minute	60-minute			
Williamson Creek at Manchaca Road, Austin, Texas (Drainage area.--19.0 mi ²)								
April 15, 1977	13.2	2.49	0.38	0.51	0.64	0.25	0.10	764
April 16, 1977	12.8	1.19	.11	.20	.34	.29	.25	551
Williamson Creek at Jimmy Clay Road, Austin, Texas (Drainage area.--27.6 mi ²)								
April 15-16, 1977	37.2	3.61	.35	.51	.64	.64	.18	683

COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAK HILL, TX
(Reconnaissance partial-record station)

LOCATION.--Lat 30°14'06", Long 97°51'36", Travis County, Hydrologic Unit 12090205, at U.S. Highway 290 road crossing in Oak Hill and 7.7 mi (12.4 km) southwest of the State Capitol at Austin.

PERIOD OF RECORD.--Occasional discharge measurements and water-quality data: January 1974 to current year.

DISCHARGE AND WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	RIO-CHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	HARDNESS (CA+MG) (MG/L)
NOV 08...	1050	7.4	679	8.0	15.0	2	0	11.8	120	.6	340
DEC 13...	1536	7.7	611	8.0	13.0	1	0	11.8	116	.4	320
JAN 20...	1112	2.1	655	8.0	8.5	1	0	14.6	129	.8	330
FEB 14...	1840	11	624	7.7	15.5	1	1	8.7	90	.5	320
MAR 03...	1015	12	591	7.3	15.0	3	2	9.0	92	2.5	290
APR 11...	1122	.17	650	8.2	19.5	1	0	11.7	131	.3	330
MAY 15...	1120	43	325	7.8	16.5	20	40	8.1	85	2.9	160
MAY 19...	1030	1.1	655	7.8	22.0	1	0	9.1	107	.6	340

DATE	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
NOV 08...	41	93	26	18	.4	1.6	364	0	37	29	.4
DEC 13...	34	86	25	11	.3	.9	346	0	27	20	.2
JAN 20...	42	91	26	14	.3	1.2	356	0	34	25	.1
FEB 14...	30	85	25	11	.3	1.0	348	0	30	19	.2
MAR 03...	24	76	24	12	.3	1.5	322	0	29	19	.1
APR 11...	29	86	27	18	.4	.5	362	0	31	32	.2
MAY 15...	16	44	13	5.2	.2	2.2	180	0	13	8.8	.1
MAY 19...	32	93	25	13	.3	1.4	370	0	30	20	.2

DATE	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NON-FILTERABLE RESIDUE (MG/L)	VOL. NON-FILTERABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
NOV 08...	4.8	389	0	0	.08	.03	.02	.23	.38	2.4
DEC 13...	6.5	347	0	0	.33	.02	.04	.16	.13	3.6
JAN 20...	3.4	370	0	0	.38	.03	.04	.19	.28	1.4
FEB 14...	6.8	350	1	0	.31	.02	.05	.21	.12	2.6
MAR 03...	4.5	325	4	1	.31	.03	.08	.23	.33	3.0
APR 11...	6.6	380	1	1	.01	.00	.02	.25	.37	4.7
MAY 15...	5.9	181	57	6	.25	.02	.08	.82	.24	7.2
MAY 19...	6.9	372	0	0	.58	.05	.01	--	.34	2.1

COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAK HILL, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)
DEC 13...	1536	1	0	0	10	0	60
FEB 14...	1840	0	0	0	0	9	10
APR 15...	1120	1	0	0	7	0	20

DATE	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
DEC 13...	0	20	.0	0	0	20
FEB 14...	0	20	.1	0	0	0
APR 15...	0	10	.0	0	0	0

08158930 Williamson Creek at Manchaca Road, Austin, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°13'16", long 97°47'36", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Manchaca Road, 0.7 mi south of the intersection of Ben White Boulevard and Manchaca Road, and 4.9 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--19.0 mi².

PERIOD OF RECORD.--August 1975 to current year. Periodic measurements only, May to August 1975.

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 618.39 ft above mean sea level.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,900 ft³/s May 23, 1975 (gage height, 12.97 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 764 ft³/s Apr. 15 (gage height, 5.75 ft).

STA. NO. 08152930		STORM RAINFALL AND RUNOFF RECORD						1977 WATER YEAR		
WILLIAMSON CREEK AT MANHACA ROAD, AUSTIN, TEXAS						STORM OF APRIL 15, 1977		ACCUM.	DISCHARGE	ACCUM.
DATE & TIME						G A G E N U M B E R		WEIGHTED PRECIP.	IN	RUNOFF
								IN.	FT ³ /S	IN.
APR. 15										
0000	0.0	0.0						0.0	0.3	0.0001
0045	0.0	0.0						0.0	0.3	0.0001
0450	0.01	0.0						0.01	0.3	0.0001
0500	0.11	0.05						0.09	0.3	0.0001
0510	0.28	0.16						0.25	0.4	0.0001
0520	0.43	0.33						0.40	3.4	0.0002
0530	0.62	0.53						0.60	9.3	0.0003
0540	0.63	0.60						0.62	9.4	0.0004
0550	0.64	0.62						0.63	35.0	0.0009
0600	0.64	0.66						0.65	85.0	0.0021
0610	0.64	0.67						0.65	106.0	0.0031
0615	0.64	0.67						0.65	116.0	0.0039
0620	0.65	0.67						0.66	104.0	0.0050
0630	0.70	0.71						0.70	81.0	0.0061
0640	0.75	0.73						0.74	74.0	0.0076
0700	0.76	0.79						0.77	63.0	0.0093
0720	0.76	0.79						0.77	48.0	0.0113
0800	0.85	0.80						0.84	32.0	0.0131
0845	0.90	0.81						0.88	21.0	0.0140
0900	1.05	0.89						1.01	20.0	0.0150
1000	1.15	0.99						1.11	21.0	0.0163
1030	1.20	1.00						1.15	29.0	0.0175
1100	1.21	1.01						1.16	23.0	0.0189
1200	1.21	1.02						1.16	15.0	0.0201
1300	1.28	1.05						1.22	9.5	0.0209
1400	1.44	1.15						1.36	9.1	0.0214
1430	1.72	1.33						1.61	12.0	0.0217
1440	1.86	1.44						1.75	19.0	0.0220
1450	1.97	1.54						1.85	24.0	0.0223
1500	2.05	1.62						1.93	29.0	0.0227
1510	2.07	1.64						1.95	62.0	0.0234
1515	2.07	1.65						1.96	78.0	0.0239
1520	2.08	1.65						1.96	104.0	0.0246
1525	2.10	1.65						1.98	131.0	0.0255
1530	2.12	1.66						2.00	157.0	0.0266
1535	2.14	1.67						2.01	166.0	0.0277
1540	2.21	1.75						2.09	174.0	0.0289
1545	2.40	1.78						2.23	183.0	0.0301
1550	2.52	1.79						2.32	181.0	0.0313

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 08158930												
WILLIAMSON CREEK AT MANCHACA ROAD, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	1PM	2PM	GAGE	NUMBER						PRECIP.	FT ³ /S	IN.
										IN.		IN.
APR. 15												
1555	2.57	1.84								2.37	179.0	0.0326
1600	2.58	1.92								2.40	177.0	0.0338
1605	2.58	1.97								2.42	177.0	0.0350
1610	2.58	2.04								2.43	177.0	0.0368
1620	2.59	2.11								2.46	208.0	0.0396
1630	2.60	2.12								2.47	270.0	0.0442
1645	2.60	2.13								2.47	369.0	0.0517
1700	2.61	2.13								2.48	315.0	0.0592
1720	2.61	2.13								2.48	253.0	0.0644
1730	2.61	2.13								2.48	255.0	0.0687
1745	2.61	2.13								2.48	398.0	0.0768
1800	2.62	2.14								2.49	600.0	0.0890
1815	2.62	2.14								2.49	725.0	0.1038
1830	2.62	2.14								2.49	764.0	0.1194
1845	2.62	2.14								2.49	740.0	0.1345
1900	2.62	2.14								2.49	706.0	0.1561
1930	2.62	2.14								2.49	595.0	0.1803
2000	2.62	2.14								2.49	447.0	0.1986
2030	2.62	2.14								2.49	335.0	0.2122
2100	2.62	2.14								2.49	249.0	0.2224
2130	2.62	2.14								2.49	177.0	0.2296
2200	2.62	2.14								2.49	135.0	0.2379
2300	2.62	2.14								2.49	85.0	0.2448
2400	2.62	2.14								2.49	60.0	0.2472

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
WILLIAMSON CREEK AT PANCHADA ROAD, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 16, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	THRS	PHRS	GAGE	NUMBER						PRECIP.	FT ³ /S	IN.
										IN.		IN.
APR. 16												
0000	0.0	0.0								0.0	60.0	0.0102
0410	0.0	0.0								0.0	34.0	0.0164
0430	0.01	0.0								0.01	33.0	0.0176
0500	0.05	0.0								0.04	33.0	0.0185
0510	0.11	0.09								0.10	32.0	0.0189
0520	0.13	0.17								0.14	32.0	0.0193
0530	0.17	0.23								0.19	33.0	0.0199
0545	0.20	0.27								0.22	35.0	0.0206
0600	0.22	0.29								0.24	43.0	0.0215
0615	0.26	0.35								0.28	52.0	0.0225
0630	0.30	0.40								0.33	50.0	0.0236
0645	0.33	0.44								0.36	47.0	0.0245
0700	0.35	0.46								0.38	54.0	0.0256
0715	0.40	0.49								0.42	65.0	0.0269
0730	0.43	0.51								0.45	65.0	0.0283
0745	0.45	0.54								0.47	59.0	0.0295
0800	0.47	0.55								0.49	59.0	0.0307
0815	0.49	0.57								0.51	59.0	0.0319
0830	0.53	0.62								0.55	57.0	0.0330
0845	0.60	0.68								0.62	57.0	0.0342
0900	0.68	0.76								0.70	63.0	0.0353
0910	0.72	0.82								0.75	78.0	0.0363
0920	0.77	0.84								0.80	101.0	0.0377
0930	0.82	0.96								0.86	132.0	0.0395
0940	0.87	0.98								0.90	171.0	0.0418
0950	0.88	1.01								0.92	212.0	0.0447
1000	0.90	1.07								0.95	255.0	0.0482
1010	0.93	1.10								0.98	274.0	0.0519
1020	0.96	1.12								1.00	299.0	0.0560
1030	1.02	1.14								1.05	332.0	0.0605
1040	1.07	1.19								1.10	336.0	0.0650
1050	1.11	1.27								1.15	338.0	0.0696
1100	1.12	1.30								1.17	338.0	0.0788
1130	1.13	1.31								1.18	413.0	0.0957
1200	1.13	1.31								1.18	467.0	0.1147
1230	1.13	1.32								1.18	500.0	0.1351
1300	1.13	1.32								1.18	533.0	0.1514
1315	1.13	1.32								1.18	551.0	0.1626
1330	1.13	1.32								1.18	533.0	0.1789

COLORADO RIVER BASIN

08158970 WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TX

LOCATION.--Lat 30°11'21", long 97°43'56", Travis County, Hydrologic Unit 12090205, at Jimmy Clay Road, 0.5 mi (0.8 km) southeast of the Intersection of Jimmy Clay and Nuckles Crossing Roads, and 5.9 mi (9.5 km) south of the State Capitol in Austin.

DRAINAGE AREA.--27.6 mi² (71.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1974 to September 1975 (periodic discharge measurements only), September 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 497.18 ft (151.540 m) above mean sea level, from city of Austin bench mark.

REMARKS.--Water-discharge records good above 50 ft³/s (1.42 m³/s) and fair below. No known regulation or diversion above station. There are two recording rain gages located in the watershed. The station is part of a hydrologic research project to study the rainfall-runoff relationships for the Austin urban-rural areas.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s (286 m³/s) Nov. 23, 1974, gage height, 15.2 ft (4.63 m), from floodmark, by slope-area measurement; minimum not determined.

EXTREMES OUTSIDE PERIOD OF RECORD.--The maximum flood since 1869 occurred on Sept. 9 or 10, 1921, stage and discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 891 ft³/s (25.2 m³/s) Sept. 19, gage height, 6.36 ft (1.939 m), from floodmark, no peak above base of 950 ft³/s (26.9 m³/s); minimum, 0.03 ft³/s (0.001 m³/s) Sept. 16, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	5.0	2.7	4.0	4.6	7.1	1.7	7.1	13	.54	.10	.17
2	.54	4.3	2.7	5.2	5.4	7.4	1.9	6.7	2.7	.38	.10	.10
3	.46	2.8	2.7	5.1	8.1	39	1.8	6.9	2.0	.38	.10	.08
4	16	2.5	2.7	4.4	5.1	16	2.6	6.8	1.7	.38	.06	.10
5	34	2.4	11	3.9	4.4	5.9	1.7	6.3	1.7	.38	.06	.10
6	2.7	2.4	16	4.5	4.2	5.0	1.5	6.3	1.6	.38	.06	.08
7	1.8	2.7	5.6	4.2	4.4	4.7	1.5	6.1	1.4	.38	.08	.08
8	2.2	2.5	4.4	4.0	4.9	4.6	1.7	6.0	1.2	.38	.10	.06
9	1.6	2.6	4.0	4.9	5.1	5.1	1.7	5.8	1.2	.38	.08	.06
10	1.3	2.6	11	4.2	29	5.1	1.6	6.6	1.2	.38	.08	.06
11	1.3	2.6	46	4.0	147	5.3	1.6	6.1	1.2	.38	.08	.06
12	1.2	2.4	13	5.3	42	5.3	1.6	5.3	1.2	.32	.08	.06
13	1.0	7.3	9.6	26	16	5.1	22	5.2	1.0	.32	.10	4.4
14	1.3	4.1	7.6	9.0	11	6.3	16	5.4	.93	.21	.12	6.7
15	21	2.5	6.6	5.2	8.3	6.2	175	5.1	1.9	.21	.15	.10
16	22	2.3	5.3	4.3	7.3	6.0	254	5.0	1.4	.24	.16	.03
17	3.6	4.0	5.1	4.3	6.4	5.6	49	4.9	1.0	.21	.17	.04
18	2.4	2.8	5.0	4.3	6.0	5.0	22	4.9	.82	.21	.12	.04
19	20	2.7	5.3	4.1	5.2	4.5	14	5.0	.72	.21	.11	90
20	1.6	6.9	5.0	4.2	5.0	3.9	154	5.2	.63	.23	.13	30
21	3.2	3.9	4.4	4.1	5.1	4.0	40	16	.63	.21	.13	.32
22	2.4	3.3	4.4	14	5.3	3.6	21	4.6	2.0	.17	.13	.21
23	2.7	3.1	4.3	19	5.1	3.4	13	2.8	5.6	.16	.16	.10
24	10	3.2	4.0	5.3	4.6	3.5	10	2.4	7.4	.17	.20	.03
25	5.6	4.4	4.1	4.2	5.3	3.3	8.9	2.2	1.6	.17	.21	.04
26	3.2	8.5	3.9	4.0	5.3	4.5	8.1	2.0	1.0	.17	.19	.13
27	2.4	4.0	3.8	3.8	6.0	13	7.6	2.0	.72	.17	.19	.26
28	4.1	3.9	3.9	3.5	7.5	7.1	7.1	1.9	.63	.21	.29	.27
29	155	3.5	3.7	3.3	---	2.9	7.1	1.9	.93	.17	.34	.40
30	18	2.7	3.9	5.9	---	2.1	7.4	1.9	1.0	.17	.39	.56
31	6.6	---	4.0	6.9	---	1.9	---	2.5	---	.12	.29	---
TOTAL	355.83	132.2	215.7	189.1	373.6	202.4	857.1	156.9	60.01	8.39	4.56	134.64
MEAN	11.5	4.41	6.96	6.10	13.3	6.53	28.6	5.06	2.00	.27	.15	4.49
MAX	155	27	46	26	147	39	254	16	13	.54	.39	90
MIN	.46	2.3	2.7	3.3	4.2	1.9	1.5	1.9	.63	.12	.06	.03
CFSM	.42	.16	.25	.22	.48	.24	1.04	.18	.07	.01	.005	.16
IN.	.48	.18	.29	.25	.50	.27	1.16	.21	.08	.01	.01	.18
AC-FT	706	262	428	375	741	401	1700	311	119	17	9.0	267
(††)	7.44	2.16	1.96	2.60	2.38	1.98	5.96	2.40	1.29	.04	.14	4.60
CAL YR 1976	TOTAL	3655.84	MEAN 9.99	MAX 902	MIN .38	CFSM .36	IN 4.93	AC-FT 7250	†† 43.47			
WTR YR 1977	TOTAL	2690.43	MEAN 7.37	MAX 254	MIN .03	CFSM .27	IN 3.63	AC-FT 5340	†† 32.95			

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

NOTE.--No gage-height record Sept. 19-24.

COLORADO RIVER BASIN

08158970 WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD--Periodic chemical, biochemical, and pesticide analyses: January 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

		INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	BIO- CHEM- ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM 7UM-MF (COL./ 100 ML)
DATE	TIME			(UNITS)								
NOV 02...	1325	5.3	596	7.6	15.5	5	4	5.0	52	.3	1700	680
JAN 03...	1345	4.4	660	7.8	8.0	5	2	12.4	108	.9	1400	36
MAR 01...	0915	6.6	667	7.7	11.0	5	1	10.0	93	1.8	2200	200
APR 15...	1045	124	284	7.7	17.5	20	95	8.0	86	5.4	120000	8800
15...	1530	112	205	8.0	16.5	30	750	8.2	86	6.5	220000	36000
18...	1225	17	553	7.7	19.0	10	10	8.2	91	1.8	10000	600
MAY 16...	1300	5.0	666	7.7	22.0	0	3	7.4	87	1.1	14000	480
JUL 12...	1115	.32	730	8.2	27.0	5	1	8.1	103	.9	17000	580
SEP 20...	1005	5.1	370	7.6	22.5	20	250	6.8	80	3.1	410000	56000
DATE	FFCAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML)	HARD- NESS (CA+MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	SODIUM AD- SORP- TION RATIO	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
NOV 02...	220	260	37	92	8.5	22	.6	2.8	278	0	44	27
JAN 03...	92	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	120	--	--	--	--	--	--	--	--	--	--	--
APR 15...	53000	--	--	--	--	--	--	--	--	--	--	--
15...	300000	91	16	33	2.1	5.4	.2	2.7	92	0	18	5.8
18...	1800	--	--	--	--	--	--	--	--	--	--	--
MAY 16...	620	290	27	98	10	29	.7	2.0	316	0	42	34
JUL 12...	520	--	--	--	--	--	--	--	--	--	--	--
SEP 20...	43000	150	39	51	4.5	11	.4	4.0	130	0	50	13
DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTITU- ENTS) (MG/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	VOL. NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	
NOV 02...	1.2	12	347	6	2	.48	.02	.40	.27	.07	4.4	
JAN 03...	--	--	--	2	2	.11	.01	.13	.34	.08	3.4	
MAR 01...	--	--	--	1	1	.41	.03	.31	.33	.06	4.5	
APR 15...	--	--	--	236	4	.34	.02	.11	1.3	.20	11	
15...	.1	5.5	118	1880	210	.44	.03	.13	3.8	.61	58	
18...	--	--	--	23	4	.48	.01	.12	.44	.07	3.2	
MAY 16...	.5	11	383	7	1	.59	.06	.30	.57	.02	2.4	
JUL 12...	--	--	--	6	2	.97	.13	.15	.28	.02	3.7	
SEP 20...	.4	4.1	207	355	47	.69	.01	.12	.66	.34	10	

COLORADO RIVER BASIN

08158970 WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TX.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)
NOV 02...	1325	3	100	0	0	0	0
APR 15...	1530	2	0	0	5	2	10
MAY 16...	1300	2	100	0	0	0	0
SEP 20...	1005	2	0	0	10	1	20

DATE	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
NOV 02...	0	150	.3	0	0	0
APR 15...	0	10	.0	0	0	10
MAY 16...	0	110	.0	0	0	10
SEP 20...	0	30	.0	0	0	10

DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
NOV 02...	1325	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
APR 15...	1530	.0	.00	.00	.0	.01	.01	.04	.13	.00	.00	.00
MAY 16...	1300	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
SEP 20...	1005	.0	.00	.00	.0	.00	.00	.01	.47	.00	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV 02...	.00	.00	.00	.00	.00	.00	.00	0	.00	.26	.02	.00
APR 15...	.00	.00	.00	.00	.00	.00	.00	0	.00	.03	.05	.01
MAY 16...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
SEP 20...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.01	.00

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 15-16, 1977										ACCUM.	DISCHARGE	ACCUM.
G A G F N U M B E R										WEIGHTED	IN	RUNOFF
DATE & TIME	1WMS	2WMS								PRECIP.	FT ³ /S	IN.
										IN.		IN.
APR. 15												
0000	0.0	0.0								0.0	7.4	0.0010
0445	0.0	0.0								0.0	6.6	0.0019
0500	0.11	0.05								0.08	6.6	0.0020
0515	0.36	0.25								0.30	6.6	0.0021
0530	0.62	0.53								0.57	6.6	0.0022
0600	0.64	0.66								0.65	16.0	0.0027
0630	0.70	0.71								0.70	36.0	0.0037
0700	0.76	0.79								0.77	59.0	0.0054
0730	0.77	0.79								0.78	45.0	0.0066
0800	0.85	0.80								0.82	58.0	0.0082
0830	0.88	0.81								0.84	86.0	0.0101
0845	0.90	0.81								0.85	93.0	0.0114
0900	1.05	0.89								0.97	97.0	0.0134
0930	1.12	0.95								1.03	97.0	0.0161
1000	1.15	0.99								1.07	120.0	0.0195
1030	1.20	1.00								1.10	130.0	0.0231
1100	1.21	1.01								1.11	118.0	0.0281
1200	1.21	1.02								1.11	93.0	0.0333
1300	1.28	1.05								1.16	76.0	0.0365
1330	1.35	1.12								1.23	69.0	0.0385
1400	1.44	1.15								1.29	64.0	0.0398
1415	1.60	1.19								1.39	63.0	0.0406
1425	1.68	1.25								1.46	64.0	0.0410
1430	1.72	1.33								1.52	64.0	0.0413
1435	1.82	1.40								1.61	64.0	0.0418
1445	1.90	1.47								1.68	65.0	0.0424
1455	2.02	1.59								1.80	72.0	0.0432
1510	2.07	1.64								1.85	77.0	0.0445
1530	2.12	1.66								1.89	112.0	0.0460
1540	2.21	1.75								1.98	144.0	0.0470
1545	2.40	1.78								2.09	160.0	0.0478
1550	2.52	1.79								2.15	163.0	0.0489
1600	2.58	1.92								2.25	168.0	0.0509
1615	2.54	2.09								2.34	170.0	0.0545
1645	2.60	2.13								2.36	257.0	0.0689
1815	2.62	2.14								2.38	468.0	0.0952
1845	2.62	2.14								2.38	506.0	0.1094
1915	2.62	2.14								2.38	487.0	0.1231
1945	2.62	2.14								2.38	420.0	0.1349

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STATION NO. 0815A970												
WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15-16, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	G A G E		N U M B E R		P R E C I P .		F T ³ /S		I N .		I N .	
	1 WMS	2 WMS										
APR. 15												
2015	2.62	2.14							2.38	379.0	0.1455	
2045	2.62	2.14							2.38	476.0	0.1589	
2115	2.62	2.14							2.38	559.0	0.1706	
2130	2.62	2.14							2.38	559.0	0.1824	
2200	2.62	2.14							2.38	503.0	0.1965	
2230	2.62	2.14							2.38	411.0	0.2081	
2300	2.62	2.14							2.38	332.0	0.2220	
2400	2.62	2.14							2.38	218.0	0.2312	
APR. 16												
0000	2.62	2.14							2.38	218.0	0.2312	
0100	2.62	2.14							2.38	163.0	0.2434	
0200	2.62	2.14							2.38	132.0	0.2508	
0300	2.62	2.14							2.38	111.0	0.2571	
0400	2.62	2.14							2.38	95.0	0.2624	
0500	2.67	2.14							2.40	84.0	0.2652	
0510	2.73	2.23							2.48	83.0	0.2659	
0520	2.75	2.31							2.53	82.0	0.2667	
0530	2.79	2.37							2.58	81.0	0.2676	
0545	2.82	2.41							2.61	79.0	0.2688	
0600	2.84	2.43							2.63	79.0	0.2700	
0620	2.90	2.51							2.70	86.0	0.2717	
0640	2.94	2.57							2.75	93.0	0.2734	
0700	2.97	2.60							2.78	99.0	0.2757	
0730	3.05	2.65							2.85	114.0	0.2789	
0800	3.09	2.69							2.89	122.0	0.2823	
0830	3.15	2.76							2.95	130.0	0.2851	
0845	3.22	2.82							3.02	135.0	0.2870	
0900	3.30	2.90							3.10	145.0	0.2890	
0915	3.36	2.99							3.17	157.0	0.2917	
0930	3.44	3.10							3.27	176.0	0.2949	
1000	3.52	3.21							3.36	244.0	0.3001	
1015	3.57	3.25							3.41	290.0	0.3041	
1030	3.64	3.28							3.46	328.0	0.3080	
1040	3.69	3.33							3.51	352.0	0.3113	
1050	3.73	3.41							3.57	374.0	0.3148	
1100	3.74	3.44							3.59	395.0	0.3221	
1130	3.75	3.45							3.60	500.0	0.3362	
1200	3.75	3.45							3.60	607.0	0.3532	
1230	3.75	3.46							3.60	661.0	0.3718	
1300	3.75	3.46							3.60	683.0	0.3909	

STORM RAINFALL AND RUNOFF RECORD										
STA. NO. 08158970				1977 WATER YEAR						
WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TEXAS				STORM OF APRIL 15-16, 1977				ACCUM.	DISCHARGE	ACCUM.
DATE & TIME				G A G E N U M B E R				WEIGHTED	IN	RUNOFF
								PRECIP.		
								IN.	FT ³ /S	IN.
APR. 16										
1330	3.75	3.46						3.60	638.0	0.4089
1400	3.75	3.46						3.60	574.0	0.4330
1500	3.75	3.46						3.60	500.0	0.4611
1600	3.75	3.46						3.60	463.0	0.5001
1800	3.76	3.47						3.61	261.0	0.5294
2000	3.76	3.47						3.61	172.0	0.5584
2400	3.76	3.47						3.61	96.0	0.5732
APR. 17										
0000	3.76	3.47						3.61	96.0	0.5732
0300	3.76	3.47						3.61	74.0	0.5897
0600	3.76	3.47						3.61	58.0	0.6044
1200	3.76	3.47						3.61	43.0	0.6188
1800	3.76	3.47						3.61	35.0	0.6306
2400	3.76	3.47						3.61	30.0	0.6357

COLORADO RIVER BASIN

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX

LOCATION.--Lat 30°10'40", long 97°41'18", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of downstream bridge on U.S. Highway 183, 2.4 mi (3.9 km) downstream from Williamson Creek, 3.2 mi (5.1 km) southwest of Del Valle, and 7.3 mi (11.7 km) southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--321 mi² (831 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. Discharge records for the period 1924-30 were published as monthly and annual figures in WSP 1312 as Onion Creek near Del Valle.

GAGE.--Water-stage recorder. Datum of gage is 442.85 ft (134.981 m) above mean sea level (Texas State Department of Highways and Public Transportation bench mark). May 15, 1924, to Mar. 15, 1930, nonrecording gage at highway bridge 1,700 ft (518 m) upstream at 6.42 ft (1.96 m) higher datum.

REMARKS.--Records fair. Flow is slightly regulated by several small ponds on main channel and tributaries above station.

AVERAGE DISCHARGE.--6 years (water years 1925-29, 1977), 84.1 ft³/s (2.382 m³/s), 3.56 in/yr (90 mm/yr), 60,930 acre-ft/yr (75.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft³/s (2,150 m³/s) May 28, 1929, gage height, 30.5 ft (9.30 m), present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stages since 1869 occurred about July 3, 1869, stage about 38 ft (11.6 m) from newspaper accounts, and Sept. 9, 1921, stage 38.0 ft (11.58 m) from floodmark, present site and datum.

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

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 16	2345	3,730 106	12.72 3.877	Apr. 20	1345	*4,780 135	14.45 4.404

Minimum daily discharge, 0.87 ft³/s (0.025 m³/s) Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	86	31	46	82	93	38	193	58	13	4.0	3.0
2	10	67	30	49	80	93	37	178	46	12	4.0	3.0
3	7.7	53	30	58	108	158	35	168	40	11	4.0	3.6
4	9.1	42	29	59	97	169	37	141	38	10	3.6	4.3
5	150	35	63	55	90	108	33	136	38	10	3.3	5.0
6	36	32	124	52	86	93	29	130	35	10	3.3	5.6
7	17	31	60	50	85	87	27	127	32	9.6	3.0	6.4
8	16	29	48	47	85	83	26	122	29	9.1	2.4	7.8
9	13	29	47	49	86	81	25	118	27	9.1	2.4	7.8
10	12	29	50	46	143	79	25	117	26	6.2	2.4	8.2
11	11	28	263	42	991	78	25	115	25	5.4	2.2	8.2
12	10	26	106	45	430	74	24	111	25	5.0	2.2	8.2
13	10	36	93	122	263	68	34	108	24	6.6	2.2	12
14	9.2	34	84	109	220	65	54	104	22	4.3	1.9	23
15	29	29	83	85	192	64	608	99	22	4.1	1.8	11
16	201	27	80	72	177	61	2880	96	29	4.6	1.6	8.7
17	42	34	74	64	171	59	1660	90	22	4.6	1.4	9.1
18	21	34	70	62	161	58	944	87	20	5.7	1.4	8.7
19	39	121	71	60	150	56	608	82	19	6.6	1.4	57
20	61	82	74	61	140	55	2020	82	19	6.6	1.4	27
21	27	47	67	61	134	52	1190	88	18	6.6	1.2	6.3
22	19	43	62	71	133	48	841	80	19	6.2	1.2	4.2
23	17	36	62	166	131	48	624	75	22	6.2	1.2	4.0
24	515	33	62	99	118	47	479	69	24	6.2	.90	4.3
25	114	33	62	81	111	47	389	65	18	5.8	.87	3.6
26	55	74	62	75	105	51	325	60	16	5.8	.90	3.6
27	39	47	57	74	99	74	277	57	15	6.2	1.1	4.0
28	33	35	55	71	97	74	244	54	14	6.2	1.2	4.0
29	977	33	54	68	---	60	222	52	13	6.0	1.2	4.0
30	296	32	51	71	---	51	210	49	14	5.4	1.6	4.3
31	127	---	47	94	---	41	---	46	---	5.2	2.7	---
TOTAL	2934.0	1297	2151	2164	4765	2275	13970	3099	769	219.3	63.97	269.9
MEAN	94.6	43.2	69.4	69.8	170	73.4	466	100	25.6	7.07	2.06	9.00
MAX	977	121	263	166	991	169	2880	193	58	13	4.0	57
MIN	7.7	26	29	42	80	41	24	46	13	4.1	.87	3.0
CFSM	.30	.14	.22	.22	.53	.23	1.45	.31	.08	.02	.006	.03
IN.	.34	.15	.25	.25	.55	.26	1.62	.36	.09	.03	.01	.03
AC-FT	5820	2570	4270	4290	9450	4510	27710	6150	1530	435	127	535

WTR YR 1977 TOTAL 33977.17 MEAN 93.1 MAX 2880 MIN .87 CFSM .29 IN 3.94 AC-FT 67390

COLORADO RIVER BASIN

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1976 to current year. Sediment analyses: October 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL./100 ML)
OCT 13...	0920	10	560	8.0	19.5	3	7	8.6	97	.8	330	62
NOV 08...	1420	34	577	8.0	17.0	1	10	9.8	104	.5	180	37
DEC 14...	0948	83	592	7.9	11.0	4	8	10.4	97	.7	2100	260
JAN 17...	0935	64	603	8.0	7.0	4	5	11.2	95	.8	390	52
FEB 15...	1014	192	514	7.8	12.0	2	7	10.3	99	.3	320	55
MAR 07...	1254	87	511	7.8	15.0	1	3	10.6	108	1.1	88	24
APR 12...	1305	24	603	8.0	22.5	2	5	9.5	112	.7	220	56
MAY 18...	1303	76	476	7.6	23.0	2	5	8.0	95	.5	6200	59
JUN 13...	1350	24	552	7.6	30.0	0	5	9.2	123	.8	4800	12
JUL 18...	1100	5.7	562	7.9	29.0	1	1	8.6	113	.5	25000	22
AUG 15...	1450	1.8	586	8.1	32.0	1	2	10.2	140	.3	8000	58
SEP 06...	1150	5.6	649	7.9	28.0	4	1	6.9	88	.6	5400	74
DATE	FECAL STREPTOCOCCI (COL. PER 100 ML)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT 13...	140	220	12	70	11	31	.9	2.6	254	0	25	37
NOV 08...	60	250	23	82	11	25	.7	2.6	277	0	37	28
DEC 14...	440	250	32	88	8.3	25	.7	3.0	270	0	52	26
JAN 17...	110	270	46	89	11	31	.8	2.5	270	0	60	51
FEB 15...	180	240	22	76	13	12	.3	1.7	270	0	30	15
MAR 07...	20	230	23	68	14	18	.5	1.6	249	0	39	21
APR 12...	420	250	21	77	13	31	.9	2.2	274	0	39	35
MAY 18...	92	220	25	67	13	15	.4	1.4	239	0	32	18
JUN 13...	180	220	5	66	13	30	.9	2.0	260	0	34	32
JUL 18...	290	200	2	58	13	42	1.3	2.4	240	0	25	45
AUG 15...	12	190	0	50	15	50	1.6	2.7	230	0	21	60
SEP 06...	150	200	0	53	17	59	1.8	3.0	260	0	16	73

COLORADO RIVER BASIN

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SILICA (SI02) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)	VOL. NON- FILT- RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL ORGANIC NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT 13...	.4	10	312	9	1	.28	.01	.02	.32	.01	3.7
NOV 08...	.4	9.9	332	13	3	.24	.01	.03	.30	.01	2.4
DEC 14...	.3	9.5	345	12	2	.89	.01	.06	.29	.02	5.6
JAN 17...	.2	8.1	386	7	2	.88	.01	.09	.17	.02	2.4
FEB 15...	.2	8.5	290	10	2	.49	.00	.04	.16	.01	4.6
MAR 07...	.2	7.7	292	4	1	.58	.00	.07	.03	.01	8.0
APR 12...	.2	10	342	7	1	.94	.06	.16	.24	.01	4.9
MAY 18...	.2	8.2	273	5	1	.53	.01	.10	--	.01	1.7
JUN 13...	.3	12	318	6	0	.80	.04	.13	.07	.04	2.6
JUL 18...	.3	15	319	1	0	.46	.02	.02	.28	.01	2.3
AUG 15...	.4	18	330	2	1	.15	.01	.01	.49	.03	3.1
SEP 06...	.3	18	367	1	0	.48	.01	.04	.16	.01	7.4

DATE	TIME	DIS- SOLVED ARSENIC (AS) (UG/L)	DIS- SOLVED BARIUM (BA) (UG/L)	DIS- SOLVED CAD- MIUM (CD) (UG/L)	DIS- SOLVED CHRO- MIUM (CR) (UG/L)	DIS- SOLVED COPPER (CU) (UG/L)	DIS- SOLVED IRON (FE) (UG/L)
OCT 13...	0920	1	100	2	0	0	0
FEB 15...	1014	1	100	0	0	0	10
JUN 13...	1350	1	0	3	0	0	20
AUG 15...	1450	1	0	1	0	0	0

DATE	DIS- SOLVED LEAD (PB) (UG/L)	DIS- SOLVED MAN- GANESE (MN) (UG/L)	DIS- SOLVED MERCURY (HG) (UG/L)	DIS- SOLVED SELE- NIUM (SE) (UG/L)	DIS- SOLVED SILVER (AG) (UG/L)	DIS- SOLVED ZINC (ZN) (UG/L)
OCT 13...	1	20	.1	0	0	10
FEB 15...	0	10	.1	0	0	0
JUN 13...	1	20	.0	1	0	0
AUG 15...	0	0	.0	0	0	6

DATE	TIME	TOTAL PCB (UG/L)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR- DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI- AZINON (UG/L)	TOTAL DI- ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)
OCT 13...	0920	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
FEB 15...	1014	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
JUN 13...	1350	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
AUG 15...	1450	.0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTA- CHLOR (UG/L)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA- THION (UG/L)	TOTAL METHYL PARA- THION (UG/L)	TOTAL METHYL TRI- THION (UG/L)	TOTAL PARA- THION (UG/L)	TOTAL TOX- APHENE (UG/L)	TOTAL TRI- THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
OCT 13...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
FEB 15...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
JUN 13...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 15...	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00

COLORADO RIVER BASIN

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV 03...	0805	10	14.0	20	.54
MAR 09...	1200	82	8.5	36	8.0
APR 22...	1100	1020	13.0	27	74
MAY 17...	1400	308	23.0	37	31
SEP 21...	1429	20	27.0	29	1.6

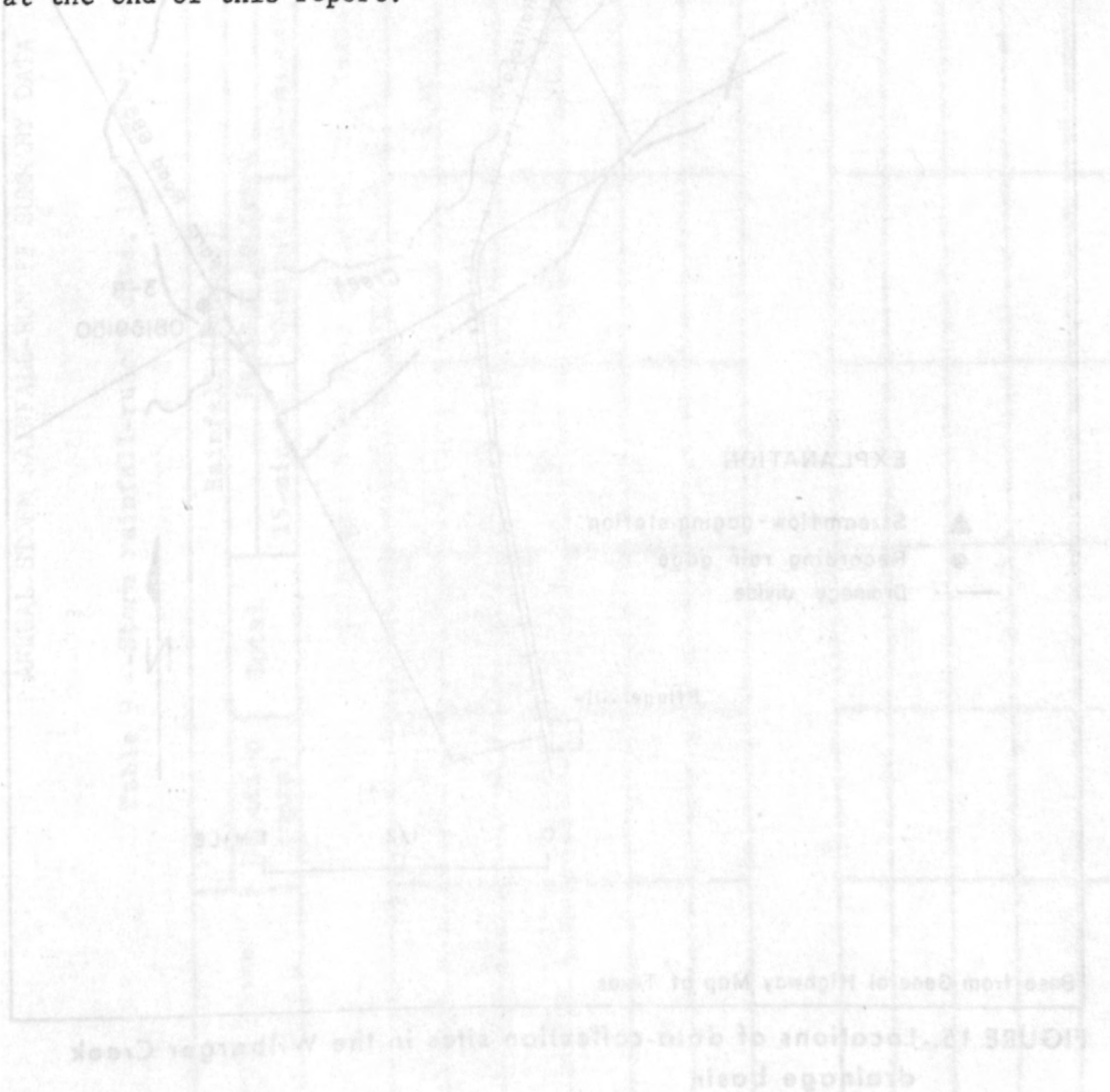
WILBARGER CREEK DRAINAGE BASIN

The location of the data-collection sites in the Wilbarger Creek drainage basin are shown in figure 15.

Rainfall recorded for the 1977 water year at stations 1-R and 3-R was 28.53 inches and 27.67 inches, respectively. Total runoff from the basin as measured at the Pflugerville station (08159150) was 6.78 inches.

A summary of storm rainfall and runoff is shown in table 9.

Daily and monthly rainfall totals for the 1977 water year are given at the end of this report.



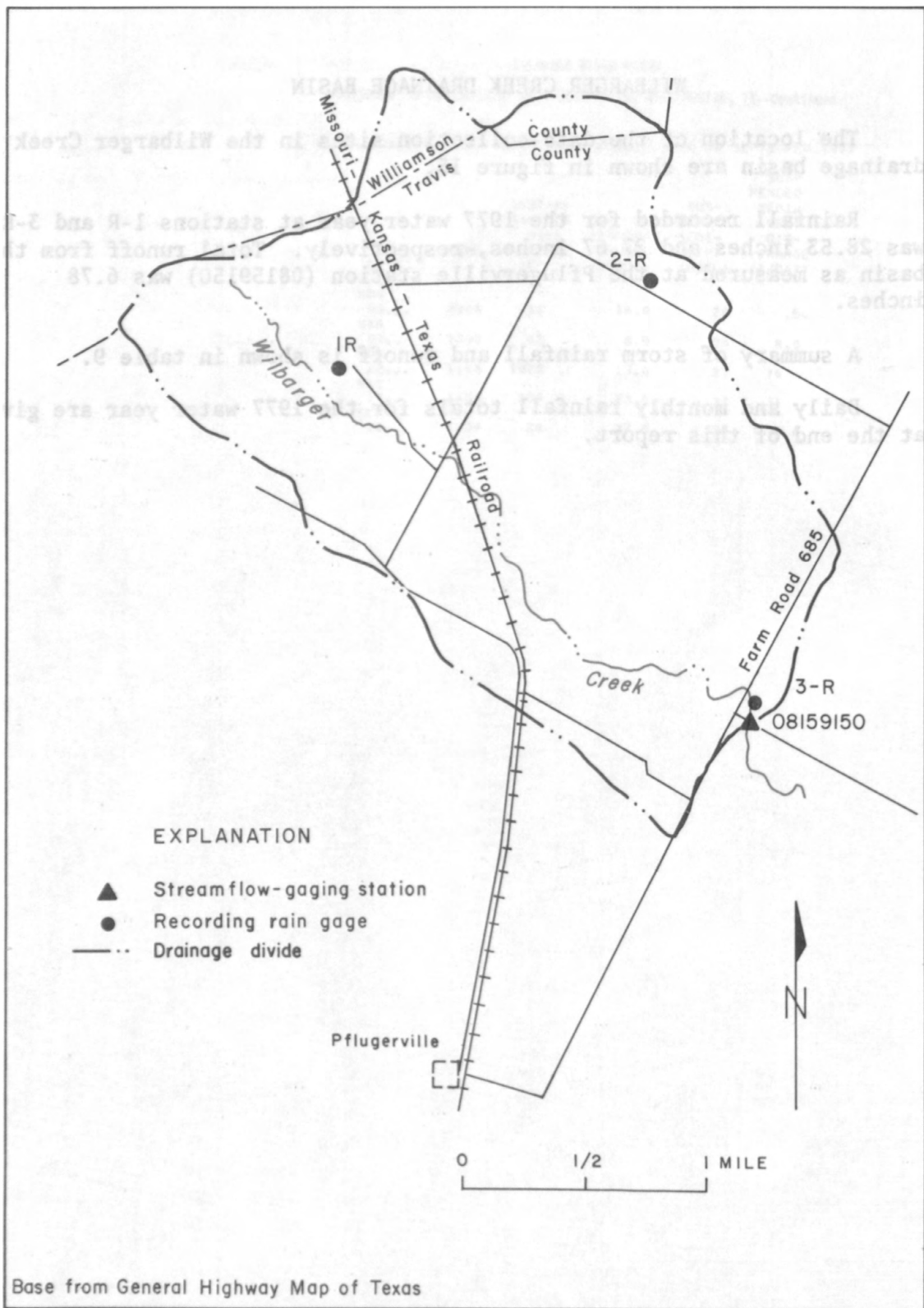


FIGURE 15.-Locations of data-collection sites in the Wilbarger Creek drainage basin

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY-TEXAS DISTRICT

ANNUAL STORM RAINFALL-RUNOFF SUMMARY DATA

Table 9.--Storm rainfall-runoff data, 1977 water year, Wilbarger Creek

[illegible]

COLORADO RIVER BASIN

08159150 WILBARGER CREEK NEAR PFLUGERVILLE, TX

LOCATION.--Lat 30°27'16", long 97°36'02", Travis County, Hydrologic Unit 12090301, on left bank downstream from county road (Pflugerville Lane), 800 ft (240 m) downstream from Farm Road 685, 1.6 mi (2.6 km) northeast of Pflugerville, and 1.9 mi (3.1 km) downstream from Missouri-Kansas-Texas Railroad.

DRAINAGE AREA.--4.61 mi² (11.9 km²).

PERIOD OF RECORD.--August 1963 to current year.

Water-quality records: Chemical, biochemical, and pesticide analyses: October 1970 to September 1971.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 670.61 ft (204.402 m) above mean sea level.

REMARKS.--Records good. Station is part of a hydrologic research project to study rainfall-runoff relations for small urban-rural areas. Two recording rain gages are located in watershed. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, 1.98 ft³/s (0.056 m³/s), 5.83 in/yr (148 mm/yr), 1,430 acre-ft/yr (1.76 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,760 ft³/s (49.8 m³/s) June 16, 1964, gage height, 6.92 ft (2.109 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1894, occurred in September 1921, stage unknown, from information by local residents, discharge 2,300 ft³/s (65.1 m³/s), from Corps of Engineers publication "Flood Plain Information, Williamson Creek, Austin, Texas."

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 405 ft³/s (11.5 m³/s) Feb. 11, gage height, 3.71 ft (1.131 m), no other peak above base of 400 ft³/s (11.3 m³/s); no flow Oct. 1-3, July 10 to Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.77	1.5	1.3	1.9	1.6	.78	5.2	.44	.03	.00	.00
2	.00	.68	1.4	1.9	2.0	1.6	.93	4.0	.32	.02	.00	.00
3	.00	.60	1.2	2.3	3.6	9.8	.79	3.1	.23	.02	.00	.00
4	.01	.53	1.2	2.2	2.4	4.5	.59	2.7	.20	.02	.00	.00
5	.03	.47	2.2	1.7	1.9	2.9	.53	2.4	.15	.02	.00	.00
6	.01	.43	4.5	1.6	1.8	2.1	.44	2.0	.17	.01	.00	.00
7	.02	.43	2.2	1.6	1.7	1.8	.45	1.8	.16	.01	.00	.00
8	.02	.43	1.9	1.5	1.7	1.8	.42	1.5	.14	.01	.00	.00
9	.01	.43	1.7	2.0	1.8	1.6	.41	2.1	.12	.01	.00	.00
10	.01	.43	3.6	1.3	1.1	1.6	.36	2.0	.11	.00	.00	.00
11	.02	.42	35	1.4	95	1.7	.37	1.4	.12	.00	.00	.00
12	.01	.44	13	1.7	14	1.2	.33	1.3	.12	.00	.00	.00
13	.02	.85	8.7	6.3	8.6	1.1	.47	1.1	.10	.00	.00	.00
14	.02	.60	7.4	4.2	6.6	.99	.53	.95	.09	.00	.00	.00
15	.03	.53	6.6	3.0	4.8	1.0	39	.82	.19	.00	.00	.00
16	.03	.49	5.4	2.4	4.2	.86	64	.80	.17	.00	.00	.00
17	.02	.49	4.6	2.0	3.9	1.0	14	.69	.08	.00	.00	.00
18	.02	.49	4.3	1.9	3.6	.98	7.9	.65	.07	.00	.00	.00
19	.06	2.5	6.4	1.7	3.0	.75	6.9	.83	.06	.00	.00	.00
20	.05	1.9	4.5	1.6	2.7	.62	80	1.2	.06	.00	.00	.00
21	.03	1.2	3.1	1.6	2.5	.68	15	3.7	.06	.00	.00	.00
22	.03	.95	3.1	2.8	2.5	.60	8.1	1.4	.08	.00	.00	.00
23	.04	.89	3.0	5.3	2.3	.59	5.1	.81	.28	.00	.00	.00
24	.11	.89	2.7	3.1	1.6	.73	3.9	.64	.15	.00	.00	.00
25	.06	2.4	2.7	2.5	1.6	.79	3.3	.53	.08	.00	.00	.00
26	.05	4.6	2.3	2.3	1.7	1.7	2.8	.48	.06	.00	.00	.00
27	.06	2.1	2.2	2.3	1.6	3.4	2.6	.40	.05	.00	.00	.00
28	.09	1.7	2.0	1.8	1.6	2.8	2.5	.39	.04	.00	.00	.00
29	4.8	1.5	1.7	1.5	---	1.3	6.0	.40	.04	.00	.00	.00
30	1.5	1.5	1.6	2.1	---	.93	23	.33	.04	.00	.00	.00
31	.95	---	1.4	2.2	---	.71	---	.31	---	.00	.00	---
TOTAL	8.11	31.64	143.1	71.1	191.6	53.73	291.50	45.93	3.98	.15	.00	.00
MEAN	.26	1.05	4.62	2.29	6.84	1.73	9.72	1.48	.13	.005	.000	.000
MAX	4.8	4.6	35	6.3	95	9.8	80	5.2	.44	.03	.00	.00
MIN	.00	.42	1.2	1.3	1.6	.59	.33	.31	.04	.00	.00	.00
CFSM	.06	.23	1.00	.50	1.48	.38	2.11	.32	.03	.001	.000	.000
IN.	.07	.26	1.15	.57	1.55	.43	2.35	.37	.03	.00	.00	.00
AC-FT	16	63	284	141	380	107	578	91	7.9	.3	.00	.00
(††)	5.27	2.21	2.29	1.44	2.72	2.31	6.78	1.62	2.17	.03	.10	1.30

CAL YR 1976 TOTAL 662.30 MEAN 1.81 MAX 86 MIN .00 CFSM .39 IN 5.34 AC-FT 1310 †† 35.83
WTR YR 1977 TOTAL 840.84 MEAN 2.30 MAX 95 MIN .00 CFSM .50 IN 6.78 AC-FT 1670 †† 28.24

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

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08159150												
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS										ACCUM.	DISCHARGE	ACCUM.
STORM OF APRIL 15, 1977										WEIGHTED	IN	RUNOFF
DATE & TIME	1-R	3-R	G A G E N U M B E R						PRECIP.	IN.	FT ³ /S	IN.
APR. 15												
0000	0.0	0.0							0.0	0.5	0.0004	
0500	0.0	0.05							0.02	0.5	0.0008	
0505	0.0	0.10							0.03	0.5	0.0009	
0510	0.02	0.16							0.07	0.5	0.0009	
0515	0.10	0.24							0.15	0.5	0.0009	
0520	0.18	0.32							0.23	0.6	0.0009	
0525	0.24	0.42							0.33	0.7	0.0009	
0530	0.35	0.47							0.39	0.8	0.0009	
0535	0.42	0.52							0.45	0.9	0.0010	
0540	0.49	0.59							0.52	1.1	0.0010	
0545	0.55	0.70							0.60	1.2	0.0010	
0550	0.61	0.81							0.68	1.6	0.0011	
0555	0.67	0.94							0.76	1.9	0.0011	
0600	0.73	0.97							0.81	2.3	0.0012	
0605	0.79	1.00							0.86	2.8	0.0013	
0610	0.87	1.04							0.93	3.3	0.0014	
0615	0.91	1.05							0.96	3.8	0.0015	
0620	0.95	1.06							0.99	4.4	0.0016	
0625	1.00	1.07							1.02	5.1	0.0017	
0630	1.01	1.07							1.03	5.7	0.0021	
0645	1.03	1.08							1.05	9.1	0.0028	
0700	1.04	1.08							1.05	11.0	0.0038	
0715	1.04	1.08							1.05	12.0	0.0048	
0730	1.06	1.08							1.07	15.0	0.0067	
0800	1.11	1.10							1.11	17.0	0.0095	
0830	1.17	1.13							1.16	13.0	0.0117	
0900	1.20	1.13							1.18	9.9	0.0134	
0930	1.21	1.21							1.21	9.9	0.0146	
0945	1.24	1.29							1.26	11.0	0.0152	
0950	1.25	1.34							1.28	12.0	0.0156	
0955	1.27	1.40							1.31	12.0	0.0159	
1000	1.29	1.41							1.33	13.0	0.0163	
1005	1.31	1.42							1.35	14.0	0.0166	
1010	1.33	1.44							1.37	14.0	0.0170	
1015	1.40	1.44							1.41	15.0	0.0175	
1020	1.47	1.44							1.46	15.0	0.0179	
1025	1.56	1.46							1.53	16.0	0.0183	
1030	1.56	1.46							1.53	16.0	0.0192	
1045	1.56	1.47							1.53	17.0	0.0207	

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STORM OF APRIL 15, 1977										ACCUM.	DISCHARGE	ACCUM.
DATE & TIME	G A G E N U M B E R									WEIGHTED	IN	RUNOFF
	1-R	3-R								PRECIP.	FT ³ /S	IN.
APR. 15												
1100	1.56	1.47								1.53	19.0	0.0223
1115	1.56	1.47								1.53	19.0	0.0238
1130	1.56	1.47								1.53	21.0	0.0265
1200	1.56	1.47								1.53	22.0	0.0302
1230	1.56	1.47								1.53	22.0	0.0339
1300	1.56	1.48								1.53	29.0	0.0412
1400	1.57	1.51								1.55	41.0	0.0515
1430	1.62	1.58								1.61	36.0	0.0561
1445	1.67	1.62								1.65	33.0	0.0588
1500	1.69	1.70								1.69	31.0	0.0615
1515	1.72	1.75								1.73	29.0	0.0631
1520	1.75	1.76								1.75	29.0	0.0639
1525	1.78	1.78								1.78	29.0	0.0647
1530	1.80	1.83								1.81	29.0	0.0655
1535	1.82	1.88								1.84	28.0	0.0667
1545	1.89	1.96								1.91	27.0	0.0678
1550	1.93	1.97								1.94	28.0	0.0690
1600	1.99	1.98								1.99	31.0	0.0712
1615	2.03	1.98								2.01	33.0	0.0739
1630	2.05	1.99								2.03	35.0	0.0769
1645	2.06	2.02								2.05	40.0	0.0802
1700	2.08	2.11								2.09	49.0	0.0844
1715	2.17	2.20								2.18	64.0	0.0880
1720	2.24	2.20								2.23	71.0	0.0899
1725	2.31	2.21								2.28	78.0	0.0921
1730	2.32	2.21								2.28	85.0	0.0969
1745	2.34	2.21								2.30	121.0	0.1071
1800	2.34	2.21								2.30	147.0	0.1194
1815	2.34	2.21								2.30	159.0	0.1328
1830	2.34	2.21								2.30	167.0	0.1468
1845	2.34	2.21								2.30	169.0	0.1610
1900	2.34	2.21								2.30	181.0	0.1762
1915	2.34	2.21								2.30	181.0	0.1914
1930	2.34	2.21								2.30	173.0	0.2132
2000	2.34	2.21								2.30	143.0	0.2373
2030	2.34	2.21								2.30	114.0	0.2564
2100	2.34	2.21								2.30	88.0	0.2786
2200	2.34	2.21								2.30	60.0	0.3089
2400	2.34	2.21								2.30	32.0	0.3196

STA. NO. 08159150				STORM RAINFALL AND RUNOFF RECORD				1977 WATER YEAR		
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS				STORM OF APRIL 16-17, 1977				ACCUM.	DISCHARGE	ACCUM.
DATE & TIME	G A G E			N U M B E R			WEIGHTED PRECIP.	IN	RUNOFF	
	1-R	3-R					IN.	FT 3/5	IN.	
APR. 16										
0000	0.0	0.0					0.0	29.0	0.0292	
0600	0.0	0.0					0.0	12.0	0.0418	
0615	0.02	0.01					0.02	12.0	0.0434	
0645	0.05	0.09					0.06	11.0	0.0447	
0700	0.06	0.10					0.07	11.0	0.0461	
0730	0.06	0.10					0.07	11.0	0.0480	
0800	0.08	0.12					0.09	11.0	0.0494	
0815	0.12	0.14					0.13	11.0	0.0503	
0830	0.20	0.17					0.19	11.0	0.0512	
0845	0.24	0.20					0.23	12.0	0.0522	
0900	0.27	0.24					0.26	13.0	0.0533	
0915	0.31	0.28					0.30	14.0	0.0545	
0930	0.34	0.31					0.33	15.0	0.0558	
0945	0.38	0.37					0.38	16.0	0.0571	
1000	0.42	0.46					0.43	18.0	0.0586	
1015	0.48	0.52					0.49	22.0	0.0605	
1030	0.52	0.55					0.53	24.0	0.0625	
1045	0.53	0.60					0.55	30.0	0.0650	
1100	0.56	0.67					0.60	45.0	0.0688	
1115	0.62	0.77					0.67	67.0	0.0744	
1130	0.71	0.85					0.76	82.0	0.0813	
1145	0.79	0.90					0.83	118.0	0.0912	
1200	0.85	0.94					0.88	154.0	0.1042	
1215	0.90	0.96					0.92	201.0	0.1211	
1230	0.92	0.98					0.94	247.0	0.1522	
1300	0.93	0.98					0.95	302.0	0.2029	
1330	0.93	0.98					0.95	290.0	0.2517	
1400	0.93	0.98					0.95	258.0	0.3167	
1500	0.93	0.98					0.95	158.0	0.3698	
1600	0.93	0.98					0.95	104.0	0.4223	
1800	0.93	0.98					0.95	57.0	0.4606	
2000	0.93	0.98					0.95	40.0	0.4875	
2200	0.93	0.98					0.95	26.0	0.5050	
2400	0.93	0.98					0.95	22.0	0.5234	
APR. 17										
0000	0.93	0.98					0.95	22.0	0.5234	
0600	0.93	0.99					0.95	15.0	0.5648	
1200	0.93	0.99					0.95	13.0	0.6041	
2400	0.93	0.99					0.95	9.5	0.6233	

STORM RAINFALL AND RUNOFF RECORD										1977 WATER YEAR		
STA. NO. 08159150												
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS										STORM OF APRIL 19-21, 1977		
DATE & TIME	G A G E				N U M B E R		ACCUM.		DISCHARGE		ACCUM.	
	1-R	2-R					WEIGHTED	PRECIP.	IN	FT ³ /S	IN.	RUNOFF
								IN.				
APR. 19												
0000	0.0	0.0					0.0		5.7		0.0057	
0600	0.0	0.0					0.0		6.4		0.0144	
0800	0.0	0.0					0.0		5.1		0.0178	
1000	0.0	0.0					0.0		6.4		0.0221	
1200	0.0	0.0					0.0		5.4		0.0331	
2210	0.0	0.0					0.0		4.3		0.0405	
2215	0.0	0.16					0.05		4.3		0.0407	
2220	0.0	0.32					0.11		5.2		0.0408	
2225	0.0	0.50					0.17		6.2		0.0410	
2230	0.15	0.57					0.29		7.1		0.0412	
2235	0.30	0.64					0.42		8.7		0.0414	
2240	0.46	0.71					0.54		10.0		0.0417	
2245	0.58	0.72					0.63		12.0		0.0420	
2250	0.70	0.73					0.71		14.0		0.0424	
2255	0.83	0.76					0.81		17.0		0.0429	
2300	0.84	0.77					0.82		19.0		0.0440	
2315	0.89	0.82					0.87		28.0		0.0463	
2330	0.94	0.85					0.91		35.0		0.0493	
2345	0.99	0.87					0.95		41.0		0.0527	
2400	1.02	0.89					0.98		71.0		0.0572	
APR. 20												
0000	1.02	0.89					0.98		71.0		0.0572	
0015	1.03	0.91					0.99		148.0		0.0711	
0030	1.07	0.98					1.04		258.0		0.0921	
0045	1.11	1.00					1.07		302.0		0.1182	
0100	1.13	1.02					1.09		295.0		0.1554	
0130	1.16	1.04					1.12		283.0		0.2029	
0200	1.16	1.04					1.12		256.0		0.2459	
0230	1.16	1.04					1.12		225.0		0.2838	
0300	1.16	1.04					1.12		191.0		0.3319	
0400	1.16	1.05					1.12		121.0		0.3726	
0500	1.16	1.05					1.12		83.0		0.4005	
0600	1.16	1.05					1.12		63.0		0.4217	
0700	1.16	1.05					1.12		51.0		0.4388	
0800	1.19	1.07					1.15		41.0		0.4526	
0900	1.20	1.10					1.17		34.0		0.4612	
0930	1.21	1.14					1.19		32.0		0.4665	
1000	1.27	1.22					1.25		31.0		0.4704	
1015	1.32	1.26					1.30		32.0		0.4731	
1030	1.35	1.29					1.33		32.0		0.4758	

STORM RAINFALL AND RUNOFF RECORD							1977 WATER YEAR		
STA. NO. 08159150									
WILBARGER CREEK NEAR PFLUGERVILLE, TEXAS							STORM OF APRIL 19-21, 1977		
DATE & TIME							ACCUM. WEIGHTED PRECIP. IN.	DISCHARGE IN FT ³ /S	ACCUM. RUNOFF IN.
							IN.	FT ³ /S	IN.
APR. 20									
1045	1.39	1.34				1.37	35.0	0.4788	
1100	1.42	1.36				1.40	37.0	0.4834	
1130	1.48	1.41				1.46	46.0	0.4912	
1200	1.48	1.41				1.46	57.0	0.5007	
1230	1.48	1.41				1.46	78.0	0.5138	
1300	1.48	1.41				1.46	107.0	0.5273	
1315	1.48	1.41				1.46	111.0	0.5367	
1330	1.48	1.41				1.46	109.0	0.5504	
1400	1.48	1.41				1.46	97.0	0.5748	
1500	1.48	1.41				1.46	75.0	0.6001	
1600	1.48	1.41				1.46	61.0	0.6308	
1800	1.48	1.41				1.46	41.0	0.6584	
2000	1.48	1.41				1.46	28.0	0.6772	
2200	1.48	1.41				1.46	22.0	0.6920	
2400	1.48	1.41				1.46	21.0	0.7096	
APR. 21									
0000	1.48	1.41				1.46	21.0	0.7096	
0600	1.53	1.41				1.49	16.0	0.7525	
1200	1.53	1.41				1.49	15.0	0.7827	
1800	1.53	1.41				1.49	12.0	0.8070	
2400	1.53	1.41				1.49	9.9	0.8169	

AUSTIN URBAN HYDROLOGY STUDY											
DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES WEST OF MERIDIAN 97°45'								PERIOD : 1977 WATER YEAR			
G A G E N U M B E R											
DATE	1RUL	2RUL	1WBL	1BEE	1BAR	2BAR	1BOL	1BGS	1WMS	2WMS	
FEB											
1	0.08	0.09	0.10	0.22	0.28	0.21	0.09	0.04	0.10	0.08	
2	0.03	0.16	0.14	0.17	0.08	0.13	0.20	0.20	0.19	0.21	
3	0.00	0.04	0.04	0.04	0.05	0.04	0.08	0.02	0.04	0.04	
4	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	
8	0.00	0.05	0.06	0.09	0.09	0.09	0.10	0.07	0.08	0.07	
9	0.05	0.05	0.05	0.01	0.07	0.01	0.00	0.00	0.01	0.01	
10	0.33	0.61	0.76	0.60	0.60	0.87	0.99	0.90	0.98	0.95	
11	0.68	1.21	1.19	0.93	1.15	1.06	0.69	1.01	0.83	1.17	
16	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
27	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MTOT	1.23	2.22	2.34	2.06	2.32	2.42	2.15	2.24	2.23	2.53	
MAR											
1	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.02	0.00	0.01	0.03	0.00	0.01	0.02	0.00	
3	0.62	0.76	0.95	1.03	0.71	0.85	1.40	0.97	0.91	1.19	
10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
11	0.03	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.01	
17	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	
24	0.06	0.06	0.06	0.03	0.03	0.02	0.07	0.07	0.06	0.09	
25	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	
26	0.31	0.31	0.28	0.30	0.23	0.33	0.32	0.31	0.45	0.31	
27	0.44	0.44	0.44	0.31	0.47	0.24	0.62	0.55	0.30	0.56	
28	0.00	0.00	0.01	0.03	0.01	0.00	0.01	0.01	0.01	0.01	
MTOT	1.51	1.63	1.80	1.73	1.47	1.48	2.43	1.94	1.77	2.18	
MTOT=MONTHLY TOTALS											

MTOT=MONTHLY TOTALS

AUSTIN URBAN HYDROLOGY STUDY												
DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES WEST OF MERIDIAN 97°45' PERIOD : 1977 WATER YEAR												
G A G E N U M B E R												
DATE	1BUL	2RUL	1WBL	1BEE	1BAR	2BAR	1BOL	1BGS	1WMS	2WMS		
APR												
1	0.01	0.00	0.01	0.00	0.02	0.01	0.01	0.02	0.02	0.02		
2	0.01	0.01	0.01	0.04	0.03	0.02	0.06	0.04	0.05	0.05		
4	0.09	0.13	0.13	0.12	0.05	0.12	0.10	0.11	0.13	0.11		
12	0.00	0.02	0.01	0.03	0.00	0.00	0.07	0.00	0.00	0.00		
13	0.30	0.35	0.27	1.26	0.60	1.54	2.33	0.43	0.53	1.10		
14	0.42	0.37	0.41	0.18	2.84	0.42	0.07	0.08	0.31	0.08		
15	3.11	2.40	3.53	2.65	3.02	2.20	2.45	1.73	2.62	2.14		
16	1.07	1.04	0.53	0.95	1.19	0.78	1.25	1.20	1.14	1.33		
17	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00		
19	0.92	1.35	0.91	0.99	0.91	0.70*	1.42	1.10	0.41	0.98		
20	0.40	0.38	0.47	0.58	0.31	0.32	0.69	0.70	0.00	0.74		
21	0.01	0.00	0.01	0.15	0.01	0.12	0.00	0.00	0.02	0.00		
22	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00		
29	1.53	1.36	1.15	0.04	0.20	0.10	0.00	0.00	0.02	0.00		
30	0.03	0.03	0.04	0.04	0.01	0.10	0.00	0.06	0.11	0.02		
MTOT	7.90	7.44	7.48	7.05	9.19	6.43	8.45	5.47	5.36	6.57		
MAY												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01		
2	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.06	0.06	0.02		
7	0.01	0.00	0.01	0.01	0.01	0.02	0.00	0.01	0.02	0.00		
9	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00		
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.04	0.13		
11	0.05	0.03	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00		
13	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.03	0.00	0.00		
15	0.01	0.00	0.06	0.07	0.00	0.06	0.00	0.02	0.02	0.01		
17	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00		
18	0.02	0.15	0.04	0.03	0.01	0.02	0.00	0.01	0.05	0.01		
19	0.25	0.02	0.18	0.09	0.03	0.11	0.07	0.12	0.27	0.12		
20	0.13	0.00	0.09	0.02	0.06	0.09	0.01	0.01	0.04	0.01		
21	0.69	0.01	0.82	0.76	0.55	0.78	1.07	0.68	0.66	0.77		
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.11	0.00		
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00		
31	0.13	0.66	1.43	0.29	0.56	0.44	0.33	1.27	1.49	0.94		
MTOT	1.31	0.87	2.66	1.33	1.24	1.53	1.49	2.55	2.78	2.02		

MTOT#MONTHLY TOTALS

*=ESTIMATED

AUSTIN URBAN HYDROLOGY STUDY

DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES EAST OF MERIDIAN 97°45'

PERIOD : 1977 WATER YEAR

GAGE NUMBER

DATE :	1SHL :	2SHL :	4-R :	5-R :	6-R :	18QG :	1WLN :	2WLN :	3WLN :	4WLN :	5WLN :	6WLN :	1-R :	2-R :	3-R :
OCT :	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
4 :	0.82 :	0.87* :	0.90 :	0.90 :	0.98 :	0.93 :	0.73 :	0.63 :	1.06 :	0.91 :	1.20 :	0.62 :	0.61 :	0.58 :	0.70 :
5 :	0.06 :	0.00 :	0.04 :	0.05 :	0.14 :	0.09 :	0.11 :	0.14 :	0.14 :	0.11 :	0.13 :	0.20 :	0.27 :	0.24 :	0.34 :
7 :	0.14 :	0.16* :	0.11 :	0.14 :	0.13 :	0.16 :	0.18 :	0.15 :	0.14 :	0.17 :	0.13 :	0.16 :	0.10 :	0.19 :	0.07 :
8 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.03 :
9 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :
15 :	0.88 :	0.90* :	0.92 :	1.00 :	0.95 :	1.02 :	0.95 :	0.92 :	0.92 :	0.91 :	1.11 :	1.16 :	1.00 :	0.83 :	0.92 :
16 :	0.00 :	0.00 :	0.00 :	0.07 :	0.05 :	0.00 :	0.01 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
17 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
19 :	0.64 :	0.68* :	0.78 :	0.72 :	0.62 :	0.69 :	0.87 :	0.73 :	0.70 :	0.72 :	0.64 :	0.55 :	0.53 :	0.89 :	0.65 :
20 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
22 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.01 :	0.00 :	0.01 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :
23 :	0.33 :	0.31* :	0.24 :	0.35 :	0.11 :	0.34 :	0.24 :	0.21 :	0.33 :	0.29 :	0.47 :	0.00 :	0.13 :	0.21 :	0.19 :
24 :	0.39 :	0.42* :	0.50 :	0.54 :	0.52 :	0.55 :	0.28 :	0.34 :	0.52 :	0.51 :	0.56 :	0.64 :	0.30 :	0.43 :	0.35 :
25 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.02 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
27 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
28 :	0.64 :	0.62* :	0.53 :	0.62 :	0.57 :	0.53 :	0.71 :	0.63 :	0.53 :	0.60 :	0.54 :	0.46 :	0.41 :	0.60 :	0.44 :
29 :	1.90 :	1.86* :	1.52 :	1.75 :	1.63 :	1.57 :	2.18 :	1.79 :	1.63 :	1.84 :	1.55 :	1.55 :	1.93 :	2.27 :	1.56 :
30 :	0.00 :	0.00 :	0.02 :	0.03 :	0.02 :	0.02 :	0.01 :	0.01 :	0.02 :	0.00 :	0.02 :	0.00 :	0.00 :	0.00 :	0.00 :
MTOT :	5.80 :	5.82 :	5.56 :	6.17 :	5.72 :	5.92 :	6.29 :	5.58 :	6.02 :	6.07 :	6.37 :	5.34 :	5.28 :	6.24 :	5.25 :
NOV :	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11 :	0.11 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.45 :	0.17 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
12 :	0.38 :	0.33 :	0.28 :	0.24 :	0.15 :	0.18 :	0.44 :	0.37 :	0.21 :	0.33 :	0.20 :	0.14 :	0.51 :	0.45 :	0.20 :
13 :	0.18 :	0.19 :	0.29 :	0.35 :	0.31 :	0.29 :	0.30 :	0.21 :	0.32 :	0.25 :	0.31 :	0.25 :	0.79 :	0.34 :	0.31 :
14 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :
16 :	0.02 :	0.05 :	0.08 :	0.07 :	0.08 :	0.11 :	0.03 :	0.03 :	0.09 :	0.05 :	0.08 :	0.11 :	0.05 :	0.03 :	0.02 :
17 :	0.00 :	0.02 :	0.02 :	0.03 :	0.06 :	0.03 :	0.01 :	0.02 :	0.02 :	0.05 :	0.02 :	0.07 :	0.08 :	0.07 :	0.03 :
18 :	0.06 :	0.06 :	0.08 :	0.08 :	0.05 :	0.11 :	0.10 :	0.10 :	0.12 :	0.09 :	0.11 :	0.03 :	0.15 :	0.79 :	0.10 :
19 :	0.66 :	0.55 :	0.57 :	0.50 :	0.63 :	0.58 :	0.76 :	0.74 :	0.63 :	0.58 :	0.62 :	0.68 :	0.03 :	0.03 :	0.57 :
20 :	0.00 :	0.00 :	0.00 :	0.00 :	0.02 :	0.02 :	0.00 :	0.01 :	0.02 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.05 :
25 :	0.46 :	0.40 :	0.43 :	0.46 :	0.47 :	0.44 :	0.44 :	0.59 :	0.62 :	0.51 :	0.72 :	0.41 :	0.63 :	0.79 :	0.58 :
26 :	0.01 :	0.00 :	0.00 :	0.00 :	0.04 :	0.02 :	0.01 :	0.01 :	0.01 :	0.01 :	0.00 :	0.00 :	0.04 :	0.05 :	0.04 :
28 :	0.06 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.10 :	0.21 :	0.02 :	0.00 :	0.14 :	0.06 :	0.00 :	0.00 :	0.00 :
29 :	0.06 :	0.01 :	0.00 :	0.00 :	0.00 :	0.00 :	0.00 :	0.05 :	0.00 :	0.00 :	0.00 :	0.02 :	0.04 :	0.00 :	0.10 :
MTOT :	2.00 :	1.62 :	1.75 :	1.73 :	1.81 :	1.79 :	2.64 :	2.51 :	2.07 :	1.87 :	2.20 :	1.77 :	2.32 :	2.55 :	2.00 :

MTOT=MONTHLY TOTALS

*=ESTIMATED

AUSTIN URBAN HYDROLOGY STUDY

DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES EAST OF MERIDIAN 97°45'

PERIOD : 1977 WATER YEAR

GAGE NUMBER

DATE	1SHL	2SHL	4-R	5-R	6-R	1RQG	1WLN	2WLN	3WLN	4WLN	5WLN	6WLN	1-R	2-R	3-R
DEC															
2	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.48	0.54	0.47	0.63	0.66	0.73	0.66	0.50	0.76	0.53	0.79	0.71	0.55	0.55	0.49
6	0.00	0.06	0.05	0.09	0.14	0.12	0.00	0.00	0.08	0.04	0.06	0.10	0.00	0.00	0.03
7	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
10	0.88	0.99	1.27	1.25	1.20	0.66	1.23	1.58	0.68	1.22	0.66	0.18	0.80	1.08	0.91
11	0.62	0.53	0.65	0.64	0.55	0.58	0.69	0.65	0.66	0.70	0.62	0.60	0.61	0.98	0.69
12	0.11	0.10	0.09	0.13	0.10	0.12	0.09	0.08	0.11	0.11	0.12	0.24	0.04	0.04	0.05
13	0.00	0.00	0.00	0.02	0.00	0.02	0.02	0.00	0.02	0.01	0.00	0.13	0.00	0.05	0.00
14	0.05	0.02	0.02*	0.03	0.06	0.05	0.08	0.05	0.03	0.05	0.06	0.00	0.03	0.00	0.03
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.11	0.02
16	0.01	0.00	0.00	0.01	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.00
17	0.00	0.00	0.00	0.01	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.02
18	0.05	0.02	0.02*	0.00	0.00	0.03	0.08	0.06	0.01	0.06	0.05	0.00	0.00	0.00	0.00
19	0.11	0.12	0.12*	0.05	0.07	0.11	0.08	0.10	0.01	0.13	0.12	0.19	0.10	0.10	0.11
20	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00
25	0.02	0.01	0.01*	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.04	0.09

MTOT : 2.42 : 2.40 : 2.75 : 2.87 : 2.88 : 2.47 : 2.96 : 3.07 : 2.37 : 2.89 : 2.50 : 2.15 : 2.21 : 2.99 : 2.44 :
 CTOT : 39.29 : 38.34 : 35.49 : 38.83 : 37.77 : 41.48 : 45.34 : 38.99 : 41.71 : 39.99 : 41.12 : 38.61 : 35.13 : 40.95 : 33.49 :

MTOT=MONTHLY TOTALS

CTOT=CALENDAR YEAR TOTALS

*=ESTIMATED

AUSTIN URBAN HYDROLOGY STUDY

DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES EAST OF MERIDIAN 97°45'

PERIOD : 1977 WATER YEAR

G A G E N U M B E R

DATE	1SHL	2SHL	4-R	5-R	6-R	180G	1WLN	2WLN	3WLN	4WLN	5WLN	6WLN	1-R	2-R	3-R
JAN															
1	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	*****	0.05
2	0.19	0.13	0.13*	0.24	0.20	0.23	0.15	0.12	0.31	0.17	0.14	0.15	0.06	*****	0.15
3	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.01	0.00	0.01	0.04	0.01	*****	0.02
4	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.00	*****	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	*****	0.00
6	0.07	0.06	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.09	0.05	0.06	0.00	*****	0.00
7	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
8	0.14	0.13	0.23	0.13	0.12	0.14	0.17	0.11	0.10	0.12	0.12	0.06	0.02	*****	0.06
9	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01	0.01	0.04	0.03	*****	0.08
10	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.12	*****	0.17
11	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
12	0.15	0.14	0.00	0.15	0.16	0.16	0.16	0.13	0.15	0.16	0.17	0.12	0.09	*****	0.00
13	0.52	0.48	0.37	0.48	0.51	0.51	0.43	0.63	0.55	0.56	0.48	0.20	0.52	*****	0.44
14	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.15	0.00	*****	0.02
15	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.15	0.00	*****	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.06
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.02
22	0.58	0.69	0.71	0.79	0.74	0.69	0.71	0.54	0.70	0.69	0.81	0.59	0.45	*****	0.26
23	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.08	0.04	*****	0.06
24	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
30	0.18	0.20	0.24	0.31	0.20	0.28	0.20	0.18	0.22	0.23	0.22	0.26	0.06	*****	0.09
31	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	*****	0.00
MTOT	1.96	1.86	1.80	2.23	2.13	2.18	1.98	1.88	2.19	2.10	2.06	1.91	1.42	*****	1.48
FEB															
1	0.11	0.14	0.08	0.04	0.05	0.08	0.12	0.09	0.04	0.08	0.06	0.06	0.04	*****	0.03
2	0.18	0.16	0.15	0.24	0.18	0.19	0.21	0.20	0.18	0.20	0.25	0.18	0.12	*****	0.11
3	0.03	0.15	0.11	0.03	0.07	0.05	0.04	0.02	0.08	0.09	0.05	0.06	0.07	*****	0.07
8	0.06	0.08	0.12	0.06	0.05	0.06	0.06*	0.06	0.07	0.07	0.07	0.04	0.00	*****	0.03
9	0.01	0.03	0.04	0.00	0.00	0.00	0.04*	0.04	0.00	0.01	0.00	0.00	0.04	*****	0.00
10	1.04	0.81	0.80	0.93	0.89	0.91	0.92*	0.91	1.05	0.88	0.93	1.08	1.04	*****	1.17
11	1.12	1.10	1.42	1.41	1.42	1.37	1.24*	1.24	1.48	1.42	1.43	1.46	1.28	*****	1.57
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	*****	0.00
MTOT	2.55	2.47	2.72	2.71	2.66	2.66	2.63	2.56	2.90	2.75	2.80	2.88	2.59	*****	2.98

MTOT=MONTHLY TOTALS

*=ESTIMATED

AUSTIN URBAN HYDROLOGY STUDY

DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES EAST OF MERIDIAN 97°45'

PERIOD : 1977 WATER YEAR

GAGE NUMBER

DATE	1SHL	2SHL	4-R	5-R	6-R	18OG	1WLN	2WLN	3WLN	4WLN	5WLN	6WLN	1-R	2-R	3-R
MAR															
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	*****	0.00
3	1.00	0.95	0.91	1.04	0.88	1.05	1.22	1.03	0.89	0.95	1.00	0.93	1.13	*****	0.93
4	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.04
9	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
10	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
11	0.03	0.01	0.02	0.03	0.00	0.01	0.05	0.04	0.01	0.02	0.02	0.00	0.05	*****	0.00
17	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.03	0.00	0.03	*****	0.00
24	0.02	0.02	0.07	0.06	0.02	0.03	0.09	0.06	0.02	0.05	0.05	0.05	0.06	*****	0.03
25	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.01	0.01	0.01	0.01	0.00	0.01	*****	0.03
26	0.42	0.38	0.39	0.32	0.24	0.42	0.49	0.50	0.44	0.39	0.53	0.32	0.52	*****	0.60
27	0.42	0.38	0.39	0.55	0.58	0.63	0.36	0.52	0.58	0.52	0.63	0.48	0.54	*****	0.56
28	0.00	0.00	0.00	0.01	0.04	0.02	0.02	0.01	0.02	0.00	0.02	0.14	0.01	*****	0.02
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.02
MTOT	1.91	1.74	1.78	2.02	1.82	2.18	2.28	2.19	1.98	1.96	2.30	1.92	2.35	*****	2.23
APR															
1	0.00	0.00	0.00	0.01	0.05	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00	*****	0.00
2	0.04	0.02	0.08	0.07	0.04	0.05	0.02	0.03	0.02	0.04	0.05	0.00	0.02	*****	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	*****	0.00
4	0.10	0.12	0.10	0.09	0.04	0.11	0.13	0.13	0.07	0.07	0.07	0.20	0.13	*****	0.06
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.02
12	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
13	0.24	0.45	0.33	1.10	0.57	0.87	0.19	0.35	0.42	0.41	0.52	0.33	0.33	*****	0.49
14	0.12	0.13	0.06	0.07	0.03	0.03	0.29	0.17	0.03	0.07	0.05	0.10	0.16	*****	0.10
15	2.52	2.43	1.92	2.47	2.25	2.15	2.93	2.58	2.30	2.55	2.23	1.40	2.34	*****	2.21
16	1.05	1.06	0.96	0.96	1.18	1.16	1.12	1.14	1.19	1.02	1.12	0.73	0.93	*****	0.98
17	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	*****	0.01
19	1.19	1.27	1.15	1.10*	1.09	1.05	1.18	1.51	1.50	1.26	1.59	0.57	1.02	*****	0.89
20	0.51	0.54	0.40	0.50*	0.58	0.55	0.53	0.52	0.58	0.52	0.58	0.31	0.46	*****	0.52
21	0.02	0.04	0.03	0.09	0.05	0.02	0.01	0.02	0.03	0.02	0.08	0.00	0.05	*****	0.00
22	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
27	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
29	0.94	0.11	0.05	0.03	0.00	0.02	1.67	1.63	0.03	0.20	0.12	0.00	1.30	*****	0.96
30	0.21	0.06	0.10	0.05	0.05	0.12	0.18	0.24	0.10	0.22	0.08	0.10	0.28	*****	0.03
MTOT	6.96	6.33	5.18	6.55	5.96	6.13	8.26	8.34	6.27	6.40	6.49	3.74	7.04	*****	6.27

MTOT=MONTHLY TOTALS

*=ESTIMATED

AUSTIN URBAN HYDROLOGY STUDY

DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES EAST OF MERIDIAN 97°45'

PERIOD : 1977 WATER YEAR

G A G E N U M B E R

DATE	1SHL	2SHL	4-R	5-R	6-R	180G	1WLN	2WLN	3WLN	4WLN	5WLN	6WLN	1-R	2-R	3-R
MAY															
1	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	*****	0.02
2	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
7	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.09	0.02	0.02	0.05	0.00	0.00	*****	0.00
9	0.00	0.01	0.00	0.00	0.00	0.09	0.84	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
10	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
11	0.01	0.02	0.03	0.04	0.01	0.02	0.02	0.11	0.03	0.01	0.00	0.00	0.70	*****	0.06
13	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.02
15	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	*****	0.00
17	0.05	0.02	0.02	0.05	0.07	0.01	0.08	0.00	0.00	0.03	0.02	0.00	0.00	*****	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.00	*****	0.00
19	0.24	0.08	0.15	0.09	0.06	0.25	0.37	0.21	0.23	0.22	0.29	0.13	0.38	*****	0.21
20	0.15	0.11	0.10	0.11	0.06	0.05	0.15	0.39	0.12	0.24	0.18	0.07	0.22	*****	0.12
21	0.74	0.71	0.69	0.77	0.63	0.68	0.74	0.74	0.73	0.66	0.65	0.95	0.52	*****	0.54
22	0.00	0.03	0.04	0.09	0.06	0.02	0.04	0.11	0.00	0.00	0.00	0.00	0.00	*****	0.03
23	0.29	0.03	0.06	0.00	0.01	0.14	0.01	0.00	0.00	0.08	0.00	0.00	0.05	*****	0.07
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	*****	0.04
31	0.05	0.09	0.00	0.03	0.00	0.00	0.14	0.01	0.00	0.00	0.01	0.00	0.00	*****	0.00
MTOT	1.55	1.12	1.10	1.18	0.91	1.30	2.43	1.67	1.18	1.26	1.21	1.17	1.89	*****	1.11
JUN															
1	0.16	0.05	0.00	0.01	0.01	0.01	0.14	0.16	0.01	0.02	0.00	0.00	0.24	*****	0.10
2	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.03
11	0.00	0.05	0.05	0.00	0.00	0.22	0.04	0.33	0.64	0.86	0.32	0.00	0.37	*****	0.03
12	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.10	0.00	0.16	0.00	0.00	0.05	*****	0.04
13	0.03	0.03	0.02	0.03	0.02	0.01	0.04	0.03	0.01	0.02	0.03	0.00	0.06	*****	0.00
14	0.02	0.00	0.00	0.01	0.03	0.00	0.07	0.01	0.00	0.00	0.00	0.05	0.45	*****	0.00
15	0.02	0.11	0.75	0.54	0.21	0.39	0.51	0.50	0.87	1.18	0.80	0.34	0.00	*****	0.52
16	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	*****	0.05
21	0.11	0.10	0.13	0.02	0.00	0.12	0.33	0.07	0.04	0.31	0.14	0.00	0.05	*****	0.24
22	0.04	0.07	0.12	0.15	0.15	0.04	0.23	0.10	0.06	0.05	0.05	0.11	0.00	*****	0.21
23	0.41	0.39	0.45	0.66	0.12	0.59	0.49	0.66	0.97	0.62	0.76	1.08	0.79	*****	1.17
24	0.01	0.01	0.00	0.01	0.00	0.02	0.02	0.00	0.01	0.02	0.01	0.00	0.04	*****	0.00
29	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
MTOT	0.81	0.82	1.52	1.44	0.55	1.43	1.88	1.96	2.61	3.25	2.11	1.58	2.05	*****	2.39
JUL															
12	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
15	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.10	0.00	*****	0.00
16	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	*****	0.00
17	0.23	0.27	0.05	0.11	0.52	0.16	0.05	0.00	0.08	0.13	0.22	0.23	0.05	*****	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	*****	0.00
MTOT	0.23	0.28	0.05	0.11	0.52	0.20	0.05	0.00	0.11	0.13	0.22	0.33	0.05	*****	0.00

MTOT=MONTHLY TOTALS

AUSTIN URBAN HYDROLOGY STUDY

DAILY AND MONTHLY RAINFALL SUMMARY FOR GAGES EAST OF MERIDIAN 97°45'

PERIOD : 1977 WATER YEAR

GAGE NUMBER

DATE	1SHL	2SHL	4-R	5-R	6-R	1806	1WLN	2WLN	3WLN	4WLN	5WLN	6WLN	1-R	2-R	3-R
AUG															
12	0.00	0.08	0.10	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	*****	0.03
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	*****	0.13
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.03
27	0.05	0.26	0.00	0.03	0.00	0.00	0.02	0.00	0.13	0.00	0.00	0.09	0.00	*****	0.00
28	0.03	0.05	0.00	0.00	0.00	0.05	0.02	0.00	0.01	0.01	0.00	0.00	0.00	*****	0.00
MTOT	0.08	0.39	0.10	0.03	0.00	0.07	0.13	0.01	0.19	0.01	0.00	0.09	0.05	*****	0.19
SEPT															
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	*****	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.11	0.01	0.00	0.00	0.00	0.00	*****	0.00
8	0.10	0.00	0.05	0.12	0.06	0.03	0.01	0.09	0.02	0.01	0.03	0.00	0.00	*****	0.00
9	0.06	0.11	0.05	0.10	0.09	0.06	0.09	0.30	0.01	0.03	0.03	0.00	0.55	*****	0.36
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	*****	0.00
11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*****	0.00
12	0.00	0.34	0.31	0.45	0.41	0.24	0.00	0.01	0.27	0.38	0.30	0.19	0.08	*****	0.20
13	0.90	1.23	1.13	0.83	0.74	0.86	0.73	0.67	0.88	0.99	0.96	0.69	0.30	*****	0.23
14	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.00	*****	0.00
19	1.42	1.43	1.45	1.52	1.21	1.35	2.27	1.50	2.06	1.33	1.42	0.94	0.35	*****	0.54
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	*****	0.00
MTOT	2.49	3.11	2.99	3.03	2.51	2.55	3.80	2.70	3.41	2.75	2.76	1.86	1.28	*****	1.33
WTOT	28.76	27.96	27.30	30.07	27.47	28.88	35.33	32.47	31.30	31.44	31.02	24.74	28.53	*****	27.67

MTOT=MONTHLY TOTALS
WTOT=WATER YEAR TOTAL

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