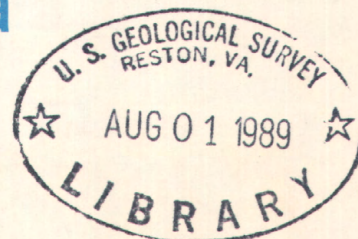


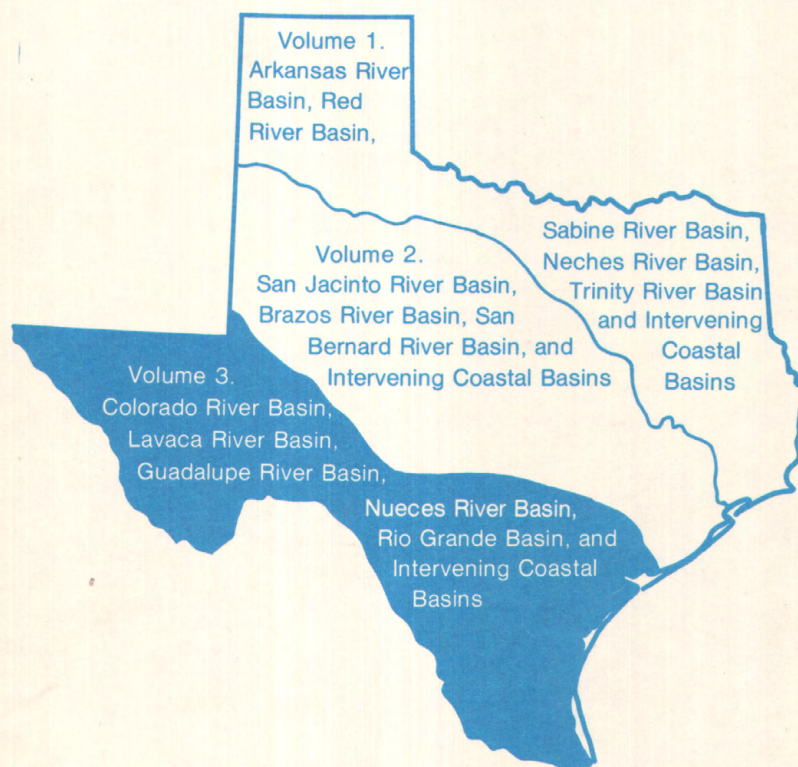
(200)
Ga 3
Texas
1988
v. 3



Water Resources Data Texas Water Year 1988



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



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-88-3
Prepared in cooperation with the State of Texas
and with other agencies

CALENDAR FOR WATER YEAR 1988

1987

OCTOBER

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

NOVEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER

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

1988

JANUARY

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

FEBRUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29					

MARCH

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

APRIL

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

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

JUNE

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY

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

AUGUST

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

SEPTEMBER

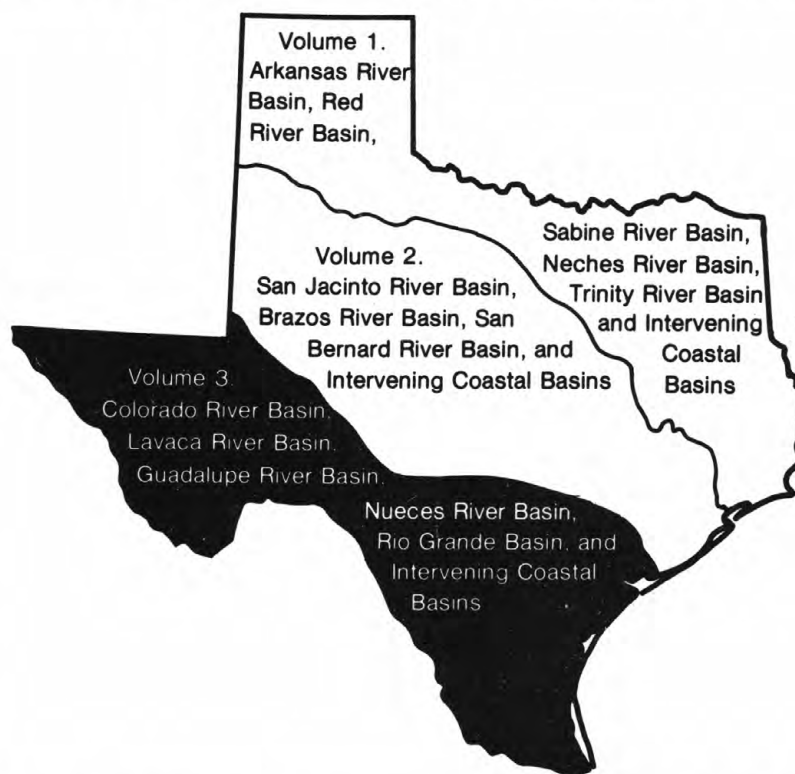
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	



Water Resources Data Texas Water Year 1988

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

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



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-88-3
Prepared in cooperation with the State of Texas
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to
District Chief, Water Resources Division
U.S. Geological Survey
8011A Cameron Road
Austin, Texas 78753

1989

Preface

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

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

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

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

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD-89/245	2.	3. Recipient's Accession No.
4. Title and Subtitle Water Resources Data for Texas, Water Year 1988, Volume 3; Colorado River, Lavaca River, Guadalupe River, Nueces River, Rio Grande basins and Intervening Coastal basins			5. Report Date April 1989
7. Author(s)			6. 8. Performing Organization Rept. No. USGS-WDR-TX-88-3
9. Performing Organization Name and Address U.S. Geological Survey, Water Resources Division 8011 Cameron Road, Building 1 Austin, TX 78753			10. Project/Task/Work Unit No.
12. Sponsoring Organization Name and Address U.S. Geological Survey, Water Resources Division 8011 Cameron Road, Building 1 Austin, TX 78753			11. Contract(C) or Grant(G) No. (C) (G)
13. Type of Report & Period Covered			Oct. 1, 1987, to Sept. 30, 1988
14.			
15. Supplementary Notes Prepared in cooperation with the State of Texas and with other agencies.			
16. Abstract (Limit: 200 words) Surface-water data for the 1988 water year for Texas are presented in three volumes, appropriately identified as to content by river basins. Data in each volume consist of records of stage, discharge, and water quality of streams and canals; and stage, contents, and water quality of lakes and reservoirs. Also included are crest-stage and flood-hydrograph partial-record stations, reconnaissance partial-record stations, and low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements. Records for a few pertinent stations in bordering States also are included. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Texas.			
17. Document Analysis a. Descriptors *Texas, *Hydrologic data, *Surface water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water analyses b. Identifiers/Open-Ended Terms c. COSATI Field/Group			
18. Availability Statement: No restriction on distribution. This report may be purchased from: National Technical Information Service Springfield, VA 22161		19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 434
		20. Security Class (This Page) UNCLASSIFIED	22. Price

CONTENTS

	Page
Preface.....	iii
List of gaging stations, in downstream order, for which records are published.....	v
Introduction.....	1
Cooperation.....	1
Hydrologic conditions.....	2
Streamflow.....	2
Water quality.....	4
Special networks and programs.....	6
Explanation of the records.....	7
Station identification numbers.....	7
Downstream order numbering.....	7
Records of stage and water discharge.....	7
Data collection and computation.....	8
Data presentation.....	9
Identifying estimated daily discharge.....	10
Accuracy of the records.....	10
Other records available.....	11
Records of surface-water quality.....	11
Classification of records.....	11
Arrangement of records.....	11
On-site measurements and sample collection.....	11
Water temperature.....	12
Sediment.....	12
Laboratory measurements.....	13
Data presentation.....	13
Remark codes.....	13
Access to WATSTORE data.....	14
Definition of terms.....	14
Publications of techniques of water-resources investigations.....	23
Gaging-station records.....	25
Discharge at partial-record stations and miscellaneous sites.....	417
Low-flow partial-record stations.....	417
Crest-stage partial-record stations.....	419
Discharge measurements at miscellaneous sites.....	421
Index.....	423

ILLUSTRATION

Figure 1. Area of Texas covered by volume 3 and location of selected streamflow and water-quality stations in volume 3.....	3
2. Comparison of monthly mean discharge at four long-term representative gaging stations during the 1988 water year with median of the monthly mean discharge for the period 1951-80.....	5

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

	Page
WESTERN GULF OF MEXICO BASINS	
COLORADO RIVER BASIN	
Colorado River near Gail.....	25
Colorado River near Ira.....	26
Colorado River near Cuthbert.....	27
Colorado River at Colorado City.....	31
Morgan Creek:	
Lake Colorado City near Colorado City.....	35
Beals Creek near Coahoma.....	36
Beals Creek near Westbrook.....	40
Colorado River above Silver.....	46
E.V. Spence Reservoir near Robert Lee.....	52
Colorado River at Robert Lee.....	58
Colorado River near Ballinger.....	59
Elm Creek at Ballinger.....	63
South Concho River (head of Concho River):	
South Concho River at Christoval.....	67
Middle Concho River above Tankersley.....	68
Spring Creek above Tankersley.....	69
Dove Creek at Knickerbocker.....	70
Twin Buttes Reservoir near San Angelo.....	71
South Concho River:	
Lake Nasworthy near San Angelo.....	72
South Concho River:	
North Concho River near Carlsbad.....	73
O.C. Fisher Lake at San Angelo.....	74
North Concho River at San Angelo.....	75
Concho River at San Angelo.....	76
Concho River at Paint Rock.....	77
Colorado River near Stacy.....	81
Colorado River at Winchell.....	84
Pecan Bayou:	
Jim Ned Creek:	
Hords Creek:	
Hords Creek Lake near Valera.....	86
Hords Creek near Valera.....	87
Pecan Bayou near Mullin.....	88
San Saba River at Menard.....	91
San Saba River near Brady.....	92
San Saba River at San Saba.....	93
Colorado River near San Saba.....	94
Lake Buchanan near Burnet.....	98
Colorado River:	
Llano River near Junction.....	99
Llano River near Mason.....	100
Beaver Creek near Mason.....	101
Llano River at Llano.....	102
Sandy Creek near Kingsland.....	103
Pedernales River near Fredericksburg.....	104
Pedernales River near Johnson City.....	105
Lake Travis near Austin.....	106
Colorado River below Mansfield Dam, Austin.....	107
Bull Creek at Loop 360 near Austin.....	109
Lake Austin at Austin.....	112
Colorado River (Town Lake):	
Barton Creek near Camp Craft Road, Austin.....	119
Barton Creek at Loop 360, Austin.....	120
Barton Springs at Austin.....	122
Shoal Creek at 12th Street, Austin.....	125
Town Lake at Austin.....	127
Colorado River at Austin.....	134
Walnut Creek at Webberville Road, Austin.....	138
Colorado River below Austin.....	140
Onion Creek near Driftwood.....	141
Bear Creek below Farm Road 1826 near Driftwood.....	143
Slaughter Creek at Farm Road 1826 near Austin.....	145
Williamson Creek at Oak Hill.....	147
Williamson Creek at Jimmy Clay Road, Austin.....	150
Onion Creek at U.S. Highway 183 near Austin.....	151
Colorado River at Bastrop.....	153

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

vii

	Page
WESTERN GULF OF MEXICO BASINS--Continued	
COLORADO RIVER BASIN--Continued	
Colorado River above LaGrange.....	162
Cummins Creek:	
Redgate Creek near Columbus.....	163
Colorado River at Columbus.....	164
Colorado River at Wharton.....	165
Colorado River near Bay City.....	170
TRES PALACIOS RIVER BASIN	
Tres Palacios River near Midfield.....	172
LAVACA RIVER BASIN	
Lavaca River at Hallettsville.....	173
Lavaca River near Edna.....	174
Navidad River near Hallettsville.....	177
Navidad River near Speaks.....	178
Sandy Creek near Louise.....	179
Mustang Creek:	
West Mustang Creek near Ganado.....	181
Lake Texana near Edna.....	182
GARCITAS CREEK BASIN	
Garcitas Creek near Inez.....	188
PLACEDO CREEK BASIN	
Placedo Creek near Placedo.....	190
GUADALUPE RIVER BASIN	
Guadalupe River:	
North Fork Guadalupe River near Hunt.....	191
Guadalupe River at Hunt.....	192
Johnson Creek near Ingram.....	193
Guadalupe River at Kerrville.....	194
Guadalupe River at Comfort.....	197
Guadalupe River near Spring Branch.....	198
Canyon Lake near New Braunfels.....	199
Guadalupe River at Sattler.....	200
Guadalupe River above Comal River at New Braunfels.....	201
Comal River at New Braunfels.....	202
Guadalupe River below New Braunfels.....	203
San Marcos River spring flow at San Marcos.....	205
Blanco River at Wimberley.....	206
Blanco River near Kyle.....	209
San Marcos River at Luling.....	210
Plum Creek at Lockhart.....	212
Plum Creek near Luling.....	213
Sandies Creek near Westhoff.....	214
Guadalupe River at Cuero.....	216
Guadalupe River at Victoria.....	217
Coleta Creek:	
Fifteenmile Creek near Weser.....	219
Coleta Creek at Arnold Road Crossing near Schroeder.....	220
Coleta Creek Reservoir inflow (Guadalupe Diversion) near Schroeder.....	221
Perdido Creek at Farm Road 622 near Fannin.....	222
Coleta Creek Reservoir (Condenser No. 1) near Fannin.....	223
Coleta Creek Reservoir near Victoria.....	225
Coleta Creek Reservoir (Outlet) near Victoria.....	226
Coleta Creek near Victoria.....	228
San Antonio River:	
Olmos Creek at Dresden Drive, San Antonio.....	229
Olmos Reservoir at San Antonio.....	231
San Antonio River at San Antonio.....	232
San Antonio River at Loop 410 at San Antonio.....	235
Salado Creek:	
Lorence Creek at Shadow Cliff Drive, San Antonio.....	242
Mud Creek:	
West Elm Creek at San Antonio.....	244
East Elm Creek at San Antonio.....	247
Salado Creek (upper station) at San Antonio.....	249
Salado Creek (lower station) at San Antonio.....	252
Medina River at Bandera.....	262
Medina Lake near San Antonio.....	265
Diversion Lake:	
Medina Canal near Riomedina.....	266

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

	Page
WESTERN GULF OF MEXICO BASINS--Continued	
GUADALUPE RIVER BASIN--Continued	
Guadalupe River:	
San Antonio River:	
Medina River at La Coste.....	267
Medina River near Macdona.....	276
Medio Creek at Pearsall Road at San Antonio.....	277
Medina River near Somerset.....	286
Culebra Creek:	
Helotes Creek at Helotes.....	287
Leon Creek at I.H. 35 at San Antonio.....	288
Medina River at San Antonio.....	293
San Antonio River near Elmendorf.....	302
San Antonio River near Falls City.....	311
Cibolo Creek near Boerne.....	320
Cibolo Creek at Selma.....	321
Cibolo Creek near Falls City.....	322
Ecleto Creek near Runge.....	328
San Antonio River at Goliad.....	329
Guadalupe-Blanco River Authority Calhoun Canal	
Flume No. 1 near Long Mott.....	333
Guadalupe River near Tivoli.....	334
COPANO CREEK BASIN	
Copano Creek near Refugio.....	338
MISSION RIVER BASIN	
Mission River at Refugio.....	340
ARANSAS RIVER BASIN	
Aransas River near Skidmore.....	342
NUECES RIVER BASIN	
Nueces River at Laguna.....	343
West Nueces River near Brackettville.....	346
Nueces River below Uvalde.....	347
Nueces River near Asherton.....	348
Nueces River at Cotulla.....	349
San Casimiro Creek near Freer.....	350
Nueces River near Tilden.....	351
Frio River at Concan.....	352
Dry Frio River near Reagan Wells.....	355
Frio River below Dry Frio River near Uvalde.....	358
Sabinal River near Sabinal.....	359
Sabinal River at Sabinal.....	362
Hondo Creek near Tarpley.....	363
Hondo Creek at King Waterhole near Hondo.....	366
Seco Creek at Miller Ranch near Utopia.....	367
Seco Creek at Rowe Ranch near D'Hanis.....	370
Frio River near Derby.....	371
Frio River at Tilden.....	372
San Miguel Creek near Tilden.....	373
Choke Canyon Reservoir near Three Rivers.....	374
Atascosa River at Whitsett.....	375
Nueces River near Three Rivers.....	376
Lagarto Creek near George West.....	379
Lake Corpus Christi near Mathis.....	380
Nueces River near Mathis.....	381
OSO CREEK BASIN	
Oso Creek at Corpus Christi.....	384
SAN FERNANDO CREEK BASIN	
San Diego Creek (head of San Fernando Creek) at Alice.....	386
RIO GRANDE BASIN	
Rio Grande at El Paso.....	387
Rio Grande at Foster Ranch near Langtry.....	388
Pecos River at Red Bluff, NM.....	390
Delaware River near Red Bluff, NM.....	391
Red Bluff Reservoir near Orla.....	392
Pecos River near Orla.....	393
Reeves County Water Improvement District No. 2 canal near Mentone...	397
Ward County Irrigation District No. 1 canal near Barstow.....	398
Pecos County Water Improvement District No. 2	
(upper diversion) canal near Grandfalls.....	399
Pecos County Water Improvement District No. 2 canal	
near Imperial.....	400

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

ix

WESTERN GULF OF MEXICO BASINS--Continued

Page

RIO GRANDE BASIN--Continued

Rio Grande:

Pecos County Water Improvement District No. 3 canal near Imperial.....	401
Pecos River near Girvin.....	402
Pecos River near Langtry.....	403
Devils River at Pafford Crossing near Comstock.....	405
Rio Grande below Amistad Dam near Del Rio.....	407
Rio Grande below Falcon Dam.....	408
Rio Grande at Fort Ringgold, Rio Grande City.....	409
Rio Grande near Los Ebanos.....	410
Rio Grande below Anzalduas Dam.....	411
Arroyo Colorado at Harlingen.....	413
Rio Grande near Brownsville.....	415

WATER RESOURCES DATA - TEXAS, 1988

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

INTRODUCTION

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

This report series includes records of stage, discharge, and water quality of streams and canals; stage, contents, and water quality of lakes and reservoirs. Volume 3 contains records for water discharge at 140 gaging stations; stage only at 1 gaging station; stage and contents at 18 lakes and reservoirs; and water quality at 85 gaging stations. Also included are data for 37 partial-record stations. Additional water data were collected at 4 miscellaneous sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Texas.

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

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

Publications similar to this report are published annually by the Geological Survey for all States. These official Geological Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water Data Report TX-88-3." For archiving and general distribution, the reports for the 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or may be purchased on microfiche from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including the current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (512) 832-5791.

COOPERATION

Federal agencies that assisted the Geological Survey in the collection of data in this report in the form of funds or services in 1988 are:

Corps of Engineers, U.S. Army.

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

U.S. Bureau of Reclamation.

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

Texas Water Development Board, M.R. Arnold II, Executive Administrator; the cities of Abilene, Arlington, Austin, Carrollton, Corpus Christi, Dallas, Gainesville, Garland, Georgetown, Graham, Houston, Lubbock, Nacogdoches, Runaway Bay, San Angelo, San Antonio, and Wichita Falls; Bexar, Medina, and Atascosa Counties Water Control and Improvement District No. 1; Brazos River Authority; Coastal Industrial Water Authority; Colorado River Municipal Water District; Dallas Public Works Department; Dallas Utilities Water Department; Edwards Underground Water District; Franklin County Water District; Galveston County; Greenbelt Municipal and Industrial Water Authority; Guadalupe-Blanco River Authority; Harris County Flood Control District; Lavaca-Navidad River Authority; Lower Colorado River Authority; Lower Neches Valley Authority; North Central Texas Municipal Water Authority; Northeast Texas Municipal Water District; Pecos River Commission; Red Bluff Water Power Control District; Sabine River Authority of Texas; Sabine River Compact Administration; San Antonio City Public Service Board; San Antonio City Water Board; San Antonio River Authority; San Jacinto River Authority; Tarrant County Water Control and Improvement District No. 1; Texas Water Commission; Titus County Fresh Water Supply District No. 1; Trinity River Authority; Upper Guadalupe River Authority; Upper Neches River Municipal Water Authority; Upper Trinity Basin Water Quality Compact; West Central Texas Municipal Water District; and Wichita County Water Improvement District No. 2.

HYDROLOGIC CONDITIONS

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

Precipitation for the first half of the water year 1988 was normal to above normal in the Panhandle, East Texas, and the Lower Rio Grande Valley, and was below normal for the remainder of the State. For the second half of the water year, precipitation was slightly above normal in West Texas to substantially above normal in the Panhandle, and was below normal to substantially below normal for the remainder of the State. Total precipitation for the year was below normal to substantially below normal in South and Southeast Texas, above normal in the Panhandle, and near normal for the remainder of the State.

Although precipitation during the current water year was below normal to substantially below normal in several regions of Texas, streamflow was in the normal to above normal range at every index station for the entire year. This pattern of streamflow was the result of above normal precipitation that occurred in the previous water year (1987).

Conservation storage in 71 selected reservoirs throughout the State, with a combined conservation capacity of 25,951,000 acre-feet, decreased from 88 percent at the end of September 1987 to 81 percent at the end of September 1988. Records from these reservoirs indicate that storage increased in 9, decreased in 61, and remained the same in 1.

The area for which water-resources data are presented in volume 3 includes the entire southwestern one-half of the State, extending from the western tip of the State to the central and lower Texas Gulf Coast. Normal annual precipitation ranges from less than 8 inches in parts of west Texas to more than 40 inches along the middle Texas coast. Average annual runoff was less than 0.1 inch in parts of western Texas to more than 10 inches in some places along the central Gulf Coast. The area described in volume 3 and the location of selected streamflow and water-quality stations in the area is shown in figure 1.

Streamflow

The most notable characteristic of streamflow in Texas during the water year 1988 was the absence of extreme hydrologic events. For five selected stations in volume 3, streamflow was below normal at two, normal at two, and above normal at one.

WATER RESOURCES DATA FOR TEXAS, 1988

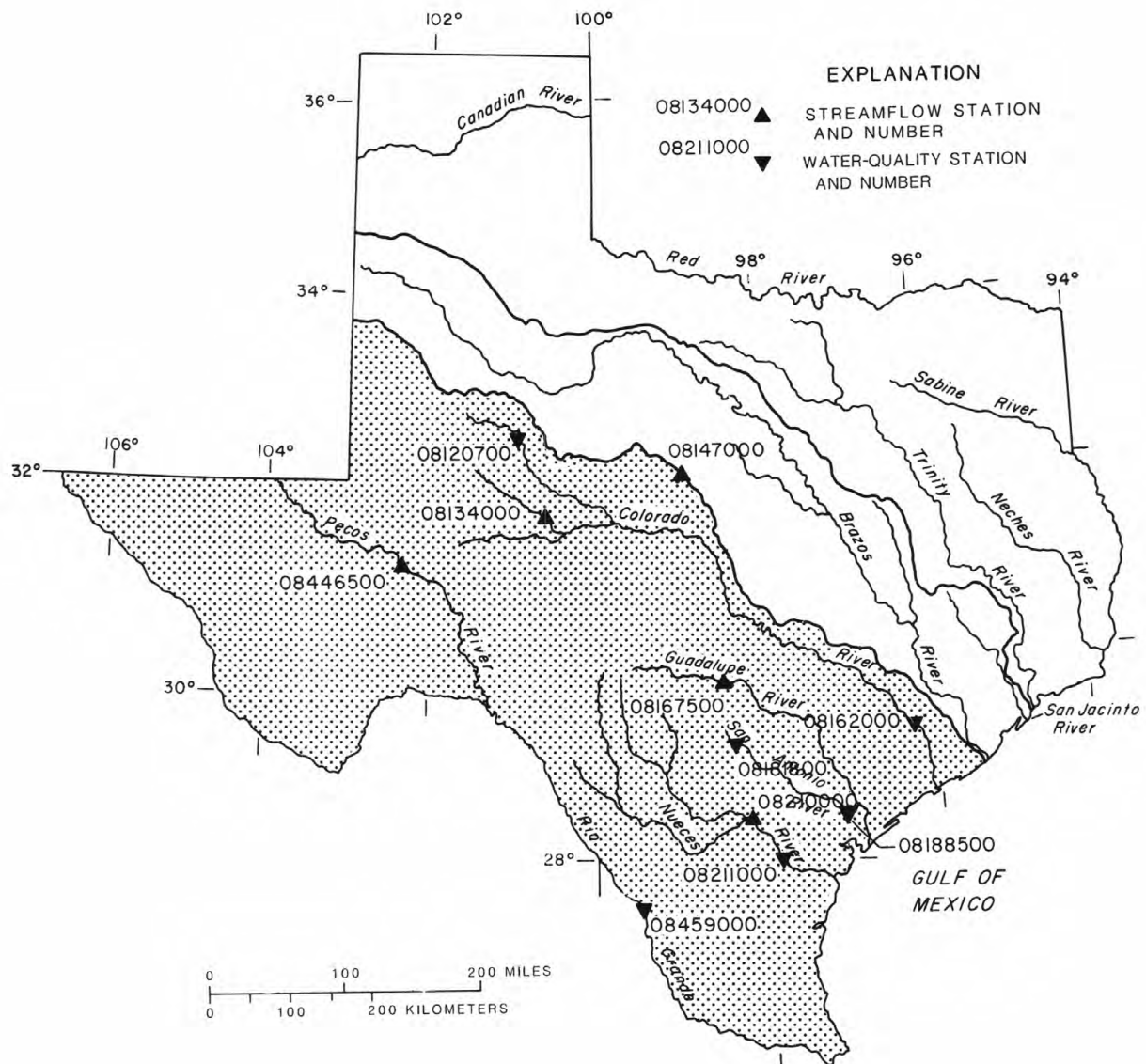


Figure 1.--Area of Texas covered by volume 3 (shaded) and location of selected streamflow and water-quality stations in volume 3.

Streamflow at the hydrologic index stations North Concho River near Carlsbad and Guadalupe River near Spring Branch ranged from normal to greater normal during the year. The North Concho River near Carlsbad had normal streamflow during October, May, June, and August and greater than normal streamflow (within the highest 25 percent of record) during the remainder of the year. The Guadalupe River near Spring Branch had greater than normal streamflow in November and July and normal streamflow for the remainder of the year. A comparison of streamflow for the water year 1988 with streamflow for the period of record at the five selected stations for which data are included in volume 3 is presented in the following table:

Station no. and name	Discharge during 1988 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Max.	Min.	Avg.	Max.	Min.	Avg.
<u>Colorado River basin</u>						
08134000 North Concho River near Carlsbad, Tex. 1/ 2/	3,800	0.04	9.33	94,600	0	32.8 (1925-88)
08147000 Colorado River near San Saba, Tex.	11,000	37	364	224,000	0	649 (1969-88)
<u>Guadalupe River basin</u>						
08167500 Guadalupe River near Spring Branch, Tex. 2/	35,100	103	327	160,000	0	333 (1923-88)
<u>Nueces River basin</u>						
08210000 Nueces River near Three Rivers, Tex. 2/	629	11.0	120	141,000	0	823 (1916-88)
<u>Rio Grande Basin</u>						
08446500 Pecos River near Girvin, Tex.	230	18.0	60.9	20,000	1.9	81.7 (1940-88)
1/ National Stream Quality Accounting Network (NASQAN) site.						
2/ Hydrologic index station.						

At the two other index stations in the State, streamflow was normal to greater than normal. Monthly mean discharge and the median of the long-term monthly means for the water years 1951-80 for four hydrologic index stations in the State are shown in figure 2. Streamflow during the water year 1988 at the Nueces River near Rockland was greater than normal during the period November through January, and normal for the remainder of the year. Streamflow during the water year 1988 at the North Bosque River near Clifton was greater than normal in June and normal for the remaining eleven months.

Conservation storage in 19 selected reservoirs in this area of the State, with a total combined conservation capacity of 8,872,580 acre-feet, decreased from 92 percent at the end of September 1987 to 85 percent at the end of September 1988. Records from these reservoirs indicate that storage increased in 1 and decreased in 18 during the water year 1988.

Water Quality

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

Records of discharge-weighted-average concentrations of dissolved solids for the water year 1988 are compared with those for the water years 1984-88 for selected long-term daily or continuous-record water-quality stations in the Colorado River, Guadalupe River, Nueces River, and Rio Grande basins. Results are shown in the following table:

WATER RESOURCES DATA FOR TEXAS, 1988

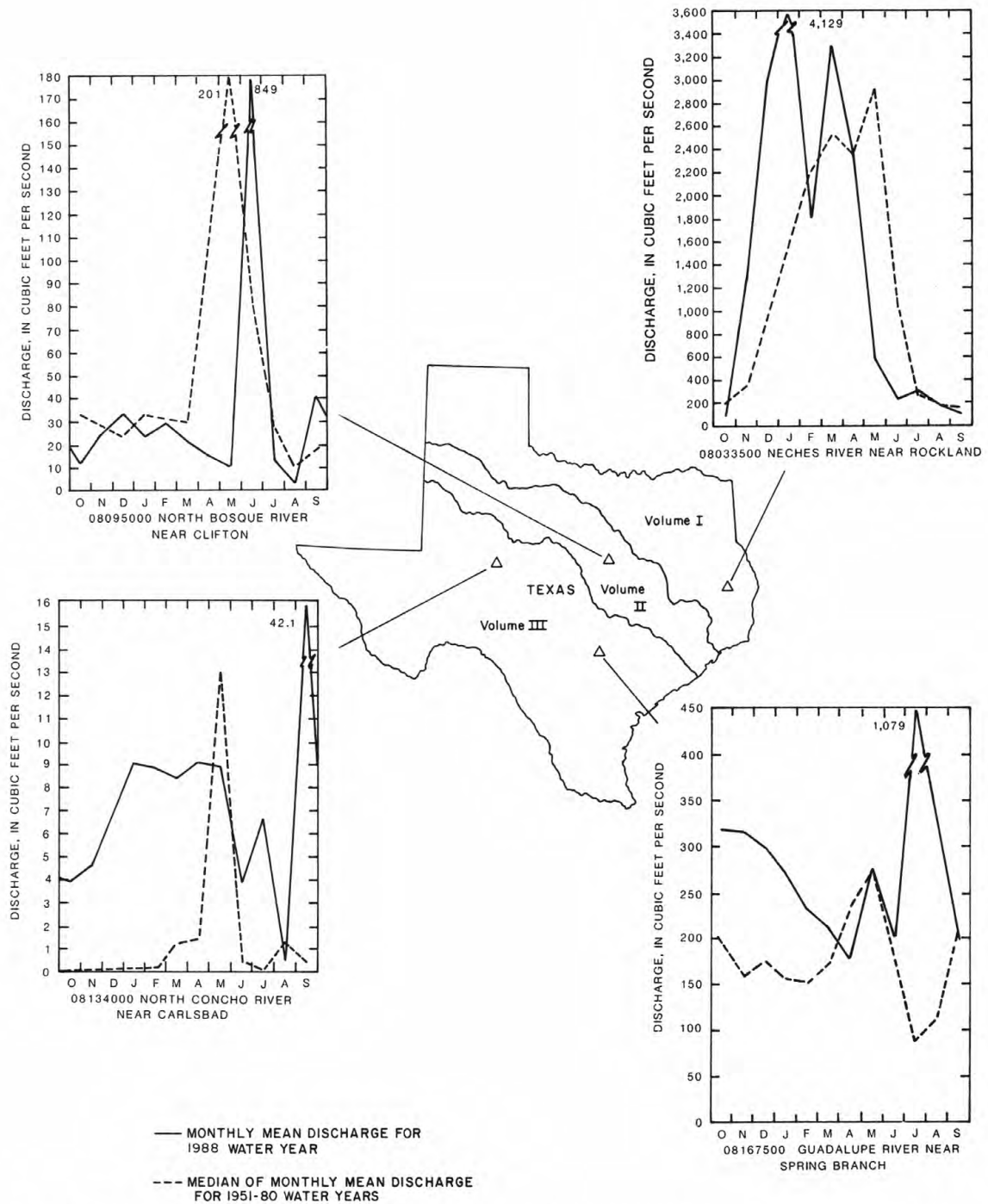


Figure 2.--Comparison of monthly mean discharges at four long-term hydrologic index gaging stations during the 1988 water year with median of the monthly mean discharges for 1951-80 water years.

Station no. and name	Mean discharge (cubic feet per second)		Discharge-weighted-average concentration of dissolved solids (milligrams per liter)	
	1988	1984-88	1988	1984-88
<u>Colorado River basin</u>				
08120700 Colorado River near Cuthbert, Tex.	25	38	1,490	1,100
08162000 Colorado River at Wharton, Tex.	1,195	2,610	316	258
<u>Guadalupe River basin</u>				
08181800 San Antonio River near Elmendorf, Tex.	371	*653	472	*377
08188500 San Antonio River at Goliad, Tex.	453	912	623	398
<u>Nueces River basin</u>				
08211000 Nueces River near Mathis, Tex.	166	432	309	313
<u>Rio Grande basin</u>				
08469200 Rio Grande below Anzalduas, Tex.	2,176	1,424	665	754

* Covers water years 1984-86 and February through September 1988.

SPECIAL NETWORKS AND PROGRAMS

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

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

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

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

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

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1988 water year that began October 1, 1987, and ended September 30, 1988. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Texas, for surface-water stations where only miscellaneous measurements are made.

Downstream Order Numbering

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

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

Records of Stage and Water Discharge

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

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

Data Collection and Computation

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

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

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

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

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

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

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

Data presentation

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

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

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

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

Other Records Available

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

Records of Surface-Water Quality

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

Classification of Records

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

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

Arrangement of Records

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

On-site Measurements and Sample Collection

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

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

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

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

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

Water Temperature

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

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

Sediment

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

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

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

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

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

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

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

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

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

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

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

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

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

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

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

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

Remark Codes

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

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

ACCESS TO WATSTORE DATA

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

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

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

DEFINITION OF TERMS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Bottom material: See Bed material.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate (CaCO_3).

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

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

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

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

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

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

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

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

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

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

Organism is any living entity.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Milligrams of oxygen per area or volume per unit time [$\text{mg O}_2/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}_2/(\text{m}^3 \cdot \text{time})$] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Solute is any substance that is dissolved in water.

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

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

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

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

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

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

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

Kingdom.....	Animal
Phylum.....	Arthropoda
Class.....	Insecta
Order.....	Ephemeroptera
Family.....	Ephemeridae
Genus.....	Hexagenia
Species.....	Hexagenia limbata

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

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

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

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

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

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

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

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

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1988, is called the "water year 1988."

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

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

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

PUBLICATIONS OF TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. "Water temperature-influential factors, field measurement, and data presentation," by H.H. Stevens, Jr., J.F. Ficke, and G.F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 p.
- 3-A1. "General field and office procedures for indirect measurements," by M.A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 p.
- 3-A2. "Measurement of peak discharge by the slope-area method," by Tate Dalrymple and M.A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 p.
- 3-A3. "Measurement of peak discharge at culverts by indirect methods," by G.L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 p.
- 3-A4. "Measurement of peak discharge at width contractions by indirect methods," by H.F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 p.
- 3-A5. "Measurement of peak discharge at dams by indirect methods," by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 p.
- 3-A6. "General procedure for gaging streams," by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 p.
- 3-A7. "Stage measurements at gaging stations," by T.J. Buchanan and W.P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 p.
- 3-A8. "Discharge measurements at gaging stations," by T.J. Buchanan and W.P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 p.
- 3-A9. "Measurement of time of travel and dispersion in streams by dye tracing," by E.F. Hubbard, F.A. Kilpatrick, L.A. Martens, and J.F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 p.
- 3-A10. "Discharge ratings at gaging stations," by E.J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 p.
- 3-A11. "Measurement of discharge by moving-boat method," by G.F. Smoot and C.E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 p.
- 3-A12. "Fluorometric procedures for dye tracing," by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS--TWRI Book 3, Chapter A12, 1986. 41 p.
- 3-A13. "Computations of continuous records of streamflow," by E.J. Kennedy: USGS--TWRI Book 3, Chapter A13, 1983. 53 p.
- 3-A14. "Use of flumes in measuring discharge," by F.A. Kilpatrick and V.R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 p.
- 3-A15. "Computation of water-surface profiles in open channels," by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 p.
- 3-A16. "Measurement of discharge using tracers," by F.A. Kilpatrick and E.D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 p.
- 3-A17. "Acoustic velocity meter systems," by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 p.
- 3-C1. "Fluvial sediment concepts," by H.P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 p.
- 3-C2. "Field methods for measurement of fluvial sediment," by H.P. Guy and V.W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 p.
- 3-C3. "Computation of fluvial-sediment discharge," by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 p.
- 4-A1. "Some statistical tools in hydrology," by H.C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 p.
- 4-A2. "Frequency curves," by H.C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 p.
- 4-B1. "Low-flow investigations," by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 p.
- 4-B2. "Storage analyses for water supply," by H.C. Riggs and C.H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 p.
- 4-B3. "Regional analyses of streamflow characteristics," by H.C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 p.
- 5-A1. "Methods for determination of inorganic substances in water and fluvial sediments," by M.W. Skougstad and others: USGS--TWRI Book 5, Chapter A1. 1979. 626 p.

- 5-A2. "Determination of minor elements in water by emission spectroscopy," by P.R. Barnett and E.C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 p.
- 5-A3. "Methods for analysis of organic substances in water," by D.F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 p.
- 5-A4. "Methods for collection and analysis of aquatic biological and microbiological samples," edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin, B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 p.
- 5-A5. "Methods for determination of radioactive substances in water and fluvial sediments," by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 p.
- 5-A6. "Quality assurance practices for the chemical and biological analyses of water and fluvial sediments," by L.C. Friedman and D.E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 p.
- 5-C1. "Laboratory theory and methods for sediment analysis," by H.P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 p.
- 7-C3. "A model for simulation of flow in singular and interconnected channels," by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1983. 110 p.
- 8-A2. "Installation and service manual for U.S. Geological Survey manometers," by J.D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 p.
- 8-B2. "Calibration and maintenance of vertical-axis type current meters," by G.F. Smoot and C.E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 p.

COLORADO RIVER MAIN STEM

08117995 COLORADO RIVER NEAR GAIL, TX

LOCATION.--Lat 32°37'43", long 101°17'06", Borden County, Hydrologic Unit 12080002, near right downstream end of bridge on FM 1205, 5 mi north of Junction FM 1785, 14 mi northwest of Vincent, 25 mi west of Ira, and 13 mi southeast of Gail.

DRAINAGE AREA.--498 mi².

PERIOD OF RECORD.--March to September 1988.

GAGE.--Water-stage recorder. Elevation of gage is 2,270 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those above 700 ft³/s, which are fair. No known regulation or diversions above station. Several observations of water temperature were made during the year.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 28	0645	646	8.82	Sept. 19	0630	1,230	10.65
July 3	0130	*4,010	*15.88				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, MARCH TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	2.8	1.9	.94	.64	12	.38	.00
2	---	---	---	---	---	3.1	1.9	.86	.51	1170	.41	15
3	---	---	---	---	---	9.1	2.7	.76	.33	1490	.45	29
4	---	---	---	---	---	5.1	4.8	.74	.23	57	.40	4.0
5	---	---	---	---	---	4.2	3.0	.68	.17	27	.60	1.8
6	---	---	---	---	---	3.7	2.4	.65	.03	15	.36	1.1
7	---	---	---	---	---	3.1	2.2	.59	.00	8.5	1.4	.80
8	---	---	---	---	---	2.8	2.0	.45	.00	31	1.2	.54
9	---	---	---	---	---	2.6	1.7	.38	.00	89	.63	.31
10	---	---	---	---	---	2.6	1.5	.33	.00	35	.44	.13
11	---	---	---	---	---	2.4	1.5	.18	.00	149	.43	.00
12	---	---	---	---	---	2.3	1.6	.54	.00	107	.40	.00
13	---	---	---	---	---	2.1	1.6	7.9	.00	61	.16	.06
14	---	---	---	---	---	2.1	1.6	2.9	.00	19	.00	2.1
15	---	---	---	---	---	2.2	1.6	2.1	.00	8.5	.54	1.6
16	---	---	---	---	---	2.2	2.9	1.7	.00	4.8	.60	1.0
17	---	---	---	---	---	2.2	3.2	1.3	.00	3.5	.34	.68
18	---	---	---	---	---	2.2	2.7	.97	.00	2.7	.04	.82
19	---	---	---	---	---	2.2	8.2	1.1	.00	2.3	.00	552
20	---	---	---	---	---	2.2	5.0	27	.00	2.0	.00	98
21	---	---	---	---	---	2.2	3.1	7.9	.00	1.8	.00	21
22	---	---	---	---	---	2.1	2.5	2.8	.00	1.6	.00	7.8
23	---	---	---	---	---	2.0	2.0	1.6	.00	1.4	.00	4.9
24	---	---	---	---	---	2.0	1.6	1.1	.00	1.2	.00	7.8
25	---	---	---	---	---	2.0	1.4	.82	.00	1.0	.00	4.6
26	---	---	---	---	---	1.9	1.3	.70	.00	.89	.00	3.1
27	---	---	---	---	---	1.9	1.1	.56	222	.89	.00	2.8
28	---	---	---	---	---	2.0	.97	.49	292	.82	.00	2.2
29	---	---	---	---	---	2.1	.96	.85	22	.62	.00	1.8
30	---	---	---	---	---	1.9	.97	.56	8.6	.43	.00	1.5
31	---	---	---	---	---	1.9	---	.59	---	.41	.00	---
TOTAL	---	---	---	---	---	83.2	69.90	141.32	546.51	3305.36	8.78	847.62
MEAN	---	---	---	---	---	2.68	2.33	4.56	18.2	107	.28	28.3
MAX	---	---	---	---	---	9.1	8.2	54	292	1490	1.4	552
MIN	---	---	---	---	---	1.9	.96	.33	.00	.41	.00	.00
AC-FT	---	---	---	---	---	165	139	280	1080	6560	17	1680
CAL YR 1987	TOTAL	---	MEAN	---	MAX	---	MIN	---	AC-FT	---		
WTR YR 1988	TOTAL	---	MEAN	---	MAX	---	MIN	---	AC-FT	---		

COLORADO RIVER MAIN STEM

08119500 COLORADO RIVER NEAR IRA, TX

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

DRAINAGE AREA.--3,483 mi², of which 2,371 mi² probably is noncontributing.

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

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

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

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

AVERAGE DISCHARGE.--5 years (water years 1948-52) prior to completion of Colorado River Dam, 50.5 ft³/s (36,590 acre-ft/yr); 30 years (water years 1959-88) regulated, 9.58 ft³/s (6,940 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,500 ft³/s July 6, 1948 (gage height, 21.35 ft), from rating curve extended above 9,600 ft³/s by slope-conveyance method; maximum gage height, 22.84 ft May 15, 1980 (from shift in rating); no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 908 ft³/s July 11 at 0715 hours (gage height, 10.63 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	.38	.68	1.0	1.3	1.2	1.2	.53	.18	84	2.7	.24
2	.23	.40	.68	1.0	1.2	1.6	1.3	.51	.17	126	3.6	6.0
3	.20	.42	.68	1.0	1.2	1.6	1.4	.53	.13	43	6.7	1.7
4	.18	.42	.68	1.0	1.3	1.4	1.4	.47	.11	5.4	2.5	.98
5	.16	.42	.69	1.0	1.3	1.4	1.3	.47	.09	1.6	.89	.59
6	.16	.40	.75	1.0	1.4	1.4	1.2	.43	.09	.98	.60	.39
7	.15	.44	.73	1.1	1.4	1.4	1.2	.43	.07	.72	.50	.30
8	.16	.45	.67	1.0	1.4	1.3	1.2	.41	.04	.61	.38	.26
9	.17	.45	.67	1.1	1.3	1.2	1.2	.34	.03	.61	.31	.22
10	.16	.44	.70	1.1	1.4	1.2	1.2	.42	.02	186	.26	.18
11	.16	.46	.76	1.1	1.3	1.3	1.3	7.9	.0	512	.26	.18
12	.18	.48	.76	1.1	1.2	1.2	1.3	1.9	.00	47	.25	.18
13	.19	.55	.76	1.1	1.2	1.2	1.2	1.0	.00	12	.22	6.6
14	.23	.61	.88	1.1	1.3	1.2	1.2	.61	.00	4.7	.22	2.2
15	.29	.55	.94	1.1	1.2	1.2	1.0	.49	.00	2.5	.18	.69
16	.30	.54	.92	1.2	1.2	1.3	.96	.39	.02	1.9	.17	.43
17	.26	.48	.89	1.2	1.2	1.5	11	.32	.01	1.6	.71	1.3
18	.30	.52	1.0	1.1	1.8	1.5	2.9	.28	.00	1.4	.23	126
19	.32	.51	1.1	1.2	1.7	1.4	1.5	.52	.00	1.2	.14	57
20	.28	.55	1.1	1.2	1.6	1.4	1.2	18	.00	1.0	.12	11
21	.29	.57	.95	1.1	1.4	1.4	.98	2.5	.00	.88	.11	2.1
22	.30	.60	.94	1.1	1.4	1.4	.87	.73	.00	.78	.09	1.3
23	.34	.61	.94	1.1	1.3	1.4	.78	.43	.00	.69	.07	13
24	.42	.67	.98	1.2	1.2	1.5	.69	.34	.00	.68	.07	1.5
25	.38	.67	1.8	1.3	1.2	1.4	.64	.29	.0	1.0	.06	1.0
26	.39	.66	2.0	1.3	1.2	1.3	.58	.29	.0	.62	.05	.85
27	.39	.67	1.7	1.3	1.3	1.2	.57	.29	295	.61	.04	.78
28	.35	.68	1.4	1.2	1.3	1.3	.58	.22	46	.54	.04	.61
29	.35	.68	1.2	1.2	1.3	1.2	.56	.22	6.3	.49	.04	.61
30	.37	.68	1.1	1.3	---	1.1	.56	.20	1.6	.47	.04	.61
31	.36	---	1.1	1.3	---	1.3	---	.18	---	.41	.04	---
TOTAL	8.31	15.96	30.15	35.1	38.5	41.4	42.97	41.64	349.86	1041.39	21.59	238.80
MEAN	.27	.53	.97	1.13	1.33	1.34	1.43	1.34	11.7	33.6	.70	7.96
MAX	.42	.68	2.0	1.3	1.8	1.6	11	18	295	512	6.7	126
MIN	.15	.38	.67	1.0	1.2	1.1	.56	.18	.00	.41	.04	.18
AC-FT	16	32	60	70	76	82	85	83	694	2070	43	474

CAL YR 1987 TOTAL 2862.74 MEAN 7.84 MAX 516 MIN .15 AC-FT 5680
WTR YR 1988 TOTAL 1905.67 MEAN 5.21 MAX 512 MIN .00 AC-FT 3780

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

DRAINAGE AREA.--3,912 mi², of which 2,381 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharge. Records good. Flow is regulated by Lake J.B. Thomas (station 08118000) 27 mi upstream.

AVERAGE DISCHARGE.--23 years (water years 1966-88), 37.4 ft³/s (27,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s Aug. 14, 1972 (gage height, 25.99 ft); maximum gage height, 27.18 ft Sept. 29, 1980; no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,690 ft³/s June 28 at 0530 hours (gage height, 12.76 ft); no flow at times (result of pumping).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	3.8	6.6	7.5	9.3	9.9	7.4	4.8	3.1	33	6.0	6.4
2	2.7	3.9	6.7	7.1	9.3	11	7.1	4.8	3.1	618	5.8	28
3	2.0	4.5	6.6	6.9	8.7	13	6.6	4.9	2.4	485	9.2	32
4	1.8	4.2	6.6	6.7	8.2	13	6.0	4.6	1.7	195	8.9	16
5	2.2	3.9	6.6	6.6	8.2	11	6.0	3.7	1.2	56	8.2	11
6	2.3	3.8	6.9	6.6	8.4	10	6.0	3.1	.94	32	7.9	8.0
7	2.0	4.2	6.9	6.7	8.8	9.6	6.0	3.0	.72	27	9.1	4.8
8	2.3	4.6	6.6	6.8	9.2	9.4	6.1	2.8	.66	22	5.7	4.1
9	2.5	4.7	6.6	6.6	9.4	9.2	6.1	2.6	.52	19	4.4	4.2
10	2.5	4.7	6.6	6.7	9.7	8.6	6.1	2.7	.46	67	4.0	4.3
11	2.3	4.7	6.6	6.7	9.2	8.2	6.2	6.2	.48	748	3.9	4.5
12	2.3	4.8	6.1	6.8	9.8	8.1	6.3	27	.48	1140	3.8	4.6
13	2.7	4.9	6.8	6.8	10	8.6	6.1	14	.39	310	4.1	11
14	2.9	5.3	7.2	6.7	9.8	8.5	6.3	9.7	.32	59	3.7	22
15	3.1	5.6	7.1	6.6	9.6	8.5	5.8	7.4	.17	37	3.3	24
16	3.4	5.6	6.0	6.6	9.7	8.0	5.4	5.6	.08	26	2.9	14
17	3.4	5.5	4.5	6.5	9.3	8.8	20	4.8	.05	21	2.5	15
18	3.1	5.5	7.7	6.6	10	10	32	3.1	.03	18	2.5	284
19	4.2	5.4	7.6	6.6	15	11	15	2.3	.02	16	2.4	517
20	4.2	5.5	7.7	3.9	15	9.9	10	6.2	.02	15	2.8	127
21	4.0	5.6	7.5	3.0	12	8.9	8.7	38	.03	13	3.2	38
22	3.8	5.9	6.9	7.6	11	8.5	8.4	24	.04	12	3.2	26
23	4.0	5.8	6.8	7.6	11	5.1	7.4	12	.04	11	3.4	34
24	4.5	5.8	7.0	8.1	10	12	5.6	7.0	.05	10	2.9	43
25	4.5	6.0	7.4	8.6	9.4	9.0	4.8	4.7	.07	9.4	2.3	23
26	4.7	6.0	9.4	7.9	9.0	8.7	4.5	4.0	.06	15	2.0	14
27	4.2	5.8	9.8	8.2	9.3	8.3	4.5	3.8	332	11	2.0	12
28	4.0	6.2	8.6	7.6	9.6	8.2	4.4	3.1	1220	9.8	1.4	11
29	4.0	6.6	8.1	8.3	10	7.9	4.4	2.4	227	8.6	1.3	9.1
30	3.9	6.6	8.1	9.3	---	7.3	4.4	2.0	58	6.7	2.0	8.5
31	3.8	---	7.7	9.1	---	7.1	---	2.2	---	6.4	6.2	---
TOTAL	101.0	155.4	221.3	217.3	287.9	285.3	233.6	226.5	1854.13	4056.9	131.0	1360.5
MEAN	3.26	5.18	7.14	7.01	9.93	9.20	7.79	7.31	61.8	131	4.23	45.3
MAX	4.7	6.6	9.8	9.3	15	13	32	38	1220	1140	9.2	517
MIN	1.8	3.8	4.5	3.0	8.2	5.1	4.4	2.0	.02	6.4	1.3	4.1
AC-FT	200	308	439	431	571	566	463	449	3680	8050	260	2700
CAL YR 1987	TOTAL 14757.5		MEAN 40.4	MAX 2590	MIN 1.3	AC-FT 29270						
WTR YR 1988	TOTAL 9130.83		MEAN 24.9	MAX 1220	MIN .02	AC-FT 18110						

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1965 to current year.

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

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 70,000 microsiemens Nov. 17, 1968; minimum, 102 microsiemens Sept. 28, 1980.

WATER TEMPERATURE: Maximum, 36.0°C Aug. 7, 1985; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 14,800 microsiemens June 24; minimum, 450 microsiemens July 2.

WATER TEMPERATURE: Maximum, 29.0°C Aug. 18; minimum, 1.0°C Dec. 19.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 06...	1530	2.4	4600	21.0	840	580	200	83	700
NOV 17...	1310	5.5	5480	9.5	940	650	220	94	910
JAN 20...	1355	2.6	4790	6.0	840	530	200	82	720
MAR 07...	1635	9.2	5260	17.0	900	630	210	91	800
APR 26...	1150	4.4	5200	19.0	860	600	200	88	810
JUN 13...	1640	0.49	4040	30.0	790	530	180	83	610

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 06...	11	9.2	267	710	910	0.90	11	2780
NOV 17...	13	10	284	840	1200	1.0	12	3460
JAN 20...	11	8.1	307	850	860	1.2	7.3	2910
MAR 07...	12	7.4	267	900	1100	1.2	5.6	3280
APR 26...	12	8.9	264	840	1000	1.3	10	3120
JUN 13...	10	9.1	262	650	870	1.1	12	2570

COLORADO RIVER MAIN STEM

29

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	101.0	4470	2780	758	1000	275	660	180	830
NOV. 1987	155.4	5210	3240	1360	1200	506	750	314	950
DEC. 1987	221.3	5320	3300	1970	1200	738	760	455	960
JAN. 1988	217.3	4930	3060	1800	1100	663	720	420	900
FEB. 1988	287.9	5090	3160	2460	1200	912	730	571	930
MAR. 1988	285.3	5130	3190	2460	1200	913	740	570	940
APR. 1988	233.6	4570	2840	1790	1000	656	670	422	840
MAY 1988	226.5	4210	2620	1600	950	580	630	383	790
JUNE 1988	1854.13	2990	1850	9240	760	3810	380	1890	480
JULY 1988	4056.9	1170	730	7990	250	2690	190	2040	230
AUG. 1988	131.0	4230	2630	931	950	336	630	223	790
SEPT 1988	1360.5	1900	1190	4360	410	1510	290	1080	370
TOTAL	9130.83	**	**	36700	**	13600	**	8550	**
WTD.AVG.	25	2400	1490	**	550	**	350	**	440

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4000	4600	5080	5270	5190	5190	5180	5130	3240	3820	4460	3740
2	4200	4620	5290	5180	5160	5020	5170	5120	3090	450	4600	2110
3	4300	4760	5260	5180	5150	4910	5160	4960	3080	740	4390	2720
4	4400	4820	5220	5190	5150	5000	5160	4930	3080	1010	4170	3330
5	4500	4930	5190	5080	5300	5090	5410	4760	3250	2070	3960	3940
6	4600	5060	5180	4910	5290	5180	5460	4560	3270	2490	3690	6100
7	4550	5280	5190	4850	5280	5270	5390	4660	3410	3420	3430	7220
8	4560	5240	5090	4690	5270	5320	5290	4920	3560	3370	3320	6830
9	4550	5000	5160	4820	5310	5350	5200	4950	3720	3450	4160	6360
10	4540	4980	5210	4950	5340	5280	5330	5130	3860	2250	4730	5480
11	4530	5000	5160	5080	5300	5200	5400	5760	3970	1070	4910	5090
12	4520	5090	5130	5080	5250	5320	5350	4530	4080	630	5140	4860
13	4510	5200	5100	5070	5040	5290	5310	4200	4190	820	4900	4720
14	4500	5280	5070	4910	4940	5150	5260	3860	4250	3070	4460	6190
15	4480	5360	4970	4910	4880	5150	5350	3520	4390	3970	4180	8080
16	4460	5450	5160	4850	4920	5130	5330	3180	4640	4520	3860	4110
17	4450	5500	5130	4880	4830	5130	3300	4290	4980	5070	3880	3150
18	4430	5410	5080	4950	4850	5090	3280	5050	5280	5340	3920	860
19	4420	5450	5290	4900	4730	5060	3360	5040	6850	5470	4130	972
20	4400	5490	5330	4810	4820	5000	4430	5000	11200	5430	4230	1300
21	4390	5410	5360	4840	4940	4960	4470	3300	14600	5370	4330	2790
22	4380	5390	5400	4800	5060	5160	4470	4930	14600	5530	4430	3090
23	4370	5300	5440	4810	5160	5180	4290	4280	14700	5560	4260	3450
24	4360	5300	5480	4810	5140	5100	4640	3920	14800	5600	4160	3360
25	4350	5350	5520	4800	5150	5120	5010	3620	14700	5630	4190	3260
26	4330	5390	5560	4910	5140	5140	5180	3270	14800	5500	4240	2970
27	4320	5330	5600	4880	5240	5120	5270	3120	11500	7390	4600	3420
28	4640	5270	5640	5000	5040	5100	5360	3130	980	5660	4870	3680
29	4950	5210	5660	5110	5220	5180	5180	3140	1290	3420	4920	3800
30	4870	5150	5690	4020	---	5150	5130	3130	3110	3650	4940	3940
31	4710	---	5700	5280	---	5070	---	3140	---	4100	4450	---
MEAN	4470	5190	5300	4930	5110	5140	4940	4280	6420	3740	4320	4030

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	5.5	2.5	11.0	12.5	10.0	---	22.5	25.0	25.5	25.5
2	---	17.5	5.0	2.5	7.5	12.5	---	18.5	---	21.0	25.0	22.5
3	---	18.0	7.0	3.5	6.0	11.5	---	16.0	23.0	23.0	---	---
4	---	17.0	7.0	3.5	4.0	8.5	15.0	18.0	22.0	26.0	---	---
5	---	16.5	8.0	3.5	3.5	---	18.0	20.5	24.0	26.5	---	20.5
6	21.0	16.0	10.5	3.0	---	---	16.0	21.0	23.0	26.5	---	22.0
7	---	17.0	8.5	2.5	---	12.5	16.5	22.0	24.0	26.5	---	23.5
8	---	16.0	9.0	2.5	3.0	12.0	17.0	22.0	24.5	26.0	25.5	22.0
9	---	12.0	6.0	---	5.0	10.0	18.0	19.0	24.5	---	27.0	21.5
10	---	9.0	6.5	---	5.5	11.0	15.0	---	24.0	---	28.5	23.0
11	---	5.0	---	5.0	2.5	11.5	13.5	20.0	---	23.0	27.5	22.5
12	---	11.0	---	3.0	3.5	10.5	14.0	19.5	---	25.0	27.5	21.5
13	---	8.0	---	---	4.5	11.0	15.0	21.0	23.5	26.5	28.5	23.0
14	---	---	4.0	2.0	8.5	8.5	16.5	---	24.0	27.0	28.5	23.0
15	---	---	1.5	2.0	6.5	9.0	18.5	---	25.0	26.5	28.5	24.0
16	---	11.0	2.0	5.0	7.0	9.5	---	25.0	24.5	---	28.0	24.0
17	---	8.5	3.0	6.0	8.0	9.5	---	26.0	24.5	27.0	28.0	---
18	---	8.5	4.0	9.5	8.0	---	17.0	24.5	23.5	27.0	29.0	---
19	---	4.5	1.0	6.0	7.0	---	16.0	22.0	25.0	27.0	25.5	21.5
20	---	6.0	---	4.0	---	---	18.0	21.0	20.5	25.0	---	21.5
21	---	6.0	---	3.0	---	11.0	19.0	20.0	21.0	24.5	---	24.0
22	---	8.0	---	3.5	8.5	13.0	19.5	18.5	20.5	24.5	26.0	24.0
23	---	8.5	---	---	9.0	15.0	18.5	19.0	---	---	---	23.0
24	---	---	---	---	8.0	15.0	19.0	21.0	---	---	28.5	22.5
25	---	10.0	---	3.0	9.0	14.5	17.0	22.0	---	25.5	26.0	22.0
26	---	9.0	---	3.0	11.5	15.5	18.0	23.0	---	25.0	24.5	22.0
27	19.0	7.5	---	3.0	11.5	16.0	16.0	23.0	---	26.5	25.0	23.0
28	---	---	---	6.5	12.5	20.0	18.5	---	21.0	26.0	23.0	23.0
29	19.5	---	---	7.5	12.0	18.0	19.0	---	24.0	26.0	20.0	20.5
30	20.0	6.0	3.0	9.0	---	17.0	19.0	23.0	25.0	27.0	20.5	18.0
31	---	---	3.0	11.0	---	18.5	---	23.0	---	27.0	21.0	---
MEAN	20.0	10.5	5.5	4.5	7.5	13.0	17.0	21.0	23.5	25.5	26.0	22.5

COLORADO RIVER MAIN STEM

31

08121000 COLORADO RIVER AT COLORADO CITY, TX

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

DRAINAGE AREA.--3,966 mi², of which 2,381 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. Since 1952, flow regulated by Lake J.B. Thomas (station 08118000) 31 mi upstream. The Colorado River Municipal Water District diverts low flow into an off channel reservoir 3 mi upstream for brine disposal. There are numerous diversions from Lake J.B. Thomas for municipal use and oil field operation.

AVERAGE DISCHARGE.--6 years (water years 1947-52) prior to completion of Lake J.B. Thomas, 85.4 ft³/s (61,870 acre-ft/yr); 36 years (water years 1953-88) regulated, 38.8 ft³/s (28,110 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s July 6, 1948 (gage height, 22.37 ft, from floodmark); maximum gage height, 27.81 ft Sept. 29, 1980, backwater from salt cedar; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1910, 35.9 ft June 20, 1939, present site and datum, based on floodmarks 1,000 ft upstream and 3,740 ft downstream from gage; discharge, 66,000 ft³/s, by slope-area measurement of peak flow at site 2.5 mi upstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,490 ft³/s June 28 at 1830 hours (gage height, 12.27 ft); minimum daily, 0.03 ft³/s June 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.37	.41	10	13	13	.35	10	7.3	5.7	41	.16	.08
2	.36	.41	11	13	12	.53	8.9	7.5	5.8	238	1.7	1.1
3	.24	.41	11	13	12	.36	8.8	6.8	5.3	748	.97	.24
4	.23	.31	11	12	12	7.3	8.3	6.9	4.7	297	.15	.08
5	.24	.19	11	12	12	16	8.5	7.0	4.4	104	11	5.3
6	.24	.19	12	13	12	14	8.1	6.4	3.9	41	11	8.8
7	.24	.20	12	13	12	13	8.2	6.4	3.6	32	12	6.8
8	.24	.16	12	13	12	12	8.3	5.5	2.8	30	12	5.7
9	.28	.15	11	13	13	11	8.8	5.0	.49	27	8.8	5.2
10	.41	.15	11	12	14	11	8.4	6.4	.12	44	7.1	4.6
11	.41	.15	11	12	13	11	8.3	34	.09	442	6.3	4.4
12	.41	.18	11	13	12	11	8.2	26	.09	1180	5.6	4.3
13	.54	5.1	10	12	14	10	8.3	29	.09	722	5.3	7.4
14	.62	8.3	13	12	15	10	8.2	16	.09	107	5.7	17
15	.62	8.5	8.7	12	13	11	8.7	12	.12	46	5.7	24
16	.40	8.9	.53	12	9.4	11	8.2	10	.15	35	4.0	20
17	.19	8.6	.37	12	.74	12	20	6.1	.11	30	.26	15
18	.20	8.7	.45	13	.76	7.9	38	.76	.09	27	.09	387
19	.24	8.6	.50	13	.47	.42	19	2.2	.08	24	.09	581
20	.24	8.6	.26	12	.41	.23	.41	4.4	.07	16	.10	276
21	.18	9.0	.24	9.8	.40	.24	.23	.91	.04	.85	.17	73
22	.20	9.4	.24	13	.37	.24	.20	19	.05	.34	.14	41
23	.24	9.5	4.8	13	.33	.26	.16	23	.04	.24	.06	57
24	.33	10	12	12	.26	.24	.16	14	.03	.21	.06	56
25	.33	9.9	17	12	.33	.23	.15	10	.04	.90	.06	39
26	.31	9.9	15	11	.41	.24	.66	8.1	.17	.87	.05	32
27	.24	9.9	20	11	.41	.24	6.9	7.2	.110	.27	.11	28
28	.24	9.3	19	11	.40	.24	7.3	6.7	1140	.17	.09	24
29	.28	10	16	10	.40	.32	7.4	6.4	641	.16	.04	20
30	.40	10	16	13	---	9.4	7.3	5.8	95	.15	.07	19
31	.38	---	15	13	---	10	---	5.8	---	.15	.10	---
TOTAL	9.85	165.11	303.09	378.8	206.09	191.74	244.07	312.57	2024.16	4235.31	98.97	1763.00
MEAN	.32	5.50	9.78	12.2	7.11	6.19	8.14	10.1	67.5	137	3.19	58.8
MAX	.62	10	20	13	15	16	38	34	1140	1180	12	581
MIN	.18	.15	.24	9.8	.26	.23	.15	.76	.03	.15	.04	.08
AC-FT	20	327	601	751	409	380	484	620	4010	8400	196	3500

CAL YR 1987 TOTAL 15381.30 MEAN 42.1 MAX 3050 MIN .08 AC-FT 30510
WTR YR 1988 TOTAL 9932.76 MEAN 27.1 MAX 1180 MIN .03 AC-FT 19700

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

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

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

INSTRUMENTATION.--From 1969 to 1975, specific conductance was continuously recorded at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily 16,700 microsiemens Nov. 13; minimum daily, 590 microsiemens July 3.

WATER TEMPERATURE: Maximum daily, 34.0°C Aug. 18; minimum daily, 1.5°C Dec. 16.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 07...	0840	0.24	6860	14.5	950	720	200	110	1300
NOV 17...	1600	8.5	8160	11.5	950	720	220	98	1500
JAN 20...	1655	12	6630	7.5	790	550	190	76	1100
MAR 08...	1510	10	6670	15.0	850	650	190	91	1100
APR 26...	1350	0.25	6920	24.0	1000	840	210	120	1200
JUN 14...	1640	0.07	8640	36.5	1100	910	210	130	1600

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 07...	19	7.5	232	1300	1600	0.90	6.6	4660
NOV 17...	22	9.3	235	940	2200	0.90	8.4	5120
JAN 20...	18	7.9	239	970	1400	0.80	4.3	3890
MAR 08...	17	6.8	197	1000	1500	1.0	2.5	4010
APR 26...	17	8.7	175	1500	1300	1.0	1.1	4450
JUN 14...	22	9.0	148	1400	2000	1.1	13	5450

COLORADO RIVER MAIN STEM

33

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	9.85	7540	4880	130	2000	54	1000	26	910
NOV. 1987	165.11	8750	5660	2520	2400	1080	1100	497	1000
DEC. 1987	303.09	7060	4570	3740	1900	1560	940	772	860
JAN. 1988	378.8	6680	4320	4420	1800	1830	900	920	820
FEB. 1988	206.09	6690	4330	2410	1800	999	900	501	820
MAR. 1988	191.74	7020	4540	2350	1900	979	940	486	860
APR. 1988	244.07	7530	4870	3210	2000	1340	1000	656	910
MAY 1988	312.57	6440	4160	3510	1700	1460	870	731	790
JUNE 1988	2024.16	1330	860	4700	340	1850	200	1070	180
JULY 1988	4235.31	1250	803	9180	320	3620	180	2090	160
AUG. 1988	98.97	6770	4380	1170	1800	486	910	243	830
SEPT 1988	1763.00	2900	1870	8910	750	3590	410	1950	370
TOTAL	9932.76	**	**	46200	**	18800	**	9950	**
WTD.AVG.	27	2670	1720	**	700	**	370	**	340

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6710	10000	7290	6320	6420	6740	7820	7820	7790	3410	7350	7980
2	6690	10400	7180	6410	6650	6750	7510	7770	7820	2290	7540	7660
3	6720	11100	7150	6490	6640	6840	7450	7770	7860	590	7600	7740
4	6750	10900	7140	6670	6600	6910	7370	7630	8010	910	7680	7820
5	6780	11200	7090	6880	6730	6960	7480	7770	8140	1320	6450	7910
6	6820	11500	7190	6700	6770	6930	7650	7920	8200	2240	6380	8100
7	6860	12200	7220	6830	6800	6890	7620	8110	8330	3330	6360	6800
8	6930	11700	7050	6750	6810	6770	7590	8150	8480	4130	6320	6700
9	7000	12000	7060	6690	6720	6640	7630	8400	8630	4930	6360	6590
10	7020	12000	7060	6620	6570	6740	7530	8530	8720	2260	6720	6630
11	7100	12900	7030	6590	6670	6840	7550	8010	8680	1920	6860	6770
12	7130	13800	7020	6710	6790	6740	7620	7480	8630	710	7010	6970
13	7060	16700	7010	6420	6780	6620	7660	4760	8590	620	7210	7160
14	7100	14500	6900	6520	6820	6890	7700	5600	8610	1750	7500	6700
15	7130	12000	6850	6620	6690	7020	7770	5700	8580	3200	7720	6330
16	7230	10000	6680	6720	6820	7060	7800	5810	8620	4240	7880	6150
17	7290	8300	6560	6660	6570	7090	7400	6530	8630	4940	7930	6200
18	7390	8130	6460	6770	6190	7080	7290	6910	8590	5490	8000	4820
19	7480	7960	6150	6760	6340	7000	6650	5040	8630	5930	7950	1280
20	7540	7800	6140	6720	6320	6640	6570	4620	8650	6210	7960	1250
21	7900	7700	6120	6840	6310	6560	6520	4570	8740	6510	7950	2120
22	7960	8060	6110	7060	6320	6590	6480	4250	8810	6690	7960	2370
23	8030	7420	7300	7100	6310	6620	6510	5610	8880	6780	8010	2680
24	8240	7600	7500	6810	6440	6630	6660	4770	8950	6910	8050	3140
25	8340	7610	7600	6610	6380	6640	6860	4950	8960	7070	8070	3500
26	8510	7620	7510	6630	6300	6740	6900	5200	8980	7120	8080	4190
27	8860	7510	7200	6790	6410	6780	8090	5770	1450	6580	8160	4730
28	8800	7520	6900	6660	6490	6500	8860	7230	1380	6600	8240	4750
29	8820	7510	6700	6510	6550	6730	7810	7340	710	6630	8180	4770
30	8800	7510	6500	6780	---	7760	7880	7450	2150	6900	8090	4980
31	9800	---	6510	6490	---	8800	---	7580	---	7120	8070	---
MEAN	7570	10000	6910	6680	6560	6890	7410	6610	7570	4370	7540	5490

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	---	8.0	2.5	12.5	13.5	17.0	---	22.5	26.0	24.5	29.5
2	20.0	19.0	7.0	2.5	6.5	12.0	---	17.5	---	25.0	25.0	23.5
3	---	18.5	9.0	4.5	---	9.5	---	17.0	22.5	23.0	---	---
4	---	17.5	9.0	4.0	4.5	9.5	17.0	17.5	23.5	26.0	---	---
5	---	16.0	10.5	4.5	3.5	---	18.0	21.0	23.5	26.5	---	20.0
6	---	15.5	11.5	3.5	---	---	15.0	22.5	24.0	26.5	---	23.0
7	---	17.0	9.5	2.5	---	14.0	16.0	21.0	25.0	26.5	---	22.5
8	---	15.0	10.5	3.5	4.5	12.0	17.0	20.5	25.5	25.5	26.5	22.5
9	19.0	11.0	7.5	---	6.0	10.0	16.0	18.5	26.0	---	27.5	22.0
10	18.0	9.0	8.0	---	6.5	11.0	14.0	22.0	26.0	---	27.0	23.0
11	14.0	3.0	9.0	2.0	3.5	14.5	13.5	19.0	---	23.0	27.5	22.5
12	15.5	8.0	---	6.0	5.5	10.5	14.5	19.5	---	24.5	27.5	23.0
13	16.0	10.0	---	2.5	5.5	11.5	15.5	21.0	23.0	26.0	28.0	24.5
14	16.0	---	4.0	3.0	10.0	9.5	17.0	---	25.5	27.5	28.0	24.0
15	18.0	---	2.0	4.5	7.0	9.5	19.5	---	25.5	27.0	29.0	24.5
16	17.0	11.0	1.5	8.0	9.5	9.5	---	24.5	25.0	26.5	27.5	24.5
17	---	9.5	4.0	7.5	8.0	9.5	---	25.5	24.0	27.0	30.0	---
18	---	10.0	5.0	11.5	8.0	---	15.0	23.5	25.5	27.0	34.0	---
19	18.0	7.0	9.0	7.0	7.0	---	15.0	23.0	26.0	27.5	26.0	21.0
20	15.0	8.0	---	3.5	9.0	---	18.5	18.0	24.0	25.0	---	21.0
21	13.5	7.5	---	3.5	---	12.5	19.0	19.0	26.0	24.5	---	24.5
22	14.0	10.5	---	5.0	---	16.0	20.0	18.0	24.5	24.0	25.0	24.0
23	17.0	10.0	---	---	8.5	16.5	12.5	18.0	24.5	---	26.5	22.0
24	18.0	15.5	---	---	8.0	16.5	19.5	21.5	32.5	---	27.5	23.0
25	20.0	10.0	---	4.0	9.5	15.0	19.0	17.5	---	24.5	26.0	22.0
26	20.5	9.0	---	4.5	12.5	14.5	18.0	22.5	---	26.5	24.0	22.0
27	20.0	8.5	---	5.0	12.5	17.0	16.5	24.0	---	26.5	24.5	23.0
28	20.0	---	---	8.0	11.0	25.5	19.0	21.5	21.5	25.5	22.0	23.0
29	16.5	---	---	9.5	11.5	20.5	20.5	---	24.0	25.0	19.5	19.5
30	18.5	7.0	4.5	11.0	---	19.0	20.0	---	25.5	27.5	21.0	18.0
31	18.0	---	4.0	12.0	---	20.5	---	21.0	---	27.0	23.0	---
MEAN	17.5	11.5	7.0	5.5	8.0	14.0	17.0	20.5	25.0	26.0	26.0	23.0
WTR YR 1988	MEAN	17.0	MAX	34.0	MIN	1.5						

08123000 LAKE COLORADO CITY NEAR COLORADO CITY, TX

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

DRAINAGE AREA.--344.7 mi², of which 42.7 mi² probably is noncontributing.

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

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

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

REMARKS.--The lake is formed by a rolled earthfill dam 4,800 ft long. Storage began in April 1949, and the dam was completed in September 1949. The dam and lake are owned by the Texas Electric Service Co. to operate their thermal electric powerplant. The uncontrolled spillway is an excavated cut channel through natural ground 1,200 ft wide located 600 ft upstream and to the left of left end of dam. The spillway is designed to discharge 150,000 ft³/s at the maximum design flood elevation. The service spillway is an uncontrolled rectangular drop inlet located 100 ft upstream from dam with two uncontrolled openings of 10.0 by 12.0 ft. The spillway is designed for a maximum discharge of 5,000 ft³/s. A service outlet is provided for small releases downstream through a 30-inch valve-controlled concrete pipe. Records furnished by the Texas Electric Service Co. will show pumpage from Champion Creek Reservoir (station 08123600) into Lake Colorado City. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 28,340 acre-ft Oct. 1 at 0100 hours (elevation, 2,067.96 ft); minimum, 21,810 acre-ft Sept. 17 (elevation, 2,063.21 ft).

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

2,063.0	21,540	2,066.0	25,510
2,064.0	22,820	2,068.0	28,400

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28310	27360	26590	26280	25860	25440	24590	23610	23200	23370	23480	22220
2	28280	27340	26590	26260	25820	25460	24560	23570	23180	23550	23490	22350
3	28250	27330	26570	26250	25820	25400	24520	23510	23180	23880	23470	22310
4	28210	27310	26550	26230	25790	25370	24500	23480	23180	24150	23480	22280
5	28180	27270	26570	26220	25790	25360	24460	23430	23180	24140	23450	22260
6	28140	27210	26530	26230	25770	25330	24410	23370	23180	24090	23430	22220
7	28090	27210	26520	26210	25770	25300	24390	23350	23160	24050	23390	22180
8	28030	27170	26490	26190	25770	25260	24350	23300	22930	24020	23330	22140
9	28000	27120	26520	26180	25750	25250	24330	23270	22870	23990	23330	22100
10	27960	27030	26490	26180	25740	25210	24280	23330	22820	24030	23290	22080
11	27910	27000	26420	26180	25720	25210	24250	23510	22770	24100	23240	22030
12	27890	26970	26390	26150	25710	25190	24220	23530	22720	24370	23310	21960
13	27840	26960	26350	26130	25690	25140	24180	23510	22650	24390	23260	21940
14	27800	26930	26360	26120	25680	25130	24150	23480	22600	24350	23220	21910
15	27780	26900	26350	26120	25650	25100	24130	23450	22560	24290	23160	21860
16	27750	26890	26330	26120	25640	25060	24090	23440	22540	24240	23100	21820
17	27720	26860	26310	26110	25620	25040	24150	23400	22510	24190	23060	22010
18	27720	26830	26350	26080	25650	25020	24100	23350	22510	24140	23020	22770
19	27710	26820	26350	26080	25640	25020	24090	23400	22500	24090	22980	23000
20	27650	26800	26350	26020	25620	24980	24060	23480	22490	24030	22910	23270
21	27610	26770	26330	26020	25600	24910	24030	23520	22490	23980	22850	23270
22	27590	26750	26310	25990	25570	24870	23990	23510	22460	23960	22790	23260
23	27560	26750	26310	25980	25540	24870	23960	23490	22450	23890	22740	23330
24	27560	26750	26290	25950	25510	24840	23890	23470	22450	23840	22680	23450
25	27550	26720	26390	25920	25500	24820	23850	23440	22500	23800	22640	23510
26	27520	26690	26360	25910	25500	24780	23790	23400	22470	23800	22560	23490
27	27490	26670	26360	25890	25500	24770	23760	23360	22830	23770	22470	23470
28	27460	26650	26330	25880	25480	24760	23720	23320	23080	23700	22400	23430
29	27430	26630	26320	25860	25460	24700	23680	23280	23190	23650	22350	23370
30	27400	26620	26310	25860	---	24650	23660	23220	23240	23600	22320	23350
31	27370	---	26290	25880	---	24630	---	23230	---	23550	22270	---
MAX	28310	27360	26590	26280	25860	25460	24590	23610	23240	23490	23490	23510
MIN	27370	26620	26290	25880	25460	24630	23660	23220	22450	23370	22270	21820
(↑)	2067.30	2066.78	2066.55	2066.26	2065.96	2065.36	2064.64	2064.31	2064.32	2064.55	2063.57	2064.40
(Φ)	-970	-750	-330	-410	-420	-830	-970	-430	+10	+310	-1280	+1080
CAL YR 1987	MAX 33420	MIN 26290	(Φ) -5230									
WTR YR 1988	MAX 28310	MIN 21820	(Φ) -4990									

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

(Φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

08123720 BEALS CREEK NEAR COAHOMA, TX

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

WATER-DISCHARGE RECORDS

DRAINAGE AREA.--1,569 mi².

PERIOD OF RECORD.--July 1983 to February 1988 (discontinued).

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

REMARKS.--Records good except those for estimated daily discharges, which are fair. Low flow is affected at times by a diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s Aug. 31, 1986 (gage height, 12.17 ft); no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October 1987 to February 1988, 96 ft³/s Dec. 25 at 0800 hours (gage height, 4.33 ft); no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1987 TO FEBRUARY 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	1.7	6.6	.28	4.0	---	---	---	---	---	---	---
2	2.0	1.5	5.4	.20	2.7	---	---	---	---	---	---	---
3	1.6	2.4	6.3	.17	3.4	---	---	---	---	---	---	---
4	.60	.87	7.3	.10	2.7	---	---	---	---	---	---	---
5	2.7	1.6	4.5	.56	2.8	---	---	---	---	---	---	---
6	.61	1.4	5.1	.36	3.3	---	---	---	---	---	---	---
7	.85	.76	4.1	.28	2.6	---	---	---	---	---	---	---
8	.45	1.7	4.0	.20	2.4	---	---	---	---	---	---	---
9	1.2	.43	4.1	.16	3.1	---	---	---	---	---	---	---
10	.11	1.5	4.5	.11	e3.0	---	---	---	---	---	---	---
11	.70	1.6	4.5	.09	e3.0	---	---	---	---	---	---	---
12	.92	1.1	3.9	.07	e3.0	---	---	---	---	---	---	---
13	.50	2.0	3.6	.05	e3.0	---	---	---	---	---	---	---
14	1.8	2.1	6.3	.03	e3.0	---	---	---	---	---	---	---
15	2.4	.95	7.1	.03	2.8	---	---	---	---	---	---	---
16	.78	1.9	5.8	.03	2.3	---	---	---	---	---	---	---
17	.82	.72	4.1	1.8	1.9	---	---	---	---	---	---	---
18	.92	1.5	4.7	4.5	14	---	---	---	---	---	---	---
19	2.6	.55	6.2	5.1	7.0	---	---	---	---	---	---	---
20	.68	1.5	4.5	4.5	5.2	---	---	---	---	---	---	---
21	.24	1.5	4.1	4.4	4.5	---	---	---	---	---	---	---
22	.46	2.8	3.3	3.6	3.9	---	---	---	---	---	---	---
23	1.2	2.9	5.0	2.7	2.2	---	---	---	---	---	---	---
24	2.8	3.6	5.4	3.2	2.4	---	---	---	---	---	---	---
25	1.5	3.2	43	3.2	2.2	---	---	---	---	---	---	---
26	1.5	4.2	12	4.4	3.0	---	---	---	---	---	---	---
27	1.8	2.3	8.6	2.8	e3.0	---	---	---	---	---	---	---
28	.63	3.6	7.9	3.0	e2.5	---	---	---	---	---	---	---
29	1.1	3.7	.60	5.0	e2.5	---	---	---	---	---	---	---
30	1.8	3.2	.38	3.9	---	---	---	---	---	---	---	---
31	1.2	---	.34	5.0	---	---	---	---	---	---	---	---
TOTAL	38.77	58.78	193.22	59.82	101.4	---	---	---	---	---	---	---
MEAN	1.25	1.96	6.23	1.93	3.50	---	---	---	---	---	---	---
MAX	2.8	4.2	43	5.1	14	---	---	---	---	---	---	---
MIN	.11	.43	.34	.03	1.9	---	---	---	---	---	---	---
AC-FT	77	117	383	119	201	---	---	---	---	---	---	---

CAL YR 1987 TOTAL 14815.90 MEAN 40.6 MAX 1120 MIN .01 AC-FT 29390
WTR YR 1988 TOTAL - MEAN - MAX - MIN - AC-FT -

e Estimated.

COLORADO RIVER BASIN

37

08123720 BEALS CREEK NEAR COAHOMA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: June 1983 to February 1988 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1983 to February 1988 (discontinued).

WATER TEMPERATURE: August 1983 to February 1988 (discontinued).

INSTRUMENTATION.--From August 1983 thru February 1988 specific conductance and water temperature were recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Estimated mean daily specific conductance values were due to removal of equipment. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 20,700 microsiemens Apr. 30, 1987; minimum, 400 microsiemens June 6, 1985.

WATER TEMPERATURE: Maximum, 35.5°C May 24, 1986; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 20,400 microsiemens Feb. 24; minimum, 10,100 microsiemens Oct. 17.

WATER TEMPERATURE: Minimum, 1.5°C Feb. 6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 05...	1405	4.9	16400	23.0	3600	3400	410	630	3000
NOV 16...	1500	0.74	12500	13.0	2700	2400	380	430	2000
JAN 19...	1305	2.4	16100	9.0	2600	2300	330	430	2700
FEB 26...	1005	3.6	18300	13.0	3100	2900	430	500	3100

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 05...	22	92	225	3700	4300	1.0	6.0	12300
NOV 16...	17	48	318	2300	3300	1.0	18	8670
JAN 19...	23	100	266	3500	3000	0.80	12	10200
FEB 26...	25	120	207	4100	4700	0.80	9.7	13100

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO FEBRUARY 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	38.77	13200	9090	952	3300	347	2600	273	*
NOV. 1987	58.78	12200	8280	1310	3100	486	2300	365	*
DEC. 1987	193.22	14700	10200	5340	3700	1920	3000	1580	*
JAN. 1988	59.82	16200	11400	1850	4100	654	3500	561	*
FEB. 1988	101.4	16400	11600	3190	4100	1120	3600	974	*
TOTAL	451.99	**	**	12600	**	4530	**	3750	**
WTD.AVG.	3.0	14800	10400	**	3700	**	3100	**	**

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	17000	11700	11100	11300	12800	12300	12600	17000	16500	16800
2	---	---	16900	11900	11100	11400	12700	11900	12200	16600	16300	16500
3	---	---	16800	12100	11200	11600	11900	11400	11600	16300	16000	16200
4	---	---	16700	11800	11400	11500	11600	11000	11300	16200	16000	16000
5	---	---	16400	12100	11600	11900	11100	10900	11000	16000	15800	15900
6	16000	15400	15700	12200	11700	12000	12100	10900	11200	15800	15700	15700
7	15500	14000	14900	12300	11600	11800	12500	11700	12200	15800	15600	15600
8	14900	13200	14000	12300	11600	12000	13000	12300	12500	15600	15400	15500
9	14800	13200	13600	12300	11200	11700	13000	12600	12800	15400	15300	15400
10	13400	13200	13300	11500	11300	11400	13000	12100	12700	15300	15100	15200
11	13500	13100	13300	12800	11500	12300	12900	12400	12700	15300	15000	15200
12	13300	12700	13000	12500	11800	12100	12900	12700	12800	15200	14800	15000
13	13400	12400	12900	12400	11600	11900	13100	12700	12800	15000	14900	15000
14	13300	11200	11900	12200	11800	12100	13200	13000	13100	15100	14900	15000
15	11700	10500	10800	12300	12000	12200	14700	13000	14200	15000	14500	14700
16	10600	10200	10300	12500	11800	12000	14700	14100	14400	14600	14100	14400
17	12200	10100	11300	12800	12300	12600	14600	13600	14300	14200	13700	14100
18	12500	11800	12200	12700	12400	12500	14700	14300	14500	15900	13800	14900
19	12900	11900	12400	12700	12200	12500	14600	14300	14500	17400	15300	16300
20	13000	12300	12600	12600	12000	12400	15600	14500	15200	18700	16900	17500
21	12300	12000	12200	12500	12000	12300	16200	15400	15800	18400	16300	17400
22	12400	12200	12400	12200	11800	12100	16100	15700	16000	17100	15600	16300
23	12100	11600	11900	12200	11700	12000	16300	15800	16000	17100	11400	16300
24	11900	11500	11700	12200	11900	12000	16100	15800	15900	17300	15700	16700
25	12700	11700	12000	12300	11900	12000	17400	16100	16800	17300	15900	16600
26	12300	11200	11600	12800	12300	12500	17100	16600	16800	17200	15200	16200
27	12400	11600	11900	12700	12100	12600	16500	16000	16300	17100	15100	16000
28	11900	11500	11600	12900	12400	12700	17500	16100	17200	17200	15100	16200
29	11900	11300	11500	12900	12300	12700	17500	17300	17400	16200	15100	15500
30	11700	11100	11300	12800	12200	12600	17500	17100	17200	16800	15300	16000
31	11700	11300	11400	---	---	---	17300	16900	17000			

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

08123800 BEALS CREEK NEAR WESTBROOK, TX

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

DRAINAGE AREA.--9,802 mi², of which 7,814 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharges, which are poor. Low flow is affected by diversion upstream from station.

AVERAGE DISCHARGE.--30 years, 27.6 ft³/s (20,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,780 ft³/s May 19, 1961 (gage height, 21.65 ft); maximum gage height, 21.94 ft Sept. 29, 1980; no flow at times.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 20	0400	*637	*8.04				

Minimum daily discharge, 0.14 ft³/s May 8, 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	1.8	3.0	2.8	4.9	3.6	.45	.36	2.9	34	132	19
2	4.1	1.6	2.6	2.2	5.2	4.2	.41	.26	3.0	43	113	60
3	3.5	1.6	3.3	2.0	5.3	4.8	.42	.23	2.6	219	149	328
4	3.3	1.6	4.2	1.9	5.2	6.4	.41	.22	e2.3	104	243	227
5	3.3	2.2	4.5	1.9	4.2	5.0	.35	.21	e2.1	21	95	78
6	2.6	2.2	4.9	1.9	4.0	5.4	.29	.20	e1.8	9.9	77	67
7	1.9	1.9	4.8	1.9	3.9	3.8	.30	.17	e1.5	38	64	60
8	2.6	1.8	3.8	1.9	4.7	4.5	.26	.14	e1.2	95	56	52
9	2.0	1.9	3.6	1.8	4.0	3.4	.29	.14	e1.0	143	48	46
10	1.3	1.9	3.3	1.9	3.9	2.7	.36	8.5	e.89	190	48	41
11	1.2	1.8	3.3	1.9	3.9	2.0	.38	83	e.70	371	47	37
12	1.2	2.1	3.5	1.8	4.8	1.9	.34	130	e.54	321	43	34
13	1.3	1.9	3.6	1.6	5.7	1.8	.28	22	e.47	229	52	31
14	1.3	1.9	3.8	1.6	5.0	1.6	.26	6.8	e.34	181	57	59
15	1.1	2.0	3.7	1.7	4.6	1.5	.27	3.2	.89	191	43	43
16	1.0	2.4	3.7	1.6	4.6	1.5	.31	1.8	3.8	213	37	29
17	1.1	2.4	6.0	1.6	4.4	1.6	27	1.2	3.1	221	32	25
18	2.2	2.1	4.9	1.5	3.7	1.1	31	.87	1.4	199	28	144
19	2.4	1.8	5.2	1.5	3.3	.94	12	3.6	.61	164	24	459
20	1.9	2.1	4.5	2.3	8.5	.80	5.1	234	.34	123	15	332
21	1.7	1.8	5.1	6.0	6.1	.72	4.6	172	.24	138	13	51
22	1.6	2.1	5.0	5.6	5.2	.78	3.2	25	.19	87	11	34
23	1.9	1.8	4.3	5.5	4.7	.69	2.3	10	.16	80	8.2	31
24	1.7	2.3	4.3	5.3	4.4	.60	1.7	7.4	.15	129	7.6	288
25	1.3	2.5	5.6	5.3	4.1	.54	1.0	4.7	1.3	188	12	68
26	1.1	2.8	13	4.6	3.2	.54	.95	3.6	3.0	245	13	35
27	1.7	2.4	16	4.5	3.3	.56	.76	4.3	29	264	15	25
28	1.9	3.0	9.2	5.1	3.5	.56	.57	3.0	71	255	16	21
29	1.7	3.1	9.0	5.0	3.3	.49	.45	3.3	20	234	18	16
30	1.7	2.5	7.3	4.4	---	.49	.38	2.8	46	197	20	15
31	2.3	---	4.4	5.3	---	.47	---	3.4	---	161	20	---
TOTAL	63.0	63.3	163.4	93.9	131.6	64.98	96.39	736.40	202.52	5087.9	1556.8	2755
MEAN	2.03	2.11	5.27	3.03	4.54	2.10	3.21	23.8	6.75	164	50.2	91.8
MAX	5.1	3.1	16	6.0	8.5	6.4	31	234	71	371	243	459
MIN	1.0	1.6	2.6	1.5	3.2	.47	.26	.14	.15	9.9	7.6	15
AC-FT	125	126	324	186	261	129	191	1460	402	10090	3090	5460

CAL YR 1987 TOTAL 19985.9 MEAN 54.8 MAX 1570 MIN 1.0 AC-FT 39640
WTR YR 1988 TOTAL 11015.19 MEAN 30.1 MAX 459 MIN .14 AC-FT 21850

e Estimated.

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1958 to current year. Chemical and biochemical analyses: October 1974 to October 1977. Sediment analyses: October 1974 to October 1977.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1958 to current year.

WATER TEMPERATURE: November 1958 to current year.

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 22,800 microsiemens June 2, 1969; minimum, 180 microsiemens May 25, 1986.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 20,000 microsiemens July 27; minimum, 1,880 microsiemens Sept. 19.

WATER TEMPERATURE: Maximum, 32.5°C June 19, 21, Aug. 23; minimum, 1.0°C Dec. 27.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 05...	1010	3.4	6960	18.0	1500	1300	270	200	1100
NOV 16...	1205	2.4	14100	12.5	2900	2700	410	460	2400
JAN 19...	1038	1.5	10100	8.5	1900	1700	290	280	1700
MAR 07...	1015	3.8	17400	13.5	3300	3100	420	540	3000
APR 25...	1115	0.99	13700	19.0	2400	2200	330	380	2400
JUN 15...	0900	0.25	9370	24.0	2200	2000	340	320	1400

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 05...	13	13	180	850	2100	0.70	3.0	4640
NOV 16...	20	41	180	2400	3800	0.80	4.6	9620
JAN 19...	17	37	177	1700	2500	0.70	2.6	6620
MAR 07...	23	74	189	3500	4500	0.80	1.6	12100
APR 25...	22	24	161	2300	3700	0.70	0.60	9230
JUN 15...	13	21	198	1400	2300	0.70	2.9	5900

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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.	1987	63.0	11100	7410	1260	3000	508	1900	318	*
NOV.	1987	63.3	13600	9140	1560	3700	633	2400	413	*
DEC.	1987	163.4	13300	8950	3950	3600	1600	2400	1040	*
JAN.	1988	93.9	13200	8870	2250	3600	910	2300	594	*
FEB.	1988	131.6	15700	10600	3780	4300	1540	2900	1040	*
MAR.	1988	64.98	15700	10600	1870	4300	760	2900	517	*
APR.	1988	96.39	9540	6370	1660	2600	667	1600	407	2100
MAY	1988	736.40	3780	2490	4950	990	1960	520	1030	820
JUNE	1988	202.52	6890	4570	2500	1800	1000	1100	579	1500
JULY	1988	5087.9	15100	10200	140000	4100	57000	2800	38900	*
AUG.	1988	1556.8	16600	11200	47300	4600	19300	3200	13500	*
SEPT	1988	2755	8340	5590	41600	2300	16800	1400	10500	1800
TOTAL		11015.19	**	**	253000	**	103000	**	68900	**
WTD.AVG.		30	12600	8490	**	3400	**	2300	**	**

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	8000	13900	13800	13800	12900	12600	12700	15700	15600	15600
2	---	---	8250	13800	13500	13600	12900	12700	12800	15600	14500	15200
3	---	---	8400	13600	13400	13500	12800	12500	12700	14500	13200	13800
4	---	---	8650	13800	13600	13700	13200	12800	13100	13100	12300	12700
5	---	---	8850	14000	13800	13900	13300	13200	13200	12300	11500	11900
6	9700	8150	9000	14300	14000	14200	13400	13200	13300	11500	11200	11400
7	9960	9710	9880	14700	14200	14400	13500	13300	13400	11200	11000	11100
8	10600	9940	10100	14700	14500	14600	13400	13300	13300	11100	10800	11000
9	11800	10700	11200	14500	14400	14400	13400	13300	13400	10900	10700	10800
10	12600	11900	12200	14600	14300	14400	13300	13100	13200	10800	10400	10600
11	12900	12600	12800	14700	14200	14400	13100	12900	13000	10500	10200	10400
12	13100	12900	13000	14400	14100	14300	13100	13000	13000	10400	10100	10300
13	13400	13000	13200	14500	14100	14200	13100	13000	13000	10300	10000	10200
14	13300	13000	13100	14100	13800	13900	13000	12700	12800	10300	10100	10200
15	13300	12700	13000	13800	13500	13700	13100	12800	12900	10400	10000	10200
16	12900	12200	12500	14000	13500	13800	13100	12900	13000	10100	9900	10000
17	12200	11900	12000	13900	13800	13800	13500	13100	13400	10100	9840	9960
18	12400	11900	12100	13700	13600	13700	13300	12300	12900	10000	9800	9950
19	12900	12300	12700	13700	13100	13400	12300	11900	12100	10100	9880	9990
20	13100	12900	13000	13300	12900	13000	11900	11700	11800	10200	9960	10100
21	13700	12600	12800	13400	13100	13200	11800	11600	11700	11800	10100	11200
22	13300	12300	12500	13100	12900	13000	11800	11600	11700	13600	11800	12600
23	12500	12300	12300	13200	12800	13000	12000	11800	11900	13900	13500	13700
24	13000	12600	12800	12800	12600	12700	12700	12000	12400	13800	13600	13700
25	13100	13000	13000	12900	12700	12800	12700	12000	12300	14000	13700	13900
26	13100	12800	13000	13100	12800	13000	13200	11400	12300	14100	13800	13900
27	12800	12400	12600	13200	13100	13200	14500	13100	14000	15600	14000	14400
28	13400	12300	12900	13300	13000	13200	15300	13700	14500	17400	15600	16600
29	13600	13300	13400	13300	13000	13200	16000	15300	15800	17400	16000	16700
30	13800	13600	13800	13200	12800	13000	16000	15500	15700	16000	15400	15600
31	13800	13400	13600	---	---	---	15700	15500	15600	16600	15600	16000
MONTH	13800	8150	11800	14700	12600	13600	16000	11400	13100	17400	9800	12400

COLORADO RIVER BASIN

43

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16600	16200	16400	15900	15700	15800	13900	12800	13300	12100	11700	11900
2	17000	16600	16800	16100	15600	15800	14300	12500	13400	11800	11500	11700
3	---	---	17200	16200	14600	15300	14000	12100	12800	11700	11000	11400
4	---	---	17000	14600	14000	14300	12300	11800	12100	11300	10600	10900
5	---	---	16500	16200	14700	15500	12500	11900	12100	11000	10700	10900
6	---	---	16000	---	---	16000	13200	11800	12200	11100	10700	10900
7	15900	---	15500	---	---	17000	12000	11800	11900	11000	10600	10800
8		15000	15700	17500	17100	17300	11900	11600	11700	10700	10400	10600
9		---	15500	17400	16800	17200	11800	11400	11500	10600	9840	10100
10		---	15600	19900	16600	17000	11500	11000	11100	10100	4040	8810
11	---	---	15900	16600	16400	16500	11000	10500	10700	3960	3440	3700
12	---	---	15800	16700	16300	16400	10700	10400	10500	3440	2840	3230
13	---	---	15600	---	---	16200	10900	10400	10600	3060	2900	2990
14	---	---	15800	---	---	16100	11200	10800	11000	3420	3020	3210
15	---	---	16000	---	---	16000	11200	10800	11100	3620	3440	3500
16	---	---	15900	---	---	15700	11000	10700	10900	3840	3620	3710
17	---	---	16000	---	---	15800	16500	6980	11100	4020	3840	3910
18	---	---	16300	---	---	15700	18800	2120	9560	4160	3960	4050
19	---	---	16400	---	---	15600	5040	2980	4460	4280	4100	4190
20	---	---	14300	17200	15000	15300	5780	4500	5170	4440	3800	4140
21	---	---	14600	17100	14400	14900	9980	5840	7390	3740	3120	3320
22	---	---	15000	17500	14100	14700	13000	10300	11800	3140	3020	3090
23	---	---	15100	16200	13500	14900	14100	13000	13500	---	---	3500
24	---	---	15200	15700	13200	14400	14200	13300	13900	---	---	4000
25	---	---	15200	13600	13100	13300	13800	13200	13500	---	---	4500
26	15500	15200	15300	14200	12900	13100	13500	13400	13400	---	---	5000
27	15300	15100	15200	13000	12900	13000	13400	13200	13300	---	---	6000
28	16000	15200	15400	12900	12600	12700	13200	12800	13000	---	---	6500
29	16000	15500	15900	12800	12500	12700	12800	12200	12400	---	---	7000
30	---	---	---	13300	12500	12700	12400	11900	12200	---	---	7100
31	---	---	---	14100	12500	13000	---	---	---	---	---	7200
MONTH	17000	15000	15800	19900	12500	15200	18800	2120	11400	12100	2840	6510

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	8600	---	---	5400	17900	17700	17800	---	---	17500
2	---	---	9500	---	---	4600	18100	17900	18000	---	---	14600
3	---	---	9200	---	---	3200	18100	9710	17600	10700	2970	5660
4	---	---	9100	---	---	7720	12500	7140	9020	10600	3650	6740
5	---	---	9000	---	---	12500	17200	13200	15800	14200	10800	12300
6	---	---	8900	---	---	16100	17400	16600	17100	18600	14600	16900
7	---	---	8900	---	---	15700	18600	17300	18000	---	---	17600
8	---	---	9000	---	---	15400	19200	18500	18800	---	---	18400
9	---	---	9100	---	---	14500	---	---	19000	---	---	19100
10	---	---	9200	---	---	13900	---	---	19100	---	---	19400
11	---	---	9300	14300	11300	12800	---	---	19300	---	---	19600
12	---	---	9400	---	---	12500	---	---	19400	---	---	19500
13	---	---	9400	---	---	14600	---	---	19000	---	---	19700
14	---	---	9400	---	---	15200	---	---	18300	---	---	13400
15	---	---	9390	---	---	14400	---	---	18800	---	---	8920
16	11800	7000	10400	---	---	13500	19900	17900	19200	13200	7790	10600
17	13000	11600	12300	---	---	13100	---	---	18700	14800	13300	14100
18	14200	13100	13700	---	---	14200	---	---	18400	14900	2280	10900
19	14200	13600	13900	---	---	14900	---	---	18600	4140	1880	2940
20	14100	13600	13800	---	---	15400	---	---	18500	5280	1900	3190
21	14000	13500	13700	---	---	16000	---	---	18500	8720	5660	7700
22	13900	13400	13600	18700	14600	16700	---	---	18600	11800	8470	9810
23	13800	13300	13500	---	---	19100	---	---	18800	14200	11900	13100
24	13600	13100	13300	---	---	19000	---	---	19100	17100	2170	7790
25	13100	9000	12300	---	---	19000	---	---	17800	6280	3590	4640
26	12900	8560	10100	---	---	19100	---	---	17200	7060	5880	6430
27	16200	5130	11000	20000	18300	19200	---	---	16900	10700	7160	8560
28	---	---	4830	19200	18700	19000	---	---	16500	12300	10800	11700
29	---	---	6250	19300	19000	19100	---	---	16200	14500	12300	13200
30	---	---	5200	19100	18600	18900	---	---	16000	14600	13800	14500
31	---	---	---	18900	17900	18500	---	---	15700	---	---	---
MONTH	16200	5130	10200	20000	11300	14600	19900	7140	17700	18600	1880	12300

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

COLORADO RIVER BASIN

45

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

COLORADO RIVER MAIN STEM

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

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

DRAINAGE AREA.--14,910 mi², of which 10,260 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

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

AVERAGE DISCHARGE.--21 years, 87.7 ft³/s (63,540 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,900 ft³/s Sept. 9, 1980 (gage height, 22.73 ft); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,300 ft³/s Sept. 20 at 1800 hours (gage height, 6.03 ft); minimum, 0.15 ft³/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	5.0	18	29	24	9.8	8.1	12	15	279	147	21
2	9.0	5.3	18	28	23	10	10	13	12	136	123	24
3	9.8	5.4	18	26	25	9.4	15	11	10	243	108	116
4	9.3	5.6	18	25	25	11	17	10	9.1	887	222	417
5	8.6	4.9	19	25	25	11	17	11	8.7	514	163	113
6	8.2	6.4	19	25	26	13	16	11	8.1	200	90	73
7	7.6	7.6	20	25	25	20	16	11	7.6	91	75	65
8	7.2	8.2	21	25	25	23	16	9.8	6.4	98	71	59
9	6.2	7.3	21	25	24	23	16	8.3	5.7	150	64	56
10	5.6	7.1	21	25	24	24	16	8.2	5.1	194	60	51
11	5.6	7.6	20	25	24	23	16	36	4.1	311	58	46
12	5.4	8.3	19	25	24	21	17	208	3.6	695	55	42
13	5.0	8.8	18	24	25	20	18	129	3.7	1080	49	44
14	5.0	9.2	18	23	25	20	17	59	2.4	1180	62	45
15	5.0	10	19	23	25	21	17	41	1.5	460	58	69
16	5.0	12	20	23	26	22	18	28	1.1	291	47	55
17	5.0	17	21	22	24	23	36	22	1.1	279	42	57
18	6.5	17	19	22	25	22	44	18	.80	258	37	518
19	7.1	17	20	22	21	21	66	19	.96	221	34	1070
20	6.2	17	16	20	16	22	65	131	1.4	179	29	1200
21	5.8	18	14	20	14	18	41	357	1.1	137	23	564
22	6.3	17	12	21	16	14	25	118	.79	150	17	186
23	5.9	18	11	23	13	12	17	41	.47	90	15	111
24	6.1	19	11	22	13	10	13	27	.37	91	12	151
25	5.7	19	30	24	12	9.5	9.4	30	3.3	142	10	366
26	5.9	18	37	25	11	9.2	7.9	23	12	199	8.5	112
27	5.4	18	39	25	11	9.1	7.0	18	25	252	12	75
28	4.7	18	44	24	11	9.1	6.6	15	136	255	13	58
29	4.5	18	39	25	9.7	8.2	5.5	18	607	240	15	47
30	4.5	18	35	25	---	8.2	5.8	18	924	212	19	40
31	5.0	---	33	25	---	8.5	---	17	---	178	21	---
TOTAL	194.8	367.7	688	746	591.7	485.0	599.3	1478.3	1818.39	9692	1759.5	5851
MEAN	6.28	12.3	22.2	24.1	20.4	15.6	20.0	47.7	60.6	313	56.8	195
MAX	9.8	19	44	29	26	24	66	357	924	1180	222	1200
MIN	4.5	4.9	11	20	9.7	8.2	5.5	8.2	.37	90	8.5	21
AC-FT	386	729	1360	1480	1170	962	1190	2930	3610	19220	3490	11610

CAL YR 1987 TOTAL 49021.8 MEAN 134 MAX 2930 MIN 4.5 AC-FT 97230
WTR YR 1988 TOTAL 24271.69 MEAN 66.3 MAX 1200 MIN .37 AC-FT 48140

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1967 to current year. Chemical and biochemical analyses: November 1977 to current year. Pesticide analyses: October 1969 to August 1981. Sediment analyses: August 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1967 to current year.

WATER TEMPERATURE: December 1967 to current year.

INSTRUMENTATION.--Beginning December 1967, specific conductance was recorded continuously. Beginning June 22, 1981, specific conductance and water temperature are recorded continuously at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 19,900 microsiemens Sept. 10, 1988; minimum, 180 microsiemens June 28, 1982.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 19,900 microsiemens Sept. 10; minimum, 520 microsiemens July 4.

WATER TEMPERATURE: Maximum, 34.0°C Aug. 23.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV 03...	1010	4.6	7180	8.20	19.5	5.9	10.6	126	1.2	250	420	1600
JAN 26...	1030	27	7440	8.40	4.5	12	15.7	131	1.4	K14	K18	1400
MAR 08...	0930	20	9890	8.40	14.0	13	9.5	101	1.4	23	22	2000
MAY 24...	1000	26	2420	8.10	21.0	65	10.9	132	2.8	24	31	500
JUN 28...	1010	99	1530	7.80	25.5	180	11.8	155	2.4	46	72	380
AUG 09...	0945	54	15600	8.50	27.5	32	8.4	120	2.8	88	140	3400
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 03...	1500	390	160	1100	12	11	127	1500	1800	0.60	7.1	5020
JAN 26...	1200	280	160	1100	13	16	184	1300	1700	0.80	1.5	4990
MAR 08...	1900	380	260	1500	15	15	108	2000	2200	0.70	0.40	7040
MAY 24...	400	110	54	310	6	8.5	100	430	490	0.70	6.8	1530
JUN 28...	320	98	32	170	4	6.1	57	320	270	0.40	6.3	964
AUG 09...	3200	300	640	2900	22	91	183	3600	4100	1.0	1.7	11900
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)
NOV 03...	5050	--	<0.010	<0.100	0.090	0.110	1.1	1.2	<0.010	<0.010	<0.010	--
JAN 26...	4690	--	<0.010	<0.100	0.080	0.050	0.92	1.0	0.060	0.010	<0.010	--
MAR 08...	6420	--	<0.010	<0.100	0.090	0.080	1.0	1.1	0.080	0.020	<0.010	--
MAY 24...	1470	0.580	0.120	0.700	0.090	0.070	0.51	0.60	0.060	0.030	<0.010	--
JUN 28...	937	--	--	--	0.110	--	1.2	1.3	0.250	0.030	--	--
AUG 09...	11800	--	<0.010	<0.100	0.100	0.090	0.90	1.0	0.170	0.060	0.020	0.06

COLORADO RIVER MAIN STEM

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 03...	43	0.53	89	<10	1	200	<10	1	2	<1	2	30
JAN 26...	18	1.3	93	<10	1	<100	<10	1	1	2	<1	30
MAR 08...	10	0.54	96	--	--	--	--	--	--	--	--	--
MAY 24...	92	6.5	99	10	4	100	<10	1	1	1	5	10
JUN 28...	292	78	99	--	--	--	--	--	--	--	--	--
AUG 09...	95	14	100	20	9	100	<10	<1	<1	<1	5	50

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 03...	<5	150	20	0.2	6	1	2	1.0	5900	25	10
JAN 26...	<5	150	50	0.5	16	<1	2	<1.0	6500	34	10
MAR 08...	--	--	--	--	--	--	--	--	--	--	--
MAY 24...	<5	40	20	<0.1	10	7	1	1.0	1800	15	<10
JUN 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 09...	<5	350	20	0.5	50	3	2	<1.0	5000	26	20

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	194.8	7040	4650	2450	1700	894	1300	682	1500
NOV. 1987	367.7	7710	5150	5110	1900	1870	1400	1430	1700
DEC. 1987	688	7310	4850	9010	1800	3290	1400	2520	1600
JAN. 1988	746	6920	4560	9190	1700	3360	1300	2560	1500
FEB. 1988	591.7	7560	5030	8030	1800	2940	1400	2250	1700
MAR. 1988	485.0	8540	5750	7530	2100	2760	1600	2120	1900
APR. 1988	599.3	8330	5610	9070	2100	3330	1600	2560	1800
MAY 1988	1478.3	4160	2670	10700	970	3880	730	2920	900
JUNE 1988	1818.39	2550	1620	7940	590	2880	440	2160	550
JULY 1988	9692	9280	6640	174000	2500	64500	1900	50700	2100
AUG. 1988	1759.5	16400	12200	57800	4500	21600	3600	17200	*
SEPT 1988	5851	5520	3780	59700	1400	22000	1100	17000	1200
TOTAL	24271.69	**	**	360000	**	133000	**	104000	**
WTD.AVG.	66	7820	5500	**	2000	**	1600	**	1800

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

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	6470	7140	6980	7080	8020	7640	7840	8700	7300	8200
2	---	---	6550	7220	7080	7150	7660	7580	7610	7440	6960	7130
3	---	---	6660	7320	7100	7220	7620	7460	7560	7560	7460	7510
4	---	---	6710	7460	7220	7340	7700	7520	7630	7500	7360	7440
5	---	---	6710	7640	7460	7530	7700	7640	7660	7360	7260	7300
6	---	---	6800	7820	7620	7730	7700	7460	7590	7260	7020	7170
7	---	---	6620	7880	7740	7820	7740	7560	7650	7000	6800	6890
8	6700	6500	6610	7940	7800	7880	7620	7420	7510	6800	6620	6710
9	6820	6700	6740	8040	7900	7940	7820	7500	7660	6640	6580	6610
10	6980	6800	6890	8300	8060	8170	7900	7780	7840	6660	6580	6630
11	7120	6920	7040	8380	8300	8350	8000	7820	7910	6660	6600	6620
12	7240	7040	7160	8400	8340	8370	8000	7820	7910	6680	6580	6630
13	7300	7120	7240	8400	8200	8330	7860	7700	7780	6720	6640	6670
14	7380	7180	7310	8240	7980	8120	7700	7600	7630	6780	6700	6730
15	7400	7280	7350	7980	7680	7830	7640	7520	7580	6880	6800	6850
16	7580	7340	7440	7780	7600	7720	7560	7400	7480	6880	6740	6810
17	7540	7420	7490	7760	7660	7710	7520	7420	7470	6760	6720	6740
18	7560	7260	7410	7680	7520	7590	7600	7340	7540	6760	6700	6730
19	7480	7380	7440	7680	7540	7610	7440	7160	7290	6760	6720	6740
20	7520	7380	7480	7700	7420	7620	7300	7160	7250	6800	6680	6740
21	7640	7440	7540	7380	6400	6850	7160	6940	7060	6800	6640	6740
22	7660	7540	7610	6400	5840	6100	7140	6980	7040	6760	6580	6700
23	7600	7320	7450	5860	5800	5830	7740	7160	7370	6740	6480	6610
24	7380	7160	7300	5840	5780	5820	8160	7800	8040	6540	6440	6470
25	7200	7000	7100	6300	5780	5900	8140	7080	7430	6600	6480	6510
26	7140	6940	7060	11500	6400	8830	7400	5480	6900	7200	6680	7050
27	7180	6980	7110	11600	10100	11000	7240	5420	6470	7240	7060	7140
28	7220	7000	7100	10100	9140	9620	7360	6260	6890	7060	7000	7030
29	7200	7020	7140	9100	8260	8680	7480	6100	6410	7080	6960	7010
30	7180	7000	7110	8260	7940	8060	7500	6760	7240	7020	6820	6940
31	7160	6980	7100	---	---	---	7880	6440	6750	6820	6720	6780
MONTH	7660	6500	7090	11600	5780	7730	8160	5420	7420	8700	6440	6900
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6940	6800	6870	9540	9440	9510	8100	7840	7970	8220	7820	8030
2	7140	6920	7040	9560	9360	9460	8360	8100	8180	7700	7380	7590
3	7220	7120	7180	9540	9440	9480	8600	8320	8480	7380	6840	7270
4	7340	7160	7260	9460	9260	9390	8940	8640	8790	7380	7080	7240
5	7420	7160	7320	9320	9160	9270	9180	8740	8980	7620	7020	7260
6	7340	7280	7310	9180	9000	9120	9320	9040	9160	8040	7420	7710
7	7400	7320	7340	9460	9020	9210	9080	8320	8720	8280	7920	8070
8	7500	7340	7380	9840	9500	9600	8300	7800	8090	8300	8100	8200
9	7840	7540	7740	---	---	10300	7860	7280	7600	8200	8000	8090
10	7720	7460	7570	11000	8820	10200	7160	6460	6800	8040	7600	7880
11	7460	7220	7280	8760	7960	8300	6460	6080	6270	7560	6080	6950
12	7380	7260	7310	8000	7300	7640	7960	6100	6620	7500	3340	6150
13	7680	7440	7580	7400	7260	7310	9640	8160	9150	7500	3220	4840
14	7600	7500	7550	7540	7260	7420	9400	8500	9000	3340	2860	2980
15	7540	7380	7430	11200	7420	9210	8500	7960	8260	3420	2880	3150
16	7660	7400	7480	11300	9700	10600	7980	7780	7910	4280	3420	3820
17	7880	7700	7810	9640	8000	8710	7760	6120	6860	4300	3780	4130
18	7920	7620	7790	7980	7700	7870	6940	5580	6400	3780	3620	3700
19	7660	7420	7580	7740	7500	7660	10900	5640	6910	4580	3820	4180
20	7440	7360	7400	7560	7460	7520	12700	8900	10500	5020	3660	4520
21	7420	7240	7320	7620	7440	7530	11600	9240	10500	3740	1420	2730
22	7380	7260	7320	7720	7540	7640	9320	9020	9200	2280	1460	2000
23	7720	7400	7550	7740	7620	7660	9260	8980	9130	2540	2240	2360
24	8160	7740	7980	7720	7560	7630	9080	8800	8960	2980	2360	2620
25	8300	8160	8260	7740	7560	7650	8820	8500	8660	3740	3020	3360
26	8240	8200	8220	7680	7580	7630	8480	8160	8350	4480	3760	4150
27	9480	8260	8780	7620	7500	7560	---	---	8520	4740	4500	4630
28	9900	9520	9760	7620	7480	7550	8760	8660	8700	4660	4380	4550
29	9680	9480	9600	7640	7540	7570	8740	8500	8640	4360	3920	4130
30	---	---	---	7580	7480	7530	8600	8220	8340	3960	3800	3900
31	---	---	---	7820	7580	7700	---	---	---	4200	3880	4010
MONTH	9900	6800	7690	11300	7260	8430	12700	5580	8320	8300	1420	5170

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

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C. WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6380	4260	5400	1540	1020	1280	---	---	19000	---	---	18900
2	6420	6000	6300	4920	1580	2460	---	---	19000	---	---	19700
3	5980	5860	5950	4960	1540	2990	---	---	19000	---	---	18200
4	5980	5740	5880	3540	520	1680	---	---	19500	---	---	5000
5	5860	5680	5770	1380	960	1260	11900	6840	7640	5520	3880	4780
6	5760	5500	5670	1260	1200	1220	10100	7000	8240	9500	5600	6870
7	5840	5520	5690	1740	1280	1520	15700	10300	13300	13400	9840	11900
8	5900	5620	5770	2400	1780	1970	---	---	16000	17700	13000	14600
9	6020	5700	5890	---	---	4230	---	---	16500	19300	17900	19000
10	6080	5840	5960	---	---	7500	---	---	16500	19900	19100	19800
11	6220	5900	6080	---	---	9200	---	---	15600	19700	19100	19700
12	6280	6060	6160	---	---	11000	---	---	15900	19800	19400	19900
13	6220	6000	6140	7740	4440	6670	---	---	17500	19400	17300	19100
14	6240	6000	6140	5480	4280	4670	18600	17300	18100	18200	13800	16400
15	6300	6000	6160	12800	5660	8520	18700	17900	18400	18700	17000	18200
16	6240	5860	6130	---	---	15600	---	---	19000	19500	17500	18900
17	6300	5980	6180	---	---	17000	---	---	15600	17500	14900	16900
18	6360	6100	6250	---	---	18000	---	---	18300	15000	2480	6880
19	6460	6220	6340	---	---	18500	---	---	16000	5120	2160	3200
20	6600	6280	6460	---	---	19000	---	---	17200	2720	1600	2310
21	6680	6480	6570	---	---	19000	17600	17100	17500	1960	1340	1820
22	6740	6460	6630	---	---	19600	18000	17300	17700	2500	1420	2190
23	6740	6520	6640	---	---	17400	18300	17500	18000	3940	2560	3590
24	6740	6600	6680	---	---	17500	18500	17600	18200	5000	3820	4640
25	6700	5840	6370	---	---	17400	18400	17900	18200	---	---	5950
26	6580	5840	6230	---	---	17500	17900	17400	17800	3930	2920	3530
27	6300	4600	5840	---	---	17500	18000	17200	17800	4330	3580	4170
28	7660	1720	3570	---	---	17500	18400	17600	18200	4840	3960	4510
29	7100	1580	3860	---	---	18000	---	---	18600	5410	4440	5180
30	1500	780	994	---	---	18500	---	---	19500	5640	4940	5460
31	---	---	---	---	---	19000	---	---	19400	---	---	---
MONTH	7660	780	5790	12800	520	11400	18700	6840	17000	19900	1340	10700

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

COLORADO RIVER MAIN STEM

51

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1				---	---	---	19.5	15.0	17.5	23.5	18.0	20.5
2				---	---	---	21.0	11.5	16.0	24.0	17.0	20.0
3				---	---	---	23.0	13.0	17.5	25.5	15.0	20.0
4				---	---	---	25.0	15.0	19.5	27.0	16.5	21.5
5				---	---	---	23.0	18.5	20.5	26.5	18.0	22.0
6				---	---	---	24.5	15.5	19.5	27.0	18.5	22.0
7				---	---	---	24.0	16.0	19.5	29.5	19.0	23.5
8				---	---	---	20.5	16.0	18.0	26.0	20.0	23.0
9				---	---	---	20.5	15.5	17.5	28.0	17.0	22.5
10				19.5	11.5	15.0	20.0	13.0	16.0	28.5	19.5	23.5
11				19.0	12.5	15.0	21.0	13.0	16.0	22.5	18.5	20.5
12				18.0	11.5	14.5	23.5	13.0	17.5	25.0	19.0	21.5
13				17.0	11.0	13.0	24.5	15.5	19.0	26.5	20.5	23.0
14				16.5	8.0	12.0	24.5	16.5	20.0	28.0	21.0	24.5
15				16.0	9.0	12.0	27.5	18.5	22.0	29.0	22.0	25.5
16				12.0	10.5	11.0	25.5	20.0	22.0	31.0	24.0	27.5
17				11.5	7.0	10.0	23.5	18.5	20.5	31.5	25.0	28.0
18				12.5	4.5	8.0	19.5	16.0	18.0	29.5	23.5	26.0
19				16.0	7.0	10.5	22.5	14.5	18.5	25.5	22.0	23.0
20				19.0	10.0	13.5	25.0	17.0	21.0	21.5	20.0	21.0
21				21.0	12.0	15.5	24.5	19.5	22.0	21.5	18.5	20.0
22				21.5	12.5	16.5	26.5	20.0	22.5	22.0	17.5	20.0
23				23.5	15.0	18.5	26.0	19.0	22.0	25.0	17.0	21.0
24				24.0	15.0	19.0	26.0	17.0	21.0	28.0	20.5	24.0
25				23.5	14.0	19.0	26.5	15.5	20.5	28.0	22.0	25.0
26				22.5	14.0	18.5	24.5	17.0	21.0	29.0	23.0	26.0
27				22.5	14.5	18.5	24.0	15.5	20.5	29.5	23.0	26.0
28				25.0	17.5	21.0	23.0	16.5	20.0	26.5	23.0	24.5
29				21.5	14.5	18.0	26.0	18.0	21.5	27.0	22.0	23.5
30				18.5	11.5	15.0	23.5	19.0	21.5	26.5	21.5	23.5
31				21.0	11.5	16.0	---	---	---	24.0	21.5	22.5
MONTH				25.0	4.5	15.0	27.5	11.5	19.5	31.5	15.0	23.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	29.5	21.5	25.0	30.0	25.0	27.0	27.0	25.0	26.0	30.5	24.0	26.5
2	33.0	23.5	27.5	29.0	26.5	27.5	28.5	24.0	26.0	28.0	24.5	26.0
3	28.0	23.5	25.0	28.5	25.5	27.0	29.0	25.0	26.5	26.0	24.5	25.5
4	30.0	22.0	25.5	27.5	26.0	27.0	28.0	25.0	26.5	25.0	22.0	23.5
5	32.0	22.5	26.5	29.5	26.0	27.5	29.0	25.0	27.0	26.0	20.5	23.5
6	31.5	22.5	26.5	29.0	26.5	28.0	30.5	25.5	28.0	28.0	22.5	25.0
7	32.5	22.5	27.5	31.0	26.0	28.0	31.0	26.0	28.5	27.0	22.0	24.5
8	32.0	24.0	28.0	28.0	25.5	27.0	31.5	25.5	28.5	27.5	21.5	24.5
9	33.0	25.0	28.5	29.5	25.0	27.0	32.5	26.0	29.0	27.5	22.0	25.0
10	32.0	24.0	27.5	28.0	26.5	27.0	32.0	27.0	29.0	28.0	22.0	25.0
11	30.5	22.5	26.5	28.0	25.0	26.5	32.0	27.5	30.0	28.0	22.0	25.0
12	29.5	23.0	26.5	29.0	25.0	27.0	32.0	27.5	29.5	27.5	21.5	25.0
13	28.0	22.0	26.0	29.0	26.5	28.0	32.0	27.0	29.5	26.5	23.5	25.0
14	28.5	22.5	25.5	29.5	27.0	28.0	32.5	27.0	30.0	28.0	23.0	25.5
15	30.5	22.5	26.0	31.0	27.0	29.0	31.5	27.5	29.5	29.0	23.5	26.5
16	30.0	23.5	26.0	31.5	27.5	29.5	32.0	27.0	29.5	30.0	24.5	27.0
17	31.0	23.5	27.0	31.5	28.0	29.5	31.0	27.5	29.0	27.0	24.5	25.5
18	31.5	24.0	28.0	31.5	27.5	29.5	32.5	26.5	29.5	24.0	23.0	23.5
19	32.5	24.0	28.0	32.5	27.5	29.5	32.5	27.5	30.0	24.0	22.5	23.0
20	32.0	24.5	27.5	29.5	27.0	28.5	32.0	27.5	30.0	24.0	22.0	23.0
21	32.0	24.5	28.5	30.0	25.0	27.5	31.5	27.0	29.5	26.0	23.0	24.5
22	32.5	24.5	28.0	30.0	25.0	27.5	33.0	26.5	29.5	27.5	23.5	25.5
23	32.0	24.5	28.5	30.0	25.0	27.5	34.0	27.0	30.0	27.5	24.0	25.5
24	31.5	25.0	28.5	30.0	25.0	27.5	33.0	27.5	30.0	27.5	22.5	25.0
25	28.5	24.5	26.5	29.5	26.0	27.5	32.5	26.0	29.0	25.5	22.5	24.0
26	27.0	23.0	25.0	28.5	25.5	27.5	31.5	24.5	28.0	27.0	22.0	24.5
27	25.5	23.5	24.5	29.0	26.0	27.5	30.5	24.5	27.5	27.5	23.0	25.0
28	26.5	22.5	24.5	29.5	26.0	28.0	29.0	24.0	26.0	28.0	22.5	25.0
29	27.0	24.0	25.5	28.5	26.0	27.5	26.0	23.0	24.0	25.5	20.0	21.5
30	26.5	24.0	25.0	29.0	26.0	27.5	27.5	22.5	24.5	23.0	17.5	20.5
31	---	---	---	29.0	25.0	27.0	29.0	23.5	26.0	---	---	---
MONTH	33.0	21.5	26.5	32.5	25.0	28.0	34.0	22.5	28.0	30.5	17.5	24.5

COLORADO RIVER MAIN STEM

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

LOCATION.--Lat 31°52'46", long 100°31'01", Coke County, Hydrologic Unit 12080008, in outlet works of Robert Lee Dam on the Colorado River, 2.2 mi west of Robert Lee, and at mile 716.0.

DRAINAGE AREA.--15,278 mi², approximately, of which 10,260 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

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

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 355,300 acre-ft June 16, 1987 (elevation, 1,887.03 ft); minimum since first appreciable storage in June 1969 (not from recorder), about 330 acre-ft May 29, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 279,600 acre-ft Oct. 1 at 1700 hours (elevation, 1,879.75 ft); minimum, 207,900 acre-ft Sept. 13 (elevation, 1,871.47 ft).

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

1,871.0	204,400	1,877.0	253,900
1,874.0	227,900	1,880.0	282,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	279100	272800	268700	269200	268100	267200	262400	258700	260000	257900	241700	208300
2	278700	272600	268700	269200	267800	267300	262500	258400	259500	257100	241500	208500
3	278500	272600	268700	269100	268000	266700	262500	258600	259300	256600	239400	208500
4	278400	272500	268700	269100	267700	266700	262400	258600	259100	256800	238000	208500
5	278000	272200	268700	268900	267900	266700	262000	258500	258800	256200	237000	208500
6	277700	271900	268700	268900	267900	266300	262200	258400	258500	255300	235900	208500
7	277500	271800	268500	268800	267600	266700	261700	258300	258300	254200	234900	208500
8	277100	271400	268300	268800	267900	266400	261500	258200	258300	254000	233400	208400
9	276800	270900	268100	268800	267800	266200	261400	258100	258200	254000	232200	208300
10	276400	270600	268000	268800	268300	265700	261000	258000	258000	254500	231800	208200
11	276000	270500	267800	268700	267800	265700	260700	257900	257900	255000	230600	208000
12	275800	270400	267800	268700	268000	265500	261000	258000	257600	256200	229600	208000
13	275600	270300	267800	268700	268000	265200	260900	258300	257200	258000	227800	207900
14	275500	270300	267600	268700	267900	265100	260600	258300	256700	258400	226500	208200
15	275300	270300	267500	268800	267800	263000	260700	258400	256500	257800	224700	208100
16	275100	270200	267400	268900	267800	264600	260100	258400	256300	257000	223400	208200
17	275200	270300	267300	268800	267800	264700	261300	258400	256100	256000	221900	208200
18	275400	270100	267600	268700	267800	264600	261000	258400	255800	254900	220500	213300
19	275300	270000	269100	268600	267800	264600	260900	260600	255800	254100	219700	215400
20	275000	269700	269000	268400	267800	264400	261200	260000	255500	252900	219600	217100
21	274800	269600	268900	268300	267700	264200	261000	260200	255300	251700	219400	218100
22	274600	269500	268800	268300	267500	264100	261000	260200	255000	250700	217800	218200
23	274500	269600	268700	268400	267500	264200	260800	259800	254700	249300	216500	218300
24	274500	269600	268700	268400	267000	264100	260700	259800	254400	247800	215000	218500
25	274500	269100	269800	268000	267300	264000	260100	259600	254200	247200	213900	218700
26	274200	269000	269700	267900	267100	263700	259800	259400	254000	246300	212500	219100
27	273900	268900	269600	268000	267100	263600	259600	259300	254400	245600	211500	219300
28	273600	268800	269600	267900	267200	263700	259400	259200	255200	244500	209900	219100
29	273400	268800	269400	268100	266900	263200	258900	259100	256200	244000	208800	219200
30	273200	268800	269300	268400	---	262800	258900	258900	257500	242800	208600	219000
31	273000	---	269300	268200	---	262800	---	259800	---	241700	208500	---
MAX	279100	272800	269800	269200	268300	267300	262500	260600	260000	258400	241700	219300
MIN	273000	268800	267300	267900	266900	262800	258900	257900	254000	241700	208500	207900
(+) 1879.10	1878.66	1878.71	1878.59	1878.44	1877.99	1877.56	1877.66	1877.40	1875.64	1871.55	1872.89	
(Φ) -6300	-4200	+500	-1100	-1300	-4100	-3900	+900	-2300	-15800	-33200	+10500	

CAL YR 1987 MAX 355300 MIN 267300 (Φ) -37500
WTR YR 1988 MAX 279100 MIN 207900 (Φ) -60300

(+) Elevation, in feet, at end of month.
(Φ) Change in Contents, in acre-feet.
e Estimated.

COLORADO RIVER MAIN STEM

53

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1969 to August 1988. Biochemical analyses: January 1978 to August 1988.

315235100312201 - E.V.SPENCE RES SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1415	1.00	3510	8.20	9.0	10.7	99
23...	1417	10.0	3500	8.20	9.0	10.7	99
23...	1419	20.0	3510	8.20	8.5	10.6	97
23...	1421	30.0	3500	8.20	8.5	10.5	96
23...	1423	40.0	3500	8.20	8.5	10.5	96
23...	1425	55.0	3510	8.20	8.5	10.3	94
MAY							
17...	1021	1.00	3770	8.30	22.0	8.3	104
17...	1023	10.0	3770	8.30	21.0	8.3	102
17...	1025	20.0	3780	8.30	20.5	7.8	95
17...	1027	30.0	3780	8.20	20.5	7.5	91
17...	1029	40.0	3780	8.10	19.5	6.3	75
17...	1031	47.0	3770	8.00	19.0	4.7	55
AUG							
17...	1108	1.00	4060	8.30	28.0	6.3	88
17...	1110	10.0	4060	8.30	27.5	6.2	86
17...	1112	20.0	4050	8.20	27.0	6.0	82
17...	1114	30.0	4040	8.10	27.0	5.6	77
17...	1116	40.0	4000	7.60	26.0	3.5	47
17...	1118	47.0	3870	7.50	23.5	3.1	40

315335100312401 - E.V.SPENCE RES SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CACO3)
FEB									
23...	1210	1.00	3500	8.20	9.0	1.40	10.6	98	680
23...	1212	10.0	3500	8.20	9.0	--	10.5	97	--
23...	1214	20.0	3510	8.20	8.5	--	10.5	96	--
23...	1216	30.0	3520	8.20	8.5	--	10.4	95	--
23...	1218	40.0	3490	8.20	8.5	--	10.4	95	--
23...	1220	50.0	3480	8.20	8.5	--	10.4	95	--
23...	1222	60.0	3480	8.20	8.5	--	10.3	94	--
23...	1224	72.0	3530	8.20	8.5	--	10.3	94	640
MAY									
17...	0935	1.00	3790	8.30	21.5	1.40	8.5	105	890
17...	0937	10.0	3790	8.30	21.0	--	8.4	103	--
17...	0939	20.0	3790	8.30	20.5	--	7.7	93	--
17...	0941	30.0	3790	8.20	20.0	--	7.3	88	--
17...	0943	40.0	3790	8.20	19.5	--	6.8	81	--
17...	0945	50.0	3790	8.10	18.5	--	5.7	66	--
17...	0947	60.0	3780	8.00	18.5	--	5.1	59	--
17...	0949	70.0	3780	7.90	18.0	--	4.0	46	700
AUG									
17...	1018	1.00	4090	8.30	27.5	1.40	6.5	90	800
17...	1020	10.0	4080	8.30	27.0	--	6.2	85	--
17...	1022	20.0	4080	8.20	27.0	--	6.0	82	--
17...	1024	30.0	4070	8.10	27.0	--	5.6	77	--
17...	1026	40.0	4000	7.60	25.5	--	3.1	41	--
17...	1028	50.0	3940	7.50	23.0	--	3.1	39	--
17...	1030	60.0	3910	7.50	22.5	--	3.0	38	--
17...	1032	70.0	4030	7.50	22.5	--	3.0	38	--
17...	1034	82.0	7230	7.50	25.0	--	3.1	41	1300

COLORADO RIVER MAIN STEM

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

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
FEB									
23...	540	130	87	500	9	20	141	620	790
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	500	120	83	490	9	20	139	630	690
MAY									
17...	750	220	83	540	8	8.0	142	680	800
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	560	130	91	530	9	8.0	144	670	800
AUG									
17...	680	140	110	570	9	14	125	720	880
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	1200	160	230	1100	13	32	171	1400	1500
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	
FEB									
23...	0.50	4.7	2230	<0.100	0.70	0.010	<10	<10	
23...	--	--	--	--	--	--	--	--	
23...	--	--	--	--	--	--	--	--	
23...	--	--	--	<0.100	0.70	0.030	10	<10	
23...	--	--	--	--	--	--	--	--	
23...	--	--	--	--	--	--	--	--	
23...	--	4.8	2120	<0.100	0.90	0.010	10	<10	
MAY									
17...	0.60	4.0	2420	<0.100	0.60	0.020	20	<10	
17...	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	
17...	--	--	--	<0.100	0.50	0.010	20	<10	
17...	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	
17...	--	5.3	2320	0.200	0.60	0.020	20	30	
AUG									
17...	0.50	4.7	2510	<0.100	0.60	0.020	12	8	
17...	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	
17...	--	--	--	<0.100	0.60	0.010	20	40	
17...	--	--	--	<0.100	0.60	0.020	20	170	
17...	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	
17...	--	7.7	4530	<0.100	2.3	0.110	140	530	

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

315413100312501 - E.V.SPENCE RES SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1350	1.00	3500	8.20	9.0	10.6	98
23...	1352	10.0	3500	8.20	8.5	10.7	98
23...	1354	20.0	3500	8.20	8.5	10.5	96
23...	1356	30.0	3500	8.20	8.5	10.5	96
23...	1358	40.0	3500	8.20	8.5	10.5	96
23...	1400	50.0	3500	8.20	8.5	10.4	95
23...	1402	61.0	3500	8.20	8.5	10.3	94
MAY							
17...	0916	1.00	3780	8.30	22.0	8.7	109
17...	0918	10.0	3780	8.30	21.0	8.7	107
17...	0920	20.0	3780	8.30	20.0	8.0	96
17...	0922	30.0	3780	8.20	20.0	7.6	91
17...	0924	40.0	3770	8.10	19.0	6.6	78
AUG							
17...	0955	1.00	4060	8.30	27.5	6.6	91
17...	0957	10.0	4060	8.30	27.5	6.5	90
17...	0959	20.0	4070	8.10	27.0	5.1	70
17...	1001	30.0	4040	7.90	26.5	4.4	60
17...	1003	43.0	3980	7.50	25.0	2.2	29

315558100342601 - E.V.SPENCE RES SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CACO3)
FEB									
23...	1445	1.00	3550	8.20	9.5	1.40	10.7	100	650
23...	1447	10.0	3520	8.20	8.5	--	10.7	98	--
23...	1449	20.0	3520	8.20	8.5	--	10.5	96	--
23...	1451	30.0	3520	8.20	8.5	--	10.5	96	--
23...	1453	44.0	3520	8.20	8.5	--	10.2	93	650
MAY									
17...	1046	1.00	3840	8.30	24.0	1.10	7.9	103	700
17...	1048	10.0	3840	8.30	23.5	--	7.8	100	--
17...	1050	20.0	3880	8.20	21.5	--	6.1	75	--
17...	1052	30.0	3810	8.10	20.0	--	5.7	68	--
17...	1054	40.0	3810	8.10	19.5	--	5.2	62	--
17...	1056	54.0	3810	7.90	19.0	--	2.8	33	700
AUG									
17...	1134	1.00	4160	8.40	30.0	1.10	6.6	95	800
17...	1136	10.0	4160	8.40	29.0	--	6.5	92	--
17...	1138	20.0	4160	8.30	29.0	--	6.4	91	--
17...	1140	30.0	4320	7.60	27.5	--	3.3	46	--
17...	1142	40.0	4890	7.60	27.0	--	3.2	44	--
17...	1144	53.0	8200	7.80	28.5	--	3.2	46	1600

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
FEB								
23...	510	120	84	480	8	20	141	620
23...	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--
23...	510	120	84	540	9	20	141	630
MAY								
17...	570	130	92	530	9	9.0	138	690
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	550	130	91	530	9	9.0	149	680
AUG								
17...	680	140	110	580	9	16	120	730
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	1400	180	270	1300	15	41	154	1600

COLORADO RIVER MAIN STEM

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

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB								
23...	610	4.7	2020	<0.100	0.80	0.010	10	<10
23...	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--
23...	--	--	--	<0.100	0.70	0.010	10	10
23...	790	4.7	2270	<0.100	0.90	0.010	10	<10
MAY								
17...	810	3.5	2350	<0.100	0.80	0.020	20	<10
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
17...	--	--	--	<0.100	0.50	0.020	30	10
17...	810	5.8	2350	<0.100	1.0	0.040	20	110
AUG								
17...	900	4.9	2550	<0.100	0.60	0.020	5	4
17...	--	--	--	--	--	--	--	--
17...	--	--	--	<0.100	0.60	0.020	10	10
17...	--	--	--	<0.100	0.70	0.020	20	30
17...	--	--	--	--	--	--	--	--
17...	1700	7.2	5190	<0.100	1.6	0.060	100	490

315619100335601 - E.V.SPENCE RES SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1515	1.00	3550	8.20	9.5	10.8	101
23...	1517	10.0	3550	8.20	9.0	10.7	99
23...	1519	20.0	3550	8.20	9.0	10.5	97
23...	1521	30.0	3530	8.20	8.5	10.4	95
23...	1523	42.0	3530	8.20	8.5	10.2	93
MAY							
17...	1122	1.00	3830	8.30	24.5	7.9	104
17...	1124	10.0	3840	8.30	23.5	7.8	100
17...	1126	20.0	3850	8.20	21.0	6.5	80
17...	1128	30.0	3820	8.10	20.0	5.5	66
17...	1130	37.0	3790	8.10	20.0	4.9	59
AUG							
17...	1206	1.00	4110	8.40	30.0	6.7	97
17...	1208	10.0	4110	8.40	29.0	7.0	99
17...	1210	20.0	4110	8.40	29.0	7.0	99
17...	1212	30.0	4250	8.10	28.5	5.2	73

315712100352001 - E.V.SPENCE RES SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1535	1.00	3580	8.20	9.5	10.6	99
23...	1537	10.0	3580	8.20	9.5	10.5	98
23...	1539	20.0	3580	8.20	9.0	10.4	96
23...	1541	34.0	3590	8.20	9.0	10.0	92
MAY							
17...	1142	1.00	3820	8.30	25.0	7.9	104
17...	1144	10.0	3810	8.30	24.0	7.8	101
17...	1146	20.0	3960	8.10	23.0	5.8	74
17...	1148	32.0	4710	7.90	22.5	3.5	44
AUG							
17...	1235	1.00	4150	8.40	30.5	7.0	102
17...	1237	10.0	4150	8.40	29.5	6.4	92
17...	1239	20.0	4150	8.40	29.5	6.3	90
17...	1241	34.0	8820	8.00	29.5	3.2	47

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

315810100364901 - E.V.SPENCE RES SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)
FEB									
23...	1600	1.00	3740	8.20	10.0	0.80	9.9	94	660
23...	1602	10.0	3750	8.20	10.0	--	9.8	93	--
23...	1604	23.0	3860	8.10	9.5	--	9.1	85	710
MAY									
17...	1205	1.00	3950	8.30	26.0	0.90	7.6	102	710
17...	1207	10.0	4000	8.20	25.0	--	7.2	95	--
17...	1209	22.0	5340	7.80	24.0	--	2.8	37	970
AUG									
17...	1248	1.00	4320	8.50	30.0	0.60	7.3	105	840
17...	1250	10.0	4400	8.40	29.0	--	6.3	89	--
17...	1252	18.0	12600	8.20	30.0	--	3.3	49	2400

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
FEB								
23...	520	130	82	520	9	19	144	670
23...	--	--	--	--	--	--	--	--
23...	570	140	88	480	8	20	146	690
MAY								
17...	570	130	93	560	9	9.0	138	710
17...	--	--	--	--	--	--	--	--
17...	830	190	120	790	11	3.0	144	960
AUG								
17...	730	140	120	620	9	29	111	590
17...	--	--	--	--	--	--	--	--
17...	2200	240	440	2100	19	71	174	2700

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB								
23...	650	4.3	2160	<0.100	0.80	0.020	10	10
23...	--	--	--	<0.100	0.90	0.030	10	20
23...	690	4.3	2200	<0.100	1.0	0.010	10	20
MAY								
17...	850	2.9	2440	<0.100	0.50	0.020	20	<10
17...	--	--	--	<0.100	0.40	0.020	20	20
17...	1100	4.7	3250	<0.100	0.80	0.040	20	280
AUG								
17...	950	5.3	2520	<0.100	0.80	0.020	22	4
17...	--	--	--	<0.100	0.70	0.040	20	30
17...	2800	7.1	8460	<0.100	1.2	0.100	240	450

08124000 COLORADO RIVER AT ROBERT LEE, TX

LOCATION.--Lat 31°53'07", long 100°28'49", Coke County, Hydrologic Unit 12080008, on left bank 190 ft upstream from bridge on State Highway 208 in Robert Lee, 0.4 mi upstream from Mountain Creek, 2.7 mi downstream from Messbox Creek, 3.6 mi downstream from Robert Lee Dam, and at mile 712.4.

DRAINAGE AREA.--15,307 mi², of which 10,260 mi² probably is noncontributing.

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

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

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

REMARKS.--No estimated daily discharges. Records good. Beginning April 1949, flow was affected by Lake Colorado City and since July 1952 by Lake J. B. Thomas. Beginning December 1968, flow completely regulated by E. V. Spence Reservoir (station 08123950) 3.6 mi upstream. There are many diversions above station for municipal, mining, agricultural, and industrial uses. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years (water years 1924-27, 1940-55) prior to completion of Robert Lee Dam, 207 ft³/s (150,000 acre-ft/yr); 20 years (water years 1969-88) regulated, 18.4 ft³/s (13,330 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft³/s Sept. 6, 1926 (gage height, 20.20 ft, site and datum then in use), from rating curve extended above 15,000 ft³/s; maximum gage height, 20.63 ft Sept. 9, 1980; no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 738 ft³/s July 3 at 1500 hours (gage height, 6.39 ft); minimum daily, 0.06 ft³/s June 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.90	.99	.81	1.4	.55	4.8	.34	5.6	.60	603	2.4
2	1.3	.84	.96	.89	.95	.95	3.3	.23	1.7	356	597	2.3
3	1.3	.96	.96	.96	.80	.89	1.0	.18	.82	699	591	2.2
4	1.3	.63	.81	.94	.87	.54	.52	.50	.58	688	586	2.1
5	1.2	.72	.83	.81	.87	.49	.24	1.6	.42	693	582	1.6
6	1.0	.69	.93	.79	1.1	.61	.22	.44	.39	694	580	1.5
7	.86	.61	.91	.89	.91	.52	.22	.22	.29	689	576	1.4
8	1.0	.79	.86	.62	.76	.59	.37	.19	.25	357	567	1.3
9	1.1	.85	.74	.48	.76	.62	.45	.18	.19	5.6	561	1.2
10	1.1	.71	.59	.31	.69	.53	.45	.28	.13	2.1	559	1.2
11	1.2	e.79	.54	.26	.70	.41	.40	5.3	.11	2.4	554	1.4
12	1.1	e.87	.68	.49	.66	.44	.20	3.5	.07	1.8	551	1.4
13	.94	e.96	.79	.42	.76	.55	.17	.99	.06	1.2	550	1.3
14	1.0	e.87	.84	.64	.86	.77	.16	.50	.07	383	547	1.3
15	1.1	e1.0	1.4	1.7	1.0	.41	.18	.41	.09	663	544	1.4
16	1.2	e.95	1.1	2.1	.77	.30	.29	.35	.11	655	541	1.3
17	1.2	e.90	1.4	1.8	.71	.62	13	.29	.13	648	539	2.3
18	1.7	.87	1.8	1.0	1.1	1.1	2.4	.16	.13	645	539	4.8
19	3.2	.87	16	1.1	1.4	.76	1.1	2.1	.17	644	538	3.6
20	e1.7	.92	3.3	.86	.79	1.0	.93	12	.19	641	539	2.1
21	e1.4	.85	1.8	.86	.60	2.4	.63	3.0	.18	639	537	1.8
22	1.2	1.0	1.3	.92	.46	2.4	.47	1.1	.16	634	537	1.6
23	1.1	1.0	1.1	1.0	.60	.53	.67	.65	.16	629	538	1.9
24	1.3	1.0	1.2	1.5	.57	.54	.77	.41	.18	626	542	2.2
25	1.2	1.0	4.7	1.3	.50	.47	.41	.38	.20	628	543	1.5
26	1.3	.96	3.2	1.0	.60	.47	.29	.33	.81	630	550	1.5
27	e1.2	.96	1.6	1.0	.68	.51	.22	.30	1.4	625	552	1.2
28	e1.0	.96	1.2	.99	.69	.63	.16	.33	.92	620	557	.73
29	.87	.96	1.1	1.1	.61	.65	.18	.39	.83	615	272	1.3
30	.96	.99	1.0	1.2	---	1.2	.30	.42	.69	612	4.7	.93
31	.83	---	.95	1.4	---	4.3	---	5.6	---	608	3.2	---
TOTAL	38.16	26.11	55.58	30.14	23.17	26.75	34.50	42.67	17.03	15334.70	15879.9	52.76
MEAN	1.23	.87	1.79	.97	.80	.86	1.15	1.38	.57	495	512	1.76
MAX	3.2	1.0	16	2.1	1.4	4.3	13	12	5.6	699	603	4.8
MIN	.83	.61	.54	.26	.46	.30	.16	.16	.06	.60	3.2	.73
AC-FT	76	52	110	60	46	53	68	85	34	30420	31500	105

CAL YR 1987 TOTAL 42181.35 MEAN 116 MAX 687 MIN .54 AC-FT 83670
WTR YR 1988 TOTAL 31561.47 MEAN 86.2 MAX 699 MIN .06 AC-FT 62600

e Estimated.

COLORADO RIVER MAIN STEM

59

08126380 COLORADO RIVER NEAR BALLINGER, TX

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

DRAINAGE AREA.--16,358 mi², approximately, of which 10,260 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supplies, and for oil field operation. Flow is affected by E. V. Spence and by Oak Creek Reservoirs (see stations 08123950 and 08125500), and at times by discharge from floodwater-retarding structures in the Kickapoo and Valley Creeks drainage basins.

AVERAGE DISCHARGE.--61 years (water years 1908-68) prior to completion of Robert Lee Dam, 336 ft³/s (243,400 acre-ft/yr); 20 years (water years 1969-88) partially regulated, 70.9 ft³/s (51,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,400 ft³/s Sept. 18, 1936 (gage height, 28.6 ft, at former site and datum); no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 661 ft³/s Aug. 10 at 1230 hours (gage height, 7.54 ft); no flow June 19, 20, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	18	26	51	31	24	19	7.1	139	8.1	559	51
2	34	18	26	48	34	25	18	7.0	192	6.4	551	32
3	31	18	26	46	32	26	17	8.3	26	4.8	552	32
4	29	18	26	46	31	23	16	5.4	18	459	551	27
5	27	18	26	43	31	23	17	4.1	14	502	560	24
6	26	18	27	41	31	22	16	2.4	12	513	571	20
7	25	19	27	41	30	21	15	2.1	8.7	529	585	18
8	24	21	26	41	30	23	14	3.8	8.7	520	603	16
9	23	19	26	40	30	21	14	5.0	6.1	387	610	15
10	22	18	25	38	32	20	15	3.0	4.5	106	632	13
11	21	17	25	37	33	19	9.3	12	4.2	104	639	11
12	20	17	24	37	30	19	8.1	16	3.8	53	571	10
13	20	17	24	37	29	17	7.0	16	3.6	40	541	13
14	19	18	25	36	30	15	6.9	17	2.9	29	550	12
15	19	32	26	35	28	15	7.6	17	2.8	84	536	10
16	19	41	26	35	28	15	9.2	17	1.3	523	531	9.7
17	19	30	26	34	27	24	14	16	1.4	538	530	69
18	20	26	26	34	28	26	14	16	.90	544	532	86
19	20	24	52	33	28	21	18	15	.00	546	530	44
20	22	24	96	33	27	18	32	17	.00	545	527	26
21	20	22	92	31	27	15	24	37	.22	549	530	24
22	19	22	66	31	27	17	18	32	.54	555	529	20
23	19	23	54	30	26	16	13	24	.00	562	525	17
24	22	24	50	30	24	16	10	23	.73	568	522	16
25	23	25	50	30	24	16	11	22	.52	569	515	16
26	22	25	130	29	24	16	4.9	21	1.8	571	514	14
27	21	26	104	29	25	15	4.7	19	5.4	568	509	14
28	19	26	72	29	25	16	4.7	18	2.9	566	508	14
29	18	26	62	29	25	19	5.3	16	11	563	505	104
30	18	26	56	30	---	18	6.1	16	15	562	342	73
31	18	---	53	30	---	18	---	15	---	560	102	---
TOTAL	696	676	1400	1114	827	599	388.8	450.2	488.01	12234.3	16362	850.7
MEAN	22.5	22.5	45.2	35.9	28.5	19.3	13.0	14.5	16.3	395	528	28.4
MAX	37	41	130	51	34	26	32	37	192	571	639	104
MIN	18	17	24	29	24	15	4.7	2.1	.00	4.8	102	9.7
AC-FT	1380	1340	2780	2210	1640	1190	771	893	968	24270	32450	1690
CAL YR 1987	TOTAL	98460	MEAN	270	MAX	2100	MIN	17	AC-FT	195300		
WTR YR 1988	TOTAL	36086.01	MEAN	98.6	MAX	639	MIN	.00	AC-FT	71580		

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1961 to current year.

WATER TEMPERATURE: October 1961 to current year.

SUSPENDED SEDIMENT DISCHARGE: January 1978 to September 1981.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Prior to October 1979, station was operated as 08126500 Colorado River at Ballinger.

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

SEDIMENT CONCENTRATION: Maximum daily mean, 3,740 mg/L Sept. 9 1980; minimum daily mean, 4 mg/L Feb. 2, 1980.

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,500 microsiemens Aug. 5; minimum daily, 1,840 microsiemens Dec. 31.

WATER TEMPERATURE: Maximum daily, 31.0°C June 29-30, July 1; minimum daily, 5.0°C Jan. 7, 9.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 06...	1025	18	3750	18.5	1100	920	260	110	420
DEC 17...	1210	26	3160	7.0	920	690	220	90	340
FEB 16...	1045	27	2760	9.0	880	660	210	86	260
APR 15...	1125	8.3	4000	22.0	1500	1300	360	140	370
JUN 07...	1420	8.5	3360	28.5	1200	1100	280	120	330
JUL 27...	1350	603	8140	27.5	1700	1600	200	300	1300

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
NOV 06...	6	9.6	184	1000	630	0.50	12	2550
DEC 17...	5	7.3	236	910	410	0.50	12	2130
FEB 16...	4	6.2	223	730	360	0.60	6.6	1790
APR 15...	4	7.8	205	1300	580	0.60	8.1	2890
JUN 07...	4	7.7	135	1000	520	0.60	11	2350
JUL 27...	14	26	158	1700	1900	0.70	7.8	5530

COLORADO RIVER MAIN STEM

61

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	696	3500	2530	4750	500	948	1100	2100	1400
NOV. 1987	676	3560	2570	4700	520	942	1100	2070	1400
DEC. 1987	1400	2680	1930	7280	360	1350	870	3270	1100
JAN. 1988	1114	2260	1620	4860	290	859	730	2210	950
FEB. 1988	827	2780	1990	4450	370	825	900	2000	1100
MAR. 1988	599	3040	2180	3530	420	672	970	1580	1200
APR. 1988	388.8	3750	2720	2850	550	581	1200	1250	1500
MAY 1988	450.2	4200	3050	3710	650	786	1300	1610	1600
JUNE 1988	488.01	3460	2500	3290	500	653	1100	1460	1400
JULY 1988	12234.3	5560	4090	135000	1000	33100	1700	56400	1900
AUG. 1988	16362	6100	4510	199000	1100	50200	1900	82400	2100
SEPT 1988	850.7	3860	2800	6430	580	1340	1200	2810	1500
TOTAL	36086.01	**	**	380000	**	92300	**	159000	**
WTD.AVG.	99	5300	3900	**	950	**	1600	**	1800

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2530	3740	2870	1850	2650	2840	3440	4140	3380	3250	6270	4690
2	2680	3720	2800	1860	2710	2820	3460	4170	3440	3160	8360	4620
3	3100	3720	2810	1890	2730	2800	3460	4150	3730	3650	8410	4620
4	3110	3720	2800	1900	2720	2790	3580	4200	3750	2800	8490	4710
5	3150	3730	2800	1900	2720	2790	3570	4210	3380	3250	8500	4710
6	3520	3740	2860	1900	2730	2890	3600	4210	3380	3840	7760	4710
7	3510	3780	2820	1940	2740	2960	3650	4210	3370	3800	7720	4720
8	3600	3760	3000	1940	2740	2880	3680	4200	3530	3840	7720	4810
9	3560	3950	3020	2000	2730	2960	3680	4120	3550	3840	7330	4810
10	3740	3960	2980	2010	2700	3030	3150	4110	3560	3760	7320	4820
11	3740	3960	3080	2010	2730	2960	3140	4110	3760	3710	7340	4860
12	3670	4060	3080	2240	2740	2940	3800	4200	3770	2870	6730	4910
13	3580	4050	3090	2260	2660	3080	4020	4300	3860	2910	6710	4780
14	3570	4030	3080	2260	2680	3060	4030	4310	3880	2860	5300	4910
15	3590	3840	3210	2370	2800	3120	4020	4290	3870	3330	5260	4920
16	3670	3840	3210	2370	2790	3140	3950	4340	4000	3800	4690	4920
17	3700	3500	3160	2370	2830	3180	3950	4340	4000	4210	4670	4250
18	3760	3560	3120	2360	2790	3140	3740	4340	4030	6240	4660	3060
19	3660	3520	3010	2580	2770	3120	4030	4300	---	6160	4660	3300
20	3760	3500	2980	2630	2830	3110	4030	4250	---	6180	4670	3630
21	3770	3310	2680	2530	2830	3100	3970	4250	4250	5730	4790	3880
22	3750	3310	2670	2530	2880	3150	3880	4130	4300	4960	4790	3890
23	3760	3300	2550	2610	2880	3140	3870	4110	---	4920	4790	3600
24	3800	3300	2610	2650	2890	3060	3780	4120	4350	6980	4790	3600
25	3700	3260	2660	2700	2910	3100	3780	4120	3700	7040	4930	3600
26	3710	3220	3100	2690	2870	3150	3960	4160	4050	8150	4940	3910
27	3720	3180	2200	2690	2860	3200	4130	4180	2540	8160	4940	3900
28	3710	3110	2100	2680	2900	3280	4160	4180	3910	7550	4840	3900
29	3720	3050	1980	2690	2910	3260	4150	4170	3940	7530	4840	3180
30	3700	3050	1860	2660	---	3260	4140	4180	3010	6590	4720	2220
31	3820	---	1840	2610	---	3300	---	4140	---	6460	4700	---
MEAN	3560	3590	2780	2310	2780	3050	3790	4200	3710	4890	5990	4210

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	22.0	11.5	6.0	15.0	19.0	18.0	23.0	23.0	31.0	26.0	27.0
2	25.0	22.5	11.5	7.0	10.0	---	20.0	23.0	21.0	29.5	27.5	27.0
3	25.0	22.5	11.5	7.0	10.5	---	22.0	24.0	25.0	16.5	27.5	25.0
4	25.0	18.0	12.0	7.0	11.0	16.0	23.0	24.0	26.0	---	28.0	26.0
5	25.0	22.0	15.0	7.0	---	16.5	23.0	24.5	27.0	---	28.5	26.5
6	25.0	20.0	15.5	6.5	---	18.0	21.5	26.0	27.0	28.0	27.5	26.5
7	25.0	19.5	16.0	5.0	11.0	18.0	22.0	20.0	29.0	28.0	29.0	27.0
8	20.0	20.0	15.0	6.5	12.0	18.0	21.5	27.0	29.5	28.0	29.0	27.0
9	21.0	10.0	15.0	5.0	12.0	18.0	20.0	27.0	29.5	27.0	29.5	28.0
10	20.0	12.0	13.0	6.5	12.0	18.0	18.0	27.0	29.0	26.0	29.0	28.0
11	18.5	14.0	14.0	7.0	11.0	18.0	17.0	22.5	28.5	27.0	29.0	28.0
12	18.5	14.5	12.0	7.0	12.0	17.0	17.0	26.0	28.0	28.0	29.0	28.0
13	20.0	15.0	10.0	7.0	14.0	17.0	20.0	27.0	29.0	28.0	29.0	---
14	21.0	15.5	9.0	7.0	14.0	15.0	21.0	27.0	29.0	30.0	29.0	28.0
15	20.0	16.0	9.0	10.0	14.0	16.0	27.0	28.0	29.0	---	29.0	28.0
16	21.0	15.0	9.5	11.0	14.0	---	25.0	28.0	29.0	30.0	29.5	25.0
17	21.0	15.0	---	11.0	12.5	---	22.0	28.0	29.0	29.0	29.5	25.0
18	21.0	15.0	---	11.0	12.0	---	20.0	28.0	29.0	29.0	30.0	25.0
19	21.0	15.0	---	9.0	12.0	---	20.0	25.0	---	29.0	30.0	26.0
20	21.0	14.5	10.5	8.5	15.0	---	26.0	22.5	---	27.0	30.0	27.5
21	21.0	15.0	10.5	10.0	15.0	18.0	24.5	21.0	---	28.0	30.0	29.0
22	21.0	16.0	11.0	10.0	17.0	20.0	26.0	25.0	---	27.0	30.0	29.5
23	21.0	17.0	14.0	10.0	14.0	21.0	25.0	27.0	---	27.0	30.0	29.0
24	22.0	17.5	---	10.0	13.0	22.0	25.0	28.0	29.0	27.0	28.5	28.0
25	22.5	---	---	10.0	16.0	---	25.0	28.0	24.5	27.0	28.5	27.0
26	21.0	---	---	11.0	16.0	---	---	28.0	27.5	28.0	28.0	27.0
27	22.0	---	---	12.0	18.0	---	25.0	27.5	25.0	29.0	28.0	27.0
28	22.0	---	---	12.0	18.0	20.0	25.0	27.0	27.0	28.0	28.0	26.0
29	22.0	15.0	---	12.5	18.0	20.0	23.5	27.0	31.0	28.0	25.5	21.0
30	23.0	12.0	13.0	12.5	---	18.0	21.0	26.0	31.0	28.0	---	21.5
31	23.0	---	9.0	12.5	---	18.0	---	23.0	---	27.5	---	---
MEAN	22.0	16.5	12.0	9.0	13.5	18.0	22.0	25.5	27.5	27.5	28.5	26.5

COLORADO RIVER BASIN

63

08127000 ELM CREEK AT BALLINGER, TX

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

DRAINAGE AREA.--450 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good except those below 100 ft³/s, which are fair. Stage-discharge relation during periods of low flow are affected by wind action and occasional accumulation of drift on dam. The city of Winters diverts water for municipal use from Lake Winters (capacity, 8,374 acre-ft at elevation 1,790 ft). Prior to June 1982, capacity of Lake Winters (old) was 3,060 acre-ft.

AVERAGE DISCHARGE.--56 years (water years 1933-88), 45.5 ft³/s (1.37 in/yr), 32,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s Oct. 13, 1957 (gage height, 14.20 ft, from floodmark); no flow at times.

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 833 ft³/s June 27 at 2330 hours (gage height, 4.65 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	2.2	9.9	20	14	10	5.8	1.7	8.4	6.5	.03	.00
2	4.1	1.9	9.9	20	13	12	4.9	1.7	43	3.8	.02	.00
3	3.4	2.0	9.8	19	14	9.3	5.0	1.6	50	3.1	.01	.00
4	3.0	2.0	10	19	12	10	5.1	1.6	33	3.4	.01	.00
5	3.0	2.0	11	17	13	9.8	5.2	1.4	19	2.5	.01	.00
6	2.8	1.8	11	18	14	9.5	4.4	1.3	11	2.1	.01	.00
7	2.4	1.8	11	17	14	9.4	4.4	1.2	5.3	1.8	.00	.00
8	2.3	2.0	11	17	14	8.7	4.2	1.1	2.0	1.6	.00	.00
9	2.3	1.8	9.7	17	14	7.9	4.3	.99	.78	1.5	.00	.00
10	2.3	1.7	9.8	17	14	7.7	3.5	.82	.66	1.4	.00	.00
11	2.0	1.8	9.9	17	12	7.2	3.4	1.2	1.5	4.5	.00	.00
12	2.0	1.9	9.9	17	14	6.7	3.6	1.4	1.4	3.0	.00	.00
13	2.0	2.0	9.8	17	14	5.7	3.6	1.6	1.1	5.0	.00	.00
14	2.0	2.1	10	17	12	5.8	3.4	1.6	.79	4.9	.00	.00
15	2.0	4.1	10	16	14	6.1	3.6	1.5	.59	3.2	.00	.00
16	2.0	7.9	11	17	13	6.6	3.5	1.5	.46	1.9	.00	.00
17	3.8	13	12	17	13	12	5.6	1.3	25	.99	.00	.00
18	11	13	13	16	13	11	4.3	1.2	13	1.4	.00	.00
19	7.8	13	28	14	13	11	4.6	1.3	3.8	1.2	.00	.00
20	5.4	12	61	13	13	11	6.3	2.3	2.0	1.0	.00	.00
21	5.9	9.4	44	14	12	9.2	5.9	6.8	1.6	.87	.00	.00
22	4.8	8.8	26	13	11	8.7	5.0	5.7	1.1	.65	.00	.00
23	3.9	9.5	21	12	11	8.9	3.9	2.9	.65	.45	.00	.00
24	3.4	9.9	18	13	9.8	8.0	2.9	2.0	.42	.27	.00	.00
25	2.9	9.1	20	12	10	7.2	2.2	1.7	14	.18	.00	.00
26	2.6	9.5	24	12	11	7.0	2.3	1.4	47	.16	.00	.00
27	2.3	10	37	12	11	6.1	1.9	1.3	90	.15	.00	.00
28	2.2	10	28	12	12	7.8	1.7	1.2	206	.09	.00	.00
29	2.3	9.8	23	13	10	7.3	1.7	1.2	35	.05	.00	.00
30	2.3	10	20	14	---	6.7	1.9	1.2	14	.03	.00	.00
31	2.3	---	19	14	---	6.0	---	1.1	---	.03	.00	---
TOTAL	105.0	186.0	557.7	483	364.8	260.3	118.1	54.81	632.55	57.72	0.09	0.00
MEAN	3.39	6.20	18.0	15.6	12.6	8.40	3.94	1.77	21.1	1.86	.003	.00
MAX	11	13	61	20	14	12	6.3	6.8	206	6.5	.03	.00
MIN	2.0	1.7	9.7	12	9.8	5.7	1.7	.82	.42	.03	.00	.00
AC-FT	208	369	1110	958	724	516	234	109	1250	114	.2	.0
CFSM	.01	.01	.04	.03	.03	.02	.01	.00	.05	.00	.00	.00
IN.	.01	.02	.05	.04	.03	.02	.01	.00	.05	.00	.00	.00
CAL YR 1987	TOTAL 29302.6	MEAN 80.3	MAX 2730	MIN 1.7	AC-FT 58120	CFSM .18	IN. 2.42					
WTR YR 1988	TOTAL 2820.07	MEAN 7.71	MAX 206	MIN .00	AC-FT 5590	CFSM .02	IN. .23					

COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURE: October 1967 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

WATER TEMPERATURE: Maximum daily 35.0°C July 19, 1986; minimum daily, 0.0°C Jan. 8, 1968, Jan. 10, 13, 1973, and Jan. 11, 14, 1982.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,170 microsiemens June 1; minimum daily, 590 microsiemens June 30.

WATER TEMPERATURE: Maximum daily, 34.5°C July 19; minimum daily 4.0°C Jan. 1, 9.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 06...	1045	1.8	2580	19.0	650	400	120	85	390
DEC 17...	1010	19	2690	7.0	680	410	130	86	280
FEB 16...	1140	14	2610	9.0	630	390	120	81	280
APR 15...	1200	3.6	2920	20.0	740	500	130	100	330
JUN 07...	1120	8.0	2350	26.0	620	380	93	95	250
JUL 26...	1210	0.18	879	29.0	270	130	57	32	71

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
NOV 06...	7	5.5	248	370	600	0.90	12	1730
DEC 17...	5	5.0	266	410	430	1.0	6.5	1510
FEB 16...	5	4.0	244	400	450	0.90	6.0	1490
APR 15...	5	4.5	239	470	520	1.0	6.1	1700
JUN 07...	4	5.4	243	380	410	0.80	9.1	1390
JUL 26...	2	4.4	149	98	120	0.40	13	485

COLORADO RIVER BASIN

65

08127000 ELM CREEK AT BALLINGER, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	105.0	2460	1460	415	480	137	360	102	730
NOV. 1987	186.0	2650	1580	792	530	267	390	197	780
DEC. 1987	557.7	2590	1550	2330	520	780	380	575	770
JAN. 1988	483	2440	1450	1890	480	623	350	462	720
FEB. 1988	364.8	2630	1570	1550	530	520	390	383	780
MAR. 1988	260.3	2770	1650	1160	560	396	410	291	820
APR. 1988	118.1	2900	1730	553	600	191	440	140	860
MAY 1988	54.81	3080	1840	272	650	96	470	70	920
JUNE 1988	632.55	1580	936	1600	300	507	220	380	470
JULY 1988	57.72	705	412	64	110	17	88	14	200
AUG. 1988	0.09	948	556	0.1	150	0.04	120	0.03	280
SEPT 1988	0.00	*	*	0.00	*	0.00	*	0.00	*
TOTAL	2820.07	**	**	10600	**	3540	**	2610	**
WTD.AVG.	7.7	2340	1390	**	460	**	340	**	690

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2200	2680	2670	2370	2600	2730	2960	3040	3170	630	941	
2	2200	2640	2670	2330	2600	2710	2820	3040	2920	620	943	
3	2220	2580	2680	2330	2610	2700	2840	3060	2680	620	950	
4	2240	2570	2690	2330	2630	2750	2820	3060	2810	660	952	
5	2260	2590	2690	2330	2610	2700	2850	3070	2550	680	963	
6	2260	2580	2700	2340	2630	2700	2840	3080	2450	680	962	
7	2280	2560	2710	2320	2620	2710	2850	3080	2350	690	---	
8	2300	2560	2720	2340	2610	2720	2850	3080	2230	680	---	
9	2320	2550	2730	2340	2620	2730	2870	3110	2230	700	---	
10	2340	2560	2730	2350	2640	2760	2880	3130	2230	690	---	
11	2340	2560	2750	2330	2680	2780	2890	3090	2240	700	---	
12	2360	2580	2740	2350	2650	2750	2900	3090	2170	730	---	
13	2370	2570	2750	2360	2620	2790	2920	3110	2180	710	---	
14	2370	2570	2750	2380	2670	2760	2910	3100	2160	750	---	
15	2380	2570	2750	2410	2620	2760	2930	3100	2120	740	---	
16	2400	2580	2750	2460	2630	2770	2900	3110	2100	750	---	
17	2420	2610	2770	2490	2640	2760	2890	3090	2070	760	---	
18	2440	2640	2760	2500	2620	2730	2910	3110	1940	800	---	
19	2510	2670	2660	2510	2610	2730	2910	3120	1890	840	---	
20	2560	2690	2680	2520	2640	2750	2910	3090	1880	810	---	
21	2610	2690	2600	2530	2650	2760	2940	3020	1890	840	---	
22	2630	2680	2530	2540	2650	2790	2940	3060	1880	850	---	
23	2650	2680	2530	2540	2640	2800	2950	3080	1880	850	---	
24	2670	2680	2490	2560	2640	2800	2980	3090	1800	870	---	
25	2670	2680	2450	2570	2640	2810	2980	3100	1730	880	---	
26	2680	2680	2450	2570	2650	2840	3010	3100	1740	900	---	
27	2690	2670	2460	2560	2650	2840	3010	3100	1640	910	---	
28	2680	2660	2460	2580	2670	2840	3010	3100	655	920	---	
29	2680	2650	2460	2590	2660	2870	3030	3110	600	920	---	
30	2660	2650	2380	2610	---	2850	3020	3110	590	930	---	
31	2610	---	2370	2630	---	3140	---	3090	---	960	---	
MEAN	2450	2620	2630	2450	2630	2780	2920	3090	2030	776	952	

COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.0	22.0	13.0	4.0	14.5	17.5	17.5	22.0	24.5	34.0	27.5	
2	24.5	21.0	12.5	5.0	9.5	18.0	19.0	20.0	26.0	29.0	29.5	
3	23.0	23.5	13.0	6.0	10.5	15.0	21.0	22.0	25.0	27.0	28.0	
4	23.0	24.0	12.0	5.0	8.0	15.5	22.0	23.0	24.5	31.0	29.0	
5	26.0	20.0	13.0	5.5	6.5	14.0	21.0	22.0	26.5	29.0	31.5	
6	23.0	20.5	12.0	5.0	8.0	16.0	22.5	---	27.0	30.5	33.5	
7	24.0	20.5	15.0	7.0	7.5	17.0	21.5	---	29.5	28.0	---	
8	23.0	18.0	13.0	4.5	5.5	15.0	18.5	23.0	30.0	27.0	---	
9	24.5	14.5	13.5	4.0	8.0	16.0	19.0	22.0	30.0	27.0	---	
10	23.0	13.5	12.5	4.5	9.0	15.5	16.0	24.5	28.0	28.0	---	
11	18.5	14.5	14.0	6.0	8.0	13.5	18.0	21.5	28.0	28.5	---	
12	24.0	14.5	11.5	8.0	8.5	16.5	21.0	27.0	28.0	34.0	---	
13	23.0	13.5	10.0	7.0	10.5	16.0	22.0	25.0	27.0	33.5	---	
14	23.0	11.5	8.0	7.5	10.0	17.0	19.0	25.0	27.0	32.5	---	
15	20.0	13.0	8.0	8.0	11.5	15.5	24.5	24.0	28.0	29.0	---	
16	23.5	14.5	8.5	8.5	12.5	13.0	22.5	28.0	29.0	28.5	---	
17	22.0	14.5	7.0	8.5	11.0	10.5	21.0	27.0	30.0	31.0	---	
18	20.5	13.0	8.0	11.0	11.5	11.0	20.5	26.0	28.0	32.0	---	
19	23.5	13.0	9.5	11.0	12.0	11.5	22.0	25.0	29.5	34.5	---	
20	19.5	13.5	9.5	9.5	12.5	13.5	23.0	23.0	30.0	29.5	---	
21	20.0	9.5	10.0	8.0	13.0	16.5	22.5	23.5	30.0	27.0	---	
22	18.0	13.0	11.5	9.0	13.5	16.0	24.0	21.5	31.0	29.0	---	
23	19.0	14.5	11.0	9.0	12.5	18.0	23.0	23.0	29.0	26.0	---	
24	21.5	15.5	10.5	8.5	13.0	19.5	23.0	26.0	27.5	29.0	---	
25	21.5	14.0	8.0	7.5	12.5	19.0	24.0	25.0	27.5	30.0	---	
26	22.0	11.5	7.0	9.0	12.5	19.0	22.5	25.0	27.0	32.5	---	
27	20.0	11.5	6.5	9.5	14.0	18.5	22.0	24.0	26.5	31.0	---	
28	21.0	12.0	7.0	9.5	17.0	20.5	20.5	24.0	24.5	29.0	---	
29	21.0	12.0	7.0	10.0	17.0	18.0	20.0	23.0	28.5	29.5	---	
30	23.0	12.0	6.5	10.5	---	18.5	20.0	24.5	32.0	28.0	---	
31	21.0	---	5.0	14.0	---	18.0	---	23.0	---	28.0	---	
MEAN	22.0	15.5	10.0	7.5	11.0	16.0	21.0	24.0	28.0	30.0	30.0	

COLORADO RIVER BASIN

67

08128000 SOUTH CONCHO RIVER AT CHRISTOVAL, TX

LOCATION (REVISED).--Lat 31°11'13", long 100°30'06", Tom Green County, Hydrologic Unit 12090102, on left upstream side of U.S. Highway 277 bridge, 9.5 mi upstream from Twin Buttes Dam, and 23.7 mi upstream from mouth.

DRAINAGE AREA.--412.6 mi², of which 58.6 mi² probably is noncontributing.

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

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,010.22 ft above National Geodetic Vertical Datum of 1929. Prior to July 17, 1930, nonrecording gage at same site and datum. July 17, 1930, to Nov. 15, 1977, water-stage recorder at same site and datum. Nov. 16, 1977 to May 5, 1987, water-stage recorder at site 160 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Low flow is materially affected by diversion to South Concho Irrigation Co.'s canal 800 ft upstream from station. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--58 years, 32.0 ft³/s (23,180 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s July 23, 1938 (gage height, 21.95 ft, from floodmark), from rating curve extended above 15,100 ft³/s on basis of slope-area measurement of 80,100 ft³/s; no flow Feb. 28 and Mar. 1, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1882, about 23 ft Aug. 6, 1906 (discharge, 115,000 ft³/s), from rating curve extended as noted above, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 11	0300	*517	*3.36	No other peak greater than base discharge.			

Minimum daily discharge, 15 ft³/s for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	31	28	33	31	29	16	22	20	22	25	22
2	33	31	28	33	30	28	17	22	19	21	25	22
3	31	31	28	33	30	28	17	23	18	20	23	22
4	31	31	28	33	30	29	17	24	18	20	22	21
5	31	30	29	34	30	27	16	25	18	20	21	19
6	31	31	29	35	30	24	15	25	18	21	21	17
7	31	31	28	35	31	21	16	23	19	21	21	17
8	36	31	28	35	31	19	16	22	20	21	21	18
9	39	32	28	35	30	19	16	21	19	21	21	18
10	39	35	28	35	30	19	15	21	17	22	21	17
11	37	33	28	36	28	19	16	71	16	27	22	17
12	35	32	28	35	30	18	15	23	17	25	21	17
13	35	32	28	33	31	18	15	22	17	25	21	18
14	35	31	26	34	29	18	15	22	17	25	21	18
15	35	31	26	36	30	20	16	21	17	25	20	18
16	35	31	26	37	31	20	15	22	17	23	22	17
17	35	31	26	35	30	19	24	22	16	23	22	21
18	35	31	27	33	30	18	22	21	17	23	21	22
19	35	30	29	31	30	18	22	22	17	23	19	21
20	35	30	28	31	30	19	23	24	16	22	19	21
21	33	32	28	32	30	20	24	22	16	22	19	21
22	33	33	28	33	32	19	24	19	16	22	19	22
23	33	33	28	33	30	19	23	18	16	22	18	21
24	33	33	29	33	31	19	23	19	16	21	19	21
25	33	33	30	33	31	18	23	19	30	21	20	21
26	33	33	30	33	31	19	23	18	22	21	19	20
27	33	32	31	32	31	18	23	20	25	21	19	19
28	33	27	33	32	29	17	24	21	22	21	18	19
29	33	27	31	32	28	15	24	22	21	21	18	21
30	33	28	34	31	---	15	23	22	22	22	21	20
31	33	---	34	31	---	16	---	22	---	23	22	---
TOTAL	1052	937	890	1037	875	625	578	720	559	687	641	588
MEAN	33.9	31.2	28.7	33.5	30.2	20.2	19.3	23.2	18.6	22.2	20.7	19.6
MAX	39	35	34	37	32	29	24	71	30	27	25	22
MIN	31	27	26	31	28	15	15	18	16	20	18	17
AC-FT	2090	1860	1770	2060	1740	1240	1150	1430	1110	1360	1270	1170

CAL YR 1987 TOTAL 18002 MEAN 49.3 MAX 553 MIN 26 AC-FT 35710
WTR YR 1988 TOTAL 9189 MEAN 25.1 MAX 71 MIN 15 AC-FT 18230

08128400 MIDDLE CONCHO RIVER ABOVE TANKERSLEY, TX

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

DRAINAGE AREA.--2,084 mi², of which 968 mi² probably is noncontributing.

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

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

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

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

AVERAGE DISCHARGE.--27 years, 17.8 ft³/s (12,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft³/s Sept. 21, 1974 (gage height, 24.98 ft); no flow at times.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 18	1830	*8,710	a*19.92	No other peak greater than base discharge.			

a From floodmark.

Minimum discharge, 0.28 ft³/s Aug. 30-31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	18	21	23	24	21	18	11	16	4.8	2.2	.45
2	18	18	21	23	24	21	18	11	13	4.3	2.3	.41
3	17	18	21	23	24	21	18	11	12	5.0	2.0	.41
4	17	18	21	23	24	21	18	10	11	6.2	1.7	.41
5	17	18	21	23	23	21	18	10	11	6.2	1.7	.41
6	17	18	22	23	24	21	18	9.9	11	5.4	1.7	.41
7	17	18	22	23	24	21	18	9.5	11	4.9	1.6	.41
8	17	20	22	23	24	21	18	9.4	11	5.2	1.2	.41
9	17	20	22	23	23	21	18	8.5	9.8	5.1	1.0	.41
10	17	21	21	23	23	21	18	7.8	9.0	4.9	.94	.50
11	17	21	22	23	22	21	18	18	8.6	8.9	.90	.59
12	17	21	22	23	22	21	18	23	8.3	31	1.3	.59
13	18	21	22	23	22	21	18	15	8.0	53	1.4	.59
14	18	21	22	22	22	20	18	13	7.5	19	1.1	.59
15	18	23	22	22	21	20	18	12	7.2	13	.99	.52
16	18	21	22	21	21	20	18	11	7.1	9.6	.88	.46
17	24	20	22	22	21	21	33	9.5	7.0	8.1	.77	4.9
18	20	20	24	23	22	21	21	8.5	6.4	6.5	.65	1480
19	20	20	50	24	22	20	15	15	6.1	5.6	.58	307
20	20	20	40	24	22	20	14	29	5.3	5.3	.54	67
21	20	20	32	24	22	19	13	79	4.9	6.0	.53	24
22	20	21	30	24	21	19	13	20	4.5	5.3	.49	15
23	20	21	29	24	21	19	12	15	4.3	4.4	.36	11
24	20	21	29	24	21	19	11	13	3.9	4.2	.48	9.7
25	20	21	30	24	21	19	11	11	11	3.5	.66	8.2
26	20	21	27	24	21	19	11	11	8.1	3.1	.48	7.2
27	19	22	27	24	22	19	11	11	10	3.4	.52	6.6
28	18	22	26	24	22	19	11	10	7.3	2.8	.52	5.8
29	18	21	24	24	22	19	11	10	6.7	2.2	.47	5.3
30	18	21	24	24	---	18	11	11	5.6	2.1	.35	5.3
31	18	---	24	24	---	18	---	12	---	2.0	.41	---
TOTAL	573	606	784	721	647	622	486	455.1	252.6	251.0	30.72	1964.57
MEAN	18.5	20.2	25.3	23.3	22.3	20.1	16.2	14.7	8.42	8.10	.99	65.5
MAX	24	23	50	24	24	21	33	79	16	53	2.3	1480
MIN	17	18	21	21	21	18	11	7.8	3.9	2.0	.35	.41
AC-FT	1140	1200	1560	1430	1280	1230	964	903	501	498	61	3900

CAL YR 1987 TOTAL 14424.5 MEAN 39.5 MAX 423 MIN 6.8 AC-FT 28610
WTR YR 1988 TOTAL 7392.99 MEAN 20.2 MAX 1480 MIN .35 AC-FT 14660

08129300 SPRING CREEK ABOVE TANKERSLEY, TX

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

DRAINAGE AREA.--424.7 mi², of which 19.7 mi² probably is noncontributing.

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

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

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

REMARKS.--Estimated daily discharges: Oct. 11 to Nov. 4. Records good. There are many small diversions above station for irrigation. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 13.7 ft³/s (9,930 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,400 ft³/s Aug. 12, 1971 (gage height, 16.57 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Outstanding floods since at least 1853 occurred in 1882 and 1884. Flood of Oct. 3, 1959, reached a stage of 18.4 ft, from floodmarks. At former gage near Tankersley 8 mi downstream, the flood of Oct. 3, 1959, had a discharge of 82,100 ft³/s and was found to be about 3 ft lower than the 1882 flood, the greatest at that location since at least 1853.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	2100	*143	*4.82				

Minimum discharge, 0.91 ft³/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	20	20	23	21	15	11	16	15	13	9.0	5.2
2	14	21	20	24	21	16	9.8	13	14	15	8.8	4.7
3	15	21	20	23	21	16	9.4	12	12	17	9.9	8.3
4	20	22	18	23	21	18	9.8	10	11	17	8.9	9.4
5	24	22	17	23	20	13	8.3	11	14	16	8.2	8.1
6	24	22	18	23	21	20	6.8	10	14	15	8.1	7.7
7	24	22	18	24	21	22	6.4	11	13	14	7.7	7.3
8	24	20	16	23	21	20	11	11	13	14	7.0	4.2
9	28	17	16	23	21	20	6.3	8.7	12	15	7.1	3.4
10	25	16	16	23	21	19	8.2	5.9	6.7	15	4.4	3.6
11	24	16	19	23	20	14	11	29	4.0	23	4.3	4.0
12	24	22	19	23	20	16	11	35	1.9	25	4.8	3.9
13	24	23	19	20	18	18	10	28	1.6	21	3.6	4.3
14	24	26	18	18	14	19	9.9	25	6.5	19	4.6	3.5
15	22	28	19	19	12	19	12	24	9.0	19	4.8	2.6
16	22	24	20	21	11	16	16	22	8.9	18	2.6	1.9
17	22	25	20	22	11	18	43	22	6.8	17	4.4	12
18	21	24	22	21	13	19	36	20	7.2	16	6.6	51
19	21	24	34	18	14	22	25	23	4.7	16	6.1	38
20	21	23	29	17	14	20	25	29	7.7	15	5.1	22
21	21	21	26	19	14	19	25	28	7.9	16	3.6	20
22	19	22	24	20	14	19	24	22	7.0	17	5.6	19
23	19	22	24	18	12	17	21	20	4.0	15	5.4	18
24	19	21	24	19	11	17	20	20	1.6	11	4.7	18
25	19	20	28	20	12	13	19	19	12	9.8	6.0	17
26	18	21	27	18	15	17	20	20	27	9.7	5.3	17
27	18	22	25	17	16	17	19	20	30	10	5.0	17
28	19	20	24	17	16	17	20	19	23	9.5	2.8	15
29	19	20	24	20	16	16	21	19	18	9.2	2.9	18
30	19	20	24	20	---	18	21	15	15	8.1	5.3	17
31	20	---	24	20	---	15	---	15	---	7.9	7.8	---
TOTAL	645	647	672	642	482	545	495.9	582.6	328.5	463.2	180.4	381.1
MEAN	20.8	21.6	21.7	20.7	16.6	17.6	16.5	18.8	10.9	14.9	5.82	12.7
MAX	28	28	34	24	21	22	43	35	30	25	9.9	51
MIN	12	16	16	17	11	13	6.3	5.9	1.6	7.9	2.6	1.9
AC-FT	1280	1280	1330	1270	956	1080	984	1160	652	919	358	756

CAL YR 1987 TOTAL 11190.2 MEAN 30.7 MAX 202 MIN 8.2 AC-FT 22200
WTR YR 1988 TOTAL 6064.7 MEAN 16.6 MAX 51 MIN 1.6 AC-FT 12030

08130500 DOVE CREEK AT KNICKERBOCKER, TX

LOCATION (REVISED).--Lat 31°16'26", long 100°37'50", Tom Green County, Hydrologic Unit 12090102, on left downstream end of bridge on Farm Road 2335, 0.5 mi west of Knickerbocker, and 5.7 mi upstream from mouth.

DRAINAGE AREA.--226.43 mi², of which 8.43 mi² probably is noncontributing.

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

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

GAGE.--Water-stage recorder. Datum of gage is 2,001.45 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1960, nonrecording gage, Nov. 10, 1960, to Mar. 17, 1986, water-stage recorder, both at site 278 ft to the right at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is partly regulated by storage, by diversions from two small channel dams upstream, and by small upstream diversions (for irrigation). Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 17.0 ft³/s (12,320 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s Aug. 12, 1971 (gage height, 20.66 ft); no flow at times.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 18	0030	*139	*4.91	No other peak greater than base discharge.			

Minimum discharge, 7.6 ft³/s July 24-25; minimum gage height, 2.82 ft June 20-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	21	23	23	21	20	15	20	15	11	21	15
2	21	21	23	23	21	20	15	19	13	11	21	13
3	20	21	22	23	21	19	16	e19	13	14	20	16
4	20	19	22	23	21	20	17	e19	12	14	19	16
5	20	17	22	23	22	20	17	e18	12	11	19	16
6	20	18	22	23	22	20	17	e18	13	11	18	15
7	20	18	22	23	22	19	16	e18	12	11	17	13
8	20	18	22	23	22	18	14	e18	12	11	17	9.9
9	20	18	22	23	21	17	14	e18	11	12	16	12
10	20	19	22	23	21	16	15	e18	11	11	16	12
11	20	18	22	23	21	16	16	25	11	16	17	13
12	19	19	21	23	21	17	14	21	11	13	15	13
13	19	19	21	22	21	17	13	17	11	12	12	11
14	19	19	22	22	21	17	16	17	11	11	12	11
15	19	22	22	22	21	17	16	17	10	10	12	12
16	20	22	21	22	19	17	16	16	9.7	9.3	11	12
17	21	21	21	22	19	19	25	16	10	9.0	11	21
18	21	21	22	22	19	19	21	14	9.7	8.5	12	52
19	21	21	28	22	20	18	20	12	9.5	8.0	12	23
20	23	21	23	22	21	17	20	14	9.0	10	12	14
21	22	21	23	22	21	17	19	13	9.1	9.9	12	14
22	21	22	23	21	21	17	19	12	9.9	8.6	12	14
23	21	22	23	21	20	17	18	11	10	8.5	12	14
24	21	23	23	20	20	17	18	11	11	8.2	12	14
25	21	23	26	20	20	17	18	12	16	8.4	12	15
26	21	22	25	21	20	17	18	12	15	12	11	14
27	21	23	24	21	20	17	17	12	25	11	11	14
28	20	23	24	21	20	17	18	12	15	11	12	14
29	20	23	23	21	20	17	18	13	12	18	13	18
30	20	23	23	21	---	16	20	13	11	19	14	16
31	20	---	23	21	---	15	---	14	---	20	15	---
TOTAL	632	618	705	682	599	547	516	489	359.9	358.4	446	466.9
MEAN	20.4	20.6	22.7	22.0	20.7	17.6	17.2	15.8	12.0	11.6	14.4	15.6
MAX	23	23	28	23	22	20	25	25	25	20	21	52
MIN	19	17	21	20	19	15	13	11	9.0	8.0	11	9.9
AC-FT	1250	1230	1400	1350	1190	1080	1020	970	714	711	885	926

CAL YR 1987 TOTAL 9839 MEAN 27.0 MAX 61 MIN 15 AC-FT 19520
WTR YR 1988 TOTAL 6419.2 MEAN 17.5 MAX 52 MIN 8.0 AC-FT 12730

e Estimated.

08131200 TWIN BUTTES RESERVOIR NEAR SAN ANGELO, TX

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

DRAINAGE AREA.--3,868 mi², of which 1,055 mi² probably is noncontributing.

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

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

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum combined daily contents, 158,400 acre-ft Mar. 6, 7, 9, 10; minimum, 131,700 acre-ft Sept. 16.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145500	146200	148200	e152100	155700	158100	156200	152500	152400	149400	143800	134100
2	145300	146200	148300	e152300	155800	158100	156000	152000	152400	149200	143600	133900
3	145300	146200	148300	e152500	155900	158100	156000	151700	152300	149200	143500	133900
4	145300	146300	148400	e152600	156000	158300	155800	151400	152200	149200	143300	133700
5	145300	146300	148500	152800	156100	158300	155500	151000	152200	149000	142900	133500
6	145300	146400	148500	152800	156300	158400	155500	150700	152100	148800	142500	133300
7	145200	146500	e148600	153000	156300	158400	155400	150700	152100	148700	142300	133100
8	145100	146400	e148600	153100	156400	158300	155200	150400	152000	148600	142000	132900
9	145000	146400	e148700	153100	156600	158400	155000	149800	151300	148500	141700	132700
10	145000	146400	e148700	153300	156700	158400	154900	149800	151100	148600	141500	132600
11	144900	146500	e148700	153500	156700	158200	154800	151500	150700	e148700	141200	132400
12	144900	146500	e148800	153500	156800	158100	154800	151700	150500	e148800	140800	132100
13	144900	146500	e148800	153500	157000	157900	154700	151700	149800	148900	140500	132000
14	144900	146500	148900	153600	157000	157800	154600	151700	149500	148900	140200	131900
15	144900	146900	148900	154100	157000	157800	154600	151700	149300	148700	139900	131800
16	145100	147100	149000	154100	157100	157800	154600	151700	149200	148600	139500	131700
17	145300	147100	149000	154200	157100	157900	154900	151700	149000	148500	139100	132400
18	145400	147100	149200	154400	157300	157600	155100	151700	148900	148400	138700	135100
19	145400	147100	149500	154400	157400	157700	155100	152000	148600	148100	138300	136600
20	145500	147200	149800	154600	157400	157600	155100	152300	148400	148100	137900	136800
21	145600	147400	150100	154600	157500	157600	155100	152300	148200	147600	137500	136900
22	145600	147400	150100	154700	157500	157600	155000	152200	147800	147100	137100	136900
23	145700	147400	e150400	154900	157500	157400	154800	152100	147500	146700	136800	136900
24	145800	147500	e150600	154800	157500	157100	154500	152100	147200	146200	136400	136900
25	145900	147600	e150800	154900	157600	157100	154300	152100	148300	145900	136200	136800
26	146000	147700	e150900	154900	157700	157000	153900	152100	148600	145500	135800	136800
27	146000	147800	e151100	155100	157800	157000	153600	152000	149400	145200	135500	136700
28	146000	147900	e151300	155300	157800	157000	153200	152100	149500	144900	135100	136600
29	146000	148000	e151600	155400	157900	156700	153000	152100	149500	144500	134800	136800
30	146100	148100	e151700	155600	---	156700	152700	151900	149500	144200	134600	136800
31	146100	---	e151900	155600	---	156500	---	152300	---	143800	134300	---
MAX	146100	148100	151900	155600	157900	158400	156200	152500	152400	149400	143800	136900
MIN	144900	146200	148200	152100	155700	156500	152700	149800	147200	143800	134300	131700
(↑)	1935.32	1935.59	1936.09	1936.56	1936.86	1936.68	1936.19	1936.14	1935.78	1935.02	1933.68	1934.04
(Φ)	+700	+2000	+3800	+3700	+2300	-1400	-3800	-400	-2800	-5700	-9500	+2500
CAL YR 1987	MAX 151900	MIN 87970	(Φ)	+64120								
WTR YR 1988	MAX 158400	MIN 131700	(Φ)	-8600								

(↑) Elevation, in feet, at end of month, at mouth of Middle Concho and Spring Creek pool
(Φ) Change in contents, in acre-feet.
e Estimated.

08132000 LAKE NASWORTHY NEAR SAN ANGELO, TX

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

DRAINAGE AREA.--3,975 mi², of which 3,868 mi² is above Twin Buttes Reservoir and 1,055 mi² probably is noncontributing.

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

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 12,650 acre-ft May 12 at 2100 hours (gage height, 32.36 ft); minimum, 10,520 acre-ft July 21 (gage height, 31.03 ft).

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

31.0	10,470
32.4	12,710

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11560	11160	11300	11480	10980	11030	10900	11050	11560	10740	10870	11010
2	11490	11160	11300	11490	11000	10900	10920	11000	11570	10810	10790	10970
3	11460	11140	11300	11510	11010	10930	10970	11000	11540	10900	10660	11030
4	11450	11140	11300	11490	11010	10950	11060	11030	11530	10980	10650	10980
5	11410	11130	11320	11490	11050	10970	10980	11060	11490	11000	10690	10980
6	11380	11130	11300	11490	11110	11080	11050	11060	11430	11050	10760	11000
7	11330	11130	11290	11490	11110	11000	11060	11110	11270	11000	10790	11030
8	11290	11110	11250	11480	11140	11060	11000	11090	11060	10980	10820	11050
9	11240	11090	11250	11450	11140	11060	11010	11060	10950	10980	10820	11000
10	11190	11080	11240	11450	11090	11090	11080	11140	11110	11080	10770	11000
11	11160	11090	11210	11450	11110	11000	11060	12600	11190	11130	10760	11030
12	11140	11110	11190	11400	11110	11060	11030	12650	11220	11110	10740	10970
13	11130	11110	11160	11380	11140	11110	11010	11910	11190	11110	10730	10930
14	11110	11090	11190	11380	11080	11290	10980	11910	11140	11060	10680	10900
15	11110	11190	11160	11400	11080	11190	11000	11910	11060	11050	10660	10850
16	11160	11210	11160	11370	11090	11130	11080	11910	10980	11000	10710	10820
17	11160	11210	11140	11350	11050	11000	11190	11910	10890	10930	10840	11010
18	11140	11190	11210	10900	11060	11370	11160	11880	10810	10790	10870	11160
19	11140	11210	11410	10890	11060	11320	11190	11930	10740	10610	10900	11140
20	11140	11210	11400	10870	11050	11220	11110	11970	10710	10550	10930	11110
21	11140	11210	11410	10870	11060	11090	11080	11960	10730	10810	10920	11080
22	11160	11210	11410	10890	10970	11110	10930	11930	10710	10920	10920	11060
23	11170	11220	11430	10950	10950	11140	10890	11910	10660	10930	10920	11060
24	11170	11240	11400	10890	10950	11110	10840	11910	10730	10920	10920	10970
25	11190	11240	11490	10930	10930	11080	10870	11890	10790	10900	10970	10930
26	11190	11240	11490	10900	10950	10970	10850	11860	11030	10980	10980	10920
27	11170	11270	11490	10920	10950	10950	10900	11590	10870	11010	10970	10870
28	11170	11290	11490	10930	10970	10900	11010	11560	10820	10810	10950	10820
29	11170	11290	11490	10980	10930	10840	11030	11530	10760	10810	10970	10900
30	11170	11290	11490	11080	---	10850	11030	11510	10680	10840	11010	10890
31	11160	---	11480	10980	---	10920	---	11560	---	10850	11050	---
MAX	11560	11290	11490	11510	11140	11370	11190	12650	11570	11130	11050	11160
MIN	11110	11080	11140	10870	10930	10840	10840	11000	10660	10550	10650	10820
(↑)	31.43	31.51	31.63	31.32	31.29	31.28	31.35	31.68	31.13	31.24	31.36	31.26
(Φ)	-410	+130	+190	-500	-50	-10	+110	+530	-880	+170	+200	-160
CAL YR 1987	MAX 12440	MIN 10270	(Φ) -300									
WTR YR 1988	MAX 12650	MIN 10550	(Φ) -680									

(↑) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

73

08134000 NORTH CONCHO RIVER NEAR CARLSBAD, TX

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

DRAINAGE AREA.--1,266 mi², of which 75.1 mi² probably is noncontributing.

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

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

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

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

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

AVERAGE DISCHARGE.--64 years, 32.8 ft³/s (23,760 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,600 ft³/s Sept. 26, 1936 (gage height, 16.0 ft, at former site, 29.1 ft at present site, from floodmark), by slope-area measurement of peak flow at former site; no flow at times. Maximum stage since 1853, that of Sept. 26, 1936.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 18	2230	*3,800	*12.68	No other peak greater than base discharge.			
Minimum daily discharge, 0.04 ft ³ /s Sept. 15, 16.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	3.3	5.1	8.6	9.3	8.6	8.3	8.6	8.3	1.6	1.0	.08
2	3.5	3.3	5.1	8.6	9.0	9.0	8.0	8.3	8.0	1.4	1.2	.07
3	3.5	3.3	5.1	8.6	8.6	8.3	8.0	8.0	7.1	1.4	1.4	.08
4	3.5	3.7	5.1	8.6	8.6	8.3	8.0	8.0	6.7	1.4	1.2	.08
5	3.5	3.9	5.1	8.6	8.6	8.3	8.0	8.0	6.5	1.4	1.0	.08
6	3.5	3.7	5.1	9.0	9.0	8.3	8.0	7.6	6.2	1.4	.71	.08
7	3.5	3.9	5.1	9.0	9.3	8.3	8.0	7.6	5.7	1.2	.60	.08
8	3.5	3.9	5.1	9.0	9.3	8.3	8.0	7.4	5.3	1.1	.50	.08
9	3.5	3.9	5.1	9.0	9.3	8.3	8.6	7.0	5.1	1.0	.37	.07
10	3.5	3.7	5.1	9.0	9.0	8.3	8.6	6.8	4.7	1.6	.27	.07
11	3.5	4.2	5.3	9.0	8.6	8.3	8.3	11	4.2	3.3	.15	.07
12	3.5	4.5	5.5	9.0	8.6	8.3	8.6	13	3.9	87	.11	.06
13	3.7	4.5	5.7	8.6	8.6	8.0	8.6	9.9	3.7	24	.11	.06
14	3.7	4.7	5.7	8.6	8.6	8.3	8.6	9.9	3.5	13	.08	.05
15	3.9	5.1	5.7	9.0	8.6	8.3	9.3	10	3.3	9.9	.08	.04
16	4.5	5.3	5.7	9.3	8.6	8.3	9.9	9.9	3.1	7.4	.08	.04
17	4.2	5.1	5.7	9.3	9.0	8.6	12	9.0	2.9	6.2	.07	.10
18	4.5	5.1	6.2	9.3	9.0	8.3	11	8.3	2.7	5.7	.07	736
19	4.7	4.9	16	9.3	9.0	8.3	10	12	2.4	4.9	.07	429
20	10	5.1	10	9.3	9.0	8.3	10	13	2.2	4.5	.07	42
21	5.3	5.3	8.3	9.3	9.0	8.3	11	14	2.0	4.5	.06	15
22	3.9	5.5	7.6	9.3	9.0	9.0	10	9.3	1.8	4.2	.06	7.2
23	3.7	5.5	7.4	9.3	8.6	9.0	10	8.3	1.4	3.7	.06	6.2
24	3.7	5.5	7.0	9.3	8.6	8.6	10	8.0	1.1	3.1	.17	6.0
25	3.7	5.3	8.6	9.3	8.3	8.6	9.6	8.3	1.0	2.7	.08	4.6
26	3.7	5.3	8.6	9.3	8.3	8.6	9.3	8.0	1.5	2.2	.07	4.2
27	3.3	5.3	8.6	9.0	8.6	8.6	9.0	7.6	2.7	1.8	.07	3.5
28	3.3	5.1	9.0	9.0	8.6	8.6	9.0	7.4	3.3	1.5	.07	3.1
29	3.1	5.1	9.0	9.0	9.0	8.3	9.0	7.1	2.9	1.4	.08	2.7
30	3.1	5.1	8.6	9.0	---	8.0	9.0	7.1	2.4	1.2	.08	2.4
31	3.1	---	8.6	9.3	---	8.3	---	8.6	---	1.1	.08	---
TOTAL	121.1	138.1	213.8	279.8	255.6	260.9	273.7	277.0	115.6	206.8	10.02	1263.09
MEAN	3.91	4.60	6.90	9.03	8.81	8.42	9.12	8.94	3.85	6.67	.32	42.1
MAX	10	5.5	16	9.3	9.3	9.0	12	14	8.3	87	1.4	736
MIN	3.1	3.3	5.1	8.6	8.3	8.0	8.0	6.8	1.0	1.0	.06	.04
AC-FT	240	274	424	555	507	517	543	549	229	410	20	2510

CAL YR 1987 TOTAL 4435.5 MEAN 12.2 MAX 197 MIN 1.2 AC-FT 8800
WTR YR 1988 TOTAL 3415.51 MEAN 9.33 MAX 736 MIN .04 AC-FT 6770

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

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

DRAINAGE AREA.--1,488 mi², of which 105 mi² probably is noncontributing.

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

REVISED RECORDS.--WSP 1922: Drainage area.

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

REMARKS.--The lake is formed by a rolled earthfill dam 40,885 ft long, including spillway. Closure was completed Mar. 7, 1951, and the dam was completed May 3, 1951. Deliberate impoundment began Feb. 1, 1952. The lake is operated for flood control and recreation with part as municipal supply for the city of San Angelo. The spillway is an uncontrolled off-channel concrete gravity dam with ogee weir section 1,150 ft wide located to the right and upstream from the right end of dam. The spillway is designed to discharge 356,000 ft³/s at maximum design flood level. The control outlet works consist of six gate-controlled outlets, 7.5 by 14.5 ft, opening into two 18.0-foot-diameter concrete conduits, and two 2.5-foot gate-controlled outlets for water-supply outlets. Since February 1973, the capacity is based on a survey made in 1962. Prior to 1973, the capacity was based on a survey made in 1944. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 66,890 acre-ft Oct. 1 (elevation, 1,896.66 ft); minimum daily, 50,610 acre-ft Sept. 16 (elevation, 1,891.40 ft).

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

1,891.0	49,460	1,894.0	58,410	1,896.0	64,790
1,892.0	52,370	1,895.0	61,550	1,897.0	68,140
1,893.0	55,360				

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66890	64890	63810	64100	63840	63350	61770	60130	58970	56850	55060	52080
2	66680	64820	63810	64100	63840	63350	61710	60090	58940	56750	54960	51990
3	66580	64790	63770	64070	63840	63320	61650	60000	58840	56690	54840	51960
4	66550	64760	63740	64070	63810	63290	61580	59870	58780	56630	54750	51810
5	66480	64660	63710	64070	63810	63220	61520	59750	58750	56540	54820	51720
6	66450	64560	63710	64070	63770	63190	61460	59690	58720	56450	54720	51640
7	66280	64490	63680	64070	63770	63160	61390	59620	58690	56360	54630	51520
8	66150	64430	63640	64070	63770	63120	61300	59530	58630	56270	54600	51400
9	66010	64360	63610	64070	63770	63060	61230	59440	58540	56210	54450	51320
10	65950	64230	63580	64070	63770	63000	61200	59470	58410	56140	54360	51230
11	65910	64130	63550	64070	63770	62930	61170	59750	58320	56330	54360	51110
12	65780	64100	63510	64070	63770	62870	61070	59690	58200	56330	54240	50990
13	65680	64030	63480	64070	63770	62800	61040	59660	58100	56330	54160	50940
14	65610	64030	63450	64070	63770	62700	61010	59590	57980	56270	54040	50820
15	65550	64130	63420	64070	63740	62610	60950	59530	57890	56180	53940	50730
16	65510	64130	63380	64070	63740	62580	60850	59470	57800	56050	53830	50610
17	65480	64100	63350	64070	63740	62610	61010	59400	57730	55960	53710	50820
18	65480	64070	63380	64100	63740	62510	60980	59340	57610	55840	53620	51200
19	65450	64000	63900	64100	63680	62450	60950	59470	57520	56140	53500	52640
20	65420	63970	63900	64100	63610	62420	60880	59500	57430	56110	53380	52760
21	65350	63940	63900	64070	63580	62350	60850	59470	57300	56020	53260	52760
22	65320	63900	63900	64030	63550	62320	60820	59370	57210	55900	53140	52700
23	65280	63940	63970	64000	63480	62290	60720	59310	57090	55810	53050	52670
24	65280	63940	63970	63970	63420	62250	60630	59220	57030	55690	52990	52610
25	65280	63940	64160	63970	63380	62220	60540	59160	56970	55600	52900	52550
26	65250	63900	64200	63940	63380	62130	60440	59090	56970	55600	52790	52460
27	65220	63870	64200	63870	63380	62090	60350	59030	57030	55510	52640	52370
28	65120	63870	64160	63840	63380	62060	60280	58970	57030	55390	52520	52280
29	65050	63840	64130	63840	63350	61960	60220	58910	56970	55300	52400	52200
30	65020	63840	64130	63840	---	61900	60190	58840	56880	55210	52310	52140
31	64950	---	64130	63840	---	61840	---	58910	---	55090	52170	---
MAX	66890	64890	64200	64100	63840	63350	61770	60130	58970	56850	55060	52760
MIN	64950	63840	63350	63840	63350	61840	60190	58840	56880	54630	52170	50610
(+) 1896.05	1895.71	1895.80	1895.71	1895.56	1895.09	1894.57	1894.16	1893.50	1892.91	1891.93	1891.92	1891.92
(φ) -2034	-1114	+293	-293	-488	-1514	-1648	-1282	-2031	-1790	-2920	-30	

CAL YR 1987 MAX 72200 MIN 63350 (φ) -2650
WTR YR 1988 MAX 66890 MIN 46630 (φ) -14850

(+) Elevation, in feet, at end of month.
(φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

75

08135000 NORTH CONCHO RIVER AT SAN ANGELO, TX

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

DRAINAGE AREA.--1,525 mi², of which 75.1 mi² probably is noncontributing.

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

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

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

REMARKS.--No estimated daily discharges. Records good. Since October 1951, flow regulated by O. C. Fisher Lake (station 08134500), 3.4 mi upstream.

AVERAGE DISCHARGE.--17 years (water years 1917-27, 1930-31, 1948-51), prior to completion of O. C. Fisher Dam, 54.5 ft³/s (39,490 acre-ft/yr); 37 years (water years 1952-88) regulated, 7.79 ft³/s (5,640 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 47,000 ft³/s June 13, 1930 (gage height, 22.52 ft, site and datum then in use); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 17, 1936, reached a stage of 34.6 ft, from floodmarks (discharge, 184,000 ft³/s), by slope-area measurement. The flood in 1936 was the greatest since flood in June 1853 (stage unknown).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 181 ft³/s Dec. 19 at 0530 hours (gage height, 2.54 ft, from floodmark); minimum daily, 0.70 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	2.3	2.3	2.7	2.6	3.0	2.3	2.1	2.3	1.2	2.0	.85
2	3.1	2.2	2.3	2.7	2.7	3.0	2.2	2.0	2.0	1.2	1.8	.86
3	2.8	2.2	2.5	2.8	2.7	3.1	2.1	1.9	1.9	1.4	1.5	1.4
4	2.8	2.2	3.0	2.7	3.2	3.0	2.1	1.7	1.8	3.1	1.2	1.4
5	2.8	2.2	3.2	2.7	3.6	3.1	2.2	1.6	1.8	2.4	1.5	1.2
6	2.7	2.2	3.2	2.8	3.1	3.1	2.1	1.6	1.8	1.5	3.3	.91
7	2.5	2.3	3.3	2.8	2.6	2.9	2.1	1.7	3.4	2.5	1.3	.98
8	2.8	2.2	3.3	2.7	2.5	2.7	2.3	1.8	2.1	1.8	1.0	.91
9	4.4	2.1	3.4	2.6	2.4	2.7	2.4	1.7	1.4	1.2	.96	.97
10	4.5	2.2	3.3	2.6	2.6	3.1	4.4	8.6	1.2	1.2	1.0	.95
11	4.0	2.2	3.8	2.6	2.6	2.9	2.2	32	1.1	7.1	1.1	.98
12	4.1	2.3	3.8	2.7	2.6	2.8	2.1	4.3	1.1	2.0	1.7	.87
13	4.1	2.8	3.8	2.5	2.4	2.7	2.2	2.5	1.1	1.5	1.2	.78
14	3.9	2.4	4.2	2.5	2.4	2.7	2.1	2.3	.98	1.3	1.0	.75
15	4.0	16	4.2	2.5	2.5	2.7	2.1	2.3	.94	1.2	.88	.73
16	4.3	4.4	3.2	2.6	2.4	2.7	2.1	2.3	.97	1.1	.90	.70
17	4.9	2.5	3.1	2.6	2.2	5.0	20	2.2	1.1	1.1	.87	9.0
18	4.6	2.3	6.6	2.4	2.5	3.1	3.4	2.1	1.1	1.1	.88	17
19	3.4	2.2	35	2.5	2.5	2.9	2.5	7.2	1.1	6.7	.88	4.1
20	4.1	2.2	3.3	2.5	2.7	2.7	2.4	5.7	.97	16	.93	1.7
21	3.5	2.3	2.8	2.4	2.8	2.3	2.3	4.0	.83	1.9	1.0	1.4
22	3.1	2.3	2.6	2.4	3.0	2.3	2.3	2.2	.85	1.4	.96	1.3
23	3.1	2.1	2.7	2.4	2.7	2.5	2.3	1.9	.80	1.2	.82	1.3
24	3.2	2.3	2.7	2.5	2.9	2.2	2.2	1.9	1.6	1.1	4.1	1.4
25	3.0	2.2	11	2.4	3.1	2.3	2.1	1.9	1.9	1.0	3.2	1.3
26	2.5	2.1	3.7	2.4	3.1	2.6	2.0	1.8	2.0	1.2	1.3	1.3
27	2.3	4.7	2.8	2.4	3.3	2.5	2.0	1.9	10	2.7	1.0	1.1
28	2.3	2.4	2.7	2.3	3.3	2.4	1.9	1.8	3.4	1.5	.87	1.1
29	2.3	2.7	2.8	2.5	3.3	2.3	1.9	1.8	2.1	1.2	.86	6.1
30	2.3	2.2	2.8	2.6	---	2.1	2.0	1.9	1.4	1.2	.85	1.9
31	2.3	---	2.8	2.6	---	2.1	---	2.6	---	1.2	.83	---
TOTAL	102.9	86.7	140.2	79.4	80.3	85.5	86.3	111.3	55.04	72.2	41.69	65.24
MEAN	3.32	2.89	4.52	2.56	2.77	2.76	2.88	3.59	1.83	2.33	1.34	2.17
MAX	4.9	16	35	2.8	3.6	5.0	20	32	10	16	4.1	17
MIN	2.3	2.1	2.3	2.3	2.2	2.1	1.9	1.6	.80	1.0	.82	.70
AC-FT	204	172	278	157	159	170	171	221	109	143	83	129

CAL YR 1987 TOTAL 2076.1 MEAN 5.69 MAX 149 MIN 1.1 AC-FT 4120
WTR YR 1988 TOTAL 1006.77 MEAN 2.75 MAX 35 MIN .70 AC-FT 2000

08136000 CONCHO RIVER AT SAN ANGELO, TX

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

DRAINAGE AREA.--5,542 mi², of which 1,131 mi² probably is noncontributing.

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

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

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

REMARKS.--No estimated daily discharges. Records good. Many diversions upstream from station for irrigation, industrial, and municipal supply. Flow is regulated by Twin Buttes Reservoir (station 08131200) on the South Concho River and by O.C. Fisher Lake (station 08134500) on North Concho River. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 158 ft³/s (114,500 acre-ft/yr); 26 years (water years 1963-88) regulated, 21.9 ft³/s (15,870 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s Sept. 17, 1936 (gage height, 46.6 ft, from floodmarks), from rating curve extended above 105,000 ft³/s on basis of slope-area measurements of 167,000 and 230,000 ft³/s; no flow at times in 1921, 1952-53, 1965, and 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1853, 47.5 ft Aug. 6, 1906 (discharge, about 246,000 ft³/s), from information by local resident. Other large floods are known to have occurred in June 1853, August 1882, and April 1900.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,350 ft³/s May 13 at 1900 hours (gage height, 4.93 ft); minimum daily, 2.0 ft³/s Sept. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	4.5	5.6	9.4	14	22	8.8	4.8	23	5.2	7.3	2.5
2	24	5.1	8.2	10	15	21	5.5	5.4	10	4.2	5.0	2.1
3	12	6.0	14	14	14	20	5.7	2.5	4.5	4.9	3.4	2.0
4	11	8.5	15	9.6	12	17	5.1	3.7	6.3	9.6	3.6	2.2
5	13	9.2	16	9.2	12	10	4.5	3.8	4.2	22	13	2.8
6	12	9.9	15	13	15	7.9	4.7	3.5	4.1	11	6.0	6.9
7	15	11	16	13	14	7.7	4.9	3.8	4.9	12	3.4	2.6
8	21	8.7	16	16	13	7.0	4.9	4.7	5.2	14	2.9	2.1
9	24	10	16	17	13	5.4	5.4	2.9	17	9.8	2.8	3.0
10	19	11	16	21	20	5.3	9.9	28	9.9	5.0	2.5	2.9
11	18	11	16	18	20	5.2	4.9	308	5.2	12	3.2	3.0
12	20	10	15	16	22	4.4	4.4	99	4.5	42	3.3	2.7
13	18	11	15	20	22	5.3	4.6	303	4.8	8.6	2.6	2.6
14	15	6.0	17	22	21	5.2	5.6	53	4.9	4.4	2.8	3.1
15	15	69	14	23	20	5.9	5.3	10	4.5	3.2	2.5	3.0
16	15	19	10	24	23	6.3	5.0	7.8	4.1	2.9	2.9	4.3
17	17	9.8	11	21	22	25	84	4.9	4.7	3.0	4.0	42
18	17	6.3	15	54	23	12	26	4.6	5.0	3.2	6.4	116
19	17	4.2	219	88	26	7.6	10	36	4.3	37	6.1	30
20	15	6.1	27	24	23	6.2	6.9	56	3.7	28	7.1	6.5
21	13	5.0	19	17	24	6.9	5.0	33	3.5	8.6	5.7	4.0
22	6.8	4.3	12	15	26	7.3	5.8	8.8	3.8	6.9	4.8	3.5
23	5.8	4.7	14	15	22	7.9	5.6	5.5	3.1	4.0	4.4	4.5
24	5.9	5.9	14	13	24	7.8	5.4	5.7	10	4.5	6.9	3.5
25	6.3	5.7	53	13	26	7.2	2.6	5.0	8.7	10	19	3.1
26	7.3	4.4	26	14	21	6.5	3.5	5.2	35	22	13	2.5
27	5.8	10	18	15	21	7.2	4.0	63	117	6.6	5.1	2.9
28	6.7	6.3	14	13	21	8.7	4.5	30	40	4.2	2.8	2.8
29	5.8	5.2	11	14	21	7.1	4.9	9.3	29	8.0	2.5	104
30	4.7	4.6	14	16	---	5.1	4.1	7.2	12	4.8	2.3	13
31	5.1	---	14	14	---	7.5	---	38	---	8.5	2.6	---
TOTAL	413.2	292.4	705.8	601.2	570	285.6	261.5	1156.1	396.9	330.1	159.9	386.1
MEAN	13.3	9.75	22.8	19.4	19.7	9.21	8.72	37.3	13.2	10.6	5.16	12.9
MAX	24	69	219	88	26	25	84	308	117	42	19	116
MIN	4.7	4.2	5.6	9.2	12	4.4	2.6	2.5	3.1	2.9	2.3	2.0
AC-FT	820	580	1400	1190	1130	566	519	2290	787	655	317	766

CAL YR 1987 TOTAL 15030.7 MEAN 41.2 MAX 1810 MIN 2.7 AC-FT 29810
WTR YR 1988 TOTAL 5558.8 MEAN 15.2 MAX 308 MIN 2.0 AC-FT 11030

COLORADO RIVER BASIN

77

08136500 CONCHO RIVER AT PAINT ROCK, TX

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

DRAINAGE AREA.--6,574 mi², of which 1,131 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good except those below 10 ft³/s, which are poor. There are many diversions above station for irrigation and municipal supply. Regulation is the same as that for Concho River at San Angelo (station 08136000). Flow is affected at times by discharge from flood-detention pools of two floodwater-retarding structures with a combined detention capacity of 2,690 acre-ft. These structures control runoff from 16.5 mi² in the Willow Creek drainage basin.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 210 ft³/s (152,100 acre-ft/yr); 26 years (water years 1963-88) regulated, 59.7 ft³/s (43,250 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft³/s Sept. 17, 1936 (gage height, 43.4 ft, from flood-marks), from rating curve extended above 98,000 ft³/s on basis of slope-area measurements of 144,000 and 301,000 ft³/s; no flow at times.
Maximum stage since at least 1853, that of Sept. 17, 1936.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,200 ft³/s May 11 at 0400 hours (gage height, 18.94 ft); minimum daily, 6.8 ft³/s Aug. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	60	72	76	75	66	31	26	43	76	24	17
2	77	58	73	76	72	68	30	27	57	58	29	20
3	75	58	72	76	70	65	30	23	53	49	27	23
4	77	58	74	75	72	65	36	19	48	53	20	33
5	69	58	80	76	72	66	40	16	43	52	19	29
6	63	62	86	76	72	62	33	15	39	46	18	29
7	62	62	84	76	74	62	29	15	37	234	20	29
8	64	64	82	77	79	55	25	14	34	61	25	26
9	62	62	81	79	76	50	28	13	35	49	28	22
10	65	62	85	79	73	48	28	14	34	46	23	16
11	66	65	81	82	70	45	35	3530	33	109	17	15
12	68	67	82	87	74	44	37	805	38	112	16	17
13	67	71	84	81	77	39	35	266	31	108	12	14
14	67	75	87	80	79	42	35	293	28	64	11	16
15	68	82	77	85	77	42	36	189	24	49	15	17
16	65	92	79	88	75	38	37	82	23	38	15	18
17	65	124	75	89	76	42	45	60	24	36	16	37
18	68	93	74	90	80	51	64	48	22	33	14	86
19	69	77	118	99	79	62	121	44	18	36	17	143
20	105	75	294	229	80	61	68	49	16	38	13	149
21	80	72	173	103	80	57	51	128	11	46	10	78
22	78	72	104	84	78	48	44	120	11	68	8.5	54
23	68	76	93	77	76	42	38	72	11	46	7.3	46
24	67	75	85	74	75	41	33	50	8.4	41	7.0	42
25	64	73	85	72	69	39	30	44	14	41	6.8	40
26	65	72	92	72	70	40	33	42	11	40	17	41
27	64	75	129	71	74	38	24	38	46	40	24	41
28	61	72	95	72	71	42	20	36	432	35	24	39
29	61	74	84	72	70	38	20	80	208	30	21	40
30	61	76	80	73	---	30	25	59	105	32	17	63
31	61	---	77	72	---	31	---	46	---	24	15	---
TOTAL	2129	2162	2937	2618	2165	1519	1141	6263	1537.4	1790	536.6	1240
MEAN	68.7	72.1	94.7	84.5	74.7	49.0	38.0	202	51.2	57.7	17.3	41.3
MAX	105	124	294	229	80	68	121	3530	432	234	29	149
MIN	61	58	72	71	69	30	20	13	8.4	24	6.8	14
AC-FT	4220	4290	5830	5190	4290	3010	2260	12420	3050	3550	1060	2460

CAL YR 1987 TOTAL 51559 MEAN 141 MAX 4140 MIN 32 AC-FT 102300
WTR YR 1988 TOTAL 26038.0 MEAN 71.1 MAX 3530 MIN 6.8 AC-FT 51650

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1946 to October 1949. Chemical and biochemical analyses: March 1964 to current year. Pesticide analyses: April 1968 to October 1981. Sediment analyses: February 1978 to September 1980.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1946 to October 1949, October 1967 to current year.

WATER TEMPERATURE: April 1946 to October 1949, October 1967 to current year.

SUSPENDED SEDIMENT DISCHARGE: February 1978 to September 1981.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

WATER TEMPERATURE: Maximum daily, 35.0°C on several days during summer months; minimum daily, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATION: Maximum daily mean, 4,190 mg/L Sept. 9, 1980; minimum daily mean, 3 mg/L Feb. 2, 1979.

SEDIMENT LOAD: Maximum daily, 269,000 tons Sept. 9, 1980; minimum daily, 0.0 tons on several days during Sept. 1980.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,070 microsiemens May 4; minimum daily, 640 microsiemens May 12.

WATER TEMPERATURE: Maximum daily, 32.0°C on several days during June and July; minimum daily, 6.0°C Jan. 1.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 05...	1135	62	2530	8.10	21.5	10.4	124	3.5	790	570
JAN 28...	1340	68	2370	8.20	8.5	15.1	136	2.8	760	540
MAR 10...	0925	55	2560	8.20	15.0	11.1	117	2.2	770	560
MAY 26...	1350	52	2180	8.00	23.5	11.2	140	3.2	650	450
JUN 30...	0910	110	1530	8.00	27.5	10.2	138	3.5	430	320
AUG 11...	1000	18	2500	8.00	29.5	9.9	138	3.0	810	650

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 05...	180	82	250	4	5.3	218	310	540	0.60	20
JAN 28...	180	75	210	3	5.0	216	300	470	0.60	17
MAR 10...	180	79	240	4	14	218	340	490	0.70	15
MAY 26...	150	66	200	4	1.2	196	240	440	0.50	20
JUN 30...	99	45	120	3	5.4	115	180	280	0.30	15
AUG 11...	170	93	230	4	5.1	156	360	530	0.40	22

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 05...	1520	12.0	0.040	12.0	0.060	0.24	0.30	0.030	--	--
JAN 28...	1390	13.0	0.040	13.0	0.040	0.46	0.50	0.020	2	200
MAR 10...	1490	12.9	0.050	13.0	0.040	0.36	0.40	0.020	--	--
MAY 26...	1240	6.04	0.160	6.20	0.100	1.0	1.1	0.030	8	100
JUN 30...	814	6.37	0.130	6.50	0.120	0.98	1.1	0.080	--	--
AUG 11...	1500	5.91	0.090	6.00	0.040	0.96	1.0	0.070	--	--

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 05...	--	--	--	--	--	--	--	--	--	--
JAN 28...	1	<1	<1	40	<5	10	<0.1	4	<1.0	10
MAR 10...	--	--	--	--	--	--	--	--	--	--
MAY 26...	<1	<1	1	20	<5	10	<0.1	3	<1.0	<10
JUN 30...	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	2129	2330	1350	7780	490	2820	280	1640	680
NOV. 1987	2162	2640	1550	9060	570	3330	340	1990	780
DEC. 1987	2937	2600	1530	12100	560	4440	330	2640	770
JAN. 1988	2618	2490	1450	10300	530	3750	310	2210	730
FEB. 1988	2165	2570	1510	8810	550	3230	330	1920	760
MAR. 1988	1519	2640	1560	6380	570	2340	340	1400	780
APR. 1988	1141	2800	1660	5110	610	1890	370	1150	830
MAY 1988	6263	1010	564	9540	190	3270	100	1690	290
JUNE 1988	1537.4	2150	1240	5150	450	1850	260	1060	630
JULY 1988	1790	2110	1220	5880	440	2110	250	1200	620
AUG. 1988	536.6	2480	1450	2100	530	766	310	450	730
SEPT 1988	1240	2670	1570	5270	580	1940	350	1160	790
TOTAL	26038.0	**	**	87500	**	31700	**	18500	**
WTD.AVG.	71	2140	1240	**	450	**	260	**	630

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2130	2720	2600	2500	2540	2640	2750	2860	2420	1440	2520	2470
2	2330	2590	2570	2450	2450	2660	2760	2800	2550	2130	2500	2630
3	2260	2570	2600	2600	2550	2590	2730	3040	2510	1830	2500	2490
4	2380	2510	2630	2470	2540	2610	2920	3070	2530	2370	2490	2550
5	2220	2550	2610	2390	2540	2560	2840	3010	2450	2460	2500	2630
6	2250	2530	2410	2460	2550	2630	2690	3040	2530	2410	2520	2620
7	2370	2540	2590	2500	2560	2620	2750	1930	2520	2160	2520	2670
8	2130	2580	2610	2460	2580	2630	2690	1910	2520	1980	2490	2660
9	2190	2600	2660	2510	2220	2630	2710	1890	2480	1260	2510	2700
10	2300	2640	2690	2450	2160	2670	2760	2210	2520	1410	2510	2710
11	2220	2680	2680	2490	2620	2650	2750	720	2570	1640	2500	2720
12	2360	2680	2660	2530	2620	2620	2760	640	2550	2180	2510	2710
13	2490	2660	2700	2490	2610	2610	2740	790	2550	1940	2430	2720
14	2480	2670	2700	2490	2660	2630	2760	980	2530	1950	2450	2690
15	2450	2670	2690	2510	2680	2630	2730	1910	2540	2400	2410	2580
16	2470	2690	2680	2540	2620	2580	2760	1860	2560	2240	2380	2700
17	2380	2680	2670	2530	2570	2640	2760	1850	2580	2100	2410	2210
18	2180	2670	2680	2540	2640	2610	2750	1830	2600	2200	2410	2690
19	2180	2700	2660	2530	2610	2660	2730	1820	2590	2200	2460	2510
20	2050	2680	2680	2570	2630	2560	2780	1810	2570	2280	2460	2840
21	1550	2370	2670	2560	2610	2630	2990	1770	2570	2440	2460	2810
22	2450	2550	2700	2510	2620	2680	2830	1310	2340	2490	2480	2800
23	2440	2730	2650	2480	2660	2670	2790	1860	2250	2480	2470	2820
24	2460	2730	2590	2390	2610	2760	2810	1890	2540	2480	2460	2370
25	2440	2690	2470	2400	2620	2650	2740	2090	2390	2490	2480	2500
26	2500	2720	2570	2450	2590	2660	2960	2230	2540	2060	2430	2800
27	2520	2660	2400	2400	2590	2640	3060	2460	1490	1950	2460	2820
28	2510	2650	2430	2400	2620	2620	3040	2110	1770	2480	2460	2840
29	2550	2670	2350	2410	2580	2810	3040	2480	1950	2490	2460	2510
30	2590	2620	2380	2450	---	2810	2980	2430	1740	2460	2460	2820
31	2720	---	2400	2400	---	2820	---	2400	---	2410	2620	---
MEAN	2340	2630	2590	2480	2570	2650	2810	2030	2410	2160	2470	2550

COLORADO RIVER BASIN

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.0	21.0	15.0	6.0	14.0	19.0	20.0	---	23.0	31.0	29.0	28.0
2	24.0	21.0	14.0	7.0	11.0	20.0	19.0	24.0	24.0	31.0	30.0	26.0
3	25.0	20.0	13.0	11.0	10.0	17.0	21.0	23.0	24.0	32.0	30.0	25.0
4	24.0	20.0	13.0	10.0	10.0	18.0	20.0	22.0	23.0	31.0	29.0	25.0
5	24.0	21.0	14.0	11.0	10.0	18.0	20.0	21.0	23.0	32.0	29.0	25.0
6	23.0	20.0	14.0	9.0	9.0	18.0	20.0	22.0	26.0	31.0	29.0	25.0
7	23.0	20.0	15.0	10.0	---	17.0	20.0	22.0	30.0	32.0	30.0	23.0
8	24.0	---	14.0	9.0	11.0	17.0	19.0	---	30.0	32.0	30.0	23.0
9	23.0	18.0	15.0	9.0	10.0	15.0	19.0	22.0	30.0	30.0	30.0	23.0
10	23.0	17.0	14.0	8.0	10.0	18.0	18.0	22.0	30.0	---	29.0	25.0
11	24.0	12.0	14.0	11.0	10.0	---	17.0	18.0	31.0	30.0	30.0	---
12	23.0	13.0	13.0	13.0	11.0	20.0	17.0	18.0	29.0	31.0	28.0	25.0
13	23.0	15.0	11.0	12.0	13.0	---	18.0	18.0	30.0	31.0	29.0	26.0
14	23.0	17.0	10.0	13.0	13.0	15.0	18.0	18.0	30.0	32.0	29.0	25.0
15	23.0	15.0	10.0	13.0	14.0	13.0	19.0	21.0	30.0	31.0	---	26.0
16	22.0	15.0	11.0	14.0	14.0	13.0	20.0	21.0	31.0	32.0	28.0	26.0
17	23.0	13.0	9.0	---	13.0	14.0	18.0	22.0	31.0	32.0	28.0	25.0
18	23.0	15.0	10.0	13.0	12.0	14.0	18.0	24.0	30.0	30.0	28.0	23.0
19	23.0	13.0	11.0	13.0	19.0	15.0	18.0	24.0	30.0	31.0	29.0	25.0
20	20.0	14.0	10.0	10.0	13.0	17.0	20.0	23.0	30.0	32.0	29.0	24.0
21	21.0	14.0	11.0	11.0	---	19.0	20.0	24.0	31.0	32.0	28.0	24.0
22	20.0	---	14.0	10.0	14.0	21.0	22.0	22.0	30.0	31.0	28.0	25.0
23	---	14.0	15.0	10.0	15.0	21.0	22.0	23.0	30.0	31.0	28.0	24.0
24	21.0	15.0	13.0	12.0	16.0	20.0	22.0	24.0	31.0	---	29.0	25.0
25	20.0	15.0	10.0	10.0	15.0	20.0	20.0	24.0	31.0	31.0	29.0	25.0
26	20.0	13.0	9.0	9.0	16.0	21.0	20.0	23.0	---	32.0	29.0	24.0
27	21.0	14.0	10.0	10.0	18.0	---	22.0	24.0	32.0	32.0	29.0	24.0
28	20.0	15.0	10.0	12.0	18.0	19.0	21.0	24.0	32.0	31.0	28.0	23.0
29	21.0	15.0	9.0	13.0	18.0	17.0	21.0	---	32.0	32.0	28.0	23.0
30	21.0	14.0	8.0	15.0	---	---	21.0	22.0	32.0	31.0	29.0	22.0
31	20.0	---	9.0	15.0	---	19.0	---	23.0	---	32.0	29.0	---
MEAN	22.5	16.0	12.0	11.0	13.0	17.5	19.5	22.0	29.0	31.5	29.0	24.5

COLORADO RIVER MAIN STEM

81

08136700 COLORADO RIVER NEAR STACY, TX

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

DRAINAGE AREA.--24,193 mi², approximately, of which 11,391 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal, and oil field operation uses. Sewage effluent is returned to the river from numerous sewage plants above station. Flow is affected by upstream reservoirs (see stations 08126380 and 08136000) and at times by discharge from the flood-detention pools of 42 floodwater-retarding structures with a combined detention capacity of 56,730 acre-ft. These structures control runoff from 277 mi².

AVERAGE DISCHARGE.--20 years (water years 1969-88), 226 ft³/s (163,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s Sept. 10, 1980 (gage height, 28.00 ft); no flow at times in 1974, 1980, and 1983-86.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, 356,000 ft³/s Sept. 18, 1936 (gage height, 64.59 ft), by slope-area measurement of peak flow. The flood of Sept. 18, 1936, was 4 ft higher than the 1906 flood and 7 to 8 ft higher than the 1882 flood, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,310 ft³/s May 11 at 1600 hours (gage height, 11.46 ft); minimum, 18 ft³/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	104	113	179	125	112	81	37	118	164	536	189
2	157	103	113	171	124	111	72	31	99	115	529	102
3	148	101	113	166	124	109	69	31	75	79	531	72
4	140	98	113	168	124	108	67	35	176	56	538	58
5	136	98	115	168	126	108	59	36	142	116	542	54
6	134	97	115	168	131	108	60	33	105	485	531	52
7	128	96	114	161	131	108	70	31	79	503	524	54
8	120	100	115	152	131	101	63	29	61	623	519	53
9	116	99	117	152	131	97	58	29	56	560	511	51
10	115	98	117	152	131	93	52	26	46	496	519	49
11	115	98	114	152	131	88	49	1830	42	386	527	46
12	115	99	115	152	131	85	49	1020	40	216	517	41
13	115	102	115	152	130	79	53	583	39	224	536	35
14	116	104	115	152	129	77	62	304	38	161	517	33
15	117	107	120	151	129	73	55	250	38	126	515	34
16	120	113	122	148	129	73	64	259	34	104	503	32
17	149	123	122	154	125	81	67	141	34	265	498	45
18	123	154	122	154	127	83	68	95	34	531	498	60
19	126	161	146	154	127	84	69	78	31	527	506	105
20	151	135	175	152	127	104	108	76	29	535	506	216
21	161	121	371	261	127	112	122	67	28	594	502	198
22	141	113	355	200	125	107	94	85	30	547	497	125
23	139	112	246	158	122	95	88	158	28	553	497	87
24	134	110	202	143	122	87	79	154	24	558	515	72
25	122	113	180	131	120	80	69	112	37	543	583	64
26	119	113	164	127	119	80	59	79	38	544	490	57
27	113	113	175	127	112	81	51	74	31	541	486	54
28	106	113	286	125	106	84	48	62	74	541	482	50
29	106	115	244	123	109	83	46	54	560	541	483	48
30	106	113	207	124	---	87	43	49	345	541	487	48
31	105	---	191	122	---	88	---	95	---	541	427	---
TOTAL	3964	3326	5032	4799	3625	2866	1994	5943	2511	12316	15852	2184
MEAN	128	111	162	155	125	92.5	66.5	192	83.7	397	511	72.8
MAX	171	161	371	261	131	112	122	1830	560	623	583	216
MIN	105	96	113	122	106	73	43	26	24	56	427	32
AC-FT	7860	6600	9980	9520	7190	5680	3960	11790	4980	24430	31440	4330

CAL YR 1987 TOTAL 205270 MEAN 562 MAX 8180 MIN 96 AC-FT 407200
WTR YR 1988 TOTAL 64412 MEAN 176 MAX 1830 MIN 24 AC-FT 127800

COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1961 to current year. Chemical and biochemical analyses: October 1974 to October 1977. Pesticide analyses: April 1975 to August 1977. Sediment analyses: October 1974 to October 1977.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.
WATER TEMPERATURE: April 1968 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,530 microsiemens Aug. 8, 1987; minimum daily, 165 microsiemens June 9, 1986.
WATER TEMPERATURE: Maximum daily, 35.0°C July 1, 1980; minimum daily, 0.0°C Feb. 9, 10, 1981.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,530 microsiemens Aug. 8; minimum daily, 450 microsiemens May 13.
WATER TEMPERATURE: Maximum daily, 33.0°C July 19; minimum daily 4.0°C Jan. 7, 8, 9, 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 03...	1030	103	2490	20.5	710	550	160	76	240
JAN 04...	1045	168	2530	6.0	870	660	210	84	230
FEB 16...	1045	129	2470	11.5	770	570	180	78	230
APR 12...	1125	50	2740	17.0	900	740	210	90	260
MAY 31...	1040	109	2360	24.0	650	550	140	73	230
JUL 11...	1035	347	3450	27.0	730	590	140	92	470

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
NOV 03...	4	6.1	167	460	410	0.50	15	1470
JAN 04...	4	6.0	212	500	470	0.60	12	1640
FEB 16...	4	4.9	200	480	380	0.60	10	1480
APR 12...	4	5.7	159	600	490	0.60	6.8	1760
MAY 31...	4	6.6	105	450	450	0.60	10	1420
JUL 11...	8	11	141	590	730	0.50	7.9	2130

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	3964	2090	1260	13500	390	4150	360	3870	630
NOV. 1987	3326	2600	1590	14200	500	4490	470	4180	740
DEC. 1987	5032	2580	1570	21400	490	6720	460	6260	730
JAN. 1988	4799	2310	1400	18100	430	5640	400	5250	680
FEB. 1988	3625	2460	1490	14600	470	4580	440	4260	710
MAR. 1988	2866	2590	1580	12200	500	3840	460	3580	730
APR. 1988	1994	2700	1650	8880	520	2810	490	2620	760
MAY 1988	5943	1530	921	14800	280	4500	260	4190	470
JUNE 1988	2511	2480	1510	10200	470	3220	440	3000	710
JULY 1988	12316	4400	2800	93300	990	32800	920	30500	820
AUG. 1988	15852	6160	4030	172000	1500	63900	1400	59400	820
SEPT 1988	2184	3880	2430	14300	820	4820	760	4480	890
TOTAL	64412	**	**	408000	**	142000	**	132000	**
WTD.AVG.	176	3700	2350	**	810	**	760	**	740

08136700 COLORADO RIVER NEAR STACY, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1720	2480	2600	2450	2490	2560	2650	2900	2230	2510	7470	4740
2	1650	2400	2590	2320	2410	2550	2640	2980	2160	2260	7150	4750
3	1620	2420	2640	2300	2380	2540	2640	2880	1960	2100	6750	4740
4	1700	2430	2610	2480	2330	2560	2640	2900	1840	1900	6370	4700
5	1780	2450	2600	2320	2320	2560	2650	2880	2000	1680	6270	4700
6	1870	2480	2580	2300	2330	2560	2650	2870	2120	1470	7430	4670
7	1920	2500	2570	2240	2340	2560	2640	2840	2600	2280	8000	4620
8	1960	2500	2570	2280	2350	2560	2660	2850	2820	2800	8530	4560
9	1970	2530	2560	2290	2360	2570	2640	2850	2890	3310	8240	4500
10	1980	2530	2570	2260	2370	2550	2680	2850	2940	3400	7950	4470
11	2000	2550	2580	2240	2400	2560	2710	2140	3000	2970	7570	4400
12	2050	2580	2600	2160	2420	2560	2730	780	3050	2600	7310	4350
13	2100	2540	2600	2150	2470	2580	2750	450	3080	2800	7050	4320
14	2160	2600	2600	2150	2470	2590	2760	620	3120	3060	7200	4250
15	2200	2580	2590	2200	2470	2610	2770	700	3110	2620	7290	4190
16	2180	2570	2570	2210	2470	2610	2760	810	3080	2480	7020	4120
17	2160	2560	2550	2230	2470	2560	2750	930	3000	3000	6310	4020
18	2140	2550	2540	2250	2470	2590	2740	980	2960	3380	5140	3700
19	2120	2620	2510	2250	2490	2610	2720	1330	2900	3370	4900	3390
20	1900	2670	2490	2270	2500	2600	2660	1700	2880	3650	4800	3120
21	2100	2710	2460	2300	2520	2550	2640	1960	2860	4880	4650	3430
22	2250	2730	2540	2320	2540	2570	2690	2000	2850	6020	4510	3660
23	2300	2740	2580	2390	2560	2580	2680	2230	2830	6130	4530	3520
24	2360	2740	2610	2400	2560	2620	2700	2240	2820	5600	4710	3280
25	2350	2730	2620	2400	2560	2630	2740	2230	2700	5120	4390	3200
26	2340	2730	2640	2410	2560	2640	2760	2120	2500	4850	4250	3130
27	2420	2740	2610	2400	2570	2640	2770	2190	2470	4880	4760	3090
28	2500	2740	2590	2410	2580	2650	2790	2180	2490	6000	4890	3070
29	2530	2740	2710	2410	2580	2660	2810	2250	2410	7120	4890	3050
30	2540	2740	2630	2410	---	2650	2840	2340	2600	7650	4890	3040
31	2510	---	2560	2440	---	2630	---	2360	---	7600	4890	---
MEAN	2110	2600	2580	2310	2460	2590	2710	2040	2680	3850	6130	3960

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	20.0	14.0	---	12.0	18.0	17.5	---	24.0	32.0	27.0	28.0
2	23.0	22.0	10.0	5.0	12.0	18.0	22.0	27.0	31.0	28.0	29.0	29.0
3	22.0	21.0	14.0	---	10.0	15.0	---	21.0	24.0	---	28.0	27.0
4	---	24.0	14.0	5.0	9.0	14.0	20.0	21.0	25.0	---	29.0	---
5	23.0	22.0	14.0	5.0	6.0	14.0	---	22.0	---	31.0	29.0	---
6	24.0	20.0	---	5.0	6.0	---	20.0	24.0	28.0	30.0	29.0	27.0
7	23.0	---	15.0	4.0	---	16.0	20.0	24.0	---	30.0	---	27.0
8	23.0	---	15.0	4.0	8.0	16.0	19.0	---	30.0	---	31.0	26.0
9	23.0	15.0	13.0	4.0	6.0	15.0	20.0	25.0	31.0	29.0	31.0	27.0
10	24.0	14.0	13.0	---	10.0	16.0	---	25.0	28.0	---	30.0	28.0
11	---	---	13.0	4.0	---	16.0	17.0	22.0	28.0	26.0	30.0	---
12	---	13.0	12.0	6.0	8.0	16.0	17.0	13.0	---	28.0	31.0	27.0
13	22.0	13.0	---	6.0	10.0	---	18.0	17.0	27.0	---	30.0	28.0
14	21.0	14.0	9.0	7.0	---	14.0	20.0	21.0	27.0	31.0	---	29.0
15	21.0	---	6.0	7.0	---	13.0	21.0	---	27.0	32.0	30.0	29.0
16	---	15.0	---	10.0	12.0	12.0	22.0	25.0	28.0	32.0	30.0	29.0
17	21.0	14.0	---	---	13.0	10.0	---	26.0	29.0	---	30.0	27.0
18	---	14.0	5.0	---	11.0	10.0	20.0	26.0	30.0	32.0	30.0	---
19	24.0	13.0	8.0	12.0	11.0	10.0	19.0	24.0	---	33.0	---	26.0
20	20.0	12.0	---	10.0	12.0	---	22.0	23.0	30.0	30.0	30.0	27.0
21	19.0	12.0	10.0	7.0	---	15.0	22.0	23.0	31.0	29.0	---	27.0
22	19.0	---	10.0	7.0	14.0	18.0	23.0	---	30.0	29.0	30.0	28.0
23	18.0	16.0	---	7.0	13.0	19.0	23.0	21.0	31.0	29.0	30.0	29.0
24	20.0	---	11.0	---	12.0	20.0	---	23.0	30.0	---	31.0	27.0
25	---	15.0	---	7.0	13.0	20.0	22.0	23.0	31.0	29.0	29.0	---
26	24.0	---	7.0	9.0	15.0	20.0	22.0	26.0	---	30.0	29.0	28.0
27	22.0	---	---	8.0	16.0	---	21.0	26.0	30.0	31.0	29.0	28.0
28	21.0	11.0	5.0	10.0	---	22.0	22.0	25.0	28.0	31.0	29.0	27.0
29	22.0	---	6.0	10.0	16.0	20.0	21.0	---	30.0	30.0	---	24.0
30	23.0	13.0	6.0	11.0	---	18.0	20.0	23.0	30.0	30.0	---	24.0
31	22.0	---	5.0	---	---	17.0	---	24.0	---	---	27.0	---
MEAN	22.0	16.0	10.0	7.0	11.0	16.0	20.5	23.0	28.5	30.0	29.5	27.5

08138000 COLORADO RIVER AT WINCHELL, TX

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

DRAINAGE AREA.--25,179 mi², approximately, of which 11,391 mi² probably is noncontributing.

PERIOD OF RECORD.--November 1923 to September 1934 (published as "near Milburn"), June 1939 to current year.
Water-quality records.--Chemical analyses: November 1967 to September 1985.

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

GAGE.--Water-stage recorder. Datum of gage is 1,264.86 ft above National Geodetic Vertical Datum of 1929. November 1923 to September 1934, nonrecording gage at site 4.2 mi downstream at datum 10.14 ft lower. Jan. 13, 1939, to Mar. 24, 1940, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are many diversions above station for irrigation, municipal supply, and oil field operation. Flow is affected by reservoirs upstream (see stations 08126380 and 08136000), and at times by discharge from the flood-detention pools of 89 floodwater-retarding structures with a combined detention capacity of 105,100 acre-ft. These structures control runoff from 512 mi² in the area above this station.

AVERAGE DISCHARGE.--39 years (water years 1925-34, 1940-68) prior to completion of Robert Lee Dam, 628 ft³/s (455,000 acre-ft/yr); 20 years (water years 1969-88) partially regulated, 278 ft³/s (201,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,100 ft³/s Oct. 15, 1930 (gage height, 51.8 ft, present site and datum); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Highest stages since 1882 were 62.2 ft Sept. 19, 1936, and 56.2 ft Aug. 8, 1906, at railway bridge 1,000 ft upstream and converted to present site and datum, from information by Gulf, Colorado, and Santa Fe Railway Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,520 ft³/s May 12 at 0400 hours (gage height, 10.91 ft); minimum daily, 20 ft³/s May 10.

CORRECTIONS.--Figures of daily discharge for the 1985 water year were published erroneously. The following table supersedes that published in TX-85-3.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	231	66	3670	35	61	42	500	48	171	135	.00
2	1.7	161	63	2270	34	52	37	390	36	146	101	.00
3	77	120	53	1230	34	48	34	225	27	108	76	.00
4	97	92	49	768	35	43	38	141	19	83	57	.00
5	100	73	48	488	36	41	35	93	294	73	44	.00
6	283	60	47	328	36	40	31	66	3280	113	36	.00
7	3760	51	45	250	36	36	27	50	431	69	28	.00
8	1220	46	40	201	35	34	24	44	142	48	23	.00
9	486	41	37	168	34	33	20	46	74	36	17	.00
10	259	36	33	140	34	32	17	60	49	28	12	.00
11	167	31	30	118	34	32	16	41	37	22	7.6	.00
12	201	28	28	104	33	31	15	27	32	18	4.3	.00
13	130	25	90	97	33	36	14	21	25	13	2.2	.00
14	693	24	143	90	31	70	13	15	18	9.2	1.3	.00
15	200	23	55	83	28	60	12	12	14	5.6	.91	.00
16	129	22	51	79	28	59	11	8.5	21	4.3	.81	.00
17	235	21	51	76	27	60	8.7	8.2	34	3.6	.63	.00
18	161	20	44	70	27	52	6.5	17	27	2.1	.32	.00
19	105	20	35	69	27	46	4.8	76	21	1.4	.09	.00
20	103	19	34	62	27	856	3.9	42	16	1.3	.03	.00
21	65	18	34	57	27	529	4.1	206	12	2.6	.00	.00
22	46	18	34	51	27	255	113	287	11	11	.00	.00
23	229	18	35	49	32	219	405	703	8.4	8.3	.00	.00
24	334	31	42	48	32	191	318	348	12	4.3	.00	.00
25	267	71	39	47	31	160	159	449	16	2.7	.00	.00
26	779	70	35	45	29	117	94	338	12	2.6	.00	.00
27	1610	53	33	42	61	94	65	224	142	1.4	.00	.00
28	1250	47	31	40	74	78	50	175	441	72	.00	.00
29	795	40	30	39	---	66	51	116	193	166	.00	.00
30	545	35	101	38	---	56	45	81	206	243	.00	.00
31	341	---	10500	36	---	48	---	60	---	186	.00	---
TOTAL	14671.1	1545	11956	10853	957	3535	1714.0	4869.7	5698.4	1655.4	547.19	0.00
MEAN	473	51.5	386	350	34.2	114	57.1	157	190	53.4	17.7	.00
MAX	3760	231	10500	3670	74	856	405	703	3280	243	135	.00
MIN	1.7	18	28	36	27	31	3.9	8.2	8.4	1.3	.00	.00
AC-FT	29100	3060	23710	21530	1900	7010	3400	9660	11300	3280	1090	.0

CAL YR 1984 TOTAL 37584.73 MEAN 103 MAX 10500 MIN .00 AC-FT 74550
WTR YR 1985 TOTAL 58001.79 MEAN 159 MAX 10500 MIN .00 AC-FT 115000

COLORADO RIVER MAIN STEM

85

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	107	126	179	127	109	61	42	1140	318	567	412
2	177	107	122	169	127	110	61	36	400	205	566	210
3	165	107	123	163	133	109	58	30	261	162	562	131
4	152	104	121	160	135	105	55	26	182	110	560	91
5	143	103	121	158	135	104	59	21	165	82	574	69
6	137	102	123	153	130	104	57	22	158	94	573	58
7	135	100	120	151	135	103	53	26	119	515	558	55
8	129	101	122	151	140	103	53	27	96	542	548	51
9	121	105	126	149	142	100	58	24	77	679	544	52
10	116	106	127	147	141	96	55	20	64	592	547	50
11	114	104	127	149	139	90	50	26	56	1310	555	47
12	110	103	123	149	133	82	45	2200	49	710	553	44
13	112	105	122	147	128	78	42	1040	44	316	553	41
14	115	110	120	147	124	74	40	593	41	296	558	37
15	115	145	118	148	124	72	43	315	39	190	538	33
16	115	144	120	146	128	66	51	264	37	149	531	29
17	147	131	125	145	e150	66	51	270	38	116	527	29
18	153	133	126	147	137	78	66	156	38	256	523	33
19	147	152	144	148	129	80	61	109	34	571	541	46
20	345	175	158	145	123	75	59	95	32	557	532	68
21	205	152	168	142	125	85	62	84	30	579	530	202
22	175	138	376	222	123	99	118	73	27	634	524	201
23	162	131	334	188	119	102	104	66	26	571	521	148
24	152	126	240	151	117	94	107	128	25	596	573	105
25	149	123	198	138	115	85	83	153	27	588	729	83
26	138	123	178	130	114	74	71	121	30	575	589	71
27	130	124	167	127	114	68	60	90	58	572	512	63
28	123	123	170	125	111	66	52	76	47	578	503	57
29	116	124	261	124	109	68	45	69	36	575	499	51
30	112	126	231	124	---	66	41	65	543	575	513	53
31	111	---	195	126	---	60	---	59	---	573	521	---
TOTAL	4497	3634	5032	4648	3707	2671	1821	6326	3919	14186	17024	2620
MEAN	145	121	162	150	128	86.2	60.7	204	131	458	549	87.3
MAX	345	175	376	222	150	110	118	2200	1140	1310	729	412
MIN	110	100	118	124	109	60	40	20	25	82	499	29
AC-FT	8920	7210	9980	9220	7350	5300	3610	12550	7770	28140	33770	5200

CAL YR 1987 TOTAL 251241 MEAN 688 MAX 10100 MIN 100 AC-FT 498300
WTR YR 1988 TOTAL 70085 MEAN 191 MAX 2200 MIN 20 AC-FT 139000

Estimated.

08141000 HORDS CREEK LAKE NEAR VALERA, TX

LOCATION.--Lat 31°49'58", long 99°33'38", Coleman County, Hydrologic Unit 12090108, at outlet-works structure near right end of dam on Hords Creek, 5.6 mi north of Valera, and 8.8 mi west of Coleman.

DRAINAGE AREA.--48 mi², approximately.

PERIOD OF RECORD.--April 1948 to current year. Prior to October 1970, published as Hords Creek Reservoir.

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

REMARKS.--The lake is formed by a rolled earthfill dam 6,800 ft long, including spillway. Deliberate impoundment of water began Apr. 7, 1948, and the dam was completed in June 1948. The spillway is an excavated channel through natural ground, 500 ft wide, located about 600 ft from the right end of dam. The spillway consists of three concrete conduits; two controlled by 5.0- by 6.0-foot slide gates, and a third uncontrolled ogee spillway 4.0 ft wide and 19.5 ft high. The lake is operated for flood control and municipal water supply for the city of Coleman. The capacity table of August 1974 is based on a sedimentation survey made in 1948. Flow is affected at times by discharge from the flood-detention pool of one floodwater-retarding structure with a detention capacity of 1,370 acre-ft. This structure controls runoff from 6.82 mi² in the Jim Ned Creek drainage basin. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,939.0	-
Design flood.....	1,933.6	-
Crest of spillway.....	1,920.0	24,730
Crest of spillway (top of conservation pool).....	1,900.0	8,110
Lowest gated outlet (invert).....	1,856.0	3

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 12,790 acre-ft May 1, 1956 (elevation, 1,906.86 ft); minimum since first appreciable storage in June 1951, 1,550 acre-ft Sept. 2, 1984 (elevation, 1,878.01 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 6,590 acre-ft Oct. 1 (elevation, 1,896.76 ft); minimum daily, 4,590 acre-ft Sept. 30 (elevation, 1,891.41 ft).

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

1,891.0	4,460	1,895.0	5,870
1,893.0	5,130	1,897.0	6,700

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6590	6340	6180	6110	6010	5920	5750	5550	5510	5300	5060	4770
2	6570	6340	6170	6110	6000	5920	5740	5540	5500	5290	5050	4760
3	6560	6330	6160	6110	5990	5910	5730	5530	5500	5300	5040	4770
4	6550	6330	6160	6100	5990	5910	5720	5520	5490	5290	5050	4750
5	6540	6320	6160	6100	6000	5900	5720	5510	5480	5280	5040	4750
6	6540	6310	6160	6100	6000	5900	5710	5500	5480	5270	5030	4740
7	6520	6300	6150	6100	5990	5900	5700	5500	5470	5260	5020	4730
8	6510	6290	6150	6100	5990	5900	5690	5480	5460	5250	5010	4720
9	6500	6270	6150	6090	5990	5890	5680	5480	5450	5240	5000	4710
10	6490	6260	6140	6090	5990	5880	5680	5470	5440	5240	4990	4700
11	6480	6260	6130	6090	5980	5880	5670	5490	5420	5270	4980	4690
12	6470	6250	6130	6080	5970	5860	5660	5480	5410	5260	4980	4680
13	6460	6240	6120	6080	5970	5860	5660	5480	5400	5260	4960	4670
14	6450	6240	6120	6080	5970	5840	5650	5470	5390	5250	4950	4660
15	6440	6240	6110	6080	5960	5830	5650	5460	5390	5240	4940	4660
16	6440	6240	6100	6080	5960	5820	5650	5450	5380	5220	4930	4650
17	6440	6240	6100	6070	5960	5830	5650	5450	5370	5210	4920	4660
18	6430	6230	6110	6070	5960	5820	5650	5440	5360	5200	4920	4670
19	6420	6220	6140	6060	5960	5820	5640	5440	5350	5190	4910	4660
20	6420	6220	6140	6060	5960	5810	5630	5460	5340	5190	4900	4650
21	6400	6210	6140	6050	5950	5800	5630	5460	5330	5180	4880	4640
22	6400	6210	6140	6050	5950	5800	5620	5440	5320	5170	4870	4640
23	6390	6210	6140	6040	5940	5800	5610	5440	5310	5160	4860	4640
24	6390	6220	6130	6030	5930	5790	5600	5430	5290	5140	4850	4640
25	6390	6200	6130	6030	5930	5780	5600	5420	5300	5140	4840	4630
26	6380	6200	6130	6020	5930	5780	5590	5410	5300	5120	4830	4620
27	6370	6190	6130	6010	5930	5770	5570	5410	5330	5110	4820	4610
28	6360	6190	6130	6010	5920	5770	5570	5400	5330	5100	4800	4600
29	6360	6180	6120	6010	5920	5760	5560	5390	5320	5090	4800	4600
30	6350	6180	6120	6010	---	5750	5560	5380	5310	5080	4790	4590
31	6350	---	6110	6010	---	5750	---	5380	---	5070	4780	---
MAX	6590	6340	6180	6110	6010	5920	5750	5550	5510	5300	5060	4770
MIN	6350	6180	6100	6010	5920	5750	5560	5380	5290	5070	4780	4590
(↑)	1896.17	1895.76	1895.60	1895.34	1895.12	1894.68	1894.18	1893.70	1893.50	1892.84	1891.97	1891.41
(Φ)	-251	-170	-66	-104	-88	-171	-191	-179	-72	-236	-296	-183
CAL YR 1987	MAX	7290	MIN	3380	(Φ)	+2730						
WTR YR 1988	MAX	6590	MIN	4590	(Φ)	-2010						

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

87

08141500 HORDS CREEK NEAR VALERA, TX

LOCATION.--Lat 31°50'03", long 99°32'26", Coleman County, Hydrologic Unit 12090108, on right bank 74 ft downstream and 50 ft south of bridge on Farm Road 503, 1.1 mi downstream from Hords Creek Dam, 5.7 mi north of Valera, 7.5 mi west of Coleman, and 27.4 mi upstream from mouth.

DRAINAGE AREA.--54.2 mi², approximately, of which 49.3 mi² is above Hords Creek Dam.

PERIOD OF RECORD.--April 1947 to current year.

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,826.72 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Oct. 1, 1979, at site 0.5 mi downstream at datum 6.84 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is regulated by Hords Creek Lake (station 08141000) 1.1 mi upstream.

AVERAGE DISCHARGE.--41 years (water years 1948-88), 1.41 ft³/s (1,020 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,860 ft³/s Apr. 30, 1956 (gage height, 14.73 ft), at site 0.5 mi downstream at datum 6.84 ft lower, from rating curve extended above 1,900 ft³/s; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 23.0 ft July 3, 1932, from information by local residents (discharge not determined). Flood in July or September 1900 reached a stage 3.7 ft higher than that of July 1932, at site 12 mi downstream from station, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s June 1 at 0600 hours (gage height, 1.82 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.02	.03	e.06	.06	.05	.02	.01	8.0	.10	.00	.00
2	.06	.02	.03	e.06	.06	.05	.02	.01	1.4	.07	.00	.00
3	.05	.03	.03	e.06	.06	.04	.02	.01	.91	.07	.00	.00
4	.05	.02	.03	e.06	.06	.04	.02	.01	.48	.08	.00	.00
5	.05	.02	.03	e.06	.06	.04	.02	.01	.34	.06	.00	.00
6	.05	.02	.02	.06	.06	.04	.02	.02	.25	.05	.00	.00
7	.05	.03	.02	.08	.07	.04	.01	.02	.20	.04	.00	.00
8	.04	.03	.02	.08	.08	.04	.01	.01	.15	.04	.00	.00
9	.05	.03	.02	.08	.07	.04	.01	.01	.12	.04	.00	.00
10	.05	.03	.02	.08	.07	.04	.01	.01	.10	.03	.00	.00
11	.05	.03	.02	.08	.06	.04	.01	.01	.10	.08	.00	.00
12	.05	.03	.02	.08	.05	.04	.01	.01	.10	.12	.00	.00
13	.04	.03	.02	.08	.05	.04	.01	.01	.10	.07	.00	.00
14	.04	.03	.02	.07	.05	.04	.01	.01	.10	.06	.00	.00
15	.04	.04	.02	.09	.05	.04	.01	.01	.10	.05	.00	.00
16	.04	.05	.03	.09	.05	.04	.01	.01	.10	.04	.00	.00
17	.05	.05	.03	.10	.05	.04	.02	.01	.11	.03	.00	.00
18	.06	.04	.03	.10	.06	.04	.01	.01	.11	.03	.00	.00
19	.06	.03	.17	.10	.07	.04	.01	.01	.10	.01	.00	.00
20	.07	.03	.10	.10	.07	.04	.01	.03	.08	.01	.00	.00
21	.07	.02	.08	.09	.06	.04	.01	.01	.07	.01	.00	.00
22	.06	.02	.08	.07	.06	.04	.01	.01	.07	.01	.00	.00
23	.07	.03	.07	.07	.06	.03	.01	.01	.06	.01	.00	.00
24	.07	.03	e.07	.07	.06	.03	.01	.01	.06	.00	.00	.00
25	.08	.03	e.07	.06	.05	.03	.01	.01	.08	.00	.00	.00
26	.08	.03	e.07	.06	.05	.02	.01	.01	.18	.00	.00	.00
27	.07	.03	e.07	.05	.05	.02	.01	.00	.24	.00	.00	.00
28	.07	.03	e.07	.05	.05	.02	.01	.00	.39	.00	.00	.00
29	.07	.03	e.07	.05	.05	.02	.01	.00	.26	.00	.00	.00
30	.05	.03	e.07	.05	---	.02	.01	.00	.17	.00	.00	.00
31	.03	---	e.06	.05	---	.02	---	.00	---	.00	.00	---
TOTAL	1.73	0.89	1.49	2.24	1.70	1.11	0.37	0.30	14.53	1.11	0.00	0.00
MEAN	.056	.030	.048	.072	.059	.036	.012	.010	.48	.036	.00	.00
MAX	.08	.05	.17	.10	.08	.05	.02	.03	8.0	.12	.00	.00
MIN	.03	.02	.02	.05	.05	.02	.01	.00	.06	.00	.00	.00
AC-FT	3.4	1.8	3.0	4.4	3.4	2.2	.7	.6	29	2.2	.0	.0

CAL YR 1987 TOTAL 401.95 MEAN 1.10 MAX 85 MIN .00 AC-FT 797
WTR YR 1988 TOTAL 25.47 MEAN .070 MAX 8.0 MIN .00 AC-FT 51

e Estimated.

LOCATION.--Lat 31°31'02", long 98°44'25", Mills County, Hydrologic Unit 12090107, on right bank 44 ft downstream from bridge on Farm Road 573, 0.6 mi downstream from Blanket Creek, 5.5 mi southwest of Mullin, and 13.6 mi upstream from mouth.

DRAINAGE AREA.--2.073 mi².

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,202.93 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharge. Records good. Flow is affected by Lake Brownwood (capacity, 143,400 acre-ft) 47 mi upstream. At end of year, flow from 152 mi² above this station and below Lake Brownwood was partly controlled by 41 floodwater-retarding structures with a combined detention capacity of 43,420 acre-ft below the flood-spillway crests. Gage-height telemeter at station.

AVERAGE DISCHARGE.--21 years, 120 ft³/s (86,940 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft³/s Jan. 23, 1968 (gage height, 29.26 ft); no flow at times in 1974, 1978, 1980-81, and 1984-85.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,200 ft³/s June 1 at 1800 hours (gage height, 26.52 ft); minimum, 0.25 ft³/s Sept. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	2.9	11	11	8.8	10	12	3.4	5620	4.0	1.9	.34
2	5.2	3.9	11	11	8.8	9.8	9.6	3.0	6720	3.2	2.4	.40
3	4.9	5.2	11	10	9.3	10	9.1	3.1	3820	2.2	1.8	.49
4	4.7	4.9	10	10	10	13	8.6	3.0	2420	1.8	1.9	.51
5	4.4	4.2	10	10	10	12	9.2	2.8	1770	3.1	2.1	.48
6	4.1	3.1	10	10	10	11	8.3	2.7	1410	3.0	1.5	.45
7	4.0	4.2	10	10	10	9.9	7.7	2.3	1110	3.2	1.1	.51
8	3.1	6.5	10	10	10	9.1	8.2	2.3	882	3.3	.80	.63
9	2.0	6.5	9.7	10	11	8.8	7.5	3.8	669	3.0	.69	.60
10	1.7	6.8	9.4	10	11	8.8	6.9	7.4	543	3.3	4.2	.54
11	1.7	6.7	9.4	10	11	8.2	6.7	14	289	352	4.1	.50
12	1.6	7.6	9.0	9.8	11	7.4	7.6	11	124	378	2.7	.42
13	1.3	6.7	9.1	9.4	11	7.7	7.3	19	61	60	1.8	.34
14	3.2	6.8	9.4	9.4	11	7.7	6.9	12	42	18	1.5	.40
15	4.5	14	8.9	9.4	11	7.7	6.8	8.1	31	11	1.3	2.3
16	4.2	45	8.3	9.4	11	7.4	6.5	6.4	25	7.2	1.1	3.3
17	3.0	28	8.3	9.4	11	7.5	6.4	5.5	21	5.2	.88	2.5
18	2.3	19	8.6	9.4	12	8.3	8.8	4.3	17	3.8	.71	2.0
19	3.2	14	12	9.4	13	12	17	3.5	12	3.0	.55	2.4
20	7.7	12	35	9.4	15	12	11	4.3	9.7	2.6	.36	2.7
21	7.1	11	24	9.4	13	11	8.8	5.9	7.5	2.7	.42	2.7
22	4.9	10	16	9.4	12	9.8	7.4	12	6.1	2.3	.94	2.6
23	4.2	9.7	13	9.4	11	9.1	6.2	8.3	5.2	2.0	1.0	1.9
24	3.4	9.5	13	9.9	11	7.7	8.0	7.2	4.1	1.7	1.2	1.4
25	3.7	10	12	10	11	6.6	17	6.3	3.9	1.7	1.5	1.0
26	4.5	10	12	9.5	11	8.9	9.4	4.1	8.1	1.7	1.3	.80
27	4.8	13	12	9.4	11	8.9	7.7	3.3	5.9	1.6	.88	.49
28	6.6	12	11	9.4	10	9.4	6.8	3.3	6.1	1.7	.70	.32
29	5.1	11	11	8.9	10	12	5.1	3.9	6.3	1.4	.59	.25
30	3.9	11	11	8.8	---	37	4.7	3.7	5.4	1.1	.44	.30
31	3.6	---	11	8.8	---	20	---	3.7	---	1.0	.35	---
TOTAL	124.0	315.2	366.1	299.9	315.9	328.7	253.2	183.6	25654.3	889.8	42.71	33.57
MEAN	4.00	10.5	11.8	9.67	10.9	10.6	8.44	5.92	855	28.7	1.38	1.12
MAX	7.7	45	35	11	15	37	17	19	6720	378	4.2	3.3
MIN	1.3	2.9	8.3	8.8	8.8	6.6	4.7	2.3	3.9	1.0	.35	.25
AC-FT	246	625	726	595	627	652	502	364	50890	1760	85	67
CAL YR 1987	TOTAL 94516.45			MEAN 259	MAX 4660		MIN .45		AC-FT 187500			
WTR YR 1988	TOTAL 28806.98			MEAN 78.7	MAX 6720		MIN .25		AC-FT 57140			

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,230 microsiemens May 14, 1978; minimum daily, 200 microsiemens July 24, 1984.

WATER TEMPERATURES: Maximum daily, 37.0°C July 18, 1979; minimum daily, 0.5°C Feb. 7, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,670 microsiemens Nov. 21; minimum daily, 266 microsiemens June 2.

WATER TEMPERATURE: Maximum daily, 34.0°C Aug. 12; minimum daily, 5.0°C Jan. 7, 10, 14.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 03...	1600	4.7	1160	20.0	340	130	94	25	110
JAN 04...	1615	10	1140	5.5	320	120	90	22	110
FEB 16...	1535	10	1300	11.0	360	140	100	27	120
APR 12...	1605	7.8	1290	19.0	350	140	100	24	120
MAY 31...	1610	3.9	1240	26.0	320	130	88	25	120
JUL 12...	0900	361	516	24.5	150	50	43	11	34

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
NOV 03...	3	7.5	205	110	180	0.30	3.8	654
JAN 04...	3	8.0	197	110	180	0.30	3.1	642
FEB 16...	3	7.6	221	120	210	0.30	0.61	718
APR 12...	3	8.6	212	120	210	0.40	3.9	714
MAY 31...	3	8.5	198	110	200	0.50	8.4	679
JUL 12...	1	5.8	103	42	59	0.30	7.8	265

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	124.0	927	511	171	150	51	69	23	230
NOV. 1987	315.2	1430	781	665	280	239	96	82	290
DEC. 1987	366.1	1160	639	631	210	208	82	81	260
JAN. 1988	299.9	1180	646	523	210	172	83	67	270
FEB. 1988	315.9	1340	736	628	260	218	92	79	290
MAR. 1988	328.7	1300	713	632	240	216	90	80	280
APR. 1988	253.2	1210	664	454	220	151	85	58	270
MAY 1988	183.6	1180	647	321	210	105	84	41	270
JUNE 1988	25654.3	370	205	14200	48	3310	30	2100	110
JULY 1988	889.8	607	336	806	89	213	48	114	170
AUG. 1988	42.71	865	477	55	140	16	65	7.5	220
SEPT 1988	33.57	1340	736	67	260	23	92	8.3	290
TOTAL	28806.98	**	**	19100	**	4930	**	2740	**
WTD. AVG.	79	445	246	**	63	**	35	**	130

COLORADO RIVER BASIN

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1170	1040	837	1280	1360	1290	1300	1310	346	730	615	1260
2	1180	1100	994	1270	1340	1280	1290	1330	266	731	619	1260
3	1180	1150	747	1270	1340	1290	1300	1340	416	749	671	1250
4	1180	1220	752	1130	1340	1300	1300	1350	448	753	650	1250
5	1160	1260	752	1040	1340	1320	1260	1340	452	743	671	1270
6	1110	1300	754	990	1350	1300	1260	1350	426	753	688	1250
7	1040	1350	874	880	1350	1300	1260	1350	423	766	704	1240
8	1010	1370	877	840	1360	1310	1280	1350	430	782	723	1240
9	990	1400	928	850	1370	1310	1280	1350	438	826	736	1240
10	960	1500	1100	880	1390	1320	1280	1340	387	855	800	1230
11	955	1520	1210	1000	1390	1290	1290	1210	384	784	800	1230
12	924	1590	1280	1080	1390	1280	1290	1120	460	480	866	1200
13	905	1550	1290	1130	1390	1270	1290	1110	462	432	870	1200
14	887	1600	1300	1180	1370	1270	1290	1120	505	464	927	1200
15	832	1600	1300	1200	1290	1270	1280	1110	527	472	925	1200
16	795	1330	1280	1230	1290	1270	1280	1140	545	468	955	1200
17	779	1550	1280	1260	1340	1290	1280	1120	560	463	974	1350
18	783	1570	1280	1250	1280	1290	1260	1190	600	461	994	1390
19	791	1620	1260	1240	1320	1310	1140	1140	646	467	1040	1320
20	795	1630	1250	1250	1350	1340	983	1140	644	465	1040	1440
21	817	1670	1270	1250	1360	1340	927	1120	662	470	1110	1450
22	830	1460	1290	1270	1350	1340	928	1120	671	486	1060	1440
23	827	1470	1300	1280	1330	1340	960	1090	689	495	1110	1440
24	820	1480	1300	1280	1330	1340	1020	1110	700	502	1040	1440
25	812	1400	1310	1290	1330	1330	1200	1130	703	510	1160	1430
26	800	1390	1300	1280	1330	1320	1190	1150	670	522	1200	1430
27	800	1330	1280	1290	1320	1320	1230	1190	700	536	1240	1440
28	823	1240	1280	1290	1310	1320	1270	1190	705	547	1260	1440
29	870	1230	1290	1310	1330	1290	1280	1210	704	562	1300	1440
30	916	995	1290	1300	---	1270	1300	1220	690	583	1270	1420
31	1000	---	1300	1480	---	1260	---	1240	---	676	1270	---
MEAN	927	1400	1150	1180	1340	1300	1220	1210	542	598	945	1320

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	20.0	11.0	7.0	15.0	---	20.0	24.0	21.0	30.0	---	30.0
2	18.0	21.0	11.0	7.5	13.0	---	22.0	22.0	22.0	31.0	30.0	29.0
3	19.0	22.0	11.0	6.0	12.0	---	23.0	23.0	22.0	31.0	30.5	29.0
4	19.0	22.0	12.0	7.0	8.0	---	24.0	25.0	20.0	31.0	31.0	26.5
5	18.0	21.0	13.0	6.5	6.0	---	22.0	26.0	22.0	31.0	31.0	28.0
6	18.0	18.0	12.0	6.0	9.0	---	22.0	25.0	22.0	31.0	31.0	29.0
7	17.0	18.5	10.0	5.0	7.0	---	22.0	25.0	26.0	31.0	32.0	22.0
8	18.0	17.5	13.0	6.0	9.0	---	22.0	27.0	26.0	31.0	31.0	24.0
9	18.5	---	11.0	5.5	7.0	---	19.0	27.0	28.0	32.0	33.0	24.0
10	19.0	15.0	12.0	5.0	15.0	---	13.0	28.0	27.0	28.0	32.0	28.0
11	19.0	13.0	10.0	5.5	15.0	18.0	18.5	21.5	26.0	27.0	31.0	26.0
12	17.0	12.0	10.0	7.0	10.0	17.0	19.5	25.0	25.0	27.0	34.0	29.0
13	17.0	13.0	10.0	6.0	10.0	15.0	21.0	26.0	27.0	28.0	30.0	29.0
14	18.0	14.0	10.0	5.0	11.0	15.0	22.0	28.0	27.5	28.0	32.0	28.0
15	18.0	14.0	11.0	7.0	12.5	16.0	24.0	27.0	28.0	31.0	31.0	29.0
16	19.0	13.0	9.0	9.0	---	13.0	22.0	28.0	---	31.0	32.0	28.0
17	19.0	14.0	8.0	15.0	10.0	10.0	21.0	28.0	28.0	32.0	32.0	27.0
18	19.0	13.0	8.0	15.0	9.0	12.0	20.0	28.0	28.0	31.0	29.0	26.0
19	20.5	13.0	9.5	16.0	9.0	14.0	22.0	26.0	28.5	28.0	32.0	28.0
20	17.5	11.0	9.0	7.0	10.0	14.0	22.0	25.0	29.0	32.0	30.0	23.0
21	16.5	13.0	10.5	9.0	15.0	17.0	25.0	26.0	29.0	29.0	31.0	24.5
22	16.0	13.0	9.5	7.0	14.0	18.0	24.0	24.0	31.0	31.0	32.0	28.0
23	17.5	12.0	9.5	10.0	13.0	20.0	26.0	27.0	31.0	30.0	32.0	28.0
24	18.5	16.0	11.0	9.0	16.0	22.0	25.0	27.0	28.0	29.0	30.0	26.0
25	18.5	15.0	8.5	8.0	13.0	22.0	22.0	27.0	29.0	32.0	30.0	25.0
26	19.0	12.0	6.0	9.0	9.0	22.0	27.0	27.0	29.0	31.5	32.0	27.0
27	17.5	12.0	8.0	9.0	11.0	20.0	25.0	28.0	28.0	31.0	31.0	25.0
28	17.0	12.0	7.5	10.0	14.0	22.0	24.0	27.0	30.5	31.0	28.0	26.0
29	17.5	13.0	9.5	11.0	---	20.0	23.0	27.0	30.0	30.0	30.0	24.0
30	19.5	12.0	9.5	13.5	---	19.0	21.0	25.0	31.0	32.0	28.5	25.0
31	20.5	---	7.0	13.5	---	19.0	---	27.0	---	28.0	32.0	---
MEAN	18.0	15.0	10.0	8.5	11.0	17.5	22.0	26.0	27.0	30.0	31.0	26.5

08144500 SAN SABA RIVER AT MENARD, TX

LOCATION.--Lat 30°55'08", long 99°47'07", Menard County, Hydrologic Unit 12090109, at downstream side of bridge on U.S. Highway 83 in Menard, 1.1 mi downstream from Las Moras Creek, 1.9 mi upstream from Volkmann Draw, and 116.3 mi upstream from mouth.

DRAINAGE AREA.--1,135 mi², of which 6.6 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area. WSP 1512: 1918-20, 1922-25, 1926(M), 1927-32, 1934(M), 1936, 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,863.05 ft above National Geodetic Vertical Datum of 1929. Sept. 14, 1915, to Mar. 12, 1924, nonrecording gage at site 635 ft downstream at datum 2.20 ft lower. Mar. 13, 1924, to Feb. 21, 1939, nonrecording gage at site 1,000 ft upstream at datum 2.00 ft higher. Feb. 22, 1939, to Jan. 25, 1940, nonrecording gage at present site and datum. Jan. 26, 1940, to Sept. 19, 1957, water-stage recorder at site 240 ft to right at present datum. Feb. 8, 1962, to Jan. 22, 1963, nonrecording gage at site 600 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Since about 1890, low flow during irrigation season regulated by diversions to Noyes Canal 4.5 mi upstream and diversions by pumping at several locations upstream. Records of the Texas Department of Water Resources show that permits have been granted to irrigate 3,338 acres above station. See record for (station 08144000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--73 years, 61.3 ft³/s (44,410 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s July 23, 1938 (gage height, 22.2 ft, from floodmark), present site and datum, from rating curve extended above 56,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times as result of upstream diversion to Noyes Canal (station 08144000).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 23.3 ft June 6, 1899, present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 670 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	0100	*1,260	*6.56	No other peak greater than base discharge.			
Minimum daily discharge, 9.6 ft ³ /s Sept. 16.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	31	38	37	37	34	26	29	23	19	24	16
2	36	31	35	37	36	34	26	29	23	17	25	15
3	35	31	35	37	36	33	25	27	22	18	24	16
4	35	31	35	37	36	32	26	27	21	19	23	18
5	35	31	35	37	36	31	26	27	22	18	22	16
6	35	30	36	38	36	26	25	26	22	16	21	18
7	32	31	35	38	37	26	25	26	21	16	21	13
8	29	33	35	38	37	26	25	25	21	15	21	13
9	29	33	35	38	37	25	27	24	20	15	20	13
10	29	33	35	38	37	24	28	24	19	16	20	12
11	29	31	35	38	35	24	27	52	19	51	19	13
12	30	31	35	38	35	24	26	30	20	457	19	14
13	30	32	35	37	36	24	26	21	21	80	18	14
14	30	33	35	36	35	24	26	19	20	44	18	15
15	30	35	37	37	35	26	26	19	20	34	18	11
16	31	36	37	38	36	26	26	20	20	26	18	9.6
17	32	35	37	39	36	29	26	20	20	23	18	19
18	33	34	38	38	42	29	26	21	20	22	18	40
19	34	33	46	38	38	28	26	17	19	22	19	36
20	34	33	48	37	37	29	26	19	19	22	21	27
21	35	33	42	36	36	27	25	23	19	23	18	22
22	33	34	39	36	36	27	25	21	18	23	17	21
23	33	35	40	36	35	27	25	18	17	23	16	21
24	31	35	40	37	35	27	25	17	16	23	17	20
25	31	36	39	37	36	26	28	18	20	22	16	20
26	31	36	40	37	37	25	27	18	21	22	16	20
27	30	37	40	37	38	25	25	19	22	22	13	20
28	29	38	39	37	38	26	25	18	21	22	12	20
29	29	38	37	38	36	25	28	18	21	21	11	20
30	31	39	37	37	---	24	29	18	21	22	13	26
31	30	---	38	38	---	24	---	21	---	24	15	---
TOTAL	988	1009	1168	1157	1057	837	782	711	608	1197	571	558.6
MEAN	31.9	33.6	37.7	37.3	36.4	27.0	26.1	22.9	20.3	38.6	18.4	18.6
MAX	37	39	48	39	42	34	29	52	23	457	25	40
MIN	29	30	35	36	35	24	25	17	16	15	11	9.6
AC-FT	1960	2000	2320	2290	2100	1660	1550	1410	1210	2370	1130	1110

CAL YR 1987 TOTAL 13525 MEAN 37.1 MAX 985 MIN 16 AC-FT 26830
WTR YR 1988 TOTAL 10643.6 MEAN 29.1 MAX 457 MIN 9.6 AC-FT 21110

COLORADO RIVER BASIN

08144600 SAN SABA RIVER NEAR BRADY, TX

LOCATION.--Lat 31°00'14", long 99°16'07", McCulloch County, Hydrologic Unit 12090109, on right bank at downstream side of bridge on U.S. Highways 87 and 377, 0.4 mi upstream from Hudson Branch, and 8.4 mi southeast of Brady, and 72.9 mi upstream from mouth.

DRAINAGE AREA.--1,633 mi², of which 6.60 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,530.98 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation (see station 08144000). Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--9 years, 69.4 ft³/s (50,280 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,000 ft³/s Sept. 8, 1980 (gage height, 25.50 ft); minimum, 0.24 ft³/s Aug. 1, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Highest stage since June 1899, 33.8 ft July 23, 1938, from high-water mark on left bank 150 ft upstream from present site.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	2230	*677	*4.00	No peak greater than base discharge.			

Minimum daily discharge, 6.4 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	48	57	60	47	71	52	29	39	22	17	7.1
2	65	49	59	60	40	62	48	29	44	24	26	7.5
3	64	51	62	61	40	55	52	28	52	24	27	7.9
4	65	41	60	61	45	54	54	29	45	24	24	8.3
5	60	36	58	59	47	50	55	30	41	21	23	8.7
6	60	31	57	58	48	43	44	27	36	20	25	12
7	58	32	56	58	51	43	35	26	39	19	24	12
8	58	83	61	59	55	40	35	31	34	18	18	14
9	54	75	62	60	59	36	34	33	33	18	15	14
10	52	46	59	58	59	34	32	31	30	16	13	12
11	50	43	54	57	57	32	37	40	26	62	15	10
12	48	40	54	60	57	32	41	60	26	220	16	9.5
13	48	42	51	63	58	31	40	122	26	415	16	9.5
14	46	49	50	62	57	35	40	72	27	190	14	9.1
15	46	51	50	58	56	35	43	60	29	101	15	7.5
16	45	43	48	55	55	39	37	62	26	69	17	6.4
17	40	44	52	54	51	46	35	56	25	56	17	11
18	37	47	56	54	59	45	31	54	23	46	16	18
19	37	48	69	52	57	39	34	53	21	39	16	27
20	48	48	66	49	55	50	32	65	20	35	11	43
21	42	41	68	49	54	49	25	68	18	34	10	45
22	41	47	69	49	57	42	24	61	17	36	16	40
23	41	56	68	48	56	44	31	61	16	32	16	31
24	42	69	67	48	53	47	31	62	14	30	14	25
25	45	62	68	47	54	45	30	53	13	29	14	24
26	47	58	67	48	59	43	29	44	14	29	9.1	25
27	48	57	67	48	63	46	33	40	18	23	9.1	23
28	47	60	62	48	70	46	26	46	101	24	9.1	22
29	45	58	60	50	72	56	27	50	29	22	7.9	27
30	47	57	60	49	---	56	28	59	22	22	6.7	28
31	48	---	60	48	---	50	---	47	---	20	7.1	---
TOTAL	1541	1512	1857	1690	1591	1396	1095	1528	904	1740	484.0	544.5
MEAN	49.7	50.4	59.9	54.5	54.9	45.0	36.5	49.3	30.1	56.1	15.6	18.1
MAX	67	83	69	63	72	71	55	122	101	415	27	45
MIN	37	31	48	47	40	31	24	26	13	16	6.7	6.4
AC-FT	3060	3000	3680	3350	3160	2770	2170	3030	1790	3450	960	1080

CAL YR 1987 TOTAL 38489 MEAN 105 MAX 2430 MIN 14 AC-FT 76340
WTR YR 1988 TOTAL 15882.5 MEAN 43.4 MAX 415 MIN 6.4 AC-FT 31500

08146000 SAN SABA RIVER AT SAN SABA, TX

LOCATION.--Lat 31°12'47", long 98°43'09", San Saba County, Hydrologic Unit 12090109, on right bank at downstream side of bridge on State Highway 16, 1.2 mi north of San Saba, 2.7 mi upstream from Mill Creek, 4.8 mi downstream from China Creek, and 16.8 mi upstream from mouth.

DRAINAGE AREA.--3,046 mi², of which 6.6 mi² probably is noncontributing.

PERIOD OF RECORD.--December 1904 to December 1906 (gage heights only), September 1915 to current year. Published as "near San Saba" December 1904 to December 1906 and September 1915 to August 1930.

REVISED RECORDS.--WSP 458: 1915-16. WSP 1282: WDR TX-81-3: Drainage area. WSP 1512: 1918-19(M), 1922, 1931(M), 1935 WSP 1922: 1917.

GAGE.--Water-stage recorder. Datum of gage is 1,162.16 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for brief history of changes prior to July 8, 1953. Since Oct. 1, 1956, supplementary water-stage recorder 2,780 ft to right of main channel gage used for floodflows.

REMARKS.--No estimated daily discharges. Records good. Many diversions above station for irrigation and municipal use affect low flow. Flow partly affected by Brady Creek Reservoir (see station 08144900), capacity 90,300 acre-ft. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--73 years, 224 ft³/s (162,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 203,000 ft³/s July 23, 1938 (gage height, 39.3 ft, present site and datum), from rating curve extended above 41,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1918, 1930, 1954-56, 1963-64, and 1984. Maximum stage since at least 1899, that of July 23, 1938.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1899, reached a stage of 36.7 ft, present site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 14	0430	*445	*4.99				

Minimum daily discharge, 17 ft³/s Aug. 17-19, 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	101	95	98	95	96	78	48	178	64	42	19
2	136	101	94	100	97	106	74	50	109	47	38	19
3	117	98	94	102	96	104	71	44	174	48	37	20
4	109	98	94	104	91	100	68	41	207	44	30	21
5	105	100	99	102	89	93	61	40	115	42	34	21
6	105	95	101	103	96	92	59	40	85	41	37	19
7	98	87	100	105	105	90	59	41	74	39	34	18
8	93	96	99	106	109	86	61	40	65	37	33	19
9	93	125	94	103	107	83	57	38	59	36	31	20
10	90	220	96	100	106	82	55	33	55	37	27	20
11	89	125	97	101	106	75	61	45	48	50	22	20
12	87	97	94	104	102	66	60	71	42	102	21	18
13	86	88	94	101	99	60	57	78	41	277	22	18
14	87	86	96	100	102	60	59	71	39	393	21	20
15	87	87	95	102	98	60	59	101	38	277	21	21
16	89	109	95	103	100	60	57	80	35	186	19	22
17	88	109	94	101	98	69	56	65	35	137	17	23
18	87	98	93	100	105	69	58	58	35	104	17	27
19	96	89	116	101	114	77	51	61	35	83	17	30
20	100	91	129	97	111	78	49	73	32	69	19	27
21	114	92	128	93	100	75	55	77	28	62	19	25
22	112	94	120	91	95	70	54	75	25	59	19	28
23	101	90	117	92	94	73	51	71	23	53	17	45
24	101	86	117	95	92	74	50	66	20	46	17	42
25	107	88	112	93	91	70	52	63	20	42	81	39
26	107	91	111	91	90	64	58	62	29	39	34	36
27	104	97	108	90	91	62	53	60	34	38	26	30
28	105	103	104	91	92	61	48	55	39	34	22	29
29	103	96	100	94	91	69	46	51	38	33	20	30
30	104	96	100	96	---	74	46	48	62	33	18	53
31	100	---	101	97	---	75	---	51	---	46	20	---
TOTAL	3186	3033	3187	3056	2862	2373	1723	1797	1819	2598	832	779
MEAN	103	101	103	98.6	98.7	76.5	57.4	58.0	60.6	83.8	26.8	26.0
MAX	186	220	129	106	114	106	78	101	207	393	81	53
MIN	86	86	93	90	89	60	46	33	20	33	17	18
AC-FT	6320	6020	6320	6060	5680	4710	3420	3560	3610	5150	1650	1550

CAL YR 1987 TOTAL 67671 MEAN 185 MAX 2420 MIN 41 AC-FT 134200
WTR YR 1988 TOTAL 27245 MEAN 74.4 MAX 393 MIN 17 AC-FT 54040

LOCATION.--Lat 31°13'04", long 98°33'51", San Saba-Lampasas County line, Hydrologic Unit 12090201, near left bank at downstream side of pier of bridge on U.S. Highway 190, 5.2 mi downstream from San Saba River, 9.2 mi east of San Saba, and at mile 474.3.

DRAINAGE AREA.--31,217 mi², approximately, of which 11,398 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1915 to October 1922 (published as "near Chadwick"), October 1923 to August 1930 (published as "near Tow"), September 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 458: 1916. WSP 858: 1900(M), 1936(M). WDR TX-81-3: Drainage area. WSP 1512: 1916-18(M), 1936. WSP 1732: 1925-26(M).

GAGE.--Water-stage recorder. Datum of gage is 1,096.22 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for brief history of changes prior to May 23, 1940.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal use, and for oil field operation. Flow is affected by four reservoirs upstream from Winchell and one reservoir in the San Saba River and Pecan Bayou basins; combined capacity, 1,973,000 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 187 floodwater-retarding structures with a combined capacity of 205,700 acre-ft. These structures control runoff from 944 mi². Gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1917-19, 1921-22, 1924-68) prior to completion of Robert Lee Dam, 1,340 ft³/s (970,100 acre-ft/yr); 20 years (water years 1969-88) partially regulated, 649 ft³/s (470,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 224,000 ft³/s July 23, 1938 (gage height, 63.2 ft, present site), based on floodmarks at site then in use; no flow Aug. 27-31, 1954; Aug. 3-13, 1963; July 20 to Aug. 8, Aug. 11-14, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1878 to July 22, 1938, 58.4 ft Sept. 25, 1900 (discharge, 184,000 ft³/s. present site). from floodmarks at former site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,000 ft³/s June 2 at 2030 hours (gage height, 12.10 ft); minimum daily, 37 ft³/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	485	280	266	348	238	242	163	114	168	131	582	512
2	402	274	266	320	231	242	161	110	9060	511	579	491
3	374	263	266	309	226	242	151	99	7080	367	572	352
4	355	258	266	300	223	243	142	86	3880	290	563	233
5	353	253	264	287	220	247	137	78	2540	228	555	172
6	344	251	261	281	221	242	129	77	1830	167	559	134
7	323	248	261	277	221	242	126	73	1550	131	572	108
8	304	246	261	273	224	238	128	67	1230	143	560	89
9	290	329	261	268	228	234	124	58	988	510	535	77
10	279	366	261	266	231	229	115	51	784	611	543	73
11	272	365	258	258	233	229	115	56	646	712	553	70
12	263	328	256	261	233	225	122	70	423	3630	530	67
13	257	301	256	259	237	215	114	1190	281	1570	536	69
14	254	275	253	256	237	203	105	1080	202	993	537	67
15	255	266	251	256	237	195	105	763	156	714	555	65
16	256	274	247	261	237	189	103	503	131	523	535	59
17	253	347	244	257	237	186	102	356	113	381	524	57
18	254	374	242	256	246	183	99	326	103	299	511	58
19	262	335	253	252	264	182	101	294	92	234	512	63
20	283	310	283	248	271	180	100	247	85	422	510	68
21	526	299	306	242	265	183	116	225	77	600	510	69
22	497	316	353	238	262	187	125	186	60	587	518	62
23	407	323	367	233	261	187	118	165	48	628	506	167
24	373	317	541	285	252	185	127	153	39	607	514	255
25	362	297	449	293	244	186	178	142	37	583	543	203
26	352	283	383	271	243	186	178	127	100	594	747	159
27	334	276	342	258	244	183	168	191	68	572	628	128
28	314	271	328	248	242	178	137	181	80	566	523	107
29	299	271	311	243	242	174	122	153	85	558	503	98
30	293	267	305	244	---	166	116	127	82	561	497	120
31	287	---	386	244	---	163	---	118	---	571	496	---
TOTAL	10162	8863	9247	8292	6950	6366	3827	7466	32018	18994	16908	4252
MEAN	328	295	298	267	240	205	128	241	1067	613	545	142
MAX	526	374	541	348	271	247	178	1190	9060	3630	747	512
MIN	253	246	242	233	220	163	99	51	37	131	496	57
AC-FT	20160	17580	18340	16450	13790	12630	7590	14810	63510	37670	33540	84350

CAL YR 1987	TOTAL 447668	MEAN 1226	MAX 16900	MIN 242	AC-FT 887900
WTR YR 1988	TOTAL 133345	MEAN 364	MAX 9060	MIN 37	AC-FT 264500

COLORADO RIVER MAIN STEM

95

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1941, September 1947 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to April 1982. Sediment analyses: May 1951 to October 1962, October 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1947 to current year.

WATER TEMPERATURE: September 1947 to current year.

SUSPENDED SEDIMENT DISCHARGE: December 1950 to September 1962.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,120 microsiemens Aug. 16, 1988; minimum daily, 150 microsiemens Sept. 14, 1981, and Jan. 1, 1985.

WATER TEMPERATURE: Maximum daily, 37.0°C Aug. 3, 1956; minimum daily, 0.0°C Jan. 29, 1948, Jan. 30, 1951.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,120 microsiemens Aug. 16; minimum daily, 326 microsiemens June 2.

WATER TEMPERATURE: Maximum daily, 33.0°C July 19, Aug. 8, 9, 19; minimum daily, 5.0°C Jan. 7, 9.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 19...	1440	334	1580	8.20	13.0	20	11.1	108	3.5	70	120
JAN 21...	1425	261	1800	8.30	8.0	26	10.1	88	2.0	K28	K20
MAR 24...	1105	160	1580	8.30	19.0	28	9.8	111	2.6	K38	42
MAY 12...	1200	68	915	8.20	23.0	31	11.2	135	2.0	31	K17
JUL 13...	1325	1440	1020	8.20	27.0	310	6.2	81	2.4	3900	2400
AUG 04...	1230	561	4640	8.20	29.0	9.7	7.6	104	1.7	54	72

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 19...	520	330	120	54	130	3	5.1	190	240	270	0.40
JAN 21...	570	350	130	58	150	3	5.0	221	280	280	0.40
MAR 24...	510	310	110	56	140	3	4.3	200	240	260	0.40
MAY 12...	330	120	66	41	66	2	3.0	212	97	130	0.30
JUL 13...	240	130	55	24	100	3	6.7	104	130	170	0.30
AUG 04...	910	760	150	130	640	9	21	149	860	930	0.40

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
NOV 19...	11	962	956	2.38	--	0.020	<0.010	2.40	2.30	0.020
JAN 21...	8.3	1080	1060	3.48	3.48	0.020	0.020	3.50	3.50	<0.010
MAR 24...	5.7	1000	950	3.38	3.19	0.020	0.010	3.40	3.20	0.040
MAY 12...	10	585	542	--	--	<0.010	<0.010	0.200	0.160	0.050
JUL 13...	8.0	592	559	0.380	0.470	0.020	0.020	0.400	0.490	0.140
AUG 04...	6.2	3050	2830	--	--	<0.010	<0.010	<0.100	<0.100	0.070

COLORADO RIVER MAIN STEM

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 19...	0.020	0.88	0.90	0.020	<0.010	<0.010	--	60	54	84
JAN 21...	0.010	--	0.60	0.040	0.020	<0.010	--	58	41	74
MAR 24...	0.030	0.86	0.90	0.060	<0.010	<0.010	--	76	33	92
MAY 12...	0.050	0.55	0.60	0.020	0.010	<0.010	--	72	13	83
JUL 13...	0.090	0.16	0.30	0.370	0.100	0.060	0.18	879	3420	99
AUG 04...	0.050	0.73	0.80	<0.010	<0.010	<0.010	--	49	74	99
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 19...	<10	1	140	<0.5	<1	<1	<3	2	<3	<5
JAN 21...	<10	1	97	<0.5	<1	1	<3	1	4	<5
MAR 24...	--	--	--	--	--	--	--	--	--	--
MAY 12...	<10	1	96	<0.5	<1	<1	<3	4	<3	<5
JUL 13...	--	--	--	--	--	--	--	--	--	--
AUG 04...	<10	2	230	0.6	1	1	2	1	22	<5
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 19...	42	1	0.2	<10	4	1	<1.0	1900	<6	4
JAN 21...	43	2	<0.1	<10	2	2	<1.0	2200	<6	<3
MAR 24...	--	--	--	--	--	--	--	--	--	--
MAY 12...	26	6	<0.1	<10	3	1	<1.0	840	<6	<3
JUL 13...	--	--	--	--	--	--	--	--	--	--
AUG 04...	100	4	0.3	17	2	1	<1.0	2600	35	16

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	10162	1270	733	20100	200	5440	150	4080	400
NOV. 1987	8863	1360	789	18900	220	5210	170	3950	420
DEC. 1987	9247	1790	1050	26200	310	7640	240	6030	520
JAN. 1988	8292	1760	1030	23000	300	6680	230	5250	510
FEB. 1988	6950	1560	904	17000	250	4780	200	3690	470
MAR. 1988	6366	1580	921	15800	260	4480	200	3470	480
APR. 1988	3827	1420	825	8520	230	2360	170	1800	440
MAY 1988	7466	1570	924	18600	270	5490	220	4360	450
JUNE 1988	32018	448	252	21700	59	5130	40	3430	160
JULY 1988	18994	2080	1260	64500	420	21600	360	18400	480
AUG. 1988	16908	6160	4130	189000	1900	85400	1800	83100	240
SEPT 1988	4252	3910	2440	28100	910	10500	820	9420	670
TOTAL	133345	**	**	451000	**	165000	**	147000	**
WTD.AVG.	364	2020	1250	**	460	**	410	**	370

COLORADO RIVER MAIN STEM

97

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1290	911	1740	1900	1450	1500	1680	1560	780	780	5000	4250
2	1300	736	1590	1830	1540	1540	1520	1520	326	900	4690	4490
3	1200	824	1610	1810	1530	1540	1450	1400	456	970	4570	4250
4	1180	1090	1640	1770	1450	1560	1330	1270	456	1050	4790	4150
5	1220	1140	1640	1770	1470	1540	1430	1320	544	1350	5840	4220
6	1260	1130	1630	1750	1560	1530	1390	1220	575	1610	6750	4190
7	1290	1180	1630	1760	1480	1570	1390	1280	512	1660	7240	4160
8	1290	1250	1640	1740	1530	1580	1440	1260	513	1620	7320	4090
9	1320	1500	1660	1790	1540	1560	1360	1220	491	2500	7090	4000
10	1320	1430	1690	1810	1480	1530	1420	1010	485	2520	6730	3740
11	1300	1320	1700	1810	1520	1570	1340	908	486	2860	6380	3740
12	1260	1220	1710	1810	1530	1540	1330	1130	483	1360	6070	3780
13	1180	1260	1710	1790	1570	1640	1340	1820	490	910	6190	3610
14	1150	1240	1740	1750	1580	1620	1360	2570	506	760	6400	3630
15	1170	1290	1750	1750	1600	1560	1190	2530	517	1130	7920	3620
16	1210	1310	1780	1760	1620	1600	1240	2010	527	1230	8120	3610
17	1110	1260	1770	1780	1570	1570	1160	1310	539	1200	7930	3630
18	980	1520	1780	1800	1700	1570	1160	1030	553	1060	7660	3490
19	1080	1580	1740	1820	1610	1560	1070	920	574	910	7450	3240
20	1150	1570	1760	1760	1590	1490	1140	810	576	1440	7190	2640
21	1500	1620	1720	1720	1570	1580	1210	785	597	1980	6900	2490
22	1400	1680	1830	1700	1560	1620	1210	769	612	2500	6830	2900
23	1380	1430	1790	1700	1550	1620	1370	760	620	2270	7090	2800
24	1330	1520	2130	1860	1560	1590	1370	740	616	2860	7010	3700
25	1380	1620	2010	1840	1600	1690	1560	745	618	2490	6160	4040
26	1400	1600	1910	1720	1600	1680	1770	750	576	3040	5150	3810
27	1420	1570	1910	1630	1570	1660	1790	800	587	3370	4630	3930
28	1410	1610	1870	1620	1560	1660	1710	810	591	3570	4530	3650
29	1240	1590	1830	1610	1560	1620	1620	800	619	5000	4380	3530
30	1000	1590	1850	1600	---	1570	1580	775	772	5580	3550	3370
31	1200	---	2000	1580	---	1760	---	765	---	5620	4040	---
MEAN	1260	1350	1770	1750	1550	1590	1400	1180	553	2130	6180	3690

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	21.0	18.0	7.0	17.0	20.0	21.0	24.0	25.0	32.0	30.0	30.0
2	25.0	20.0	12.0	8.0	10.0	19.0	22.0	24.0	23.0	30.0	30.0	30.0
3	22.0	23.0	15.0	10.0	11.0	16.0	22.0	25.0	23.0	31.0	31.0	28.0
4	23.0	22.0	15.0	8.0	10.0	18.0	24.0	25.0	25.0	31.0	30.0	26.0
5	23.0	27.0	15.0	8.0	9.0	18.0	23.0	26.0	24.0	30.0	32.0	29.0
6	23.0	20.0	16.0	6.0	10.0	18.0	23.0	25.0	24.0	31.0	32.0	---
7	22.0	19.0	16.0	5.0	9.0	20.0	23.0	24.0	27.0	30.0	32.0	23.0
8	22.0	18.0	20.0	6.0	10.0	18.0	20.0	28.0	28.0	30.0	33.0	23.0
9	24.0	15.0	15.0	5.0	10.0	19.0	19.0	26.0	30.0	31.0	33.0	28.0
10	25.0	22.0	17.0	6.0	11.0	20.0	17.0	28.0	29.0	29.0	31.0	25.0
11	22.0	---	---	9.0	9.0	18.0	25.0	22.0	29.0	28.0	31.0	26.0
12	30.0	15.0	13.0	11.0	11.0	17.0	18.0	17.0	29.0	32.0	30.0	26.0
13	21.0	15.0	11.0	7.0	12.0	18.0	19.0	25.0	27.0	28.0	30.0	29.0
14	22.0	16.0	10.0	7.0	15.0	18.0	22.0	26.0	29.0	30.0	32.0	30.0
15	21.0	15.0	10.0	9.0	13.0	15.0	22.0	27.0	29.0	32.0	31.0	---
16	23.0	15.0	10.0	12.0	13.0	12.0	23.0	27.0	29.0	32.0	32.0	27.0
17	30.0	20.0	9.0	12.0	13.0	13.0	25.0	29.0	30.0	32.0	31.0	28.0
18	23.0	15.0	8.0	12.0	13.0	13.0	22.0	27.0	30.0	---	30.0	28.0
19	22.0	15.0	12.0	14.0	14.0	15.0	23.0	---	30.0	33.0	33.0	29.0
20	19.0	16.0	9.0	10.0	13.0	17.0	---	25.0	27.0	30.0	32.0	29.0
21	20.0	---	12.0	10.0	16.0	19.0	25.0	25.0	30.0	32.0	32.0	31.0
22	19.0	16.0	12.0	10.0	---	20.0	25.0	25.0	31.0	31.5	32.0	28.0
23	20.0	20.0	12.0	12.0	17.0	19.0	25.0	20.0	30.0	31.0	32.0	30.0
24	21.0	---	12.0	10.0	15.0	23.0	22.0	28.0	30.0	31.0	30.0	29.0
25	23.0	17.0	---	8.0	17.0	23.0	26.0	---	31.0	30.0	31.0	31.0
26	22.0	---	9.0	12.0	15.0	22.0	25.0	28.0	28.0	32.0	32.0	29.0
27	23.0	13.0	10.0	10.0	20.0	22.0	24.0	27.0	31.0	32.0	31.0	30.0
28	20.0	13.0	9.0	---	20.0	25.0	22.0	28.0	32.0	32.0	30.0	30.0
29	21.0	12.0	8.0	13.0	20.0	19.0	25.0	27.0	31.0	30.0	30.0	28.0
30	22.0	13.0	10.0	---	---	20.0	22.0	---	25.0	28.0	30.0	22.0
31	---	---	9.0	15.0	---	19.0	---	26.0	---	30.0	29.0	---
MEAN	22.5	17.5	12.0	9.5	13.5	18.5	22.5	25.5	28.0	30.5	31.0	28.0

08148000 LAKE BUCHANAN NEAR BURNET, TX

LOCATION.--Lat 30°45'04", long 98°25'06", Burnet County, Hydrologic Unit 12090201, in powerhouse at Buchanan Dam on Colorado River, 1.3 mi upstream from bridge on State Highway 29, 11 mi west of Burnet, and at mile 413.6.

DRAINAGE AREA.--31,910 mi², approximately, of which 11,398 mi² probably is noncontributing.

PERIOD OF RECORD.--May 1937 to current year. Prior to Oct. 1, 1968, published as Buchanan Reservoir.

REVISED RECORDS.--WSP 1118: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Lower Colorado River Authority). Prior to July 1938, temporary staff and float gages at same site and datum 0.48 ft higher.

REMARKS.--The lake is formed by two reinforced concrete multiple-arch sections, three banks of tainter gates, a 1,100-foot uncontrolled emergency concrete spillway, and natural ground. A net opening of 1,270 ft is controlled by thirty 33- by 15-foot and by seven 40- by 15-foot tainter gates. The dam was completed and storage began May 20, 1937. Water is used for power development and for irrigation below Columbus. The power generating features consist of three generating units, each with a 12,677 kilowatt capacity. A pump-back unit, with a capacity of 840 ft³/s, returns water from Inks Lake to Lake Buchanan during off-peak power demand periods. Inflow is largely regulated by twelve major reservoirs with a combined capacity of 2,438,000 acre-ft, of which 1,091,000 acre-ft is for flood control. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08147000. The capacity table is based on a 1987 survey. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	1,025.5	-
Crest of gravity overflow spillway (top of conservation storage)....	1,020.0	910,800
Crest of spillway (15 ft gates).....	1,005.0	609,200
Crest of spillway (25 ft gates).....	995.0	454,100
Invert of three 12-foot-diameter penstocks.....	937.0	21,100

COOPERATION.--Capacity curve and gage-height record were furnished by the Lower Colorado River Authority.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,010,000 acre-ft Jan. 24, 1968 (gage height, 1,020.8 ft); minimum after initial filling of lake in July 1938, 340,800 acre-ft Sept. 8-10, 1952 (gage height, 983.4 ft).

EXTREMES (AT 2400) FOR CURRENT YEAR.--Maximum contents observed, 893,500 acre-ft June 5 (gage height, 1,019.23 ft); minimum, 727,600 acre-ft Sept. 30 (gage height, 1,011.35 ft).

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

1,011.0	720,300	1,017.0	844,300
1,014.0	780,800	1,020.0	910,800

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	861500	865000	868100	881400	878500	885000	873900	863100	869400	844300	849700	799500
2	862400	865500	867900	881600	878500	886800	872100	863500	876300	843200	850000	797700
3	861800	865500	867400	882100	879200	884300	871900	863500	888500	843600	850200	796000
4	861800	866100	877900	882500	879400	882300	872100	863300	892300	843900	850400	793100
5	862200	866100	878300	882800	880100	880100	871000	862800	893500	844300	850400	790200
6	862200	865700	879000	883000	879400	878100	870900	862400	893000	843900	850400	787700
7	862000	865900	879200	883600	880100	875900	869000	862600	892100	843600	850400	785400
8	861800	867000	879600	881200	880500	875200	868800	862800	891700	841300	850200	782700
9	861300	867700	879200	879400	881000	873400	869400	862000	889400	841100	848400	780000
10	862200	869900	879400	878300	882300	872600	869000	862000	886800	840800	846700	777300
11	862200	869900	879900	876300	881200	872300	865700	865000	884300	842800	844500	774400
12	862200	869400	879900	875700	881000	872800	864200	864800	882500	845200	843000	771800
13	861800	869900	880100	876100	880800	872600	863500	864800	878100	848900	840200	769100
14	861500	869900	877600	875400	881600	871200	863100	865900	875400	850600	838000	766400
15	862200	869000	875400	875400	881900	870300	863300	866300	874100	851300	836300	763800
16	861500	873000	875900	875400	881900	870100	863300	868300	871400	851500	832700	761300
17	862000	872600	874800	877200	883400	870300	864600	868300	868300	851500	830500	763400
18	862200	871900	875000	877600	883600	870800	864600	868300	865700	851500	829200	760100
19	862600	872300	875400	878100	883400	871000	863500	869200	863700	851500	827700	758100
20	862800	872100	874800	876300	884100	871000	862200	871000	862000	851500	825400	754800
21	862400	872100	878100	874800	884300	871000	862200	871000	860400	851700	823200	752000
22	863100	871400	878500	875000	885000	871200	862400	870600	857600	851500	820500	749000
23	863700	871000	879400	874800	885000	871900	863300	870300	855600	851100	818600	745600
24	863500	870100	880100	875200	885200	872300	862800	870600	853500	850800	816200	742800
25	863900	869900	881000	875000	884800	872600	863100	870300	852600	850800	814300	740900
26	864400	869400	881400	875400	884500	873000	863300	870300	854300	850600	811800	738400
27	864400	869200	881900	875200	885000	872600	862800	869900	853200	850400	809900	735400
28	864400	869200	882100	876100	885200	873000	862400	869400	851500	850200	808000	732000
29	864400	869200	881200	876300	885900	873900	863500	869900	848000	850200	805400	730200
30	864600	869200	880100	876800	---	873200	863700	869900	844900	850000	802500	727600
31	864600	---	881400	877900	---	873400	---	869400	---	850000	800600	---
MAX	864600	873000	882100	883600	885900	886800	873900	871000	893500	851700	850400	799500
MIN	861300	865000	867400	874800	878500	870100	862200	862000	844900	840800	800600	727600
(↑)	1017.93	1018.14	1018.69	1018.53	1018.89	1018.33	1017.89	1018.15	1017.03	1017.26	1014.95	1011.37
(Φ)	+11100	+4600	+12200	-3500	+8000	-12500	-9700	+5700	-24500	+5100	-49400	-73000

CAL YR 1987 MAX 989000 MIN 861300 (Φ) -5400
WTR YR 1988 MAX 893500 MIN 727600 (Φ) -125900

(↑) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

COLORADO RIVER BASIN

99

08150000 LLANO RIVER NEAR JUNCTION, TX

LOCATION.--Lat 30°30'15", long 99°44'03", Kimble County, Hydrologic Unit 12090204, on right bank 960 ft upstream from low-water crossing, 1.0 mi east of Junction, 2.6 mi downstream from bridge on Interstate Highway 10, 2.8 mi downstream from confluence of North and South Llano Rivers, 5.3 mi upstream from Johnson Fork, and 114.8 mi upstream from mouth.

DRAINAGE AREA.--1,854.14 mi², of which 5.14 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year.

REVISED RECORDS.--WSP 568: 1915-16, 1918-20, 1922. WDR TX-81-3: Drainage area. WSP 1922: 1920, 1923.

GAGE.--Water-stage recorder. Datum of gage is 1,636.32 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 14, 1925, nonrecording gage, and Aug. 14, 1925, to May 17, 1940, and Aug. 18, 1944, to Oct. 12, 1981, water-stage recorder at site 5,330 ft downstream at datum 6.0 ft lower, designated as regular gage (destroyed by flood of Oct. 13, 1981).

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--73 years, 195 ft³/s (1.43 in/yr), 141,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 319,000 ft³/s June 14, 1935 (gage height, 43.3 ft at regular gage, 41.4 ft at former gage 5,330 ft downstream, from floodmarks), from rating curve extended above 54,000 ft³/s on basis of slope-area measurements of 154,000 and 319,000 ft³/s; minimum, 3.1 ft³/s Aug. 16, 17, 1956. Maximum stage since at least 1875, that of June 14, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--There was a major flood in 1889 which was the highest known prior to June 14, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 11	1930	*54,300	*23.38	No other peak greater than base discharge.			
Minimum daily discharge, 126 ft ³ /s June 22-24.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	233	200	203	192	180	165	161	154	168	134	216	145
2	229	200	203	190	179	164	158	154	171	133	220	144
3	226	200	201	192	178	160	155	154	216	135	214	145
4	222	200	200	191	177	160	149	154	181	131	210	145
5	221	200	200	190	176	161	153	154	172	129	201	142
6	221	200	201	192	178	161	158	154	167	130	196	142
7	217	199	199	192	178	160	156	154	164	128	193	139
8	215	283	199	192	176	168	154	154	160	133	187	138
9	213	362	197	191	176	171	157	154	156	131	183	137
10	212	253	199	190	175	165	155	153	151	131	183	136
11	211	233	198	190	172	161	152	154	149	24100	181	137
12	210	226	197	190	172	161	152	168	147	6300	179	136
13	210	223	197	187	173	159	152	166	145	925	174	136
14	211	220	197	187	174	159	151	158	144	630	169	136
15	210	217	199	187	172	159	152	153	141	530	168	135
16	210	215	197	188	173	158	151	149	140	512	165	134
17	208	213	198	187	173	161	157	147	139	454	166	177
18	207	212	198	187	172	158	156	144	137	409	165	180
19	205	210	216	187	172	159	152	152	133	368	165	164
20	212	210	214	183	173	159	150	166	130	338	161	159
21	207	210	206	182	171	158	149	806	129	326	156	153
22	202	210	201	183	170	159	149	455	126	311	153	149
23	204	209	200	184	166	158	156	289	126	293	151	148
24	208	209	200	183	165	157	156	239	126	277	151	148
25	208	207	197	182	167	157	160	211	134	264	161	147
26	206	203	196	182	168	156	155	193	167	252	156	145
27	202	206	195	183	170	155	152	186	164	243	150	144
28	199	203	195	181	170	155	152	181	152	243	145	142
29	199	203	193	180	167	154	154	178	145	231	145	142
30	200	203	193	180	---	157	154	174	140	222	146	142
31	200	---	192	180	---	160	---	172	---	230	147	---
TOTAL	6538	6539	6181	5785	5013	4955	4618	6180	4520	38773	5357	4367
MEAN	211	218	199	187	173	160	154	199	151	1251	173	146
MAX	233	362	216	192	180	171	161	806	216	24100	220	180
MIN	199	199	192	180	165	154	149	144	126	128	145	134
AC-FT	12970	12970	12260	11470	9940	9830	9160	12260	8970	76910	10630	8660
CFSM	.11	.12	.11	.10	.09	.09	.08	.11	.08	.67	.09	.08
IN.	.13	.13	.12	.12	.10	.10	.09	.12	.09	.78	.11	.09

CAL YR 1987	TOTAL 105726	MEAN 290	MAX 4580	MIN 156	AC-FT 209700	CFSM .16	IN. 2.12
WTR YR 1988	TOTAL 98826	MEAN 270	MAX 24100	MIN 126	AC-FT 196000	CFSM .15	IN. 1.98

08150700 LLANO RIVER NEAR MASON, TX

LOCATION.--Lat 30°39'38", long 99°06'32", Mason County, Hydrologic Unit 12090204, on right bank 98 ft downstream from downstream bridge on U.S. Highway 87, 1.0 mi upstream from Beaver Creek, 9.1 mi southeast of Mason, 10.2 mi downstream from James River, and 61.1 mi upstream from mouth.

DRAINAGE AREA.--3,247.14 mi², of which 5.14 mi² probably is noncontributing.

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

REVISED RECORD.--WDR TX-75-3: 1968(P). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,230.36 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 19, 1971, at site 190 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperatures were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1969-88), 337 ft³/s (1.41 in/yr), 244,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260,000 ft³/s Sept. 8, 1980 (gage height, 37.00 ft, from floodmark), from rating curve extended above 151,000 ft³/s on basis of slope-area measurement and discharge measurement of 145,000 ft³/s; minimum, 16 ft³/s July 23, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, about 46 ft June 14, 1935 (discharge, about 380,000 ft³/s), from information by State Department of Highways and Public Transportation; at site 17.0 mi downstream discharge was 388,000 ft³/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	0330	*61,600	*a18.40	No other peak greater than base discharge.			

(a) From floodmark.

Minimum daily discharge, 144 ft³/s June 24, 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	402	266	269	261	246	224	204	182	221	187	258	177
2	360	266	269	257	246	220	207	182	244	178	259	176
3	342	267	268	259	246	216	202	182	956	173	250	175
4	331	265	267	259	242	214	195	176	367	170	249	173
5	328	264	265	256	240	214	197	173	273	164	248	172
6	319	264	261	258	243	214	189	173	244	158	241	170
7	311	261	263	264	245	210	191	173	229	156	234	168
8	306	482	264	260	244	218	197	169	221	152	230	168
9	299	636	264	258	241	219	207	164	212	152	223	168
10	297	551	264	256	238	221	200	164	197	152	214	167
11	297	415	260	255	235	215	197	179	192	2620	211	167
12	293	337	256	253	235	207	194	218	188	29900	211	167
13	293	311	256	253	233	203	195	207	184	2700	209	163
14	293	302	258	253	231	205	191	202	180	1310	204	162
15	293	298	260	250	231	204	189	197	176	881	200	161
16	293	304	260	249	231	203	192	193	172	650	198	162
17	290	297	262	249	231	215	196	188	166	506	194	176
18	288	286	262	249	231	216	200	177	164	422	193	228
19	282	277	295	249	229	214	196	188	161	374	206	240
20	286	275	313	247	228	211	190	211	160	362	201	205
21	283	274	307	246	228	210	187	234	159	345	195	191
22	290	271	290	244	228	210	185	996	152	333	194	184
23	293	271	279	245	226	211	191	637	148	321	190	179
24	294	271	275	243	224	211	192	350	144	305	186	177
25	297	271	272	244	224	207	196	288	144	293	186	175
26	290	272	275	246	226	200	188	262	196	285	183	173
27	281	276	271	246	228	201	184	235	231	278	187	173
28	278	278	268	243	228	205	180	228	248	272	183	172
29	270	274	267	244	228	205	180	221	226	269	180	173
30	267	271	264	244	---	198	185	220	201	266	179	178
31	267	---	264	246	---	195	---	221	---	260	178	---
TOTAL	9313	9353	8368	7786	6786	6516	5797	7590	6756	44594	6474	5320
MEAN	300	312	270	251	234	210	193	245	225	1439	209	177
MAX	402	636	313	264	246	224	207	996	956	29900	259	240
MIN	267	261	256	243	224	195	180	164	144	152	178	161
AC-FT	18470	18550	16600	15440	13460	12920	11500	15050	13400	88450	12840	10550
CFSM	.09	.10	.08	.08	.07	.06	.06	.08	.07	.44	.06	.05
IN.	.11	.11	.10	.09	.08	.07	.07	.09	.08	.51	.07	.06

CAL YR 1987 TOTAL 173559 MEAN 476 MAX 11800 MIN 222 AC-FT 344300 CFSM .15 IN. 1.99
WTR YR 1988 TOTAL 124653 MEAN 341 MAX 29900 MIN 144 AC-FT 247200 CFSM .10 IN. 1.43

COLORADO RIVER BASIN

101

08150800 BEAVER CREEK NEAR MASON, TX

LOCATION.--Lat 30°38'36", long 99°05'44", Mason County, Hydrologic Unit 12090204, on left bank at downstream side of downstream bridge on U.S. Highway 87, 1.8 mi upstream from Llano River, 6.4 mi downstream from Spring Creek, and 11.1 mi southeast of Mason.

DRAINAGE AREA.--215 mi².

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

REVISED RECORDS.--WSP 2122: 1964-65. WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,253.24 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 3, 1978, at site 300 ft upstream at same datum.

REMARKS.--Records good. There is no known regulation or diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 17.7 ft³/s (1.12 in/yr), 12,820 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,900 ft³/s Aug. 3, 1978 (gage height, 24.0 ft, from floodmarks), from rating curve extended above 7,400 ft³/s on basis of slope-area measurements of 20,100 and 66,900 ft³/s; no flow at times most years.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 20	0515	*33	*1.82				

Minimum daily discharge, 0.04 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	6.2	5.8	6.5	5.0	4.3	3.2	13	1.9	2.7	.36	.21
2	6.3	6.2	5.5	6.2	5.0	4.3	3.2	6.5	2.8	2.1	.38	.21
3	5.6	6.2	5.4	6.2	5.0	4.3	3.2	4.1	43	1.8	.76	.16
4	5.2	5.9	5.3	6.2	5.0	4.3	3.0	3.0	16	1.5	.94	.14
5	4.6	5.8	5.0	6.2	5.2	4.3	2.9	2.4	8.7	1.3	1.0	.08
6	4.6	5.8	4.6	6.2	6.0	4.3	2.9	1.9	5.8	1.1	.90	.09
7	4.6	5.7	5.0	5.9	6.7	4.1	2.9	1.4	4.1	.96	.61	.09
8	4.4	6.8	4.6	5.8	6.9	3.6	2.9	1.4	3.0	.81	.42	.09
9	4.2	14	4.6	5.8	6.6	3.6	3.1	1.4	2.2	.70	.28	.09
10	3.9	14	4.6	5.8	6.1	3.6	4.7	1.4	1.4	.69	.28	.09
11	3.9	9.4	4.6	5.8	5.5	3.5	5.0	3.8	1.1	4.7	.28	.09
12	3.8	8.4	4.6	5.8	5.4	2.9	4.3	9.9	.93	19	.26	.07
13	3.6	8.0	4.5	5.5	5.4	2.9	3.8	8.1	.84	9.8	.20	.05
14	3.6	8.0	4.3	5.4	5.4	2.9	3.5	4.5	.80	5.6	.16	.06
15	3.6	7.6	4.3	5.4	5.4	2.9	3.2	2.7	.70	3.6	.10	.05
16	3.8	9.1	4.3	5.4	5.4	2.9	2.9	1.8	.68	2.6	.12	.04
17	3.9	13	4.2	5.4	5.4	3.7	3.3	1.4	.53	2.1	.09	1.4
18	3.9	10	4.6	5.4	5.4	6.9	4.6	1.2	.46	1.5	.12	4.3
19	4.3	8.0	15	5.2	5.4	6.3	4.0	4.6	.41	1.0	.19	6.6
20	6.1	7.4	24	5.0	5.4	4.9	2.5	19	.25	2.5	.23	4.5
21	6.2	7.0	13	4.6	5.4	4.3	2.2	19	.19	8.1	.99	3.1
22	6.2	6.6	10	4.6	5.2	4.0	1.9	13	.14	9.3	.81	2.3
23	6.2	6.6	8.5	4.6	4.4	3.9	2.2	7.1	.16	5.4	.44	1.8
24	7.0	6.6	8.0	4.6	3.9	3.9	3.0	4.6	.16	3.6	.36	1.3
25	7.4	6.4	7.6	4.6	3.9	3.5	4.0	3.6	.28	2.4	.35	1.0
26	7.6	6.2	7.5	4.6	3.9	3.4	1.8	2.8	12	1.7	.28	.97
27	7.6	6.2	8.0	4.6	3.9	3.2	1.2	2.4	13	1.3	.28	.79
28	7.1	6.2	7.6	4.6	4.1	3.2	.95	2.4	9.7	.92	.34	.66
29	6.6	5.8	6.5	4.9	4.3	3.2	.84	2.1	6.1	.67	.36	.57
30	6.6	5.8	6.6	5.0	---	3.2	13	1.8	4.0	.57	.36	3.6
31	6.6	---	6.6	5.0	---	3.2	---	1.8	---	.51	.35	---
TOTAL	166.4	228.9	214.8	166.8	150.6	119.5	100.19	154.1	141.33	100.53	12.60	34.50
MEAN	5.37	7.63	6.93	5.38	5.19	3.85	3.34	4.97	4.71	3.24	.41	1.15
MAX	7.6	14	24	6.5	6.9	6.9	13	19	43	19	1.0	6.6
MIN	3.6	5.7	4.3	4.6	3.9	2.9	.84	1.2	.14	.51	.09	.04
AC-FT	330	454	426	331	299	237	199	306	280	199	25	68
CFSM	.02	.04	.03	.03	.02	.02	.02	.02	.02	.02	.00	.01
IN.	.03	.04	.04	.03	.03	.02	.02	.03	.02	.02	.00	.01

CAL YR 1987 TOTAL 15336.3 MEAN 42.0 MAX 2200 MIN 3.2 AC-FT 30420 CFSM .20 IN. 2.65
WTR YR 1988 TOTAL 1590.25 MEAN 4.34 MAX 43 MIN .04 AC-FT 3150 CFSM .02 IN. .28

08151500 LLANO RIVER AT LLANO, TX

LOCATION.--Lat 30°45'04", long 98°40'10", Llano County, Hydrologic Unit 12090204, on right bank in Llano, 0.4 mi downstream from bridge on State Highway 16, 7 mi upstream from Little Llano River, and 29.3 mi upstream from mouth.

DRAINAGE AREA.--4,197.14 mi², of which 5.14 mi² probably is noncontributing.

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

Water-quality records.--Chemical analyses: April 1948 to October 1967. Chemical and Biochemical analyses: April 1979 to September 1986. Sediment analyses: September 1964, April 1979 to September 1986.

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

GAGE.--Water-stage recorder. Datum of gage is 970.01 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are many small diversions above station. Part of low flow of Llano River disappears into various formations, many of which are faulted, between stations near Junction and Llano. Gage-height telemeter and rain gage at station.

AVERAGE DISCHARGE.--49 years, 364 ft³/s (1.18 in/yr), 263,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 232,000 ft³/s Sept. 10, 1952 (gage height, 32.6 ft), from rating curve extended above 129,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1952-56, 1964, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, 41.5 ft June 14, 1935 (discharge, 380,000 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	0930	*72,100	*19.21	No other peak greater than base discharge.			
Minimum daily discharge, 96 ft ³ /s June 24.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	528	284	297	285	270	251	202	169	227	181	322	134
2	468	279	296	282	272	256	197	182	243	165	327	134
3	414	279	292	285	267	249	195	174	865	153	310	135
4	386	279	285	285	259	242	198	169	935	141	296	125
5	369	276	282	281	260	235	193	157	555	126	291	118
6	354	270	274	284	268	229	189	149	376	114	277	122
7	345	268	262	290	281	228	186	145	287	109	272	127
8	334	327	264	290	284	230	182	142	236	103	260	125
9	322	458	262	287	283	241	196	142	211	98	252	123
10	312	692	262	282	277	242	221	137	191	99	252	121
11	308	624	260	280	264	244	213	174	181	184	253	123
12	305	469	253	283	255	232	201	188	170	37000	243	118
13	302	398	254	279	253	218	188	232	163	5730	228	127
14	302	360	260	276	252	210	183	214	163	2000	220	119
15	302	344	257	273	246	210	186	206	158	1180	211	114
16	302	384	258	275	247	210	184	192	153	901	197	111
17	302	361	261	276	254	242	191	180	149	757	190	179
18	302	343	259	279	260	244	193	168	142	672	210	260
19	303	317	425	275	257	242	201	168	131	608	190	285
20	320	308	477	265	257	235	198	224	124	623	184	363
21	301	299	452	258	254	226	188	300	124	613	184	289
22	299	297	406	261	250	219	179	327	121	530	172	244
23	311	296	365	256	246	217	194	1130	110	507	159	215
24	314	290	342	253	240	218	183	671	96	470	158	205
25	319	291	327	253	235	215	192	478	143	433	152	185
26	322	291	338	249	235	208	193	374	224	404	145	181
27	310	304	325	251	242	203	175	315	199	382	140	172
28	298	300	312	255	249	201	174	264	256	364	136	164
29	293	308	299	259	251	204	170	231	244	343	147	159
30	288	308	293	262	---	199	164	254	208	337	136	184
31	285	---	290	267	---	199	---	250	---	335	136	---
TOTAL	10220	10304	9489	8436	7468	6999	5709	8106	7385	55662	6650	5061
MEAN	330	343	306	272	258	226	190	261	246	1796	215	169
MAX	528	692	477	290	284	256	221	1130	935	37000	327	363
MIN	285	268	253	249	235	199	164	137	96	98	136	111
AC-FT	20270	20440	18820	16730	14810	13880	11320	16080	14650	110400	13190	10040
CFSM	.08	.08	.07	.06	.06	.05	.05	.06	.06	.43	.05	.04
IN.	.09	.09	.08	.07	.07	.06	.05	.07	.07	.49	.06	.04

CAL YR 1987	TOTAL 240860	MEAN 660	MAX 17400	MIN 253	AC-FT 477700	CFSM .16	IN. 2.13
WTR YR 1988	TOTAL 141489	MEAN 387	MAX 37000	MIN 96	AC-FT 280600	CFSM .09	IN. 1.25

COLORADO RIVER BASIN

103

08152000 SANDY CREEK NEAR KINGSLAND, TX

LOCATION (REVISED).--Lat 30°33'27", long 98°28'18", Llano County, Hydrologic Unit 12090201, at right downstream end of bridge on State Highway 71, 6.6 mi upstream from mouth, and 7.3 mi south of Kingsland.

DRAINAGE AREA.--346 mi².

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

Water-quality records.--Sediment records: January 1968 to September 1975.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 862.31 ft above National Geodetic Vertical Datum of 1929. October 1966 to September 1986, at site 522 ft to the left and at same datum. October 1986 to May 19, 1988, at site 168 ft to the right and at same datum.

REMARKS.--Records fair. Some diversions above station for irrigation (amount unknown). Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--22 years, 62.8 ft³/s (2.46 in/yr), 45,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s June 16, 1981 (gage height, 17.63 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Sept. 11, 1952, the highest since at least 1881, reached a stage of 34.2 ft (discharge, 163,000 ft³/s), from slope-area measurement at gage site.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	1300	*1,660	*7.40				
Minimum discharge, no flow Sept. 1-16, 28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	7.7	28	17	29	14	17	11	15	30	7.4	.02
2	6.2	8.6	29	23	27	27	13	10	12	25	6.7	.00
3	5.6	10	29	25	28	24	12	9.6	214	21	8.3	e.00
4	4.5	12	28	24	30	16	12	9.0	101	14	7.0	e.00
5	4.4	13	29	24	33	13	12	9.0	43	11	6.1	.00
6	3.9	14	29	28	34	12	12	7.3	29	9.1	5.2	.00
7	3.1	16	27	28	35	12	11	5.9	20	7.8	3.6	.00
8	2.6	87	27	26	34	18	11	5.5	11	5.7	2.5	.00
9	2.7	43	27	26	33	16	11	4.7	7.7	5.0	2.4	.00
10	2.9	22	27	27	31	14	12	4.7	5.1	4.0	2.0	.00
11	2.9	15	27	27	32	13	13	6.3	3.2	19	2.1	.00
12	3.0	11	26	28	32	12	13	10	1.7	44	4.0	.00
13	3.1	9.9	25	28	32	12	13	7.8	.60	43	1.3	.00
14	3.0	10	27	28	32	13	13	7.8	.36	28	.67	.00
15	3.0	13	26	28	32	14	11	6.3	.21	17	.49	.00
16	3.6	61	26	29	30	15	9.6	7.8	.16	10	.39	.00
17	4.0	46	26	28	32	29	9.0	7.8	.11	8.0	.39	3.2
18	3.2	35	27	28	36	31	7.3	6.8	.07	6.2	.39	1.7
19	2.4	27	51	28	34	23	8.4	6.8	.04	4.7	.46	.71
20	2.2	22	50	28	32	18	7.8	14	.03	478	.48	.48
21	2.3	22	38	26	31	15	6.8	84	.02	401	.48	.35
22	3.7	24	31	27	17	13	6.8	40	.01	81	.46	.24
23	5.4	25	26	27	9.6	15	6.8	30	.01	40	.37	.20
24	7.0	26	23	27	11	16	5.9	23	.11	28	.26	.19
25	7.7	27	19	27	12	16	6.8	13	.36	23	.36	.14
26	7.5	27	32	27	13	16	6.8	8.4	728	14	.20	.07
27	6.4	34	29	27	15	17	5.9	6.8	283	11	.20	.02
28	6.4	30	24	28	15	17	5.8	6.3	193	8.8	.20	.00
29	6.7	26	16	28	15	18	9.6	6.3	63	7.3	.15	.06
30	7.1	28	15	29	---	14	12	11	41	8.4	.06	.76
31	7.7	---	16	30	---	15	---	8.2	---	7.5	.04	---
TOTAL	140.2	752.2	860	831	776.6	518	301.3	395.1	1772.79	1420.5	64.65	8.14
MEAN	4.52	25.1	27.7	26.8	26.8	16.7	10.0	12.7	59.1	45.8	2.09	.27
MAX	7.7	87	51	30	36	31	17	84	728	478	8.3	3.2
MIN	2.2	7.7	15	17	9.6	12	5.8	4.7	.01	4.0	.04	.00
AC-FT	278	1490	1710	1650	1540	1030	598	784	3520	2820	128	16
CFSM	.01	.07	.08	.08	.08	.05	.03	.04	.17	.13	.01	.00
IN.	.02	.08	.09	.09	.08	.06	.03	.04	.19	.15	.01	.00

CAL YR 1987	TOTAL 43006.44	MEAN 118	MAX 5850	MIN .11	AC-FT 85300	CFSM .34	IN. 4.62
WTR YR 1988	TOTAL 7840.48	MEAN 21.4	MAX 728	MIN .00	AC-FT 15550	CFSM .06	IN. .84

e Estimated.

COLORADO RIVER BASIN

08152900 PEDERNALES RIVER NEAR FREDERICKSBURG, TX

LOCATION.--Lat 30°13'13", long 98°52'10", Gillespie County, Hydrologic Unit 12090206, on left bank at downstream side of bridge on U.S. Highway 87, 2.0 mi upstream from Mueseback Creek, 3.8 mi south of Fredericksburg, and 88.7 mi upstream from mouth.

DRAINAGE AREA.--369 mi².

PERIOD OF RECORD.--July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,564.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation or diversion above station. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--9 years, 54.4 ft³/s (39,410 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s June 4, 1981 (gage height, 23.23 ft); no flow July 13-18, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Aug. 2, 1978, which is the highest since 1907, reached a stage of 41.6 ft (discharge not determined). The highest known discharge was 64,000 ft³/s June 1, 1979 (gage height, 34.4 ft, from floodmark), from rating curve extended above a discharge measurement of 42,300 ft³/s June 1, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	0100	6,550	16.13	July 11	1800	*7,490	*17.27
June 3	0530	1,520	8.70	July 20	2330	2,070	9.72

Minimum daily discharge (estimated), 9.4 ft³/s Sept. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	28	36	44	28	22	18	28	37	27	46	16
2	34	28	36	43	28	22	19	24	37	25	54	16
3	33	28	33	43	26	26	19	20	608	23	345	16
4	31	36	32	43	26	26	19	17	159	20	78	15
5	29	34	32	41	26	24	19	14	86	19	55	e14
6	28	32	32	41	26	22	21	11	57	22	48	e13
7	27	30	31	42	26	22	21	10	43	20	44	e13
8	25	37	29	41	26	24	21	11	38	17	41	e13
9	25	66	29	41	26	27	27	12	35	16	38	e13
10	24	56	28	41	26	28	29	10	32	15	35	e12
11	23	41	28	41	25	26	27	15	30	1520	33	e12
12	23	35	28	41	24	23	25	31	29	409	32	e11
13	23	34	27	40	24	21	23	34	28	163	30	e11
14	23	32	27	31	24	19	20	22	28	87	29	e10
15	22	33	27	31	24	18	20	15	28	66	27	e9.4
16	23	97	25	30	24	17	20	11	27	59	27	e11
17	24	113	26	31	23	22	21	11	26	53	25	14
18	25	61	27	33	23	31	25	11	23	45	24	17
19	25	47	117	33	24	31	23	10	23	40	23	21
20	29	41	178	31	24	25	20	725	21	648	23	19
21	36	39	90	31	23	24	16	1730	20	918	22	16
22	36	39	66	30	22	22	17	257	19	241	20	e15
23	36	38	57	29	20	22	17	154	17	141	17	e15
24	36	37	53	29	21	21	17	107	17	93	17	14
25	37	37	50	29	20	22	16	76	18	73	21	14
26	37	36	55	28	20	22	17	57	168	64	23	14
27	36	37	56	27	21	21	17	48	137	58	20	13
28	32	38	50	27	22	19	16	41	51	52	17	e13
29	28	39	47	27	22	20	17	39	34	49	17	e12
30	28	37	44	27	---	20	26	37	30	47	16	e11
31	27	---	44	27	---	18	---	37	---	46	16	---
TOTAL	899	1286	1440	1073	694	707	613	3625	1906	5076	1263	413.4
MEAN	29.0	42.9	46.5	34.6	23.9	22.8	20.4	117	63.5	164	40.7	13.8
MAX	37	113	178	44	28	31	29	1730	608	1520	345	21
MIN	22	28	25	27	20	17	16	10	17	15	16	9.4
AC-FT	1780	2550	2860	2130	1380	1400	1220	7190	3780	10070	2510	820

CAL YR 1987 TOTAL 46835 MEAN 128 MAX 3200 MIN 22 AC-FT 92900
WTR YR 1988 TOTAL 18995.4 MEAN 51.9 MAX 1730 MIN 9.4 AC-FT 37680

e Estimated.

08153500 PEDERNALES RIVER NEAR JOHNSON CITY, TX

LOCATION.--Lat 30°17'30", long 98°23'57", Blanco County, Hydrologic Unit 12090206, near left downstream end of bridge on U.S. Highway 281, 0.2 mi downstream from Towhead Creek, 1.1 mi northeast of Johnson City, 3.4 mi downstream from Buffalo Creek, and 48.0 mi upstream from mouth.

DRAINAGE AREA.--901 mi².

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

Water-quality records.--Chemical analyses: April 1948 to September 1950, October 1971 to September 1985.

REVISED RECORDS.--WSP 1632: 1953(M), 1957, 1958(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,096.70 ft above National Geodetic Vertical Datum of 1929. May 4 to Sept. 13, 1939, nonrecording gage, and Sept. 14, 1939, to Sept. 10, 1952, water-stage recorder at upstream side of bridge at same datum. Sept. 11, 1952, to June 29, 1953, nonrecording gage, and June 30, 1953, to Oct. 7, 1954, water-stage recorder at site 360 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. There are diversions above station for irrigation. During the year, the city of Fredericksburg discharged varying amounts of sewage effluent into the river upstream from station. The city of Johnson City diverts varying amounts of water from the pool at gage and discharge sewage effluent into river below the gage. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 4,580 acre-ft. These structures control runoff from 15.6 mi² in the Williamson Creek drainage basin. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--49 years (water years 1940-88), 185 ft³/s (134,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s Sept. 11, 1952 (gage height, 42.5 ft, from floodmark), from rating curve extended above 116,000 ft³/s on basis of slope-area measurement of 441,000 ft³/s; no flow at times in 1951-52, 1954, 1956-57, 1963-64, 1967-68, 1971, and 1984-85.
Maximum stage since at least 1859, 42.5 ft Sept. 11, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 33 ft from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	0200	*14,300	*14.27	July 12	0330	5,940	12.57
June 26	0700	6,860	12.79	July 21	1730	4,150	12.09

Minimum daily discharge, 19 ft³/s Sept. 28-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	93	96	87	78	71	67	47	96	106	96	26
2	106	88	97	88	78	57	72	46	96	83	98	25
3	106	80	95	88	80	51	68	43	872	51	361	23
4	106	80	88	88	71	64	71	45	438	34	278	22
5	106	80	87	88	76	68	70	40	204	30	146	26
6	101	80	83	92	84	60	68	36	149	30	111	25
7	101	80	80	89	87	60	72	35	129	29	91	25
8	99	277	80	88	81	52	70	34	116	30	88	24
9	96	173	80	88	76	56	72	35	95	26	79	24
10	96	139	80	88	79	66	64	34	84	25	62	24
11	96	127	74	88	44	60	67	47	79	28	77	24
12	96	108	72	87	71	59	79	115	73	1930	76	22
13	96	100	72	87	73	55	80	101	67	298	73	21
14	93	93	52	88	64	51	67	62	72	162	67	21
15	88	96	64	83	68	50	62	51	75	116	57	22
16	88	117	72	86	68	50	59	62	72	96	51	21
17	88	147	71	88	68	51	60	52	72	80	43	22
18	88	147	72	81	66	62	38	42	74	81	55	95
19	88	119	116	78	74	88	58	39	76	69	50	76
20	82	111	220	67	71	82	56	85	72	594	38	37
21	84	103	199	76	74	70	53	5960	70	2310	31	30
22	88	100	153	80	72	63	57	622	63	812	29	28
23	88	100	126	79	62	68	52	253	69	280	28	27
24	88	95	115	63	64	69	47	174	71	197	25	24
25	88	88	102	61	67	66	48	150	71	159	33	22
26	84	88	157	71	69	72	46	139	2030	135	36	21
27	84	89	170	76	75	71	33	124	606	118	26	22
28	91	88	119	74	80	60	35	106	264	110	26	19
29	98	88	106	69	83	59	37	101	170	99	27	19
30	96	91	99	70	---	68	54	111	138	91	28	36
31	91	---	94	72	---	72	---	97	---	87	27	---
TOTAL	2906	3265	3191	2508	2103	1951	1782	8888	6563	8296	2313	853
MEAN	93.7	109	103	80.9	72.5	62.9	59.4	287	219	268	74.6	28.4
MAX	106	277	220	92	87	88	80	5960	2030	2310	361	95
MIN	82	80	52	61	44	50	33	34	63	25	25	19
AC-FT	5760	6480	6330	4970	4170	3870	3530	17630	13020	16460	4590	1690

CAL YR 1987 TOTAL 196447 MEAN 538 MAX 14500 MIN 52 AC-FT 389700
WTR YR 1988 TOTAL 44619 MEAN 122 MAX 5960 MIN 19 AC-FT 88500

COLORADO RIVER MAIN STEM

08154500 LAKE TRAVIS NEAR AUSTIN, TX

LOCATION.--Lat 30°23'29", long 97°54'24", Travis County, Hydrologic Unit 12090205, in powerhouse at Mansfield Dam on Colorado River, 7.3 mi downstream from Sandy Creek, 12 mi northwest of Austin, and at mile 318.0.

DRAINAGE AREA.--38,755 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1940 to current year. Prior to October 1948, published as Marshall Ford Reservoir near Austin.

REVISED RECORDS.--WSP 1342: Drainage area. WDR TX-83-3: 1982.

GAGE.--Nonrecording gage. Datum of gage is 0.12 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Dec. 26, 1940, staff gages on left bank near dam, datum is National Geodetic Vertical Datum of 1929, unadjusted. Dec. 26, 1940, to February 1942, mercury manometer in powerhouse, datum is National Geodetic Vertical Datum of 1929, unadjusted.

REMARKS.--The lake is formed by a 7,098-foot-long concrete gravity, earth, and rockfill dam. Storage began Sept. 9, 1940, and dam was completed in early 1942. Capacity curve is based on an October 1939 survey. Capacity between gage heights 681.0 and 714.0 ft is 778,000 acre-ft and is reserved for flood control. Water is used for power development and for irrigation below Columbus. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08153500. Diversion for municipal and irrigation purposes are pumped from lake, and minor amounts of sewage effluent are discharged into the lake. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam (roadway).....	750.1	-
Design flood.....	748.9	3,223,000
Crest of spillway.....	714.0	1,950,000
Top of power storage.....	681.0	1,172,000
Lowest gated outlet (invert).....	535.8	27,900

COOPERATION.--Records of daily gage heights and capacity curve furnished by Lower Colorado River Authority.

EXTREMES (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,770,000 acre-ft May 18, 1957 (gage height, 707.4 ft); minimum, 332,600 acre-ft Aug. 13, 14, 1951 (gage height, 614.2 ft).

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 1,135,000 acre-ft Feb. 26-28; maximum gage height, 679.06 ft Feb. 26, 27; minimum contents, 941,200 acre-ft July 10 (gage height, 667.70 ft).

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

667.0	930,400	673.0	1,026,000	678.0	1,116,000
670.0	976,900	676.0	1,080,000	680.0	1,152,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1072000	986400	1030000	1079000	1116000	1128000	1069000	1039000	985600	970700	986200	964500
2	1069000	990600	1030000	1078000	1117000	1125000	1070000	1035000	986900	966100	986400	963100
3	1064000	992200	1032000	1078000	1117000	1122000	1068000	1032000	992800	962500	988200	963400
4	1060000	992200	1032000	1080000	1117000	1119000	1068000	1029000	998600	958300	985600	962300
5	1058000	991200	1036000	1081000	1117000	1113000	1072000	1026000	999500	955000	983000	960500
6	1056000	990900	1037000	1083000	1120000	1111000	1070000	1023000	1001000	953200	980800	961200
7	1052000	990700	1037000	1085000	1119000	1107000	1069000	1020000	1003000	949800	980300	959500
8	1048000	1005000	1039000	1089000	1119000	1105000	1069000	1018000	1004000	946200	979800	958900
9	1046000	1009000	1040000	1090000	1119000	1100000	1071000	1017000	1005000	943700	979200	958500
10	1042000	1008000	1040000	1092000	1120000	1094000	1070000	1014000	1005000	941200	977200	957800
11	1039000	1008000	1040000	1093000	1122000	1089000	1071000	1017000	1002000	943100	978000	956400
12	1035000	1008000	1040000	1095000	1122000	1088000	1070000	1015000	1003000	989800	979300	956100
13	1032000	1008000	1041000	1095000	1123000	1087000	1070000	1012000	1002000	1007000	979500	954900
14	1030000	1008000	1043000	1096000	1124000	1088000	1068000	1010000	999600	1011000	978700	953800
15	1027000	1010000	1043000	1097000	1125000	1088000	1068000	1006000	997900	1009000	978700	953000
16	1024000	1014000	1043000	1099000	1124000	1087000	1068000	1005000	994700	1009000	978800	954000
17	1023000	1013000	1048000	1099000	1130000	1091000	1066000	1001000	994000	1006000	979000	955500
18	1020000	1014000	1047000	1100000	1131000	1092000	1063000	997800	992200	1006000	978200	954900
19	1017000	1016000	1052000	1101000	1131000	1092000	1064000	995000	990300	1003000	978500	951300
20	1014000	1016000	1054000	1103000	1130000	1091000	1062000	996400	986900	1007000	976400	951300
21	1010000	1016000	1057000	1106000	1130000	1091000	1060000	1007000	983500	1008000	975800	950700
22	1007000	1017000	1059000	1107000	1130000	1089000	1058000	1006000	980600	1010000	975200	951200
23	1007000	1017000	1056000	1107000	1131000	1088000	1057000	1003000	979500	1009000	974300	951200
24	1005000	1021000	1057000	1108000	1131000	1085000	1054000	1001000	976300	1006000	975200	950200
25	1002000	1025000	1062000	1109000	1134000	1081000	1054000	1000000	974400	1003000	972700	949600
26	999800	1027000	1067000	1110000	1135000	1079000	1052000	994500	976900	1001000	970500	949800
27	996200	1028000	1070000	1110000	1135000	1075000	1049000	992200	977100	997400	967400	948800
28	992400	1030000	1072000	1110000	1135000	1074000	1045000	989000	975400	994700	968700	947000
29	993000	1030000	1073000	1110000	1131000	1073000	1044000	987700	973800	992700	966800	948400
30	989500	1030000	1075000	1110000	---	1071000	1042000	983800	973500	991400	965600	949300
31	986400	---	1076000	1113000	---	1069000	---	983300	---	989000	965000	---
MAX	1072000	1030000	1076000	1113000	1135000	1128000	1072000	1039000	1005000	1011000	988200	964500
MIN	986400	986400	1030000	1078000	1116000	1069000	1042000	983300	973500	941200	965000	947000
(↑)	670.59	673.16	675.80	677.85	678.85	675.38	673.88	670.40	669.78	670.75	669.23	668.22
(Φ)	-87600	+43600	+46000	+37000	+18000	-62000	-27000	-58700	-9800	+15500	-24000	-15700

CAL YR 1987 MAX 1428000 MIN 986400 (Φ) -216000
WTR YR 1988 MAX 1135000 MIN 941200 (Φ) -124700

(↑) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

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

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 3,610 ft³/s Mar. 3; no flow at times.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1540	.00	.00	.00	.00	2670	966	1790	1080	2130	1790	1640
2	1770	232	.00	.00	.00	1970	828	1660	847	2410	1500	1530
3	2180	.00	.00	.00	.00	3610	576	1490	810	2120	1840	1550
4	1730	.00		107	.00	3210	1400	1700	1310	2140	1740	1510
5	1680	397	.00	.00	138	3350	917	1830	1030	1960	1630	1590
6	1680	.00	.00	112	150	2980	358	1470	1430	1470	1720	1480
7	1580	64	.00	721	.00	3390	657	1250	1450	2120	1660	892
8	1750	.00	.00	.00	.00	3070	381	1440	1540	1640	1660	1580
9	1770	.00	318	689	.00	3400	361	1410	1560	1760	1580	1670
10	1610	.00	.00	422	150	3350	612	1360	2030	1710	1630	1490
11	1540	318	.00	80	.00	3180	892	1290	1920	1360	1400	1630
12	1330	239	.00	.00	.00	795	412	1030	2000	1780	1230	1460
13	1740	.00	.00	.00	.00	202	477	1680	1900	1980	1770	1810
14	1610	.00	274	.00	.00	428	509	1620	1990	1790	1590	1470
15	1780	.00	479	.00	134	433	521	1710	2190	1610	1490	1550
16	1580	.00	.00	.00	.00	516	768	1670	2060	1560	1590	1400
17	1720	451	368	.00	.00	436	1010	1590	2260	1770	1760	1340
18	1690	.00	.00	.00	.00	127	917	1600	2270	1750	1570	1680
19	1670	.00		145	.00	202	1150	1720	1950	2100	1510	1610
20	1390	122	.00	.00	.00		1230	1430	2280	2020	1740	1480
21	1620	.00	.00	.00	.00	169	882	941	2100	1450	1530	1560
22	1660	.00	.00	.00	.00	1940	983	1940	2340	2240	1710	1510
23	1260	.00	.00	.00	.00	1710	844	1670	2000	2070	1620	1670
24	1280	512	.00	.00	161	1600	737	1730	2340	2050	1400	1410
25	1720	.00	.00	.00	.00	1800	793	1760	2170	1800	1880	1640
26	1630	.00	438	.00	.00	1650	740	1650	2090	2020	1840	1560
27	1520	.00	.00	.00	.00	1690	1070	1740	2050	2150	1730	1590
28	1630	165	.00	107	.00	1740	1780	1580	2110	2040	1620	1620
29	1640	.00	.00	.00	3130	879	1410	1630	2240	1650	1820	1470
30	1620	.00	493	.00	---	1040	1780	1730	2010	1740	1550	1560
31	1500	---	.00	171	---	793	---	1580	---	1660	1560	---
TOTAL	50420	2500.00	2370.00	2554.00	3863.00	52330.00	25961	48691	55357	58050	50660	45952
MEAN	1626	83.3	76.5	82.4	133	1688	865	1571	1845	1873	1634	1532
MAX	2180	512	493	721	3130	3610	1780	1940	2340	2410	1880	1810
MIN	1260	.00	.00	.00	.00	.00	358	941	810	1360	1230	892
AC-FT	100000	4960	4700	5070	7660	103800	51490	96580	109800	115100	100500	91150
CAL												

COLORADO RIVER MAIN STEM

08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)
MAR 01...	0925	3520	560	8.10	11.5	9.8	91	0.1	210
APR 06...	1610	963	537	7.90	15.5	9.4	95	0.4	200
MAY 26...	1345	2380	548	7.60	14.5	8.7	86	0.3	200
JUN 21...	1240	2100	559	8.00	15.0	7.0	70	0	210
AUG 02...	1015	2480	585	7.60	16.5	5.5	57	0.1	210
SEP 01...	1205	2480	592	7.70	19.5	4.6	51	1.2	210
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 01...	50	48	22	34	1	3.8	161	43	56
APR 06...	--	44	21	34	1	3.4	--	46	53
MAY 26...	50	47	21	32	1	4.1	154	44	56
JUN 21...	54	49	22	34	1	3.4	159	42	55
AUG 02...	49	47	22	33	1	3.6	159	44	56
SEP 01...	--	46	24	35	1	3.4	--	43	57
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
MAR 01...	0.30	9.5	313	<0.010	0.200	<0.010	--	0.20	0.010
APR 06...	0.30	8.1	210	<0.010	0.200	0.020	0.18	0.20	0.020
MAY 26...	0.40	9.4	306	<0.010	0.200	<0.010	--	0.30	0.010
JUN 21...	0.40	9.2	310	<0.010	0.200	<0.010	--	0.40	0.010
AUG 02...	0.30	8.9	310	<0.010	0.300	0.030	0.27	0.30	0.020
SEP 01...	0.20	8.8	217	<0.010	0.100	<0.010	--	0.40	0.060

COLORADO RIVER BASIN

109

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX

LOCATION.--Lat 30°22'19", Long 97°47'04", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of bridge at Loop 360, 1.0 mi upstream from West Fork Bull Creek and Farm Road 2222, and 7.1 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--22.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1976 to July 1978 (operated as a flood-hydrograph partial-record station only), July 1978 to current year.

GAGE.--Water-stage recorder, concrete control, and crest-stage gage. Datum of gage is 534.08 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known regulation or diversion above station. There are two recording rain gages in the watershed. Gage-height telemeter at station.

AVERAGE DISCHARGE.--10 years, 12.7 ft³/s (7.73 in/yr), 9,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft³/s May 13, 1982 (gage height, 11.96 ft); no flow for several days in 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0300	*2,270	a*6.57	No other peak greater than base discharge.			

Minimum daily discharge, 0.18 ft³/s July 3 and Sept. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	1.6	e17	11	6.2	4.1	e6.2	3.7	26	.35	.76	.53
2	1.8	1.5	15	10	5.8	4.1	e5.6	3.4	19	.24	.41	.53
3	1.5	1.5	14	10	5.6	4.1	e5.6	3.4	28	.18	1.3	.53
4	1.3	1.5	13	10	5.4	4.1	e4.8	2.9	10	.29	1.6	.49
5	1.6	1.5	12	10	4.8	4.1	3.8	2.6	8.3	1.6	1.4	.39
6	1.7	1.5	11	10	4.8	4.0	3.8	3.3	6.3	1.2	1.3	.33
7	1.6	1.5	10	10	4.7	3.9	3.5	2.4	5.9	2.1	1.5	.33
8	1.7	46	9.8	10	4.1	3.8	3.3	2.0	5.0	1.8	1.3	.33
9	2.0	29	9.5	11	4.6	3.5	6.4	2.3	3.9	1.3	1.2	.33
10	2.0	23	8.9	9.5	4.8	3.5	6.0	2.1	3.5	1.0	1.2	.33
11	1.5	19	8.8	8.9	4.6	3.2	4.2	2.7	3.0	1.0	2.4	.30
12	1.5	17	8.7	8.9	4.1	3.3	4.1	3.5	3.2	6.4	4.5	.31
13	1.6	17	8.9	8.4	4.1	3.0	3.9	2.5	3.1	2.9	2.1	.33
14	1.7	17	8.3	8.2	4.1	3.0	3.9	1.9	2.5	1.9	2.0	.27
15	1.7	18	6.8	7.5	4.1	3.0	3.9	1.8	1.3	1.2	1.8	.22
16	1.7	37	6.8	6.9	4.1	3.0	4.1	1.5	1.4	.67	1.5	.22
17	1.7	27	6.8	7.5	4.1	19	3.9	1.7	1.6	.64	1.6	.30
18	1.7	24	7.6	7.5	11	12	3.3	1.5	1.2	.40	1.1	.32
19	1.4	22	36	7.5	9.4	8.4	3.5	1.1	1.0	.48	.91	.27
20	1.2	19	21	7.5	6.7	7.2	3.5	4.1	1.1	.35	.96	.27
21	1.2	17	17	7.5	6.2	6.8	3.5	16	1.0	7.8	1.1	.27
22	1.8	17	15	7.5	5.6	6.7	3.8	4.7	.53	2.7	.91	.26
23	2.3	17	14	7.5	5.6	6.2	3.0	3.2	.88	1.8	.91	.24
24	2.1	13	14	7.2	5.6	6.2	3.0	2.7	1.7	1.2	.77	.22
25	2.0	761	14	6.8	5.1	6.1	3.0	2.2	2.5	1.2	.70	.22
26	2.0	e41	17	6.8	4.8	5.2	2.7	2.0	2.0	.82	.70	.23
27	2.0	e32	14	6.5	4.8	5.4	2.3	1.9	1.3	.64	.70	.27
28	1.9	e27	13	5.6	4.8	4.8	2.2	1.5	1.2	.42	.71	.22
29	1.8	e24	13	5.6	4.7	5.1	5.4	5.6	.58	.33	.72	.18
30	1.7	e21	12	5.6	---	4.8	5.7	7.1	.39	.60	.60	.56
31	1.7	---	12	5.8	---	4.8	---	4.1	---	.91	.53	---
TOTAL	53.4	1295.6	394.9	252.7	154.3	166.4	121.9	101.4	147.38	44.42	39.19	9.60
MEAN	1.72	43.2	12.7	8.15	5.32	5.37	4.06	3.27	4.91	1.43	1.26	.32
MAX	2.3	761	36	11	11	19	6.4	16	.28	7.8	4.5	.56
MIN	1.2	1.5	6.8	5.6	4.1	3.0	2.2	1.1	.39	.18	.41	.18
AC-FT	106	2570	783	501	306	330	242	201	292	88	78	19
CFSM	.08	1.94	.57	.37	.24	.24	.18	.15	.22	.06	.06	.01
IN.	.09	2.16	.66	.42	.26	.28	.20	.17	.25	.07	.07	.02

CAL YR 1987 TOTAL 10312.92 MEAN 28.3 MAX 1040 MIN .54 AC-FT 20460 CFSM 1.27 IN. 17.20
WTR YR 1988 TOTAL 2781.19 MEAN 7.60 MAX 761 MIN .18 AC-FT 5520 CFSM .34 IN. 4.64

e Estimated.

COLORADO RIVER BASIN

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1978 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: January to April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 03...	1035	1.6	553	--	19.5	2	0.40	--	--	0.2	27	260
FEB 17...	0825	4.4	555	8.00	13.5	4	0.50	8.6	84	0.9	20	57
APR 26...	0805	1.2	570	7.30	19.5	2	0.20	6.6	73	0.7	42	210
JUN 02...	1400	67	330	--	--	23	77	--	--	2.2	12000	K1600
02...	1500	30	375	--	--	17	16	--	--	2.1	4000	10000
02...	1600	26	356	7.90	--	--	--	--	--	--	--	--
02...	1700	25	366	--	--	22	73	--	--	1.6	--	--
02...	1800	22	416	--	--	--	--	--	--	--	--	--
02...	1900	19	443	--	--	17	26	--	--	1.4	K2200	K3600
AUG 01...	0920	0.33	545	8.00	26.0	3	1.3	6.0	75	0.3	K15	K5
DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 03...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	260	57	71	20	19	0.5	1.5	203	45	33	0.20	5.8
APR 26...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	160	32	47	11	11	0.4	2.3	131	29	15	0.30	7.1
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	200	62	47	19	31	1	2.7	134	53	50	0.40	12
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
NOV 03...	--	3	<1	--	<0.010	<0.100	0.010	0.19	0.20	0.030	1.8	--
FEB 17...	317	<1	<1	--	<0.010	<0.100	<0.010	--	0.20	<0.010	1.9	<1
APR 26...	--	<1	<1	--	<0.010	<0.100	<0.010	--	<0.20	<0.010	2.2	--
JUN 02...	--	138	21	0.190	0.010	0.200	0.020	0.48	0.50	0.030	7.6	--
02...	--	615	30	0.290	0.010	0.300	0.010	0.39	0.40	0.030	9.1	--
02...	201	--	--	--	--	--	--	--	--	--	--	--
02...	--	116	48	0.380	0.020	0.400	0.010	0.39	0.40	0.040	7.8	--
02...	--	--	--	--	--	--	--	--	--	--	--	4
02...	--	36	7	0.280	0.020	0.300	0.010	0.59	0.60	0.030	6.1	--
AUG 01...	296	2	2	--	<0.010	<0.100	0.120	0.38	0.50	0.060	2.8	<1
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	
NOV 03...	--	--	--	--	--	--	--	--	--	--	--	
FEB 17...	43	<1	<1	<1	<3	<5	2	<0.1	<1	<1.0	<3	
APR 26...	--	--	--	--	--	--	--	--	--	--	--	
JUN 02...	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	
02...	41	<1	<10	1	<3	<5	<1	--	<1	<1.0	<3	
02...	--	--	--	--	--	--	--	--	--	--	--	
AUG 01...	44	<1	<1	<1	9	<5	7	<0.1	<1	<1.0	9	

08154900 LAKE AUSTIN AT AUSTIN, TX

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

DRAINAGE AREA.--38,846 mi², of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1978 to current year.

301739097471601 - LAKE AUSTIN SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
08...	1000	1.00	530	8.10	8.0	10.4	88
08...	1002	10.0	530	8.10	8.0	10.4	88
08...	1004	25.0	530	8.10	8.0	10.4	88
APR							
20...	0805	1.00	552	8.20	18.5	8.6	94
20...	0807	10.0	552	8.20	18.0	8.7	94
20...	0809	20.0	552	8.10	17.5	8.3	88
20...	0811	30.0	552	7.90	16.0	7.0	72
20...	0813	35.0	552	7.90	16.0	6.9	71
JUL							
28...	0850	1.00	550	8.00	24.5	7.6	92
28...	0852	10.0	550	7.80	20.5	7.1	80
28...	0854	25.0	550	7.80	20.0	6.7	75

301739097471201 - LAKE AUSTIN SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN												
08...	0915	1.00	525	8.10	8.0	1.40	5	2.5	10.4	88	0.8	--
08...	0917	10.0	525	8.10	8.0	--	--	--	10.4	88	--	--
08...	0919	20.0	525	8.10	8.0	--	--	--	10.4	88	--	--
08...	0921	30.0	525	8.10	8.0	--	--	--	10.4	88	--	--
08...	0923	40.0	525	8.10	8.0	--	--	--	10.4	88	--	--
08...	0925	52.0	525	8.10	8.0	--	7	2.5	10.4	88	0.4	--
APR												
20...	0835	1.00	555	8.20	18.5	1.40	2	2.9	8.7	95	0.3	33
20...	0837	10.0	555	8.20	18.0	--	--	--	8.7	94	--	--
20...	0839	20.0	555	8.10	17.5	--	--	--	8.2	88	--	--
20...	0841	30.0	555	8.00	16.0	--	--	--	7.1	73	--	--
20...	0843	40.0	555	7.90	16.0	--	--	--	6.8	70	--	--
20...	0845	52.0	555	7.80	16.0	--	4	17	5.7	59	0.4	--
JUL												
28...	0805	1.00	550	8.00	24.5	1.30	3	2.1	7.6	92	0.4	K19
28...	0807	10.0	550	7.90	20.5	--	--	--	7.1	80	--	--
28...	0809	20.0	550	7.80	19.5	--	--	--	6.8	75	--	--
28...	0811	30.0	550	7.70	19.5	--	--	--	6.7	74	--	--
28...	0813	40.0	550	7.70	19.0	--	--	--	5.9	64	--	--
28...	0815	51.0	550	7.50	18.5	--	2	7.2	4.3	46	0.2	--

DATE	STREP- TOCOCCT FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN												
08...	52	210	48	54	18	26	0.8	3.4	161	40	44	0.20
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	210	47	54	18	26	0.8	3.4	162	39	44	0.20
APR												
20...	K52	210	52	49	22	33	1	3.4	161	45	55	0.30
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	210	54	49	22	33	1	3.4	159	45	56	0.30
JUL												
28...	43	210	54	48	22	34	1	3.5	157	41	59	0.20
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	210	53	48	22	34	1	3.6	158	41	58	0.20

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 - LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN												
08...	9.5	292	4	<1	0.190	0.010	0.200	0.020	0.28	0.30	0.010	4.1
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	<0.010	0.200	0.020	0.18	0.20	0.010	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	9.6	291	1	1	--	<0.010	0.200	0.020	0.28	0.30	0.010	3.2
APR												
20...	9.4	314	5	5	--	<0.010	0.200	0.030	0.27	0.30	<0.010	3.2
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	<0.010	0.200	0.050	0.25	0.30	<0.010	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	10	314	26	14	--	<0.010	0.200	0.120	0.38	0.50	<0.010	3.6
JUL												
28...	8.7	311	3	2	--	<0.010	0.100	<0.010	--	0.50	0.020	3.2
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	<0.010	0.200	<0.010	--	0.40	0.020	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	10	312	17	5	0.160	0.040	0.200	0.070	0.63	0.70	0.040	3.8
DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN												
08...	1	--	62	<1	--	<5	--	2	--	<3	--	<5
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	<10	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	1	6	62	<1	2	<5	<10	3	10	<3	7800	<5
APR												
20...	1	--	72	<1	--	<1	--	1	--	<3	--	<5
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	<10	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	1	7	72	<1	1	<1	10	2	20	8	14000	<5
JUL												
28...	1	--	76	<1	--	<1	--	2	--	<3	--	<5
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	20	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	1	6	79	1	1	<1	6	2	10	8	5100	<5
DATE	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY DIS- SOLVED (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L)
JAN												
08...	--	2	--	<0.1	--	<1	<1.0	<3	--	<3.0	<3.0	<3.0
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	<10	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	30	2	1100	<0.1	<0.10	<1	<1.0	<3	40	--	--	--
APR												
20...	--	<1	--	<0.1	--	<1	<1.0	<3	--	<0.20	<0.20	<0.20
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	<10	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	20	10	17000	<0.1	<0.01	<1	<1.0	5	50	--	--	--
JUL												
28...	--	<1	--	<0.1	--	<1	<1.0	3	--	<0.20	<0.20	<0.20
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	--	<10	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	10	30	790	<0.1	<0.01	<1	<1.0	6	30	--	--	--

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 - LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
JAN											
08...	<0.10	<0.10	<0.10	<2.0	<0.1	<0.1	<0.10	<2.0	<2.0	<0.10	<0.1
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	<0.10	<0.10	<0.10	<2.0	<0.1	<0.1	<0.10	<2.0	<2.0	<0.10	<0.1
APR											
20...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1
JUL											
28...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
28...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1

301739097470901 - LAKE AUSTIN SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
08...	1025	1.00	530	8.10	8.0	10.3	87
08...	1027	10.0	530	8.10	8.0	10.4	88
08...	1029	23.0	530	8.10	8.0	10.4	88
APR							
20...	0915	1.00	555	8.20	18.5	8.6	94
20...	0917	10.0	555	8.20	18.0	8.3	90
20...	0919	15.0	555	8.10	17.5	8.1	86
JUL							
28...	0900	1.00	550	7.80	24.5	7.6	92
28...	0902	10.0	550	7.80	21.0	7.1	81
28...	0904	23.0	550	7.80	20.0	6.7	75

302043097472401 - LAKE AUSTIN SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
JAN									
08...	1115	1.00	505	8.20	8.5	1.70	10.9	94	--
08...	1117	10.0	505	8.20	8.5	--	10.9	94	--
08...	1119	20.0	505	8.20	8.5	--	10.9	94	--
08...	1121	30.0	505	8.20	8.5	--	10.9	94	--
APR									
20...	0940	1.00	556	8.30	19.0	1.70	9.3	102	--
20...	0942	10.0	556	8.20	18.5	--	9.2	100	--
20...	0944	20.0	556	8.00	17.5	--	7.9	84	--
20...	0946	29.0	556	7.90	17.0	--	6.6	70	0.190
JUL									
28...	0935	1.00	545	7.80	26.0	1.10	7.3	91	--
28...	0937	10.0	545	7.70	20.5	--	6.8	76	--
28...	0939	20.0	545	7.70	19.5	--	6.8	75	--
28...	0941	29.0	545	7.70	19.5	--	6.8	75	--

COLORADO RIVER BASIN

115

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
08...	<0.010	<0.100	0.010	0.29	0.30	0.010	<10	<10
08...	--	--	--	--	--	--	--	--
08...	<0.010	<0.100	0.020	0.48	0.50	0.010	<10	<10
08...	<0.010	<0.100	0.020	0.48	0.50	0.010	<10	<10
APR								
20...	<0.010	0.100	0.020	0.28	0.30	<0.010	<10	<10
20...	--	--	--	--	--	--	--	--
20...	<0.010	0.200	0.030	0.27	0.30	<0.010	<10	<10
20...	0.010	0.200	0.060	0.24	0.30	<0.010	20	<10
JUL								
28...	<0.010	0.100	<0.010	--	1.1	0.020	<10	<10
28...	<0.010	0.200	<0.010	--	0.40	0.020	<10	<10
28...	--	--	--	--	--	--	--	--
28...	<0.010	0.200	<0.010	--	0.20	0.020	<10	<10

302044097472301 - LAKE AUSTIN SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
08...	1130	1.00	505	8.20	8.5	11.0	94
08...	1132	12.0	505	8.20	8.5	11.0	94
APR							
20...	0930	1.00	556	8.20	18.5	9.1	99
20...	0932	14.0	556	8.10	18.0	8.0	86
JUL							
28...	0920	1.00	550	7.90	26.0	7.4	92
28...	0922	10.0	550	7.70	20.0	6.7	75
28...	0924	15.0	550	7.60	19.5	6.5	72

301926097502201 - LAKE AUSTIN SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN										
08...	1145	1.00	538	8.20	8.0	2.60	4	0.80	11.2	95
08...	1147	10.0	538	8.20	8.0	--	--	--	11.2	95
08...	1149	20.0	538	8.20	8.0	--	--	--	11.2	95
08...	1151	30.0	538	8.20	8.0	--	9	0.80	11.2	95
APR										
20...	1010	1.00	552	8.20	17.5	1.80	2	2.4	8.6	92
20...	1012	10.0	552	8.10	16.5	--	--	--	8.2	86
20...	1014	20.0	552	8.10	16.0	--	--	--	8.0	83
20...	1016	25.0	552	8.10	16.0	--	3	7.8	8.0	83
JUL										
28...	1005	1.00	545	7.80	20.5	2.70	1	1.4	7.3	82
28...	1007	10.0	545	7.70	19.5	--	--	--	7.3	80
28...	1009	23.0	545	7.70	19.5	--	2	1.9	6.5	72

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 - LAKE AUSTIN SITE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
JAN 08...	0.6	--	K7	200	43	47	21	32	1	3.7
JAN 08...	--	--	--	--	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--	--	--	--	--
JAN 08...	0.4	--	--	210	46	48	21	32	1	3.9
APR 20...	0.2	K16	K1	210	48	48	21	34	1	3.4
APR 20...	--	--	--	--	--	--	--	--	--	--
APR 20...	--	--	--	--	--	--	--	--	--	--
APR 20...	0.3	--	--	210	52	49	21	34	1	3.4
JUL 28...	0.3	38	52	210	48	46	22	33	1	3.5
JUL 28...	--	--	--	--	--	--	--	--	--	--
JUL 28...	0.3	--	--	200	40	45	21	33	1	3.5

DATE	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, DIS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
JAN 08...	161	44	53	0.20	8.8	306	1	<1	--
JAN 08...	--	--	--	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--	--	--	--
JAN 08...	161	43	53	0.20	8.8	306	3	<1	0.090
APR 20...	159	43	56	0.30	9.4	310	16	8	--
APR 20...	--	--	--	--	--	--	--	--	--
APR 20...	--	--	--	--	--	--	--	--	--
APR 20...	157	44	56	0.30	9.3	311	29	22	--
JUL 28...	158	41	59	0.20	8.5	308	2	<1	--
JUL 28...	--	--	--	--	--	--	--	--	--
JUL 28...	159	42	52	0.20	8.4	300	5	1	--

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 08...	<0.010	0.100	0.010	0.19	0.20	0.010	3.0	7	2
JAN 08...	<0.010	0.100	0.010	0.49	0.50	0.010	--	<10	<10
JAN 08...	--	--	--	--	--	--	--	--	--
JAN 08...	0.010	0.100	<0.010	--	0.30	0.010	3.2	7	2
APR 20...	<0.010	0.200	0.030	0.37	0.40	<0.010	3.1	<3	<1
APR 20...	<0.010	0.200	0.030	0.27	0.30	<0.010	--	<10	<10
APR 20...	--	--	--	--	--	--	--	--	--
APR 20...	<0.010	0.200	0.050	0.25	0.30	0.020	3.5	<3	1
JUL 28...	<0.010	0.100	<0.010	--	0.60	0.020	3.0	<3	4
JUL 28...	<0.010	0.100	<0.010	--	0.40	0.020	--	10	<10
JUL 28...	<0.010	0.200	<0.010	--	0.30	0.020	2.6	4	6

302021097540001 - LAKE AUSTIN SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 08...	1215	1.00	530	8.40	8.0	3.30	11.8	100
JAN 08...	1217	16.0	530	8.40	8.0	--	11.8	100
APR 20...	1040	1.00	549	8.30	15.5	2.10	9.8	100
APR 20...	1042	10.0	549	8.30	15.0	--	9.8	99
APR 20...	1044	15.0	549	8.30	15.0	--	9.8	99
JUL 28...	1040	1.00	540	7.70	19.0	4.30	7.1	77
JUL 28...	1042	10.0	540	7.70	18.5	--	7.0	76
JUL 28...	1044	15.0	540	7.50	18.5	--	7.0	76

COLORADO RIVER BASIN

117

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302021097540001 - LAKE AUSTIN SITE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 08...	<0.010	<0.100	0.010	0.19	0.20	0.010	<10	<10
08...	<0.010	<0.100	<0.010	--	0.30	0.010	<10	<10
APR 20...	<0.010	0.200	0.030	--	<0.20	<0.010	20	<10
20...	--	--	--	--	--	--	--	--
20...	<0.010	0.200	0.050	0.25	0.30	<0.010	<10	<10
JUL 28...	<0.010	0.200	<0.010	--	0.40	0.020	<10	<10
28...	<0.010	0.200	<0.010	--	0.50	0.030	<10	<10
28...	<0.010	0.200	<0.010	--	0.50	0.020	<10	<10

302314097544901 - LAKE AUSTIN SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 08...	1245	1.00	537	8.20	11.0	1.60	4	1.4	9.8	89
08...	1247	8.00	537	8.20	11.0	--	--	--	9.8	89
APR 20...	1110	1.00	550	8.30	14.0	2.20	4	0.80	10.2	101
20...	1112	8.00	550	8.10	13.5	--	5	1.5	10.4	102
JUL 28...	1115	1.00	540	7.60	17.5	2.40	2	0.40	5.7	60
28...	1117	8.00	540	7.60	17.5	--	1	0.40	5.6	59

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO
JAN 08...	0.4	--	K7	200	46	46	21	33	1
08...	--	--	--	--	--	--	--	--	--
APR 20...	0.2	K3	<1	210	49	47	22	34	1
20...	0.4	--	--	210	49	48	21	34	1
JUL 28...	--	K4	44	200	46	45	22	33	1
28...	--	--	--	210	49	46	22	34	1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)
JAN 08...	4.7	156	43	54	0.20	9.3	305	12	3
08...	--	--	--	--	--	--	--	--	--
APR 20...	3.4	159	44	56	0.30	9.4	311	10	10
20...	3.4	158	44	56	0.30	9.0	310	6	6
JUL 28...	3.6	157	41	59	0.20	8.7	307	1	1
28...	3.6	157	41	59	0.20	8.8	309	<1	<1

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302314097544901 - LAKE AUSTIN SITE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN									
08...	<0.010	0.200	<0.010	--	0.30	0.010	3.1	<3	<1
08...	--	--	--	--	--	--	--	--	--
APR									
20...	<0.010	0.200	0.020	0.28	0.30	<0.010	2.8	4	1
20...	<0.010	0.200	0.020	0.28	0.30	0.030	3.0	<3	<1
JUL									
28...	<0.010	0.200	<0.010	--	0.60	0.020	2.9	<3	3
28...	<0.010	0.200	<0.010	--	0.30	<0.010	3.0	<3	3

COLORADO RIVER BASIN

119

08155260 BARTON CREEK NEAR CAMP CRAFT ROAD, AUSTIN, TX

LOCATION.--Lat 30°16'12", long 97°49'43", Travis County, Hydrologic Unit 12090205, on left bank about 0.5 mi south of Camp Craft Road, 1.0 mi downstream from bridge on Lost Creek Blvd., and 5 mi west of the State Capitol Building in Austin.

DRAINAGE AREA.--109 mi².

PERIOD OF RECORD.--September 1982 to September 1988 (discontinued).

Water-quality records: Chemical, biochemical, and pesticide analysis: September 1982 to September 1986.

GAGE.--Water-stage recorder. Altitude of gage is 570 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair above 10 ft³/s and poor below. Daily discharges are not published above 250 ft³/s. There is one recording rain gage in the watershed upstream from the gage. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 13.18 ft (from floodmark) June 10, 1987 (discharge not determined); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 8.47 ft Nov. 25 at 0715 hours (discharge not determined); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	.03	23	27	14	12	16	10	13	e1.5	e.43	e.02
2	1.7	.03	20	25	14	11	16	10	12	e1.5	e.41	e.02
3	1.4	.03	19	25	14	11	15	11	35	e1.4	e.39	e.01
4	1.0	.03	18	24	13	10	13	7.0	13	e1.4	e.37	e.01
5	.93	.03	17	23	13	10	12	3.3	12	e1.3	e.35	e.00
6	.94	.03	17	23	13	10	12	2.5	11	e1.3	e.34	e.00
7	.83	.02	16	24	13	9.4	11	2.4	8.5	e1.2	e.32	e.00
8	.71	10	15	25	13	9.6	11	2.6	6.0	1.2	e.30	e.00
9	.61	124	14	23	13	9.3	13	3.2	4.3	.79	e.35	e.00
10	.52	19	14	22	13	8.7	15	3.3	3.6	.74	e.45	e.00
11	.45	7.1	14	22	12	8.5	15	3.9	3.2	.82	e.60	e.00
12	.39	4.1	13	21	12	8.6	13	5.6	3.1	1.6	e.70	e.00
13	.34	1.7	12	21	12	7.9	12	4.8	2.7	1.6	e.64	e.00
14	.29	.41	12	20	12	7.6	11	4.6	2.6	1.3	e.59	e.00
15	.25	.25	11	20	12	7.6	10	4.4	2.4	1.0	e.54	e.00
16	.22	7.1	10	20	12	7.9	10	4.4	2.3	.90	e.49	e.00
17	.19	6.6	10	20	12	18	10	4.2	e2.0	.82	e.46	e.00
18	.16	4.4	10	20	13	104	11	3.9	e1.9	e.70	e.42	e.00
19	.13	5.2	22	19	21	58	10	3.8	e1.8	e.60	e.39	e.00
20	.11	3.9	38	18	26	32	9.6	3.9	e1.6	e.66	e.36	e.00
21	.09	2.6	31	17	19	25	8.1	55	e1.5	e.74	e.33	e.00
22	.08	1.1	24	16	14	22	6.1	53	e1.5	e.70	e.31	e.00
23	.09	.54	22	16	12	22	5.5	18	e1.4	e.67	e.27	e.00
24	.10	.38	22	16	11	22	4.0	13	e1.3	e.63	e.25	e.00
25	.10	---	24	15	11	21	3.5	11	e1.2	e.60	e.17	e.00
26	.08	81	27	15	11	19	2.6	6.5	e1.8	e.57	e.13	e.00
27	.07	42	26	14	11	18	2.0	4.7	e1.8	e.55	e.10	e.00
28	.05	35	27	14	11	17	1.8	4.0	e1.7	e.52	e.07	e.00
29	.05	29	26	14	11	17	2.9	3.6	e1.7	e.50	e.05	e.00
30	.04	26	25	14	---	16	8.3	3.7	e1.6	e.47	e.04	e.00
31	.03	---	26	14	---	16	---	3.5	---	e.45	e.03	---
TOTAL	13.85	---	605	607	388	576.1	290.4	274.8	157.5	28.73	10.65	0.06
MEAN	.45	---	19.5	19.6	13.4	18.6	9.68	8.86	5.25	.93	.34	.002
MAX	1.9	---	38	27	26	104	16	55	35	1.6	.70	.02
MIN	.03	---	10	14	11	7.6	1.8	2.4	1.2	.45	.03	.00
AC-FT	27	---	1200	1200	770	1140	576	545	312	57	21	.1

CAL YR 1987 TOTAL -- MEAN -- MAX -- MIN -- AC-FT --
WTR YR 1988 TOTAL -- MEAN -- MAX -- MIN -- AC-FT --

e Estimated.

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 west of the intersection of Ben White and Lamar Boulevards, and 4.3 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--116 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 510.32 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--Records fair except those below 3 ft³/s and estimated discharges, which are poor. No known regulation or diversions. Recording rain gage in the watershed above station.

AVERAGE DISCHARGE.--11 years, 45.7 ft³/s (5.35 in/yr), 33,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,100 ft³/s May 25, 1981 (gage height, 15.03 ft); no flow for many days each year.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	1100	*786	*5.54				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	e3.1	6.5	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	e2.6	4.8	.00	.00	.00	.00	1.5	.00	.00	.00
3	.00	.00	.88	4.0	.00	.00	.00	.00	4.4	.00	.00	.00
4	.00	.00	.67	3.0	.00	.00	.00	.00	.00	.04	.00	.00
5	.00	.00	.45	1.7	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.08	2.3	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	5.0	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	e.02	.00	6.1	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	e43	.00	5.1	.00	.00	.00	.00	.00	.00	.42	.00
10	.00	e.17	.00	2.7	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	e.00	.00	1.7	.00	.00	.00	.29	.00	.07	5.0	.00
12	.00	e.00	.00	1.2	.00	.00	.00	.00	.00	.25	.10	.00
13	.00	e.00	.00	.46	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	e.00	.00	.35	.00	.00	.00	.00	.00	.01	.00	.00
15	.00	e.00	.00	.33	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	3.1	.00	.27	.00	.00	.00	.00	.00	.00	2.6	.00
17	.00	e.00	.00	.26	.00	2.6	.00	.00	.00	.00	.12	.00
18	.00	e.00	.00	.26	.00	53	.00	.07	.00	.00	.00	.00
19	.00	e.00	.26	.22	.00	27	.00	.26	.00	.00	.00	.00
20	.00	e.00	19	.08	.00	6.3	.00	1.7	.00	.00	.00	.00
21	.00	e.00	16	.00	.00	.22	.00	4.0	.00	.00	.00	.00
22	.00	e.00	5.7	.00	.00	.06	.00	27	.00	.00	.00	.00
23	.00	e.00	1.5	.00	.00	.00	.00	.19	.00	.00	.00	.00
24	.00	e.00	.89	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	e267	1.1	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	e92	5.9	.00	.00	.00	.00	.00	.78	.00	.00	.00
27	.00	e36	6.0	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	e18	6.8	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	e9.9	7.1	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	e4.1	6.3	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	6.9	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	473.29	91.23	46.33	0.00	89.18	0.00	33.51	6.68	0.37	8.24	0.00
MEAN	.00	15.8	2.94	1.49	.00	2.88	.00	1.08	.22	.012	.27	.00
MAX	.00	267	19	6.5	.00	53	.00	27	4.4	.25	5.0	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	939	181	92	.0	177	.0	66	13	.7	16	.0
CFSM	.00	.14	.03	.01	.00	.02	.00	.01	.00	.00	.00	.00
IN.	.00	.15	.03	.01	.00	.03	.00	.01	.00	.00	.00	.00

CAL YR 1987 TOTAL 46963.76 MEAN 129 MAX 6320 MIN .00 AC-FT 93150 CFSM 1.11 IN. 15.06
WTR YR 1988 TOTAL 748.83 MEAN 2.05 MAX 267 MIN .00 AC-FT 1490 CFSM .02 IN. .24

e Estimated.

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1979 to current year. Pesticide analyses: January 1979 to September 1986. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)
JAN 11...	1045	5.0	464	8.40	3.0	3	0.30	13.6	102	0.3
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 11...	K1	K12	7	2	<0.010	0.100	<0.010	0.20	<0.010	0.7

COLORADO RIVER BASIN

08155500 BARTON SPRINGS AT AUSTIN, TX

LOCATION.--Lat 30°15'48", long 97°46'16", Travis County, Hydrologic Unit 12090205, at ground-water well (YD 58-42-903), on right bank 0.4 mi upstream from Barton Springs Road bridge over Barton Creek, 0.7 mi upstream from mouth, and 1.8 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--Not applicable. Only springflow is published for this station.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1894 to April 1917, and October 1918 to February 1978 (discharge measurements only), May 1917 to September 1918 (published as "Barton Creek at Austin, Texas"), and March 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage, at ground-water well (YD 58-42-903), is 462.34 ft above National Geodetic Vertical Datum of 1929. May 1917 to September 1918, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records poor. Only springflow from the Edwards and associated limestones in the Balcones Fault Zone are published for this station.

AVERAGE DISCHARGE.--11 years (water years 1918, 1979-88), 58.4 ft³/s (42,310 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD (DISCHARGE MEASUREMENTS ONLY).--Maximum measured discharge, 166 ft³/s May 10, 1941; minimum measured, 9.6 ft³/s Mar. 29, 1956.

EXTREMES FOR PERIOD OF RECORD (1917-18 AND SINCE MARCH 1978).--Maximum daily spring discharge, 115 ft³/s June 28, 1987; minimum daily spring, 12 ft³/s Feb. 25, 1918.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 95 ft³/s Oct. 1; minimum daily, 38 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	86	82	74	65	58	54	50	48	45	42	41
2	94	86	82	74	65	57	54	49	50	45	41	40
3	94	85	81	74	64	57	54	49	50	45	43	40
4	94	85	81	74	63	56	54	48	49	45	43	40
5	93	84	81	73	62	57	54	48	49	45	42	40
6	93	82	80	73	62	56	54	48	48	47	43	40
7	93	83	78	73	62	56	54	48	48	46	43	40
8	92	83	75	73	62	55	54	48	48	44	42	39
9	92	83	73	73	61	55	53	48	48	45	41	39
10	91	83	73	73	61	54	54	48	47	45	42	40
11	91	82	73	72	63	54	53	48	47	45	43	40
12	91	82	73	72	64	54	53	48	47	45	44	40
13	91	82	74	72	64	53	53	48	47	45	45	40
14	91	81	74	72	63	53	53	48	46	45	45	40
15	92	81	74	71	63	53	52	48	46	45	44	40
16	92	80	74	71	63	52	52	48	46	45	43	40
17	93	80	74	71	62	52	52	48	46	45	43	41
18	93	79	74	70	62	60	51	48	45	45	43	41
19	93	79	75	70	62	58	51	48	45	44	43	41
20	93	78	75	69	61	57	51	50	45	44	43	41
21	93	78	76	68	61	57	51	54	45	44	43	40
22	93	79	76	68	60	57	50	52	45	44	42	40
23	91	79	76	67	60	57	50	51	45	44	41	39
24	89	79	75	67	60	56	50	50	45	44	42	40
25	89	80	75	67	59	56	50	49	45	43	41	40
26	89	81	75	66	59	55	50	49	46	41	41	40
27	89	82	75	66	59	55	50	49	46	43	42	40
28	89	82	75	66	58	55	50	48	46	42	42	40
29	89	82	74	66	58	55	50	48	45	41	42	39
30	87	82	74	66	58	54	50	48	45	43	41	38
31	85	---	74	66	---	54	---	48	---	43	41	---
TOTAL	2834	2448	2351	2177	1788	1718	1561	1512	1398	1372	1316	1199
MEAN	91.4	81.6	75.8	70.2	61.7	55.4	52.0	48.8	46.6	44.3	42.5	40.0
MAX	95	86	82	74	65	60	54	54	50	47	45	41
MIN	85	78	73	66	58	52	50	48	45	41	41	38
AC-FT	5620	4860	4660	4320	3550	3410	3100	3000	2770	2720	2610	2380

CAL YR 1987 TOTAL 34204 MEAN 93.7 MAX 115 MIN 73 AC-FT 67840
WTR YR 1988 TOTAL 21674 MEAN 59.2 MAX 95 MIN 38 AC-FT 42990

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical analyses: October 1903, June 1941 to February 1959. Chemical, biochemical, and pesticide analyses: December 1978 to current year. Radiochemical analyses: January to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 04...	0815	84	636	7.30	20.5	2	0.30	7.4	84	0	K2	K7
MAR 08...	0805	55	641	7.00	20.5	1	0.50	6.1	69	0	K5	K4
19...	1225	58	612	7.40	20.5	2	--	8.3	93	1.1	K76	480
APR 27...	0858	32	677	7.00	21.0	1	0.20	5.4	61	0.3	230	400
MAY 02...	1055	49	671	7.00	21.0	--	--	5.6	64	--	35	68
AUG 03...	0750	42	711	7.10	21.5	1	0.30	4.9	56	0.2	23	88
DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 08...	310	39	85	23	18	0.5	1.4	268	31	29	0.30	11
19...	280	35	81	20	16	0.4	1.4	250	28	25	0.20	11
APR 27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 03...	320	50	85	25	25	0.6	1.4	266	35	39	0.40	12
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 04...	--	6	2	<0.010	1.60	<0.010	--	0.40	<0.010	0.7	--	--
MAR 08...	359	4	3	<0.010	1.50	<0.010	--	<0.20	0.010	<0.1	<1	55
19...	333	7	1	<0.010	1.40	<0.010	--	<0.20	0.020	2.8	<1	55
APR 27...	--	<1	<1	<0.010	1.50	<0.010	--	<0.20	0.010	0.5	--	--
MAY 02...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 03...	382	1	1	<0.010	1.50	0.030	0.47	0.50	0.020	0.1	<1	66
DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 08...	<1	<1	<1	<3	<5	<1	<0.1	<1	<1.0	<3	<0.20	<0.20
19...	<1	<1	3	<3	<5	<1	<0.1	<1	<1.0	<3	<0.20	<0.20
APR 27...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 03...	<1	<1	1	<3	<5	<1	<0.1	<1	<1.0	7	<3.0	<3.0

[illegible]

COLORADO RIVER BASIN

125

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX

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

DRAINAGE AREA.--12.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year. Periodic discharge measurements, periodic QW sample collection and associated peak discharges along with annual maximum, November 1974 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 455.33 ft above National Geodetic Vertical Datum of 1929 (city of Austin bench mark). Apr. 2, 1975 to Nov. 14, 1984, operated as a flood-hydrograph partial-record site at same location and datum.

REMARKS.--No estimated daily discharges. Records fair. There is no known regulation or diversion. The station is equipped with an automatic water-quality sampler.

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 16,000 ft³/s May 24, 1981 (gage height, 23.22 ft); no flow at times.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0500	*1,700	*9.36	No other peak greater than base discharge.			
Minimum discharge, no flow at times.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.78	.00	.00	.00	.00	.00	3.3	5.1	33	.00	.00	.00
2	.45	.00	.00	.01	.00	9.0	1.3	3.8	56	.00	.00	.00
3	.12	.00	.00	.00	.00	.71	.09	.64	73	.00	29	.00
4	.00	.00	.00	.00	.00	.00	.02	.00	8.0	21	6.2	.00
5	.00	.00	.00	.00	.00	.00	.02	.00	4.1	7.5	.21	.00
6	.00	.00	.00	1.7	.00	.00	.00	.00	1.3	2.9	.00	.00
7	.00	.00	.00	2.3	.00	.00	.00	.00	.32	6.1	.00	.00
8	.00	75	.00	.16	.00	.00	.00	.00	.01	.30	.00	.00
9	.00	8.6	.00	.00	.00	.00	53	.00	.00	.00	2.3	.00
10	.00	.92	.00	.00	.00	.00	10	.00	.00	2.9	.38	.00
11	.00	.00	.00	.00	.00	.00	1.9	7.9	.00	4.3	23	.00
12	.00	.00	.00	.00	.00	.00	.21	12	.00	42	11	.00
13	.00	.00	.00	.00	.00	.00	.59	4.1	.02	3.2	.92	.00
14	.00	.00	.00	.00	.00	.00	.25	.10	.00	.59	.00	.00
15	.00	.00	.00	.00	.00	.00	.15	.00	.00	.01	.00	.00
16	.00	45	.00	.00	.00	.00	.22	.00	.00	.00	2.6	.00
17	.00	3.8	.02	.00	.00	85	.55	.00	.00	.00	16	.03
18	.00	.77	.00	.00	1.6	6.9	.00	.00	.00	.03	3.4	.00
19	.00	.02	57	.00	.84	1.3	.00	.00	.00	.00	.07	.00
20	.00	.00	3.1	.00	.00	.05	.00	25	.00	1.8	.00	.00
21	.00	.00	.69	.00	.00	.00	.00	59	.00	31	.00	.00
22	2.2	.00	.78	.00	.00	.00	.00	4.4	.00	2.2	.00	.00
23	5.8	.00	.04	.00	.00	.00	.00	.79	.00	.02	.00	.00
24	1.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00
25	.00	139	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	2.0	4.7	.00	.00	.00	.00	.00	5.6	.00	.00	.00
27	.00	34	.74	.00	.00	.00	.00	.00	1.6	.40	.00	.00
28	.00	1.9	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.52	.00	.00	.00	.13	33	7.0	.00	.13	.00	.00
30	.00	.07	.01	.00	---	.00	17	9.1	.00	4.1	.00	23
31	.00	---	.00	.00	---	.00	---	3.2	---	.54	.00	---
TOTAL	10.55	311.60	67.14	4.17	2.44	103.09	121.60	142.13	182.95	131.02	95.11	23.03
MEAN	.34	10.4	2.17	.13	.084	3.33	4.05	4.58	6.10	4.23	3.07	.77
MAX	5.8	139	57	2.3	1.6	85	53	59	73	42	29	23
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	21	618	133	8.3	4.8	204	241	282	363	260	189	46
CFSM	.03	.84	.18	.01	.01	.27	.33	.37	.50	.34	.25	.06
IN.	.03	.94	.20	.01	.01	.31	.37	.43	.55	.40	.29	.07

CAL YR 1987	TOTAL 3831.77	MEAN 10.5	MAX 692	MIN .00	AC-FT 7600	CFSM .85	IN. 11.59
WTR YR 1988	TOTAL 1194.83	MEAN 3.26	MAX 139	MIN .00	AC-FT 2370	CFSM .27	IN. 3.61

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: February 1943, January 1975 to current year. Water temperature: January 1975 to current year. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
MAR													
17...	1345	364	--	--	--	--	--	--	--	--	<2000	<2000	
17...	1415	323	555	--	--	--	--	--	--	--	--	--	
17...	1417	742	--	--	--	--	--	--	--	--	--	--	
17...	1445	796	137	--	--	--	--	--	--	13	K26000	46000	
17...	1515	424	149	--	--	--	--	--	--	--	--	--	
17...	1545	278	174	--	--	72	150	--	--	8.0	K16000	64000	
APR													
29...	1100	70	170	7.30	21.0	28	250	8.1	92	24	64000	160000	
29...	1245	192	379	--	--	39	340	--	--	21	K180000	130000	
MAY													
20...	2220	192	297	--	--	--	--	--	--	--	400000	230000	
21...	0020	167	176	--	--	60	22	--	--	--	40000	82000	
JUL													
12...	1110	74	182	7.90	26.0	55	230	7.4	93	2.3	78000	82000	
DATE		HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
MAR													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	220	99	77	7.6	26	0.8	3.8	125	90	44	0.30	5.5	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
29...	70	25	25	1.8	6.5	0.4	3.9	45	22	11	0.20	2.1	--
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
12...	75	28	27	1.9	4.3	0.2	2.1	47	24	6.0	0.20	2.9	--
DATE		SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLATILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
MAR													
17...	--	--	--	--	0.990	0.010	1.00	<0.010	--	0.80	0.140	--	--
17...	329	--	--	--	0.710	0.090	0.800	<0.010	--	<0.20	0.110	--	--
17...	--	--	--	--	0.370	0.030	0.400	0.160	0.74	0.90	0.170	--	--
17...	--	--	--	--	0.370	0.030	0.400	0.160	1.3	1.5	0.180	37	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	4
17...	--	325	47	--	--	--	--	--	--	--	--	--	--
APR													
29...	100	563	78	0.540	0.060	0.600	0.260	0.74	1.0	0.200	42	2	--
29...	--	1510	163	0.430	0.070	0.500	0.100	0.80	0.90	0.200	2.0	--	--
MAY													
20...	--	--	--	--	0.630	0.070	0.700	0.190	0.61	0.80	0.220	4.3	--
21...	--	5610	510	0.460	0.040	0.500	0.210	0.49	0.70	0.470	20	--	--
JUL													
12...	97	393	37	0.150	0.050	0.200	0.100	--	<0.20	0.280	10	2	--
DATE		BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	
MAR													
17...	--	--	--	--	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	--	--	--	--	
17...	--	--	--	--	--	--	--	--	--	--	--	--	
17...	15	<1	<1	2	29	<5	5	<0.1	<1	<1.0	4	--	
17...	--	--	--	--	--	--	--	--	--	--	--	--	
APR													
29...	17	<1	<1	4	41	6	25	<0.1	<1	<1.0	7	--	
29...	--	--	--	--	--	--	--	--	--	--	--	--	
MAY													
20...	--	--	--	--	--	--	--	--	--	--	--	--	
21...	--	--	--	--	--	--	--	--	--	--	--	--	
JUL													
12...	14	<1	20	1	16	<5	1	<0.1	<1	4.0	<3	--	

COLORADO RIVER BASIN

127

08157900 TOWN LAKE AT AUSTIN, TX

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

DRAINAGE AREA.--39,003 mi², approximately, of which 11,403 mi² probably is noncontributing.

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

301559097424801 - TOWN LAKE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	0900	1.00	558	8.20	11.5	10.7	100
19...	0902	10.0	558	8.20	11.5	10.6	99
19...	0904	22.0	558	7.80	9.0	9.4	83
APR							
19...	0820	1.00	556	7.90	18.5	8.3	90
19...	0822	10.0	556	7.90	18.5	8.3	90
19...	0824	22.0	556	7.80	18.0	7.4	79
JUL							
27...	0830	1.00	540	7.40	23.0	7.3	86
27...	0832	10.0	540	7.40	22.5	6.7	78
27...	0834	22.0	540	7.40	21.5	5.8	66

301500097424801 - TOWN LAKE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

									OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)		
DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)				
JAN													
19...	0910	1.00	560	8.30	11.5	1.50	3	0.50	10.7	101	1.2	K18	
19...	0912	10.0	560	8.20	11.5	--	--	--	10.6	100	--	--	
19...	0914	20.0	597	8.10	9.0	--	--	--	9.4	83	--	--	
19...	0916	27.0	597	8.10	9.0	--	4	0.80	9.5	84	0.8	--	
APR													
19...	0840	1.00	556	7.90	19.0	1.30	3	2.5	7.9	86	0.5	1100	
19...	0842	10.0	556	7.90	18.5	--	--	--	7.9	86	--	--	
19...	0844	20.0	556	7.80	18.0	--	--	--	6.6	71	--	--	
19...	0846	29.0	556	7.70	17.0	--	3	3.8	5.3	56	0.7	--	
JUL													
27...	0900	1.00	540	7.40	23.0	1.80	3	0.80	7.3	86	0.6	K40	
27...	0902	10.0	540	7.40	22.0	--	--	--	6.8	79	--	--	
27...	0904	20.0	540	7.40	21.5	--	--	--	6.5	74	--	--	
27...	0906	28.0	540	7.30	21.5	--	2	1.3	5.9	68	0.4	--	
DATE		STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN													
19...	K10	230	53	56	21	29	0.9	3.7	174	42	46	0.30	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	220	53	54	21	29	0.9	3.7	169	43	47	0.70	
APR													
19...	K67	220	49	51	22	32	1	3.2	169	46	53	0.30	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	210	44	51	21	30	0.9	3.2	170	44	51	0.30	
JUL													
27...	K4	210	53	48	22	34	1	3.6	158	41	55	0.20	
27...	--	--	--	--	--	--	--	--	--	--	--	--	
27...	--	--	--	--	--	--	--	--	--	--	--	--	
27...	--	210	51	47	22	33	1	3.5	157	40	54	0.20	

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLATILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN												
19...	8.8	311	1	<1	0.190	0.010	0.200	0.010	0.39	0.40	0.010	2.8
19...	--	--	--	--	0.190	0.010	0.200	0.010	0.39	0.40	0.010	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	9.0	309	2	<1	--	<0.010	0.200	0.030	0.37	0.40	0.010	2.6
APR												
19...	9.6	319	11	11	--	<0.010	0.300	0.060	0.24	0.30	<0.010	3.1
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	<0.010	0.300	0.070	0.23	0.30	<0.010	--
19...	10	313	7	7	--	<0.010	0.300	0.110	0.29	0.40	0.010	3.0
JUL												
27...	9.0	308	1	1	--	<0.010	0.200	<0.010	--	0.60	0.020	3.0
27...	--	--	--	--	--	<0.010	0.200	<0.010	--	0.90	0.020	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	9.1	303	6	2	--	<0.010	0.200	0.020	0.28	0.30	<0.010	2.9
DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN												
19...	1	--	66	<1	--	<5	--	<1	--	<3	--	<5
19...	--	--	--	--	--	--	--	--	--	<10	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	1	5	66	<1	2	<5	<10	<1	10	5	4200	<5
APR												
19...	1	--	71	<1	--	<1	--	4	--	<3	--	<5
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	<10	--	--
19...	1	9	69	<1	2	<1	10	3	20	<3	7100	<5
JUL												
27...	1	--	74	1	--	<1	--	3	--	<3	--	<5
27...	--	--	--	--	--	--	--	--	--	<10	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	1	1	73	<1	2	<1	10	2	20	4	7600	<5
DATE	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY DIS- SOLVED (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L)
JAN												
19...	--	2	--	<0.1	--	<1	<1.0	5	--	<3.0	<3.0	<3.0
19...	--	<10	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	60	7	440	<0.1	<0.10	<1	<1.0	<3	50	--	--	--
APR												
19...	--	6	--	<0.1	--	<1	<1.0	<3	--	<0.20	<0.20	<0.20
19...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	<10	--	--	--	--	--	--	--	--	--	--
19...	20	41	9400	<0.1	<0.10	<1	<1.0	6	60	--	--	--
JUL												
27...	--	3	--	<0.1	--	<1	<1.0	<3	--	<0.20	<0.20	<0.20
27...	--	<10	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
27...	60	65	570	<0.1	<0.01	<1	<1.0	<3	80	--	--	--

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLORO- BENZENE TOTAL (UG/L)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L)	CHLORO- ETHANE TOTAL (UG/L)	CHLORO- FORM- TOTAL (UG/L)	METHYL- CHLO- RIDE TOTAL (UG/L)	CIS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	DI- CHLORO- BROMO- METHANE TOTAL (UG/L)	DI- CHLORO- DI- FLUORO- METHANE TOTAL (UG/L)	ETHYL- BENZENE TOTAL (UG/L)	METHYL- BROMIDE TOTAL (UG/L)	METHYL- ENE CHLO- RIDE TOTAL (UG/L)
JAN											
19...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
19...	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
JUL											
27...	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
DATE	STYRENE TOTAL (UG/L)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L)	VINYL CHLO- RIDE TOTAL (UG/L)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L)	1,1,2- TRI- CHLORO- ETHANE TOTAL (UG/L)
JAN											
19...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
19...	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
JUL											
27...	<0.2	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
DATE	1,1,2,2- TETRA- CHLORO- ETHANE TOTAL (UG/L)	1,2- DIBROMO- ETHYL- ENE TOTAL (UG/L)	1,2-DI- CHLORO- BENZENE TOTAL (UG/L)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L)	1,2-DI- CHLORO- PROPANE TOTAL (UG/L)	1,3-DI- CHLORO- BENZENE TOTAL (UG/L)	1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	1,4-DI- CHLORO- BENZENE TOTAL (UG/L)	1,2- TRANS DI- CHLORO- ETHENE TOTAL (UG/L)	2- CHLORO- ETHYL- VINYL- ETHER TOTAL (UG/L)	XYLENE TOTAL WATER WHOLE TOT REC (UG/L)
JAN											
19...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	4.0
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
19...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
JUL											
27...	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
DATE	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
JAN											
19...	<0.10	<0.10	<0.10	<2.0	<0.1	<0.1	<0.10	<2.0	<2.0	<0.10	<0.1
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	<0.10	<0.10	<0.10	<2.0	<0.1	<0.1	<0.10	<2.0	<2.0	<0.10	<0.1
APR											
19...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1
JUL											
27...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.10	<0.5	<0.50	<0.10	<0.1

COLORADO RIVER BASIN
08157900 TOWN LAKE AT AUSTIN, TX--Continued

301503097424701 - TOWN LAKE AL
WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	0950	1.00	560	8.20	12.0	10.5	100
19...	0952	10.0	560	8.20	11.5	10.2	96
19...	0954	17.0	560	8.10	9.5	9.1	82
APR							
19...	0910	1.00	556	7.90	20.5	7.4	83
19...	0912	10.0	556	7.90	18.5	7.4	80
19...	0914	15.0	556	7.80	18.5	7.3	79
JUL							
27...	0950	1.00	540	7.50	23.0	7.3	86
27...	0952	10.0	540	7.50	22.5	6.9	81
27...	0954	18.0	540	7.50	22.0	6.2	72

301500097440801 - TOWN LAKE BR
WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	1005	1.00	595	8.00	12.5	9.7	93
19...	1007	10.0	565	8.10	10.0	9.6	87
19...	1009	15.0	565	8.10	9.5	9.2	83
APR							
19...	0920	1.00	552	7.90	18.0	7.7	83
19...	0922	10.0	552	7.90	18.0	7.7	83
19...	0924	14.0	552	7.90	18.0	7.7	83
JUL							
27...	1005	1.00	542	7.50	23.0	7.4	87
27...	1007	10.0	542	7.50	22.0	7.0	81
27...	1009	15.0	542	7.50	22.0	7.0	81

301504097440901 - TOWN LAKE BC
WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	1015	1.00	594	8.00	12.5	9.6	92
19...	1017	10.0	570	8.10	10.0	9.5	86
19...	1019	20.0	564	8.10	9.5	8.9	80
19...	1021	29.0	564	8.00	9.5	8.8	79
APR							
19...	0930	1.00	552	7.90	18.0	7.7	83
19...	0932	10.0	552	7.90	18.0	7.7	83
19...	0934	20.0	552	7.90	18.0	7.7	83
19...	0936	30.0	552	7.90	18.0	7.7	83
JUL							
27...	1015	1.00	542	7.50	22.5	7.1	83
27...	1017	10.0	542	7.50	22.0	7.0	81
27...	1019	20.0	542	7.50	22.0	7.0	81
27...	1021	29.0	542	7.50	21.5	6.9	79

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301544097445201 - TOWN LAKE CR

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	1100	1.00	607	7.70	14.5	8.9	90
19...	1102	10.0	582	7.90	10.5	8.1	74
19...	1104	15.0	582	7.90	10.5	8.1	74
APR							
19...	0950	1.00	558	7.90	18.5	8.2	89
19...	0952	10.0	558	7.90	18.5	8.1	88
19...	0954	17.0	558	7.90	18.5	8.0	87
JUL							
27...	1030	1.00	543	7.50	21.5	6.7	77
27...	1032	13.0	543	7.50	21.5	6.7	77

301546097445101 - TOWN LAKE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	1040	1.00	607	7.70	14.5	9.0	91
19...	1042	10.0	582	7.90	11.0	8.7	81
19...	1044	18.0	582	7.90	10.5	8.0	74
APR							
19...	1000	1.00	558	7.90	19.0	8.0	88
19...	1002	10.0	558	7.90	18.5	8.0	87
19...	1004	19.0	558	7.90	18.5	8.0	87
JUL							
27...	1035	1.00	543	7.50	21.5	6.8	78
27...	1037	10.0	543	7.50	21.5	6.7	77
27...	1039	18.0	543	7.50	21.0	6.7	76

301556097452301 - TOWN LAKE DR

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
19...	1140	1.00	607	7.70	15.0	9.0	92
19...	1142	12.0	590	7.80	11.5	9.3	88
APR							
19...	1010	1.00	570	7.70	19.0	7.5	82
19...	1012	12.0	570	7.70	19.0	7.5	82
JUL							
27...	1040	1.00	542	7.50	21.5	6.7	77
27...	1042	13.0	542	7.50	21.0	6.7	76

301558097452201 - TOWN LAKE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN										
19...	1112	1.00	610	7.70	15.5	1.80	3	1.7	9.0	93
19...	1114	10.0	584	7.90	10.5	--	--	--	9.5	87
19...	1116	20.0	584	7.90	10.0	--	4	1.2	9.0	82
APR										
19...	1015	1.00	570	8.00	19.0	1.80	4	2.3	8.0	88
19...	1017	10.0	570	7.90	19.0	--	--	--	7.8	85
19...	1019	19.0	570	7.80	19.0	--	2	12	7.7	84
JUL										
27...	1050	1.00	542	7.40	21.5	1.80	1	1.3	6.7	77
27...	1052	10.0	542	7.50	21.0	--	--	--	6.7	76
27...	1054	21.0	542	7.50	21.0	--	3	5.6	6.7	76

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301558097452201 - TOWN LAKE DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
JAN										
19...	0.2	210	54	260	29	70	21	22	0.6	2.4
19...	--	--	--	--	--	--	--	--	--	--
19...	0.6	--	--	230	46	56	21	31	0.9	3.7
APR										
19...	0.1	K120	67	220	49	50	22	33	1	3.3
19...	--	--	--	--	--	--	--	--	--	--
19...	0.4	--	--	230	53	55	22	31	0.9	3.1
JUL										
27...	0.3	K100	K60	210	50	48	22	34	1	3.4
27...	--	--	--	--	--	--	--	--	--	--
27...	0.2	--	--	210	48	46	22	33	1	3.4

DATE	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
JAN									
19...	233	35	34	0.30	9.2	334	1	<1	--
19...	--	--	--	--	--	--	--	--	0.290
19...	181	44	49	0.30	8.9	322	<1	<1	--
APR									
19...	167	43	54	0.30	9.5	315	3	3	--
19...	--	--	--	--	--	--	--	--	--
19...	175	43	52	0.30	9.8	321	3	3	--
JUL									
27...	161	41	55	0.20	9.2	309	3	1	--
27...	--	--	--	--	--	--	--	--	--
27...	158	42	56	0.20	8.9	306	10	3	--

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN									
19...	<0.010	0.900	<0.010	--	0.40	0.010	1.3	<3	4
19...	0.010	0.300	0.040	0.46	0.50	0.010	--	<10	20
19...	<0.010	0.300	0.050	0.25	0.30	0.020	2.6	6	13
APR									
19...	<0.010	0.200	0.050	0.25	0.30	<0.010	3.5	5	5
19...	<0.010	0.300	0.050	--	<0.20	<0.010	--	<10	<10
19...	<0.010	0.400	0.050	0.25	0.30	<0.010	3.1	<3	3
JUL									
27...	<0.010	0.200	<0.010	--	0.50	0.020	3.0	5	5
27...	<0.010	0.200	<0.010	--	0.30	0.020	--	<10	<10
27...	<0.010	0.200	<0.010	--	0.90	<0.010	3.2	7	5

301712097470701 - TOWN LAKE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN										
19...	1210	1.00	580	7.60	13.5	3.30	4	0.50	9.0	89
19...	1212	14.0	574	7.70	12.0	--	5	0.50	9.0	86
APR										
19...	1050	1.00	550	8.20	19.0	1.30	1	3.2	9.4	103
19...	1052	10.0	550	8.20	19.0	--	--	--	9.2	101
19...	1054	17.0	550	8.10	19.0	--	2	1.3	9.1	100
JUL										
27...	1120	1.00	541	7.50	21.5	1.20	2	3.2	7.3	84
27...	1122	10.0	541	7.50	21.5	--	--	--	7.3	84
27...	1124	15.0	541	7.40	21.5	--	1	1.2	7.3	84

COLORADO RIVER BASIN

133

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301712097470701 - TOWN LAKE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
JAN 19...	0.7	K3	K2	250	47	64	21	24	0.7	2.8
19...	0.6	--	--	240	47	60	21	27	0.8	3.2
APR 19...	0.5	22	36	210	50	50	21	33	1	3.4
19...	--	--	--	--	--	--	--	--	--	--
19...	0.5	--	--	210	47	49	21	33	1	3.3
JUL 27...	0.4	K39	K3	210	49	47	22	34	1	3.6
27...	--	--	--	--	--	--	--	--	--	--
27...	0.4	--	--	210	49	47	22	34	1	3.5

DATE	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
JAN 19...	200	40	38	0.30	8.4	318	<1	<1	--
19...	190	41	43	0.30	8.3	318	1	<1	0.390
APR 19...	162	44	58	0.30	9.4	316	3	3	--
19...	--	--	--	--	--	--	--	--	--
19...	162	44	55	0.30	9.5	312	7	7	--
JUL 27...	159	42	57	0.20	9.1	310	3	3	--
27...	--	--	--	--	--	--	--	--	--
27...	159	41	56	0.20	9.1	308	2	1	--

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 19...	<0.010	0.400	0.030	0.17	0.20	0.010	2.0	13	3
19...	0.010	0.400	0.040	0.16	0.20	0.020	2.8	15	6
APR 19...	<0.010	0.200	0.020	0.28	0.30	<0.010	3.2	<3	3
19...	--	--	--	--	--	--	--	--	--
19...	<0.010	0.200	0.020	0.28	0.30	0.020	3.8	10	1
JUL 27...	<0.010	0.200	<0.010	--	0.70	0.020	2.8	5	<1
27...	--	--	--	--	--	--	--	--	--
27...	<0.010	0.200	<0.010	--	0.50	0.020	2.8	5	1

301601097454001 - TOWN LAKE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 19...	1150	3.00	629	7.40	20.0	9.0	102
APR 19...	1035	3.00	640	7.40	20.0	8.8	98
JUL 27...	1110	3.00	664	7.30	22.5	7.1	83

COLORADO RIVER MAIN STEM

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

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

DRAINAGE AREA.--39,009 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 402.27 ft above National Geodetic Vertical Datum of 1929. Prior to June 19, 1939, all records collected at or near Congress Avenue bridge 3.9 mi upstream at datum 19.6 ft higher; prior to June 18, 1915, nonrecording gages, recording gages thereafter; June 20, 1939, to Oct. 16, 1963, at site 1,000 ft downstream from present site at datum 5.0 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Since 1937, at least 10 percent of drainage area has been regulated by upstream reservoirs. Flow largely regulated by Lake Travis (station 08154500). The city of Austin diverts water for municipal use upstream from station and returns sewage effluent downstream. There are many other diversions above Lake Buchanan for irrigation, municipal supplies, and oil field operations. Gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1899-1936) unregulated, 2,711 ft³/s (1,964,000 acre-ft/yr); 52 years (water years 1937-88) regulated, 1,970 ft³/s (1,427,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 481,000 ft³/s June 15, 1935 (gage height, 50 ft, present site and datum, from floodmark); minimum daily, 2.4 ft³/s Feb. 28, 1984.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,230 ft³/s Aug. 13 at 2100 hours (gage height, 7.62 ft); minimum daily, 15 ft³/s Jan. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1640	261	113	137	472	97	864	1690	1530	1950	1700	1540
2	1780	193	119	122	17	169	961	1680	1550	2070	1680	1530
3	2380	114	118	138	16	2910	809	1650	1160	2060	1820	1570
4	1780	125	117	118	17	3210	999	1660	1270	2250	1720	1530
5	1770	399	117	130	17	3230	1140	1610	1170	2100	1530	1540
6	1790	95	121	610	103	3050	526	1560	1480	1670	1640	1500
7	1810	114	121	681	92	3260	503	1300	1540	1940	1580	1020
8	1840	653	114	141	109	3280	452	1430	1530	1690	1420	1520
9	1980	154	281	684	109	3260	627	1460	1520	1680	1590	1530
10	1880	106	124	443	103	3290	703	1450	2040	1690	1550	1550
11	1660	136	125	2630	86	3280	696	1650	1970	1840	1740	1520
12	1600	127	120	3670	103	1590	470	957	2160	1750	1360	1570
13	1680	128	120	1600	108	232	424	1740	2080	2100	1740	1760
14	1710	124	429	49	108	342	445	1770	2070	1700	1600	1580
15	1690	144	480	58	101	542	428	1820	2080	1710	1350	1530
16	1700	665	115	61	78	579	1020	1790	2210	1660	1640	1570
17	1710	403	391	151	105	1120	1030	1820	2070	1680	1590	1570
18	1710	115	363	120	101	474	1020	1840	2100	1810	1550	1530
19	1730	106	354	44	102	104	1030	1840	2170	1840	1560	1570
20	1430	185	392	662	76	96	1030	2020	2170	2180	1540	1540
21	1690	116	85	61	102	95	1020	1500	2210	1690	1590	1590
22	1740	116	141	18	84	1590	805	2110	2070	1960	1560	1570
23	1300	118	18	17	75	1670	786	1810	2020	2070	1580	1560
24	1680	131	70	16	99	1730	870	1810	2100	2030	1580	1550
25	1690	1210	116	15	77	1870	944	1810	2070	1690	1880	1570
26	1690	609	491	95	76	1670	779	1790	2190	2060	1760	1570
27	1520	286	134	20	94	1480	846	1790	2080	1950	1610	1540
28	1630	130	116	19	72	1780	1660	1820	2150	1930	1450	1560
29	1640	132	136	21	70	879	1820	1940	2090	1670	1560	1610
30	1590	126	450	99	---	974	1730	1850	2070	1750	1630	1770
31	1630	---	119	102	---	764	---	1800	---	1670	1600	---
TOTAL	53070	7321	6110	12732	2772	48617	26437	52767	56920	57840	49700	46460
MEAN	1712	244	197	411	95.6	1568	881	1702	1897	1866	1603	1549
MAX	2380	1210	491	3670	472	3290	1820	2110	2210	2250	1880	1770
MIN	1300	95	18	15	16	95	424	957	1160	1660	1350	1020
AC-FT	105300	14520	12120	25250	5500	96430	52440	104700	112900	114700	98580	92150

CAL YR 1987 TOTAL 1427992 MEAN 3912 MAX 31700 MIN 18 AC-FT 2832000
WTR YR 1988 TOTAL 420746 MEAN 1150 MAX 3670 MIN 15 AC-FT 834500

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1932 to March 1944, October 1947 to October 1973. Chemical and biochemical analyses: February to August 1968, January 1974 to current year. Sediment analyses: March 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURE: October 1947 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 795 microsiemens Mar. 10, 1984; minimum daily, 243 microsiemens Dec. 2, 1953.

WATER TEMPERATURE: Maximum daily, 33.0°C July 25, 1979; minimum daily, 5.0°C Jan. 3, 1984.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 618 microsiemens Feb. 20, 25; minimum daily, 423 microsiemens Mar. 2.

WATER TEMPERATURE: Maximum daily, 25.5°C July 26; minimum daily, 5.5°C Jan. 16, 20.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 26...	1100	1790	548	7.80	23.0	1.2	8.7	103	1.5	K2600	130	210
JAN 04...	1335	44	544	8.10	12.0	--	--	--	--	--	--	230
FEB 16...	0905	44	608	8.20	11.5	2.3	10.3	96	1.0	K76	170	270
MAY 23...	1010	1490	544	7.60	20.5	3.1	8.9	100	0.2	180	96	210
SEP 02...	1230	1740	573	7.60	26.0	2.7	8.4	105	1.5	37	40	220
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS S102)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT 26...	53	52	19	29	0.9	3.7	156	39	47	0.30	9.9	299
JAN 04...	40	60	20	23	0.7	2.5	192	38	34	0.20	9.5	--
FEB 16...	45	71	22	25	0.7	2.5	224	39	39	0.30	7.8	346
MAY 23...	50	49	21	32	1	3.3	160	43	53	0.40	9.1	327
SEP 02...	58	49	23	38	1	3.4	160	45	56	0.20	9.0	330
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
OCT 26...	295	--	<0.010	<0.100	0.020	0.020	0.78	0.80	<0.010	<0.010	<0.010	--
JAN 04...	302	--	--	--	--	--	--	--	--	--	--	--
FEB 16...	346	0.650	0.010	0.660	0.010	0.010	--	<0.20	0.010	<0.010	0.540	1.7
MAY 23...	309	--	<0.010	0.280	0.020	0.020	0.28	0.30	0.010	0.020	<0.010	--
SEP 02...	321	--	<0.010	0.110	<0.010	<0.010	--	0.50	0.060	0.010	0.030	0.09
DATE	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 26...	7	34	62	<10	1	67	<0.5	<1	1	<3	2	7
JAN 04...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 16...	23	2.7	58	<10	1	71	<0.5	<1	<1	<3	2	16
MAY 23...	40	161	53	<10	1	69	<0.5	<1	<1	<3	2	6
SEP 02...	35	164	77	<10	1	73	<0.5	<1	<1	<3	2	13

COLORADO RIVER MAIN STEM

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 26...	<5	13	3	<0.1	<10	<1	<1	<1.0	430	<6	12
JAN 04...	--	--	--	--	--	--	--	--	--	--	--
FEB 16...	<5	16	7	<0.1	<10	<1	<1	<1.0	690	<6	8
MAY 23...	<5	12	8	<0.1	<10	<1	<1	<1.0	460	<6	<3
SEP 02...	<5	15	4	<0.1	<10	<1	<1	<1.0	510	<6	42

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	53070	540	295	42300	47	6690	36	5120	220
NOV. 1987	7321	552	302	5970	47	939	37	724	220
DEC. 1987	6110	562	307	5070	48	795	37	615	220
JAN. 1988	12732	537	294	10100	46	1590	35	1220	210
FEB. 1988	2772	529	290	2170	46	343	35	262	210
MAR. 1988	48617	567	310	40700	49	6370	38	4940	230
APR. 1988	26437	563	308	22000	48	3450	37	2670	220
MAY 1988	52767	559	305	43500	48	6840	37	5280	220
JUNE 1988	56920	560	306	47000	48	7390	37	5710	220
JULY 1988	57840	562	307	48000	48	7530	37	5830	220
AUG. 1988	49700	566	310	41500	49	6510	38	5040	230
SEPT 1988	46460	581	318	39800	50	6220	39	4850	230
TOTAL	420746	**	**	348000	**	54700	**	42200	**
WTD.AVG.	1150	561	307	**	48	**	37	**	220

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	550	535	543	547	474	435	558	556	559	557	560	575
2	545	524	549	595	500	423	563	567	563	560	556	571
3	543	565	548	575	498	585	563	554	528	558	557	579
4	548	578	553	560	528	587	557	560	545	560	565	579
5	534	581	544	474	496	566	566	563	538	559	567	578
6	537	572	545	502	450	590	569	564	544	562	568	581
7	545	584	570	522	490	558	563	570	556	558	568	574
8	548	529	582	540	529	569	561	561	559	555	563	576
9	538	506	585	534	478	560	565	573	557	563	564	573
10	544	587	587	505	448	557	550	557	556	559	558	575
11	542	579	586	542	460	561	560	557	557	558	571	579
12	545	580	583	522	480	558	573	555	556	542	548	575
13	536	571	557	549	490	565	569	560	561	566	560	578
14	537	604	555	556	570	557	569	561	564	562	582	577
15	537	571	542	579	585	583	570	557	561	562	564	598
16	531	567	552	586	466	580	568	560	563	561	561	580
17	533	560	571	584	515	595	560	559	560	561	557	582
18	539	566	547	499	596	517	565	559	560	560	561	577
19	538	579	545	561	607	552	564	569	562	566	572	574
20	535	576	549	595	618	557	565	563	565	565	560	586
21	540	598	564	507	582	562	565	511	570	562	569	585
22	540	585	556	446	614	574	563	552	569	570	568	575
23	543	580	525	554	526	576	564	555	563	574	566	576
24	543	559	552	571	536	558	564	554	564	570	569	578
25	543	584	556	532	618	556	563	553	565	565	571	578
26	545	453	580	565	606	565	564	563	561	560	571	580
27	522	502	575	560	606	555	566	558	557	574	574	597
28	531	519	580	550	611	563	568	558	566	570	572	598
29	548	523	584	520	605	565	558	556	571	563	573	598
30	539	540	573	590	---	559	558	562	561	565	578	600
31	542	---	557	556	---	556	---	572	---	564	578	---
MEAN	540	559	561	544	537	556	564	559	559	562	566	581

COLORADO RIVER MAIN STEM

137

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	21.0	15.0	10.5	16.5	18.0	18.0	19.5	20.0	20.0	22.0	23.5
2	23.5	20.5	14.5	11.0	15.0	18.0	16.0	---	20.5	21.0	22.0	23.5
3	---	21.0	15.0	12.0	15.5	15.5	16.5	18.5	20.0	21.5	22.0	23.0
4	22.0	19.5	15.5	10.0	14.5	14.0	18.0	19.0	---	21.0	22.0	24.5
5	22.0	20.0	15.5	---	15.0	13.5	18.5	19.0	21.0	20.5	23.5	23.5
6	23.0	20.0	17.0	9.5	13.5	---	17.0	15.5	21.0	21.5	23.0	---
7	21.5	19.5	16.5	10.5	---	13.5	17.0	---	---	21.5	23.5	22.0
8	21.5	20.0	16.5	---	13.0	15.0	18.5	19.0	20.0	21.0	23.0	23.0
9	23.0	18.0	16.0	6.5	14.0	13.5	18.0	20.0	20.0	21.0	23.5	23.0
10	---	16.0	---	7.0	14.0	---	16.0	19.5	20.5	21.5	23.0	23.0
11	---	16.0	16.5	8.0	---	13.5	16.0	20.0	22.0	21.5	24.0	23.5
12	22.0	15.5	16.0	7.0	---	14.0	16.5	19.5	20.0	22.0	23.5	23.0
13	22.0	16.5	15.5	8.0	12.0	13.5	16.5	---	19.5	20.5	23.0	23.5
14	22.0	17.0	14.5	9.0	---	13.5	18.0	19.0	20.0	21.0	23.0	23.0
15	---	18.0	11.5	8.5	14.5	13.5	18.5	19.0	20.0	21.0	23.5	23.5
16	21.5	15.5	11.5	5.5	14.5	14.5	19.0	19.0	20.0	---	24.0	24.5
17	---	16.0	12.0	8.5	15.5	14.5	18.5	19.5	19.5	---	23.5	24.5
18	22.0	17.0	11.0	7.0	---	11.5	18.5	19.0	20.0	---	23.5	24.5
19	22.0	15.5	12.0	6.0	15.5	13.0	19.5	18.5	19.0	23.5	23.0	23.5
20	---	15.5	13.5	5.5	15.0	13.5	---	19.5	20.0	22.0	23.5	24.0
21	---	15.0	13.0	11.0	15.0	15.5	19.0	19.0	19.5	23.5	---	24.0
22	20.5	16.0	12.0	13.0	15.5	15.5	19.5	19.5	20.0	24.0	---	23.5
23	21.0	17.0	13.0	13.5	16.5	15.5	20.0	20.0	19.5	23.5	23.5	24.0
24	20.5	18.0	12.0	15.5	15.5	16.5	20.0	20.0	---	---	24.0	23.5
25	21.0	16.5	14.0	14.0	---	16.5	19.5	20.5	21.0	21.0	24.5	24.5
26	21.0	---	13.0	13.0	16.0	18.0	19.5	19.0	21.0	25.5	24.5	24.0
27	20.5	14.5	11.0	---	16.5	---	---	19.0	21.5	21.5	24.5	24.0
28	20.5	14.0	11.0	14.0	16.5	18.0	20.5	19.0	21.0	---	23.0	24.0
29	20.0	---	11.0	15.0	18.5	18.5	20.0	19.5	20.0	21.0	24.0	24.0
30	20.5	14.0	10.0	16.0	---	15.5	20.0	19.5	20.5	---	25.0	23.5
31	20.5	---	---	16.5	---	18.0	---	20.0	---	21.5	24.0	---
MEAN	21.5	17.5	13.5	10.5	15.0	15.0	18.5	19.0	20.5	21.5	23.5	23.5

COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX

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

DRAINAGE AREA.--51.3 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 425.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No known regulation or diversion.

AVERAGE DISCHARGE.--22 years, 26.2 ft³/s (6.94 in/yr), 18,980 acres-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft³/s May 25, 1981 (gage height, 27.24 ft); no flow at times in 1967, 1971, and 1982-84.
Maximum stage since at least 1891, that of May 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1935, reached a stage of 24 ft, backwater from Colorado River. A flood in 1919 reached a stage of 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0800	2,140	13.30	June 2	1445	2,060	13.07
Mar. 17	1500	1,550	11.58	June 3	1415	*2,890	*15.23

Minimum daily discharge, 1.1 ft³/s Aug. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	4.5	15	14	9.6	5.6	12	5.5	26	1.4	2.6	1.5
2	8.6	4.2	13	14	8.8	27	8.0	4.3	251	1.1	3.6	1.6
3	7.8	4.2	12	15	8.2	8.0	6.3	4.0	505	1.1	13	1.6
4	7.0	4.1	11	13	7.7	4.3	5.8	3.3	44	2.1	9.7	1.8
5	7.2	4.1	11	11	7.6	3.7	5.8	2.9	20	4.6	4.3	1.5
6	7.4	4.1	9.9	22	7.6	3.7	8.2	2.9	13	11	3.6	1.7
7	6.4	4.1	9.3	19	7.1	3.7	5.4	3.3	11	13	3.3	2.0
8	6.4	154	9.3	12	7.0	4.8	6.9	3.3	8.9	4.7	3.5	1.8
9	6.9	33	9.2	11	7.0	4.8	82	3.3	7.1	3.4	6.1	2.4
10	6.4	8.3	8.9	11	7.0	3.7	24	3.3	7.0	3.4	3.3	1.8
11	6.4	6.4	8.9	11	6.9	3.7	9.3	13	6.6	6.5	12	2.3
12	6.4	5.5	8.7	11	5.9	4.1	7.7	16	6.4	55	15	2.1
13	6.4	5.3	8.6	9.9	5.8	4.1	6.4	5.2	6.4	13	3.8	2.3
14	6.7	4.9	8.7	9.3	5.8	4.1	6.4	3.6	6.4	5.4	2.9	2.6
15	7.2	5.0	8.2	9.3	5.8	4.1	5.8	2.9	8.4	3.4	3.0	2.2
16	7.6	76	8.2	9.3	5.8	4.3	5.4	2.6	10	3.6	20	2.0
17	7.6	13	8.2	9.6	5.8	220	9.8	2.6	9.3	2.9	14	9.4
18	7.6	7.7	14	9.8	16	29	7.7	2.5	8.5	2.6	5.5	4.1
19	8.2	5.9	163	10	12	10	5.1	1.8	8.2	2.3	3.6	2.2
20	7.6	5.8	32	10	7.0	8.6	4.9	19	8.6	8.7	3.3	1.5
21	7.2	5.8	21	10	5.8	7.6	4.6	114	7.7	52	2.9	.95
22	16	5.8	18	10	5.8	7.5	4.5	7.4	7.2	6.8	2.6	1.0
23	20	5.6	16	10	5.3	6.4	4.1	3.7	8.7	3.7	1.8	1.2
24	10	5.3	15	10	4.9	6.4	3.6	3.3	7.3	3.2	1.6	1.5
25	7.5	466	20	10	4.9	5.8	4.2	2.6	7.0	2.5	2.0	1.7
26	6.7	28	29	10	4.9	5.8	4.1	1.8	16	2.1	1.7	1.8
27	5.6	84	17	10	4.9	5.8	2.9	1.8	9.3	4.2	1.1	1.8
28	4.9	23	16	10	4.9	5.8	2.6	1.6	4.5	4.9	1.1	1.8
29	4.9	17	16	10	4.6	9.2	43	56	3.1	3.8	.87	1.5
30	4.5	15	15	10	---	8.3	20	21	2.5	4.6	1.7	36
31	4.5	---	17	10	---	6.4	---	5.3	---	2.9	1.9	---
TOTAL	236.3	1015.6	577.1	351.2	200.4	436.3	326.5	323.8	1045.1	239.9	155.37	97.65
MEAN	7.62	33.9	18.6	11.3	6.91	14.1	10.9	10.4	34.8	7.74	5.01	3.25
MAX	20	466	163	22	16	220	82	114	505	55	20	36
MIN	4.5	4.1	8.2	9.3	4.6	3.7	2.6	1.6	2.5	1.1	.87	.95
AC-FT	469	2010	1140	697	397	865	648	642	2070	476	308	194
CFSM	.15	.66	.36	.22	.13	.27	.21	.20	.68	.15	.10	.06
IN.	.17	.74	.42	.25	.15	.32	.24	.23	.76	.17	.11	.07

CAL YR 1987	TOTAL 18640.9	MEAN 51.1	MAX 3010	MIN 1.1	AC-FT 36970	CFSM 1.00	IN. 13.52
WTR YR 1988	TOTAL 5005.22	MEAN 13.7	MAX 505	MIN .87	AC-FT 9930	CFSM .27	IN. 3.63

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1976 to current year. Pesticide analyses: November 1976 to September 1986. Sediment analyses: December 1977 to July 1982. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

								OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)		
DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)					
NOV 04...	0925	3.8	660	8.10	17.0	1	2.0	8.0	84	7.2	80	K360	
FEB 17...	0945	6.5	606	7.90	14.0	5	0.60	8.6	85	1.3	K48	41	
APR 26...	0905	4.9	617	7.70	19.0	2	0.30	7.3	80	0.6	180	420	
JUN 03...	1310	170	247	7.60	22.0	35	530	8.7	102	3.4	27000	78000	
03...	1413	3210	126	8.00	21.5	90	870	7.3	84	4.3	72000	210000	
AUG 01...	1025	3.7	472	7.80	26.5	4	7.7	6.8	86	0.4	K380	400	
DATE		HARDNESS TOTAL (MG/L AS CAC03)	HARDNESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	250	70	89	7.3	31	0.9	2.8	183	66	43	0.40	0.84	
APR 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	110	25	38	2.6	6.8	0.3	2.9	81	26	8.9	0.30	5.7	
03...	53	8	19	1.4	2.8	0.2	2.5	45	13	3.4	0.30	3.9	
AUG 01...	180	58	62	6.4	23	0.8	3.1	123	50	36	0.40	5.0	
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L)	RESIDUE VOLATILE, SUSPENDED (MG/L)	RESIDUE FIXED NON FILTERABLE (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV 04...	--	7	2	--	--	<0.010	0.400	0.030	0.97	1.0	<0.010	2.5	
FEB 17...	350	<1	<1	--	--	<0.010	0.200	0.010	0.39	0.40	0.010	2.6	
APR 26...	--	5	4	1	0.090	0.010	0.100	0.021	0.18	0.20	0.021	2.6	
JUN 03...	140	1440	81	--	0.480	0.020	0.500	0.030	0.47	0.50	0.120	18	
03...	73	2260	94	--	0.280	0.020	0.300	0.050	0.35	0.40	0.130	30	
AUG 01...	260	6	6	--	--	<0.010	<0.100	0.030	0.17	0.20	0.020	3.8	
DATE		ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	<1	63	2	10	1	9	<5	12	<0.1	<1	<1.0	4	
APR 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	1	29	<1	<1	1	6	<5	<1	<0.1	<1	<1.0	<3	
03...	1	16	<1	<1	1	16	<5	<1	<0.1	<1	<1.0	<3	
AUG 01...	1	59	<1	<1	1	7	<5	10	<0.1	<1	<1.0	5	

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

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

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: February 1975 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		SPE- CIFIC CON- DUCT- ANCE (US/CM)		PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT	26...	1330	549	7.40	24.0	1	0.50	8.6	104	2.4	2100	48	210
DEC	15...	1245	578	7.80	13.5	1	2.3	10.4	100	0.9	420	96	230
FEB	16...	1115	673	8.10	15.5	4	0.60	13.6	138	1.2	K8	80	240
APR	04...	1245	567	8.10	20.0	9	4.9	10.0	112	0.6	80	K16	210
MAY	23...	1240	551	7.70	22.0	3	5.3	8.7	101	0.6	150	25	210
SEP	02...	1000	607	7.90	25.0	1	5.5	5.9	72	1.2	20	400	210
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	
OCT	26...	51	51	20	31	1	3.8	159	38	49	0.30	10	299
DEC	15...	47	64	18	27	0.8	3.6	187	38	43	0.40	9.8	316
FEB	16...	71	62	20	38	1	5.7	166	61	63	0.60	5.0	355
APR	04...	48	49	21	34	1	3.5	161	48	57	0.30	8.7	318
MAY	23...	46	48	21	33	1	3.7	161	43	54	0.50	8.9	309
SEP	02...	52	48	22	36	1	3.7	159	43	59	0.30	9.1	317
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)		
OCT	26...	6	<1	0.590	0.010	0.600	0.030	0.37	0.40	0.150	4.6	2	
DEC	15...	2	<1	1.36	0.040	1.40	0.180	0.52	0.70	0.520	3.4	--	
FEB	16...	8	2	4.73	0.170	4.90	0.250	0.45	0.70	2.10	4.5	1	
APR	04...	1	<1	--	<0.010	1.00	0.040	0.26	0.30	0.300	2.9	--	
MAY	23...	6	6	--	<0.010	0.800	0.030	1.1	1.1	0.190	3.1	1	
SEP	02...	18	6	--	<0.010	0.600	0.020	0.48	0.50	0.230	3.1	1	
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)		
OCT	26...	67	<1	<10	1	4	<5	3	<0.1	<1	<1.0	7	
DEC	15...	--	--	--	--	--	--	--	--	--	--	--	
FEB	16...	59	<1	<1	3	9	<5	22	<0.1	<1	<1.0	8	
APR	04...	--	--	--	--	--	--	--	--	--	--	--	
MAY	23...	67	<1	<1	5	<3	<5	8	<0.1	<1	<1.0	<3	
SEP	02...	72	<1	<1	2	5	<5	4	<0.1	<1	<1.0	11	

COLORADO RIVER BASIN

141

08158700 ONION CREEK NEAR DRIFTWOOD, TX

LOCATION.--Lat 30 04'59", long 98 00'29", Hays County, Hydrologic Unit 12090205, on left bank at upstream side of low-water crossing on Farm Road 150, 3.2 mi southeast of Driftwood, and 10 mi west of Buda.

DRAINAGE AREA.--124 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1958, November 1961 to June 1979 (periodic discharge measurements only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 878.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair.

AVERAGE DISCHARGE.--9 years, 50.4 ft³/s (5.52 in/yr), 36,510 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,990 ft³/s June 6, 1985 (gage height, 16.38 ft); no flow for several days in August and September 1984 and Oct. 1-10, 1984. Flood of Mar. 20, 1979, reached a stage of 11.48 ft (discharge, 4,980 ft³/s), on basis of peak flow over dam, 1.5 mi downstream.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0315	*2,500	*7.97	No other peak greater than base discharge.			
Minimum daily discharge, 0.09 ft ³ /s Oct. 11.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.43	3.2	9.6	10	8.1	6.2	5.9	4.7	4.5	2.6	.91	.44
2	.52	3.3	8.2	10	7.6	7.8	5.7	3.8	3.8	2.2	4.6	.48
3	.42	3.3	6.4	11	6.8	6.7	7.6	4.0	3.7	2.2	11	.40
4	.50	3.3	5.6	10	6.3	6.2	7.7	3.4	3.7	2.2	2.4	.32
5	.53	2.7	5.3	9.6	7.1	5.9	7.1	3.3	3.7	2.2	2.0	.18
6	.51	2.5	5.1	11	7.3	5.3	6.2	3.8	3.7	2.2	2.1	.18
7	.36	3.3	4.5	11	6.8	5.4	5.6	4.2	3.4	2.2	1.8	.20
8	.44	18	4.1	9.5	7.1	6.5	5.2	4.4	3.4	2.2	1.6	.18
9	.58	9.2	3.1	9.5	7.5	4.6	5.7	3.9	3.2	2.0	1.4	.15
10	.44	6.3	2.9	9.7	7.5	4.5	7.4	3.9	3.0	1.8	1.4	.15
11	.09	9.0	2.9	10	7.1	5.0	5.5	5.5	3.1	1.8	1.3	.15
12	.11	10	2.2	10	6.5	4.6	6.2	6.1	2.5	7.5	3.2	.15
13	.15	9.7	2.3	9.1	6.8	4.1	5.6	3.2	2.6	2.4	1.6	.15
14	.24	9.1	2.5	9.6	6.8	4.5	5.9	3.1	2.7	1.1	1.1	.15
15	.23	12	1.3	9.8	6.0	4.2	6.2	3.2	2.7	.96	.89	.15
16	.21	7.6	1.0	9.8	6.3	4.2	6.2	6.4	2.7	.82	.89	.15
17	.27	9.0	1.2	9.4	7.7	8.1	6.2	4.4	2.2	.85	.89	1.2
18	.30	11	1.9	9.2	8.6	13	5.1	3.7	2.2	.56	.89	2.0
19	.48	11	9.4	8.8	7.8	16	3.9	3.3	2.7	.52	1.1	.76
20	.35	10	11	8.0	7.9	13	4.2	3.5	2.7	.61	1.1	.58
21	.20	13	14	7.9	8.5	11	4.3	18	1.7	.88	1.1	.44
22	.77	5.6	13	7.9	8.4	10	4.6	7.1	1.1	.70	.89	.28
23	.92	8.9	13	6.8	7.7	9.6	4.6	5.6	1.1	.44	.67	.22
24	1.0	9.0	13	6.7	5.8	9.0	3.8	5.1	1.1	.44	.60	.22
25	1.1	316	12	6.5	5.1	8.4	4.1	5.1	1.0	.44	.60	.19
26	1.0	28	11	6.8	5.1	8.0	3.6	3.9	6.7	.43	.60	.15
27	.69	20	11	6.8	6.0	7.8	3.5	1.2	5.3	1.6	.58	.15
28	1.0	17	11	7.1	6.0	7.6	3.6	3.5	3.6	5.2	.52	.15
29	1.9	15	11	7.5	6.3	7.4	5.4	4.0	3.0	.89	.52	.15
30	2.3	12	11	7.5	---	6.1	7.8	6.9	2.7	1.2	.52	.27
31	3.1	---	11	7.5	---	6.2	---	3.4	---	1.2	.47	---
TOTAL	21.14	598.0	221.5	274.0	202.5	226.9	164.4	145.6	89.5	52.34	49.24	10.34
MEAN	.68	19.9	7.15	8.84	6.98	7.32	5.48	4.70	2.98	1.69	1.59	.34
MAX	3.1	316	14	11	8.6	16	7.8	18	6.7	7.5	11	2.0
MIN	.09	2.5	1.0	6.5	5.1	4.1	3.5	1.2	1.0	.43	.47	.15
AC-FT	42	1190	439	543	402	450	326	289	178	104	98	21
CFSM	.01	.16	.06	.07	.06	.06	.04	.04	.02	.01	.01	.00
IN.	.01	.18	.07	.08	.06	.07	.05	.04	.03	.02	.01	.00

CAL YR 1987	TOTAL 43653.33	MEAN 120	MAX 2610	MIN .09	AC-FT 86590	CFSM .96	IN. 13.10
WTR YR 1988	TOTAL 2055.46	MEAN 5.62	MAX 316	MIN .09	AC-FT 4080	CFSM .05	IN. .62

COLORADO RIVER BASIN

08158700 UNION CREEK NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1974 to current year. Pesticide analyses: January 1978 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
NOV 03...	0850	3.3	507	8.00	19.5	2	0.30	8.4	94	0.2	K52	1200	
FEB 16...	1005	5.6	494	7.90	11.0	5	0.40	10.3	96	0.9	K7	K28	
APR 25...	1200	3.7	497	7.80	22.5	4	0.20	7.9	94	1.1	K64	720	
AUG 02...	0850	0.89	438	7.50	27.0	2	0.40	6.7	86	0.1	42	160	
DATE		HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS S102)
NOV 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 16...	260	53	78	17	8.1	0.2	1.2	212	43	12	0.30	7.1	
APR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 02...	200	47	53	17	9.1	0.3	1.2	156	38	14	0.30	12	
DATE		SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	
NOV 03...	--	4	<1	<0.010	<0.100	0.010	0.39	0.40	<0.010	1.4	--	--	
FEB 16...	294	<1	<1	<0.010	<0.100	0.010	0.29	0.30	<0.010	1.0	<1		
APR 25...	--	<1	<1	<0.100	<0.100	<0.010	--	<0.20	<0.010	2.5	--	--	
AUG 02...	238	7	6	<0.010	<0.100	0.020	0.18	0.20	0.020	2.3	<1		
DATE		BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	
NOV 03...	--	--	--	--	--	--	--	--	--	--	--	--	
FEB 16...	27	<1	20	<1	<3	<5	6	<0.1	<1	<1.0	<3		
APR 25...	--	--	--	--	--	--	--	--	--	--	--	--	
AUG 02...	29	<1	<1	<1	6	<5	5	<0.1	<1	<1.0	<3		

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX

LOCATION.--Lat 30°09'19", long 97°56'23", Hays County, Hydrologic Unit 12090205, 0.8 mi southeast of Farm Road 1826 and 5.9 mi northeast of Driftwood.

DRAINAGE AREA.--12.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1978 to July 1979 (periodic discharge measurements only), October 1978 to June 1979 (peak discharges above base only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 860 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Rain gage in the watershed.

AVERAGE DISCHARGE.--9 years, 6.30 ft³/s (7.01 in/yr), 4,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,330 ft³/s June 11, 1981 (gage height, 13.05 ft, from floodmarks), from slope-area measurements of peak flow; no flow in 1980, 1983-84, and 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1919, reached a stage of 16.2 ft (discharge unknown) and was the highest since at least 1924, from information by local resident. A flood in 1915 was 2 ft higher than the 1939 flood, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0430	*22	*2.81				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.04	1.5	1.2	1.1	.76	.72	.72	.47	.02	.00	.00
2	.05	.05	1.5	1.2	1.1	1.1	.74	.65	.41	.02	.01	.00
3	.05	.05	1.3	1.2	.93	.86	.70	.61	.73	.01	.04	.00
4	.05	.04	1.2	1.2	.93	.75	.70	.48	.42	.01	.00	.00
5	.04	.03	1.1	1.1	1.0	.77	.70	.48	.37	.03	.00	.00
6	.04	.03	1.1	1.4	1.1	.73	.65	.37	.22	.09	.00	.00
7	.03	.03	.86	1.4	1.1	.71	.66	.30	.22	.05	.00	.00
8	.03	.29	.90	1.2	1.1	.72	.65	.34	.18	.04	.00	.00
9	.03	.40	.79	1.2	1.1	.69	.97	.30	.09	.05	.00	.00
10	.03	.32	.75	1.1	.93	.65	.78	.28	.09	.04	.00	.00
11	.04	.24	.73	1.1	.90	.65	.73	.55	.08	.04	.00	.00
12	.04	.17	.70	1.1	.80	.65	.65	.61	.07	.80	.00	.00
13	.05	.22	.71	1.1	.80	.61	.65	.38	.07	.23	.00	.00
14	.04	.22	.87	.93	.80	.60	.65	.33	.07	.07	.00	.00
15	.04	.75	1.1	.93	.80	.60	.65	.13	.06	.06	.00	.00
16	.04	1.2	1.1	1.1	.80	.60	.65	.26	.05	.05	.00	.00
17	.04	.70	1.1	1.1	.80	1.5	.65	.10	.05	.04	.00	.00
18	.04	.60	1.1	1.1	1.2	.91	.67	.08	.05	.04	.00	.00
19	.04	.56	2.8	1.1	.98	.65	.60	.08	.04	.04	.00	.00
20	.04	.38	1.5	1.1	.90	.65	.58	.49	.03	.03	.00	.00
21	.03	.29	1.5	1.1	.80	.65	.48	1.5	.03	.04	.00	.00
22	.03	.22	1.5	1.1	.79	.65	.48	.72	.02	.03	.00	.00
23	.04	.25	1.4	1.1	.75	.65	.45	.54	.03	.0	.00	.00
24	.05	.30	1.4	.93	.75	.65	.30	.48	.02	.00	.00	.00
25	.04	8.3	1.4	.93	.75	.65	.31	.48	.02	.00	.00	.00
26	.04	2.3	1.3	1.0	.75	.65	.20	.47	.11	.00	.00	.00
27	.03	2.3	1.4	1.1	.75	.65	.08	.38	.08	.00	.00	.00
28	.04	2.0	1.4	1.1	.75	.65	.08	.36	.06	.00	.00	.00
29	.05	1.8	1.2	1.1	.75	.66	1.0	.30	.05	.00	.00	.00
30	.05	1.6	1.2	1.1	---	.62	1.1	.37	.04	.00	.00	.00
31	.05	---	1.2	1.1	---	.67	---	.43	---	.00	.00	---
TOTAL	1.27	25.68	37.61	34.52	26.01	22.31	18.23	13.57	4.23	1.83	0.05	0.00
MEAN	.041	.86	1.21	1.11	.90	.72	.61	.44	.14	.059	.002	.00
MAX	.06	8.3	2.8	1.4	1.2	1.5	1.1	1.5	.73	.80	.04	.00
MIN	.03	.03	.70	.93	.75	.60	.08	.08	.02	.00	.00	.00
AC-FT	2.5	51	75	68	52	44	36	27	8.4	3.6	.1	.0
CFSM	.00	.07	.10	.09	.07	.06	.05	.04	.01	.00	.00	.00
IN.	.00	.08	.11	.11	.08	.07	.06	.04	.01	.01	.00	.00

CAL YR 1987	TOTAL 3736.32	MEAN 10.2	MAX 419	MIN .03	AC-FT 7410	CFSM .84	IN. 11.39
WTR YR 1988	TOTAL 185.31	MEAN .51	MAX 8.3	MIN .00	AC-FT 368	CFSM .04	IN. .57

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1978 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX

LOCATION.--Lat 30°12'32", long 97°54'11", Travis County, Hydrologic Unit 12090205, 1.7 mi south of the intersection on U.S. Highway 290 and Farm Road 1826 and 11.9 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--8.24 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.14 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No known regulation or diversion. Recording rain gage in the watershed.

AVERAGE DISCHARGE.--10 years (water years 1979-88), 6.10 ft³/s (10.05 in/yr), 4,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,080 ft³/s June 11, 1981 (gage height, 10.79 ft); no flow at times most years.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0700	*166	*5.84				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.14	.20	.60	.42	.54	.33	.13	.10	.00	.00	.00
2	.08	.14	.20	.58	.43	.60	.31	.14	.10	.00	.00	.00
3	.08	.14	.20	.63	.45	.54	.30	.12	.17	.00	.00	.00
4	.08	.14	.20	.63	.46	.54	.29	.12	.15	.03	.00	.00
5	.08	.14	.22	.62	.48	.56	.31	.12	.15	.00	.00	.00
6	.08	.13	.24	.66	.49	.56	.27	.09	.11	.02	.00	.00
7	.09	.12	.23	.74	.51	.58	.25	.08	.09	.00	.00	.00
8	.09	.26	.23	.72	.53	.56	.21	.08	.07	.01	.00	.00
9	.09	.14	.22	.70	.54	.54	.25	.08	.04	.00	.00	.00
10	.09	.13	.22	.67	.57	.55	.20	.08	.04	.03	.00	.00
11	.09	.13	.22	.65	.51	.56	.16	.12	.04	.00	.00	.00
12	.09	.12	.21	.65	.51	.53	.14	.14	.04	.04	.00	.00
13	.09	.12	.20	.60	.51	.52	.14	.12	.03	.00	.00	.00
14	.08	.12	.25	.59	.52	.51	.14	.12	.01	.00	.00	.00
15	.05	.16	.12	.59	.51	.51	.14	.12	.01	.01	.00	.00
16	.13	.22	.17	.62	.52	.50	.14	.11	.01	.00	.00	.00
17	.10	.14	.17	.64	.54	.60	.14	.10	.01	.00	.00	.04
18	.11	.13	.18	.65	.57	.49	.12	.09	.00	.00	.00	.00
19	.11	.12	.67	.62	.56	.45	.10	.07	.00	.00	.00	.00
20	.11	.12	.35	.54	.55	.44	.11	.09	.00	.00	.00	.00
21	.11	.12	.33	.51	.55	.42	.11	.18	.00	.00	.00	.00
22	.11	.12	.34	.52	.55	.41	.11	.14	.09	.00	.00	.00
23	.11	.12	.34	.54	.54	.40	.11	.11	.00	.00	.00	.00
24	.11	.12	.36	.54	.54	.39	.11	.14	.00	.00	.00	.00
25	.12	22	.46	.49	.54	.38	.08	.13	.00	.00	.00	.00
26	.12	.20	.56	.50	.54	.35	.07	.12	.03	.00	.00	.00
27	.12	.37	.53	.41	.53	.33	.08	.11	.00	.00	.00	.00
28	.12	.21	.59	.36	.54	.31	.08	.09	.00	.00	.00	.00
29	.12	.20	.60	.37	.53	.32	.12	.08	.00	.00	.00	.00
30	.12	.20	.59	.39	---	.31	.14	.08	.00	.00	.00	.00
31	.13	---	.65	.40	---	.33	---	.09	---	.00	.00	---
TOTAL	3.08	26.52	10.05	17.73	15.04	14.63	5.06	3.39	1.29	0.14	0.00	0.04
MEAN	.099	.88	.32	.57	.52	.47	.17	.11	.043	.005	.00	.001
MAX	.13	.22	.67	.74	.57	.60	.33	.18	.17	.04	.00	.04
MIN	.05	.12	.12	.36	.42	.31	.07	.07	.00	.00	.00	.00
AC-FT	6.1	53	20	35	30	29	10	6.7	2.6	.3	.0	.08
CFSM	.01	.11	.04	.07	.06	.06	.02	.01	.01	.00	.00	.00
IN.	.01	.12	.05	.08	.07	.07	.02	.02	.01	.00	.00	.00

CAL YR 1987	TOTAL	3403.74	MEAN	9.33	MAX	651	MIN	.00	AC-FT	6750	CFSM	1.13	IN.	15.37
WTR YR 1988	TOTAL	96.97	MEAN	.26	MAX	22	MIN	.00	AC-FT	192	CFSM	.03	IN.	.44

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

COLORADO RIVER BASIN

147

08158920 WILLIAMSON CREEK AT OAK HILL, TX

LOCATION.--Lat 30°06'06", long 97°51'36", Travis County, Hydrologic Unit 12090205, at downstream side of bridge on U.S. Highway 290 in Oak Hill, 0.8 mi east of the intersection of U.S. Highway 290 and State Highway 71, and 7.7 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--6.30 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1974 to February 1977 (periodic discharge measurements only), January 1978 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 798.68 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Station is equipped with an automatic water-quality sampler. Recording rain gage in the watershed above this station.

AVERAGE DISCHARGE.--10 years, 4.64 ft³/s (10.00 in/yr), 3,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,170 ft³/s June 11, 1981 (gage height, 8.55 ft) from rating curve extended above 105 ft³/s on basis of slope-area measurement of peak flow; no flow for many days each year.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0330	*261	*3.71				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.10	.40	.16	.02	.07	.00	.51	.00	e.00	.00
2	.00	.00	.07	.34	.16	.15	.08	.00	1.2	.00	e.00	.00
3	.00	.00	.09	.43	.14	.03	.03	.00	3.3	.00	e.00	.00
4	.00	.00	.05	.36	.16	.02	.00	.00	.04	.37	e.00	.00
5	.00	.00	.02	.35	.17	.02	.04	.00	.00	.01	e.00	.00
6	.00	.00	.00	.81	.13	.02	.10	.00	.00	.00	e.00	.00
7	.00	.00	.00	.48	.15	.01	.00	.00	.00	.00	e.00	.00
8	.00	18	.00	.44	.13	.02	.00	.00	.00	.00	e.00	.00
9	.00	.45	.00	.42	.11	.01	1.6	.00	.00	.00	e.00	.00
10	.00	.02	.00	.40	.11	.01	.31	.00	.00	e1.0	e.00	.00
11	.00	.00	.00	.42	.11	.00	.24	1.6	.00	e.20	e1.1	.00
12	.00	.00	.00	.42	.13	.00	.18	.26	.00	e2.0	e.00	.00
13	.00	.00	.00	.37	.12	.00	.12	.00	.00	e.10	e.00	.00
14	.00	.00	.00	.38	.16	.00	.06	.00	.00	e.00	e.00	.00
15	.00	.55	.00	.39	.07	.01	.03	.00	.00	e.00	e.00	.00
16	.00	6.0	.00	.41	.05	.01	.01	.00	.00	e.00	e1.2	.00
17	.00	.05	.00	.38	.06	8.3	.00	.00	.00	e.00	e.00	4.0
18	.00	.00	.13	.41	.13	.31	.00	.00	.00	e.00	e.00	.00
19	.00	.00	6.3	.39	.05	.16	.00	.00	.00	e.00	e.00	.00
20	.00	.00	.46	.31	.05	.13	.00	4.6	.00	e.00	e.00	.00
21	.00	.00	.39	.31	.04	.10	.00	8.8	.00	e.00	e.00	.00
22	.00	.00	.23	.33	.03	.08	.00	.00	.00	e.00	e.00	.00
23	.00	.00	.18	.36	.03	.06	.00	.00	.00	e.00	e.00	.00
24	.00	.00	.57	.33	.02	.05	.00	.00	.00	e.00	e.00	.00
25	.00	21	.82	.32	.02	.03	.00	.00	.00	e.00	e.00	.00
26	.00	.19	1.2	.30	.01	.03	.00	.00	1.2	e.00	e.00	.00
27	.00	2.7	.56	.28	.01	.01	.00	.00	.00	e.00	e.00	.00
28	.00	.31	.53	.31	.01	.01	.00	.00	.00	e.00	e.00	.00
29	.00	.18	.49	.24	.04	.10	1.4	.00	.00	e.00	e.00	.00
30	.00	.16	.49	.26	---	.04	.24	.00	.00	e.00	e.00	.00
31	.00	---	.50	.21	---	.04	---	.59	---	e.00	e.00	---
TOTAL	0.00	49.61	13.18	11.56	2.56	9.78	4.51	15.85	6.25	3.68	2.30	4.00
MEAN	.00	1.65	.43	.37	.088	.32	.15	.51	.21	.12	.074	.13
MAX	.00	21	6.3	.81	.17	8.3	1.6	8.8	3.3	2.0	1.2	4.0
MIN	.00	.00	.00	.21	.01	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	98	26	23	5.1	19	8.9	31	12	7.3	4.6	7.9
CFSM	.00	.26	.07	.06	.01	.05	.02	.08	.03	.02	.01	.02
IN.	.00	.29	.08	.07	.02	.06	.03	.09	.04	.02	.01	.02

CAL YR 1987 TOTAL 2026.13 MEAN 5.55 MAX 285 MIN .00 AC-FT 4020 CFSM .88 IN. 11.96
WTR YR 1988 TOTAL 123.28 MEAN .34 MAX 21 MIN .00 AC-FT 245 CFSM .05 IN. .73

e Estimated.

COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAK HILL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1974 to current year. Pesticide analyses: June 1978 to September 1986. Radiochemical analyses: April 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV												
08...	1445	52	232	--	--	28	95	--	--	7.3	40000	42000
08...	1515	218	130	--	--	54	120	--	--	3.8	23000	44000
08...	1545	182	128	--	--	--	--	--	--	--	--	--
08...	1615	84	138	--	--	48	57	--	--	3.4	--	--
08...	1645	55	144	7.40	--	--	--	--	--	--	--	--
08...	1800	28	182	--	--	17	22	--	--	2.8	35000	100000
JAN												
11...	1005	0.70	754	8.10	4.0	8	0.50	--	--	0.2	K8	80
MAR												
09...	0915	0.05	704	7.80	12.0	3	0.60	9.0	85	0	40	30
17...	1415	89	160	--	--	37	95	--	--	7.3	8000	37000
17...	1445	54	166	--	--	--	--	--	--	--	--	--
17...	1515	45	171	--	--	--	--	--	--	--	--	--
17...	1545	31	173	--	--	--	--	--	--	4.0	K3600	52000
MAY												
21...	0010	46	348	--	--	22	100	--	--	5.2	60000	42000
21...	0040	57	271	--	--	--	--	--	--	--	--	--
21...	0110	62	234	--	--	55	100	--	--	3.0	38000	66000
21...	0140	53	178	7.90	--	--	--	--	--	--	--	--
21...	0210	41	190	--	--	35	28	--	--	4.2	--	--
21...	0240	38	176	--	--	34	33	--	--	1.9	14000	52000
NOV												
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	61	19	18	4.0	3.4	0.2	3.9	43	23	5.2	0.10	2.7
08...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
11...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
09...	350	69	98	25	21	0.5	1.5	279	42	31	0.10	2.7
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	74	12	22	4.6	4.6	0.2	2.4	62	16	6.3	0.10	2.9
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	71	11	22	4.0	4.5	0.2	2.3	61	15	6.9	0.20	2.4
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
08...	--	282	58	0.370	0.030	0.400	0.110	2.5	2.6	0.390	31	--
08...	--	251	60	0.370	0.030	0.400	0.080	1.0	1.1	0.210	23	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	100	33	0.370	0.030	0.400	0.080	1.1	1.2	0.200	14	--
08...	86	--	--	--	--	--	--	--	--	--	--	--
08...	--	31	9	0.360	0.040	0.400	0.030	0.67	0.70	0.180	14	--
JAN												
11...	--	4	<1	--	<0.010	0.300	0.010	0.29	0.30	0.170	2.0	--
MAR												
09...	389	3	<1	--	<0.010	<0.100	<0.010	--	0.30	0.100	2.7	--
17...	--	246	31	0.160	0.040	0.200	0.030	1.6	1.6	0.180	19	--
17...	--	--	--	0.260	0.040	0.300	0.030	0.97	1.0	0.180	--	--
17...	96	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	0.360	0.040	0.400	0.050	0.55	0.60	0.190	11	--
MAY												
21...	--	378	88	0.370	0.030	0.400	0.050	0.75	0.80	0.380	48	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	210	92	0.380	0.020	0.400	0.110	0.49	0.60	0.220	22	--
21...	94	--	--	--	--	--	--	--	--	--	--	0.24
21...	--	61	32	0.370	0.030	0.400	0.120	0.68	0.80	0.260	15	--
21...	--	908	192	0.370	0.030	0.400	0.080	0.32	0.40	0.250	13	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

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 south-east of the intersection of Jimmy Clay and Nuckles Crossing Roads, and 5.9 mi south of the State Capitol in Austin.

DRAINAGE AREA.--27.6 mi.

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1975 to September 1988. Pesticide analyses: January 1975 to September 1986. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW-INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (FTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
NOV 04...	1045	0.05	838	7.60	17.0	2	0.20	5.8	61	0.1	K60	K52
MAR 09...	0805	0.50	618	7.20	13.5	4	0.70	6.4	62	0	1000	220
APR 27...	1015	0.03	709	7.60	18.5	2	0.40	5.6	61	0.4	44	180
JUN 21...	1040	0.05	683	7.50	24.0	1	0.50	5.6	68	0	120	580
AUG 03...	0910	0.22	526	7.50	24.5	<1	0.40	5.4	66	0.2	K470	540
SEP 02...	0905	0.04	734	7.20	24.5	1	1.2	4.1	50	1.6	50	3900

[illegible]

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
NOV 04...	--	10	2	<0.010	0.900	0.030	0.27	0.30	0.010	1.8	--
MAR 09...	351	3	<1	<0.010	0.300	<0.010	--	0.30	0.010	2.0	1
APR 27...	402	1	<1	<0.010	0.500	0.030	--	--	0.030	2.0	1
JUN 21...	378	1	<1	<0.010	0.800	0.020	0.18	0.20	0.070	1.8	2
AUG 03...	291	4	3	<0.010	0.700	0.030	0.47	0.50	0.060	2.3	1
SEP 02...	--	5	3	<0.010	0.900	<0.010	--	<0.20	0.090	1.8	--

[illegible]

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

LOCATION.--Lat 30°10'40", long 97°41'18", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of downstream bridge on U.S. Highway 183, 2.4 mi downstream from Williamson Creek, 3.2 mi southwest of Del Valle, and 7.5 mi southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--321 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. In 1924-30 station was published as "near Del Valle."

GAGE.--Water-stage recorder. Datum of gage is 442.85 ft State Department of Highways and Public Transportation datum. May 15, 1924, to Mar. 15, 1930, nonrecording gage at highway bridge 1,700 ft upstream at 6.42-foot higher datum.

REMARKS.--No estimated daily discharges. Records good. Flow is slightly regulated by several small ponds on main channel and tributaries above station. Three recording rain gages in the watershed.

AVERAGE DISCHARGE.--17 years (water years 1925-29, 1977-88), 84.1 ft³/s (3.56 in/yr), 60,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft³/s May 28, 1929 (gage height, 30.5 ft), present datum; no flow at times.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	1200	*3,580	*12.54	No other peak greater than base discharge.			
Minimum discharge, no flow at times.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	2.6	8.4	6.7	7.3	3.5	3.5	3.8	4.8	.00	5.9	.00
2	2.7	2.3	7.1	6.2	7.2	13	3.5	2.3	4.6	.00	1.9	.00
3	2.4	2.3	6.3	7.1	6.8	6.7	3.2	1.4	73	.00	.26	.00
4	1.7	2.5	6.0	7.2	6.3	2.9	3.1	1.1	33	.00	.10	.00
5	1.6	2.6	6.6	6.7	6.3	2.3	2.9	1.1	10	24	.00	.00
6	1.3	2.6	6.1	7.2	5.9	2.0	2.8	.75	11	20	.00	.00
7	1.3	2.6	5.8	11	5.8	1.8	2.7	.57	11	16	.00	.00
8	1.3	25	5.6	7.8	5.2	1.7	2.6	.55	11	9.7	.00	.00
9	.87	23	6.2	6.9	4.9	1.6	5.3	.41	9.4	5.4	.00	.00
10	.62	8.1	5.8	6.6	5.0	1.5	9.2	.31	6.6	2.0	.00	.00
11	.76	4.8	5.8	6.8	3.9	1.2	4.5	35	5.8	.70	16	.00
12	1.1	4.1	5.4	6.7	4.0	1.2	3.2	38	5.6	152	170	.00
13	1.8	3.6	5.7	6.0	4.7	1.3	2.7	5.3	5.2	23	11	.00
14	1.9	3.5	5.3	5.8	4.7	1.4	2.6	2.4	6.0	10	5.0	.00
15	1.4	4.9	4.9	5.8	4.3	1.0	3.6	1.4	4.3	6.6	1.3	.00
16	1.0	23	4.9	5.8	4.1	.79	2.1	1.0	.04	4.6	.27	.00
17	.57	14	4.9	5.5	4.1	105	2.4	.98	.00	2.6	15	.00
18	.57	7.2	6.1	5.4	6.6	50	2.8	1.0	.00	1.1	3.6	.00
19	.76	5.1	65	5.4	7.7	12	2.2	1.2	.00	.53	.26	.00
20	.77	4.1	38	5.4	4.9	7.5	1.9	1.5	.00	9.9	.00	.00
21	1.1	4.5	16	5.4	4.5	5.5	1.7	154	.00	26	.00	.00
22	1.2	4.1	11	5.4	4.5	4.6	1.6	9.1	.00	7.3	.00	.00
23	2.3	4.1	8.9	5.6	4.5	4.4	1.6	4.0	.00	3.3	.00	.00
24	3.6	4.2	8.3	5.9	3.7	4.2	1.4	3.4	.00	.76	.00	.00
25	3.7	769	8.3	5.7	3.3	4.1	1.3	2.2	.00	.07	.00	.00
26	3.8	116	8.4	5.4	3.2	3.7	1.0	1.8	2.0	.00	.00	.00
27	3.1	71	7.5	5.6	3.4	3.7	.79	1.4	18	.00	.00	.00
28	2.6	23	7.0	5.8	3.0	3.6	.61	1.1	.67	.00	.00	.00
29	2.4	13	6.6	6.0	3.7	3.7	1.0	.93	.00	.00	.00	.00
30	2.3	10	6.3	6.5	---	3.3	3.5	1.5	.02	6.1	.00	.00
31	2.7	---	6.7	7.1	---	3.3	---	3.7	---	9.9	.00	---
TOTAL	56.32	1166.8	304.9	196.4	143.5	262.49	81.30	283.20	222.03	341.56	230.59	0.00
MEAN	1.82	38.9	9.84	6.34	4.95	8.47	2.71	9.14	7.40	11.0	7.44	.00
MAX	3.8	769	65	11	7.7	105	9.2	154	73	152	170	.00
MIN	.57	2.3	4.9	5.4	3.0	.79	.61	.31	.00	.00	.00	.00
AC-FT	112	2310	605	390	285	521	161	562	440	677	457	.0
CFSM	.01	.12	.03	.02	.02	.03	.01	.03	.02	.03	.02	.00
IN.	.01	.14	.04	.02	.02	.03	.01	.03	.03	.04	.03	.00

CAL YR 1987	TOTAL 63317.72	MEAN 173	MAX 6670	MIN .57	AC-FT 125600	CFSM .54	IN. 7.34
WTR YR 1988	TOTAL 3289.09	MEAN 8.99	MAX 769	MIN .00	AC-FT 6520	CFSM .03	IN. .38

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. Pesticide analyses: October 1976 to September 1986. Sediment analyses: October 1976 to September 1982. Radiochemical analyses: January 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
NOV 04...	1005	2.0	536	8.00	19.5	4	0.30	8.5	94	0.4	25	41	
FEB 17...	1035	6.0	558	7.90	13.5	5	0.90	10.4	101	1.1	K5	K13	
APR 26...	1000	1.0	575	7.80	21.5	3	0.20	7.4	86	1.3	27	88	
JUL 12...	0840	194	250	7.90	25.0	45	84	7.3	90	1.6	29000	34000	
AUG 01...	1115	6.8	362	7.90	28.5	4	1.7	7.3	96	0.6	K340	96	
DATE		HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	240	61	75	13	29	0.8	2.6	180	61	34	0.30	1.5	
APR 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 12...	100	24	34	4.2	9.0	0.4	2.3	78	18	15	0.20	2.9	
AUG 01...	150	22	47	7.1	16	0.6	2.6	125	28	16	0.40	9.7	
DATE		SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
NOV 04...	--	5	1	--	<0.010	<0.100	<0.010	--	<0.20	<0.010	2.1	--	--
FEB 17...	324	13	<1	--	<0.010	<0.100	0.010	0.19	0.20	0.010	2.6	<1	<1
APR 26...	--	<1	<1	--	<0.010	<0.100	0.010	0.29	0.30	0.020	3.1	--	--
JUL 12...	132	136	18	0.170	0.030	0.200	0.050	--	<0.20	0.200	7.5	2	2
AUG 01...	202	2	2	--	<0.010	<0.100	0.020	0.38	0.40	0.020	4.4	2	2
DATE		BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 17...	41	2	<1	<1	5	<5	2	<0.1	<1	<1.0	<3		
APR 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 12...	15	<1	<1	<1	16	<5	<1	<0.1	<1	<1.0	4		
AUG 01...	48	<1	<1	<1	5	<5	4	<0.1	<1	<1.0	<3		

LOCATION.--Lat 30°06'16", long 97°19'09", Bastrop County, Hydrologic Unit 12090301, at the downstream side of bridge on State Highway 71 bridge, at Bastrop, 0.2 mi upstream from Gillis Branch, 1.2 mi downstream from Piney Creek, and at mile 236.6.

WATER-DISCHARGE RECORDS

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

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation and for municipal supply. Regulation is the same as that for Colorado River at Austin (station 08158000). The city of Austin diverts water into Decker Lake (by pumpage) upstream from this station. The Lower Colorado River Authority also diverts water from the Colorado into Lake Bastrop by pumping upstream from this station. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,600 ft³/s Oct. 29, 1960 (gage height, 34.45 ft); minimum daily, 75 ft³/s Apr. 1, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,940 ft³/s June 4 at 1100 hours (gage height, 6.46 ft); minimum daily, 208 ft³/s Feb. 7.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2110	2030	438	464	263	243	1060	2030	1980	2460	1950	1770
2	2050	1010	421	369	546	239	1150	1970	1810	2310	1940	1690
3	2120	584	405	369	354	253	1300	1990	2330	2360	1940	1710
4	2580	511	395	355	236	2740	999	1920	3210	2410	2070	1750
5	2130	436	395	330	215	3260	1250	1930	1840	2550	1990	1690
6	2090	430	396	324	211	3270	1370	1970	1470	2480	1770	1660
7	2070	604	379	424	208	3160	894	1860	1740	2090	1840	1730
8	2070	413	370	904	251	3340	694	1570	1770	2120	1800	1220
9	2070	913	362	742	266	3370	706	1700	1770	1970	1620	1630
10	2170	793	424	759	268	3380	939	1710	1780	1890	1750	1660
11	2100	477	444	783	268	3400	1050	1700	2200	1900	1750	1650
12	2070	392	373	2610	272	3410	1090	2000	2240	2150	2070	1630
13	2080	394	370	3630	269	1950	647	1370	2330	2190	1930	1750
14	2070	376	364	1960	278	724	532	1980	2310	2380	1770	1900
15	2080	375	368	646	279	462	645	1990	2300	2020	1890	1800
16	2080	390	869	396	273	723	617	2010	2310	1920	1630	1770
17	2080	954	442	359	269	822	1100	1980	2440	1860	1920	1810
18	2080	789	370	344	298	2220	1250	1960	2320	1860	1920	1830
19	2090	477	748	385	297	1200	1220	1970	2360	1970	1870	1790
20	2090	397	907	343	302	568	1220	1920	2390	2040	1820	1770
21	1890	396	840	518	282	401	1230	2440	2420	2400	1810	1740
22	2010	416	551	640	265	355	1230	1930	2470	2050	1840	1780
23	2140	378	429	329	259	1350	973	2230	2390	2220	1800	1770
24	1800	374	371	268	252	1870	945	2000	2280	2350	1820	1760
25	2050	386	313	257	260	2040	1050	1970	2440	2220	1810	1720
26	2080	2290	325	245	254	2210	1090	1940	2420	1980	2030	1760
27	2070	1210	578	234	244	2010	862	1930	2560	2300	2060	1760
28	1960	871	493	277	248	1760	968	1920	2460	2210	1890	1710
29	2070	565	371	241	253	2100	1880	1940	2530	2190	1680	1740
30	2070	465	356	220	---	1260	2230	2210	2470	1980	1800	1900
31	2040	---	550	221	---	1330	---	2060	---	2030	1800	---
TOTAL	64460	20096	14417	19946	7940	55420	32191	60100	67340	66860	57580	51850
MEAN	2079	670	465	643	274	1788	1073	1939	2245	2157	1857	1728
MAX	2580	2290	907	3630	546	3410	2230	2440	3210	2550	2070	1900
MIN	1800	374	313	220	208	239	532	1370	1470	1860	1620	1220
AC-FT	127900	39860	28600	39560	15750	109900	63850	119200	133600	132600	114200	102800
CAL YR 1987	TOTAL 1721073			MEAN 4715	MAX 46400			AC-FT 3414000				
WTR YR 1988	TOTAL 518200			MEAN 1416	MAX 3630	MIN 208	AC-FT 1028000					

08159200 COLORADO RIVER AT BASTROP, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1944. Chemical and biochemical analyses: February 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1986 to current year.

pH: November 1986 to current year

WATER TEMPERATURE: November 1986 to current year.

DISSOLVED OXYGEN: November 1986 to current year.

INSTRUMENTATION.--Beginning November 1986, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

REMARKS.--Interruptions in the record were due to malfunction of the instrument. A lightning strike caused instrument problems and loss of record in October. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request. Where there is only a mean value for conductance, it is a value estimated from available field values, flow, past data and regression relationships.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 749 microsiemens Feb. 13, 1988; minimum, 265 microsiemens Dec. 23, 1986.

pH: Maximum, 9.2 units Feb. 13, 14, 1988; minimum, 7.3 units May 30, 1987.

WATER TEMPERATURE: Maximum, 33.5°C Aug. 12, 1987; minimum, 5.0°C Jan. 10, 11, 1988.

DISSOLVED OXYGEN: Maximum, 18.4 mg/L Feb. 12, 13, 1988; minimum, 5.1 mg/L June 4, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 749 microsiemens Feb. 13; minimum, 365 microsiemens June 5.

pH: Maximum, 9.2 units Feb. 13, 14; minimum, 7.4 units Sept. 18.

WATER TEMPERATURE: Maximum, 30.5°C Aug. on several days during August; minimum, 5.0°C Jan. 10, 11.

DISSOLVED OXYGEN: Maximum, 18.4 mg/L Feb. 12, 13; minimum, 5.1 mg/L June 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CaCO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3
NOV 17...	0930	1290	689	8.20	16.0	8.4	86	0.9	250	61
FEB 25...	1120	257	710	8.70	14.0	12.4	120	0.8	250	60
MAR 28...	1135	1510	570	8.10	20.0	8.4	93	0.7	200	41
MAY 13...	1300	915	572	8.10	24.0	8.0	96	0.5	210	53
JUN 16...	1115	2300	566	7.90	25.5	7.3	90	0.6	210	56
AUG 19...	0910	1900	563	7.80	28.0	6.5	84	0.1	200	52

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CaCO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 17...	68	20	45	1	5.1	192	58	57	0.60
FEB 25...	67	21	52	1	5.6	194	67	68	0.60
MAR 28...	48	20	34	1	3.8	161	46	54	0.30
MAY 13...	50	21	37	1	3.8	159	46	56	0.40
JUN 16...	49	22	35	1	4.2	157	45	56	0.40
AUG 19...	47	21	35	1	3.8	152	44	57	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV 17...	9.6	378	4.35	0.050	4.40	0.140	0.66	0.80	1.10
FEB 25...	0.67	398	3.61	0.090	3.70	0.020	0.58	0.60	1.40
MAR 28...	9.0	312	0.790	0.010	0.800	0.050	0.45	0.50	0.300
MAY 13...	9.7	319	0.990	0.010	1.00	0.040	0.26	0.30	0.310
JUN 16...	9.4	315	--	<0.010	0.700	<0.010	--	0.40	0.200
AUG 19...	9.3	309	0.790	0.010	0.800	0.020	0.58	0.60	0.320

COLORADO RIVER MAIN STEM

155

08159200 COLORADO RIVER AT BASTROP, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	64460	550	302	52600	50	8700	42	7380	210
NOV. 1987	20096	587	321	17400	54	2920	46	2490	220
DEC. 1987	14417	641	349	13600	59	2300	51	1980	230
JAN. 1988	19946	605	331	17800	56	2990	48	2570	220
FEB. 1988	7940	714	386	8270	67	1430	58	1240	250
MAR. 1988	55420	572	314	47000	52	7820	44	6650	210
APR. 1988	32191	590	323	28100	54	4690	46	4010	220
MAY 1988	60100	566	311	50400	52	8370	44	7120	210
JUNE 1988	67340	554	304	55300	50	9170	43	7780	210
JULY 1988	66860	561	308	55600	51	9230	43	7840	210
AUG. 1988	57580	574	315	49000	52	8160	45	6940	210
SEPT 1988	51850	587	322	45000	54	7520	46	6420	220
TOTAL	518200	**	**	440000	**	73300	**	62400	**
WTD.AVG.	1416	574	315	**	52	**	45	**	210

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	549	553	549	551	581	567	570	653	635	645
2	---	---	550	568	554	560	591	569	579	656	650	653
3	---	---	549	591	569	580	624	592	608	649	642	646
4	---	---	538	617	591	604	646	625	637	640	635	637
5	---	---	558	640	618	629	668	647	654	657	638	646
6	---	---	549	664	641	653	673	661	667	671	658	664
7	---	---	555	687	665	678	687	673	679	678	669	676
8	---	---	550	692	655	681	687	685	686	668	653	664
9	---	---	550	666	631	657	697	681	685	650	619	631
10	---	---	547	629	597	621	683	678	680	619	614	617
11	---	---	549	593	563	572	681	679	680	629	619	623
12	---	---	550	589	568	580	678	668	675	630	552	598
13	---	---	550	597	590	593	669	664	667	551	520	531
14	---	---	550	621	598	608	665	657	662	544	521	531
15	---	---	550	653	622	636	657	649	652	565	546	557
16	---	---	550	679	654	665	680	652	669	585	563	570
17	---	---	550	686	676	682	675	647	661	601	579	588
18	---	---	550	675	612	649	646	615	631	617	599	608
19	---	---	550	610	589	602	618	593	611	634	617	625
20	---	---	550	587	572	578	649	619	635	665	636	651
21	551	543	546	616	582	599	628	609	618	687	666	674
22	555	548	553	647	616	630	---	---	600	703	686	695
23	548	541	545	662	641	651	---	---	580	691	681	683
24	554	546	550	684	660	669	589	554	571	681	662	672
25	564	551	559	691	675	681	610	590	601	661	648	654
26	550	547	549	680	384	533	633	612	620	653	648	650
27	550	547	548	448	385	422	662	635	648	662	654	656
28	553	547	549	546	450	492	696	664	682	667	661	663
29	553	546	549	554	547	552	696	680	689	685	668	676
30	550	548	549	571	554	562	678	648	664	702	686	691
31	550	547	549	---	---	---	648	630	638	706	695	701
MONTH	564	541	550	692	384	606	697	554	642	706	520	638

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	714	701	706	715	710	713	594	583	587	570	555	564
2	729	711	719	711	702	708	616	588	601	565	558	561
3	739	730	737	715	708	710	603	594	598	571	562	566
4	739	732	736	712	593	654	604	592	596	577	570	573
5	733	711	722	598	588	594	610	588	602	584	574	578
6	711	694	703	587	571	580	602	578	587	582	571	577
7	696	685	690	572	560	567	599	583	593	581	570	573
8	687	677	682	561	556	559	604	586	593	584	576	579
9	688	679	683	559	554	556	620	602	609	587	581	584
10	707	689	698	561	555	557	616	600	612	584	580	582
11	726	708	718	560	556	559	609	559	596	584	573	579
12	739	725	733	559	555	557	586	556	570	580	571	576
13	749	739	742	570	555	562	594	587	590	581	553	572
14	741	723	734	582	569	575	596	588	591	567	548	556
15	722	707	714	596	583	589	603	589	595	585	547	555
16	711	705	707	621	596	606	624	605	613	589	562	571
17	718	707	712	631	607	621	625	606	616	600	564	577
18	732	700	712	611	502	573	609	577	596	---	---	553
19	720	710	713	491	473	477	582	577	579	---	---	555
20	722	719	721	510	477	495	585	575	581	---	---	559
21	721	709	716	549	510	528	586	578	582	---	---	548
22	708	700	705	583	551	568	591	581	586	---	---	564
23	709	702	704	643	583	608	591	585	588	---	---	558
24	713	708	710	593	526	549	598	585	589	---	---	567
25	713	703	708	566	551	557	599	586	595	---	---	569
26	712	705	708	569	557	563	599	581	592	---	---	575
27	720	708	712	576	561	567	584	577	579	---	---	561
28	714	710	712	586	564	571	599	586	593	564	560	562
29	716	713	714	584	561	570	600	562	583	562	560	561
30	---	---	---	573	567	570	567	555	560	568	548	558
31	---	---	---	605	574	586	---	---	---	550	528	540
MONTH	749	677	713	715	473	582	625	555	592	600	528	566

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	559	550	556	566	558	562	577	568	572	584	580	582
2	559	540	552	567	560	563	576	561	566	587	583	586
3	556	531	544	566	561	563	573	566	569	591	579	587
4	573	387	447	564	557	561	576	564	570	586	578	583
5	481	365	406	560	555	558	578	573	575	585	582	584
6	516	485	500	555	532	547	577	573	575	585	582	583
7	550	517	538	547	528	536	579	572	575	585	580	583
8	557	550	552	559	547	553	580	575	577	588	582	585
9	563	554	558	560	552	555	581	576	579	598	588	594
10	566	558	563	563	559	561	582	579	580	590	585	587
11	570	550	564	562	556	560	583	558	578	591	586	588
12	567	557	562	563	546	556	613	574	589	586	582	585
13	569	559	565	552	506	539	575	530	554	589	585	587
14	569	560	564	539	507	529	569	534	554	590	585	588
15	571	554	564	562	533	547	567	548	554	596	571	585
16	593	562	572	570	563	567	574	547	566	593	585	588
17	---	---	571	576	569	573	584	562	574	---	---	587
18	---	---	574	576	574	575	583	558	576	---	---	586
19	---	---	573	575	572	573	565	558	563	---	---	588
20	---	---	572	574	570	572	573	564	568	---	---	588
21	577	567	573	573	565	569	581	574	577	---	---	589
22	598	569	576	575	558	566	583	580	582	---	---	588
23	601	572	582	574	557	564	584	580	582	---	---	588
24	584	567	574	571	562	566	584	581	582	---	---	589
25	---	---	566	575	564	569	586	580	583	---	---	590
26	---	---	566	584	569	574	588	583	585	---	---	589
27	---	---	563	584	567	572	587	580	583	---	---	589
28	---	---	570	573	568	570	588	581	583	---	---	590
29	---	---	560	573	567	570	590	575	584	---	---	589
30	565	556	562	571	565	568	586	572	581	---	---	584
31	---	---	---	571	568	569	582	567	573	---	---	---
MONTH	601	365	553	584	506	562	613	530	574	598	571	587

08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	8.3	8.2	8.2	8.2	8.0	8.2	8.3	8.2	8.2
2	---	---	---	8.2	8.1	8.2	8.3	8.1	8.2	8.3	8.2	8.2
3	---	---	---	---	---	---	8.3	8.1	8.2	8.3	8.2	8.2
4	---	---	---	---	---	---	8.3	8.2	8.2	8.3	8.1	8.2
5	---	---	---	---	---	---	8.3	8.1	8.2	8.3	8.1	8.2
6	---	---	---	---	---	---	---	---	---	8.2	8.1	8.1
7	---	---	---	---	---	---	---	---	---	8.2	8.0	8.1
8	---	---	---	---	---	---	---	---	---	8.2	8.1	8.2
9	---	---	---	---	---	---	---	---	---	8.3	8.1	8.2
10	---	---	---	8.2	8.1	8.1	8.4	8.1	8.2	8.2	8.1	8.2
11	---	---	---	8.1	8.0	8.1	8.3	8.1	8.2	8.2	8.1	8.2
12	---	---	---	8.1	8.0	8.1	8.2	8.0	8.1	8.2	7.9	8.0
13	---	---	---	8.2	8.0	8.1	8.1	7.9	8.0	---	---	---
14	---	---	---	8.2	8.0	8.1	8.0	7.8	7.9	---	---	---
15	---	---	---	8.2	8.0	8.1	8.1	7.9	8.0	---	---	---
16	---	---	---	8.3	8.1	8.2	8.2	8.1	8.2	---	---	---
17	---	---	---	8.2	8.1	8.2	8.1	8.1	8.1	---	---	---
18	---	---	---	8.3	8.1	8.2	8.3	8.0	8.1	---	---	---
19	---	---	---	8.3	8.1	8.2	8.2	7.9	8.1	---	---	---
20	---	---	---	8.3	8.0	8.1	8.3	7.8	8.0	---	---	---
21	8.5	8.2	8.3	8.3	8.0	8.1	8.3	7.9	8.1	---	---	---
22	8.3	8.2	8.2	8.3	8.0	8.2	---	---	---	---	---	---
23	8.3	8.1	8.2	8.4	8.1	8.3	---	---	---	---	---	---
24	8.2	8.1	8.2	8.4	8.1	8.2	8.0	7.9	7.9	---	---	---
25	8.2	8.1	8.1	8.3	8.0	8.1	8.0	7.9	8.0	---	---	---
26	8.3	8.1	8.2	8.3	8.1	8.1	8.2	8.0	8.1	---	---	---
27	8.3	8.1	8.2	8.3	8.1	8.2	8.2	8.1	8.2	---	---	---
28	8.3	8.1	8.2	8.4	8.2	8.3	8.2	8.1	8.2	---	---	---
29	8.3	8.2	8.2	8.3	8.2	8.3	8.2	8.1	8.2	---	---	---
30	8.3	8.2	8.2	8.3	8.2	8.3	8.3	8.2	8.2	---	---	---
31	8.3	8.2	8.2	---	---	---	8.3	8.2	8.2	---	---	---
MONTH	8.5	8.1	8.2	8.4	8.0	8.2	8.4	7.8	8.1	8.3	7.9	8.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	8.6	8.3	8.5	8.0	7.9	7.9	8.1	7.9	8.0
2	8.8	8.5	8.6	8.4	8.2	8.3	7.9	7.8	7.8	8.0	8.0	8.0
3	8.5	8.1	8.2	8.5	8.1	8.3	7.9	7.8	7.8	8.1	8.0	8.1
4	8.3	8.1	8.2	8.4	8.2	8.3	7.9	7.8	7.8	8.1	8.1	8.1
5	8.2	8.2	8.2	8.4	8.4	8.4	8.0	7.6	7.8	8.1	8.0	8.1
6	8.6	8.2	8.3	8.4	8.3	8.4	---	---	---	8.1	8.0	8.1
7	8.7	8.4	8.5	8.4	8.3	8.3	---	---	---	8.1	8.0	8.1
8	8.7	8.5	8.6	8.3	8.3	8.3	---	---	---	8.1	8.0	8.1
9	8.9	8.6	8.7	8.3	8.3	8.3	---	---	---	8.1	8.0	8.0
10	9.0	8.7	8.8	8.3	8.2	8.2	---	---	---	8.1	8.0	8.1
11	9.0	8.8	8.9	8.3	8.2	8.2	---	---	---	8.1	8.0	8.1
12	9.1	8.9	9.0	8.3	8.2	8.2	8.5	8.2	8.3	8.1	8.0	8.0
13	9.2	8.9	9.1	8.3	8.2	8.2	8.7	8.3	8.5	8.0	8.0	8.0
14	9.2	9.0	9.1	8.2	8.2	8.2	8.8	8.2	8.5	8.0	7.9	8.0
15	9.1	9.0	9.1	8.2	8.1	8.1	8.9	8.3	8.6	8.1	8.0	8.1
16	9.1	9.0	9.1	8.2	8.1	8.1	8.7	8.3	8.5	8.2	8.1	8.1
17	9.0	8.6	8.8	8.1	8.1	8.1	---	---	---	8.2	8.1	8.2
18	8.7	8.4	8.5	8.2	8.0	8.1	---	---	---	8.3	8.2	8.2
19	8.5	8.3	8.4	8.0	7.9	8.0	---	---	---	8.3	8.2	8.3
20	8.6	8.2	8.4	7.9	7.9	7.9	---	---	---	8.3	8.2	8.3
21	8.7	8.3	8.5	7.9	7.9	7.9	---	---	---	8.3	8.1	8.2
22	8.8	8.4	8.6	8.0	7.9	7.9	---	---	---	8.1	7.9	8.0
23	8.8	8.6	8.7	7.9	7.9	7.9	8.8	8.1	8.4	8.0	7.8	7.9
24	8.8	8.6	8.7	7.9	7.9	7.9	8.9	8.1	8.5	8.1	7.9	8.1
25	9.1	8.7	8.9	8.0	7.9	7.9	8.9	8.2	8.5	8.2	8.1	8.2
26	9.1	8.9	9.0	8.0	7.9	7.9	8.8	8.0	8.4	8.2	8.1	8.2
27	9.0	8.8	8.9	7.9	7.9	7.9	8.8	8.1	8.5	8.2	8.1	8.1
28	9.0	8.8	8.8	7.9	7.9	7.9	8.7	8.0	8.4	8.2	8.1	8.1
29	8.8	8.6	8.7	8.0	7.9	7.9	8.3	8.0	8.1	8.2	8.1	8.1
30	---	---	---	8.0	7.9	8.0	8.1	8.0	8.0	8.2	8.1	8.1
31	---	---	---	8.0	7.9	7.9	---	---	---	8.1	8.0	8.0
MONTH	9.2	8.1	8.7	8.6	7.9	8.1	8.9	7.6	8.2	8.3	7.8	8.1

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	8.0	8.1	8.3	8.2	8.2	7.9	7.7	7.9	8.3	8.1	8.2
2	8.1	8.0	8.1	8.3	8.2	8.2	7.8	7.6	7.7	8.3	8.1	8.2
3	8.1	8.1	8.1	8.3	8.2	8.2	8.0	7.5	7.7	8.3	8.1	8.2
4	8.1	7.6	7.8	8.3	8.2	8.2	8.0	8.0	8.0	8.6	8.2	8.4
5	7.9	7.7	7.8	8.2	8.2	8.2	8.1	8.0	8.0	8.6	8.4	8.5
6	8.0	7.8	7.9	8.2	8.1	8.2	8.2	8.0	8.1	8.6	8.4	8.5
7	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.0	8.1	8.7	8.4	8.5
8	8.2	8.1	8.2	8.2	8.1	8.2	8.2	8.0	8.1	8.7	8.5	8.5
9	8.2	8.1	8.2	8.2	8.2	8.2	8.1	8.0	8.0	8.5	8.2	8.4
10	8.2	8.1	8.2	8.2	8.2	8.2	8.1	7.9	8.0	8.4	8.2	8.3
11	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.8	7.9	8.4	8.2	8.3
12	8.1	8.0	8.1	8.2	8.1	8.2	8.1	7.8	7.9	8.2	8.0	8.1
13	8.2	8.1	8.2	8.1	7.9	8.1	7.9	7.6	7.8	8.2	7.9	8.1
14	8.2	8.1	8.1	8.1	7.9	8.0	7.9	7.6	7.7	8.2	7.6	7.9
15	8.2	8.1	8.1	8.3	8.0	8.1	7.8	7.6	7.7	8.0	7.8	7.9
16	8.1	7.9	8.0	8.3	8.2	8.3	7.8	7.6	7.7	7.9	7.7	7.8
17	8.0	7.9	7.9	8.3	8.3	8.3	7.9	7.7	7.8	7.7	7.6	7.6
18	7.9	7.9	7.9	8.4	8.3	8.3	7.9	7.7	7.8	7.6	7.4	7.5
19	---	---	---	8.3	8.3	8.3	8.0	7.7	7.9	7.7	7.5	7.6
20	---	---	---	8.3	8.3	8.3	8.0	7.9	8.0	7.8	7.6	7.7
21	---	---	---	8.3	8.2	8.3	8.0	7.8	8.0	8.0	7.8	7.9
22	8.3	8.2	8.2	8.3	8.2	8.3	8.1	7.7	7.9	8.2	8.0	8.1
23	8.2	8.1	8.2	8.3	8.2	8.2	8.0	7.7	7.9	8.2	8.1	8.1
24	8.2	8.1	8.2	8.3	8.2	8.2	8.1	7.9	8.0	8.2	8.1	8.2
25	8.2	8.1	8.1	8.2	8.1	8.2	8.1	8.0	8.1	8.1	8.0	8.1
26	8.2	8.1	8.2	---	---	---	8.1	8.0	8.1	8.2	8.1	8.1
27	8.2	8.1	8.1	---	---	---	8.1	8.0	8.0	8.2	8.1	8.1
28	8.1	8.0	8.0	---	---	---	8.2	8.0	8.1	8.3	8.1	8.2
29	8.1	8.0	8.0	8.0	7.8	7.9	8.3	8.0	8.1	8.2	8.0	8.1
30	8.3	8.0	8.2	7.9	7.8	7.8	8.1	8.0	8.1	8.2	8.1	8.2
31	---	---	---	8.0	7.8	7.9	8.3	8.0	8.1	---	---	---
MONTH	8.3	7.6	8.1	8.4	7.8	8.2	8.3	7.5	7.9	8.7	7.4	8.1

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

COLORADO RIVER MAIN STEM

159

08159200 COLORADO RIVER AT BASTROP, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	19.0	17.5	18.0	21.5	20.0	20.5	20.0	17.5	18.5	23.5	21.0	22.0
2	18.5	14.5	16.5	20.5	19.5	20.0	21.0	18.0	19.5	22.5	21.5	22.0
3	14.5	13.0	13.5	19.5	17.0	18.0	21.5	18.5	20.0	23.5	21.0	22.0
4	13.0	10.0	11.5	17.0	16.0	16.5	22.5	20.0	21.0	24.0	21.5	22.5
5	10.0	8.5	9.0	17.0	15.5	16.5	23.5	21.5	22.5	24.5	21.5	23.0
6	9.5	7.0	8.5	17.0	15.5	16.5	22.5	21.0	22.0	24.5	21.5	23.0
7	8.5	8.0	8.5	16.5	15.5	16.0	23.0	19.5	21.0	23.0	22.0	22.5
8	9.0	8.0	8.5	16.5	16.0	16.0	21.5	20.0	20.5	24.5	21.5	23.0
9	10.0	9.0	9.5	16.0	14.5	15.0	20.0	19.0	19.5	26.5	23.5	25.0
10	12.0	9.5	10.5	16.0	14.0	15.0	19.0	16.5	18.0	27.0	25.0	26.0
11	11.0	8.5	10.0	17.0	15.0	16.0	18.0	15.5	16.5	26.0	24.0	25.0
12	10.5	7.5	9.0	17.5	16.5	17.0	19.0	15.5	17.0	24.0	22.5	23.0
13	12.0	8.5	10.5	17.0	15.0	16.0	21.0	17.0	18.5	25.0	21.5	23.5
14	14.5	12.0	13.0	16.0	13.0	14.5	23.0	19.0	21.0	26.0	23.0	24.5
15	14.5	12.0	13.5	15.5	13.0	14.5	25.0	21.5	23.0	26.0	24.0	25.0
16	15.0	12.0	13.5	14.5	13.5	14.0	23.5	22.5	23.0	25.5	24.0	24.5
17	16.0	15.0	15.5	14.0	13.0	13.5	23.0	22.0	22.5	26.0	23.5	24.5
18	16.0	14.0	15.0	13.0	11.5	12.5	23.5	22.0	22.5	26.0	23.5	24.5
19	14.0	12.5	13.5	14.5	11.5	13.0	22.5	20.0	21.5	25.5	23.5	24.5
20	14.5	12.0	13.5	16.0	12.5	14.5	23.0	20.5	21.5	25.5	22.5	24.5
21	15.5	12.0	14.0	18.5	14.5	16.0	24.0	21.5	22.5	24.0	22.5	23.0
22	16.5	13.5	15.0	18.5	16.5	17.5	25.0	23.0	24.0	24.0	21.0	22.5
23	17.0	15.0	16.0	19.5	17.5	18.5	27.0	24.0	25.5	24.5	22.0	23.0
24	16.0	14.0	15.5	20.5	18.5	19.5	26.5	23.5	25.0	25.5	23.0	24.0
25	16.5	14.0	15.0	21.5	19.5	20.5	26.0	23.5	25.0	26.5	24.0	25.0
26	17.0	15.0	16.0	20.5	19.5	20.0	26.5	23.0	24.5	26.5	24.5	25.5
27	18.5	16.5	17.5	20.5	19.0	20.0	25.5	22.5	24.0	26.0	24.0	25.0
28	20.0	17.0	18.5	21.0	20.0	20.5	25.5	22.5	24.0	26.0	24.0	25.0
29	21.0	19.0	20.0	21.0	18.0	20.0	24.0	22.5	23.5	25.5	24.5	25.0
30	---	---	---	18.0	16.5	17.0	22.5	22.0	22.0	25.0	24.0	24.5
31	---	---	---	17.5	16.0	17.0	---	---	---	25.5	23.5	24.5
MONTH	21.0	7.0	13.5	21.5	11.5	17.0	27.0	15.5	21.5	27.0	21.0	24.0

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

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	8.9	7.5	8.1	10.4	9.1	9.8	11.1	10.3	10.7
2	---	---	---	9.2	7.4	8.2	10.4	9.2	9.8	11.5	10.3	10.8
3	---	---	---	9.3	7.3	8.3	10.4	9.2	9.8	12.0	10.5	11.2
4	---	---	---	9.7	7.3	8.5	10.2	9.0	9.7	12.2	10.7	11.4
5	---	---	---	9.7	7.3	8.5	10.2	8.7	9.5	12.2	10.9	11.4
6	---	---	---	9.7	7.4	8.5	10.3	8.3	9.3	11.5	10.6	11.0
7	---	---	---	9.4	7.7	8.5	10.5	8.2	9.4	12.1	10.4	11.3
8	---	---	---	8.4	7.5	8.0	10.4	8.3	9.3	11.9	11.0	11.5
9	---	---	---	8.9	7.3	8.1	11.2	8.4	9.8	12.5	10.9	11.7
10	---	---	---	9.7	8.1	8.8	11.7	9.1	10.4	12.8	11.3	12.0
11	---	---	---	9.7	8.0	8.9	11.5	8.9	10.2	12.8	11.4	12.1
12	---	---	---	10.3	8.4	9.4	11.4	9.0	10.3	11.9	10.7	11.1
13	---	---	---	10.4	8.9	9.7	10.2	9.2	9.7	11.7	10.7	11.2
14	---	---	---	10.5	8.9	9.7	10.3	8.8	9.5	11.9	11.5	11.7
15	---	---	---	10.2	8.7	9.4	11.8	9.8	10.6	12.0	11.1	11.5
16	---	---	---	10.4	8.5	9.4	11.4	10.6	11.0	11.3	10.5	10.8
17	---	---	---	9.5	7.7	8.7	11.2	10.4	10.8	11.5	10.0	10.7
18	---	---	---	9.2	7.2	8.1	11.5	10.7	11.0	11.3	9.9	10.6
19	---	---	---	9.7	7.8	8.7	11.0	10.3	10.6	11.6	9.6	10.6
20	---	---	---	10.2	7.9	9.1	10.4	9.4	9.9	12.0	9.7	10.8
21	10.0	7.4	8.5	10.3	8.4	9.4	10.3	9.0	9.6	12.5	10.3	11.3
22	8.3	7.6	8.0	10.3	8.4	9.4	10.9	9.0	10.1	12.2	10.0	11.1
23	8.4	7.3	7.8	10.8	8.3	9.5	10.7	9.1	9.9	12.9	10.4	11.6
24	8.7	7.3	7.9	9.7	8.1	8.9	9.5	8.5	8.9	13.6	11.2	12.2
25	8.1	7.2	7.5	8.6	7.2	8.0	8.8	8.2	8.5	14.4	11.4	12.7
26	8.6	7.2	7.7	7.9	6.5	6.9	9.4	8.5	8.9	16.1	12.1	13.9
27	8.6	7.3	7.9	7.8	7.1	7.5	10.3	9.2	9.7	17.2	13.2	14.7
28	8.8	7.4	8.0	8.7	7.8	8.3	10.7	9.7	10.2	17.2	13.6	14.9
29	8.7	7.5	8.0	9.1	8.4	8.7	11.1	10.0	10.6	17.0	13.2	14.8
30	8.4	7.5	7.9	9.8	8.7	9.2	11.1	10.3	10.7	16.5	12.9	14.4
31	8.6	7.4	7.9	---	---	---	11.0	10.2	10.7	15.4	11.5	13.1
MONTH	10.0	7.2	7.9	10.8	6.5	8.7	11.8	8.2	9.9	17.2	9.6	11.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.2	11.6	12.5	11.5	8.1	9.6	8.8	8.1	8.5	7.8	6.6	7.2
2	11.5	8.9	10.0	9.0	7.6	8.2	8.9	8.0	8.4	7.4	7.0	7.2
3	9.7	8.0	8.7	10.8	7.3	8.7	8.7	8.0	8.4	8.0	7.2	7.5
4	10.4	8.4	9.3	9.8	7.7	8.9	9.2	8.0	8.4	8.2	7.3	7.7
5	10.4	9.4	9.9	9.9	9.3	9.6	8.6	7.4	7.9	7.7	7.3	7.5
6	13.3	9.9	11.4	10.0	9.4	9.7	9.0	7.2	7.9	7.7	7.2	7.4
7	13.9	11.5	12.5	10.1	9.7	9.8	10.2	7.5	8.6	7.7	7.4	7.5
8	14.3	12.0	12.9	9.8	9.7	9.7	9.7	7.7	8.7	7.7	7.3	7.5
9	14.8	11.9	13.2	10.0	9.7	9.8	8.8	7.7	8.2	7.8	7.2	7.4
10	17.7	12.2	14.6	9.9	9.6	9.8	10.0	7.7	8.6	7.8	7.1	7.4
11	16.9	13.0	14.8	9.6	9.3	9.5	10.9	8.2	9.2	7.5	7.2	7.4
12	18.4	13.9	15.8	9.4	9.3	9.3	10.7	8.3	9.3	7.8	7.3	7.5
13	18.4	14.4	16.3	9.6	9.1	9.4	13.1	8.3	10.5	8.3	7.5	7.8
14	16.8	13.2	14.9	9.7	9.0	9.3	15.1	8.3	11.4	7.8	7.2	7.5
15	16.8	12.5	14.4	9.7	8.8	9.2	16.1	8.2	12.0	8.0	7.5	7.8
16	15.8	12.7	14.1	9.6	8.9	9.2	12.4	8.0	10.0	8.1	7.6	7.8
17	12.5	9.9	11.5	9.3	9.0	9.1	10.0	7.5	8.5	8.4	7.8	8.1
18	10.7	8.7	9.6	9.5	8.8	9.3	10.1	6.8	8.3	8.7	7.9	8.2
19	11.7	8.8	10.1	8.9	8.7	8.8	11.8	7.2	9.3	8.8	7.9	8.3
20	13.1	9.5	11.2	8.9	8.6	8.7	12.9	7.6	10.0	8.8	7.8	8.3
21	14.4	10.5	12.2	8.9	8.2	8.5	12.7	7.6	9.8	8.2	7.6	7.9
22	14.6	11.2	12.6	8.6	7.9	8.2	10.9	7.3	8.9	7.6	6.9	7.3
23	14.4	10.8	12.4	8.2	7.7	7.9	13.8	6.8	9.5	7.6	6.8	7.2
24	15.2	11.1	12.7	8.1	7.8	7.9	14.0	6.7	9.8	8.2	7.5	7.8
25	15.5	11.5	13.1	8.2	7.8	8.0	14.7	6.8	10.1	8.4	7.1	8.0
26	15.0	11.7	12.9	8.3	7.8	8.1	13.9	6.1	9.6	8.2	7.7	7.9
27	14.4	10.3	11.9	8.4	8.2	8.2	14.0	6.8	10.0	8.5	7.4	7.9
28	14.7	10.3	12.1	8.5	8.0	8.2	13.4	6.5	9.6	8.6	7.4	7.9
29	13.3	9.7	11.3	8.4	8.0	8.2	8.5	6.4	7.0	8.2	7.3	7.7
30	---	---	---	9.1	8.3	8.7	7.2	6.7	6.9	7.7	7.2	7.4
31	---	---	---	8.9	8.6	8.7	---	---	---	7.2	6.9	7.1
MONTH	18.4	8.0	12.4	11.5	7.3	8.9	16.1	6.1	9.1	8.8	6.6	7.7

COLORADO RIVER MAIN STEM

161

08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.7	7.0	7.3	7.5	6.9	7.2	8.0	7.4	7.7	7.6	6.8	7.2
2	7.5	6.8	7.2	7.6	6.9	7.2	7.9	7.3	7.6	7.6	6.7	7.1
3	7.3	6.7	7.1	7.5	6.8	7.1	7.9	7.3	7.6	7.5	6.7	7.1
4	7.3	5.1	6.2	7.3	6.7	7.0	8.0	7.3	7.6	8.0	6.7	7.2
5	6.8	6.3	6.5	7.1	6.7	6.8	8.3	7.2	7.7	8.3	7.0	7.5
6	7.0	6.6	6.8	6.9	6.6	6.8	8.5	7.2	7.8	8.5	7.1	7.7
7	7.2	6.9	7.0	7.1	6.5	6.7	8.5	7.1	7.7	8.5	7.0	7.6
8	7.3	7.0	7.1	6.9	6.5	6.7	8.5	7.1	7.6	9.4	7.3	8.3
9	7.4	6.9	7.1	7.2	6.6	6.9	8.7	7.1	7.8	8.9	7.4	7.9
10	7.4	7.0	7.2	7.2	6.7	6.9	9.0	7.1	8.0	8.8	6.8	7.6
11	7.5	7.2	7.3	7.1	6.6	6.9	8.8	7.4	7.9	8.6	6.7	7.5
12	7.9	7.4	7.6	7.0	6.7	6.9	8.4	6.9	7.5	8.4	6.7	7.4
13	7.9	7.5	7.7	7.1	6.1	6.8	7.1	6.5	6.8	8.2	6.6	7.2
14	7.9	7.5	7.7	6.7	6.1	6.4	7.4	6.4	6.8	7.8	6.4	6.9
15	7.9	7.6	7.7	7.8	6.4	7.1	7.6	6.5	7.0	7.6	6.3	6.9
16	8.1	7.4	7.8	7.9	7.2	7.5	8.6	6.9	7.5	7.1	6.3	6.7
17	8.1	7.5	7.8	8.1	7.3	7.6	7.9	7.0	7.5	7.1	6.3	6.7
18	8.0	7.5	7.7	8.3	7.2	7.7	7.2	6.6	6.9	7.1	6.3	6.7
19	7.9	7.4	7.6	8.0	7.2	7.6	7.1	6.6	6.8	7.1	6.4	6.7
20	7.8	7.3	7.6	7.6	7.3	7.4	7.1	6.5	6.7	7.3	6.4	6.8
21	7.9	7.3	7.5	7.6	7.3	7.4	7.1	6.4	6.7	7.3	6.4	6.8
22	7.7	7.1	7.3	8.2	7.4	7.7	7.2	6.4	6.8	7.3	6.4	6.8
23	7.7	7.1	7.4	7.8	7.1	7.4	7.4	6.6	6.9	7.2	6.5	6.8
24	7.8	7.0	7.4	7.7	7.3	7.5	7.4	6.5	6.9	7.3	6.5	6.8
25	7.6	7.1	7.3	7.7	7.3	7.5	7.4	6.5	6.9	7.7	6.6	7.0
26	7.8	7.0	7.3	7.8	6.9	7.3	7.4	6.6	6.9	7.8	6.8	7.2
27	7.4	6.9	7.1	7.8	6.9	7.3	7.3	6.6	6.9	7.9	6.8	7.3
28	7.4	6.7	7.0	7.8	7.2	7.5	7.4	6.6	6.9	7.8	6.8	7.3
29	7.4	6.7	7.0	7.8	7.3	7.5	7.5	6.6	7.0	7.6	6.7	7.1
30	7.5	6.8	7.1	7.7	7.2	7.4	7.6	6.7	7.1	7.2	6.8	7.0
31	---	---	---	7.9	7.3	7.5	7.7	6.8	7.2	---	---	---
MONTH	8.1	5.1	7.3	8.3	6.1	7.2	9.0	6.4	7.3	9.4	6.3	7.2

COLORADO RIVER MAIN STEM

08160400 COLORADO RIVER ABOVE LAGRANGE, TX

LOCATION.--Lat 29°54'44", long 96°54'13", Fayette County, Hydrologic Unit 12090301, at right downstream end of bridge on new State Highway 71, 1.4 mi upstream from Buckners Creek, and at mile 177.

DRAINAGE AREA.--40,874 mi², of which 11,403 mi² is noncontributing.

PERIOD OF RECORD.--1979-82 (discharge measurements only), April to September 1988.

GAGE.--Water-stage recorder. Datum of gage is 210.04 ft above National Geodetic Vertical Datum of 1929. Dec. 12, 1979, to Sept. 30, 1982, discharge measurements only were made at old State Highway 71 bridge, 1.0 mi downstream and at different datum.

REMARKS.--No estimated daily discharges. Records good. At times, low-flow releases from Lake Travis (station 08154500) are made for generation of electric power and/or to fulfill downstream water contracts. There are many diversions above station for irrigation and for municipal supply. Regulation is the same as that for Colorado River at Austin (08158000), and Colorado River at Bastrop (08159200). Gage-height telemeter located at station. Several observation of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,530 ft³/s June 4 at 1100 hours (gage height 8.57 ft); minimum daily 955 ft³/s.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, about 56.7 ft on July 9, 1869 (from marble high-water marker in LaGrange). Stages of other floods are as follows: Dec. 5, 1913, 56.4 ft, from floodmark; June 17, 1935, 50.84 ft, from floodmarks (discharge 255,000 ft³/s from rating curve extended above 200,000 ft³/s); July 27, 1938, 42.95 ft (discharge, 200,000 ft³/s). This data was collected at a site 2.6 mi downstream at streamflow station Colorado River at LaGrange (discontinued) at different datum than at present (1988) site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period April to September, 5,530 ft³/s June 4 at 1100 hours (gage height, 8.57 ft); minimum daily, 955 ft³/s Apr. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	2130	2040	2190	1950	1740
2	---	---	---	---	---	---	---	1950	2110	2170	1860	1710
3	---	---	---	---	---	---	---	1890	2450	2040	1870	1670
4	---	---	---	---	---	---	---	1890	4790	2190	1890	1670
5	---	---	---	---	---	---	---	1810	3930	2220	2000	1700
6	---	---	---	---	---	---	---	1830	1940	2540	1890	1670
7	---	---	---	---	---	---	---	1900	1550	2410	1700	1670
8	---	---	---	---	---	---	---	1770	1680	1930	1750	1720
9	---	---	---	---	---	---	---	1560	1690	2020	1750	1410
10	---	---	---	---	---	---	---	1630	1660	1850	1610	1590
11	---	---	---	---	---	---	---	1690	1690	1770	1710	1640
12	---	---	---	---	---	---	---	1770	2050	1810	1730	1650
13	---	---	---	---	---	---	---	2250	2130	2020	2030	1650
14	---	---	---	---	---	---	---	1500	2210	2070	1850	1670
15	---	---	---	---	---	---	---	1840	2210	2300	1740	1800
16	---	---	---	---	---	---	---	1880	2180	1950	1800	1760
17	---	---	---	---	---	---	---	1900	2170	1840	1580	1730
18	---	---	---	---	---	---	---	1870	2280	1780	1820	1790
19	---	---	---	---	---	---	---	1850	2150	1770	1830	1760
20	---	---	---	---	---	---	---	1850	2190	1870	1790	1730
21	---	---	---	---	---	---	1250	2060	2220	2480	1740	1690
22	---	---	---	---	---	---	1280	2650	2240	2400	1730	1670
23	---	---	---	---	---	---	1310	1950	2280	2000	1740	1690
24	---	---	---	---	---	---	1130	2220	2170	2140	1710	1670
25	---	---	---	---	---	---	1070	1970	2070	2270	1760	1670
26	---	---	---	---	---	---	1120	1920	2250	2120	1740	1660
27	---	---	---	---	---	---	1210	1900	2240	2000	1930	1670
28	---	---	---	---	---	---	955	1880	2370	2200	1960	1680
29	---	---	---	---	---	---	1090	1890	2220	2140	1810	1690
30	---	---	---	---	---	---	1830	1940	2250	2130	1660	1780
31	---	---	---	---	---	---	---	2220	---	1950	1750	---
TOTAL	---	---	---	---	---	---	---	59360	67410	64570	55680	50600
MEAN	---	---	---	---	---	---	---	1915	2247	2083	1796	1687
MAX	---	---	---	---	---	---	---	2650	4790	2540	2030	1800
MIN	---	---	---	---	---	---	---	1500	1550	1770	1580	1410
AC-FT	---	---	---	---	---	---	---	117700	133700	128100	110400	100400
CAL YR 1987	TOTAL	---	MEAN	---	MAX	---	MIN	---	AC-FT	---		
WTR YR 1988	TOTAL	---	MEAN	---	MAX	---	MIN	---	AC-FT	---		

COLORADO RIVER BASIN

163

08160800 REDGATE CREEK NEAR COLUMBUS, TX

LOCATION.--Lat 29°47'56", long 96°31'55", Colorado County, Hydrologic Unit 12090301, on left bank at downstream side of bridge on Farm Road 109, 1.9 mi upstream from Cummins Creek, and 7.0 mi north of Columbus.

DRAINAGE AREA.--17.3 mi².

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

REVISED RECORDS.--WSP 2122: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 210.82 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1975, at datum 10.00 ft higher.

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

AVERAGE DISCHARGE.--26 years, 5.43 ft³/s (4.26 in/yr), 3,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft³/s May 22, 1979 (gage height, 27.19 ft), from rating curve extended above 2,170 ft³/s on basis of slope-area measurement of peak flow of Jan. 22, 1965; no flow for many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, about 33.4 ft in late June or early July 1940, from information by State Department of Highways and Public Transportation and local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 17	1745	*553	*15.02				
Minimum daily discharge, no flow Sept. 29.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	.25	.84	1.8	1.2	1.4	1.2	.72	.36	.23	.10	.03
2	.40	.25	.78	1.6	1.3	2.8	1.2	.59	.47	.18	.09	.05
3	.38	.28	.77	1.5	1.3	1.6	.82	.77	4.3	.13	.16	.05
4	.33	.30	.86	1.5	1.2	1.0	.82	.52	1.4	.13	.11	.05
5	.29	.30	.80	1.4	1.2	.99	.97	.42	1.3	34	.07	.04
6	.32	.30	.90	1.6	1.2	.99	3.0	.40	.25	1.9	.07	.02
7	.36	.30	.88	2.1	1.2	.99	1.0	.40	.16	.31	.05	.01
8	.29	.51	.78	1.5	1.2	.97	.87	.43	.15	.20	.03	.01
9	.27	1.9	.77	1.5	1.2	.99	.87	.47	.12	.16	.03	.01
10	.29	1.0	.85	1.5	1.2	.90	.82	.43	.11	.10	.03	.01
11	.35	.57	.95	1.5	1.2	.88	.82	1.1	.10	.10	.30	.01
12	.49	.50	.93	1.5	1.1	.88	.78	2.7	.08	.10	.21	.01
13	.56	.50	1.1	1.4	1.1	.85	.78	.62	.08	.14	.18	.01
14	.59	.50	.85	1.3	1.1	.77	.72	.47	.07	.12	.10	.01
15	.59	.88	.73	1.3	1.1	.77	.72	.43	.07	.10	.06	.01
16	.59	6.5	.54	1.3	1.1	.77	.78	.40	.06	.08	.16	.02
17	.59	1.7	.65	1.3	1.1	.69	.99	.36	.06	.07	.10	.55
18	.59	.78	.79	1.3	2.7	13	.93	.33	.05	.05	.05	.35
19	.57	.64	6.6	1.3	1.7	3.5	.54	.30	.05	.04	.03	.08
20	.43	.63	13	1.2	1.4	2.1	.55	.30	.05	2.2	.02	.05
21	.43	.84	22	1.2	1.2	1.6	.59	1.5	.05	.37	.02	.04
22	.38	.91	4.6	1.2	1.2	1.5	.59	.52	.05	.28	.02	.04
23	.54	1.4	2.2	1.2	1.3	1.5	.59	.26	.04	.17	.03	.04
24	.64	1.3	2.9	1.2	1.4	1.4	.54	.29	.04	.13	.10	.03
25	.42	14	4.3	1.2	1.4	1.4	.40	.28	.09	.08	2.1	.03
26	.40	1.8	7.0	1.2	1.4	1.2	.40	.20	.36	.07	.15	.03
27	.38	2.3	12	1.2	1.4	1.2	.36	.18	.55	.05	.10	.02
28	.24	1.2	3.8	1.0	1.4	1.1	.33	.18	.84	.10	.06	.01
29	.24	.89	2.2	.99	1.4	1.1	.80	16	.46	.50	.05	.00
30	.25	.88	1.9	1.1	---	1.1	2.6	3.6	.29	.11	.03	.04
31	.25	---	1.9	1.2	---	1.1	---	.63	---	.10	.03	---
TOTAL	12.91	44.11	99.17	42.09	37.9	119.35	26.38	35.80	12.06	42.30	4.64	1.66
MEAN	.42	1.47	3.20	1.36	1.31	3.85	.88	1.15	.40	1.36	.15	.055
MAX	.64	14	22	2.1	2.7	69	3.0	16	4.3	34	2.1	.55
MIN	.24	.25	.54	.99	1.1	.77	.33	.18	.04	.04	.02	.00
AC-FT	26	87	197	83	75	237	52	71	24	84	9.2	3.3
CFSM	.02	.08	.18	.08	.08	.22	.05	.07	.02	.08	.01	.00
IN.	.03	.09	.21	.09	.08	.26	.06	.08	.03	.09	.01	.00

CAL YR 1987	TOTAL 2082.47	MEAN 5.71	MAX 279	MIN .18	AC-FT 4130	CFSM .33	IN. 4.48
WTR YR 1988	TOTAL 478.37	MEAN 1.31	MAX 69	MIN .00	AC-FT 949	CFSM .08	IN. 1.03

08161000 COLORADO RIVER AT COLUMBUS, TX

LOCATION.--Lat 29°42'22", long 96°32'12", Colorado County, Hydrologic Unit 12090302, near right bank at downstream side of pier of bridge on U.S. Highway 90 at eastern edge of Columbus, 340 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.6 mi downstream from Cummins Creek, and at mile 135.1.

DRAINAGE AREA.--41,640 mi², approximately, of which 11,403 mi² probably is noncontributing; 41,730 mi², approximately, at site "near Eagle Lake".

PERIOD OF RECORD.--January 1903 to December 1911 (gage heights only), May 1916 to current year. Discharge records for 1902-11, published in WSP 84, 99, 132, 174, 210, 288, and 308, have been found to be unreliable and should not be used. Records collected at site 23 mi downstream October 1930 to May 1939, published as "near Eagle Lake". Gage-height records collected in this vicinity since 1903 are contained in reports of the National Weather Service. Water-quality records.--Chemical analyses: October 1967 to September 1971. Chemical and biochemical analyses: February 1968 to September 1981. Sediment records: March 1957 to September 1973.

REVISED RECORDS.-- WSP 1562: 1920-21(M), 1922. WDR TX-81-3: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 155.52 ft above National Geodetic Vertical Datum of 1929. Prior to May 1, 1919, various nonrecording gages at sites in the immediate vicinity at datum 3.00 ft lower. May 1, 1919, to Nov. 23, 1930, water-stage recorder at site about 300 ft downstream at datum 3.00 ft lower. Sept. 17, 1930, to June 12, 1939 (Oct. 1, 1930, to May 31, 1939, used herein), water-stage recorder at site 23 mi downstream at different datum. May 17 to Nov. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. At times, low-flow releases from Lake Travis (station 08154500) are made for generation of electric power and (or) to fulfill downstream water contracts. The Lower Colorado River Authority reported that 21,810 acre-ft was diverted from the river to Cedar Creek Reservoir during the current year. This reservoir is located 10 mi north of the river and 3.5 mi west of Fayetteville. Flow is also affected at times by discharge from flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 25,570 acre-ft. These structures control runoff from 73.1 mi² in the Cummins Creek watershed. There are many other diversions above station for irrigation and municipal supply. Gage-height telemeter at station. One observation of water temperature was made during the year.

AVERAGE DISCHARGE.--20 years (water years 1917-36) unregulated, 3,809 ft³/s (2,760,000 acre-ft/yr); 52 years (water years 1937-88) regulated, 2,890 ft³/s (2,094,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190,000 ft³/s June 18, 1935 (gage height, 38.5 ft), present site and datum, computed on basis of records for station near Eagle Lake; minimum, 93 ft³/s Sept. 1, 1918.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 41.6 ft, present datum, in July 1869 and Dec. 6, 1913, from information by local resident. River divided each time and left Columbus on an island.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,400 ft³/s Mar. 18 at 1100 hours (gage height, 13.89 ft); minimum daily, 368 ft³/s Feb. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2850	2010	837	552	399	403	1420	1620	1960	2140	1910	1520
2	2280	2000	e750	544	381	414	1340	1780	1830	2080	1870	1520
3	2190	1840	e700	646	371	414	1170	1680	4910	2050	1770	1500
4	2120	1260	e670	560	414	392	1180	1650	4270	1990	1770	1470
5	2320	996	e640	515	578	379	1240	1650	4770	2110	1770	1460
6	2590	901	e620	461	489	2400	1110	1550	3260	2210	1870	1470
7	2170	828	e600	447	423	3290	1220	1600	2020	2470	1720	1460
8	2120	786	e580	425	387	3290	1280	1690	1710	2250	1590	1500
9	2110	830	e570	414	373	3440	1060	1520	1790	1920	1630	1520
10	2090	792	e560	637	368	3580	921	1410	1770	2150	1600	1290
11	2090	867	e550	764	387	3620	907	1470	1740	1970	1480	1430
12	2180	959	e545	641	410	3650	952	3730	1780	2020	1560	1490
13	2080	802	e540	788	415	3660	1050	1970	2040	2100	1570	1500
14	2060	780	e535	2950	419	3290	1090	1980	2080	2250	1860	1490
15	2080	780	e530	3080	428	1580	890	1410	2150	2440	1640	1510
16	2060	781	e525	1500	430	953	812	1630	2080	2670	1690	1610
17	2070	782	544	884	442	922	810	1660	2070	2250	1670	1590
18	2060	767	757	639	466	14000	824	1670	2070	2100	1500	1560
19	2060	858	854	546	585	7060	930	1650	2160	2040	1610	1580
20	2050	891	1060	483	683	3780	1120	1630	2070	2070	1650	1560
21	2040	821	2640	457	582	1880	1130	1680	2080	2140	1590	1530
22	2020	813	1680	456	528	1290	1130	1810	2130	2680	1550	1510
23	1880	809	1210	427	504	1020	1140	2220	2140	2440	1560	1490
24	2060	786	902	622	475	894	1140	1710	2160	2110	1580	1500
25	2090	876	725	517	453	1230	1010	1900	2070	2280	1620	1490
26	1820	887	733	408	442	1780	974	1720	1970	2280	1650	1480
27	2020	1020	728	389	433	1880	1030	1690	2150	2110	1600	1480
28	2020	1720	642	405	428	1940	1040	1660	2150	2130	1710	1480
29	1960	1260	596	394	419	1800	942	1730	2220	2220	1680	1500
30	1970	1000	712	388	---	1720	1100	2100	2130	2130	1580	1540
31	2020	---	601	409	---	1830	---	1800	---	2060	1480	---
TOTAL	65530	30502	24136	22348	13112	77781	31962	54970	69730	67860	51330	45030
MEAN	2114	1017	779	721	452	2509	1065	1773	2324	2189	1656	1501
MAX	2850	2010	2640	3080	683	14000	1420	3730	4910	2680	1910	1610
MIN	1820	767	525	388	368	379	810	1410	1710	1920	1480	1290
AC-FT	130000	60500	47870	44330	26010	154300	63400	109000	138300	134600	101800	89320

CAL YR 1987 TOTAL 2054378 MEAN 5628 MAX 49100 MIN 525 AC-FT 4075000
WTR YR 1988 TOTAL 554291 MEAN 1514 MAX 14000 MIN 368 AC-FT 1099000

e Estimated.

08162000 COLORADO RIVER AT WHARTON, TX
(National stream-quality accounting and radiochemical network)

LOCATION.--Lat 29°18'32", long 96°06'13", Wharton County, Hydrologic Unit 12090302, near left bank at downstream side of downstream bridge on U.S. Highway 59 in Wharton, 1,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 12 mi upstream from Jones Creek, and at mile 66.6.

DRAINAGE AREA.--42,003 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1916 to August 1918 (intermittent periods), March 1919 to September 1925, July and August 1938 (flood discharge measurements only), October 1938 to current year. June to November 1901 and May to September 1902, daily records published in U.S. Department of Agriculture, Office of Experiment Stations, Bulletin Nos. 119 and 133. Gage-height records collected in this vicinity since 1935 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 878: 1938(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 52.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, various types of recording and nonrecording gages 800 ft upstream at different datum. Oct. 1, 1938, to June 1, 1966, nonrecording gage 100 ft upstream at datum 13.00 ft higher. June 1, 1956, to Sept. 30, 1975, water-stage recorder at present site at datum 13 ft higher. Oct. 1, 1975, to Mar. 1, 1983, water-stage recorder at present site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supply, cooling water for thermal-electric powerplant, and oil field operations. For statement regarding upstream regulation, see station 08161000. Gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1920-25) unregulated, 3,680 ft³/s (2,666,000 acre-ft/yr); 50 years (water years 1939-88) regulated, 2,678 ft³/s (1,940,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 100,000 ft³/s July 3, 1940 (gage height, 38.99 ft); no flow Aug. 6, 1925 (result of pumping).
Flood of July 30, 1938, reached a stage of 50.4 ft, present datum, observed by Geological Survey engineers (discharge, 145,000 ft³/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, 51.9 ft Dec. 8, 1913, present datum, from information by local residents; below Wharton floodwater combined with that of the Brazos River. Flood of about July 12, 1869, reached about same height. Flood of June 20, 1935, reached a stage of 51.2 ft, present datum, furnished by National Weather Service (discharge, 159,000 ft³/s), from rating curve defined by current-meter measurements below 145,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,900 ft³/s Mar. 19 at 0900 hours (gage height, 22.42 ft); minimum daily, 428 ft³/s Sept. 12 (result of regulation and pumping).

CORRECTIONS.--Figures of daily discharge for the 1985 water year were published erroneously. The following table supersedes that published in TX-85-3.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	692	3080	907	1870	907	4280	2910	1580	766	1430	913	980
2	759	2260	895	3190	855	7460	2750	1390	845	1350	819	915
3	780	1810	927	4020	809	5140	2380	1400	932	1330	714	910
4	764	1520	929	4180	782	3520	2150	1540	857	1660	916	863
5	775	1270	903	2970	767	2820	2170	1270	1050	2170	949	825
6	709	1110	767	2630	743	2350	2000	1100	1130	2440	858	831
7	709	1030	645	2240	732	1990	2050	1120	1150	3110	869	855
8	692	966	581	1730	729	1740	1940	768	1200	4230	951	803
9	703	891	599	1400	725	1590	1910	714	6780	2730	1060	811
10	563	829	620	1220	780	1490	1880	632	7240	1700	1090	921
11	594	785	606	1080	1300	1450	1770	648	2730	1470	1090	922
12	779	739	567	1010	3080	1310	3080	827	1860	1310	1220	1020
13	1120	700	534	982	2550	1230	5080	935	1830	1200	1280	1290
14	2830	657	507	1020	1800	1400	4330	1010	1680	1270	1300	1280
15	4890	628	507	1040	1470	1670	3560	1340	1610	1660	967	1310
16	3270	796	1210	1130	1220	2410	2630	2040	1610	1540	969	1290
17	3350	700	1460	1810	998	2550	2510	3000	1540	1350	1010	1200
18	3460	717	3360	6240	872	3090	2100	2370	1490	1380	995	1330
19	2890	688	4570	4740	783	2980	1790	1950	2070	1470	1020	1260
20	2050	705	3190	3000	717	3310	2110	1810	3780	1620	942	881
21	1820	623	2110	2160	671	4270	2920	1460	3270	1520	894	690
22	3680	572	1640	1610	642	7110	2130	1170	2440	1460	782	613
23	4420	544	1330	1360	616	6510	1890	955	2280	1430	729	532
24	9990	559	1120	1230	7020	4710	1800	839	2060	1350	776	494
25	8830	583	969	1140	11300	3640	1730	840	2320	1210	770	472
26	7840	562	888	1070	6260	3350	3350	795	4530	1170	758	469
27	5980	533	845	1030	5920	3110	2800	720	2930	1160	738	643
28	3990	543	795	991	3970	2990	2110	679	2220	1090	935	623
29	2940	773	764	1070	---	3320	1880	656	1800	1070	1020	743
30	2380	1080	740	1100	---	3150	1830	652	1570	988	991	1530
31	2580	---	919	970	---	3110	---	748	---	926	1000	---
TOTAL	86829	28253	36404	61233	59018	99050	73540	36958	67570	49794	29325	27306
MEAN	2801	942	1174	1975	2108	3195	2451	1192	2252	1606	946	910
MAX	9990	3080	4570	6240	11300	7460	5080	3000	7240	4230	1300	1530
MIN	563	533	507	970	616	1230	1730	632	766	926	714	469
AC-FT	172200	56040	72210	121500	117100	196500	145900	73310	134000	98770	58170	54160

WTR YR 1985 TOTAL 655280 MEAN 1795 MAX 11300 MIN 469 AC-FT 1300000

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2120	1930	1210	773	505	458	2440	1120	1320	1190	1330	690
2	2270	1940	1040	702	500	458	1980	1570	1360	1140	1350	664
3	1960	1930	904	665	503	463	1750	1860	1390	1070	1380	681
4	1870	1880	859	679	502	461	1520	1690	3460	1030	1380	674
5	1810	1480	835	696	505	456	1460	1630	3450	995	1420	618
6	1800	1170	814	657	554	446	1480	1460	3870	1280	1430	603
7	2020	1040	802	645	606	1180	1280	1250	2730	1470	1470	639
8	1780	972	781	605	557	2520	1170	1160	1510	1750	1440	648
9	1680	926	761	581	519	2630	1140	1160	973	1870	1300	604
10	1610	873	746	572	494	2700	1100	1100	850	1680	1240	586
11	1680	873	730	581	476	2840	982	837	832	1680	1200	539
12	1670	823	719	756	471	2930	933	763	778	1460	1160	428
13	1720	986	714	742	471	2970	830	2060	726	1230	1160	571
14	1600	899	705	743	479	2990	898	1560	865	1020	1090	640
15	1590	810	737	1910	479	2820	898	1400	1050	1010	1150	762
16	1800	779	713	2640	477	1810	812	1020	1140	980	1150	1290
17	1930	790	700	1750	472	1190	712	980	1200	1010	927	1340
18	1990	815	699	1150	475	2240	873	1010	1150	885	1050	1220
19	1980	794	725	855	479	11300	910	967	1140	779	933	1100
20	1970	755	920	715	491	6470	905	900	1220	739	958	871
21	1970	898	1760	648	589	3780	1140	927	1160	750	975	760
22	1960	876	2520	606	616	2310	1160	1020	1150	918	979	679
23	1970	780	2110	590	557	1730	1170	1150	1100	1290	917	603
24	1890	732	1560	578	528	1390	1090	1400	1130	1410	829	578
25	1950	1110	1240	587	507	1190	1000	1060	1170	1120	753	568
26	2000	890	990	655	487	1230	886	1000	1130	1090	757	555
27	1810	1090	925	585	476	1810	657	964	1170	1210	788	556
28	1900	1000	920	541	466	1970	467	911	1300	1220	784	548
29	1940	1590	871	528	462	2070	477	875	1300	1120	788	556
30	1920	1450	779	525	---	2020	663	944	1330	1320	864	1500
31	1880	---	782	516	---	1950	---	1310	---	1320	773	---
TOTAL	58040	32881	30571	24776	14703	70782	32783	37058	42954	37036	33725	22081
MEAN	1872	1096	986	799	507	2283	1093	1195	1432	1195	1088	736
MAX	2270	1940	2520	2640	616	11300	2440	2060	3870	1870	1470	1500
MIN	1590	732	699	516	462	446	467	763	726	739	753	428
AC-FT	115100	65220	60640	49140	29160	140400	65030	73500	85200	73460	66890	43800
CAL YR 1987	TOTAL 2079296											
WTR YR 1988	TOTAL 437390											
	MEAN 5697											
	MAX 51200											
	MIN 428											
	MIN 11300											
	MAX 699											
	AC-FT 4124000											
	AC-FT 867600											

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1967 to June 1982. Sediment analyses: October 1974 to current year. Radiochemical analyses: December 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1944 to current year.

WATER TEMPERATURE: October 1945 to September 1948, March 1950 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 904 microsiemens Oct. 29, 1963; minimum daily, 139 microsiemens Nov. 12, 1985.

WATER TEMPERATURE: Maximum daily, 35.0°C July 26, 1954; minimum daily, 0.0°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 735 microsiemens Feb. 20; minimum daily, 232 microsiemens Mar. 21.

WATER TEMPERATURE: Maximum daily, 31.0°C July 3, 4; minimum daily, 4.0°C Jan. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 26...	1200	2020	566	8.10	23.0	8.7	8.1	94	0.8	84	48	230
FEB 01...	1330	505	633	8.40	18.5	3.9	8.9	95	0.8	60	44	260
MAR 21...	1509	3380	203	8.00	15.0	130	9.2	91	2.5	2000	1700	77
MAY 09...	1210	1170	590	8.30	26.0	31	7.8	97	0.8	60	48	220
JUN 27...	1152	1170	588	8.50	30.0	34	7.5	100	0.7	68	64	220
AUG 15...	1150	1120	602	8.50	30.0	62	7.0	94	1.3	56	28	230
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT 26...	56	59	19	32	1	3.9	170	41	50	0.30	9.0	318
FEB 01...	44	71	19	36	1	4.0	212	42	50	0.40	2.1	356
MAR 21...	11	24	4.0	10	0.5	4.4	66	16	12	0.10	9.1	131
MAY 09...	56	52	21	37	1	4.0	161	52	56	0.40	11	329
JUN 27...	59	53	22	36	1	3.9	165	45	58	0.30	9.6	331
AUG 15...	51	55	22	39	1	3.9	178	46	62	0.30	8.9	330
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
OCT 26...	320	--	--	<0.010	<0.010	0.700	0.670	0.030	0.020	0.67	0.70	0.220
FEB 01...	352	--	--	<0.010	<0.010	<0.100	<0.100	<0.010	0.010	--	0.40	0.070
MAR 21...	122	0.370	0.380	0.030	0.020	0.400	0.400	0.070	0.060	0.83	0.90	0.220
MAY 09...	336	0.990	1.09	0.010	0.010	1.00	1.10	0.020	0.050	0.38	0.40	0.320
JUN 27...	331	0.590	--	0.010	<0.010	0.600	0.610	<0.010	<0.010	--	0.40	0.270
AUG 15...	347	--	--	<0.010	<0.010	0.500	0.430	0.020	<0.010	0.28	0.30	0.240

08162000 COLORADO RIVER AT WHARTON, TX--Continued
 (National stream-quality accounting and radiochemical network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 26...	0.180	0.180	0.55	58	316	77	<10	2	87	<0.5	<1	<1
FEB 01...	0.050	0.040	0.12	7	9.5	96	--	--	--	--	--	--
MAR 21...	0.120	0.090	0.28	441	4020	84	80	2	51	<0.5	<1	<1
MAY 09...	0.410	0.330	1.0	72	227	99	<10	2	92	<0.5	<1	<1
JUN 27...	0.210	0.190	0.58	64	202	94	<10	2	86	<0.5	<1	<1
AUG 15...	0.240	0.200	0.61	44	133	100	10	3	87	<0.5	<1	<1
DATE	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	
OCT 26...	<3	2	5	<5	15	2	<0.1	<10	<1	<1	<1.0	
FEB 01...	--	--	--	--	--	--	--	--	--	--	--	
MAR 21...	<3	5	83	8	6	2	0.2	<10	5	<1	1.0	
MAY 09...	<3	3	<3	<5	10	2	<0.1	<10	3	<1	1.0	
JUN 27...	<3	5	6	7	15	2	<0.1	<10	2	<1	<1.0	
AUG 15...	<3	2	5	<5	12	2	0.2	10	<1	<1	1.0	
DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)	
OCT 26...	440	<6	6	0.9	1.4	4.9	1.1	3.7	1.0	0.09	0.88	
FEB 01...	--	--	--	--	--	--	--	--	--	--	--	
MAR 21...	120	<6	6	--	--	--	--	--	--	--	--	
MAY 09...	480	<6	8	--	--	--	--	--	--	--	--	
JUN 27...	470	<6	4	--	--	--	--	--	--	--	--	
AUG 15...	490	<6	<3	--	--	--	--	--	--	--	--	

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	58040	570	318	49800	50	7760	40	6280	220
NOV. 1987	32881	610	339	30100	53	4740	43	3800	230
DEC. 1987	30571	589	328	27100	51	4240	41	3410	220
JAN. 1988	24776	629	350	23400	55	3700	44	2950	240
FEB. 1988	14703	696	385	15300	62	2460	49	1930	260
MAR. 1988	70782	476	267	51000	41	7860	34	6410	180
APR. 1988	32783	591	330	29200	52	4570	42	3670	230
MAY 1988	37058	560	313	31300	49	4870	39	3940	210
JUNE 1988	42954	522	292	33900	45	5230	37	4260	200
JULY 1988	37036	579	323	32300	50	5050	41	4070	220
AUG. 1988	33725	593	330	30100	52	4710	42	3790	230
SEPT 1988	22081	610	339	20200	53	3180	43	2550	230
TOTAL	437390	**	**	374000	**	58400	**	47100	**
WTD.AVG.	1195	567	316	**	49	**	40	**	220

COLORADO RIVER MAIN STEM

169

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	543	578	608	552	642	692	565	566	572	592	588	607
2	557	580	650	596	703	707	477	495	546	591	588	611
3	570	580	654	626	649	694	541	554	576	588	588	615
4	565	578	629	622	642	705	556	563	562	584	574	608
5	548	582	579	613	666	712	588	573	347	581	585	625
6	540	590	543	634	671	712	558	565	431	581	600	622
7	572	604	535	627	683	712	598	576	401	562	620	612
8	574	614	550	653	690	700	613	579	450	571	588	613
9	577	610	571	670	700	641	616	582	454	568	588	621
10	577	628	586	680	697	611	627	591	445	575	593	624
11	577	633	615	702	688	593	630	602	444	577	594	623
12	576	646	624	692	686	580	628	608	477	576	601	652
13	584	634	629	680	685	574	633	598	544	571	598	645
14	582	652	625	673	683	576	631	410	574	586	596	612
15	581	654	645	678	693	576	628	411	567	592	597	618
16	575	657	640	649	707	578	621	570	578	593	596	625
17	572	648	643	595	711	581	579	584	585	591	604	610
18	568	665	650	557	723	502	606	591	588	590	596	610
19	570	671	645	564	728	266	613	583	591	595	595	607
20	567	652	649	569	735	287	612	588	588	572	574	611
21	571	650	622	592	730	232	602	580	591	584	584	615
22	571	652	577	601	725	306	605	581	596	545	575	616
23	566	657	558	613	713	454	607	585	591	594	580	620
24	566	633	548	619	708	480	614	584	584	572	592	625
25	571	520	543	625	707	493	613	577	597	535	599	622
26	567	577	541	623	712	510	599	585	598	573	593	625
27	571	602	542	631	727	515	597	587	588	586	594	626
28	578	623	544	642	690	551	624	584	592	589	594	627
29	574	579	548	642	686	586	644	537	591	589	600	626
30	578	606	549	640	---	553	588	544	593	589	599	490
31	585	---	537	641	---	558	---	567	---	589	601	---
MEAN	570	619	593	629	696	556	600	565	541	580	593	615

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.0	21.0	13.0	10.0	19.0	20.5	19.0	21.0	25.5	28.0	29.0	28.0
2	22.5	21.0	12.5	9.0	13.0	20.0	13.0	21.0	25.5	30.0	28.0	28.0
3	22.0	21.0	14.0	9.0	13.0	17.0	18.0	22.0	26.0	31.0	29.0	27.0
4	20.0	22.0	17.0	8.0	19.5	14.0	21.0	22.5	25.0	31.0	29.0	26.0
5	21.0	21.0	17.5	8.0	10.0	14.0	20.0	22.0	24.0	28.0	29.0	24.0
6	22.0	19.0	19.0	9.0	6.0	16.0	22.0	23.0	25.5	27.0	---	24.5
7	20.5	18.0	18.0	7.0	8.0	17.0	19.0	23.0	26.0	27.0	---	25.0
8	21.0	21.0	17.0	5.0	8.5	19.0	20.0	23.0	27.0	27.0	30.0	25.0
9	22.0	18.0	16.0	5.0	10.0	17.0	19.5	24.0	27.0	27.0	30.0	24.0
10	22.0	15.0	15.0	4.0	12.0	16.5	18.5	25.0	28.0	28.0	30.0	24.0
11	22.0	14.0	18.0	5.0	9.0	18.0	16.0	25.5	26.5	29.0	30.0	25.5
12	20.5	13.0	16.0	10.0	7.5	19.0	15.0	23.0	26.0	28.5	30.0	26.0
13	20.0	15.0	17.5	8.0	9.5	16.0	17.0	23.5	26.0	29.0	29.0	---
14	19.0	16.0	---	8.0	15.0	16.0	19.0	24.0	26.0	29.0	30.0	27.0
15	21.0	19.5	---	8.0	12.0	14.5	20.5	23.0	26.0	29.0	29.0	27.0
16	21.0	20.5	12.0	11.0	12.0	15.0	21.0	24.0	26.5	29.5	29.0	27.0
17	22.0	16.5	---	12.0	16.0	15.0	21.0	24.0	27.0	29.0	29.0	28.0
18	22.0	16.5	---	13.0	16.0	12.0	22.0	24.0	27.0	29.5	29.0	27.5
19	22.0	15.0	---	15.0	13.0	13.0	19.0	25.0	27.0	29.0	28.0	28.0
20	22.0	13.0	---	12.0	13.0	13.0	20.0	25.0	28.0	28.0	28.0	27.0
21	20.0	14.0	---	10.0	---	14.0	---	24.5	27.0	28.0	30.0	29.0
22	19.0	16.0	---	9.0	14.5	15.5	---	22.5	27.0	28.0	30.0	27.0
23	20.0	18.0	---	10.0	14.5	18.0	24.0	23.0	27.0	28.5	30.0	27.5
24	21.0	19.0	---	11.0	15.0	20.0	23.0	25.0	27.0	---	29.0	27.0
25	22.0	20.0	---	10.0	---	21.0	23.0	24.5	27.0	29.0	30.0	26.0
26	23.0	16.0	---	8.5	15.0	22.5	23.0	25.0	28.0	29.0	29.0	25.0
27	---	---	---	9.0	18.0	21.0	23.0	24.0	29.0	29.0	29.0	26.0
28	20.0	13.0	---	10.5	19.0	22.0	22.0	24.0	29.0	28.0	27.0	26.0
29	20.5	13.0	---	12.0	20.0	22.0	24.0	25.5	29.0	28.0	28.0	26.0
30	21.0	13.0	9.0	14.0	---	17.0	21.0	25.0	29.0	29.0	27.0	21.0
31	21.0	---	11.0	17.0	---	18.0	---	25.5	---	28.0	28.0	---
MEAN	21.0	17.0	15.0	9.5	13.5	17.0	20.0	23.5	27.0	28.5	29.0	26.0

08162500 COLORADO RIVER NEAR BAY CITY, TX

LOCATION.--Lat 28°58'26", long 96°00'44", Matagorda County, Hydrologic Unit 12090302, on right bank, 6,300 ft downstream from bridge on State Highway 35, 7,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.8 mi west of Bay City, and at mile 32.5.

DRAINAGE AREA.--42,240 mi², approximately, of which 11,403 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1940 (WSP 1046), April 1948 to current year. Records of elevation collected in this vicinity since 1946 are contained in reports of the National Weather Service.
Water-quality records.--Chemical and biochemical analyses: October 1974 to September 1975.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. July 2-6, 1940, nonrecording gage at highway bridge, 6,300 ft upstream at datum 30.60 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. There are diversions above station for irrigation and municipal supply. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08161000. Gage-height telemeter at station.

AVERAGE DISCHARGE.--40 years (water years 1949-88), 2,403 ft³/s (1,741,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,100 ft³/s June 26, 1960; maximum elevation, 48.2 ft, present datum, July 4, 1940, at site 6,300 ft upstream at bridge on State Highway 35, observed by U.S. Army Corps of Engineers (elevation 46.6 ft) adjusted to present site; no flow at times in 1951-53 and 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation since 1869, 56.1 ft Dec. 10, 1913. Flood in July 1869 probably reached about same elevation. Elevation of other floods are as follows: May 8, 1922, 55.4 ft; June 1929, 55.0 ft; June 22, 1935, 54.6 ft; Oct. 5, 1936, 52.2 ft; Aug. 2, 1938, 53.4 ft; Nov. 27, 1940, 47.6 ft. All above flood data from information by Texas and New Orleans Railroad Co. and adjusted to present site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,200 ft³/s Mar. 19 at 1930 hours (elevation, 18.24 ft); minimum daily, 6.8 ft³/s Apr. 30.

CORRECTIONS.--Figures of daily discharge for the 1985 water year were published erroneously. The following table supersedes that published in TX-85-3.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	312	2940	1200	1450	967	4320	2800	1810	260	600	256	672
2	271	3350	1100	2860	916	6280	2620	1460	320	520	230	591
3	346	2870	1150	3390	859	6560	2420	1240	414	497	138	560
4	332	2180	1200	4210	815	4020	2100	1270	408	1810	87	537
5	393	1720	1150	3420	787	3210	2030	1310	321	2910	223	484
6	392	1450	1050	2650	762	2500	1920	1010	465	2330	262	466
7	348	1290	945	2420	743	2170	1840	893	528	1960	240	486
8	332	1210	811	2010	736	1800	1760	742	529	3230	300	484
9	341	1150	750	1590	743	1600	1630	502	2090	2700	400	430
10	457	1050	750	1360	752	1450	1500	460	7730	1440	420	529
11	352	964	750	1150	1020	1390	1580	468	3850	781	400	609
12	415	881	700	1070	2200	1310	1870	447	1770	572	550	637
13	782	886	660	1100	3180	873	4010	668	1490	409	570	752
14	3540	1130	630	1220	2230	5290	4750	730	1260	356	600	910
15	6680	805	610	1200	1680	8810	3580	831	1040	493	450	882
16	4800	905	665	1160	1450	5450	2770	1140	979	787	452	946
17	3710	1290	1510	1330	1190	3950	2300	2230	922	624	455	890
18	4130	1240	1810	3660	991	3150	2160	2560	1310	548	452	849
19	8810	1320	3860	5620	873	3200	1740	1830	3730	645	495	1000
20	12700	1110	3720	3510	777	5650	2160	1620	3320	949	532	794
21	7070	930	2570	2570	724	7670	6790	1440	3810	951	472	525
22	10300	787	1920	1920	690	7070	4700	1160	2570	823	450	387
23	6730	715	1570	1560	701	7020	2710	873	1980	740	337	318
24	9110	685	1360	1330	1270	5610	2130	626	1670	712	311	260
25	16400	717	1170	1190	11900	3920	1960	534	1500	636	347	183
26	19300	741	996	1120	7210	3340	2520	511	3000	523	396	158
27	13200	690	949	1100	6300	3150	4070	369	3500	500	422	142
28	7300	750	932	986	4980	2900	2990	258	1500	456	455	210
29	4400	1000	859	982	---	2940	2190	193	1000	388	633	299
30	3120	1400	824	1130	---	3120	1970	190	700	390	688	524
31	2750	---	908	1070	---	2890	---	178	---	307	650	---
TOTAL	149123	38156	39079	61338	57446	122613	79570	29553	53966	30587	12673	16514
MEAN	4810	1272	1261	1979	2052	3955	2652	953	1799	987	409	550
MAX	19300	3350	3860	5620	11900	8810	6790	2560	7730	3230	688	1000
MIN	271	685	610	982	690	873	1500	178	260	307	87	142
AC-FT	295800	75680	77510	121700	113900	243200	157800	58620	107000	60670	25140	32760

WTR YR 1985 TOTAL 690618 MEAN 1892 MAX 19300 MIN 87 AC-FT 1370000

08162500 COLORADO RIVER NEAR BAY CITY, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1950	2100	1470	929	564	525	2140	386	360	486	604	416
2	2320	2120	1210	866	563	548	2200	905	449	359	732	368
3	2120	2120	1030	789	560	529	1560	1340	537	313	744	393
4	1610	2130	896	747	565	517	1350	1360	1260	257	818	432
5	1520	1880	843	787	563	536	1160	1100	2770	248	946	395
6	1450	1440	814	776	574	533	1070	943	3250	309	1050	345
7	1560	1180	781	815	649	509	1040	619	2900	600	992	340
8	1550	1080	754	831	669	1890	795	432	1460	762	1070	357
9	1380	1060	734	761	615	2750	760	339	623	1090	1020	318
10	1230	973	716	672	577	2800	704	317	278	1100	909	276
11	1230	927	687	644	548	2960	607	248	179	834	892	267
12	1260	904	697	695	530	3130	499	171	128	882	834	249
13	1300	898	687	864	534	3200	401	380	76	591	832	206
14	1310	1070	660	786	546	3200	319	1480	28	435	846	190
15	1300	930	655	941	548	3200	323	849	24	287	752	470
16	1380	850	676	2670	526	2630	395	765	45	256	876	1010
17	1650	860	656	2430	528	1690	347	411	102	233	709	1470
18	1750	859	644	1590	530	1630	325	374	175	221	635	1230
19	1770	864	676	1160	529	8440	364	291	200	176	829	749
20	1770	797	744	891	551	8680	322	225	239	176	809	606
21	1750	833	1470	757	578	5170	322	205	327	171	800	447
22	1770	975	5490	704	688	2900	496	304	304	168	746	366
23	1840	914	4210	661	685	1950	489	360	343	226	693	280
24	1850	801	2410	644	615	1440	440	430	368	626	616	241
25	1750	2440	1750	622	587	1140	385	496	399	609	515	225
26	1870	4880	1390	669	564	964	300	223	388	426	485	203
27	1800	2790	1190	706	551	1170	225	180	e410	450	509	174
28	1670	3030	1320	631	538	1710	139	140	e470	513	521	147
29	1790	1760	1240	588	531	1820	25	114	538	507	478	129
30	1850	1830	1050	581	---	1920	6.8	87	484	486	496	527
31	2060	---	925	576	---	2050	---	81	---	602	496	---
TOTAL	51410	45295	38475	27783	16606	72131	19508.8	15555	19114	14399	23254	12826
MEAN	1658	1510	1241	896	573	2327	650	502	637	464	750	428
MAX	2320	4880	5490	2670	688	8680	2200	1480	3250	1100	1070	1470
MIN	1230	797	644	576	526	509	6.8	81	24	168	478	129
AC-FT	102000	89840	76320	55110	32940	143100	38700	30850	37910	28560	46120	25440
CAL YR 1987	TOTAL	2046767	MEAN	5608	MAX	50300	MIN	380	AC-FT	4060000		
WTR YR 1988	TOTAL	356356.8	MEAN	974	MAX	8680	MIN	6.8	AC-FT	706800		

e Estimated.

TRES PALACIOS RIVER MAIN STEM

08162600 TRES PALACIOS RIVER NEAR MIDFIELD, TX

LOCATION (REVISED).--Lat 28°55'40", long 96°10'15", Matagorda County, Hydrologic Unit 12100401, at right downstream end of bridge on Farm Road 456, 1.0 mi downstream from Juanita Creek, and 2.4 mi southeast of Midfield. Prior to Apr. 28, 1988, at site at left downstream end of bridge.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--June 1970 to current year. Prior to October 1973, published as Tres Palacios Creek near Midfield. Water-quality records.--Chemical, biochemical, and pesticide analyses: October 1968 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 5.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Ten known diversions above station (amount unknown). An undetermined amount of water from irrigated ricefields enters river upstream at various points. Extensive channel cleaning upstream and downstream from gage was begun in the 1983 water year and completed during the 1984 water year.

AVERAGE DISCHARGE.--18 years, 151 ft³/s (109,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Oct. 17, 1984 (gage height, 32.43 ft, from floodmark); minimum daily, 1.0 ft³/s Nov. 3-5, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1885, 37 ft in June 1960 and 35 ft in August 1945, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	2300	*2,910	*22.20	No other peak greater than base discharge.			

Minimum daily discharge, 7.8 ft³/s Mar. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	10	81	20	11	11	74	83	12	24	32	26
2	23	9.3	50	17	11	13	36	51	14	19	29	22
3	17	8.7	35	15	11	15	20	29	14	17	30	24
4	14	9.3	28	14	11	12	15	22	32	16	32	27
5	13	10	24	13	11	11	13	15	28	27	33	25
6	13	9.8	22	16	11	9.7	13	10	22	321	34	23
7	12	8.9	21	150	10	8.9	12	9.7	18	510	33	21
8	11	9.2	22	119	10	9.1	11	11	14	e220	34	21
9	10	12	20	50	10	10	13	12	15	e82	30	22
10	10	15	18	26	11	9.1	13	23	14	e63	30	23
11	10	16	16	19	11	8.8	14	23	13	e54	28	22
12	11	13	15	16	11	8.9	13	26	12	e47	31	21
13	9.9	12	14	14	10	8.8	12	26	10	e43	34	20
14	10	13	14	13	11	8.5	14	23	10	e41	44	21
15	11	11	13	13	11	7.8	13	18	10	e39	36	23
16	10	15	13	15	11	8.1	12	16	11	e38	30	27
17	11	21	12	22	12	11	18	17	13	e37	32	26
18	12	24	12	19	13	61	20	16	13	e35	34	24
19	13	20	13	17	13	81	20	12	13	e35	178	23
20	13	15	14	15	13	26	16	11	13	e36	140	23
21	11	12	177	12	12	17	14	11	13	e40	85	23
22	11	10	936	11	12	13	17	17	14	e70	46	22
23	12	9.6	334	11	11	11	16	23	16	e150	34	23
24	14	8.9	139	11	12	9.9	17	20	18	e72	26	23
25	15	1410	71	10	13	10	16	21	22	e54	23	64
26	14	1830	49	10	13	50	12	16	22	43	22	93
27	13	1010	66	10	16	144	11	14	88	32	22	55
28	12	1110	102	10	12	24	12	11	113	31	21	44
29	11	356	66	11	11	17	20	12	50	30	21	39
30	10	158	36	11	---	31	64	19	30	33	23	159
31	11	---	25	11	---	80	---	16	---	40	34	---
TOTAL	400.9	6176.7	2458	721	335	745.6	571	633.7	687	2299	1261	1009
MEAN	12.9	206	79.3	23.3	11.6	24.1	19.0	20.4	22.9	74.2	40.7	33.6
MAX	33	1830	936	150	16	144	74	83	113	510	178	159
MIN	9.9	8.7	12	10	10	7.8	11	9.7	10	16	21	20
AC-FT	795	12250	4880	1430	664	1480	1130	1260	1360	4560	2500	2000

CAL YR 1987 TOTAL 42921.8 MEAN 118 MAX 5450 MIN 7.6 AC-FT 85140
WTR YR 1988 TOTAL 17297.9 MEAN 47.3 MAX 1830 MIN 7.8 AC-FT 34310

e Estimated.

LAVACA RIVER MAIN STEM

173

08163500 LAVACA RIVER AT HALLETTSVILLE, TX

LOCATION.--Lat 29°26'35", long 96°56'39", Lavaca County, Hydrologic Unit 12100101, on left bank 75 ft downstream from bridge on U.S. Highway 77 in Hallettsville and 0.7 mi downstream from Campbell Branch.

DRAINAGE AREA.--108 mi².

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

REVISED RECORDS.--WSP 1312: 1942(M), 1944(M). WSP 1732: 1952(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 186.72 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1960, water-stage recorder for high stages and movable nonrecording gage for stages below about 6.2 ft. Apr. 20, 1960, to June 2, 1961, movable nonrecording gage. All gages at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No diversion above station. The Lavaca County Flood Control District No. 3 began channel rectification 1.6 mi downstream from gage in August 1983. This rectification reached the gage Jan. 26, 1984, and was completed in June 1984. The channel was previously rectified in 1959-60.

AVERAGE DISCHARGE.--49 years, 50.3 ft³/s (6.32 in/yr), 36,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,500 ft³/s Aug. 31, 1981 (gage height, 41.1 ft, from floodmark), from rating curve extended above 23,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times in 1953 and 1956.

Maximum stage since at least 1840, that of Aug. 31, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage from about 1870 to 1940, 32.8 ft July 16, 1936, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 11	2200	*1,560	*12.30				

Minimum daily discharge, 0.23 ft³/s Sept. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	1.4	14	9.9	4.9	4.4	5.6	6.0	3.4	e2.6	e.74	e.38
2	1.6	1.4	e8.0	9.2	4.8	6.1	5.5	5.7	4.7	e2.5	e.72	e.34
3	1.2	1.3	e5.0	8.6	4.6	6.1	4.9	4.5	372	e2.4	e.70	e.33
4	1.2	1.3	e4.9	8.0	4.8	5.6	4.0	4.0	205	e2.3	e.68	e.32
5	1.4	1.3	e4.8	7.7	4.8	5.3	e3.8	e3.8	166	e3.0	e.66	e.30
6	1.3	1.3	e4.7	8.3	5.1	5.2	e3.8	e3.8	26	7.6	e.65	e.30
7	1.1	1.3	e4.6	8.5	5.1	5.0	e3.9	e3.7	5.9	48	e.65	e.28
8	1.1	3.9	e9.0	8.1	5.1	4.9	4.0	e3.7	e3.3	e3.2	e.64	e.26
9	1.1	2.6	4.9	8.1	5.1	4.7	4.2	e3.8	e3.0	e2.8	e.63	e.25
10	1.2	1.7	4.3	7.7	5.1	4.4	5.0	4.0	e2.7	e2.5	e.62	e.28
11	1.3	1.4	4.2	7.5	4.9	4.3	4.6	263	e2.7	e2.3	e.62	e.36
12	1.3	1.3	4.2	7.5	4.6	4.4	4.0	344	e2.7	e2.0	e.63	e.38
13	1.1	1.4	4.2	7.3	4.4	3.9	e3.8	38	e2.7	e1.8	e.66	e.39
14	1.1	1.6	4.2	6.8	4.4	3.5	e3.9	6.4	e2.7	e1.6	e.64	e.36
15	1.1	1.9	4.0	6.7	4.4	3.5	4.0	3.4	e2.9	e1.5	e.66	e.30
16	1.1	100	4.0	6.6	4.3	3.9	4.3	e3.0	e2.7	e1.4	7.3	e.28
17	1.1	29	4.1	6.6	4.3	15	4.2	e2.8	e2.5	e1.3	e.98	e.26
18	1.1	9.2	4.4	6.6	5.4	114	4.2	e2.7	e2.4	e1.3	e.88	e.24
19	1.1	4.7	35	6.6	7.5	36	4.0	e2.7	e2.3	e1.2	e.82	e.25
20	1.1	2.3	168	6.1	7.3	13	4.0	3.4	e2.5	131	e.81	e.24
21	1.1	2.8	708	5.6	5.7	8.7	e3.9	15	e2.4	19	e.75	e.23
22	1.2	4.5	249	5.5	5.0	6.9	e3.8	3.7	e2.5	3.8	e.70	e.24
23	2.0	4.9	60	5.3	4.7	6.1	e3.8	3.0	e2.7	e1.3	e.66	e.24
24	1.8	5.3	28	5.2	4.4	5.5	e3.8	e2.9	e3.0	e1.0	e.76	e.25
25	1.7	294	22	4.8	4.2	5.2	e3.8	e2.7	e3.1	.89	e.66	e.26
26	1.7	66	21	4.6	4.2	4.8	e3.8	e2.6	e3.2	e.80	e.56	e.27
27	1.7	29	23	4.5	4.2	4.4	e3.8	e2.6	e3.1	e.80	e.50	e.28
28	1.6	22	21	4.4	4.2	4.0	4.0	e2.5	e3.0	e.87	e.46	e.27
29	1.5	19	15	4.4	4.2	4.1	6.8	e2.5	e2.9	e.78	e.54	e.26
30	1.4	18	12	4.6	---	4.0	7.1	e2.5	e2.6	e.76	e.38	e.27
31	1.4	---	11	4.7	---	5.5	---	e2.5	---	e.75	e.34	---
TOTAL	41.9	635.8	1470.5	206.0	141.7	312.4	130.3	754.9	846.6	253.05	27.00	8.67
MEAN	1.35	21.2	47.4	6.65	4.89	10.1	4.34	24.4	28.2	8.16	.87	.29
MAX	2.2	294	708	9.9	7.5	114	7.1	344	372	131	7.3	.39
MIN	1.1	1.3	4.0	4.4	4.2	3.5	3.8	2.5	2.3	.75	.34	.23
AC-FT	83	1260	2920	409	281	620	258	1500	1680	502	54	17
CFSM	.01	.20	.44	.06	.05	.09	.04	.23	.26	.08	.01	.00
IN.	.01	.22	.51	.07	.05	.11	.04	.26	.29	.09	.01	.00

CAL YR 1987 TOTAL 34689.63 MEAN 95.0 MAX 17500 MIN .67 AC-FT 68810 CFSM .88 IN. 11.95
WTR YR 1988 TOTAL 4828.82 MEAN 13.2 MAX 708 MIN .23 AC-FT 9580 CFSM .12 IN. 1.66

e Estimated.

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°57'35", long 96°41'10", Jackson County, Hydrologic Unit 12100101, at downstream side near center of upstream bridge of two bridges on U.S. Highway 59, 660 ft upstream from Texas and New Orleans Railroad Co. bridge, and 2.8 mi southwest of Edna.

DRAINAGE AREA.--817 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 1923: 1955. WRD TX-73-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.10 ft above National Geodetic Vertical Datum of 1929. Prior to June 6, 1939, nonrecording gage (property of U.S. Army Corps of Engineers); June 6, 1939, to Apr. 3, 1957, nonrecording gage at site 110 ft downstream; Apr. 4, 1957, to Mar. 21, 1961, nonrecording gage; all at same datum.

REMARKS.--Records fair to June 15 due to bridge construction and good thereafter. Small diversions above station for irrigation.

AVERAGE DISCHARGE.--50 years, 329 ft³/s (5.47 in/yr), 238,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s July 1, 1940 (gage height, 32.51 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 33.8 ft May 25, 1936 (discharge, 83,400 ft³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	1500	*3,890	*17.30				

Minimum daily discharge, 1.5 ft³/s Sept. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	23	65	101	42	38	79	98	13	29	11	3.3
2	33	20	53	86	42	38	64	74	15	28	12	3.3
3	30	19	47	77	41	43	50	50	108	27	11	3.3
4	28	19	43	70	40	43	42	37	363	26	10	3.2
5	27	19	40	64	40	43	39	28	699	26	9.7	2.7
6	25	21	38	61	40	42	37	23	297	26	8.7	2.7
7	26	21	37	60	40	39	34	20	301	34	8.5	2.2
8	25	22	35	56	40	37	32	18	104	149	7.5	2.1
9	24	28	34	54	40	35	34	18	57	93	9.3	1.8
10	22	34	43	53	41	31	36	16	40	55	10	1.6
11	22	28	40	50	40	31	33	14	29	39	10	1.6
12	22	41	37	46	38	31	33	16	e28	31	8.8	1.7
13	21	35	35	41	36	28	32	837	e27	27	7.7	1.6
14	21	30	35	40	37	26	31	563	e25	23	6.9	1.6
15	22	28	31	40	38	25	31	196	27	21	5.9	1.5
16	22	28	31	42	37	26	30	110	26	19	7.0	2.9
17	21	64	32	44	40	30	47	69	28	18	7.6	5.6
18	21	828	32	42	38	143	50	52	25	16	7.1	6.0
19	20	183	37	41	38	89	52	42	23	15	6.1	6.2
20	19	61	40	39	38	170	39	36	23	16	6.4	6.5
21	19	40	701	38	38	119	33	36	24	393	9.5	5.9
22	18	33	2710	38	40	76	31	40	23	429	6.9	5.2
23	21	29	2070	39	45	60	29	44	24	101	5.8	4.7
24	26	26	593	39	42	52	28	53	25	49	5.3	e4.7
25	29	2220	310	40	38	48	24	38	27	29	5.0	e4.3
26	28	1280	246	41	38	46	21	28	27	22	5.4	e4.3
27	29	1040	234	41	38	42	21	23	28	20	3.8	e4.0
28	27	234	223	40	39	41	20	18	29	17	3.3	e4.0
29	24	121	177	40	39	40	19	17	30	14	3.3	e4.0
30	23	84	138	40	---	40	30	16	29	15	4.2	e3.6
31	27	---	116	41	---	51	---	14	---	12	3.5	---
TOTAL	763	6659	8303	1544	1143	1603	1081	2644	2524	1819	227.2	106.1
MEAN	24.6	222	268	49.8	39.4	51.7	36.0	85.3	84.1	58.7	7.33	3.54
MAX	41	2220	2710	101	45	170	79	837	699	429	12	6.5
MIN	18	19	31	38	36	25	19	14	13	12	3.3	1.5
AC-FT	1510	13210	16470	3060	2270	3180	2140	5240	5010	3610	451	210
CFSM	.03	.27	.33	.06	.05	.06	.04	.10	.10	.07	.01	.00
IN.	.03	.30	.38	.07	.05	.07	.05	.12	.11	.08	.01	.00

CAL YR 1987 TOTAL 219983 MEAN 603 MAX 22500 MIN 18 AC-FT 436300 CFSM .74 IN. 10.02
WTR YR 1988 TOTAL 28416.3 MEAN 77.6 MAX 2710 MIN 1.5 AC-FT 56360 CFSM .10 IN. 1.29

e Estimated.

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1945 to September 1977. Chemical and biochemical analyses: February 1971 to current year. Pesticide analyses: January 1968 to August 1981. Sediment analyses: November 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1977 to September 1981.
WATER TEMPERATURE: November 1977 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 899 microsiemens April 22, 1978; minimum daily, 100 microsiemens May 5, 1979, and May 20, 1980.
WATER TEMPERATURE: Maximum daily, 33.0°C July 16, 1978; minimum daily, 5.0°C January 22, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 14...	1410	21	723	8.10	21.5	4.7	9.1	102	0.9	180	190	300
DEC 15...	1235	31	695	8.20	13.5	--	9.8	93	1.4	--	--	270
MAR 01...	1420	38	726	8.20	20.0	7.5	8.3	91	1.5	140	110	270
APR 13...	1225	31	725	8.30	17.5	--	9.6	100	0.6	--	--	270
JUN 29...	1245	30	695	8.10	28.5	14	8.0	103	1.7	840	190	270
AUG 10...	1200	11	617	8.10	29.5	2.5	7.6	100	1.2	180	--	240
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT 14...	12	110	6.4	46	1	2.7	290	18	60	0.30	23	413
DEC 15...	7	100	5.6	46	1	4.2	266	21	59	0.40	22	--
MAR 01...	18	100	5.9	57	2	3.0	257	27	75	0.40	14	400
APR 13...	21	100	6.1	55	2	2.9	254	26	73	0.40	18	--
JUN 29...	8	98	6.2	49	1	3.5	263	18	61	0.20	21	426
AUG 10...	8	86	5.8	39	1	4.2	231	14	50	0.30	23	377
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)
OCT 14...	442	<0.010	--	<0.100	--	0.020	--	0.48	0.50	0.070	0.060	--
DEC 15...	418	<0.010	--	<0.100	--	0.020	--	0.18	0.20	<0.120	--	--
MAR 01...	433	<0.010	0.010	<0.100	<0.100	0.020	0.040	--	<0.20	0.060	0.060	0.060
APR 13...	434	<0.010	--	<0.100	--	0.030	--	0.47	0.50	0.140	--	--
JUN 29...	416	<0.010	<0.010	<0.100	<0.100	0.040	<0.010	0.46	0.50	0.210	0.170	0.100
AUG 10...	362	<0.010	<0.010	<0.100	<0.100	0.040	0.030	0.36	0.40	0.250	0.210	0.190
DATE	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT 14...	--	53	3.0	28	<10	3	360	<0.5	<1	1	<3	1
DEC 15...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	0.18	83	8.5	45	<10	3	330	<0.5	<1	<1	<3	1
APR 13...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 29...	0.31	73	5.9	67	<10	6	310	<0.5	<1	<1	<3	1
AUG 10...	0.58	49	1.5	46	<10	6	290	<0.5	<1	<1	<3	2

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 14...	4	<5	11	20	0.2	<10	1	<1	1.0	360	<6	<3
DEC 15...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 01...	4	<5	17	15	<0.1	<10	5	<1	<1.0	380	<6	<3
APR 13...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 29...	4	<5	17	23	0.1	<10	<1	<1	<1.0	360	<6	6
AUG 10...	5	<5	13	19	0.1	<10	1	<1	<1.0	320	6	6

LAVACA RIVER BASIN

177

08164300 NAVIDAD RIVER NEAR HALLETTSVILLE, TX

LOCATION.--Lat 29°28'00", long 96°48'45", Lavaca County, Hydrologic Unit 12100102, on right bank 28 ft downstream from bridge on U.S. Highway 90-A, 0.8 mi downstream from Mixons Creek, 1.2 mi southwest of Sublime, and 8 mi northeast of Hallettsville.

DRAINAGE AREA.--332 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 159.28 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

AVERAGE DISCHARGE.--27 years, 145 ft³/s (5.93 in/yr), 105,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,500 ft³/s Sept. 13, 1974 (gage height, 36.05 ft); no flow Aug. 5-7, 22, Sept. 2-16, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, 40 ft in June 1940; flood in July 1936 reached a stage of 39 ft, from information by local residents and Southern Pacific Railroad Co.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 21	2000	*2,280	*19.11				

Minimum daily discharge, 0.05 ft³/s Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	5.6	22	36	22	19	50	30	11	5.2	2.3	.15
2	8.3	7.4	19	33	22	21	52	23	11	4.5	2.6	.27
3	7.8	6.2	18	32	22	24	35	21	173	4.1	2.9	.24
4	6.8	6.1	17	31	22	22	31	19	90	3.9	2.2	.22
5	6.2	5.6	17	30	22	20	29	17	87	4.1	1.8	.15
6	5.7	5.6	17	30	23	19	27	17	40	12	1.4	.10
7	5.5	5.5	49	30	23	19	26	16	18	12	.92	.08
8	5.3	5.8	25	30	23	20	26	17	12	8.8	.69	.07
9	5.3	9.3	18	29	23	19	25	17	11	7.6	.58	.06
10	5.3	13	17	28	23	19	25	17	10	6.1	.55	.06
11	5.1	10	16	28	23	19	25	46	9.3	5.1	.44	.06
12	4.8	8.7	16	28	22	20	24	343	8.8	4.3	.48	.05
13	4.8	8.4	15	27	22	19	23	74	9.3	3.9	3.0	.07
14	4.8	8.2	15	25	23	19	23	38	9.1	3.7	1.5	.07
15	4.8	9.7	14	25	24	19	23	28	9.0	4.2	.81	.10
16	4.8	123	14	26	22	19	22	24	8.4	3.6	.56	.11
17	4.6	140	14	26	23	68	23	21	7.8	3.0	.50	.17
18	5.9	30	14	26	28	1010	24	20	7.5	2.7	.64	.17
19	4.9	17	27	25	31	185	23	18	7.0	2.4	.60	.16
20	4.8	13	226	24	28	84	21	17	6.7	33	.33	.12
21	4.6	11	1550	22	24	61	21	29	6.1	41	.25	.11
22	4.6	11	861	22	23	50	21	36	6.1	14	.29	.12
23	5.4	11	145	22	22	43	21	20	5.8	7.8	.23	.12
24	7.2	11	82	22	20	40	20	15	5.6	4.6	.20	.09
25	7.2	474	65	22	19	36	18	13	5.5	3.1	.24	.08
26	6.7	247	71	21	19	33	17	11	5.3	2.1	1.2	.08
27	6.7	56	87	21	19	31	16	10	5.8	1.7	.53	.09
28	6.1	47	74	21	19	29	16	9.8	6.5	1.6	.28	.08
29	5.8	31	49	21	19	28	19	9.9	6.8	1.3	.15	.44
30	5.8	25	41	22	---	26	47	13	6.2	1.7	.13	.44
31	5.6	---	39	22	---	29	---	12	---	1.9	.14	---
TOTAL	180.6	1362.1	3654	807	655	2070	773	1001.7	605.6	215.0	28.44	4.13
MEAN	5.83	45.4	118	26.0	22.6	66.8	25.8	32.3	20.2	6.94	.92	.14
MAX	9.4	474	1550	36	31	1010	52	343	173	41	3.0	.44
MIN	4.6	5.5	14	21	19	19	16	9.8	5.3	1.3	.13	.05
AC-FT	358	2700	7250	1600	1300	4110	1530	1990	1200	426	56	8.2
CFSM	.02	.14	.36	.08	.07	.20	.08	.10	.06	.02	.00	.00
IN.	.02	.15	.41	.09	.07	.23	.09	.11	.07	.02	.00	.00

CAL YR 1987	TOTAL	56764.2	MEAN	156	MAX	9370	MIN	2.2	AC-FT	112600	CFSM	.47	IN.	6.36
WTR YR 1988	TOTAL	11356.57	MEAN	31.0	MAX	1550	MIN	.05	AC-FT	22530	CFSM	.09	IN.	1.27

08164350 NAVIDAD RIVER NEAR SPEAKS, TX

LOCATION.--Lat 29°19'18", long 96°42'32", Lavaca County, Hydrologic Unit 12100102, at right downstream end of bridge on Farm Road 530, 100 ft downstream from Ragsdale Creek, and 4.6 mi north of Speaks.

DRAINAGE AREA.--437 mi².

PERIOD OF RECORD.--October 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 120.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. There are no known diversions above this station.

AVERAGE DISCHARGE.--7 years, 139 ft³/s (4.32 in/yr), 100,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s May 14, 1982 (gage height, 27.89 ft, from floodmark); minimum daily, 0.10 ft³/s Sept. 12, 1988.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 22	1400	*2,320	*15.57				

Minimum daily discharge, 0.10 ft³/s Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	5.7	e26	55	27	19	57	40	30	13	2.7	.37
2	9.7	5.6	23	50	26	20	64	24	30	11	2.9	.59
3	9.0	6.0	22	47	25	23	49	17	67	10	5.7	.46
4	8.4	7.0	20	45	23	25	36	14	231	9.3	4.3	.36
5	8.3	5.9	19	43	23	21	31	12	80	9.5	3.9	.39
6	7.7	5.2	18	42	23	19	28	10	91	11	2.8	.34
7	7.5	4.8	27	42	23	17	26	9.5	49	34	2.0	.29
8	7.1	5.7	53	42	24	17	25	9.3	36	28	1.3	.22
9	6.8	8.8	28	42	24	17	24	9.3	30	20	.97	.16
10	6.7	8.1	19	40	24	16	24	9.3	27	16	.79	.14
11	6.7	12	16	38	25	15	24	287	24	13	.57	.14
12	6.5	12	15	38	21	15	22	587	21	11	.48	.10
13	6.0	10	16	38	21	15	21	216	19	9.5	.43	.15
14	5.9	9.7	14	37	21	13	20	78	18	8.3	.52	.27
15	5.6	9.3	13	35	22	12	19	58	17	8.3	2.0	.29
16	5.6	15	12	35	23	12	19	49	16	8.0	1.1	.41
17	5.6	196	11	36	21	14	20	43	15	8.0	.75	.58
18	5.6	75	11	36	21	642	19	39	14	7.3	.88	.73
19	5.6	29	14	36	29	531	20	36	13	6.4	.78	.70
20	6.0	17	142	34	33	93	17	34	12	7.9	.57	.58
21	5.1	e16	974	28	27	61	15	34	11	43	.55	.45
22	4.8	e15	2030	26	23	48	15	48	14	33	.57	.40
23	5.0	e14	340	27	21	40	14	46	15	16	.47	.26
24	5.4	e13	113	27	20	35	13	36	14	8.8	.42	.26
25	6.9	e20	90	26	18	33	11	32	14	5.3	.41	.24
26	8.0	e600	89	24	18	31	9.5	30	13	3.9	.36	.19
27	7.4	e300	106	24	17	28	8.3	28	12	4.0	.26	.16
28	6.9	e61	117	25	18	26	7.4	27	12	3.6	.25	.14
29	6.7	e50	81	26	19	24	7.8	35	12	2.8	.52	1.0
30	6.3	e32	64	26	---	22	23	30	12	3.8	.46	16
31	5.9	---	58	26	---	42	---	29	---	2.8	.34	---
TOTAL	209.7	1568.8	4581	1096	660	1946	689.0	1956.4	969	376.5	40.05	26.37
MEAN	6.76	52.3	148	35.4	22.8	62.8	23.0	63.1	32.3	12.1	1.29	.88
MAX	11	600	2030	55	33	642	64	587	231	43	5.7	16
MIN	4.8	4.8	11	24	17	12	7.4	9.3	11	2.8	.25	.10
AC-FT	416	3110	9090	2170	1310	3860	1370	3880	1920	747	.79	.52
CFSM	.02	.12	.34	.08	.05	.14	.05	.14	.07	.03	.00	.00
IN.	.02	.13	.39	.09	.06	.17	.06	.17	.08	.03	.00	.00

CAL YR 1987 TOTAL 74134.5 MEAN 203 MAX 8180 MIN 1.9 AC-FT 147000 CFSM .46 IN. 6.31
WTR YR 1988 TOTAL 14118.82 MEAN 38.6 MAX 2030 MIN .10 AC-FT 28000 CFSM .09 IN. 1.20

e Estimated.

LAVACA RIVER BASIN

179

08164450 SANDY CREEK NEAR LOUISE, TX

LOCATION.--Lat 29°09'36", long 96°32'46", Jackson County, Hydrologic Unit 12100102, on left bank at downstream end of bridge on Farm Road 710, 0.9 mi upstream from Goldenrod Creek, and 9.1 mi northwest of Louise.

DRAINAGE AREA.--289 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 59.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for discharges below 5 ft³/s, which are poor. Much of the low flow during the irrigation season (April to September) comes from drainage from ricefields irrigated by water originally diverted from the Colorado River. No known diversion above station.

AVERAGE DISCHARGE.--11 years, 176 ft³/s (8.27 in/yr), 127,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s Sept. 14, 1978 (gage height, 23.03 ft), from rating curve extended above 7,800 ft³/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 22	10000	*2,170	*12.77	No other peak greater than base discharge.			

Minimum daily discharge, no flow Oct. 31, Nov. 1, 7, Mar. 13-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	.00	35	30	.25	.03	314	357	326	7.7	127	6.4
2	148	4.3	21	22	.10	.09	700	174	143	1.6	115	6.4
3	115	3.3	11	15	3.0	.01	624	84	122	.29	147	6.4
4	77	1.2	7.6	12	.65	.01	189	40	674	.35	186	6.2
5	49	.29	4.9	8.7	.04	.01	72	17	185	.29	188	6.1
6	41	.03	3.9	6.9	.06	.01	34	3.3	97	2.6	152	6.1
7	27	.00	2.7	6.4	.05	.01	14	1.5	54	153	126	6.1
8	17	.55	1.8	5.3	.02	.01	1.8	1.9	21	190	94	6.1
9	15	1.4	.98	4.0	.02	.01	1.2	1.6	6.4	150	64	6.0
10	22	.27	.55	3.0	1.9	.01	1.0	3.0	2.4	120	54	5.8
11	26	.03	.42	1.9	1.2	.01	.97	2.3	2.7	84	49	5.8
12	19	1.8	.42	1.5	.15	.01	2.5	104	1.9	52	48	5.8
13	15	5.4	.42	.90	.31	.00	3.9	290	1.4	38	39	5.8
14	18	8.9	.42	.65	.04	.00	6.8	147	5.1	29	27	5.8
15	11	10	.42	.59	.01	.00	3.5	76	17	9.8	8.6	17
16	2.8	13	.42	.64	.01	.01	2.9	36	26	4.0	8.1	28
17	2.2	16	.42	.59	.01	2.7	94	19	36	4.7	7.7	27
18	1.8	24	.41	.39	.02	126	139	17	22	5.0	9.4	29
19	1.4	21	.73	.36	.02	296	78	8.7	11	11	21	24
20	e1.7	10	.57	12	.02	75	26	2.6	4.3	21	24	7.5
21	e2.4	4.9	780	7.6	.02	28	9.1	7.4	2.4	93	19	5.5
22	2.3	2.8	1970	5.3	.02	13	5.0	12	2.0	271	9.2	5.5
23	2.0	2.2	1210	3.1	.02	7.1	2.8	19	3.7	263	15	5.5
24	1.5	1.9	678	1.9	.02	1.4	2.1	23	17	218	10	5.5
25	1.2	664	359	.99	.02	.23	2.2	19	21	161	7.0	5.5
26	.75	650	185	.99	.04	.08	2.9	6.9	19	114	6.8	5.3
27	.30	396	194	1.0	.05	.05	2.9	1.2	18	107	6.7	5.2
28	.11	191	236	.75	.05	.52	7.0	1.1	43	118	6.7	5.2
29	.04	112	152	.19	.03	.88	2.9	18	32	113	6.6	9.4
30	.01	63	76	.43	---	7.9	89	139	16	123	6.4	85
31	.0	---	45	.16	---	19	---	408	---	142	6.4	---
TOTAL	801.51	2209.27	5979.08	155.23	8.15	578.09	2434.47	2040.5	1932.3	2607.33	1594.6	354.9
MEAN	25.9	73.6	193	5.01	.28	18.6	81.1	65.8	64.4	84.1	51.4	11.8
MAX	181	664	1970	30	3.0	296	700	408	674	271	188	85
MIN	.00	.00	.41	.16	.01	.00	.97	1.1	1.4	.29	6.4	5.2
AC-FT	1590	4380	11860	308	16	1150	4830	4050	3830	5170	3160	704
CFSM	.09	.25	.67	.02	.00	.06	.28	.23	.22	.29	.18	.04
IN.	.10	.28	.77	.02	.00	.07	.31	.26	.25	.34	.21	.05

CAL YR 1987 TOTAL 79977.28 MEAN 219 MAX 5190 MIN .00 AC-FT 158600 CFSM .76 IN. 10.29
WTR YR 1988 TOTAL 20695.43 MEAN 56.5 MAX 1970 MIN .00 AC-FT 41050 CFSM .20 IN. 2.66

e Estimated.

08164450 SANDY CREEK NEAR LOUISE, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: November 1977 to July 1981. Sediment analyses: September 1978 to April 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

LAVACA RIVER BASIN

181

08164503 WEST MUSTANG CREEK NEAR GANADO, TX

LOCATION.--Lat 29°04'17", long 96°28'01", Jackson County, Hydrologic Unit 12100102, on right bank at downstream end of downstream bridge on U.S. Highway 59, 2.1 mi upstream from Middle Mustang Creek, and 3.6 mi east of Ganado.

DRAINAGE AREA.--178 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 40.12 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Much of low flow during the irrigation season (April to September) comes from drainage from ricefields irrigated by diversions originating from the Colorado River.

AVERAGE DISCHARGE.--11 years, 147 ft³/s (11.2 in/yr), 106,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s Jan. 21, 1980 (gage height, 24.49 ft, from floodmark), from rating curve extended above 8,800 ft³/s; minimum daily, 0.03 ft³/s Jan. 18, 19, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	0900	*2,370	*15.63	Dec. 22	1900	2,000	15.06

Minimum daily discharge, 0.15 ft³/s Mar. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	20	100	34	2.3	.43	45	292	44	4.7	154	4.1
2	56	9.4	62	26	1.6	.64	115	160	39	3.6	138	5.3
3	41	6.5	37	19	1.2	1.0	204	71	27	3.7	117	4.6
4	28	5.1	27	14	3.2	.88	121	39	136	4.1	113	5.1
5	22	3.5	19	10	3.9	.58	42	28	148	4.0	88	5.8
6	16	4.2	17	8.1	2.8	.51	21	21	65	44	73	3.9
7	11	4.5	14	7.5	2.1	.51	12	7.7	30	154	65	2.6
8	9.3	3.3	11	13	1.9	.46	7.0	3.5	17	199	40	2.3
9	6.0	8.3	9.2	15	2.0	.44	7.1	6.0	9.4	176	45	3.9
10	4.9	5.7	7.7	9.6	1.7	.39	7.4	15	5.4	138	50	2.3
11	8.6	3.3	4.7	6.9	1.3	.35	18	13	3.6	79	52	2.0
12	6.9	4.5	3.2	5.5	.94	.33	15	18	3.2	65	49	2.3
13	5.9	9.8	2.6	4.4	.95	.27	11	28	2.9	48	50	2.2
14	8.0	12	2.3	3.7	1.3	.16	11	31	3.8	28	49	4.4
15	8.7	9.1	1.8	3.3	3.4	.15	11	19	84	18	44	8.0
16	6.9	10	1.6	5.5	1.7	.26	20	11	84	8.1	28	9.0
17	8.5	13	1.5	6.0	2.0	3.5	118	9.3	83	9.0	26	12
18	8.3	13	1.5	6.3	1.8	434	182	9.9	49	12	19	13
19	7.4	14	1.9	8.1	1.2	350	92	5.4	27	21	12	11
20	6.6	16	2.2	10	.84	89	40	3.6	18	16	20	6.1
21	4.8	11	384	9.7	.69	34	23	6.5	11	55	21	2.2
22	3.9	8.5	1740	10	.63	19	13	23	7.4	123	15	1.7
23	7.0	6.4	1470	8.9	.44	11	7.4	41	5.3	125	12	1.6
24	14	5.5	562	6.5	.37	7.3	4.5	28	9.8	87	10	1.6
25	12	1150	267	4.5	.36	5.4	2.1	11	17	78	6.8	3.3
26	8.4	2230	162	4.0	.37	4.1	1.8	8.6	26	64	6.8	2.8
27	6.7	1340	147	2.6	.37	3.3	6.3	6.0	25	52	7.0	2.6
28	5.8	803	282	2.1	.38	3.2	7.5	3.0	23	42	6.6	2.9
29	6.4	384	150	1.8	.41	2.7	15	2.5	19	51	3.8	3.3
30	5.7	172	78	1.9	---	1.9	148	18	10	63	2.1	28
31	13	---	48	2.8	---	11	---	24	---	83	1.9	---
TOTAL	441.7	6285.6	5617.2	270.7	42.15	986.76	1328.1	963.0	1032.8	1858.2	1325.0	159.9
MEAN	14.2	210	181	8.73	1.45	31.8	44.3	31.1	34.4	59.9	42.7	5.33
MAX	84	2230	1740	34	3.9	434	204	292	148	199	154	28
MIN	3.9	3.3	1.5	1.8	.36	.15	1.8	2.5	2.9	3.6	1.9	1.6
AC-FT	876	12470	11140	537	84	1960	2630	1910	2050	3690	2630	317
CFSM	.08	1.18	1.02	.05	.01	.18	.25	.17	.19	.34	.24	.03
IN.	.09	1.31	1.17	.06	.01	.21	.28	.20	.22	.39	.28	.03

CAL YR 1987	TOTAL	55326.3	MEAN	152	MAX	2410	MIN	1.1	AC-FT	109700	CFSM	.85	IN.	11.56
WTR YR 1988	TOTAL	20311.11	MEAN	55.5	MAX	2230	MIN	.15	AC-FT	40290	CFSM	.31	IN.	4.24

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX

WATER-QUALITY RECORDS

LOCATION.--Lat 28°53'30", long 96°34'00", Jackson County, Hydrologic Unit 12100102, at upstream side of dam at old river channel on the Navidad River, 4.9 mi upstream from confluence with Lavaca River, 4.0 mi north of Lolita, and 7.2 mi southeast of Edna.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January to September 1988.

285331096343501 - LAKE TEXANA SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TRANSPARENCY (SECCHI DISK (M))	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS TOTAL (MG/L AS CaCO3)	
JAN													
14...	1122	1.00	204	8.00	8.5	0.20	95	55	10.1	85	0.8	62	
14...	1124	10.0	204	8.00	8.5	--	--	--	10.1	85	--	--	
14...	1126	20.0	204	8.00	8.5	--	--	--	10.1	85	--	--	
14...	1127	30.0	204	8.00	8.5	--	--	--	10.1	85	--	--	
14...	1130	40.0	204	8.00	8.5	--	--	--	10.1	85	--	--	
14...	1132	50.0	204	7.90	8.5	--	--	--	10.1	85	--	--	
14...	1135	60.0	207	7.90	8.5	--	140	49	10.2	86	0.8	65	
APR													
25...	0930	1.00	200	7.70	23.0	0.20	65	39	8.0	94	0.5	68	
25...	0932	10.0	200	7.70	23.0	--	--	--	8.0	94	--	--	
25...	0934	20.0	200	7.60	22.0	--	--	--	8.0	92	--	--	
25...	0936	30.0	200	7.50	19.5	--	--	--	7.6	83	--	--	
25...	0938	40.0	200	7.50	19.0	--	--	--	7.2	78	--	--	
25...	0940	50.0	200	7.50	19.0	--	--	--	7.2	78	--	--	
25...	0942	60.0	200	7.40	19.0	--	68	46	7.0	76	0.7	70	
JUL													
20...	0735	1.00	244	7.90	28.5	0.85	16	2.5	6.5	84	0.5	83	
20...	0737	10.0	244	8.00	28.5	--	--	--	6.4	82	--	--	
20...	0739	20.0	244	8.00	28.5	--	--	--	6.4	82	--	--	
20...	0741	30.0	244	7.70	28.5	--	--	--	5.3	68	--	--	
20...	0743	40.0	246	7.20	27.0	--	--	--	1.3	16	--	--	
20...	0745	50.0	236	7.10	24.0	--	--	--	2.1	25	--	--	
20...	0747	60.0	236	7.10	21.0	--	--	--	2.1	23	--	--	
20...	0749	68.0	239	7.10	21.0	--	55	28	2.1	23	5.1	82	
DATE		HARDNESS NONCARB WH TOT FLD MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)
JAN													
14...	2	20	2.9	13	0.8	3.6	60	14	18	0.20	13	121	
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	6	21	3.0	13	0.7	3.7	59	14	17	0.20	13	120	
APR													
25...	1	22	3.1	13	0.7	4.4	67	13	18	0.20	13	127	
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	4	23	3.1	13	0.7	4.5	66	12	17	0.20	13	126	
JUL													
20...	5	27	3.7	16	0.8	4.1	78	10	21	0.20	9.6	139	
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	0	27	3.5	13	0.7	3.5	88	6.2	17	0.20	18	145	

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
JAN											
14...	24	4	0.600	0.60	0.120	1.00	0.100	2	<100	<1	<1
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	0.600	0.50	0.130	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	16	3	0.500	0.40	0.120	--	--	2	70	<1	<5
APR											
25...	20	6	0.600	0.60	0.110	7.70	0.300	2	77	<1	<1
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	0.700	0.60	0.120	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	38	5	0.700	0.70	0.110	--	--	2	77	<1	<1
JUL											
20...	6	1	<0.100	0.50	0.060	10.0	0.500	4	90	<1	<1
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	<0.100	0.30	0.080	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	46	10	<0.100	1.2	0.600	--	--	15	97	<1	<1
DATE	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L)
JAN											
14...	4	80	<5	<10	<0.1	<1	<1.0	<10	<3.0	<3.0	<3.0
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	90	--	<10	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	5	82	<5	9	0.5	<1	<1.0	3	<3.0	<3.0	<3.0
APR											
25...	4	60	<5	<1	<0.1	<1	<1.0	<3	<3.0	<3.0	<3.0
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	60	--	<10	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	4	61	<5	<1	<0.1	<1	<1.0	<3	<3.0	<3.0	<3.0
JUL											
20...	3	29	<5	6	<0.1	<1	<1.0	<3	<3.0	<3.0	<3.0
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	<10	--	110	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	1	2000	<5	1400	<0.1	<1	<1.0	<3	<3.0	<3.0	<3.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	1,1,2,2- TETRA- CHLORO- ETHANE TOTAL (UG/L)	1,2- DIBROMO- ETHYL- ENE TOTAL (UG/L)	1,2-DI- CHLORO- BENZENE TOTAL (UG/L)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L)	1,2-DI- CHLORO- PROPANE TOTAL (UG/L)	1,3-DI- CHLORO- BENZENE TOTAL (UG/L)	1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	1,4-DI- CHLORO- BENZENE TOTAL (UG/L)	1,2- TRANS DI- CHLORO- ETHENE TOTAL (UG/L)	2- CHLORO- ETHYL- VINYL- ETHER TOTAL (UG/L)	XYLENE TOTAL WATER TOT REC (UG/L)
JAN											
14...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--
14...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	4.0
APR											
25...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
25...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
JUL											
20...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

285326096342101 - LAKE TEXANA SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
14...	1100	1.00	207	7.90	8.5	10.2	86
14...	1102	10.0	207	7.90	8.5	10.2	86
14...	1104	20.0	207	7.90	8.5	10.3	87
14...	1106	30.0	207	7.80	8.5	10.5	89
14...	1108	36.0	207	7.80	8.5	10.3	87
APR							
25...	1115	1.00	200	7.80	23.0	8.1	95
25...	1117	10.0	200	7.80	23.0	8.1	95
25...	1119	20.0	200	7.80	22.5	8.1	94
25...	1121	30.0	200	7.70	20.0	7.7	85
25...	1123	35.0	200	7.70	20.0	7.7	85
JUL							
20...	0920	1.00	244	8.00	29.0	6.8	88
20...	0922	10.0	243	8.00	29.0	6.8	88
20...	0924	20.0	243	8.00	28.5	6.7	86
20...	0926	30.0	243	7.40	28.0	3.4	43
20...	0928	36.0	250	7.20	27.0	1.2	15

285534096322301 - LAKE TEXANA SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
14...	1338	1.00	204	7.90	8.5	9.8	83
14...	1340	10.0	204	7.90	8.5	9.8	83
14...	1342	20.0	204	7.90	8.5	9.8	83
14...	1344	30.0	204	7.90	8.5	9.8	83
14...	1346	42.0	204	7.90	8.5	9.8	83
APR							
25...	1140	1.00	203	7.70	22.0	8.1	93
25...	1142	10.0	203	7.70	21.5	8.0	91
25...	1144	20.0	203	7.70	21.5	8.0	91
25...	1146	30.0	203	7.70	20.5	7.8	87
25...	1148	44.0	203	7.70	20.5	7.5	84
JUL							
20...	0940	1.00	251	8.10	29.5	6.6	86
20...	0942	10.0	251	8.10	29.5	6.6	86
20...	0943	20.0	251	8.00	29.5	6.5	85
20...	0944	30.0	258	7.40	27.0	1.1	14
20...	0948	40.0	251	7.30	27.0	1.1	14
20...	0950	45.0	253	7.30	27.0	1.1	14

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285816096320201 - LAKE TEXANA SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
JAN										
14...	1405	1.00	170	7.80	8.0	0.20	9.8	82	56	7
14...	1407	10.0	170	7.80	8.0	--	9.8	82	--	--
14...	1410	20.0	168	7.80	8.0	--	9.8	82	--	--
14...	1412	30.0	170	7.80	7.5	--	9.8	81	--	--
14...	1415	39.0	170	7.80	7.5	--	9.8	81	55	6
APR										
25...	1200	1.00	225	7.60	23.0	0.20	7.5	88	73	0
25...	1202	10.0	225	7.60	22.5	--	7.4	86	--	--
25...	1204	20.0	225	7.50	22.0	--	7.1	82	--	--
25...	1206	30.0	225	7.50	21.5	--	6.7	76	--	--
25...	1208	40.0	225	7.50	21.5	--	6.3	72	73	0
JUL										
20...	1005	1.00	281	7.80	29.5	0.55	6.3	82	92	3
20...	1007	10.0	279	7.80	29.5	--	6.3	82	--	--
20...	1009	20.0	279	7.80	29.5	--	6.2	81	--	--
20...	1011	30.0	285	7.70	29.5	--	5.8	76	--	--
20...	1013	36.0	285	7.70	29.5	--	5.9	77	90	1

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN									
14...	18	2.6	12	0.7	3.8	49	19	15	0.20
14...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
14...	18	2.4	10	0.6	3.9	49	12	13	0.20
APR									
25...	24	3.2	15	0.8	4.1	74	13	19	0.20
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	24	3.2	15	0.8	4.3	74	14	18	0.20
JUL									
20...	30	4.2	21	1	4.4	89	11	28	0.20
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	29	4.2	20	1	4.3	89	12	27	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN									
14...	13	113	0.600	0.40	0.140	0.700	<0.100	240	5
14...	--	--	--	--	--	--	--	--	--
14...	--	--	0.600	0.70	0.150	--	--	110	10
14...	--	--	--	--	--	--	--	--	--
14...	11	100	0.600	0.70	0.160	--	--	120	<10
APR									
25...	12	135	0.600	0.70	0.120	5.10	0.200	86	<1
25...	--	--	--	--	--	--	--	--	--
25...	--	--	0.600	0.60	0.120	--	--	70	<10
25...	--	--	--	--	--	--	--	--	--
25...	12	135	0.600	0.60	0.120	--	--	93	<1
JUL									
20...	11	163	<0.100	0.60	0.070	7.80	0.500	5	3
20...	--	--	--	--	--	--	--	--	--
20...	--	--	<0.100	0.80	0.090	--	--	<10	<10
20...	--	--	--	--	--	--	--	--	--
20...	11	161	<0.100	0.70	0.080	--	--	13	23

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

290042096331401 - LAKE TEXANA SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
JAN										
14...	1650	1.00	203	7.80	7.5	0.20	9.7	80	64	5
14...	1652	10.0	204	7.80	7.0	--	9.7	79	--	--
14...	1654	20.0	204	7.80	7.0	--	9.7	79	--	--
14...	1656	24.0	206	7.80	7.0	--	9.7	79	64	10
APR										
25...	1305	1.00	259	7.60	24.0	0.20	7.0	83	84	0
25...	1307	10.0	259	7.50	24.0	--	6.8	81	--	--
25...	1309	22.0	272	7.40	23.0	--	4.5	53	87	0
JUL										
20...	1100	1.00	340	7.60	30.0	0.30	5.3	70	100	1
20...	1101	10.0	340	7.60	30.0	--	5.2	69	--	--
20...	1103	23.0	340	7.60	29.5	--	5.1	67	100	3

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN									
14...	21	2.9	13	0.7	5.1	59	14	15	0.20
14...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
14...	21	2.8	13	0.7	5.1	54	24	14	0.20
APR									
25...	28	3.4	18	0.9	4.8	84	16	23	0.20
25...	--	--	--	--	--	--	--	--	--
25...	29	3.6	19	0.9	4.7	89	15	24	0.20
JUL									
20...	33	5.3	27	1	4.4	103	14	36	0.30
20...	--	--	--	--	--	--	--	--	--
20...	33	5.3	27	1	4.4	101	14	37	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN									
14...	14	121	0.300	0.80	0.150	1.70	0.200	250	5
14...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
14...	13	126	0.400	1.0	0.150	--	--	210	17
APR									
25...	10	154	0.500	0.70	0.090	22.0	1.20	68	<1
25...	--	--	0.400	0.80	0.090	--	--	<10	<10
25...	11	160	0.500	0.80	0.110	--	--	76	18
JUL									
20...	12	194	<0.100	0.60	0.120	29.0	2.20	16	6
20...	--	--	<0.100	1.0	0.120	--	--	<10	10
20...	12	194	<0.100	1.1	0.090	--	--	17	34

285940096312101 - LAKE TEXANA SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
14...	1526	1.00	140	7.60	8.0	9.6	80
14...	1528	10.0	140	7.60	7.5	9.6	79
14...	1530	20.0	140	7.60	7.5	9.2	76
14...	1532	32.0	140	7.60	7.5	8.9	73
APR							
25...	1243	1.00	227	7.50	23.5	7.4	87
25...	1245	10.0	227	7.50	22.5	7.0	81
25...	1247	20.0	227	7.50	22.0	6.6	76
25...	1249	30.0	227	7.50	21.0	5.3	60
JUL							
20...	1037	1.00	347	8.00	30.0	6.5	86
20...	1039	10.0	359	7.90	30.0	6.2	82
20...	1041	20.0	368	7.80	29.5	5.9	77
20...	1043	28.0	404	7.40	29.5	3.0	39

GARCITAS CREEK MAIN STEM

08164600 GARCITAS CREEK NEAR INEZ, TX

LOCATION.--Lat 28°53'28", long 96°49'08", Victoria County, Hydrologic Unit 12100402, at right downstream end of bridge on U.S. Highway 59 access road, 0.3 mi upstream from Southern Pacific Railroad bridge, 2.0 mi southwest of Inez, and 3.6 mi upstream from Casa Blanca Creek.

DRAINAGE AREA.--91.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 29.16 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. An undetermined amount of return water from irrigation enters stream above station. Recording rain gage discontinued Oct. 14, 1987.

AVERAGE DISCHARGE.--18 years, 53.5 ft³/s (7.92 in/yr), 38,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,700 ft³/s June 12, 1981 (gage height, 29.00 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1903-70, 24.5 ft Oct. 26, 1960. In 1929, a flood nearly as high as the 1960 flood occurred, and a flood in September 1967 reached a stage of 23.4 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
------	------	-----------------------------------	---------------------	------	------	-----------------------------------	---------------------

Nov. 25	2100	*2,100	*15.66	No other peak greater than base discharge.			
---------	------	--------	--------	--	--	--	--

Minimum daily discharge, no flow Aug. 12 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	1.3	43	16	3.2	2.6	3.1	24	.66	.06	.32	.00
2	8.1	2.0	32	13	3.2	2.8	2.4	8.7	.68	.04	.33	.00
3	6.3	2.2	25	11	3.2	3.0	2.0	3.4	2.0	.02	.35	.00
4	5.0	2.1	20	9.5	3.2	2.8	1.9	1.9	3.3	.05	.26	.00
5	4.1	1.7	17	8.2	3.2	2.7	1.9	1.4	2.6	.05	.17	.00
6	3.6	1.4	14	7.6	3.2	2.5	1.7	1.1	1.4	.04	.12	.00
7	3.0	1.2	11	7.2	3.2	2.4	1.6	1.0	.85	.04	.05	.00
8	2.5	1.2	9.2	6.9	3.2	2.5	1.5	1.2	.60	.01	.01	.00
9	2.2	2.0	7.7	6.4	3.2	2.5	2.3	1.2	.44	.80	.03	.00
10	1.9	2.2	6.6	6.1	3.2	2.4	2.3	1.1	.37	1.2	.06	.00
11	1.7	1.7	6.0	5.6	3.0	2.4	2.0	.98	.34	1.1	.03	.00
12	1.6	1.4	5.5	5.6	2.7	2.4	1.8	1.2	.31	.67	.00	.00
13	1.5	1.3	5.1	5.6	2.7	2.2	2.9	2.6	.29	.40	.00	.00
14	1.5	1.2	4.7	5.3	2.7	2.0	2.6	3.1	.26	.28	.00	.00
15	1.4	1.1	3.8	5.3	2.6	2.0	2.1	2.3	.24	.72	.00	.00
16	1.3	3.3	3.8	5.3	2.6	2.2	3.1	1.4	.21	3.6	.00	.00
17	1.4	4.3	3.8	5.3	2.6	3.8	17	1.0	.19	2.6	.00	.00
18	1.4	2.5	3.6	5.3	2.7	3.3	8.4	.76	.19	1.4	.00	.00
19	1.2	2.1	3.6	5.0	2.7	2.4	3.6	.66	.15	.52	.00	.00
20	1.1	2.0	3.8	4.7	2.7	2.1	2.5	.63	.15	.31	.00	.00
21	1.1	1.9	25	4.5	2.7	1.9	1.7	.93	.22	.21	.00	.00
22	1.0	1.8	115	4.2	2.6	1.9	1.5	10	.16	.20	.00	.00
23	1.3	1.6	65	4.0	2.6	1.9	1.4	4.2	.12	.14	.00	.00
24	1.7	1.6	43	4.0	2.5	1.9	1.2	1.9	.12	.10	.00	.00
25	1.7	1060	32	3.8	2.4	1.9	1.1	1.3	.12	.08	.00	.00
26	1.6	678	30	3.6	2.4	1.9	.98	2.2	.09	.03	.00	.00
27	1.4	195	36	3.2	2.4	1.8	.92	1.3	.09	.30	.00	.00
28	1.1	160	54	3.2	2.6	1.7	.92	.73	.17	3.8	.00	.00
29	1.1	88	40	3.2	2.6	1.7	4.8	.57	.12	4.5	.00	.00
30	1.0	60	27	3.2	---	2.4	19	.76	.08	2.0	.00	.00
31	1.0	---	21	3.2	---	4.4	---	.69	---	.55	.00	---
TOTAL	75.8	2286.1	717.2	185.0	81.8	74.4	100.22	84.21	16.52	25.82	1.73	0.00
MEAN	2.45	76.2	23.1	5.97	2.82	2.40	3.34	2.72	.55	.83	.056	.00
MAX	11	1060	115	16	3.2	4.4	19	24	3.3	4.5	.35	.00
MIN	1.0	1.1	3.6	3.2	2.4	1.7	.92	.57	.08	.01	.00	.00
AC-FT	150	4530	1420	367	162	148	199	167	33	51	3.4	.0
CFSM	.03	.83	.25	.07	.03	.03	.04	.03	.01	.01	.00	.00
IN.	.03	.93	.29	.08	.03	.03	.04	.03	.01	.01	.00	.00

CAL YR 1987	TOTAL 31207.10	MEAN 85.5	MAX 7600	MIN .58	AC-FT 61900	CFSM .93	IN. 12.66
WTR YR 1988	TOTAL 3648.80	MEAN 9.97	MAX 1060	MIN .00	AC-FT 7240	CFSM .11	IN. 1.48

PLACEDO CREEK MAIN STEM

08164800 PLACEDO CREEK NEAR PLACEDO, TX

LOCATION.--Lat 28°43'30", long 96°46'07", Victoria County, Hydrologic Unit 12100401, on right bank at downstream end of bridge on Farm Road 616, 0.1 mi downstream from confluence of Lone Tree Creek and Arroyo Palo Alto, 1.2 mi upstream from Ninemile Creek, and 4.4 mi northeast of Placedo.

DRAINAGE AREA.--68.3 mi².

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 5.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No known diversion above station.

AVERAGE DISCHARGE.--18 years, 65.8 ft³/s (47,670 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft³/s Oct. 31, 1981 (gage height, 30.8 ft); no flow at times in 1971, 1981-84, and 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1930, 31.9 ft in September 1967 and 30.4 ft in 1960 (probably October), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	2200	*2,520	*20.69	No other peak greater than base discharge.			

Minimum daily discharge, no flow June 9-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	1.7	16	3.8	1.2	.65	2.1	.59	.20	.03	.02	.01
2	2.6	1.8	9.1	2.7	1.1	.76	1.0	.39	.26	.01	.02	.01
3	1.6	1.9	6.0	2.1	.97	.82	.91	.36	.32	.01	.02	.02
4	.92	2.0	4.2	1.7	.93	.63	.88	.45	.17	.01	.02	.02
5	.70	1.9	3.2	1.4	1.2	.37	.75	.35	.19	.10	.02	.01
6	.63	1.9	2.8	1.4	1.1	.35	.61	.28	.18	.14	.01	.01
7	.51	1.8	2.4	1.5	.97	.44	.53	.42	.08	.18	.01	.01
8	.41	2.0	2.2	1.3	1.0	.53	.52	.46	.02	.18	.01	.01
9	.46	2.6	2.7	1.2	1.3	.64	.73	.56	.00	.15	.01	.01
10	.54	2.2	2.5	1.3	1.4	.50	.79	.69	.00	.21	.01	.01
11	.59	1.9	2.4	1.3	1.1	.58	.57	.78	.00	.13	.01	.01
12	.62	1.8	2.2	1.5	.74	.57	.42	.91	.00	.08	.01	.01
13	.59	2.0	2.2	1.5	.83	.56	.43	.85	.00	.05	.01	.01
14	.65	2.1	2.1	1.3	.90	.41	.47	.73	.00	.01	.01	.01
15	.82	2.2	1.7	1.3	.97	.45	.51	.63	.00	.01	.01	.01
16	.74	3.4	1.6	1.8	.95	.94	.62	.62	.00	.01	.01	.01
17	.68	3.3	2.0	1.9	.91	4.7	.80	.46	.00	.01	.01	.01
18	.79	9.6	2.1	1.4	1.2	9.1	.93	.37	.00	.01	.01	.01
19	.83	7.8	2.2	1.2	1.2	.93	.74	.39	.00	.01	.01	.01
20	.78	4.1	2.2	.99	1.1	.58	.71	.29	.00	.01	.01	.01
21	.74	3.1	2.3	.81	.92	.42	.95	.29	.00	.01	.01	.01
22	.71	2.9	28	.81	.96	.36	1.0	.33	.00	.01	.01	.01
23	1.2	2.8	30	.93	.94	.46	1.2	.31	.00	.01	.01	.01
24	2.0	3.1	18	1.0	.87	.53	1.1	.24	.00	.01	.01	.02
25	2.0	1050	10	.98	.82	.52	.90	.19	.00	.01	.01	.02
26	1.9	991	6.3	.94	.83	.53	.70	.19	.70	.01	.01	.02
27	1.9	322	4.3	.97	.86	.59	.57	.22	.95	.01	.01	.02
28	1.6	270	6.6	1.1	.89	.79	.37	.20	.24	.02	.01	.02
29	1.6	75	18	1.2	.72	.99	.66	.19	.08	.01	.01	.02
30	1.7	30	9.4	1.2	---	1.3	1.2	.18	.05	.02	.01	.02
31	1.7	---	5.6	1.3	---	1.3	---	.27	---	.02	.01	---
TOTAL	37.41	2807.9	210.3	43.83	28.88	32.30	23.67	13.19	3.44	1.49	0.36	0.39
MEAN	1.21	93.6	6.78	1.41	1.00	1.04	.79	.43	.11	.048	.012	.013
MAX	4.9	1050	30	3.8	1.4	9.1	2.1	.91	.95	.21	.02	.02
MIN	.41	1.7	1.6	.81	.72	.35	.37	.18	.00	.01	.01	.01
AC-FT	74	5570	417	87	57	64	47	26	6.8	3.0	.7	.8

CAL YR 1987 TOTAL 17426.50 MEAN 47.7 MAX 2480 MIN .30 AC-FT 34570
WTR YR 1988 TOTAL 3203.16 MEAN 8.75 MAX 1050 MIN .00 AC-FT 6350

GUADALUPE RIVER BASIN

191

08165300 NORTH FORK GUADALUPE RIVER NEAR HUNT, TX

LOCATION.--Lat 30°03'36", long 99°23'40", Kerr County, Hydrologic Unit 12100201, on right bank 410 ft downstream from Ranch Road 1340, 1.3 mi downstream from Bear Creek, 3.7 mi west of Hunt, and 4.1 mi upstream from Honey Creek.

DRAINAGE AREA.--168 mi².

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

REVISED RECORDS.--WRD TX-74-1: 1971(P).

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,800.10 ft above National Geodetic Vertical Datum 1929.

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

AVERAGE DISCHARGE.--21 years, 44.0 ft³/s (3.56 in/yr), 31,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Oct. 19, 1985 (gage height, 29.81 ft, from rating curve extended above 170 ft³/s on basis of slope-area measurements of 7,460 and 38,400 ft³/s); minimum, 0.47 ft³/s May 10, 1988, result of dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred July 1, 1932 (gage height, 37.3 ft), discharge 140,000 ft³/s, by slope-area measurements, combined flow of North Fork Guadalupe River 5 mi upstream and Bear Creek 2 mi upstream from mouth, and adjusted for difference in drainage area.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	2115	883	7.34	July 11	1245	*5,720	*12.31

Minimum discharge, 0.47 ft³/s May 10, result of dam upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	47	63	42	36	32	37	30	34	28	34	25
2	52	47	58	42	36	33	35	30	34	27	30	26
3	52	48	54	41	36	32	35	31	37	27	30	25
4	51	49	52	41	36	32	37	27	35	26	30	23
5	51	50	51	40	36	32	36	29	34	25	30	24
6	51	50	41	40	35	31	35	29	33	25	30	24
7	51	49	36	40	35	31	33	29	31	24	30	24
8	50	53	53	40	35	32	33	30	30	25	29	24
9	50	52	52	40	36	32	35	29	30	25	29	24
10	50	50	50	39	34	31	35	22	29	25	29	24
11	50	47	48	39	33	32	35	34	29	1130	29	24
12	50	47	47	39	33	31	34	43	28	186	28	24
13	50	47	46	38	32	30	33	36	27	83	28	24
14	50	49	46	38	32	30	33	33	27	66	27	24
15	50	50	45	38	32	30	33	33	26	60	27	24
16	50	63	45	38	32	30	32	32	26	53	26	25
17	50	49	46	38	33	33	33	32	26	49	26	30
18	58	50	45	38	33	34	34	31	26	46	26	36
19	52	49	56	38	33	32	34	33	26	43	26	33
20	51	48	51	37	33	32	33	157	26	51	26	29
21	48	48	49	36	32	33	33	168	26	54	26	28
22	48	48	47	36	32	33	34	63	27	43	26	27
23	49	48	47	36	32	34	34	51	26	41	26	27
24	50	48	45	36	32	35	32	46	25	40	26	27
25	49	49	45	36	32	35	32	42	25	38	26	27
26	49	49	45	36	31	34	32	40	47	37	26	26
27	48	49	45	35	32	32	31	38	38	36	26	26
28	47	48	43	35	32	32	31	37	32	36	26	26
29	47	47	42	35	31	40	32	36	30	35	26	26
30	47	52	42	35	---	36	36	35	29	34	25	27
31	47	---	42	36	---	36	---	35	---	34	25	---
TOTAL	1553	1480	1477	1178	967	1012	1012	1341	899	2452	854	783
MEAN	50.1	49.3	47.6	38.0	33.3	32.6	33.7	43.3	30.0	79.1	27.5	26.1
MAX	58	63	63	42	36	40	37	168	47	1130	34	36
MIN	47	47	36	35	31	30	31	22	25	24	25	23
AC-FT	3080	2940	2930	2340	1920	2010	2010	2660	1780	4860	1690	1550
CFSM	.30	.29	.28	.23	.20	.19	.20	.26	.18	.47	.16	.16
IN.	.34	.33	.33	.26	.21	.22	.22	.30	.20	.54	.19	.17

CAL YR 1987	TOTAL 36848	MEAN 101	MAX 11700	MIN 33	AC-FT 73090	CFSM .60	IN. 8.16
WTR YR 1988	TOTAL 15008	MEAN 41.0	MAX 1130	MIN 22	AC-FT 29770	CFSM .24	IN. 3.32

08165500 GUADALUPE RIVER AT HUNT, TX

LOCATION.--Lat 30°04'08", long 99°19'23", Kerr County, Hydrologic Unit 12100201, on right bank 56 ft upstream and 137 ft right of right end of bridge on State Highway 39, 0.6 mi downstream from confluence of North and South Forks, 0.8 mi east of Hunt, and at mile 430.9.

DRAINAGE AREA.--288 mi².

PERIOD OF RECORD.--October 1941 to September 1949, discharge not computed above 600 ft³/s, and April 1965 to current year. Occasional discharge measurements made 1950-64.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,722.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. There are numerous diversions for irrigation above station, but amounts are unknown. Gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 82.0 ft³/s (3.87 in/yr), 59,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107,800 ft³/s July 17, 1987 (gage height, 28.38 ft) from rating curve extended above 3,700 ft³/s on basis of channel geometry and flow-over-dam measurement of peak flow; minimum, 6.9 ft³/s June 17, 1948.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 36.6 ft July 2, 1932, from information by local resident (discharge, 206,000 ft³/s, determined by slope-area measurement 4.5 mi downstream from gage).

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	2400	1,060	5.43	July 11	1500	*34,800	*19.55

Minimum daily discharge, 45 ft³/s Sept. 5, 6, 10, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	88	93	83	81	74	68	61	72	63	88	49
2	102	88	93	83	80	75	67	58	70	61	84	50
3	101	88	89	83	79	75	67	58	91	58	81	49
4	98	88	87	83	79	74	76	55	75	56	78	48
5	98	88	86	83	79	70	66	53	70	51	78	45
6	98	88	84	83	79	70	65	54	66	50	76	45
7	96	88	81	83	79	71	63	54	65	50	73	46
8	94	94	83	83	79	73	63	56	62	50	71	46
9	94	101	84	83	79	74	64	65	60	48	72	47
10	94	89	84	83	79	71	65	47	59	46	70	45
11	94	88	84	83	79	73	63	51	59	5100	69	46
12	93	87	84	83	78	71	67	85	59	795	69	46
13	93	88	84	83	73	70	64	63	58	302	65	49
14	93	88	84	83	70	70	63	56	56	211	62	46
15	93	89	83	83	75	70	63	48	55	139	61	47
16	93	112	83	83	77	70	62	57	54	129	61	45
17	93	95	83	83	78	71	63	57	53	121	61	80
18	94	89	83	83	78	73	63	55	53	112	56	74
19	93	89	98	83	78	69	61	57	53	104	54	66
20	102	86	95	82	78	68	60	214	51	164	53	61
21	95	86	89	81	76	68	61	458	52	266	52	58
22	93	86	84	81	76	68	61	167	49	151	50	55
23	93	86	84	81	76	68	53	127	49	128	51	55
24	94	86	84	81	75	68	55	108	48	113	52	55
25	94	86	84	81	74	68	61	88	50	103	52	55
26	95	86	84	81	74	68	57	81	81	95	52	54
27	90	86	84	80	75	66	56	79	128	90	52	53
28	89	86	83	81	74	78	56	70	82	107	49	51
29	89	86	83	81	74	60	59	72	70	92	48	50
30	88	86	83	81	---	68	66	73	67	88	49	57
31	88	---	83	80	---	68	---	73	---	88	50	---
TOTAL	2927	2671	2650	2548	2231	2180	1878	2700	1917	9031	1939	1573
MEAN	94.4	89.0	85.5	82.2	76.9	70.3	62.6	87.1	63.9	291	62.5	52.4
MAX	103	112	98	83	81	78	76	458	128	5100	88	80
MIN	88	86	81	80	70	60	53	47	48	46	48	45
AC-FT	5810	5300	5260	5050	4430	4320	3730	5360	3800	17910	3850	3120
CFSM	.33	.31	.30	.29	.27	.24	.22	.30	.22	1.01	.22	.18
IN.	.38	.35	.34	.33	.29	.28	.24	.35	.25	1.17	.25	.20

CAL YR 1987	TOTAL 77670	MEAN 213	MAX 22200	MIN 71	AC-FT 154100	CFSM .74	IN. 10.03
WTR YR 1988	TOTAL 34245	MEAN 93.6	MAX 5100	MIN 45	AC-FT 67920	CFSM .32	IN. 4.42

GUADALUPE RIVER BASIN

193

08166000 JOHNSON CREEK NEAR INGRAM, TX

LOCATION.--Lat 30°06'00", long 99°16'58", Kerr County, Hydrologic Unit 12100201, on right bank 1.6 mi upstream from Henderson Branch, 3.4 mi northwest of Ingram, 3.8 mi upstream from mouth, and 9.2 mi northwest of Kerrville.

DRAINAGE AREA.--114 mi².

PERIOD OF RECORD.--September 1941 to November 1959, October 1961 to current year.

REVISED RECORDS.--WSP 1058: 1942-45. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,721.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are numerous small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--45 years (water years 1942-59, 1962-88), 22.4 ft³/s (2.67 in/yr), 16,230 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,900 ft³/s Oct. 4, 1959 (gage height, 24.25 ft), from rating curve extended above 4,400 ft³/s on basis of slope-area measurements of 9,100 and 16,000 ft³/s and conveyance study; minimum daily, 0.4 ft³/s July 26, 27, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35 ft July 2, 1932, from information by local resident; discharge, 138,000 ft³/s, by slope-area measurement at point 0.5 mi downstream from State fish hatchery and 6 or 7 mi upstream from gage. Flood of June 14, 1935, reached a stage of 31 or 32 ft, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	2130	*1,340	*4.64	Aug. 3	0100	1,060	4.17
July 11	1200	900	3.87				

Minimum daily discharge, 22 ft³/s Sept. 5, 7-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	50	43	37	35	31	33	31	37	28	37	24
2	58	50	45	37	35	32	32	31	38	29	36	24
3	58	50	45	39	35	35	31	29	47	31	155	24
4	58	50	44	40	35	35	31	29	37	31	50	24
5	58	50	42	40	35	35	33	31	35	31	44	22
6	58	49	42	40	35	35	31	31	35	31	42	23
7	58	47	42	40	35	35	31	31	35	31	37	22
8	58	52	42	40	35	35	31	31	35	30	37	22
9	56	52	41	40	35	36	31	31	35	31	37	22
10	56	46	40	40	34	34	39	30	35	31	39	22
11	56	45	40	38	33	33	37	39	35	201	37	22
12	56	45	40	37	33	33	35	47	35	95	35	22
13	55	45	40	37	33	33	35	31	35	52	33	22
14	54	45	40	37	33	31	34	31	35	40	33	22
15	56	47	38	37	33	31	30	31	35	35	33	22
16	56	58	37	37	32	31	30	31	35	34	31	35
17	53	48	39	37	31	31	28	31	35	31	29	139
18	54	47	40	37	31	33	28	31	35	28	28	116
19	53	45	63	37	31	33	28	35	33	28	26	58
20	56	45	48	37	31	33	28	202	33	92	26	39
21	54	45	42	36	31	33	28	224	33	138	26	38
22	53	45	42	35	31	33	28	85	31	61	29	35
23	53	45	42	35	31	33	28	61	31	49	30	34
24	53	45	42	35	32	35	28	52	31	47	27	33
25	53	45	41	35	32	33	28	42	31	44	26	29
26	52	45	42	35	31	31	28	43	46	42	24	28
27	48	45	40	35	31	31	28	41	45	40	24	28
28	47	43	40	35	31	33	28	38	34	40	24	28
29	48	42	38	35	31	35	31	40	29	40	24	30
30	52	42	37	35	---	33	31	42	28	38	24	35
31	51	---	37	35	---	33	---	39	---	37	24	---
TOTAL	1692	1408	1294	1150	951	1028	922	1521	1054	1516	1107	1044
MEAN	54.6	46.9	41.7	37.1	32.8	33.2	30.7	49.1	35.1	48.9	35.7	34.8
MAX	61	58	63	40	35	36	39	224	47	201	155	139
MIN	47	42	37	35	31	31	28	29	28	28	24	22
AC-FT	3360	2790	2570	2280	1890	2040	1830	3020	2090	3010	2200	2070
CFSM	.48	.41	.37	.33	.29	.29	.27	.43	.31	.43	.31	.31
IN.	.55	.46	.42	.38	.31	.34	.30	.50	.34	.49	.36	.34
CAL YR 1987	TOTAL 27259	MEAN 74.7	MAX 2860	MIN 31	AC-FT 54070	CFSM .66	IN. 8.90					
WTR YR 1988	TOTAL 14687	MEAN 40.1	MAX 224	MIN 22	AC-FT 29130	CFSM .35	IN. 4.79					

LOCATION.--Lat 30°03'09", long 99°09'54", Kerr County, Hydrologic Unit 12100201, on right bank near right end of Kerrville Dam, 1.0 mi upstream from mouth of Town Creek, and 1.4 mi upstream from junction of State Highways 16 and 98 near Kerrville State Hospital in Kerrville.

PERIOD OF RECORD.--July 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Numerous diversions for irrigation above station, amounts unknown. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s July 17, 1987 (gage height, 37.72 ft, from floodmark), from rating curve extended above 30,000 ft³/s on basis of indirect measurement of flow over dam; minimum daily, 35 ft³/s Aug. 21, 22, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum estimated discharge, 196,000 ft³/s July 2, 1932 (estimated gage height, 39 ft).

EXTREMES FOR 1986 WATER YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 26	1100	*45,800	*28.80				

Minimum daily discharge, 35 ft³/s Aug. 21, 22.

EXTREMES FOR 1987 WATER YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 12	0630	5,510	23.69	June 12	0400	8,060	24.25
May 29	2030	4,660	23.47	June 13	2100	2,860	22.99
June 3	1830	18,900	25.93	July 17	0630	*141,000	a*37.72

a From floodmark.

Minimum daily discharge, 99 ft³/s Oct. 4.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	2330	4,010	23.32	Aug. 3	0300	7,670	24.17
July 11	1600	*45,900	*28.81				

Minimum observed discharge, 62 ft³/s May 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	---	---	---	---	---	---	---	---	---	97	40	66		
2	---	---	---	---	---	---	---	---	---	93	40	73		
3	---	---	---	---	---	---	---	---	---	88	40	69		
4	---	---	---	---	---	---	---	---	---	88	40	63		
5	---	---	---	---	---	---	---	---	---	84	50	40		
6	---	---	---	---	---	---	---	---	---	80	50	330		
7	---	---	---	---	---	---	---	---	---	80	47	193		
8	---	---	---	---	---	---	---	---	---	76	43	172		
9	---	---	---	---	---	---	---	---	---	69	40	125		
10	---	---	---	---	---	---	---	---	---	73	40	106		
11	---	---	---	---	---	---	---	---	---	69	40	97		
12	---	---	---	---	---	---	---	---	219	66	40	80		
13	---	---	---	---	---	---	---	---	411	73	40	80		
14	---	---	---	---	---	---	---	---	182	73	47	84		
15	---	---	---	---	---	---	---	---	158	76	43	80		
16	---	---	---	---	---	---	---	---	148	73	40	76		
17	---	---	---	---	---	---	---	---	163	69	40	73		
18	---	---	---	---	---	---	---	---	163	63	43	73		
19	---	---	---	---	---	---	---	---	158	58	40	69		
20	---	---	---	---	---	---	---	---	158	54	37	66		
21	---	---	---	---	---	---	---	---	131	54	35	66		
22	---	---	---	---	---	---	---	---	111	54	35	66		
23	---	---	---	---	---	---	---	---	125	50	37	66		
24	---	---	---	---	---	---	---	---	120	50	54	66		
25	---	---	---	---	---	---	---	---	120	50	63	66		
26	---	---	---	---	---	---	---	---	120	50	63	4330		
27	---	---	---	---	---	---	---	---	111	50	54	478		
28	---	---	---	---	---	---	---	---	102	47	50	219		
29	---	---	---	---	---	---	---	---	102	43	58	168		
30	---	---	---	---	---	---	---	---	97	40	50	142		
31	---	---	---	---	---	---	---	---	---	40	54	---		
TOTAL	---	---	---	---	---	---	---	---	---	2030	1393	7682		
MEAN	---	---	---	---	---	---	---	---	---	65.5	44.9	256		
MAX	---	---	---	97	63	---	---	---	---	97	63	4330		
MIN	---	---	---	---	---	---	---	---	---	40	35	40		
AC-FT	---	---	---	---	---	---	---	---	---	4030	2760	15240		
CFSM	---	---	---	---	---	---	---	---	---	.13	.09	.50		
IN.	---	---	---	---	---	---	---	---	---	.15	.10	.56		
WTR YR 1986	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--	CFSM	--	IN.	--

GUADALUPE RIVER MAIN STEM

195

08166200 GUADALUPE RIVER AT KERRVILLE, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	158	e136	233	178	190	165	125	638	448	352	255
2	110	158	130	226	172	188	156	131	445	428	344	241
3	105	157	131	218	169	183	153	150	6250	409	341	247
4	99	296	131	214	172	177	149	197	4510	382	323	226
5	117	285	135	214	180	184	160	185	1340	372	318	234
6	160	228	136	216	203	163	171	158	926	356	305	221
7	175	217	148	214	186	151	168	159	742	344	302	226
8	166	199	146	214	178	165	165	144	677	334	303	239
9	150	203	138	216	174	178	165	149	663	328	284	226
10	134	190	155	211	172	195	162	132	715	317	265	214
11	410	189	171	204	175	208	163	126	1110	315	261	329
12	1840	187	160	201	177	198	161	136	3050	310	338	274
13	559	176	150	203	177	190	147	133	1330	299	314	230
14	335	174	163	198	178	183	133	137	1150	295	283	215
15	266	179	187	195	158	182	133	130	765	297	277	207
16	244	180	190	193	167	186	136	150	694	306	270	209
17	214	183	180	198	163	245	142	215	682	36100	261	217
18	200	179	180	190	158	235	137	159	677	1100	256	219
19	191	173	182	186	159	210	134	369	646	721	254	195
20	184	169	174	188	169	204	136	429	608	614	246	207
21	181	160	169	188	170	204	137	231	590	494	252	209
22	196	157	305	188	163	203	147	202	556	455	250	203
23	215	e154	607	187	162	188	148	194	559	417	226	194
24	223	e154	430	184	182	179	147	204	535	414	221	189
25	197	e154	347	180	187	185	152	202	513	479	225	188
26	187	e148	308	179	245	179	144	187	489	451	226	188
27	177	e148	282	176	230	177	137	182	444	444	220	189
28	174	e148	270	176	201	175	132	181	449	420	390	212
29	167	e142	261	174	---	173	147	1100	449	391	279	229
30	163	e142	246	172	---	167	130	911	453	346	266	216
31	160	---	237	171	---	170	---	534	---	348	274	---
TOTAL	7825	5387	6585	6107	5005	5815	4457	7642	32655	48734	8726	6648
MEAN	252	180	212	197	179	188	149	247	1088	1572	281	222
MAX	1840	296	607	233	245	245	171	1100	6250	36100	390	329
MIN	99	142	130	171	158	151	130	125	444	295	220	188
AC-FT	15520	10690	13060	12110	9930	11530	8840	15160	64770	96660	17310	13190
CFSM	.49	.35	.42	.39	.35	.37	.29	.48	2.13	3.08	.55	.43
IN.	.57	.39	.48	.45	.37	.42	.33	.56	2.38	3.55	.64	.48

CAL YR 1986 TOTAL -- MEAN -- MAX -- MIN -- AC-FT -- CFSM -- IN. --
WTR YR 1987 TOTAL 145586 MEAN 399 MAX 36100 MIN 99 AC-FT 288800 CFSM .78 IN. 10.62

e Estimated.

GUADALUPE RIVER MAIN STEM

08166200 GUADALUPE RIVER AT KERRVILLE, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	210	156	162	148	97	84	147	97	167	95	156	99
2	187	154	176	148	115	97	107	88	164	88	163	100
3	179	154	174	154	88	88	95	88	206	89	1300	99
4	180	154	167	154	93	84	94	87	167	87	256	93
5	185	149	163	154	93	84	101	103	134	85	208	89
6	184	153	163	154	93	84	99	95	119	87	185	82
7	180	165	148	154	93	84	97	110	122	117	157	100
8	179	158	142	154	97	97	97	124	119	122	155	91
9	162	164	148	154	97	102	97	97	110	97	155	87
10	147	151	147	154	97	97	98	93	99	87	145	85
11	146	142	148	148	93	93	97	162	94	10800	142	85
12	148	136	146	142	88	e93	96	178	97	1320	146	80
13	148	147	142	142	88	e93	95	165	106	445	135	79
14	148	182	129	142	88	93	97	109	110	306	131	80
15	148	172	128	142	88	102	94	106	103	239	129	101
16	148	197	131	153	88	97	89	102	114	198	121	90
17	148	166	138	155	88	e97	91	100	89	191	121	292
18	155	154	143	151	88	97	89	96	76	179	121	299
19	154	148	200	157	84	93	90	115	93	166	113	175
20	184	146	203	149	84	102	93	790	87	405	115	132
21	172	148	180	119	84	106	93	1670	69	553	116	120
22	162	165	170	118	76	111	90	372	99	317	115	111
23	158	158	165	160	76	114	93	265	97	245	111	108
24	162	158	172	129	76	115	86	263	97	220	107	109
25	163	149	164	129	80	122	92	218	93	200	109	107
26	160	138	152	130	102	124	90	191	239	185	104	105
27	158	163	148	115	93	126	88	182	214	168	96	103
28	154	164	148	102	88	129	88	165	149	178	99	102
29	154	154	148	93	84	101	96	177	108	169	96	97
30	154	159	148	84	---	88	107	187	112	160	96	103
31	156	---	148	88	---	95	---	175	---	159	99	---
TOTAL	5073	4704	4841	4276	2599	3092	2886	6770	3653	17757	5302	3403
MEAN	164	157	156	138	89.6	99.7	96.2	218	122	573	171	113
MAX	210	197	203	160	115	129	147	1670	239	10800	1300	299
MIN	146	136	128	84	76	84	86	87	69	85	96	79
AC-FT	10060	9330	9600	8480	5160	6130	5720	13430	7250	35220	10520	6750
CFSM	.32	.31	.31	.27	.18	.20	.19	.43	.24	1.12	.34	.22
IN.	.37	.34	.35	.31	.19	.23	.21	.49	.27	1.30	.39	.25

CAL YR 1987 TOTAL 140407 MEAN 385 MAX 36100 MIN 125 AC-FT 278500 CFSM .75 IN. 10.24
WTR YR 1988 TOTAL 64356 MEAN 176 MAX 10800 MIN 69 AC-FT 127700 CFSM .34 IN. 4.69

e Estimated.

GUADALUPE RIVER MAIN STEM

197

08167000 GUADALUPE RIVER AT COMFORT, TX

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

DRAINAGE AREA.--839 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,369.83 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939, to June 2, 1980, water-stage recorder at site 0.4 mi upstream at datum 2.22 ft higher. June 2, 1980, to Sept. 30, 1986, at present site at datum 2.00 ft higher.

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

AVERAGE DISCHARGE.--49 years (water years 1940-88), 205 ft³/s (148,500 acre-ft/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 42.3 ft, present datum, from report by U.S. Army Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft, from floodmark, and from information by State Department of Highways and Public Transportation. Flood of July 16, 1900, reached about the same stage as that of July 1, 1932, from information by local residents. All stages are at site and datum then in use.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	0700	3,530	8.93	Aug. 3	1000	4,240	9.62
July 11	1700	*54,000	a*23.26				

a From floodmark.

Minimum daily discharge, 73 ft³/s June 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	303	236	236	237	209	192	161	143	206	149	327	145
2	294	236	248	234	208	186	161	136	195	136	321	145
3	292	236	252	233	210	194	156	135	313	129	1500	145
4	285	233	247	232	211	184	156	123	277	123	587	143
5	282	236	245	231	208	178	158	119	216	115	428	131
6	280	e233	242	235	206	183	162	89	193	108	369	132
7	277	e233	233	239	206	186	155	81	178	104	330	127
8	270	e450	222	234	206	187	147	96	168	99	295	127
9	261	e350	218	231	204	191	156	102	158	97	285	123
10	261	e300	224	227	203	184	156	104	144	97	286	125
11	256	e260	233	225	201	178	154	98	134	16500	264	124
12	261	250	225	226	189	150	152	238	132	4870	247	120
13	259	240	216	221	190	156	148	195	128	1350	239	118
14	256	239	218	217	188	158	142	166	130	876	228	120
15	253	240	213	216	178	173	142	140	158	661	220	121
16	254	330	206	222	176	167	138	132	118	527	211	120
17	253	324	208	224	186	232	136	126	111	468	206	302
18	253	278	212	218	200	238	138	120	73	419	185	596
19	253	261	292	222	204	191	133	114	75	382	198	357
20	265	248	346	216	194	183	130	228	95	624	191	272
21	279	242	307	209	193	180	128	2050	96	1650	186	223
22	e261	242	286	206	188	183	125	717	91	995	180	200
23	256	240	267	210	186	181	126	431	88	679	175	184
24	258	240	264	206	179	181	125	332	89	544	175	173
25	261	241	262	203	178	181	131	285	84	473	179	170
26	256	235	296	205	193	173	127	209	290	442	168	165
27	253	240	265	203	216	168	119	227	406	394	163	161
28	e242	237	253	203	201	167	117	214	284	364	155	152
29	239	235	247	203	196	169	118	196	211	373	154	151
30	242	237	240	205	---	165	154	202	169	346	149	189
31	242	---	239	206	---	161	---	213	---	334	145	---
TOTAL	8157	7802	7662	6799	5707	5600	4251	7761	5010	34428	8746	5361
MEAN	263	260	247	219	197	181	142	250	167	1111	282	179
MAX	303	450	346	239	216	238	162	2050	406	16500	1500	596
MIN	239	233	206	203	176	150	117	81	73	97	145	118
AC-FT	16180	15480	15200	13490	11320	11110	8430	15390	9940	68290	17350	10630

CAL YR 1987 TOTAL 276819 MEAN 758 MAX 36700 MIN 206 AC-FT 549100
WTR YR 1988 TOTAL 107284 MEAN 293 MAX 16500 MIN 73 AC-FT 212800

e Estimated.

GUADALUPE RIVER MAIN STEM

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

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

DRAINAGE AREA.--1,315 mi².

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

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

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

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

REMARKS.--No estimated daily discharges. Records good. Several small diversions above station for irrigation. Satellite telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--66 years, 333 ft³/s (241,300 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	1300	*35,100	a*27.25	No other peak greater than base discharge.			

a From floodmark.

Minimum daily discharge, 103 ft³/s June 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	388	282	283	294	253	232	204	167	236	191	378	171
2	372	276	276	290	252	231	201	177	233	171	375	171
3	363	275	287	288	252	223	198	169	285	157	445	169
4	352	275	294	280	249	223	193	162	380	148	1590	167
5	349	276	292	279	246	222	194	155	302	143	613	166
6	343	273	287	281	246	215	194	151	253	136	471	157
7	335	270	282	289	246	213	194	137	225	133	412	157
8	330	297	273	288	246	218	193	123	205	127	375	149
9	323	549	259	283	246	214	193	123	196	124	345	151
10	317	427	256	276	246	216	196	128	187	126	328	148
11	312	350	259	276	237	215	195	134	174	127	323	146
12	306	316	264	276	236	211	192	140	166	17000	303	146
13	310	310	261	273	232	195	189	209	158	2860	287	145
14	308	301	252	270	233	184	187	216	158	1310	278	142
15	308	302	246	267	227	190	184	201	154	865	263	138
16	305	308	247	268	220	193	183	169	175	663	254	140
17	305	378	243	273	217	237	182	160	150	547	247	160
18	305	378	249	272	230	308	175	151	141	487	252	272
19	303	334	288	269	238	302	174	146	130	438	234	514
20	301	312	374	264	243	245	170	149	103	398	234	359
21	304	302	404	259	234	230	167	657	117	845	226	289
22	324	295	365	253	231	223	168	1740	121	1750	218	244
23	315	295	343	257	225	223	164	637	118	941	210	223
24	307	292	325	259	218	223	157	443	115	658	206	209
25	311	321	313	250	218	222	158	354	115	546	203	193
26	311	294	388	248	215	219	158	308	122	487	203	184
27	299	291	409	247	223	215	160	247	242	457	192	181
28	293	288	340	249	247	211	150	249	371	427	188	174
29	286	287	316	249	241	207	152	239	289	393	184	169
30	285	283	303	250	---	202	159	228	231	396	180	190
31	281	---	302	252	---	207	---	221	---	391	175	---
TOTAL	9851	9437	9280	8329	6847	6869	5384	8490	5852	33442	10192	5824
MEAN	318	315	299	269	236	222	179	274	195	1079	329	194
MAX	388	549	409	294	253	308	204	1740	380	17000	1590	514
MIN	281	270	243	247	215	184	150	123	103	124	175	138
AC-FT	19540	18720	18410	16520	13580	13620	10680	16840	11610	66330	20220	11550

CAL YR 1987 TOTAL 481560 MEAN 1319 MAX 32000 MIN 243 AC-FT 955200
WTR YR 1988 TOTAL 119797 MEAN 327 MAX 17000 MIN 103 AC-FT 237600

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX

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

DRAINAGE AREA.--1,432 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

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

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 732,600 acre-ft June 19, 1987 (elevation, 942.68 ft); minimum observed since conservation pool first reached in April 1968, 311,200 acre-ft Nov. 24, 1984 (elevation, 899.85 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 414,000 acre-ft July 14, 15 (elevation, 912.78 ft); minimum daily, 319,100 acre-ft Nov. 7 (elevation, 900.94 ft).

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

900.0	312,300	906.0	357,800	911.0	398,700
902.0	327,000	908.0	373,800	912.0	407,300
904.0	342,200	910.0	390,300	913.0	415,900

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	335700	319400	330700	346900	359100	368200	377800	381800	387900	382600	404700	382700
2	334400	319400	331300	347200	359300	368800	377900	381800	387700	382500	404700	382600
3	334000	319400	331700	347700	359600	369000	378100	381800	388400	382200	404400	382400
4	333800	319300	332200	348100	360000	369100	378400	381600	388400	382000	405300	381900
5	333700	319300	332700	348400	360200	369400	378600	381400	388100	381800	404900	381500
6	333500	319200	333200	349200	360400	369600	378900	381200	387800	381600	404100	381300
7	333500	319100	333700	349500	360700	369900	378900	381100	387500	381400	403300	381200
8	333200	320200	334100	349900	361100	370300	379200	381000	387000	381100	402400	380900
9	333100	320500	334400	350200	361500	370400	379600	380800	386600	380800	401400	380800
10	333100	320700	334800	350600	361500	370600	379800	380700	386100	380700	400300	380600
11	333000	320700	335200	351000	362100	371000	379800	381200	385500	380500	399500	380400
12	332900	320700	335600	351500	362200	371100	379900	381100	384800	408800	398600	380200
13	332800	320500	336000	351700	362600	371300	380100	380900	384100	413300	397500	380200
14	332800	320500	336200	352200	363000	371300	380200	380900	383800	414000	396400	380200
15	332500	320800	336400	352600	363200	371300	380400	380800	383700	414000	395200	380000
16	332300	321400	336900	353100	363400	371500	380700	380800	383500	413600	394300	380000
17	331700	321400	337400	353500	363800	373300	381000	380600	383300	413000	393300	380900
18	330800	322000	337900	353700	364600	373400	381200	380400	383100	412200	392500	381200
19	330200	322300	339200	354400	364900	373800	381200	380200	382800	411300	391600	381800
20	329100	322700	339900	354700	365000	374100	381300	381700	382500	410500	390600	382200
21	327600	323100	340700	355000	365400	374200	381500	382500	382200	410200	389800	382500
22	326400	323500	341300	355400	365700	374600	381800	385600	381800	411700	388900	382500
23	325600	324100	341900	355700	366000	375100	381900	386400	381700	411800	388100	382400
24	324400	324700	342800	356000	366100	375500	382000	387000	381400	411300	387500	382200
25	323200	327900	343500	356200	366400	375900	382100	387100	382200	410700	386700	382100
26	322000	328300	344200	356600	366800	376100	382000	387400	382500	409900	386100	381800
27	320500	329100	344400	356900	367000	376300	381800	387100	382500	409200	385400	381500
28	319400	329400	345000	357200	367600	376800	381600	387100	382700	408200	384800	381300
29	319500	329900	345400	357600	367900	377200	382300	388000	382800	407300	384200	381000
30	319500	330400	346000	358000	---	377200	382100	388400	382700	406500	383600	381700
31	319400	---	346400	358500	---	377500	---	388100	---	405600	383200	---
MAX	335700	330400	346400	358500	367900	377500	382300	388400	388400	414000	405300	382700
MIN	319400	319100	330700	346900	359100	368200	377800	380200	381400	380500	383200	380000
(↑)	902.98	902.45	904.55	906.09	907.27	908.45	909.01	909.73	909.09	911.81	909.14	908.96
(Φ)	-19380	+10940	+16080	+12090	+9414	+9560	+4592	+5969	-5310	+22910	-22500	-1483

CAL YR 1987 MAX 731300 MIN 319100 (Φ) -79600
WTR YR 1988 MAX 414000 MIN 319100 (Φ) +42900

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

GUADALUPE RIVER MAIN STEM

08167800 GUADALUPE RIVER AT SATTLER, TX

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

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

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

Water-quality records.--Water temperature: June 1984 to September 1987.

REVISED RECORDS.--WSP 2123: Drainage area.

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

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

AVERAGE DISCHARGE.--26 years (water years 1962-88) since regulation began at Canyon Lake, 435 ft³/s (315,200 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,860 ft³/s Oct. 1 at 1300 hours (gage height, 6.78 ft); minimum daily, 3.5 ft³/s Dec. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1850	275	72	70	73	71	70	181	432	209	763	318
2	1110	275	72	71	71	73	72	181	427	212	772	314
3	415	275	71	69	72	71	71	180	428	215	774	313
4	415	275	73	67	72	66	72	162	426	215	772	313
5	415	275	71	70	73	67	71	184	426	210	772	235
6	347	275	73	70	71	69	71	182	426	208	772	166
7	364	276	73	71	72	71	65	181	426	209	772	166
8	318	281	71	75	72	72	66	181	426	209	772	166
9	318	275	72	72	71	70	71	181	426	209	772	166
10	318	277	72	72	73	64	67	181	426	209	772	166
11	318	275	73	73	74	69	67	182	426	209	775	166
12	318	275	73	71	72	77	68	181	426	218	781	166
13	318	281	72	72	75	74	65	181	426	400	781	140
14	318	286	55	74	74	69	67	181	315	791	777	116
15	318	275	5.5	73	74	71	65	181	209	791	763	116
16	490	280	4.2	71	74	74	69	179	208	791	694	116
17	727	279	3.5	68	73	77	66	179	209	791	607	115
18	621	156	45	66	74	74	62	180	209	774	607	113
19	621	73	75	68	71	74	67	181	209	772	607	112
20	790	74	74	63	73	75	68	183	209	772	607	112
21	906	74	73	69	61	76	68	185	209	772	607	100
22	910	73	37	71	62	75	67	181	209	772	601	168
23	906	73	69	71	70	70	65	181	209	765	563	216
24	906	84	69	70	69	73	70	181	209	763	518	228
25	906	93	67	72	69	70	63	181	209	763	518	228
26	906	75	67	72	72	73	104	181	213	763	446	228
27	906	76	69	72	71	73	182	319	212	763	416	228
28	646	75	68	72	71	71	181	416	209	763	416	198
29	275	72	70	71	69	70	183	394	209	763	416	203
30	275	71	67	72	---	71	180	257	209	763	416	203
31	275	---	65	73	---	72	---	432	---	763	346	---
TOTAL	18526	5779	1921.2	2191	2068	2222	2523	6510	9212	16827	19975	5595
MEAN	598	193	62.0	70.7	71.3	71.7	84.1	210	307	543	644	186
MAX	1850	286	75	75	75	77	183	432	432	791	781	318
MIN	275	71	3.5	63	61	64	62	162	208	208	346	100
AC-FT	36750	11460	3810	4350	4100	4410	5000	12910	18270	33380	39620	11100

CAL YR 1987 TOTAL 526567.2 MEAN 1443 MAX 5480 MIN 3.5 AC-FT 1044000
WTR YR 1988 TOTAL 93349.2 MEAN 255 MAX 1850 MIN 3.5 AC-FT 185200

GUADALUPE RIVER MAIN STEM

201

08168500 GUADALUPE RIVER ABOVE COMAL RIVER AT NEW BRAUNFELS, TX

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

DRAINAGE AREA.--1,518 mi².

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

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

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

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

AVERAGE DISCHARGE.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft³/s (269,500 acre-ft/yr); 26 years (water years 1963-88) regulated, 526 ft³/s (381,100 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,330 ft³/s May 29 at 2400 hours (gage height, 6.51 ft); minimum daily, 82 ft³/s Dec. 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2080	362	155	141	134	124	123	200	503	230	789	305
2	1630	363	153	143	133	131	121	200	488	229	789	306
3	530	363	152	144	131	128	119	200	519	231	806	306
4	521	359	151	141	131	126	119	196	511	236	797	302
5	519	356	152	139	134	124	118	186	495	231	793	301
6	459	356	151	144	131	124	120	200	480	232	792	188
7	494	356	149	142	130	120	118	205	471	229	789	179
8	428	380	148	143	130	123	114	205	469	226	789	178
9	427	366	145	142	131	119	117	205	460	227	788	178
10	427	355	145	141	131	120	121	205	453	230	787	178
11	425	356	141	142	129	110	112	215	453	239	786	178
12	419	351	142	142	128	117	114	210	450	249	792	178
13	419	352	142	138	129	120	111	210	444	246	785	180
14	417	354	141	139	133	116	106	205	416	775	781	142
15	417	363	124	139	130	113	106	205	240	789	781	134
16	425	362	90	141	129	117	106	202	235	789	771	135
17	873	349	82	140	130	151	109	201	235	789	610	158
18	709	326	82	133	142	198	106	197	234	789	602	143
19	702	157	124	132	132	149	100	191	230	789	600	139
20	794	150	161	129	128	139	103	194	230	789	597	139
21	991	151	154	129	127	134	103	238	230	791	593	136
22	1000	151	147	134	113	133	106	208	230	789	588	128
23	1010	151	118	134	120	131	103	201	229	787	582	228
24	1000	151	145	133	124	127	100	196	230	787	510	234
25	1000	383	147	132	125	129	100	196	230	788	509	240
26	1000	197	144	133	127	122	96	196	274	788	482	240
27	1000	184	144	132	130	124	167	237	239	789	403	238
28	946	167	142	133	128	121	191	417	236	789	403	229
29	381	162	145	133	127	122	221	599	231	789	403	208
30	363	159	143	132	---	120	210	701	230	792	405	231
31	362	---	141	134	---	121	---	519	---	789	380	---
TOTAL	22168	8592	4300	4254	3747	3953	3660	7740	10375	17222	20282	6059
MEAN	715	286	139	137	129	128	122	250	346	556	654	202
MAX	2080	383	161	144	142	198	221	701	519	792	806	306
MIN	362	150	82	129	113	110	96	186	229	226	380	128
AC-FT	43970	17040	8530	8440	7430	7840	7260	15350	20580	34160	40230	12020

CAL YR 1987 TOTAL 588942 MEAN 1614 MAX 5680 MIN 82 AC-FT 1168000
WTR YR 1988 TOTAL 112352 MEAN 307 MAX 2080 MIN 82 AC-FT 222900

GUADALUPE RIVER BASIN

08169000 COMAL RIVER AT NEW BRAUNFELS, TX

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

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

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

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

AVERAGE DISCHARGE.--56 years (water years 1933-88), 296 ft³/s (214,500 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 19	1130	*566	*4.77				

Minimum daily discharge, 209 ft³/s Sept. 10, 12, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	355	352	370	369	355	342	337	314	273	236	245	214
2	356	355	368	369	354	347	329	312	276	241	244	220
3	354	354	369	369	357	342	334	311	285	239	243	221
4	355	355	370	369	354	341	327	309	284	269	246	224
5	358	351	370	366	354	339	328	308	282	252	242	220
6	352	353	370	369	355	338	327	301	282	240	246	216
7	350	351	371	366	355	338	330	300	278	239	244	216
8	351	369	370	366	353	338	326	303	275	234	247	213
9	356	359	369	367	354	340	328	299	277	234	243	212
10	355	353	370	366	352	337	329	294	265	234	245	209
11	350	356	370	364	349	336	330	296	265	256	245	210
12	355	358	369	363	352	334	332	298	266	259	241	209
13	355	361	370	363	351	335	326	292	265	239	244	211
14	354	363	370	365	353	333	323	294	258	234	243	215
15	354	364	367	362	350	333	321	291	246	237	244	209
16	355	368	367	364	349	332	317	286	246	243	240	220
17	355	367	370	365	350	367	326	284	245	239	238	241
18	354	362	373	362	368	341	326	282	248	234	246	221
19	354	363	401	362	353	334	323	278	248	228	241	227
20	354	365	380	360	349	338	322	283	243	227	246	227
21	352	365	374	359	348	336	312	306	234	264	241	228
22	354	370	369	360	343	335	312	283	233	241	240	228
23	356	368	368	360	348	336	317	286	230	244	233	229
24	354	374	371	361	337	336	319	280	221	242	232	230
25	359	369	370	363	346	333	318	281	225	240	235	226
26	359	369	371	363	345	330	312	273	264	234	229	225
27	355	379	369	371	345	334	312	273	236	235	231	221
28	356	370	368	365	345	334	311	273	234	240	227	225
29	354	370	367	365	341	332	317	275	240	236	222	227
30	355	369	367	365	---	330	310	284	243	238	215	236
31	355	---	367	358	---	338	---	272	---	244	221	---
TOTAL	10991	10882	11495	11296	10165	10459	9681	9021	7667	7472	7399	6630
MEAN	355	363	371	364	351	337	323	291	256	241	239	221
MAX	359	379	401	371	368	367	337	314	285	269	247	241
MIN	350	351	367	358	337	330	310	272	221	227	215	209
AC-FT	21800	21580	22800	22410	20160	20750	19200	17890	15210	14820	14680	13150

CAL YR 1987 TOTAL 136909 MEAN 375 MAX 1070 MIN 317 AC-FT 271600
WTR YR 1988 TOTAL 113158 MEAN 309 MAX 401 MIN 209 AC-FT 224400

LOCATION.--Lat 29°40'00", long 98°04'14", Comal County, Hydrologic Unit 12100202, in Lake Dunlap, 8 mi southeast of New Braunfels, and 15 mi downstream from Interstate Highway 35 bridge.

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: June 1986 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARB WH WAT TOT FLD (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)
OCT 16...	1028	513	7.60	22.5	8.0	94	1.0	240	35	68	17
JAN 08...	1451	537	7.40	15.0	8.8	88	0.9	260	29	76	16
FEB 26...	1417	556	7.60	20.0	7.1	80	1.6	260	37	77	17
APR 13...	1246	534	8.00	22.0	8.3	97	2.0	260	30	76	17
JUN 09...	1322	478	8.10	27.0	10.1	131	4.6	240	32	65	18
AUG 09...	1156	461	7.80	25.0	7.7	96	1.3	210	27	55	18

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINIT- WAT TOT FET FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CON- STITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
OCT 16...	14	0.4	2.5	205	24	19	0.30	11	279	--	<0.010
JAN 08...	15	0.4	1.9	227	26	20	0.20	12	303	--	--
FEB 26...	17	0.5	1.9	226	26	24	0.30	12	311	1.49	0.010
APR 13...	16	0.4	1.6	230	27	22	0.30	12	310	1.48	0.020
JUN 09...	13	0.4	2.0	205	25	18	0.20	11	275	0.690	0.010
AUG 09...	13	0.4	2.2	185	22	17	0.20	10	248	0.590	0.010

DATE	NITRO- GEN, NO ₂ -NO ₃ TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
OCT 16...	1.20	0.030	--	<0.20	<0.010	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--	--	--	--	--	--
FEB 26...	1.50	0.050	0.15	0.20	0.060	--	--	--	--	--	--
APR 13...	1.50	0.080	1.1	1.2	0.080	--	--	--	--	--	--
JUN 09...	0.700	0.030	0.37	0.40	0.040	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010
AUG 09...	0.600	0.080	0.42	0.50	0.100	--	--	--	--	--	--

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

205

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

PERIOD OF RECORD.--May 1956 to current year. June 1915 to January 1916, March 1916 to September 1921, and May to September 1956, published as San Marcos River at San Marcos; records include some surface runoff. Periodic measurements of springflow were made at this location outside period of records since Nov. 14, 1894, and are published as miscellaneous measurements.

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

AVERAGE DISCHARGE.--32 years (water years 1957-88), 168 ft³/s (121,700 acre-ft/yr).

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

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge 244 ft³/s Oct. 1; maximum gage height, 11.92 ft Nov. 25 at 0400 hours (flood runoff); minimum daily spring discharge, 114 ft³/s Sept. 21-22.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	244	199	219	189	167	164	155	153	176	146	132	120
2	243	199	216	188	168	167	153	152	170	145	130	121
3	240	196	212	187	167	163	153	151	170	147	129	120
4	239	196	211	186	167	162	153	151	170	145	130	121
5	238	194	212	188	172	160	151	150	166	142	128	120
6	234	194	215	190	166	161	151	151	163	143	127	118
7	231	195	211	188	164	160	149	151	162	143	122	119
8	230	196	205	185	164	160	150	152	160	143	123	117
9	227	197	201	183	163	159	152	150	159	143	124	115
10	223	193	210	182	162	159	156	147	157	144	124	118
11	222	191	209	177	162	162	155	145	156	143	123	118
12	221	198	206	176	162	163	153	147	157	143	123	118
13	223	197	206	173	167	161	153	150	155	138	124	117
14	221	197	205	172	167	160	152	150	152	138	123	115
15	222	196	202	172	166	157	152	152	152	139	121	118
16	218	195	203	172	165	154	153	151	151	135	120	118
17	216	196	202	172	165	157	156	152	150	137	123	118
18	215	196	206	172	170	167	154	150	150	134	121	115
19	216	193	207	172	168	163	152	151	151	133	124	116
20	209	189	208	172	165	162	150	148	149	131	123	115
21	206	188	207	172	164	160	151	148	147	134	123	114
22	204	190	203	172	163	159	152	149	147	132	123	114
23	206	189	203	171	162	158	151	149	145	132	123	117
24	204	188	203	170	162	156	151	145	147	132	122	118
25	201	196	200	168	162	155	150	145	145	130	125	116
26	203	206	198	168	163	155	146	148	151	129	124	115
27	199	213	194	168	167	154	147	147	151	130	124	116
28	199	218	194	168	167	152	149	147	149	130	123	117
29	199	220	192	168	165	153	148	149	147	131	124	120
30	199	220	191	167	---	152	151	148	148	131	123	122
31	199	---	191	167	---	154	---	171	---	132	118	---
TOTAL	6751	5935	6342	5455	4792	4929	4549	4650	4653	4255	3846	3526
MEAN	218	198	205	176	165	159	152	150	155	137	124	118
MAX	244	220	219	190	172	167	156	171	176	147	132	122
MIN	199	188	191	167	162	152	146	145	145	129	118	114
AC-FT	13390	11770	12580	10820	9500	9780	9020	9220	9230	8440	7630	6990

CAL YR 1987	TOTAL 92531	MEAN 254	MAX 427	MIN 182	AC-FT 183500
WTR YR 1988	TOTAL 59683	MEAN 163	MAX 244	MIN 114	AC-FT 118400

08171000 BLANCO RIVER AT WIMBERLEY, TX

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

DRAINAGE AREA.--355 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--Records good except those for estimated daily discharge, which are fair. There are many small diversions above station. Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--62 years (water years 1925-26, 1929-88), 129 ft³/s (4.93 in/yr), 93,460 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0500	7,320	10.50	May 29	2030	*21,900	*16.66

Minimum daily discharge, 27 ft³/s Sept. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	72	81	91	71	59	58	39	157	70	55	39
2	73	70	78	89	70	64	56	39	134	69	64	39
3	71	66	76	91	68	57	56	39	311	67	287	37
4	71	66	75	86	67	57	58	38	205	66	166	34
5	73	66	75	84	66	57	58	37	142	65	113	35
6	72	65	74	87	66	54	56	36	123	71	91	34
7	68	62	75	86	66	54	53	36	112	69	82	33
8	68	79	72	84	66	55	54	38	103	63	76	33
9	68	73	70	84	66	55	55	38	98	62	75	32
10	68	80	71	83	66	55	56	37	94	61	66	32
11	68	81	70	83	63	56	52	43	89	62	63	31
12	66	71	69	86	62	56	51	44	86	78	190	32
13	66	70	68	82	63	54	53	43	e81	114	88	34
14	66	68	67	80	63	52	54	49	78	147	74	31
15	69	68	63	81	63	51	54	49	72	112	68	32
16	70	77	67	81	62	51	54	47	68	92	65	36
17	70	72	66	81	63	63	54	45	66	84	62	43
18	69	71	70	81	66	60	53	42	66	65	58	36
19	71	69	95	80	61	65	51	41	65	61	56	42
20	64	69	91	78	62	70	48	53	65	60	53	49
21	63	67	100	78	62	67	49	165	63	57	51	44
22	65	68	96	76	62	66	49	156	61	55	51	41
23	67	68	92	75	61	64	49	99	60	56	49	38
24	67	68	91	75	58	61	45	80	60	60	47	37
25	66	1020	89	73	58	61	43	73	58	60	49	33
26	68	123	86	73	57	62	43	66	88	55	45	32
27	68	103	143	71	57	59	41	64	64	53	44	31
28	68	92	108	72	57	60	39	58	63	52	42	29
29	68	89	97	74	58	61	41	1600	61	51	40	27
30	68	86	93	73	---	58	43	382	66	58	39	42
31	68	---	94	73	---	57	---	169	---	63	39	---
TOTAL	2120	3199	2562	2491	1830	1821	1526	3745	2859	2158	2348	1068
MEAN	68.4	107	82.6	80.4	63.1	58.7	50.9	121	95.3	69.6	75.7	35.6
MAX	73	1020	143	91	71	70	58	1600	311	147	287	49
MIN	63	62	63	71	57	51	39	36	58	51	39	27
AC-FT	4210	6350	5080	4940	3630	3610	3030	7430	5670	4280	4660	2120
CFSM	.19	.30	.23	.23	.18	.17	.14	.34	.27	.20	.21	.10
IN.	.22	.34	.27	.26	.19	.19	.16	.39	.30	.23	.25	.11

CAL YR 1987 TOTAL 125899 MEAN 345 MAX 6760 MIN 62 AC-FT 249700 CFSM .97 IN. 13.19
WTR YR 1988 TOTAL 27727 MEAN 75.8 MAX 1600 MIN 27 AC-FT 55000 CFSM .21 IN. 2.91

e Estimated.

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: December 1976 to September 1978.

INSTRUMENTATION.--From December 1976 to September 1978 water temperature was recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum daily, 36.0°C July 16, 1978, minimum daily, 2.5°C Jan. 20, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

GUADALUPE RIVER BASIN

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

GUADALUPE RIVER BASIN

209

08171300 BLANCO RIVER NEAR KYLE, TX

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

DRAINAGE AREA.--412 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 620.12 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Recording rain gage at this site.

REMARKS.--No estimated daily discharges. Records good. Small diversions above station for irrigation. Most of the low flow of the Blanco River enters the Edwards and associated limestones in the Balcones Fault Zone which crosses the basin upstream from this station and below the station at Wimberley. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 155 ft³/s (5.11 in/yr), 112,300 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0500	*28,000	*24.22	May 29	2400	19,500	21.57

Minimum daily discharge, 6.3 ft³/s Sept. 28-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	45	99	85	59	49	43	30	180	40	28	9.7
2	54	44	90	82	57	48	42	28	143	38	28	9.5
3	54	44	84	81	56	49	40	30	219	37	195	10
4	53	44	79	76	56	47	40	28	262	35	111	9.6
5	52	43	76	74	55	46	40	26	142	35	83	8.3
6	51	43	73	74	55	45	39	25	114	34	53	8.2
7	51	42	70	80	55	45	37	24	101	43	41	8.1
8	49	52	69	79	54	45	36	25	90	34	35	8.0
9	49	72	68	78	54	44	36	25	83	32	38	7.8
10	49	57	67	76	54	43	38	24	77	30	33	7.3
11	48	63	66	74	54	42	38	23	72	32	31	7.0
12	47	59	65	73	53	42	37	34	69	62	116	7.0
13	47	55	64	72	53	41	36	29	65	40	63	7.8
14	47	53	62	72	53	39	36	29	64	96	37	8.7
15	47	56	61	71	52	39	36	31	61	71	31	7.2
16	47	63	58	71	52	39	35	29	57	53	29	7.0
17	47	62	58	70	52	50	35	28	54	42	25	16
18	47	53	58	69	53	64	34	25	52	38	22	19
19	47	51	79	67	55	47	33	23	50	35	21	10
20	47	49	101	66	54	52	33	25	47	33	20	13
21	44	48	86	64	53	53	32	140	46	32	18	15
22	45	48	97	63	52	51	32	139	44	30	17	13
23	50	48	93	62	52	50	32	81	43	28	16	11
24	52	48	88	62	52	49	30	55	42	28	15	9.6
25	48	5540	85	61	51	47	29	46	41	28	15	8.2
26	48	251	83	60	51	46	29	42	59	27	15	7.1
27	45	179	113	60	50	45	28	37	60	26	13	6.6
28	44	139	117	59	50	43	27	34	45	28	12	6.3
29	44	119	92	59	50	43	30	819	42	25	11	6.3
30	45	110	86	59	---	43	36	1540	40	27	12	9.7
31	45	---	86	59	---	42	---	234	---	34	10	---
TOTAL	1498	7580	2473	2158	1547	1428	1049	3708	2464	1173	1194	282.0
MEAN	48.3	253	79.8	69.6	53.3	46.1	35.0	120	82.1	37.8	38.5	9.40
MAX	55	5540	117	85	59	64	43	1540	262	96	195	19
MIN	44	42	58	59	50	39	27	23	40	25	10	6.3
AC-FT	2970	15030	4910	4280	3070	2830	2080	7350	4890	2330	2370	559
CFSM	.12	.61	.19	.17	.13	.11	.08	.29	.20	.09	.09	.02
IN.	.14	.68	.22	.19	.14	.13	.09	.22	.11	.11	.11	.03

CAL YR 1987	TOTAL 137888	MEAN 378	MAX 6550	MIN 42	AC-FT 273500	CFSM .92	IN. 12.45
WTR YR 1988	TOTAL 26554.0	MEAN 72.6	MAX 5540	MIN 6.3	AC-FT 52670	CFSM .18	IN. 2.40

GUADALUPE RIVER BASIN

08172000 SAN MARCOS RIVER AT LULING, TX

LOCATION.--Lat 29°39'54", long 97°38'59", Caldwell-Guadalupe County line, Hydrologic Unit 12100203, on left bank 390 ft downstream from bridge on State Highway 80, 1.0 mi south of U.S. Post Office at Luling, and 9.4 mi upstream from Plum Creek.

DRAINAGE AREA.--838 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 958: 1940. WSP 1312: 1940(M), 1945(M), 1947(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 322.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected at times by discharge from the flood-detention pools of 18 floodwater-retarding structures with a combined detention capacity of 26,830 acre-ft. These structures control runoff from 105 mi² in the Town and York Creeks drainage basins. Satellite telemeter at station.

AVERAGE DISCHARGE.--49 years, 380 ft³/s (275,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Sept. 12, 1952 (gage height, 34.95 ft); minimum daily, 43 ft³/s Aug. 12, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, 40.4 ft in 1869 or 1870, from information by State Department of Highways and Public Transportation. Flood of May 29, 1929, reached a stage of 37.1 ft and is the second highest known.

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

date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	0500	*7,160	*25.73	No other peak greater than base discharge.			
Minimum daily discharge, 102 ft ³ /s Sept. 15.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	263	449	334	266	226	205	191	499	171	150	111
2	286	262	419	320	256	226	202	176	418	167	149	112
3	312	259	403	317	258	228	191	166	368	168	152	113
4	283	255	390	310	254	225	187	172	394	167	209	114
5	281	252	374	304	255	220	192	159	492	167	227	110
6	276	250	368	314	254	218	193	158	362	167	205	109
7	252	242	362	316	255	211	206	159	316	166	181	105
8	262	264	349	306	242	222	187	155	290	164	162	105
9	268	285	339	298	257	206	187	152	270	166	149	106
10	268	284	332	301	240	214	191	154	256	163	141	105
11	268	273	336	299	258	210	194	160	243	163	140	106
12	267	266	324	293	246	210	187	191	231	163	140	104
13	266	278	328	282	239	207	184	169	224	186	152	106
14	267	276	324	297	245	209	180	155	218	180	197	105
15	270	275	306	286	248	202	180	150	209	174	165	102
16	273	283	312	288	242	204	178	149	205	206	145	104
17	274	292	309	291	238	262	183	149	199	190	137	122
18	274	287	331	288	340	712	182	147	195	176	133	154
19	271	272	375	281	296	300	182	142	191	166	132	123
20	272	266	416	279	258	246	173	123	189	161	128	117
21	270	262	394	273	248	237	175	178	183	169	126	114
22	267	263	368	272	241	234	173	257	179	172	125	107
23	294	263	362	274	242	235	170	245	177	158	122	107
24	292	263	364	273	231	226	157	230	173	144	119	108
25	291	955	347	263	228	217	169	190	170	147	124	109
26	288	3580	354	269	228	220	154	171	182	143	119	107
27	280	957	331	263	227	216	150	161	193	143	116	104
28	270	693	318	262	228	215	144	154	201	143	114	104
29	275	533	385	263	234	212	168	152	194	142	115	103
30	262	477	346	262	---	203	199	1100	179	144	114	105
31	261	---	334	263	---	204	---	1040	---	151	112	---
TOTAL	8530	13630	11049	8941	7254	7377	5423	7055	7600	5087	4500	3301
MEAN	275	454	356	288	250	238	181	228	253	164	145	110
MAX	312	3580	449	334	340	712	206	1100	499	206	227	154
MIN	252	242	306	262	227	202	144	123	170	142	112	102
AC-FT	16920	27040	21920	17730	14390	14630	10760	13990	15070	10090	8930	6550

CAL YR 1987 TOTAL 337450 MEAN 925 MAX 23200 MIN 242 AC-FT 669300
WTR YR 1988 TOTAL 89747 MEAN 245 MAX 3580 MIN 102 AC-FT 178000

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
OCT 28...	244	30	24	0.20	12	334	--	--	--	--	--	--
NOV 19...	243	30	26	0.20	11	337	--	--	--	--	--	--
FEB 24...	244	32	29	0.30	7.1	335	--	--	--	--	--	--
JUN 06...	210	24	14	0.20	11	273	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010
JUL 20...	211	29	24	0.20	13	297	--	--	--	--	--	--
SEP 07...	233	27	24	0.20	12	316	--	--	--	--	--	--

[illegible][illegible]

08172400 PLUM CREEK AT LOCKHART, TX

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

DRAINAGE AREA.--112 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

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

AVERAGE DISCHARGE.--29 years, 48.3 ft³/s (34,990 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,700 ft³/s Nov. 24, 1985 (gage height, 20.89 ft); no flow at times each year.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	1700	*317	*7.77				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	5.0	3.1	1.2	1.3	.41	.08	.43	.07	.00	.00
2	.00	.00	4.0	3.1	1.2	1.3	.43	.28	.39	.00	.00	.00
3	.00	.00	2.9	2.7	1.3	1.5	.43	2.5	.38	.00	.00	.00
4	.00	.00	2.5	3.4	1.3	1.5	.35	2.0	.30	.00	.00	.00
5	.00	.00	2.8	4.3	1.4	1.5	.28	1.5	.36	.00	.00	.00
6	.00	.00	3.2	4.1	1.4	1.2	.18	.88	.18	.00	.00	.00
7	.00	.00	3.2	4.7	1.4	1.1	.19	.31	.11	.36	.00	.00
8	.00	.00	3.0	5.5	1.4	.97	.12	.20	.08	.09	.00	e.00
9	.00	.00	2.5	4.9	1.4	.86	.14	.10	.03	.03	.00	e.00
10	.00	.00	2.1	4.4	1.3	.81	.25	.05	.00	.00	.00	e.00
11	.00	.00	2.0	3.6	1.2	.79	.35	.03	.00	.00	.00	e.00
12	.00	.00	1.7	3.5	1.1	.82	.39	.04	.00	.00	.00	e.00
13	.00	.00	1.7	3.1	1.1	.76	.58	.02	.00	.00	.00	e.00
14	.00	.00	1.9	2.9	1.1	.64	.58	.00	.00	.00	.00	e.00
15	.00	.00	2.4	2.8	1.1	.44	.72	.00	.00	.00	.00	e.00
16	.00	.00	2.4	2.7	1.1	.43	.84	.00	.00	.00	.00	e.00
17	.00	.00	2.9	2.6	1.0	1.2	1.1	.00	.00	.00	.00	e.00
18	.00	.00	3.2	2.8	2.2	.38	1.1	.00	.00	.00	.00	e.00
19	.00	.00	5.1	2.6	3.7	7.1	.58	.00	.00	.00	.00	e.00
20	.00	.00	23	2.3	3.3	3.7	.34	.00	.00	.00	.00	e.00
21	.00	.00	14	2.1	2.7	2.2	.24	57	.00	.00	.00	e.00
22	.00	.00	9.0	2.2	2.4	1.4	.74	24	.00	.00	.00	e.00
23	.00	.00	6.9	2.2	2.2	1.0	.54	15	.07	.00	.00	e.00
24	.00	.00	5.9	3.7	1.8	.90	.22	6.5	2.3	.00	.00	e.00
25	.00	62	5.6	4.3	1.5	.73	.09	2.9	3.7	.00	.00	e.00
26	.00	33	5.2	2.0	1.5	.63	.04	1.6	3.4	.00	.00	e.00
27	.00	24	4.9	1.4	1.5	.51	.01	.98	2.7	.00	.00	e.00
28	.00	16	4.5	1.2	1.4	.49	.00	.68	1.9	.00	.00	e.00
29	.00	8.8	3.7	1.1	1.3	.50	.04	4.8	1.1	.00	.00	e.00
30	.00	6.1	3.2	1.1	---	.30	.10	2.8	.40	.00	.00	e.00
31	.00	---	3.0	1.2	---	.37	---	.73	---	.00	.00	---
TOTAL	0.00	149.90	143.4	91.6	46.5	74.95	11.38	124.98	17.83	0.55	0.00	0.00
MEAN	.00	5.00	4.63	2.95	1.60	2.42	.38	4.03	.59	.018	.00	.00
MAX	.00	62	23	5.5	3.7	.38	1.1	57	3.7	.36	.00	.00
MIN	.00	.00	1.7	1.1	1.0	.30	.00	.00	.00	.00	.00	.00
AC-FT	.0	297	284	182	92	149	23	248	35	1.1	.0	.0

CAL YR 1987 TOTAL 31546.22 MEAN 86.4 MAX 3510 MIN .00 AC-FT 62570
WTR YR 1988 TOTAL 661.09 MEAN 1.81 MAX 62 MIN .00 AC-FT 1310

e Estimated.

GUADALUPE RIVER BASIN

213

08173000 PLUM CREEK NEAR LULING, TX

LOCATION.--Lat 29°41'58", long 97°36'12", Caldwell County, Hydrologic Unit 12100203, near left bank at downstream side of pier of bridge on county road, 1.2 mi upstream from West Fork, 1.9 mi upstream from Southern Pacific Railroad Co. bridge, 2.2 mi upstream from McNeil Creek, 2.9 mi northeast of Luling, and at mile 7.5.

DRAINAGE AREA.--309 mi².

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

Water-quality records.--Chemical analysis: February 1944, April 1961 to September 1986. Sediment analysis: November 1965 to June 1966. Specific conductance: October 1967 to September 1986. Water temperatures: October 1967 to September 1986.

REVISED RECORDS.--WSP 1923: 1933. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 321.57 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 18, 1976, at datum 5.0 ft higher.

REMARKS.--No estimated daily discharges. Records good. Low flow is slightly regulated by oil field operations above station. At end of year, flow from 119 mi above this station was partly controlled by 27 floodwater-retarding structures with a combined detention capacity of 41,840 acre-ft. No other known diversion above station.

AVERAGE DISCHARGE.--58 years, 105 ft³/s (76,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,500 ft³/s July 1, 1936 (gage height, 30.7 ft, from floodmarks), present datum, from rating curve extended above 37,500 ft³/s; no flow at times.
Maximum stage since at least 1868, that of July 1, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1913 reached about same stage as that of July 1, 1936, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0800	*860	*11.10				

Minimum daily discharge, 0.43 ft³/s Aug. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	8.7	21	16	14	14	14	16	27	7.2	3.5	2.5
2	7.4	8.8	17	15	13	14	14	9.3	21	5.2	4.6	2.5
3	7.3	8.5	16	15	13	14	13	7.8	15	3.5	3.6	2.5
4	7.0	8.6	15	15	13	13	13	7.6	18	6.1	4.8	2.3
5	7.2	8.1	14	15	13	13	13	7.9	13	4.4	3.5	1.9
6	7.3	7.6	14	15	17	13	12	7.1	10	3.9	3.9	2.0
7	7.0	7.3	15	17	15	13	11	6.8	8.9	4.8	3.0	1.8
8	6.8	7.6	15	18	14	13	10	7.0	7.7	8.7	3.2	2.1
9	6.7	19	14	18	14	13	10	6.9	7.0	5.7	2.7	2.0
10	7.0	13	13	18	14	13	12	6.1	5.9	5.7	1.6	1.8
11	8.0	7.6	11	18	14	13	15	5.9	5.3	4.9	.43	1.8
12	7.5	6.9	13	18	13	12	12	7.9	5.5	4.4	.96	2.1
13	7.5	7.0	13	17	13	12	10	8.9	5.2	14	1.6	2.2
14	8.1	6.9	14	16	14	12	9.8	6.4	5.2	8.7	1.3	2.2
15	8.1	7.5	13	16	14	11	9.8	5.7	4.8	4.9	1.4	2.2
16	7.8	8.8	12	16	14	11	10	5.2	4.3	4.9	1.8	2.2
17	7.9	16	11	16	13	91	10	4.9	4.3	3.9	1.6	2.9
18	8.3	13	13	16	36	317	10	4.5	4.3	3.9	1.8	2.8
19	8.4	11	31	16	30	90	12	4.2	3.9	3.4	2.7	1.9
20	8.0	11	68	16	21	45	9.6	3.9	3.9	3.2	2.5	.77
21	7.9	11	66	15	19	31	8.7	15	3.9	4.0	2.2	1.2
22	8.3	12	46	15	17	24	8.3	113	2.7	8.5	2.2	1.9
23	11	12	32	14	15	21	8.0	60	3.3	6.5	2.2	2.0
24	17	13	26	14	14	20	7.3	40	3.3	4.6	2.0	1.8
25	13	16	23	14	14	19	6.5	23	3.3	4.2	2.0	1.8
26	11	118	22	18	13	17	6.1	14	13	3.1	7.5	1.7
27	9.9	79	20	19	13	16	5.7	9.5	16	3.0	3.2	1.2
28	9.1	66	18	21	14	15	5.4	7.1	13	2.4	1.9	1.2
29	8.6	45	17	20	14	13	5.6	6.1	12	2.5	1.6	1.2
30	8.4	28	15	17	---	13	22	412	9.2	2.9	1.6	.95
31	8.6	---	16	14	---	14	---	69	---	3.9	1.7	---
TOTAL	263.5	592.9	656	508	455	950	313.8	908.7	259.9	157.0	78.59	57.42
MEAN	8.50	19.8	21.2	16.4	15.7	30.6	10.5	29.3	8.66	5.06	2.54	1.91
MAX	17	118	68	21	36	317	22	412	27	14	7.5	2.9
MIN	6.7	6.9	11	14	13	11	5.4	3.9	2.7	2.4	.43	.77
AC-FT	523	1180	1300	1010	902	1880	622	1800	516	311	156	114
CAL YR 1987	TOTAL 101184.4	MEAN 277	MAX 19200	MIN 6.6	AC-FT 200700							
WTR YR 1988	TOTAL 5200.81	MEAN 14.2	MAX 412	MIN .43	AC-FT 10320							

GUADALUPE RIVER BASIN

08175000 SANDIES CREEK NEAR WESTHOFF, TX

LOCATION.--Lat 29°12'54", long 97°26'57", De Witt County, Hydrologic Unit 12100202, on left bank 100 ft downstream from bridge on county highway, 1.9 mi upstream from Birds Creek, 2.0 mi northeast of Westhoff, and 20.4 mi upstream from mouth.

DRAINAGE AREA.--549 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to November 1934, August 1959 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 178.27 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 9, 1934, water-stage recorder at site 150 ft upstream at datum 0.86 ft higher. Aug. 10, 1959, to Feb. 2, 1960, nonrecording gage at present site and datum.

REMARKS.--Records good. No known diversion above station.

AVERAGE DISCHARGE.--33 years (water years 1931-34, 1960-88), 126 ft³/s (3.12 in/yr), 91,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,700 ft³/s Sept. 22, 1967 (gage height, 32.34 ft), from rating curve extended above 21,000 ft³/s on basis of slope-area measurement of 92,700 ft³/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1864, 92,700 ft³/s July 2, 1936 (gage height, 33.1 ft, from floodmarks), on basis of computation of peak flow, at present site and datum.
Flood in October 1913 reached a stage of 26.0 ft, present site and datum, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 19	2200	*238	*5.91				

Minimum daily discharge, 0.74 ft³/s Sept. 9-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	4.2	11	12	9.6	8.9	10	6.5	4.9	2.0	1.4	.93
2	7.2	4.2	10	11	9.7	9.1	10	6.4	4.9	2.2	1.3	.93
3	6.2	4.1	9.2	11	9.7	9.7	10	6.4	7.6	2.3	1.3	.87
4	5.2	4.1	8.9	11	9.9	9.4	10	6.6	7.6	2.3	1.2	.86
5	4.7	4.8	8.9	10	9.9	9.1	10	6.7	12	2.0	1.1	.86
6	4.5	4.7	8.9	10	9.8	9.1	10	6.7	21	2.3	1.0	.80
7	4.1	4.6	8.8	11	9.7	9.1	9.6	6.7	13	2.4	1.1	.80
8	4.0	5.0	8.8	11	9.7	9.0	9.1	6.5	9.0	2.2	1.2	.77
9	4.1	6.7	9.1	12	9.7	8.6	9.1	6.1	7.0	2.2	1.2	.74
10	4.1	7.1	8.8	12	9.7	8.2	9.3	5.7	5.8	2.2	1.2	.74
11	3.9	7.3	8.4	12	9.7	7.8	9.3	5.6	4.9	2.0	1.2	.74
12	3.7	7.4	8.5	12	9.5	7.9	9.3	5.8	4.3	2.1	1.2	.77
13	3.6	6.8	8.6	12	9.3	7.3	9.1	6.2	3.8	2.1	1.2	.89
14	3.5	6.4	8.3	11	9.3	6.8	8.9	6.2	3.4	1.8	1.2	.85
15	3.6	6.4	8.3	11	9.2	6.5	8.8	5.9	3.1	1.7	1.2	.80
16	3.8	32	7.9	11	9.1	6.4	8.9	6.0	2.9	1.7	1.2	.81
17	3.8	12	7.8	11	9.1	9.6	10	5.7	2.7	1.6	e1.2	1.4
18	3.6	9.8	7.6	12	9.3	12	10	5.3	2.7	1.5	e1.1	1.6
19	3.7	8.9	9.4	12	9.5	112	9.7	5.0	2.7	1.5	e1.1	1.7
20	3.5	8.2	15	11	9.5	130	9.7	5.0	2.6	2.1	1.1	1.5
21	3.2	7.8	131	11	9.3	41	9.9	12	2.5	3.9	1.0	1.5
22	3.0	7.6	198	11	9.3	23	10	14	2.4	2.2	.94	1.5
23	3.0	7.6	137	11	9.3	18	9.7	16	2.4	1.6	.87	1.5
24	3.2	7.8	73	10	9.3	15	9.3	13	2.4	1.5	e.90	1.5
25	4.1	8.3	37	10	9.1	14	8.7	11	2.4	1.4	e.95	1.3
26	5.4	8.3	23	9.7	9.1	13	7.7	8.9	2.4	1.4	1.1	1.2
27	4.8	8.1	18	9.7	9.1	12	7.2	7.4	2.2	1.5	1.1	1.2
28	4.4	8.1	15	9.7	8.9	11	6.8	6.8	2.3	1.5	1.1	1.2
29	4.2	9.2	13	9.7	8.9	11	6.7	6.1	2.2	1.5	1.0	2.1
30	4.2	11	13	9.5	---	11	6.6	5.5	1.9	1.5	.99	.90
31	4.2	---	13	9.5	---	10	---	5.0	---	1.4	.93	---
TOTAL	133.0	238.5	853.2	336.8	273.2	575.5	273.4	226.7	149.0	59.6	34.58	33.26
MEAN	4.29	7.95	27.5	10.9	9.42	18.6	9.11	7.31	4.97	1.92	1.12	1.11
MAX	8.5	32	198	12	9.9	130	10	16	21	3.9	1.4	2.1
MIN	3.0	4.1	7.6	9.5	8.9	6.4	6.6	5.0	1.9	1.4	.87	.74
AC-FT	264	473	1690	668	542	1140	542	450	296	118	69	66
CFSM	.01	.01	.05	.02	.02	.03	.02	.01	.01	.00	.00	.00
IN.	.01	.02	.06	.02	.02	.04	.02	.02	.01	.00	.00	.00

CAL YR 1987 TOTAL 108557.8 MEAN 297 MAX 14200 MIN 3.0 AC-FT 215300 CFSM .54 IN. 7.36
WTR YR 1988 TOTAL 3186.74 MEAN 8.71 MAX 198 MIN .74 AC-FT 6320 CFSM .02 IN. .22

e Estimated.

GUADALUPE RIVER BASIN

215

08175000 SANDIES CREEK NEAR WESTHOFF, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to current year. Sediment analyses: November 1965 to May 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	
DATE	TIME								
OCT 15...	1050	1370	19.5	150	0	44	9.3	270	
DEC 16...	1045	1210	10.0	150	0	44	9.1	210	
MAR 02...	1220	1350	19.0	180	0	53	11	220	
APR 14...	1115	1350	17.0	180	0	52	12	230	
JUN 28...	0905	1550	26.0	98	0	29	6.1	280	
AUG 11...	1120	2560	27.5	110	0	32	6.4	560	
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 15...	10	9.6	354	59	220	0.70	14	839	
DEC 16...	8	10	305	62	180	0.60	19	718	
MAR 02...	7	10	294	88	210	0.60	12	781	
APR 14...	8	9.8	308	87	200	0.60	16	792	
JUN 28...	13	9.8	310	39	270	0.30	18	838	
AUG 11...	25	10	575	34	520	1.5	19	1530	

GUADALUPE RIVER MAIN STEM

08175800 GUADALUPE RIVER AT CUERO, TX

LOCATION.--Lat 29°03'57", long 97°19'16", De Witt County, Hydrologic Unit 12100204, on left bank at downstream side of bridge on U.S. Highways 77A, 87, and 183, 2.1 mi upstream from Gohlke Creek, 2.4 mi southwest of Cuero, 4.2 mi downstream from Sandies Creek, and at mile 100.6.

DRAINAGE AREA.--4,934 mi², of which 1,432 mi² is above Canyon Dam.

PERIOD OF RECORD.--December 1902 to December 1906, August 1916 to December 1935, and January 1964 to current year. Published as "near Cuero" 1902-6, and as "below Cuero" 1916-35. Gage-height records collected at site 7.1 mi upstream from Sandies Creek from 1941 to 1966 (published in reports of the National Weather Service) and at present site since June 12, 1968.

Water-quality records.--Chemical analyses: March 1968 to September 1985.

REVISED RECORDS.--WRD TX-68-1, TX-69-1: Drainage areas at all sites.

GAGE.--Water-stage recorder. Datum of gage is 128.64 ft above National Geodetic Vertical Datum of 1929. From Dec. 26, 1902, to June 1903, nonrecording gage at site 7.1 mi upstream at different datum, gage heights moved to site 3.3 mi upstream from present site before computation; from July 1903 to December 1906 nonrecording gage 3.3 mi upstream at different datum; and Aug. 19, 1916, to Dec. 16, 1935, water-stage recorder at site 5.0 mi downstream at datum 3.19 ft lower.

REMARKS.--Records good. Since July 21, 1962, flow regulated by Canyon Lake (station 08167700) 202.4 mi upstream. Flow below New Braunfels is partly regulated by a series of small power dams, combined capacity of six largest dams 33,550 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 53 floodwater-retarding structures with a combined detention capacity of 87,200 acre-ft. These structures control runoff from 302 mi² in the Comal, San Marcos, and Plum Creek drainage basins. Many small diversions above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--20 years (water years 1904-6, 1917-18, 1921-35) prior to regulation by Canyon Lake, 1,303 ft³/s (944,000 acre-ft/yr); 24 years (water years 1965-88) regulated, 2,041 ft³/s (1,479,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132,000 ft³/s Sept. 1, 1981 (gage height, 41.83 ft); minimum daily, 28 ft³/s July 22, 1984.

Floods at this station since at least 1900 occurred Mar. 1, 1903, 43.0 ft, at different site and datum; Oct. 20, 1919, 32.2 ft, site and datum then in use; May 30, 1929, 35.2 ft, site and datum then in use; all from information by local residents.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, probably occurred July 2, 1936, 44.33 ft, present site and datum, from information by State Department of Highways and Public Transportation. Other floods at this station occurred Oct. 4, 1913, 37.57 ft, at different site and datum; Dec. 6, 1913, 34.57 ft, at different site and datum; June 21, 1961, 37.0 ft, present site and datum; all from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,920 ft³/s Nov. 28 at 0300 hours (gage height, 10.39 ft); minimum daily, 451 ft³/s Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2720	1250	1160	1060	869	839	828	808	2130	733	1210	742
2	2830	1160	1140	1020	871	885	803	863	1810	698	1200	722
3	2850	1270	1190	980	863	849	739	834	1440	694	1220	687
4	2720	1110	962	982	878	868	794	767	1280	651	1280	647
5	2190	1100	e980	975	879	849	765	777	1270	763	1250	665
6	1700	1050	e1000	971	823	849	765	821	1260	753	1180	661
7	1420	e1080	e980	984	849	872	754	741	1280	926	1300	622
8	1260	e1190	930	977	866	833	811	753	1250	901	1280	630
9	1260	e1170	925	973	869	815	745	753	1100	798	1180	639
10	1270	1190	944	958	871	867	744	755	1060	743	1200	551
11	1200	1210	906	920	822	837	746	750	1070	717	1020	549
12	1280	1130	897	977	827	854	723	806	946	687	1200	557
13	1200	1100	883	972	839	793	765	762	957	741	1120	544
14	1170	1110	892	943	849	783	719	832	1000	764	1380	505
15	1160	1140	915	931	848	775	775	826	1070	721	1240	562
16	1140	1540	900	957	846	826	663	753	876	920	1250	562
17	1120	1590	852	934	851	763	825	742	955	1200	877	551
18	1020	1230	872	936	836	872	752	696	797	1260	1130	556
19	1290	1180	920	913	836	1680	749	741	622	1210	1120	595
20	1490	1060	959	932	1010	2900	752	712	765	1300	1020	654
21	1350	1020	2150	897	1080	2190	716	728	732	1200	1230	602
22	1470	e960	2560	874	921	1090	712	737	712	1210	990	536
23	1620	900	1670	884	912	986	659	872	712	1280	967	501
24	1610	871	1410	885	814	895	715	899	706	1300	850	451
25	1650	748	1180	883	777	873	677	852	724	1140	977	557
26	1700	787	1060	864	813	855	694	835	737	1170	957	595
27	1810	2140	1060	855	853	843	659	738	737	1210	919	545
28	1760	3370	1050	837	808	813	688	755	765	1200	770	558
29	1760	1820	1020	873	861	808	697	704	816	1170	741	590
30	1750	1420	1020	860	---	815	718	841	805	1150	734	657
31	1670	---	989	846	---	794	---	1050	---	1150	749	---
TOTAL	50440	37896	34376	28853	25041	30571	22152	24503	30384	30360	33541	17793
MEAN	1627	1263	1109	931	863	986	738	790	1013	979	1082	593
MAX	2850	3370	2560	1060	1080	2900	828	1050	2130	1300	1380	742
MIN	1020	748	852	837	777	763	659	696	622	651	734	451
AC-FT	100000	75170	68180	57230	49670	60640	43940	48600	60270	60220	66530	35290

CAL YR 1987 TOTAL 1633822 MEAN 4476 MAX 90300 MIN 748 AC-FT 3241000
WTR YR 1988 TOTAL 365910 MEAN 1000 MAX 3370 MIN 451 AC-FT 725800

e Estimated.

217

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2380	1560	1430	997	866	939	886	780	1260	741	1210	739
2	2680	1280	1250	1040	869	886	902	833	2300	668	1210	744
3	2730	1290	1240	1010	879	942	844	919	1720	671	1200	705
4	2760	1290	1260	984	885	862	814	869	1380	653	1210	673
5	2550	1190	1010	989	908	943	857	800	1280	607	1270	623
6	2040	1190	1060	991	902	865	838	812	1260	723	1210	657
7	1750	1150	1080	989	842	881	805	857	1250	746	1190	654
8	1520	1180	1070	994	882	902	847	753	1260	887	1290	624
9	1400	1270	1030	991	889	831	868	787	1210	841	1260	612
10	1410	1210	1050	978	893	865	809	783	1060	732	1160	631
11	1380	1260	1060	961	882	867	824	789	1040	666	1140	544
12	1360	1210	978	960	838	880	787	785	1020	635	1040	539
13	1370	1190	952	983	835	845	797	842	891	626	1160	553
14	1310	1150	979	976	864	829	805	780	949	677	1140	544
15	1280	1170	969	951	864	784	794	877	986	725	1350	490
16	1270	1290	985	954	860	849	821	852	1030	653	1190	582
17	1260	1730	972	969	858	857	764	780	848	994	1160	617
18	1220	1400	926	945	873	831	884	729	938	1150	922	589
19	1180	1260	975	956	841	976	793	719	743	1230	1120	563
20	1440	1210	1000	943	859	2340	810	765	616	1220	1040	599
21	1470	1120	1340	959	1080	3020	790	743	751	1300	1090	662
22	1430	1040	2860	928	1000	1850	757	735	708	1190	1140	603
23	1570	957	2330	912	915	1130	747	767	681	1190	959	534
24	1650	997	1710	920	901	1060	714	899	696	1260	939	505
25	1630	1980	1420	913	868	998	738	911	683	1220	859	444
26	1660	1080	1210	912	831	972	708	881	673	1170	944	553
27	1750	1080	1120	909	901	947	717	835	707	1190	1000	609
28	1760	3070	1100	902	903	924	684	767	677	1180	854	550
29	1750	2820	1070	882	857	878	737	756	731	1160	764	590
30	1750	1760	1050	890	---	905	751	739	789	1190	767	780
31	1740	---	1010	881	---	910	---	885	---	1170	715	---
TOTAL	52450	41384	37496	29569	25645	32568	23892	25029	30137	29065	33503	18112
MEAN	1692	1379	1210	954	884	1051	796	807	1005	938	1081	604
MAX	2760	3070	2860	1040	1080	3020	902	919	2300	1300	1350	780
MIN	1180	957	926	881	831	784	684	719	616	607	715	444
AC-FT	104000	82090	74370	58650	50870	64600	47390	49650	59780	57650	66450	35930
CAL YR 1987	TOTAL 1765510											
WTR YR 1988	TOTAL 378850											
MEAN 4837	MEAN 1035											
MAX 80700	MAX 3070											
MIN 926	MIN 444											
AC-FT 3502000	AC-FT 751400											

GUADALUPE RIVER MAIN STEM

08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1945 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: February 1974 to August 1981. Sediment analyses: April 1959, August 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1945 to September 1981.

WATER TEMPERATURE: November 1950 to September 1981.

INSTRUMENTATION.--From March to May 1973, specific conductance and water temperature were continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,950 microsiemens on several days during January 1946; minimum daily, 135 microsiemens Sept. 3, 1981.

WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 4, 27, 1952; minimum daily, 2.0°C Jan. 11, 12, 1962, Jan. 24, 1963.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 14...	1705	1320	561	8.30	22.5	9.7	8.6	98	0.7	K44	K32	260
MAR 01...	1530	871	620	8.30	21.0	12	9.9	111	2.5	K60	84	250
JUN 29...	1700	794	554	8.10	31.0	15	8.1	109	1.3	66	K34	210
AUG 10...	1550	1140	496	8.20	32.0	3.0	6.7	92	1.4	81	--	220
DATE	HARD- NESS NONCARB WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT 14...	33	76	18	22	0.6	2.2	232	27	30	0.30	12	325
MAR 01...	33	69	18	30	0.9	2.6	214	36	44	0.30	6.2	346
JUN 29...	25	56	17	23	0.7	2.0	186	28	31	0.50	9.5	278
AUG 10...	30	60	18	19	0.6	1.9	195	27	23	0.20	13	259
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
OCT 14...	328	--	--	--	<0.010	--	--	0.30	0.050	0.020	--	--
MAR 01...	340	0.980	0.020	1.00	0.020	0.030	0.28	0.30	0.070	0.020	0.030	0.09
JUN 29...	281	--	<0.010	0.390	0.030	<0.010	0.47	0.50	0.060	0.030	0.020	0.06
AUG 10...	283	--	<0.010	0.760	0.020	0.020	0.38	0.40	0.090	0.050	0.060	0.18
DATE	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 14...	55	196	83	<10	2	67	<0.5	<1	<1	<3	2	5
MAR 01...	75	176	61	<10	7	72	<0.5	1	<1	<3	1	6
JUN 29...	72	154	90	<10	2	71	<0.5	1	<1	<3	1	15
AUG 10...	153	471	90	<10	2	70	<0.5	<1	<1	<3	2	<3
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 14...	<5	11	1	0.1	<10	<1	<1	<1.0	530	<6	5	
MAR 01...	<5	18	3	<0.1	<10	5	1	<1.0	590	<6	<3	
JUN 29...	<5	15	4	0.1	<10	<1	<1	<1.0	470	<6	16	
AUG 10...	<5	12	2	<0.1	<10	2	<1	<1.0	500	<6	9	

GUADALUPE RIVER BASIN

219

08176550 FIFTEENMILE CREEK NEAR WESER, TX

LOCATION.--Lat 28°53'51", long 97°21'17", De Witt County, Hydrologic Unit 12100204, at DeWitt-Goliad County line, on left downstream end of bridge on U.S. Highway 183, and 2.4 mi northeast of Weser.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 158.40 ft (revised) above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversions above station. Guadalupe-Blanco River Authority gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,380 ft³/s June 11, 1987 (gage height, 15.07 ft), from rating curve extended above 530 ft³/s; minimum daily, 0.28 ft³/s Sept. 6-9, 1988.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 16	2200	*673	*9.01				

Minimum daily discharge, 0.28 ft³/s Sept. 6-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	2.8	7.3	9.2	7.7	6.9	6.4	5.1	3.3	1.4	.82	.42
2	3.4	2.8	7.1	9.1	7.7	7.3	6.4	4.8	3.2	1.4	.81	.42
3	3.4	2.8	7.1	8.9	7.7	7.5	6.3	4.7	3.7	1.3	.81	.42
4	3.3	2.8	7.1	8.7	7.7	7.4	6.2	4.4	5.7	1.3	.76	.42
5	3.0	2.8	7.1	8.7	7.6	7.2	6.1	4.3	5.7	1.4	.72	.38
6	2.9	2.8	7.1	8.6	7.5	7.1	6.0	4.2	4.2	1.5	.68	.28
7	2.9	2.8	7.0	8.6	7.5	7.1	5.8	4.1	3.6	1.3	.64	.28
8	2.8	3.0	7.0	8.6	7.5	7.1	5.9	4.1	3.3	1.2	.60	.28
9	2.8	3.9	6.9	8.6	7.5	6.9	6.1	4.1	3.1	1.1	.57	.28
10	2.7	4.3	6.8	8.4	7.5	6.8	6.2	4.0	2.9	1.1	.53	.29
11	2.7	3.8	6.8	8.4	7.5	6.8	6.1	4.0	2.8	1.0	.49	.30
12	2.6	3.4	6.8	8.4	7.2	6.8	5.9	4.1	2.6	.97	.47	.30
13	2.6	3.4	6.8	8.4	7.2	6.7	5.7	4.0	2.5	.90	.45	.30
14	2.6	3.4	6.8	8.4	7.2	6.7	5.7	3.9	2.4	.86	.42	.30
15	2.6	3.6	6.8	8.4	7.2	6.7	5.7	3.9	2.4	.84	.41	.30
16	2.6	164	6.7	8.3	7.2	6.6	6.1	3.7	2.3	.88	.41	.39
17	2.6	196	6.7	8.3	7.2	7.1	6.7	3.7	2.2	.83	.40	.60
18	2.6	31	6.7	8.4	7.2	7.6	7.0	3.6	2.1	.78	.53	.54
19	2.7	15	7.0	8.4	7.2	7.6	6.1	3.5	2.1	.74	.67	.49
20	2.7	12	7.6	8.1	7.2	7.6	5.7	3.5	2.1	.86	.63	.49
21	2.6	10	20	7.8	7.1	7.1	5.4	4.3	2.1	5.0	.56	.50
22	2.6	9.1	115	7.8	7.1	6.8	5.3	6.1	2.0	3.1	.50	.49
23	3.1	8.6	34	7.8	6.9	6.8	5.3	5.5	1.9	2.2	.47	.49
24	3.5	8.3	19	7.8	6.8	6.8	5.2	4.2	1.9	1.7	.48	.47
25	3.4	8.1	14	7.8	6.8	6.8	5.1	3.8	1.9	1.3	.45	.47
26	3.4	7.7	12	7.5	6.8	6.8	4.8	3.6	2.2	1.0	.42	.47
27	3.2	7.7	11	7.5	6.8	6.8	4.6	3.3	2.1	.84	.42	.47
28	3.0	7.6	10	7.5	6.8	6.6	4.4	3.3	1.9	.79	.39	.47
29	2.9	7.4	10	7.6	6.8	6.4	4.6	3.1	1.6	.81	.35	.46
30	2.8	7.4	9.6	7.7	---	6.4	5.2	3.4	1.5	.80	.40	.62
31	2.8	---	9.5	7.7	---	6.3	---	3.3	---	.82	.42	---
TOTAL	90.9	548.3	403.3	255.4	210.1	215.1	172.0	125.6	81.3	40.02	16.68	12.39
MEAN	2.93	18.3	13.0	8.24	7.24	6.94	5.73	4.05	2.71	1.29	.54	.41
MAX	4.1	196	115	9.2	7.7	7.6	7.0	6.1	5.7	5.0	.82	.62
MIN	2.6	2.8	6.7	7.5	6.8	6.3	4.4	3.1	1.5	.74	.35	.28
AC-FT	180	1090	800	507	417	427	341	249	161	79	33	25

CAL YR 1987 TOTAL 18143.2 MEAN 49.7 MAX 3660 MIN 2.6 AC-FT 35990
WTR YR 1988 TOTAL 2171.09 MEAN 5.93 MAX 196 MIN .28 AC-FT 4310

08176900 COLETO CREEK AT ARNOLD ROAD CROSSING NEAR SCHROEDER, TX

LOCATION.--Lat 28°51'41", long 97°13'34", Goliad County, Hydrologic Unit 12100204, on right bank at downstream side of Arnold Road Crossing, 0.7 mi downstream from confluence of Twelvemile and Fifteenmile Creeks, 3.2 mi north of Schroeder, 12.8 mi upstream from Coleta Creek Reservoir, and 26.0 mi upstream from mouth.

DRAINAGE AREA.--357 mi².

PERIOD OF RECORD.--October 1978 to current year. Records equivalent for January 1930 to December 1933 and October 1952 to September 1979, published as "near Schroeder".

GAGE.--Water-stage recorder. Datum of gage is 100.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversion above station. Wireless telemeter at station.

AVERAGE DISCHARGE.--10 years, 75.9 ft³/s (54,990 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft³/s Aug. 31, 1981 (gage height, 17.78 ft); minimum daily, 0.02 ft³/s Sept. 26-30, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharges since at least 1872 at site 3.5 mi downstream, 122,000 ft³/s Sept. 21, 1967 (slope-area measurement of peak flow), 63,700 ft³/s Oct. 16, 1946, and 46,700 ft³/s in October 1925, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 17	1300	*427	*6.91				
Minimum daily discharge, 0.02 ft ³ /s Sept. 26-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	6.6	13	14	12	13	11	8.6	5.1	2.4	1.4	.30
2	5.7	6.6	12	14	12	13	11	7.8	4.9	2.3	1.2	.23
3	5.6	6.6	12	14	12	14	11	7.4	5.8	2.1	.95	.20
4	5.3	e6.6	12	13	12	13	10	6.9	5.9	2.0	.92	.17
5	5.3	e6.6	12	13	12	12	10	6.2	6.1	2.0	.90	.13
6	5.3	6.6	12	13	12	12	10	6.0	6.4	2.3	.74	.11
7	5.0	6.6	12	13	12	11	9.9	6.0	5.6	2.6	.55	.10
8	5.1	7.1	11	13	13	11	10	6.0	5.0	2.5	.42	.10
9	5.3	9.4	11	13	13	11	11	6.0	4.7	2.2	.32	.09
10	5.4	8.9	11	13	13	11	10	6.0	4.4	2.1	.31	.08
11	5.4	8.7	11	12	14	11	10	6.0	4.2	1.8	.29	.07
12	5.6	8.5	11	12	13	11	9.9	6.5	4.0	1.7	.27	.07
13	5.6	8.5	11	12	13	10	9.7	6.2	3.7	1.5	.25	.06
14	5.7	8.3	11	12	14	10	9.5	5.7	3.7	1.4	.24	.06
15	5.7	8.2	11	12	14	10	9.2	5.4	3.5	1.3	.23	.05
16	5.8	9.6	11	12	14	10	9.5	5.4	3.5	1.2	.22	.06
17	5.9	223	11	12	15	11	11	5.3	3.4	1.1	.23	.07
18	5.9	95	11	12	15	13	11	5.1	3.3	.99	.25	.06
19	6.0	38	11	12	15	13	10	5.1	3.1	.94	.23	.05
20	6.1	25	11	12	15	12	9.1	5.1	3.1	.91	.22	.04
21	6.2	20	16	12	15	12	8.5	6.7	3.4	.90	.21	.04
22	6.2	18	59	12	16	11	8.3	6.9	3.2	1.4	.19	.04
23	7.2	16	81	12	16	11	8.2	6.6	3.2	2.4	.18	.03
24	8.3	15	36	12	16	11	7.8	6.6	3.8	1.8	.17	.03
25	7.7	17	25	12	16	11	7.4	5.8	3.5	1.5	.16	.03
26	7.5	15	21	12	16	11	7.1	5.3	2.9	1.2	.14	.02
27	7.1	15	19	12	16	11	6.7	5.3	2.8	.98	.13	.02
28	6.8	15	17	12	16	11	6.5	5.1	2.8	.91	.13	.02
29	6.6	14	16	12	14	10	6.8	4.9	2.7	.89	.15	.02
30	6.6	13	15	12	---	10	8.6	4.9	2.5	.92	.16	.02
31	6.6	---	15	12	---	10	---	5.0	---	1.4	.27	---
TOTAL	188.5	662.4	548	385	406	351	278.7	185.8	120.2	49.64	12.03	2.37
MEAN	6.08	22.1	17.7	12.4	14.0	11.3	9.29	5.99	4.01	1.60	.39	.079
MAX	8.3	223	81	14	16	14	11	8.6	6.4	2.6	1.4	.30
MIN	5.0	6.6	11	12	12	10	6.5	4.9	2.5	.89	.13	.02
AC-FT	374	1310	1090	764	805	696	553	369	238	98	24	4.7

CAL YR 1987 TOTAL 36773.8 MEAN 101 MAX 5070 MIN 5.0 AC-FT 72940
WTR YR 1988 TOTAL 3189.64 MEAN 8.71 MAX 223 MIN .02 AC-FT 6330

e Estimated.

GUADALUPE RIVER BASIN

221

08176990 COLETO CREEK RESERVOIR INFLOW (GUADALUPE DIVERSION) NEAR SCHROEDER, TX

LOCATION.--Lat 28°50'21", long 97°11'20", Victoria County, Hydrologic Unit 12100204, on right bank of small tributary 1,200 ft upstream from Coleto Creek and 2.6 mi northeast of Schroeder.

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 100.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Discharge represents flow diverted by pumping from the Guadalupe River to be used as makeup water for the Central Power and Light Co. generating plant on Coleto Creek Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 36 ft³/s Apr. 2, 11, Sept. 11, 1980; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 32 ft³/s Sept. 8, 9; no flow most of time.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	18	30	30
2	.00	.00	.00	.00	4.8	.00	.00	.00	.00	18	30	29
3	.00	.00	.00	.00	3.7	.00	.00	.00	7.8	16	30	29
4	.00	.00	.00	.00	.32	.00	.00	.00	14	19	30	29
5	.00	.00	.00	.00	.00	.00	.00	.00	14	19	31	29
6	.00	.00	.00	.00	.00	.00	.00	.00	14	18	30	28
7	.00	.00	.00	.00	.00	.00	.00	.00	14	18	30	22
8	.00	.00	.00	.00	.00	.00	.00	.00	14	18	30	32
9	.00	.00	.00	.00	.00	.00	.00	.00	16	18	30	32
10	.00	.00	.00	.00	.00	.00	.00	.00	19	18	30	30
11	.00	.00	.00	.00	.00	.00	.00	.00	19	17	29	31
12	.00	.00	.00	.00	.00	.00	.00	.00	19	16	29	30
13	.00	.00	.00	.00	.00	.00	.00	.00	19	15	29	28
14	.00	.00	.00	.00	.00	.00	.00	.00	19	17	29	28
15	.00	.00	.00	.00	.00	.00	.00	.00	19	14	25	27
16	.00	.00	.00	.00	.00	.00	.00	.00	19	18	29	.23
17	.00	.00	.00	.00	.00	.00	.00	4.4	19	17	26	.15
18	.00	.00	.00	.00	.00	.00	.00	.06	19	16	23	.15
19	.00	.00	.00	.00	.00	.00	.00	.00	19	16	31	16
20	.00	.00	.00	.00	.00	.00	.00	.02	18	16	26	30
21	.00	.00	.00	.00	.00	.00	.00	.00	19	19	31	28
22	.00	.00	.00	.00	.00	.00	.00	.00	18	23	31	28
23	.00	.00	.00	.00	.00	.00	.00	.07	17	30	31	28
24	.00	.00	.00	.00	.00	.00	.00	4.1	18	30	30	27
25	.00	.00	.00	.00	.00	.00	.00	.36	18	29	30	27
26	.00	.00	.00	.00	.00	.00	.00	.00	18	31	30	28
27	.00	.00	.00	.00	.00	.00	.00	.00	17	27	30	27
28	.00	.00	.00	.00	.00	.00	.00	.00	19	26	30	27
29	.00	.00	.00	.00	.00	.00	.00	.00	19	29	30	20
30	.00	.00	.00	.00	---	.00	.00	.00	18	30	30	18
31	.00	---	.00	.00	---	.00	---	.00	---	30	30	---
TOTAL	0.00	0.00	0.00	0.00	8.82	0.00	0.00	9.01	482.80	646	910	738.53
MEAN	.00	.00	.00	.00	.30	.00	.00	.29	16.1	20.8	29.4	24.6
MAX	.00	.00	.00	.00	4.8	.00	.00	4.4	19	31	31	32
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	14	23	.15
AC-FT	.0	.0	.0	.0	17	.0	.0	18	958	1280	1800	1460

CAL YR 1987 TOTAL 142.83 MEAN .39 MAX 18 MIN .00 AC-FT 283
WTR YR 1988 TOTAL 2795.16 MEAN 7.64 MAX 32 MIN .00 AC-FT 5540

08177300 PERDIDO CREEK AT FARM ROAD 622 NEAR FANNIN, TX

LOCATION.--Lat 28°45'05", long 97°19'01", Goliad County, Hydrologic Unit 12100204, at right downstream end of bridge on Farm Road 622, 1.2 mi downstream from Farmer Creek, 3.1 mi upstream from Kilgore Creek, and 6.1 mi northwest of Fannin.

DRAINAGE AREA.--28.0 mi².

PERIOD OF RECORD.--June 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 134.66 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversion above gage. Gage-height telemeter at station.

AVERAGE DISCHARGE.--10 years, 5.70 ft³/s (2.76 in/yr), 4,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,600 ft³/s May 29, 1981 (gage height, 13.80 ft, from floodmark), from rating curve extended above 1,160 ft³/s; maximum gage height, 14.60 ft Oct. 31, 1981; no flow for many days in 1986 and 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 20, 1976, reached a stage of 26.28 ft, and flood of Sept. 15, 16, 1967, reached a stage of 26.08 ft, from information by the State Department of Highways and Public Transportation.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	0500	*9.5	*4.14				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.22	.13	.22	.17	.27	.20	.38	e.43	.43	.01	.01	.00
2	e.22	.15	.20	.18	.28	.43	.24	e.43	.49	.00	.02	.00
3	e.22	.15	.23	.20	.24	.33	.24	e.38	3.0	.00	.00	.00
4	e.21	.16	.24	.20	.28	.24	.28	e.38	.70	.03	.00	.00
5	e.21	.12	.24	.20	.24	.24	.33	e.43	.49	.02	.00	.00
6	e.21	.09	.25	.33	.24	.20	.28	e.38	.43	.03	.00	.00
7	e.21	.10	.20	.28	.20	.24	.20	e.38	.43	.05	.00	.00
8	.20	.98	.19	.24	.24	.24	.28	e.38	.33	.02	.00	.00
9	.16	.77	.20	.23	.24	.20	.63	e.43	.17	.04	.00	.00
10	.15	.20	.20	.20	.28	.20	.38	e.38	.14	.02	.00	.00
11	.12	.15	.20	.20	.20	.24	.33	.53	.14	.01	.00	.00
12	.10	.14	.20	.22	.20	.20	.28	.96	.11	.00	.00	.00
13	.12	.16	.24	.21	.24	.17	.28	.43	.09	.00	.00	.00
14	.15	.19	.22	.20	.28	.17	.33	.28	.09	.00	.00	.00
15	.16	.22	.17	.20	.24	.24	.33	.28	.09	.00	.00	.00
16	.19	1.1	.17	.36	.24	.43	.49	.24	.07	.00	.00	.00
17	.19	.30	.17	.36	.28	.70	.95	.24	.07	.00	.00	.00
18	.14	.18	.22	.32	.28	.38	.78	.17	.14	.00	.00	.00
19	.12	.16	.30	.18	.24	.24	.43	.17	.09	.00	.00	.00
20	.12	.16	.22	.11	.20	.28	.38	.24	.07	.00	.00	.00
21	.11	.17	1.0	.15	.20	.24	.33	.56	.07	.00	.00	.00
22	.18	.19	.37	.17	.24	.28	.33	.49	.06	.00	.00	.00
23	1.3	.21	.28	.17	.20	.28	.38	.20	.06	.00	.00	.00
24	.43	.20	.28	.16	.20	.33	.28	.24	.14	.00	.00	.00
25	.31	2.9	.27	.14	.24	.33	.20	.20	.06	.00	.00	.00
26	.26	.37	.23	.16	.24	.33	.20	.20	.05	.00	.00	.00
27	.19	1.1	.30	.17	.24	.33	.17	.24	.07	.00	.00	.00
28	.19	.40	.24	.19	.24	.33	.20	.17	.11	.00	.00	.00
29	.19	.33	.18	.20	.24	.33	.28	.20	.03	.00	.00	.00
30	.15	.27	.17	.25	---	.28	e.38	.33	.02	.11	.81	.00
31	.14	---	.19	.28	---	.28	---	.33	---	.02	.00	---
TOTAL	6.87	11.75	7.79	6.63	6.95	8.91	10.57	10.70	8.24	0.36	0.84	0.00
MEAN	.22	.39	.25	.21	.24	.29	.35	.35	.27	.012	.027	.00
MAX	1.3	2.9	1.0	.36	.28	.70	.95	.96	3.0	.11	.81	.00
MIN	.10	.09	.10	.11	.20	.17	.17	.17	.02	.00	.00	.00
AC-FT	14	23	15	13	14	18	21	21	16	.7	1.7	.0
CFSM	.01	.01	.01	.01	.01	.01	.01	.01	.01	.00	.00	.00
IN.	.01	.02	.01	.01	.01	.01	.01	.01	.01	.00	.00	.00

CAL YR 1987 TOTAL 2381.10 MEAN 6.52 MAX 467 MIN .09 AC-FT 4720 CFSM .23 IN. 3.16
WTR YR 1988 TOTAL 79.61 MEAN .22 MAX 3.0 MIN .00 AC-FT 158 CFSM .01 IN. .11

e Estimated.

GUADALUPE RIVER BASIN

223

08177360 COLETO CREEK RESERVOIR (CONDENSER NO. 1) NEAR FANNIN, TX

LOCATION.--Lat 28°43'24", long 97°12'16", Goliad County, Hydrologic Unit 12100204, on right bank of discharge canal
4,000 ft below Central Power and Light powerplant, 2.7 mi northeast of Fannin, and 13.3 mi southwest of Victoria.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1980 to current year.

INSTRUMENTATION.--Beginning May 1980, water temperature is recorded continuously at this station.

REMARKS: Prior to Feb. 19, 1982, water temperature recording site was 4,000 ft upstream at Condenser No. 1 cooling
water outlet.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 41.0°C Aug. 10, 11, 1987; minimum, 4.5°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 40.5°C July 3, 25, 26, Aug. 10, 15; minimum, 14.5°C Mar. 19.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

GUADALUPE RIVER BASIN

08177360 COLETO CREEK RESERVOIR (CONDENSER NO. 1) NEAR FANNIN, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	25.5	20.0	23.5	20.0	19.5	19.5	28.0	25.0	27.0	33.5	29.0	32.0
2	25.0	21.0	24.0	19.5	19.5	19.5	29.0	25.0	27.5	33.0	29.5	32.0
3	24.0	21.5	23.5	19.5	17.5	18.5	28.5	24.0	26.0	34.0	30.5	32.5
4	23.0	21.0	22.5	18.0	17.0	17.5	30.5	27.0	29.5	34.5	30.5	33.5
5	22.0	19.0	20.0	19.0	17.0	17.5	31.0	28.5	30.0	35.0	33.0	34.5
6	20.5	19.0	20.0	19.0	17.5	18.0	30.5	28.0	29.5	35.0	32.5	34.0
7	20.5	20.0	20.5	19.0	18.5	18.5	30.5	26.0	28.5	34.5	32.0	33.5
8	20.5	20.0	20.0	19.5	19.0	19.5	30.0	27.5	29.0	34.0	32.5	33.5
9	21.5	18.0	20.5	19.5	17.5	19.0	29.5	25.0	27.5	34.5	32.5	33.5
10	22.0	19.5	21.5	19.5	17.5	19.0	29.0	25.0	26.0	34.5	33.0	34.0
11	22.0	19.5	21.0	19.5	17.5	19.0	28.0	23.0	26.5	34.5	29.5	32.5
12	21.5	20.5	21.0	20.5	19.5	20.0	28.5	23.5	26.5	32.0	29.5	31.0
13	22.0	19.0	20.5	20.5	18.5	19.0	29.0	23.5	27.0	34.5	29.5	32.5
14	22.0	17.5	19.5	18.0	16.5	17.5	30.0	25.5	28.5	34.5	30.5	33.0
15	23.0	18.0	21.0	17.5	17.0	17.0	31.0	25.5	29.0	35.5	30.0	33.0
16	23.5	20.5	22.5	17.0	16.5	16.5	30.0	28.0	29.5	35.0	30.5	33.5
17	24.0	17.5	22.0	17.0	16.0	16.5	30.5	29.5	30.0	35.5	31.0	34.0
18	24.0	19.0	22.5	16.0	15.0	15.5	31.0	30.0	30.5	36.0	32.0	34.5
19	23.5	19.5	22.5	16.0	14.5	15.5	31.0	28.0	30.0	35.5	31.5	34.5
20	24.0	20.5	22.5	17.0	15.0	16.0	32.0	25.5	30.0	35.0	32.0	34.5
21	23.5	20.0	22.0	17.5	15.5	16.5	32.0	27.0	30.5	35.0	32.5	34.0
22	30.5	20.0	26.0	18.0	17.0	17.5	32.5	29.0	31.0	34.5	29.5	32.0
23	31.0	22.5	28.5	19.0	17.5	18.0	33.5	32.0	32.5	35.0	29.0	33.0
24	30.5	23.5	27.5	20.0	17.0	19.0	34.0	32.0	33.0	36.0	32.5	35.0
25	30.5	23.5	28.5	24.5	20.5	23.0	34.5	32.5	33.5	37.0	35.0	36.0
26	27.5	16.5	21.0	28.0	20.0	25.5	35.0	30.0	33.5	37.0	34.5	36.0
27	17.5	16.5	17.0	26.0	24.5	25.5	34.5	30.5	33.0	36.5	28.0	33.0
28	18.0	17.5	17.5	29.5	25.5	27.5	34.5	30.5	33.5	28.0	27.5	27.5
29	19.5	18.0	18.5	29.0	26.0	27.5	34.0	31.5	33.5	33.5	27.5	30.0
30	---	---	---	26.5	23.0	25.5	34.0	29.5	32.5	33.5	32.5	33.0
31	---	---	---	27.0	24.5	26.0	---	---	---	34.0	32.5	33.0
MONTH	31.0	16.5	22.0	29.5	14.5	19.5	35.0	23.0	30.0	37.0	27.5	33.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	35.0	33.0	33.5	39.5	37.5	39.0	39.0	37.5	38.5	39.0	37.5	38.5
2	36.0	33.0	34.0	40.0	38.0	39.5	39.0	37.5	38.5	38.5	37.5	38.0
3	35.5	32.5	33.5	40.5	38.0	39.5	39.0	37.0	38.5	38.0	36.0	37.5
4	35.0	32.0	33.5	40.0	37.5	39.5	39.0	35.5	38.0	37.5	35.0	36.5
5	34.0	32.0	33.5	39.5	37.5	39.0	39.5	35.5	38.0	35.5	27.5	30.0
6	36.0	32.5	34.5	39.5	37.0	39.0	40.0	37.0	38.5	29.0	27.5	28.0
7	37.0	34.5	35.5	39.5	35.0	38.5	40.0	38.5	39.0	37.5	27.5	32.0
8	37.5	34.0	35.0	39.5	35.0	38.0	40.0	36.5	39.0	38.0	32.5	36.0
9	37.0	34.0	35.0	39.0	34.0	37.5	40.0	38.5	39.5	37.5	32.5	36.0
10	36.5	34.0	35.5	39.5	34.0	37.5	40.5	39.0	39.5	37.5	32.0	35.5
11	36.5	35.5	36.0	39.0	36.0	38.0	40.0	38.5	39.5	37.0	32.0	35.0
12	36.0	34.5	35.5	39.0	37.0	38.0	40.0	39.0	39.5	37.5	34.0	36.5
13	36.0	34.5	35.0	39.0	36.0	38.0	40.0	39.0	39.5	38.0	35.5	37.0
14	36.5	34.5	35.5	39.5	36.0	38.5	40.0	38.0	39.5	38.5	35.0	37.5
15	36.0	34.5	35.0	39.5	36.5	38.5	40.5	36.5	39.0	38.0	33.5	36.5
16	37.5	33.5	35.5	39.5	37.5	39.0	40.0	35.5	38.5	33.0	32.0	32.5
17	38.0	34.5	36.0	40.0	37.0	39.0	40.0	39.0	39.5	33.5	32.0	32.5
18	35.5	34.5	35.0	40.0	38.0	39.5	39.5	38.5	39.0	37.0	32.0	34.5
19	36.0	34.5	35.5	39.5	37.5	39.0	38.5	37.5	38.0	37.5	33.0	36.0
20	35.5	35.0	35.5	39.0	38.0	39.0	39.5	36.5	38.5	37.5	34.0	36.0
21	36.0	35.0	35.5	39.0	37.5	38.5	39.5	37.0	38.5	38.0	34.5	36.5
22	36.5	35.0	35.5	39.5	37.0	38.5	39.5	37.5	39.0	37.5	34.0	35.5
23	36.5	34.0	36.0	40.0	35.5	38.5	39.5	37.0	39.0	37.5	34.0	35.5
24	37.0	30.5	35.0	40.0	36.5	39.0	39.5	37.0	39.0	38.5	34.5	36.0
25	37.0	35.5	36.0	40.5	38.5	40.0	40.0	38.5	39.5	38.5	37.5	38.0
26	37.0	36.0	36.5	40.5	37.0	39.5	40.0	37.5	39.5	38.5	37.5	38.0
27	37.0	36.0	36.5	40.0	36.5	39.0	40.0	39.5	40.0	38.5	37.0	38.0
28	39.5	36.5	37.5	39.5	35.0	38.0	40.0	39.0	39.5	38.5	37.5	38.0
29	39.5	36.5	38.5	39.0	37.5	38.5	40.0	39.0	39.5	38.0	37.0	37.5
30	40.0	36.0	38.0	39.0	37.5	38.0	40.0	39.0	39.5	37.5	36.5	37.0
31	---	---	---	39.5	37.5	38.5	39.5	38.0	39.0	---	---	---
MONTH	40.0	30.5	35.5	40.5	34.0	38.5	40.5	35.5	39.0	39.0	27.5	35.5

08177400 COLETO CREEK RESERVOIR NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°09'53", Victoria County, Hydrologic Unit 12100204, on right bank 175 ft upstream from right end of spillway of dam on Coleta Creek, 1.6 mi upstream from U.S. Highway 59, 11.6 mi west of Victoria, and 12.8 mi upstream from mouth.

DRAINAGE AREA.--494 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 80.00 ft above National Geodetic Vertical Datum of 1929.

Supplementary gage (Turkey Creek Arm).--Water-stage recorder 2.7 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coleta Creek Reservoir (Turkey Creek Arm) near Schroeder (station 08177240) is locally known as Dike No. 2.

Supplementary gage (Sulphur Creek Arm).--Water-stage recorder 2.8 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coleta Creek Reservoir (Sulphur Creek Arm) near Fannin (station 08177380) is known locally as Dike No. 1.

REMARKS.--The reservoir system consists of the main reservoir (station 08177400), Turkey Creek Arm (station 08177240), and Sulphur Creek Arm (station 08177380). Figures shown below are the total contents for each of the three stations. Cooling water is diverted from the main reservoir through a Central Power and Light coal-fired generating plant, through a canal to the Sulphur Creek Arm, and then through a canal to Turkey Creek Arm where it is released back into the main reservoir. The system was built for the Guadalupe-Blanco River Authority, and storage began in February 1980.

The main reservoir is formed by a compacted earthfill dam 20,800 ft long, including a 2,000-foot uncontrolled spillway and a 403-foot wide concrete outlet structure with seven 40- x 28-foot spillway gates. Low-flow releases are made through the dam by a controlled 8-inch pipe. Turkey Creek Arm is formed by a compacted earthfill dam 2,250 ft long, including a 186-foot wide concrete outlet structure with two 40- x 11-foot spillway gates. Sulphur Creek Arm is formed by a compacted earthfill dam 1,030 ft long, including a 186-foot wide concrete outlet structure with two 40- by 11-foot spillway gates. Data regarding the dams and reservoirs are given in the following table:

Coleta Creek Reservoir			Turkey Creek Arm		Sulphur Creek Arm	
Gage height	Contents		Gage height	Contents	Gage height	Contents
(feet)	(acre-feet)		(feet)	(acre-feet)	(feet)	(acre-feet)
Top of dam.....	39.0	140,200	17.0	7,330	17.0	2,550
Spillway.....	27.3	63,560	--	--	--	--
Top of spillway gates...	19.0	34,000	12.9	4,950	12.9	1,640
Crest of spillway.....	-9.0	954	1.89	1,400	1.91	306

COOPERATION.--Elevations and capacity tables were provided by Forrest and Cotton Engineers, Consulting Engineers for the Guadalupe-Blanco River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 40,330 acre-ft Feb. 25, 1982; no appreciable storage prior to Feb. 28, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 40,250 acre-ft Dec. 27; minimum, 30,070 acre-ft Sept. 28.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35780	34120	36130	40120	39610	35170	35340	34290	32880	32360	31260	30550
2	35720	34120	36100	40150	35900	35290	35280	34260	32820	32300	31260	30580
3	35590	34050	35820	40080	35940	35260	35250	34260	32980	32270	31260	30550
4	35480	34050	35780	40080	35900	35590	35270	34150	32910	32190	31290	30500
5	35490	33960	35780	40060	35840	35580	35240	34050	32890	32210	31260	30420
6	35390	33850	35820	40120	35800	35560	35120	34020	32870	32160	31230	30390
7	35330	33800	35780	40080	35800	35210	35080	33990	32840	32140	31220	30380
8	35210	34040	35780	40010	35840	35230	35130	33970	32840	32080	31170	30350
9	35160	33950	35720	39970	35840	35140	35100	33910	32740	32100	31160	30300
10	35110	33850	35720	39970	35870	35100	35020	33860	32720	32040	31110	30280
11	35070	33790	35680	39950	35750	35050	34960	33970	32640	31980	31040	30270
12	34990	33740	35660	39980	35750	35080	34870	33940	32590	31910	31010	30320
13	34930	33730	35610	39910	35690	35070	34820	33860	32530	31820	30960	30320
14	34840	33660	35510	39910	35770	34940	34750	33830	32530	31790	30980	30280
15	34800	33690	35430	39910	35680	34880	34720	33800	32460	31680	30950	30230
16	34750	33900	35370	39950	35640	34990	34860	33730	32470	31650	30920	30320
17	34730	34160	35310	39970	35710	35200	34890	33670	32400	31610	30860	30300
18	34690	34350	35330	40020	35730	35140	34880	33590	32350	31530	30820	30210
19	34670	34380	35410	39970	35680	35090	34820	33480	32320	31460	30820	30180
20	34630	34390	35410	39910	35610	35090	34740	33470	32400	31440	30790	30170
21	34500	34360	35660	39840	35600	35100	34730	33510	32360	31400	30760	30140
22	34420	34370	35750	39840	35590	35110	34760	33440	32420	31330	30740	30130
23	34490	34420	40010	39810	35570	35150	34700	33400	32530	31310	30710	30110
24	34510	34420	40190	39740	35520	35370	34580	33380	32600	31270	30680	30120
25	34500	36140	40220	39670	35480	35410	34540	33290	32560	31250	30800	30130
26	34500	36100	40190	39650	35480	40090	34450	33200	32550	31200	30730	30130
27	34390	36210	40250	39640	35460	35390	34350	33130	32520	31120	30710	30100
28	34310	36200	40220	39540	35490	35380	34260	33070	32520	31070	30650	30070
29	34230	36180	40190	39560	35230	35330	34430	33040	32480	31070	30670	30090
30	34200	36180	40150	39560	---	35300	34340	32970	32390	31100	30620	30090
31	34150	---	40230	39600	---	35310	---	32900	---	31210	30610	---
MAX	35780	36210	40250	40150	39610	40090	35340	34290	32980	32360	31290	30580
MIN	34150	33660	36100	39540	35230	34880	34260	32900	32320	31070	30610	30070
(†)	-70	+2030	+4050	-630	-4370	+80	-970	-1440	-510	-1180	-600	-520

CAL YR 1987 MAX 40250 MIN 33660 (†) +4910
WTR YR 1988 MAX 40250 MIN 30070 (†) -2190

(†) Change in contents, in acre-feet.

08177410 COLETO CREEK RESERVOIR (OUTFLOW) NEAR VICTORIA, TX

LOCATION---Lat 28°43'54", long 97°09'50", Victoria County, Hydrologic Unit 12100204, on top of Coleta Creek Dam at Pier No. 4, 1.6 mi upstream from U.S. Highway 59, and 11.6 mi west of Victoria.

PERIOD OF DAILY RECORD--

WATER TEMPERATURE: May 1980 to current year.

INSTRUMENTATION: Beginning May 1980, water temperature is recorded continuously at this station.

EXTREMES FOR PERIOD OF DAILY RECORD--

WATER TEMPERATURE: Maximum, 32.5°C July 16, 1983; minimum, 7.5°C Dec. 31, 1983, Jan. 1, 2, 1984.

EXTREMES FOR CURRENT YEAR--

WATER TEMPERATURE: Maximum, 32.0°C Sept. 4; minimum, 9.5°C Jan. 17-19.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	23.0	23.0	23.0	18.0	17.5	18.0	15.0	14.5	15.0
2	26.0	26.0	26.0	23.0	23.0	23.0	17.5	17.0	17.0	15.0	14.5	14.5
3	25.5	25.5	25.5	23.0	23.0	23.0	---	---	---	14.5	14.0	14.0
4	25.5	25.0	25.5	23.0	23.0	23.0	---	---	---	14.0	13.5	13.5
5	25.0	25.0	25.0	23.0	23.0	23.0	16.5	16.5	16.5	14.0	13.5	13.5
6	25.0	25.0	25.0	23.5	23.0	23.0	16.5	16.5	16.5	13.5	13.5	13.5
7	25.0	24.5	25.0	23.5	23.0	23.0	17.0	16.5	16.5	13.5	13.0	13.5
8	24.5	24.5	24.5	23.5	23.0	23.5	17.0	16.5	17.0	13.0	12.5	12.5
9	24.5	24.0	24.5	23.5	23.0	23.5	17.0	17.0	17.0	12.5	12.0	12.0
10	24.5	24.0	24.5	23.0	21.5	22.0	17.0	17.0	17.0	12.0	11.5	11.5
11	24.5	24.0	24.5	22.0	20.5	21.0	17.0	17.0	17.0	11.5	11.0	11.5
12	24.5	24.5	24.5	20.5	20.0	20.5	17.5	17.0	17.0	11.0	10.0	10.5
13	24.5	24.5	24.5	20.0	19.5	19.5	18.0	17.5	17.5	11.0	10.0	10.0
14	24.5	24.0	24.0	19.5	19.0	19.0	18.0	17.5	17.5	11.0	10.5	10.5
15	24.0	24.0	24.0	19.0	19.0	19.0	19.0	18.0	18.5	11.0	10.0	10.5
16	24.0	23.5	24.0	21.0	19.0	19.5	18.0	17.5	18.0	10.5	10.0	10.5
17	23.5	23.5	23.5	20.0	20.0	20.0	17.5	17.0	17.0	10.5	9.5	10.0
18	23.5	23.5	23.5	20.0	20.0	20.0	17.0	16.5	17.0	9.5	9.5	9.5
19	23.5	23.5	23.5	20.5	20.0	20.0	17.5	16.0	16.5	10.5	9.5	10.0
20	24.0	23.5	23.5	20.0	19.0	19.5	16.5	16.0	16.0	11.5	10.0	10.5
21	24.0	23.5	24.0	19.0	18.5	18.5	17.0	16.0	16.5	11.0	10.5	11.0
22	24.0	23.5	24.0	18.5	18.0	18.5	17.0	16.5	17.0	11.5	11.0	11.0
23	23.5	23.5	23.5	18.5	18.0	18.0	17.0	16.5	16.5	11.5	11.0	11.5
24	23.5	23.0	23.5	18.0	18.0	18.0	16.5	16.0	16.0	13.5	11.5	12.0
25	23.0	23.0	23.0	18.5	18.0	18.0	17.0	16.0	16.0	14.0	12.5	13.0
26	23.0	22.5	22.5	18.5	18.5	18.5	17.5	16.5	17.0	15.0	13.5	14.0
27	22.5	22.5	22.5	19.5	18.5	19.0	17.5	16.5	16.5	13.5	13.5	13.5
28	22.5	22.5	22.5	19.5	18.5	19.0	16.5	15.5	16.0	13.5	13.5	13.5
29	23.0	22.5	22.5	18.5	18.0	18.0	15.5	15.5	15.5	13.5	13.5	13.5
30	23.0	22.5	23.0	18.0	18.0	18.0	15.5	15.0	15.0	13.5	13.5	13.5
31	23.0	23.0	23.0	---	---	---	14.5	14.0	14.5	14.0	13.5	13.5
MONTH	26.0	22.5	24.0	23.5	18.0	20.5	19.0	14.0	16.5	15.0	9.5	12.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.5	14.0	14.0	16.0	16.0	16.0	18.0	18.0	18.0	19.5	19.0	19.5
2	14.5	14.0	14.5	16.0	16.0	16.0	18.0	18.0	18.0	20.0	19.0	19.5
3	14.5	14.5	14.5	17.0	16.0	16.5	18.0	18.0	18.0	20.0	19.0	19.5
4	16.0	14.5	15.5	17.0	17.0	17.0	18.0	18.0	18.0	20.0	19.0	19.5
5	16.0	15.5	16.0	17.0	16.5	17.0	18.0	18.0	18.0	19.5	19.0	19.0
6	15.5	14.5	14.5	17.0	16.5	16.5	18.5	18.0	18.0	20.0	19.0	19.5
7	14.5	14.0	14.5	16.5	16.5	16.5	18.5	18.0	18.0	20.5	19.0	19.5
8	14.0	14.0	14.0	17.5	16.5	17.0	18.5	18.0	18.0	20.0	19.0	19.5
9	13.5	13.5	13.5	17.5	17.0	17.5	18.5	18.0	18.5	20.5	19.0	19.5
10	13.5	13.5	13.5	17.5	17.0	17.5	19.0	18.0	18.5	20.5	19.5	20.0
11	14.5	13.5	14.0	18.0	17.0	17.5	19.5	18.5	19.0	20.5	20.0	20.5
12	14.0	13.5	14.0	18.0	18.0	18.0	19.5	19.0	19.5	20.5	20.0	20.5
13	14.0	13.0	13.5	18.0	17.0	18.0	19.5	19.0	19.5	20.5	20.0	20.5
14	13.0	12.0	12.5	17.5	16.5	17.0	19.0	19.0	19.0	20.5	20.0	20.5
15	13.0	12.0	12.5	17.0	16.0	16.5	19.0	19.0	19.0	20.5	20.5	20.5
16	13.0	13.0	13.0	16.5	16.0	16.5	19.0	19.0	19.0	21.0	20.5	20.5
17	13.5	13.0	13.0	16.5	16.0	16.0	19.0	19.0	19.0	21.0	20.0	20.5
18	13.5	13.0	13.5	16.0	15.0	15.5	19.0	19.0	19.0	21.0	20.5	20.5
19	13.5	13.0	13.5	15.0	14.5	14.5	19.0	19.0	19.0	21.0	20.0	20.5
20	14.0	13.0	13.5	15.5	14.5	15.0	19.0	19.0	19.0	21.0	20.5	21.0
21	14.0	13.5	14.0	15.0	15.0	15.0	19.0	19.0	19.0	21.5	20.5	21.0
22	16.5	13.5	15.0	15.0	15.0	15.0	19.5	19.0	19.0	21.5	20.5	21.0
23	16.0	15.5	16.0	15.0	15.0	15.0	19.5	19.0	19.0	21.5	21.0	21.5
24	16.5	15.5	16.0	15.5	15.0	15.0	19.5	19.0	19.5	21.5	21.0	21.5
25	16.5	15.5	16.0	16.0	15.5	15.5	19.5	19.0	19.0	21.5	21.5	21.5
26	16.5	15.5	16.0	15.5	15.5	15.5	19.5	19.0	19.0	21.5	21.5	21.5
27	16.5	16.0	16.0	15.5	15.5	15.5	20.0	19.0	19.0	21.5	21.5	21.5
28	16.0	15.5	16.0	16.0	15.5	15.5	20.0	19.0	19.5	22.0	21.5	21.5
29	16.0	15.5	16.0	18.0	16.0	16.5	19.5	19.0	19.5	22.5	21.5	21.5
30	---	---	---	19.0	17.5	18.5	19.5	19.0	19.5	22.5	21.5	22.0
31	---	---	---	18.5	18.0	18.0	---	---	---	23.0	22.0	22.0
MONTH	16.5	12.0	14.5	19.0	14.5	16.5	20.0	18.0	19.0	23.0	19.0	20.5

GUADALUPE RIVER BASIN

227

08177410 COLETO CREEK RESERVOIR (OUTFLOW) NEAR VICTORIA, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

GUADALUPE RIVER BASIN

08177500 COLETO CREEK NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°08'18", Victoria County, Hydrologic Unit 12100204, on left bank at downstream side of westbound bridge on U.S. Highway 59, 1.6 mi downstream from Coleta Creek dam, 9.0 mi southwest of Victoria, and 11.2 mi upstream from mouth.

DRAINAGE AREA.--514 mi².

PERIOD OF RECORD.--June 1939 to September 1954, June 1978 to current year.

REVISED RECORDS.--WSP 1562: 1939-40. WSP 1732: 1941.

GAGE.--Water-stage recorder. Datum of gage is 44.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1955, at datum 5.0 ft higher.

REMARKS.--Records good except those below 4 ft³/s, which are fair. Since Feb. 21, 1980, flow is completely regulated by Coleta Creek Reservoir, 1.6 mi upstream. Diversions from the Guadalupe River basin to the Coleta Creek basin upstream from Coleta Creek Reservoir began Mar. 6, 1980 (see station 08176990). There are no other large diversions above station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1940-54, 1979) prior to regulation by Coleta Creek Reservoir, 92.7 ft³/s (67,160 acre-ft/yr); 8 years (water years 1981-88) regulated, 91.6 ft³/s (66,360 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,000 ft³/s Oct. 16, 1946 (gage height, 36.64 ft, present datum, from floodmark), on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1875, 236,000 ft³/s Sept. 22, 1967 (gage height, 42.0 ft, from floodmark), present site and datum, on basis of slope-area measurement of peak flow. Flood of Apr. 20, 1976, reached a stage of 37.85 ft, at site 0.2 mi upstream at present datum. Flood of July 1, 1936, reached a stage of 32.2 ft, present site and datum, from information by railroad company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 231 ft³/s Nov. 25 at 0900 hours (gage height, 5.32 ft); minimum daily, 1.2 ft³/s Aug. 14, Sept. 5, 10-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	5.1	6.1	6.6	11	5.4	5.7	5.2	5.2	4.6	4.0	1.6
2	5.5	5.2	5.9	5.6	7.2	6.2	5.1	4.9	5.0	4.6	3.8	1.7
3	5.7	5.4	5.9	5.4	6.0	6.3	5.0	4.8	8.3	4.6	3.2	1.7
4	5.7	5.4	5.9	5.4	5.6	5.9	4.8	4.5	6.3	4.6	2.7	1.4
5	5.7	5.7	5.9	5.4	5.9	5.9	4.8	4.1	5.5	4.7	2.5	1.2
6	5.7	5.7	5.9	5.7	5.8	5.9	4.6	4.2	4.9	4.9	2.1	1.4
7	5.7	5.7	5.7	5.8	5.7	5.9	4.5	4.3	4.9	4.9	1.7	1.3
8	5.7	6.7	5.7	5.5	5.7	6.1	5.0	4.4	4.7	4.6	1.6	1.5
9	5.7	8.1	5.7	5.4	5.7	5.8	5.6	4.4	4.6	4.5	1.5	1.4
10	5.4	6.1	5.7	5.4	5.5	6.1	5.2	4.5	4.6	4.2	1.4	1.2
11	5.1	5.7	5.7	5.6	5.2	7.6	4.9	4.8	4.7	4.1	1.4	1.2
12	5.1	5.7	5.7	5.9	5.2	6.0	4.9	6.9	4.8	4.1	1.4	1.2
13	5.1	5.7	5.7	5.5	5.4	5.5	4.9	5.4	4.7	4.2	1.3	1.3
14	5.1	5.7	5.6	5.4	5.4	5.7	5.1	4.9	4.7	4.2	1.2	1.3
15	5.1	5.8	5.4	5.5	5.4	5.9	5.1	4.7	4.6	4.5	1.4	6.3
16	5.1	7.5	5.4	5.7	5.2	7.0	6.0	4.6	4.7	4.4	1.8	5.5
17	5.1	6.3	5.4	5.6	5.4	8.5	6.5	4.6	5.0	4.2	3.3	3.4
18	5.1	11	5.5	5.6	5.4	8.7	5.7	4.6	5.0	4.3	2.1	2.5
19	5.1	8.9	6.1	5.4	5.4	6.9	5.0	4.5	4.9	5.1	1.8	2.0
20	5.1	6.4	5.8	5.1	5.4	6.5	5.0	4.5	5.0	5.4	1.6	1.8
21	5.1	5.9	8.5	5.2	5.3	6.0	4.8	5.4	5.0	6.5	1.5	1.8
22	5.1	5.7	7.1	5.4	5.4	5.9	5.4	5.4	5.0	7.2	1.4	1.8
23	5.5	5.7	6.1	5.7	5.4	5.9	4.9	4.6	6.1	6.5	1.3	1.8
24	5.7	5.7	5.9	5.7	5.4	5.9	4.9	4.6	7.1	5.9	1.6	2.0
25	5.5	87	5.9	5.7	5.4	10	4.9	4.6	5.7	6.0	2.0	2.5
26	5.1	17	5.7	5.7	5.4	8.6	4.5	4.6	5.4	5.3	3.6	2.6
27	5.0	9.4	6.1	5.8	5.4	6.7	4.4	4.6	5.5	4.5	2.6	2.4
28	4.9	7.7	6.4	5.9	5.5	6.3	4.4	4.6	5.6	3.8	2.0	2.3
29	4.9	6.4	6.2	6.1	5.5	6.8	4.9	4.9	5.2	3.2	1.7	2.3
30	4.9	6.1	5.7	6.2	---	6.4	5.5	5.1	4.7	2.8	1.8	2.8
31	5.1	---	7.0	6.1	---	6.0	---	5.1	---	3.3	1.8	---
TOTAL	164.2	284.4	185.3	175.0	166.2	202.3	153.0	148.3	157.4	145.7	63.1	63.2
MEAN	5.30	9.48	5.98	5.65	5.73	6.53	5.10	4.78	5.25	4.70	2.04	2.11
MAX	5.7	87	8.5	6.6	11	10	6.5	6.9	8.3	7.2	4.0	6.3
MIN	4.9	5.1	5.4	5.1	5.2	5.4	4.4	4.1	4.6	2.8	1.2	1.2
AC-FT	326	564	368	347	330	401	303	294	312	289	125	125

CAL YR 1987 TOTAL 49471.0 MEAN 136 MAX 8430 MIN 3.3 AC-FT 98130
WTR YR 1988 TOTAL 1908.1 MEAN 5.21 MAX 87 MIN 1.2 AC-FT 3780

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

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

DRAINAGE AREA.--21.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to September 1981 (as a continuous-record station), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Recording rain gage at station, with three additional recording rain gages in the watershed. Rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--13 years (water years 1968-81), 4.34 ft³/s (2.78 in/yr), 3,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s June 4, 1986 (gage height, 9.85 ft); maximum gage height, 14.82 ft (from floodmark) Sept. 13, 1978; no flow at times. Maximum stage since 1935, that of Sept. 13, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in September and November 1947 reached a stage of 8.5 ft, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 16	0545	932	5.05	June 26	0200	993	5.14
Dec. 19	1000	1,080	5.25	July 21	0730	*2,200	*6.33
June 3	0030	2,170	6.30				

Minimum discharge, no flow most of year.

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
MAR 17...	1345	25	340	7.70	16.0	80	35	9.1	94	9.1	K170000
MAR 17...	1448	25	307	7.20	16.0	56	37	9.1	94	9.4	K230000
APR 08...	1515	95	403	7.70	20.0	28	3.7	9.8	110	>7.8	510000
JUN 03...	1345	81	205	8.20	28.0	100	44	8.2	108	4.9	19000
DATE		STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 17...	K110000	120	24	42	4.0	20	0.8	4.2	98	32	23
MAR 17...	K120000	110	25	38	3.5	17	0.7	4.0	84	25	18
APR 08...	K1200000	190	29	59	9.8	13	0.4	4.0	159	39	14
JUN 03...	28000	89	9	32	2.2	4.6	0.2	5.2	80	13	7.0
DATE		FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLAT- ILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
MAR 17...	0.20	6.5	191	95	22	0.890	0.110	1.00	0.300	1.7	2.0
MAR 17...	0.20	6.3	162	69	14	0.810	0.090	0.900	0.270	1.5	1.8
APR 08...	0.30	5.9	240	7	1	0.750	0.050	0.800	0.080	0.62	0.70
JUN 03...	0.30	8.6	121	46	7	0.450	0.050	0.500	0.050	1.2	1.2

GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued
(Flood-hydrograph partial-record station)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
MAR 17...	0.210	26	1	41	<1	<1	6	33	6	9	0.3
MAR 17...	0.190	21	--	--	--	--	--	--	--	--	--
APR 08...	0.030	10	--	--	--	--	--	--	--	--	--
JUN 03...	0.220	11	2	30	1	<1	9	73	<5	7	<0.1
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
MAR 17...	3	<1.0	34	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.24
MAR 17...	--	--	--	--	--	--	--	--	--	--	--
APR 08...	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	<1	<1.0	62	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.92
DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	
MAR 17...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.21	<0.01	<0.01	
MAR 17...	--	--	--	--	--	--	--	--	--	--	
APR 08...	--	--	--	--	--	--	--	--	--	--	
JUN 03...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.07	<0.01	<0.01	
DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	
MAR 17...	<0.01	<0.01	0.01	<0.1	<0.01	<1	<0.01	0.09	0.04	<0.01	
MAR 17...	--	--	--	--	--	--	--	--	--	--	
APR 08...	--	--	--	--	--	--	--	--	--	--	
JUN 03...	<0.01	<0.01	0.01	<0.1	<0.01	<1	<0.01	0.07	0.02	<0.01	

231

LOCATION.--Lat 29°28'24", long 98°28'26", Bexar County, Hydrologic Unit 12100301, in gate house near middle of dam on Olmos Drive, 0.8 mi upstream from Hildebrand Street, 1.5 mi upstream from Brackenridge Park Zoo, and 4.0 mi downstream from gaging station 08177700.

PERIOD OF RECORD.--June 1968 to September 1971, April 1976 to current year.

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

REMARKS.--The dam is a concrete-gravity-type structure with a maximum height of 50 ft with a total length of 1,941 ft, and a spillway crest length of 1,051 ft. The dam, spillway section, and gate house were rebuilt in 1980. The outlet structure consists of six vertical slide-gate-controlled concrete conduits with entrance dimensions of 5.75 ft wide by 7.83 ft high. Gates are maintained and operated by city of San Antonio Fire Department as required to control downstream flooding. Reservoir is empty except during flooding when it is used as a detention reservoir. The reservoir has a surface area of about 950 acres at top of dam. Dam is owned by city of San Antonio. Rain gage and gage-height telemeter at station. Prior to the 1983 water year, elevation published at 2400 hours. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Design flood (probably maximum flood).....	736.4	24,150
Floor of gate operating room.....	736.0	23,560
Top of dam (crest of spillway).....	728.0	14,240
Lowest gated outlet (invert).....	680.0	0

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 708.65 ft June 4, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 695.83 ft July 21.

[illegible]

GUADALUPE RIVER BASIN

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°24'34", long 98°29'41", Bexar County, Hydrologic Unit 12100301, on left bank 193 ft downstream from South Alamo Street Bridge in San Antonio, 2.1 mi upstream from San Pedro Creek, and 230.6 mi upstream from mouth.

DRAINAGE AREA.--41.8 mi². Flow of river comes from intermittent spring flow and from artesian wells; drainage area of streams not applicable.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1895 to June 1906 (periodic discharge measurements only), January 1915 to November 1929, February 1939 to current year. Ground-water discharge into river is discussed by Petit and George, Texas Board of Water Engineers Bull. 5608, vol. 1 (1956, p. 45).

REVISED RECORDS.--WSP 1312: 1917. WSP 1923: Drainage area. WRD TX-72-1: 1971(m).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 605.26 ft above National Geodetic Vertical Datum of 1929. Jan. 26, 1915, to Feb. 27, 1916, nonrecording gage at site 1.3 mi upstream at different datum. Feb. 28, 1916, to Apr. 7, 1920, nonrecording gage at site 1.1 mi upstream at different datum. Apr. 8, 1920, to Nov. 16, 1929, and Feb. 15, 1939, to Apr. 25, 1967, water-stage recorder in vicinity of South Alamo Street Bridge at 7.00-foot higher datum. Apr. 25, 1967, to May 13, 1969, water-stage recorder at site 307 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Floodflow is regulated by Olmos flood-control reservoir (capacity, 14,240 acre-ft), about 8.5 mi upstream. Olmos Dam was completed in 1926 and rebuilt in 1980. Springs emerge intermittently from the Edwards and associated limestones along the Balcones Fault Zone upstream from station.

AVERAGE DISCHARGE.--63 years, 55.0 ft³/s (17.87 in/yr), 39,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Sept. 10, 1921 (gage height, 20.14 ft, from floodmark), at former site and datum, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times due to regulation.
Maximum stage since 1819, that of Sept. 10, 1921.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1819, equaled or exceeded that of Sept. 10, 1921.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,770 ft³/s July 21 at 0630 hours (gage height, 12.11 ft); minimum daily, 0.11 ft³/s June 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	82	91	96	89	56	49	16	14	14	19	8.0
2	86	96	101	95	88	48	35	15	14	14	16	19
3	85	85	101	96	88	47	33	16	371	21	19	17
4	84	83	100	95	115	43	33	14	10	15	43	18
5	83	64	100	95	82	44	31	12	.92	14	18	59
6	85	75	102	109	87	43	19	12	13	15	10	9.8
7	83	76	100	102	87	40	28	11	34	14	17	7.4
8	82	220	101	97	88	42	35	11	16	12	18	18
9	79	104	101	96	110	38	33	11	10	12	16	11
10	78	91	102	95	93	39	32	11	2.4	21	17	3.9
11	77	93	103	113	89	38	31	11	13	72	18	16
12	78	74	104	95	86	36	30	11	15	27	17	39
13	75	85	106	95	83	34	28	10	17	6.3	16	12
14	209	88	106	97	83	32	25	10	14	13	21	5.6
15	82	92	103	98	81	56	24	10	11	14	18	18
16	60	167	102	99	78	20	48	9.9	13	14	18	36
17	74	101	131	108	79	148	38	11	14	14	19	68
18	75	100	168	100	177	17	21	11	13	14	42	30
19	76	97	251	78	84	37	30	11	24	16	6.7	7.6
20	75	97	116	92	82	38	29	13	30	103	17	1.1
21	74	97	109	92	81	37	26	67	1.6	511	17	17
22	77	99	102	92	60	51	26	14	.11	36	18	18
23	105	102	102	92	74	35	23	8.8	9.6	11	18	18
24	82	121	100	94	62	37	18	2.7	12	18	20	18
25	83	100	114	74	68	23	17	11	12	54	19	18
26	83	97	103	115	74	35	15	12	113	4.1	17	18
27	82	142	100	88	71	37	13	13	7.9	105	17	19
28	81	139	97	87	69	36	12	13	25	25	17	19
29	81	103	96	86	68	38	33	13	15	19	17	19
30	81	105	95	88	---	37	17	13	15	21	17	19
31	82	---	96	88	---	38	---	14	---	19	24	---
TOTAL	2610	3075	3403	2947	2476	1300	832	418.4	860.53	1268.4	586.7	587.4
MEAN	84.2	102	110	95.1	85.4	41.9	27.7	13.5	28.7	40.9	18.9	19.6
MAX	209	220	251	115	177	148	49	67	371	511	43	68
MIN	60	64	91	74	60	17	12	2.7	.11	4.1	6.7	1.1
AC-FT	5180	6100	6750	5850	4910	2580	1650	830	1710	2520	1160	1170
CFSM	2.01	2.45	2.63	2.27	2.04	1.00	.66	.32	.69	.98	.45	.47
IN.	2.32	2.74	3.03	2.62	2.20	1.16	.74	.37	.77	1.13	.52	.52

CAL YR 1987 TOTAL 42976 MEAN 118 MAX 1090 MIN 13 AC-FT 85240 CFSM 2.82 IN. 38.25
WTR YR 1988 TOTAL 20364.43 MEAN 55.6 MAX 511 MIN .11 AC-FT 40390 CFSM 1.33 IN. 18.12

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: June 1965 to current year. Sediment analyses: October 1968 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DEC 17...	1245	107	465	8.00	16.5	4	16	9.1	94	1.1	K600
FEB 02...	1210	90	508	8.00	17.0	8	5.9	8.9	93	0.5	1600
APR 06...	1020	0.87	498	8.10	22.0	7	1.3	9.7	112	1.9	1100
JUN 07...	1200	17	437	7.80	25.5	13	7.1	7.6	95	2.2	1400
DATE	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DEC 17...	8200	250	39	74	16	11	0.3	1.7	212	22	19
FEB 02...	1400	220	39	66	13	10	0.3	2.2	180	24	18
APR 06...	320	240	43	70	15	13	0.4	1.5	194	25	20
JUN 07...	530	190	25	57	12	13	0.4	3.4	167	30	18
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
DEC 17...	0.30	13	284	3	<1	--	<0.010	1.70	0.030	--	<0.20
FEB 02...	0.20	12	253	9	<1	0.280	0.020	0.300	0.060	0.54	0.60
APR 06...	0.30	11	272	4	<1	1.58	0.020	1.60	0.030	0.37	0.40
JUN 07...	0.30	9.9	244	9	2	1.36	0.040	1.40	0.040	0.46	0.50
DATE	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
DEC 17...	0.020	0.4	<1	51	<1	1	2	4	<5	6	<0.1
FEB 02...	0.050	4.5	--	--	--	--	--	--	--	--	--
APR 06...	0.030	1.4	--	--	--	--	--	--	--	--	--
JUN 07...	0.090	4.6	2	52	<1	1	3	6	<5	2	<0.1
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
DEC 17...	<1	<1.0	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
FEB 02...	--	--	--	--	--	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--	--	--	--	--	--
JUN 07...	<1	<1.0	20	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.18

GUADALUPE RIVER BASIN

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)
DEC 17...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
FEB 02...	--	--	--	--	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--	--	--	--	--
JUN 07...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	0.01	<0.01	<0.01
DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
DEC 17...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
FEB 02...	--	--	--	--	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--	--	--	--	--
JUN 07...	<0.01	<0.01	0.01	<0.1	<0.01	<1	<0.01	0.02	0.01	<0.01

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'18", Long 98°26'57", Bexar County, Hydrologic Unit 12100301, on left bank, 0.2 mi downstream from Loop 410, at Camino Coahuilteca crossing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1986 to August 1988 (discontinued).
 pH: December 1986 to August 1988 (discontinued).
 WATER TEMPERATURE: December 1986 to August 1988 (discontinued).
 DISSOLVED OXYGEN: December 1986 to August 1988 (discontinued).

INSTRUMENTATION.--Beginning December 1986, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, dissolved oxygen at this station. Due to channel changes, the water-quality monitor was discontinued August 31, 1988.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 980 microsiemens Apr. 22, 1987; minimum, 130 microsiemens Dec. 22, 1986.
 pH: Maximum, 8.7 units on several days during 1988; minimum, 7.1 units June 12, 1987.
 WATER TEMPERATURE: Maximum, 36.0°C Aug. 6, 9, 10, 1988; minimum, 11.5°C Dec. 15, 1988, Jan. 9, 1988.
 DISSOLVED OXYGEN: Maximum, 15.3 mg/L May 25, 1988; minimum, 0.5 mg/L May 21, July 21, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 924 microsiemens May 11; minimum, 190 microsiemens June 3.
 pH: Maximum, 8.7 units Nov. 8, Dec. 27-28, Jan. 20, 22-24; minimum, 7.4 units Dec. 18 (confidence very poor).
 WATER TEMPERATURE: Maximum, 36.0°C Aug. 6, 9, 10; minimum, 11.5°C Dec. 15, Jan. 9.
 DISSOLVED OXYGEN: Maximum, 15.3 mg/L May 25; minimum, 0.5 mg/L May 21, July 21 (confidence very poor).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 28...	1330	137	738	8.30	22.0	10.8	124	3.9	280	28
DEC 08...	1440	120	521	8.50	21.0	12.2	139	1.3	240	39
FEB 19...	1230	105	420	8.00	15.5	9.8	100	2.1	180	32
APR 05...	1400	127	563	8.30	24.0	11.2	135	--	230	39
JUN 15...	1345	19	600	8.20	30.0	11.9	161	2.2	230	61
AUG 24...	1155	25	584	8.20	32.0	10.5	145	1.1	210	65

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 28...	87	16	43	1	3.9	256	49	53	0.30
DEC 08...	68	16	18	0.5	2.2	197	31	29	0.30
FEB 19...	54	9.9	18	0.6	3.6	144	35	22	0.30
APR 05...	65	17	24	0.7	1.9	194	44	35	0.30
JUN 15...	62	18	39	1	3.3	168	61	54	0.40
AUG 24...	56	16	32	1	3.0	141	56	45	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
OCT 28...	14	420	1.78	0.020	1.80	0.050	0.55	0.60	0.030
DEC 08...	11	294	1.78	0.020	1.80	0.070	0.33	0.40	0.020
FEB 19...	8.8	238	1.47	0.030	1.50	0.080	0.52	0.60	0.100
APR 05...	7.6	311	1.67	0.030	1.70	0.070	0.33	0.40	0.020
JUN 15...	8.6	347	0.950	0.050	1.00	0.060	0.54	0.60	0.050
AUG 24...	12	305	1.16	0.040	1.20	0.050	0.55	0.60	0.030

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	760	560	650	541	484	517	560	540	552	550	510	537
2	690	570	637	543	494	517	610	520	561	560	530	544
3	630	540	569	543	495	523	560	510	541	550	480	526
4	590	530	557	543	467	523	560	520	545	540	480	517
5	560	530	547	544	477	533	570	520	544	550	480	524
6	570	520	550	573	516	543	---	---	530	590	500	542
7	570	540	559	545	516	530	---	---	520	540	510	526
8	580	530	558	545	220	437	---	---	521	540	530	536
9	580	530	559	460	335	373	551	495	523	550	510	532
10	570	540	555	546	460	518	543	496	523	540	510	527
11	570	530	554	557	546	550	554	496	525	540	510	527
12	570	520	551	557	538	547	545	507	529	550	520	535
13	570	530	551	620	547	573	557	508	539	540	510	528
14	560	530	552	570	550	561	550	529	542	540	510	533
15	---	---	---	570	430	526	551	522	541	550	520	537
16	590	560	571	460	270	374	552	514	538	550	520	540
17	659	560	609	430	290	366	554	505	542	550	510	533
18	577	546	562	450	410	433	437	340	370	560	500	536
19	566	534	550	440	380	413	497	234	368	550	520	539
20	554	525	546	550	310	445	509	313	406	580	510	549
21	551	531	541	550	490	537	569	441	490	550	510	533
22	558	511	541	560	510	544	541	462	519	550	500	530
23	616	478	535	570	530	551	562	541	554	550	500	527
24	544	487	516	620	520	554	574	562	567	540	500	530
25	550	514	534	510	300	402	605	506	565	550	490	526
26	548	517	536	620	520	557	557	525	539	650	500	554
27	544	503	528	560	300	391	568	547	559	600	520	553
28	530	502	520	530	420	483	579	558	567	---	---	---
29	530	483	515	560	520	543	580	530	552	---	---	---
30	532	483	516	560	540	550	550	520	534	---	---	---
31	532	494	514	---	---	---	540	510	528	---	---	---
MONTH	760	478	553	620	220	497	610	234	524	650	480	534
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	605	541	568	610	580	598
2	---	---	---	---	---	---	573	541	564	630	580	603
3	---	---	---	---	---	---	572	551	560	630	590	614
4	570	560	569	---	---	---	572	500	545	610	560	585
5	590	550	566	---	---	---	560	540	547	610	530	567
6	630	550	589	---	---	---	590	540	559	610	510	557
7	610	550	573	---	---	---	570	540	562	630	530	597
8	560	540	548	---	---	---	590	490	534	640	610	630
9	570	530	547	---	---	---	550	490	529	640	620	629
10	560	540	549	---	---	---	550	530	540	669	639	649
11	570	540	556	---	---	---	560	540	548	924	627	680
12	560	530	546	---	---	---	550	530	539	904	684	736
13	560	530	542	---	---	---	550	530	542	711	671	691
14	540	520	532	---	---	---	550	520	538	699	668	685
15	540	520	531	---	---	---	560	530	544	696	666	684
16	540	510	528	---	---	---	620	390	477	712	663	688
17	570	510	543	---	---	---	520	450	491	720	661	698
18	560	240	385	---	---	---	530	510	516	699	638	675
19	470	370	406	---	---	---	560	530	545	686	645	671
20	540	480	510	---	---	---	570	540	553	700	662	677
21	---	---	---	---	---	---	560	530	547	661	364	452
22	---	---	---	---	---	---	550	530	543	494	439	466
23	---	---	---	---	---	---	560	530	546	578	504	544
24	---	---	---	600	567	590	560	530	544	---	---	---
25	---	---	---	599	567	579	560	530	546	---	---	---
26	---	---	---	620	556	593	560	520	541	647	599	624
27	---	---	---	609	577	592	560	530	545	617	587	605
28	---	---	---	597	554	574	560	540	552	606	576	597
29	---	---	---	617	565	585	620	560	571	612	592	604
30	---	---	---	586	563	580	630	600	615	663	608	621
31	---	---	---	595	553	573	---	---	---	663	624	642
MONTH	630	240	531	620	553	583	630	390	545	924	364	623

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	700	620	646	---	---	---	510	440	478			
2	660	600	634	---	---	---	530	490	513			
3	480	190	242	---	---	---	540	510	524			
4	400	260	327	---	---	---	540	420	525			
5	470	400	435	---	---	---	520	460	487			
6	580	470	521	---	---	---	540	510	527			
7	610	540	583	---	---	---	530	500	523			
8	540	490	517	---	---	---	530	500	519			
9	580	540	556	---	---	---	540	510	529			
10	610	570	588	---	---	---	560	530	546			
11	630	590	608	---	---	---	560	540	552			
12	640	590	620	---	---	---	580	550	566			
13	620	580	601	---	---	---	590	570	577			
14	620	580	604	---	---	---	590	540	575			
15	630	580	609	580	550	566	620	570	596			
16	621	592	607	596	557	578	620	590	609			
17	623	594	609	596	564	581	600	580	594			
18	616	595	610	592	580	586	590	520	550			
19	628	606	615	609	577	591	560	520	536			
20	628	558	593	625	447	591	580	550	562			
21	602	569	588	523	340	443	610	560	580			
22	644	591	623	607	532	555	580	530	564			
23	678	595	664	785	615	681	580	540	560			
24	750	575	714	878	795	842	580	210	532			
25	733	683	711	800	493	622	480	260	382			
26	662	279	391	519	480	505	570	460	530			
27	406	261	356	590	380	534	560	520	538			
28	520	386	441	360	260	312	570	510	540			
29	530	510	518	440	350	385	580	510	541			
30	---	---	---	450	310	392	570	530	546			
31	---	---	---	440	360	405	580	550	561			
MONTH	750	190	556	878	260	539	620	210	541			

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	8.4	8.2	8.3	---	---	---	---	---	---
2	---	---	---	8.3	8.1	8.2	---	---	---	---	---	---
3	---	---	---	8.4	8.2	8.3	---	---	---	---	---	---
4	---	---	---	8.5	8.2	8.4	---	---	---	---	---	---
5	7.9	7.7	7.8	8.5	8.3	8.4	---	---	---	---	---	---
6	8.0	7.8	7.9	8.6	8.3	8.5	---	---	---	---	---	---
7	8.1	7.8	8.0	8.6	8.4	8.5	---	---	---	---	---	---
8	8.2	7.9	8.0	8.7	8.2	8.5	---	---	---	---	---	---
9	7.9	7.6	7.8	8.4	8.1	8.2	8.5	8.2	8.3	---	---	---
10	7.8	7.7	7.8	8.6	8.4	8.5	8.4	8.2	8.3	---	---	---
11	7.9	7.6	7.7	8.5	8.4	8.5	8.3	8.0	8.2	---	---	---
12	7.8	7.6	7.7	8.5	8.3	8.4	8.2	7.9	8.0	---	---	---
13	8.0	7.6	7.8	8.4	8.2	8.3	8.1	7.9	8.0	---	---	---
14	8.0	7.8	7.9	8.4	8.0	8.2	8.0	7.9	7.9	---	---	---
15	---	---	---	8.0	7.6	7.8	8.0	7.9	7.9	---	---	---
16	8.3	8.2	8.3	---	---	---	8.0	7.9	7.9	---	---	---
17	8.0	7.8	7.9	---	---	---	7.9	7.7	7.8	---	---	---
18	8.2	7.9	8.0	---	---	---	8.3	7.4	7.8	---	---	---
19	8.2	8.0	8.1	---	---	---	8.5	8.1	8.3	---	---	---
20	8.2	8.0	8.1	---	---	---	8.4	8.1	8.2	8.7	8.3	8.5
21	8.3	8.2	8.2	---	---	---	8.6	8.3	8.5	8.6	8.3	8.5
22	8.4	8.2	8.3	---	---	---	8.6	8.3	8.5	8.7	8.4	8.5
23	8.3	8.0	8.2	---	---	---	8.6	8.5	8.6	8.7	8.4	8.5
24	8.2	8.1	8.1	---	---	---	8.6	8.5	8.6	8.7	8.3	8.5
25	8.3	8.2	8.2	---	---	---	8.6	8.5	8.5	8.6	8.3	8.4
26	8.3	8.2	8.2	---	---	---	8.6	8.5	8.6	8.5	8.0	8.3
27	8.4	8.2	8.3	---	---	---	8.7	8.5	8.6	8.1	7.8	8.0
28	8.3	8.1	8.3	---	---	---	8.7	8.6	8.6	---	---	---
29	8.2	8.0	8.1	---	---	---	---	---	---	---	---	---
30	8.3	8.1	8.2	---	---	---	---	---	---	---	---	---
31	8.4	8.2	8.3	---	---	---	---	---	---	---	---	---
MONTH	8.4	7.6	8.1	8.7	7.6	8.3	8.7	7.4	8.3	8.7	7.8	8.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
MONTH									

DAY	JUNE			JULY			AUGUST			SEPTEMBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
MONTH												

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	25.5	21.5	23.5	23.5	21.5	22.5	18.5	16.5	18.0	17.5	12.5	15.0
2	25.5	21.5	24.0	23.5	22.0	23.0	19.0	15.5	17.5	14.5	12.5	13.5
3	24.5	21.5	23.0	23.5	21.5	22.5	20.5	17.5	19.0	17.0	14.0	15.5
4	23.0	20.5	22.0	24.0	21.5	23.0	20.0	18.0	19.5	16.5	15.0	16.0
5	24.0	20.5	22.5	23.5	22.0	23.0	21.5	20.0	20.5	16.0	14.5	15.0
6	23.5	21.5	23.0	22.5	21.0	22.0	22.5	21.0	21.5	15.0	14.0	14.5
7	23.0	20.5	22.0	21.5	20.0	21.0	21.0	19.0	20.5	14.0	13.0	13.5
8	23.0	20.5	22.0	22.0	19.5	21.0	21.0	19.0	20.0	12.5	12.0	12.5
9	24.0	21.0	23.0	20.0	17.5	18.5	20.0	18.0	19.0	13.5	11.5	12.5
10	25.0	22.0	23.5	18.0	16.0	17.0	20.5	17.5	19.0	14.0	12.0	13.0
11	25.0	22.5	23.5	18.0	16.0	17.0	21.0	18.0	20.0	15.0	12.5	14.0
12	23.5	21.5	22.5	18.0	15.5	17.0	20.0	17.5	18.0	17.0	15.0	16.0
13	23.5	21.0	22.0	19.5	17.5	18.5	17.5	17.0	17.0	16.5	14.0	15.0
14	23.5	21.0	22.5	21.0	18.5	19.5	17.0	13.5	16.0	15.0	13.5	14.0
15	---	---	---	23.0	21.0	22.0	15.0	11.5	13.5	17.5	15.0	16.0
16	24.5	23.5	24.0	23.0	17.5	20.0	16.0	13.5	15.0	19.0	17.5	18.0
17	26.0	23.0	24.5	19.0	15.5	17.5	16.0	15.0	15.5	20.5	19.0	19.5
18	26.0	24.0	25.0	20.5	18.0	19.5	15.5	13.0	14.0	20.0	18.5	19.5
19	24.5	23.0	24.0	19.0	16.5	17.5	19.0	15.5	17.5	20.0	17.5	18.5
20	24.0	22.0	23.5	18.5	15.5	17.5	16.5	15.5	16.0	17.5	15.0	15.5
21	22.0	20.0	21.0	18.5	16.0	17.5	17.0	15.5	16.5	16.0	13.0	15.0
22	20.5	19.5	20.0	20.5	18.0	19.0	19.0	16.0	17.5	16.5	14.0	15.5
23	21.5	20.0	21.0	22.0	20.5	21.5	19.5	18.0	18.5	16.0	14.5	15.5
24	23.0	21.5	22.0	22.0	21.0	21.5	22.0	19.5	21.0	16.5	14.0	15.0
25	24.5	22.5	23.5	21.5	20.0	21.0	21.5	15.5	18.5	15.5	13.5	15.0
26	26.0	23.5	24.5	19.5	17.0	18.0	15.5	13.0	14.5	18.0	12.0	15.0
27	24.5	22.0	23.0	18.0	15.5	16.5	14.5	12.5	13.5	17.0	14.0	16.0
28	22.5	20.5	21.5	18.0	15.0	17.0	16.0	14.0	15.0	---	---	---
29	22.5	20.0	21.5	17.5	16.5	17.0	16.0	14.0	15.0	---	---	---
30	23.5	21.5	22.5	19.0	17.0	18.0	15.5	14.0	15.0	---	---	---
31	23.5	21.5	22.5	---	---	---	18.5	15.5	17.0	---	---	---
MONTH	26.0	19.5	23.0	24.0	15.0	19.5	22.5	11.5	17.5	20.5	11.5	15.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	22.0	19.5	21.0	23.5	22.5	23.0
2	---	---	---	---	---	---	---	---	---	23.0	22.0	22.5
3	---	---	---	---	---	---	23.0	20.5	21.5	27.0	22.0	24.0
4	---	---	---	---	---	---	23.0	21.0	22.0	28.0	23.0	25.5
5	---	---	---	---	---	---	24.5	22.0	23.0	26.5	23.5	25.0
6	---	---	---	---	---	---	---	---	---	27.0	22.5	24.5
7	---	---	---	---	---	---	---	---	---	24.5	22.5	23.5
8	---	---	---	---	---	---	21.5	19.5	20.5	27.5	23.0	25.0
9	---	---	---	---	---	---	20.0	19.5	20.0	27.5	25.0	26.0
10	---	---	---	---	---	---	---	---	---	30.0	25.0	27.0
11	---	---	---	---	---	---	---	---	---	27.5	24.0	26.0
12	---	---	---	---	---	---	---	---	---	26.0	23.5	24.5
13	---	---	---	---	---	---	---	---	---	28.0	22.5	25.0
14	---	---	---	---	---	---	24.5	21.5	22.5	28.5	23.5	25.5
15	---	---	---	---	---	---	25.0	22.0	23.0	29.5	24.0	26.0
16	---	---	---	---	---	---	22.5	21.0	21.5	29.5	24.0	26.5
17	---	---	---	---	---	---	23.5	21.0	22.5	30.0	24.5	27.0
18	---	---	---	---	---	---	25.0	22.5	23.5	29.5	24.0	26.5
19	---	---	---	---	---	---	24.5	20.5	22.5	27.0	24.0	25.5
20	---	---	---	---	---	---	25.5	22.0	23.5	27.5	24.0	25.5
21	---	---	---	---	---	---	25.5	23.0	24.5	24.5	22.0	23.0
22	---	---	---	---	---	---	27.5	23.5	25.0	27.0	22.0	24.0
23	---	---	---	---	---	---	27.5	25.0	26.0	28.5	22.5	25.0
24	---	---	---	24.0	21.0	22.5	25.5	24.0	24.5	31.0	24.0	27.0
25	---	---	---	24.5	23.0	23.5	27.5	23.5	25.0	30.5	25.0	27.5
26	---	---	---	23.5	22.5	23.0	28.5	23.5	26.0	29.0	25.0	27.0
27	---	---	---	23.5	22.0	22.5	27.5	24.0	26.0	30.0	24.5	26.5
28	---	---	---	22.5	21.5	22.0	27.0	23.0	25.5	28.5	24.5	26.0
29	---	---	---	21.5	20.0	21.0	25.5	22.5	24.5	27.5	24.0	25.5
30	---	---	---	---	---	---	26.0	22.5	23.5	26.5	24.5	25.5
31	---	---	---	20.0	19.0	19.5	---	---	---	27.0	24.0	25.5
MONTH	---	---	---	24.5	19.0	22.0	28.5	19.5	23.5	31.0	22.0	25.5

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	29.5	24.5	26.5	34.5	28.0	30.5	32.0	27.0	29.0			
2	31.5	26.5	28.5	34.5	28.5	31.0	33.0	28.0	30.0			
3	25.0	22.0	24.0	35.0	29.0	31.5	30.5	28.5	29.0			
4	26.5	23.0	24.5	34.0	29.5	31.0	32.5	27.5	29.5			
5	29.5	23.0	26.0	34.5	28.5	31.0	32.5	28.0	30.0			
6	30.5	23.5	27.0	34.0	29.0	31.0	36.0	28.0	31.5			
7	31.5	25.5	28.5	33.5	29.5	31.0	35.0	29.5	32.0			
8	32.0	26.5	29.0	32.5	28.0	29.5	35.0	29.5	32.0			
9	33.0	26.5	29.5	31.5	27.0	29.0	36.0	29.5	32.5			
10	30.5	28.0	29.0	30.0	27.5	28.5	36.0	30.0	32.5			
11	31.5	26.0	28.5	28.5	27.0	28.0	35.0	29.5	31.5			
12	31.0	26.0	28.0	30.5	26.5	28.0	34.5	29.0	31.0			
13	30.5	25.5	27.5	33.5	27.0	29.5	34.0	29.0	31.0			
14	30.5	26.0	27.5	33.0	25.5	29.5	34.0	29.0	31.0			
15	32.0	26.0	28.5	33.5	28.5	30.5	33.5	29.0	30.5			
16	32.0	26.0	29.0	33.5	28.0	30.0	34.0	28.5	31.0			
17	32.5	26.5	29.5	34.0	28.0	30.5	34.5	29.0	31.0			
18	32.0	27.0	29.0	34.5	28.0	31.0	30.5	28.0	29.5			
19	32.5	26.0	29.0	34.5	28.5	31.0	34.0	27.5	29.5			
20	32.0	27.5	29.0	30.5	28.5	29.5	33.0	27.5	30.0			
21	33.0	26.5	29.0	28.5	25.5	26.5	33.5	28.5	30.0			
22	34.0	26.5	29.5	29.5	25.0	27.0	33.0	28.5	30.0			
23	34.0	26.5	29.5	32.0	26.0	28.5	34.5	28.5	30.5			
24	34.0	27.5	30.0	33.0	28.0	30.5	35.5	27.5	31.0			
25	34.5	28.5	31.0	32.5	28.5	30.0	33.5	28.5	30.0			
26	31.0	26.5	28.5	34.0	28.0	30.0	34.5	29.0	31.0			
27	32.5	28.0	29.5	33.5	28.0	30.5	34.0	29.0	30.5			
28	32.0	28.0	30.0	31.5	26.5	28.5	33.5	28.5	30.0			
29	33.5	28.5	30.5	32.0	28.0	29.5	33.5	28.0	30.0			
30	34.0	28.0	30.5	30.5	26.5	28.0	32.0	27.5	29.5			
31	---	---	---	29.5	26.5	28.0	---	---	---			
MONTH	34.5	22.0	28.5	35.0	25.0	29.5	36.0	27.0	30.5			

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.6	6.7	7.4	10.0	7.2	8.1	11.2	8.3	9.3	11.3	8.9	9.9
2	9.1	6.4	7.4	10.2	7.2	8.1	11.6	8.4	9.5	12.5	9.9	10.6
3	9.5	6.4	7.9	9.7	7.2	8.0	12.0	8.0	9.3	13.0	9.2	10.5
4	9.5	7.0	8.1	10.6	7.2	8.3	10.5	8.0	9.0	13.6	9.1	10.5
5	9.6	6.9	7.9	10.5	7.1	8.3	11.1	7.9	8.8	12.9	9.3	10.3
6	9.5	6.9	7.9	11.1	7.0	8.6	11.5	7.8	8.8	10.4	9.1	9.5
7	9.7	7.1	8.1	10.6	7.7	8.6	12.0	7.8	9.1	11.8	9.2	10.3
8	9.9	7.2	8.2	9.0	7.5	7.9	12.4	8.0	9.2	12.7	9.7	10.6
9	9.6	6.5	7.9	8.1	7.7	7.9	12.5	8.2	9.7	13.6	9.7	10.9
10	9.8	6.6	7.7	9.4	8.0	8.6	12.5	8.3	9.6	13.8	9.4	10.9
11	9.8	6.8	7.8	9.5	8.1	8.8	12.2	8.1	9.4	13.4	9.3	10.6
12	9.9	6.8	7.9	9.7	8.1	8.7	11.8	8.1	9.5	12.0	9.0	9.9
13	10.1	7.0	8.1	10.0	8.0	8.7	10.5	8.7	9.2	13.5	9.0	10.6
14	---	---	---	10.3	7.9	8.7	11.0	8.8	9.6	12.3	9.5	10.5
15	---	---	---	10.5	7.6	8.5	12.3	9.7	10.7	12.7	8.8	10.0
16	---	---	---	8.5	7.4	8.0	12.2	9.1	10.4	10.8	8.5	9.2
17	9.9	6.7	7.7	10.1	8.2	8.9	10.8	9.1	9.7	11.9	8.3	9.4
18	9.5	6.6	7.6	10.2	8.1	8.8	10.1	9.0	9.6	12.1	8.1	9.2
19	9.5	6.7	7.7	11.4	8.2	9.5	9.1	8.2	8.6	12.9	8.2	9.7
20	9.8	7.0	7.9	11.9	8.6	9.8	9.2	8.9	9.0	13.2	8.8	10.4
21	10.3	7.4	8.5	12.2	8.5	9.7	9.7	8.8	9.2	13.6	9.2	10.7
22	9.9	7.6	8.2	11.2	8.1	9.2	9.7	8.6	9.1	13.6	9.1	10.6
23	7.8	7.1	7.5	11.0	7.9	8.7	9.1	8.5	8.8	13.4	9.2	10.5
24	8.4	7.0	7.5	9.1	7.7	8.1	9.0	7.9	8.3	13.9	9.2	10.8
25	9.1	7.0	7.6	8.5	7.8	8.1	9.4	7.9	8.6	14.3	9.1	11.0
26	9.7	7.1	7.9	10.1	8.0	8.8	10.2	9.4	9.8	12.4	8.6	9.9
27	10.2	7.1	8.3	9.3	8.5	8.9	10.8	9.8	10.3	14.1	8.7	10.5
28	10.8	7.3	8.5	10.1	8.4	9.1	10.9	9.6	10.1	14.2	8.3	10.3
29	10.2	7.2	8.3	10.0	8.4	8.9	10.9	9.0	9.9	14.2	7.9	9.8
30	10.1	7.3	8.2	10.6	8.3	9.1	10.9	9.3	9.8	13.5	7.7	9.6
31	10.3	7.3	8.2	---	---	---	11.4	8.9	9.7	---	---	---
MONTH	10.8	6.4	7.9	12.2	7.0	8.7	12.5	7.8	9.4	14.3	7.7	10.2

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---							---	---	---
2	---	---	---							---	---	---
3	---	---	---							---	---	---
4	---	---	---							---	---	---
5	10.6	9.6	10.1							---	---	---
6	12.5	9.7	10.9							---	---	---
7	12.2	9.4	10.4							---	---	---
8	12.5	9.5	10.5							---	---	---
9	12.9	9.2	10.2							---	---	---
10	12.7	8.9	10.2							---	---	---
11	13.6	8.8	10.9							12.3	4.4	6.6
12	14.0	9.7	11.4							10.6	5.0	7.3
13	14.0	9.1	11.0							13.3	4.6	7.8
14	14.0	8.5	10.3							11.8	4.2	7.2
15	14.1	8.6	10.4							13.5	4.2	7.3
16	13.9	8.1	10.0							13.8	4.1	7.5
17	9.7	7.6	8.3							15.2	3.7	8.0
18	9.0	7.6	8.5							14.8	3.9	8.0
19	10.2	8.6	9.3							13.4	4.0	7.0
20	11.1	8.8	9.7							13.5	4.2	7.4
21	---	---	---							14.0	.5	4.5
22	---	---	---							10.8	6.7	8.8
23	---	---	---							12.6	6.3	8.8
24	---	---	---							10.9	5.4	7.6
25	---	---	---							15.3	4.1	9.1
26	---	---	---							13.1	4.7	7.8
27	---	---	---							13.0	4.9	8.2
28	---	---	---							12.8	4.7	7.7
29	---	---	---							11.7	4.9	7.6
30	---	---	---							11.6	5.2	7.5
31	---	---	---							11.3	5.2	7.6
MONTH	14.1	7.6	10.1							15.3	.5	7.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	---	---	---	7.6	5.8	6.6	10.8	5.8	7.7			
2	---	---	---	7.1	5.9	6.4	13.3	5.4	8.5			
3	---	---	---	7.3	6.4	7.0	12.8	5.0	7.8			
4	---	---	---	10.0	4.4	6.4	12.6	5.3	8.5			
5	---	---	---	7.3	4.7	6.6	10.6	5.2	7.6			
6	---	---	---	7.4	4.1	5.9	14.5	4.6	8.5			
7	---	---	---	8.1	4.6	6.1	12.8	4.5	7.7			
8	---	---	---	7.8	6.2	7.2	11.9	4.3	7.3			
9	---	---	---	7.9	7.1	7.4	12.3	4.2	7.2			
10	---	---	---	9.3	5.5	7.0	11.8	4.2	7.1			
11	---	---	---	6.9	4.8	5.6	11.4	4.5	7.4			
12	---	---	---	6.6	4.9	6.1	11.6	5.2	7.7			
13	---	---	---	7.2	4.8	6.3	11.4	5.3	7.7			
14	---	---	---	10.2	4.8	7.1	10.9	4.9	7.1			
15	---	---	---	12.2	4.9	7.6	10.4	5.1	7.1			
16	10.8	4.0	6.7	12.6	4.9	8.0	10.9	5.1	7.3			
17	10.1	4.0	6.4	11.9	4.8	7.6	11.6	5.1	7.4			
18	9.3	4.0	5.9	9.4	4.8	6.7	9.7	5.1	7.1			
19	9.2	4.1	6.1	9.2	4.9	6.4	12.0	5.5	7.9			
20	6.6	4.1	5.6	8.3	5.0	6.2	11.4	5.0	7.5			
21	7.0	4.4	5.3	10.7	.5	5.0	11.1	5.0	7.4			
22	7.5	3.9	5.2	10.9	4.1	7.6	11.2	5.0	7.6			
23	8.3	3.9	5.7	4.3	2.0	3.2	11.3	5.3	7.5			
24	8.5	3.4	5.7	5.7	3.5	4.3	10.7	5.3	7.4			
25	9.0	3.7	5.7	9.2	3.2	6.1	7.3	4.6	5.9			
26	6.4	4.4	5.8	---	---	---	10.4	4.5	6.7			
27	6.9	4.4	5.4	---	---	---	11.3	4.6	7.1			
28	7.8	4.7	5.9	---	---	---	11.8	4.6	7.2			
29	10.7	4.5	6.9	---	---	---	11.0	4.8	6.9			
30	7.7	4.7	6.1	---	---	---	10.5	4.8	6.9			
31	---	---	---	8.4	6.2	7.2	8.5	5.1	6.5			
MONTH	10.8	3.4	5.9	12.6	.5	6.5	14.5	4.2	7.4			

GUADALUPE RIVER BASIN

08178622 LORENCE CREEK AT SHADOW CLIFF DRIVE, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°34'58", long 98°27'36", Bexar County, Hydrologic Unit 123100301, at downstream side of culvert on Shadow Cliff Drive and 3.4 mi upstream from mouth.

DRAINAGE AREA.--4.57 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1980 to October 1985 (published as "at Thousand Oaks Boulevard"), October 1985 to September 1988 (discontinued).

GAGE.--Digital recorders (stage and rainfall). Gage is not referenced to National Geodetic Vertical Datum of 1929. Gage removed Sept. 5, 1984, to Apr. 27, 1987. Prior to Oct. 21, 1985, at site 0.8 mi upstream at Thousand Oaks Boulevard.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,450 ft³/s May 31, 1987 (gage height, 6.21 ft), at present site and datum, from rating curve extended above 230 ft³/s; no flow most of time.

EXTREMES FOR WATER YEAR 1987.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 22	0800	221	4.44	May 31	1545	b*1,450	*6.21
May 29	0815	404	a4.74	June 2	0500	269	4.43

a From floodmark.

b From rating curve extended above 230 ft³/s.

Minimum discharge, no flow most of time.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	0015	163	4.13	July 21	0930	*318	*4.55

Minimum discharge, no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1980 to July 1988 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
NOV												
16...	1345	<1.0	147	8.00	17.0	48	22	--	--	--	27000	
DEC												
19...	1350	<1.0	105	8.00	17.5	65	56	8.2	89	4.1	K12000	
JUN												
25...	2343	58	89	7.40	--	95	5.1	--	--	--	--	
26...	0016	123	99	7.70	--	110	840	--	--	--	--	
26...	0802	2.2	152	7.90	24.0	50	1.5	5.6	68	5.8	--	
JUL												
21...	0700	68	140	6.00	--	45	16	--	--	3.8	K8500	
21...	0730	92	110	5.70	--	55	26	--	--	3.9	16000	
21...	0830	252	103	6.40	24.0	--	--	8.0	97	4.9	14000	
DATE	TIME	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV												
16...	--	63	14	23	1.3	1.9	0.1	3.8	49	12	4.1	
DEC												
19...	37000	--	--	--	--	--	--	--	21	--	--	
JUN												
25...	--	33	10	12	0.69	1.2	0.1	3.5	23	8.8	4.4	
26...	--	48	--	18	0.68	1.6	0.1	3.2	--	12	2.4	
26...	K8000	72	1	27	1.2	1.7	0.1	4.4	71	9.5	2.5	
JUL												
21...	22000	65	5	24	1.3	1.6	0.1	2.9	60	9.0	1.5	
21...	28000	49	1	18	1.1	1.4	0.1	2.8	49	8.2	1.7	
21...	17000	48	8	18	0.72	1.4	0.1	2.6	40	10	1.8	

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

GUADALUPE RIVER BASIN

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

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

DRAINAGE AREA.--2.45 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1976 to September 1988 (discontinued).

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

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (revised), 889 ft³/s June 6, 1985 (gage height, 6.92 ft); no flow most of time.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	0015	*529	*6.48	No other peak greater than base discharge.			

Minimum discharge, no flow most of time.

REVISIONS.--The peak discharges and annual maximum (*) reported for water years 1978, 1981-83, and 1985 have been revised as shown in the following table. They supersede figures published in the WDR reports for 1978, 1981-83, and 1985.

Water year	Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Water year	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
1978	Nov. 1, 1977	0820	523	5.82	1985	Apr. 13, 1985	1805	674	6.11
1981	June 13, 1981	1655	417	5.43		June 6, 1985	1355	889	6.92
1982	May 6, 1982	Unknown	514	6.79		June 18, 1985	1745	214	4.50
1983	May 20, 1983	1455	293	4.90		June 22, 1985	0615	765	6.58
	May 21, 1983	0915	293	4.90		July 3, 1985	1510	607	6.10
1985	Oct. 14, 1984	0150	230	4.30		July 12, 1985	0550	173	4.26
	Oct. 22, 1984	0955	235	4.31		Sept. 29, 1985	0955	354	5.17

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1976 to July 1988 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV											
08...	1530	1.2	96	7.40	--	140	90	--	--	4.9	--
08...	1600	1.7	93	7.70	--	75	65	--	--	5.0	--
16...	0645	1.2	81	7.10	--	80	61	--	--	--	70000
16...	0715	0.67	82	7.00	--	60	72	--	--	--	70000
DEC											
19...	1240	0.63	92	8.20	16.0	140	72	8.8	93	4.1	51000
FEB											
18...	0430	2.0	63	7.50	--	--	--	--	--	6.4	K7200
18...	0500	3.6	88	7.80	--	--	--	--	--	5.9	K8800
18...	0530	2.7	97	7.90	--	--	--	--	--	5.8	K16000
MAY											
20-20	2225	45	74	7.40	--	55	31	--	--	--	--
JUN											
02-03	2350	393	95	7.00	--	--	--	--	--	--	--
JUL											
21...	0652	1.2	74	8.00	--	22	2.6	--	--	3.8	6000
21...	0722	6.0	106	5.90	--	55	11	--	--	4.7	2400
21...	0800	24	73	5.70	24.0	45	7.3	7.8	95	2.9	9600

GUADALUPE RIVER BASIN

245

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV											
08...	--	38	7	14	0.78	2.6	0.2	4.8	31	12	5.0
08...	--	38	8	14	0.65	1.9	0.1	4.8	30	11	3.9
16...	--	33	4	12	0.63	1.7	0.1	3.7	29	8.0	3.1
16...	88000	35	4	13	0.68	1.8	0.1	3.6	31	9.0	3.1
DEC											
19...	300000	40	0	15	0.72	1.8	0.1	4.4	41	8.0	2.8
FEB											
18...	K28000	--	--	--	--	--	--	--	25	--	--
18...	K52000	--	--	--	--	--	--	--	32	--	--
18...	K76000	--	--	--	--	--	--	--	35	--	--
MAY											
20-20	--	25	12	9.2	0.60	1.7	0.2	3.0	13	7.3	3.2
JUN											
02-03	--	37	4	14	0.53	1.6	0.1	2.8	33	6.9	2.6
JUL											
21...	7200	33	2	12	0.64	1.2	0.1	2.0	31	5.8	1.2
21...	13000	43	3	16	0.85	1.5	0.1	3.7	41	6.0	2.1
21...	32000	30	2	11	0.69	1.7	0.1	2.6	28	7.3	2.1
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
NOV											
08...	0.10	3.8	62	187	40	0.680	0.020	0.700	0.080	1.0	1.1
08...	0.10	3.3	58	207	54	0.680	0.020	0.700	0.070	1.0	1.1
16...	0.10	3.1	50	80	17	0.380	0.020	0.400	0.090	0.41	0.50
16...	0.10	3.7	54	83	16	0.370	0.030	0.400	0.080	1.0	1.1
DEC											
19...	0.20	4.9	62	92	25	0.270	0.030	0.300	0.040	0.66	0.70
FEB											
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
MAY											
20-20	0.20	2.2	35	55	30	0.380	0.020	0.400	0.190	0.71	0.90
JUN											
02-03	0.30	3.6	52	--	--	0.640	0.060	0.700	0.100	0.80	0.90
JUL											
21...	0.10	2.8	44	5	1	0.390	0.010	0.400	0.020	0.38	0.40
21...	0.10	5.3	60	16	3	0.380	0.020	0.400	0.040	0.76	0.80
21...	0.20	3.7	46	21	7	0.280	0.020	0.300	0.060	0.74	0.80
DATE	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
NOV											
08...	0.160	15	1	7	<1	<1	4	42	<5	3	0.3
08...	0.180	15	2	17	<1	2	3	14	<5	1	0.2
16...	0.200	12	1	17	<1	<1	2	29	<5	<1	0.2
16...	0.130	12	1	6	<1	<1	3	91	<5	3	0.2
DEC											
19...	0.190	11	1	7	<1	<1	3	46	<5	3	<0.1
FEB											
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
MAY											
20-20	0.250	9.3	1	6	<1	<1	12	47	<5	7	0.1
JUN											
02-03	0.330	--	--	--	--	--	--	--	--	--	--
JUL											
21...	0.110	5.1	--	--	--	--	--	--	--	--	--
21...	0.140	9.3	--	--	--	--	--	--	--	--	--
21...	0.260	5.6	1	14	<1	<1	3	68	<5	4	0.1

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

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

LOCATION (REVISED).--Lat 29°36'30", long 98°25'29", Bexar County, Hydrologic Unit 12100301, at mid-channel, 1.1 mi upstream from West Elm Creek, 1.3 mi upstream from Farm Road 1604, and 6.2 mi north of San Antonio International Airport. Prior to May 19, 1987, at site 1.0 mi upstream.

DRAINAGE AREA.--2.33 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1975 to September 1988 (discontinued).

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Gage is not referenced to National Geodetic Vertical. Datum of 1929. Prior to May 19, 1987, at site 1.0 mi upstream.

REMARKS.--Records poor.

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

EXTREMES FOR WATER YEAR 1987.--Peak discharges greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 12	0555	*194	*5.83	May 31	Unknown	Unknown	a4.78

a Maximum stage at new site.

Minimum discharge, no flow most of time.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	0200	Unknown	*3.99				

Minimum discharge, no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1976 to June 1988 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	
JUN 03...	0955	EO.50	123	100	4.4	3500	K12000	59	8	22	0.94	1.4	
DATE	RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUD- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	
JUN 03...	0.1	4.3	51	9.9	3.4	0.30	11	84	6	3	0.670	0.030	
DATE		NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JUN 03...	0.700	0.060	0.94	1.0	0.050	16	<1	9	<1	<1	2	41	
DATE		LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JUN 03...	<5	3	<0.1	<1	<1.0	14	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	
DATE		DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	
JUN 03...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01		

GUADALUPE RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JUN 03...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

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

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

DRAINAGE AREA.--137 mi².

WATER-DISCHARGE RECORDS

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

Water-quality records.--Chemical, biochemical, and pesticide analyses: November 1968 to September 1988.
Sediment analyses: November 1971 to September 1973. Water temperatures: November 1968 to September 1988.
Bacteria analyses: May 1976 to September 1988.

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

REMARKS.--Records fair above about 2 ft³/s and poor below. Some diversions upstream from gage for irrigation. Flow is affected at times by discharge from the flood-detention pools of eleven floodwater-retarding structures with a combined detention capacity of 26,770 acre-ft. These structures control runoff from 74.6 mi² above this station. Recording rain gage at station with four additional recording rain gages in the watershed.

AVERAGE DISCHARGE.--28 years, 9.80 ft³/s (7,100 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	0400	*3,780	*8.42	July 21	1330	468	4.72

Minimum daily discharge, 0.10 ft³/s May 19, 20, June 2, Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	.30	2.1	e.40	e.60	.22	1.5	1.7	e.20	5.8	2.1	e.13
2	e.20	.35	.54	e.40	e.50	.55	1.5	1.5	e.10	1.4	6.8	e.13
3	.44	.40	.63	e.30	e.40	.24	1.5	1.1	659	2.6	2.2	e.13
4	3.6	.40	.63	e.30	e.30	.18	1.5	.95	22	3.9	8.9	e.11
5	3.6	.38	.31	e.30	2.4	6.7	1.5	1.0	14	1.3	4.6	e.11
6	3.6	1.1	.13	e6.0	6.7	7.1	1.5	1.1	7.9	.28	3.1	e.11
7	3.4	2.6	.89	e2.0	4.0	4.9	1.5	1.2	.75	.24	.25	e.11
8	.32	13	8.0	e1.0	.99	.40	3.1	1.3	.57	.24	.18	e.11
9	e.20	1.6	9.1	e.50	.30	e.30	2.1	1.6	.41	.24	.18	e.11
10	e.20	.52	1.9	e.40	e.30	e.20	1.7	1.3	.41	.47	.18	e.11
11	e.20	.51	2.1	e.40	e.30	2.9	1.5	1.0	3.9	2.5	.18	e.11
12	e.20	.49	2.3	e.40	e.40	2.1	1.5	1.1	4.9	7.5	.18	e.11
13	e.20	e.30	2.8	e.40	4.2	1.8	1.5	.25	5.1	.28	.16	e.11
14	e.20	1.9	3.0	e.30	5.1	1.8	1.5	e.20	3.9	.24	.18	e.11
15	1.3	6.0	3.1	e.40	4.3	2.4	1.5	e.18	.47	.24	.19	e.11
16	9.7	6.6	3.3	e.70	.26	6.2	2.9	e.16	.30	.23	.24	.12
17	7.6	.65	e4.0	e.60	e.18	10	2.4	e.14	.24	.20	.22	6.5
18	2.2	.51	e2.0	e.40	4.5	2.8	1.8	e.12	.24	e.18	.20	3.0
19	.19	.45	e30	e.40	1.7	1.8	1.5	e.10	.24	e.16	.20	.30
20	.24	.51	e5.0	e.40	11	1.8	1.5	e.10	.24	6.8	e.18	.20
21	.17	.51	e4.0	e.40	7.6	1.8	1.5	e.80	.24	153	e.16	e.13
22	.29	.51	e1.0	e.40	4.8	1.8	1.5	e.30	.26	25	e.14	e.13
23	.89	.54	e1.0	e.30	.40	1.7	1.5	e.20	.32	2.1	e.12	e.13
24	.53	1.1	e.50	e.30	e.20	1.3	1.3	e.50	.32	.54	.12	e.13
25	.46	4.7	e7.0	e.30	e.15	1.4	1.3	.37	.69	.51	1.3	e.13
26	.69	2.1	e2.0	e.30	1.6	.54	1.2	.40	16	.51	.16	e.13
27	2.3	8.3	e1.0	e.30	12	1.5	1.1	.90	20	.51	e.14	e.13
28	2.2	2.4	e.70	e.30	7.7	3.0	1.2	e.60	58	.55	e.12	e.13
29	.43	2.6	e.50	e.30	1.7	6.7	4.1	e.50	5.4	.32	e.10	e.13
30	.32	2.6	e.40	e.30	---	3.8	3.7	e.40	1.6	1.6	.16	e.13
31	.32	---	e.40	e1.0	---	1.7	---	e.30	---	.44	e.14	---
TOTAL	46.49	63.93	100.33	20.20	84.58	79.63	53.4	21.37	827.70	219.88	33.08	13.13
MEAN	1.50	2.13	3.24	.65	2.92	2.57	1.78	.69	27.6	7.09	1.07	.44
MAX	9.7	13	30	6.0	12	10	4.1	1.7	659	153	8.9	6.5
MIN	.17	.30	.13	.30	.15	.18	1.1	.10	.10	.16	.10	.11
AC-FT	92	127	199	40	168	158	106	42	1640	436	66	26

CAL YR 1987 TOTAL 7647.70 MEAN 21.0 MAX 789 MIN .00 AC-FT 15170
WTR YR 1988 TOTAL 1563.72 MEAN 4.27 MAX 659 MIN .10 AC-FT 3100

e Estimated.

GUADALUPE RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1968 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DEC 17...	1235	0.51	638	7.90	24.5	5	2.5	11.8	144	1.8	<100
FEB 02...	1255	0.31	611	7.90	15.0	2	1.3	10.0	100	4.4	20
APR 06...	1050	1.7	549	7.80	19.5	4	13	7.7	85	3.4	K210
JUN 07...	1330	0.50	628	8.00	26.5	14	8.0	8.3	106	3.0	620
DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DEC 17...	K670	290	35	96	11	22	0.6	12	250	59	26
FEB 02...	200	250	21	84	10	20	0.6	12	230	40	24
APR 06...	280	230	22	74	11	21	0.6	9.6	208	50	24
JUN 07...	480	250	96	90	7.2	23	0.7	14	159	100	24
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLAT- ILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
DEC 17...	0.50	13	389	2	<1	0.780	0.020	0.800	0.030	0.47	0.50
FEB 02...	0.40	11	339	5	<1	1.68	0.020	1.70	0.040	--	<0.20
APR 06...	0.40	12	327	25	6	0.280	0.020	0.300	0.050	0.35	0.40
JUN 07...	0.70	15	369	13	3	0.440	0.020	0.460	0.030	0.37	0.40
DATE	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
DEC 17...	0.020	2.5	1	60	<1	<1	<1	3	<5	2	<0.1
FEB 02...	0.030	0.4	--	--	--	--	--	--	--	--	--
APR 06...	0.040	3.9	--	--	--	--	--	--	--	--	--
JUN 07...	0.030	6.3	2	64	<1	<1	1	<3	<5	9	<0.1
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
DEC 17...	<1	<1.0	3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
FEB 02...	--	--	--	--	--	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--	--	--	--	--	--
JUN 07...	2	<1.0	3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	0.16

GUADALUPE RIVER BASIN

251

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)
DEC 17...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
FEB 02...	--	--	--	--	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--	--	--	--	--
JUN 07...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
DEC 17...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
FEB 02...	--	--	--	--	--	--	--	--	--	--
APR 06...	--	--	--	--	--	--	--	--	--	--
JUN 07...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	0.03	0.01	<0.01

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX

LOCATION.--Lat 29°21'25", long 98°24'45", Bexar County, Hydrologic Unit 12100301, on right bank at upstream side of bridge on Loop 13 at San Antonio, 1.4 mi east of Brooks Air Force Base, and 3.3 mi upstream from Rosillo Creek.

DRAINAGE AREA.--189 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 526.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Small diversions above station. Recording rain gages in watershed above station. Most of low flow comes from artesian wells and springs in the city of San Antonio. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 43.3 ft³/s (3.11 in/yr), 31,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s Sept. 27, 1973 (gage height, 28.83 ft); no flow Aug. 13, 1967.
Maximum stage since at least 1941, that of Sept. 27, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Sept. 27, 1946, and Aug. 15, 1960, were about equal magnitude. Flood of Aug. 15, 1960, reached a stage of 26.8 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,690 ft³/s June 3 at 1400 hours (gage height, 15.11 ft); minimum daily, 11 ft³/s June 21-23, July 18, 19, Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	27	33	26	29	27	27	22	13	14	23	14
2	24	27	32	26	29	28	25	18	12	14	32	14
3	23	26	30	26	26	31	24	16	709	14	26	14
4	23	27	29	26	25	27	24	15	97	18	45	15
5	23	26	29	25	25	26	24	15	36	20	38	14
6	24	26	29	31	34	27	23	15	26	14	21	11
7	24	25	29	39	36	30	22	16	22	15	19	13
8	23	61	27	33	33	30	25	16	17	12	17	12
9	23	133	31	27	29	25	38	17	16	12	15	12
10	23	e69	36	26	26	23	27	16	15	13	14	14
11	23	e40	30	27	25	23	23	16	14	17	14	14
12	23	e30	28	26	24	24	23	17	14	77	14	14
13	24	e28	28	26	24	26	21	17	14	24	16	16
14	23	e26	28	25	27	25	21	16	15	14	17	13
15	24	e50	28	25	30	24	20	16	12	13	17	14
16	23	e90	28	25	29	24	29	17	13	13	15	14
17	28	45	29	32	25	59	42	15	12	12	15	34
18	31	31	102	33	86	85	29	14	12	11	27	52
19	30	27	129	28	51	37	24	13	12	11	19	26
20	24	27	131	26	32	31	21	13	12	15	15	18
21	23	27	48	25	34	29	20	34	11	369	14	17
22	24	27	42	24	32	26	20	21	11	153	14	15
23	36	27	30	23	30	26	20	15	11	36	14	15
24	34	30	28	27	26	26	18	14	13	24	13	14
25	29	104	30	29	25	25	18	13	12	20	17	14
26	29	63	39	29	26	24	16	13	55	18	19	14
27	28	92	32	26	26	24	15	13	31	18	15	13
28	29	62	33	25	33	24	15	13	131	29	15	12
29	30	37	30	25	33	25	15	12	39	32	15	14
30	29	36	25	25	---	29	23	13	19	21	13	14
31	27	---	25	26	---	28	---	13	---	20	13	---
TOTAL	805	1346	1228	842	910	918	692	494	1426	1093	581	490
MEAN	26.0	44.9	39.6	27.2	31.4	29.6	23.1	15.9	47.5	35.3	18.7	16.3
MAX	36	133	131	39	86	85	42	34	709	369	45	52
MIN	23	25	25	23	24	23	15	12	11	11	13	11
AC-FT	1600	2670	2440	1670	1800	1820	1370	980	2830	2170	1150	972
CFSM	.14	.24	.21	.14	.17	.16	.12	.08	.25	.19	.10	.09
IN.	.16	.26	.24	.17	.18	.18	.14	.10	.28	.22	.11	.10

CAL YR 1987 TOTAL 28960 MEAN 79.3 MAX 1360 MIN 23 AC-FT 57440 CFSM .42 IN. 5.70
WTR YR 1988 TOTAL 10825 MEAN 29.6 MAX 709 MIN 11 AC-FT 21470 CFSM .16 IN. 2.13

e Estimated.

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1968 to September 1973.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.
pH: January 1987 to current year.
WATER TEMPERATURE: January 1987 to current year.
DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 940 microsiemens July 2, 1987; minimum, 177 microsiemens June 3, 1988.
pH: Maximum, 8.4 units on several days during 1987 and 1988; minimum, 7.4 units Feb. 18, 1987, Mar. 18-21, 1988.
WATER TEMPERATURE: Maximum, 31.0°C July 17-20, 1988; minimum, 8.0°C Jan. 11, 1988.
DISSOLVED OXYGEN: Maximum, 16.7 mg/L Jan. 27, 1988; minimum, 3.6 mg/L Aug. 15, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 873 microsiemens Mar. 30; minimum, 177 microsiemens June 3.
pH: Maximum, 8.4 units Dec. 16; minimum, 7.4 units Mar. 18-21.
WATER TEMPERATURE: Maximum, 31.0°C July 17-20; minimum, 8.0°C Jan. 11.
DISSOLVED OXYGEN: Maximum, 16.7 mg/L Jan. 27; minimum, 3.6 mg/L Aug. 15.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 29...	1315	15	746	8.10	20.0	--	--	7.0	78	2.8	--
DEC 09...	1410	34	770	8.00	17.0	4	3.5	8.7	91	1.1	280
FEB 19...	1430	44	533	7.70	15.5	8	11	7.8	80	1.6	--
APR 06...	1145	24	741	7.70	20.0	8	19	7.0	78	2.6	K200
JUN 29...	1200	44	356	7.90	26.0	30	170	5.6	71	2.2	2100
AUG 09...	1200	16	622	8.00	27.0	19	10	4.8	62	1.8	480
DATE	STREP- TOCOCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 29...	--	280	30	87	16	43	1	3.6	254	52	54
DEC 09...	210	310	38	96	17	44	1	4.1	272	54	57
FEB 19...	--	210	43	66	12	29	0.9	4.4	172	46	37
APR 06...	290	290	25	88	16	41	1	4.6	261	58	58
JUN 29...	3300	140	41	46	5.0	18	0.7	5.0	95	40	19
AUG 09...	700	230	35	72	11	38	1	4.3	190	47	50
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLATILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
OCT 29...	0.30	14	422	--	--	1.58	0.020	1.60	0.040	0.16	0.20
DEC 09...	0.30	12	447	8	5	1.28	0.020	1.30	0.030	0.37	0.40
FEB 19...	0.30	9.7	308	20	4	0.980	0.020	1.00	0.100	0.50	0.60
APR 06...	0.30	14	436	36	7	1.17	0.030	1.20	0.050	0.25	0.30
JUN 29...	0.40	9.7	200	272	40	0.500	0.100	0.600	0.260	0.14	0.40
AUG 09...	0.20	13	349	18	3	--	<0.010	0.700	0.040	0.26	0.30

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible][illegible][illegible]

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	805	767	437	950	63	136	62	134	290
NOV. 1987	1346	605	352	1280	43	155	52	188	240
DEC. 1987	1228	634	367	1220	47	154	53	177	250
JAN. 1988	842	761	434	987	62	141	61	139	290
FEB. 1988	910	712	409	1000	55	136	58	144	270
MAR. 1988	918	722	413	1020	57	141	59	146	280
APR. 1988	692	748	428	799	60	112	61	113	290
MAY 1988	494	744	426	568	60	80	60	81	280
JUNE 1988	1426	429	254	979	27	102	38	148	170
JULY 1988	1093	448	266	786	27	80	40	119	180
AUG. 1988	581	662	383	601	49	77	56	87	260
SEPT 1988	490	680	392	519	51	68	57	75	260
TOTAL	10825	**	**	10700	**	1380	**	1550	**
WTD.AVG.	30	634	367	**	47	**	53	**	250

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	775	753	767	779	757	766	672	581	629	789	747	780
2	775	753	765	779	768	775	702	671	688	800	747	788
3	788	764	776	788	768	779	720	700	708	789	779	787
4	788	776	782	778	768	770	738	718	725	789	779	782
5	788	776	786	779	758	772	747	728	740	790	738	779
6	788	754	772	779	768	773	765	736	751	790	758	771
7	788	754	768	779	769	778	763	743	752	758	727	735
8	766	744	752	779	442	711	772	751	763	790	727	755
9	778	744	762	---	---	400	771	721	748	759	748	753
10	789	767	778	---	---	495	731	702	718	780	759	770
11	778	767	777	---	---	575	732	713	722	770	749	756
12	790	767	780	---	---	620	755	724	736	770	749	764
13	790	779	784	---	---	660	757	745	754	760	748	751
14	790	767	779	---	---	700	768	757	763	770	749	762
15	791	768	780	---	---	615	759	739	750	770	760	769
16	791	769	783	---	---	500	760	741	748	791	770	777
17	791	747	777	---	---	600	752	733	746	781	740	763
18	758	736	750	724	662	703	774	520	620	761	739	748
19	747	736	738	765	713	741	592	316	467	750	739	746
20	770	736	746	764	710	730	389	337	354	771	750	764
21	782	759	772	751	719	734	544	408	488	782	739	774
22	782	770	775	738	718	726	586	554	560	792	739	778
23	827	759	778	757	737	743	660	586	631	782	771	776
24	771	726	750	776	745	759	702	660	683	782	739	764
25	782	726	757	745	413	581	734	702	715	750	729	739
26	772	749	761	659	505	568	715	694	704	739	718	731
27	783	761	774	649	421	509	727	705	715	750	718	734
28	783	761	776	605	452	506	740	707	722	760	739	750
29	761	746	749	605	543	569	750	710	729	771	750	756
30	757	736	746	593	562	573	746	736	737	771	760	767
31	767	747	756	---	---	---	779	737	768	771	750	763
MONTH	827	726	768	788	413	658	779	316	688	800	718	762

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	760	749	756	751	730	740	798	766	783	719	709	715
2	760	739	753	774	752	762	808	776	787	768	718	741
3	781	749	762	765	743	755	818	786	794	758	738	752
4	781	770	779	766	744	753	796	786	789	758	728	745
5	791	779	783	777	757	763	796	774	786	767	757	761
6	790	726	761	768	738	757	795	774	783	837	747	769
7	747	715	731	749	727	742	805	773	779	777	747	758
8	735	704	719	750	729	739	836	762	776	776	756	767
9	766	744	753	763	731	746	762	709	729	766	746	755
10	745	712	730	774	752	768	771	719	738	776	756	764
11	754	733	744	786	764	777	761	729	741	775	755	762
12	764	752	762	787	776	781	760	738	748	775	755	764
13	784	762	772	778	757	767	773	738	761	775	745	759
14	782	740	761	780	768	774	762	751	759	774	754	763
15	750	718	736	792	760	775	773	751	761	784	764	772
16	739	728	733	793	761	772	772	593	738	794	773	781
17	768	737	751	783	382	732	727	627	673	783	773	778
18	778	497	640	572	360	493	694	649	672	793	772	780
19	559	425	519	627	520	557	694	660	682	810	781	789
20	695	548	635	692	608	656	737	694	717	817	789	803
21	684	560	605	705	608	641	771	737	748	797	437	680
22	675	623	658	727	683	714	749	726	739	679	639	656
23	686	664	673	749	727	742	760	749	754	724	648	690
24	738	686	714	771	759	762	760	749	759	723	692	706
25	760	738	747	791	770	784	770	748	761	720	692	707
26	833	749	768	802	780	791	770	759	765	728	709	717
27	782	739	772	801	790	792	781	750	766	762	717	738
28	781	730	756	800	789	799	770	750	762	781	743	760
29	741	719	733	800	788	796	779	759	766	778	748	760
30	---	---	---	873	767	784	769	719	746	776	735	758
31	---	---	---	777	766	774	---	---	---	763	743	749
MONTH	833	425	724	873	360	742	836	593	752	837	437	748

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	770	731	750	540	500	520	640	570	608	770	720	742
2	757	718	745	570	530	548	700	620	666	750	730	739
3	709	177	292	590	550	570	680	660	665	740	720	729
4	352	205	294	640	590	616	700	550	650	750	720	736
5	471	361	404	640	540	601	570	360	453	740	720	725
6	525	452	490	690	510	636	550	520	537	740	710	724
7	630	504	565	710	640	686	560	540	547	740	720	730
8	700	630	656	730	700	717	620	560	583	750	720	738
9	730	700	713	750	710	733	660	620	636	760	730	744
10	760	730	743	750	720	738	670	640	659	760	730	744
11	780	750	767	800	680	727	690	660	676	750	720	734
12	810	780	793	700	350	488	700	680	693	740	730	735
13	810	790	799	530	400	481	700	680	694	750	730	737
14	810	790	801	620	480	542	700	660	689	750	710	726
15	820	790	799	650	590	625	720	590	687	750	730	741
16	820	800	814	610	580	595	720	690	705	750	730	740
17	830	800	812	650	560	608	730	710	726	730	500	658
18	830	820	824	680	620	639	730	660	711	610	520	571
19	820	810	815	680	630	656	700	660	669	570	490	518
20	830	810	818	710	660	687	720	690	708	630	580	607
21	840	820	826	670	200	337	730	710	725	650	630	636
22	830	810	826	320	210	264	730	720	726	670	650	660
23	830	800	820	410	320	367	720	710	715	670	650	660
24	820	710	803	500	400	439	730	710	722	670	660	665
25	810	780	801	520	470	493	740	710	728	670	660	668
26	800	550	674	570	520	543	730	670	692	690	670	679
27	560	510	543	610	560	587	720	690	704	710	680	694
28	620	290	430	640	560	607	780	710	724	720	690	705
29	410	320	369	610	570	595	780	740	746	740	710	723
30	480	410	439	630	480	609	760	740	747	730	710	721
31	---	---	---	660	540	626	770	740	759	---	---	---
MONTH	840	177	674	800	200	577	780	360	676	770	490	698

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.1	8.1	8.1	8.1	7.9	7.8	7.8	8.2	8.1	8.1
2	8.2	8.1	8.1	8.2	8.1	8.1	7.9	7.9	7.9	8.2	8.2	8.2
3	8.2	8.1	8.1	8.1	8.1	8.1	8.0	7.9	7.9	8.2	8.2	8.2
4	8.2	8.1	8.1	8.1	8.1	8.1	7.9	7.8	7.9	8.3	8.2	8.2
5	8.2	8.0	8.1	8.1	8.1	8.1	7.9	7.8	7.9	8.3	8.2	8.2
6	8.1	8.0	8.1	8.2	8.1	8.1	7.9	7.9	7.9	8.3	8.2	8.2
7	8.2	8.0	8.1	8.2	8.1	8.1	8.0	7.9	7.9	8.3	8.1	8.2
8	8.1	8.0	8.1	8.2	7.8	8.1	8.0	7.9	7.9	8.2	8.1	8.2
9	8.1	8.0	8.1	---	---	---	8.1	7.9	8.0	8.3	8.2	8.3
10	8.1	8.0	8.1	---	---	---	8.1	8.0	8.1	8.3	8.2	8.3
11	8.1	8.0	8.1	---	---	---	8.2	8.1	8.1	8.3	8.2	8.2
12	8.1	8.0	8.1	---	---	---	8.2	8.0	8.1	8.3	8.2	8.2
13	8.2	8.0	8.1	---	---	---	8.1	8.1	8.1	8.3	8.2	8.3
14	8.2	8.0	8.1	---	---	---	8.3	8.1	8.2	8.3	8.2	8.3
15	8.1	8.0	8.1	---	---	---	8.3	8.2	8.3	8.3	8.2	8.2
16	8.2	8.0	8.1	---	---	---	8.4	8.2	8.3	8.2	8.1	8.2
17	8.2	8.0	8.1	---	---	---	8.3	8.2	8.2	8.3	8.1	8.2
18	8.2	8.1	8.1	8.1	8.1	8.1	8.2	8.0	8.1	8.2	8.1	8.2
19	8.1	8.0	8.1	8.2	8.1	8.2	8.1	7.9	8.0	8.3	8.0	8.2
20	8.2	8.1	8.1	8.2	8.1	8.1	7.9	7.9	7.9	8.3	8.1	8.2
21	8.2	8.1	8.1	8.2	8.1	8.2	7.9	7.9	7.9	8.3	8.1	8.2
22	8.2	8.1	8.1	8.2	8.1	8.2	7.9	7.9	7.9	8.3	8.2	8.2
23	8.1	8.0	8.0	8.1	8.0	8.1	7.9	7.9	7.9	8.3	8.2	8.2
24	8.0	7.9	8.0	8.1	8.0	8.1	8.1	7.9	8.0	8.3	8.2	8.3
25	8.0	7.9	8.0	8.0	7.8	7.9	8.1	8.1	8.1	8.3	8.2	8.3
26	8.0	7.9	8.0	7.9	7.8	7.9	8.2	8.1	8.1	8.3	8.2	8.3
27	8.1	8.0	8.0	7.9	7.7	7.8	8.2	8.1	8.2	8.3	8.2	8.3
28	8.1	8.1	8.1	7.8	7.7	7.8	8.2	8.2	8.2	8.3	8.2	8.3
29	8.1	8.0	8.1	7.8	7.7	7.8	8.2	8.1	8.2	8.3	8.2	8.2
30	8.2	8.1	8.1	7.8	7.7	7.8	8.1	8.0	8.1	8.2	8.0	8.1
31	8.2	8.1	8.1	---	---	---	8.1	8.0	8.1	8.1	8.0	8.1
MONTH	8.2	7.9	8.1	8.2	7.7	8.0	8.4	7.8	8.0	8.3	8.0	8.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.1	8.0	8.1	7.9	7.8	7.9	8.0	7.9	8.0	8.1	8.0	8.0
2	8.0	8.0	8.0	7.9	7.8	7.9	8.0	8.0	8.0	8.0	7.9	8.0
3	8.2	8.0	8.1	7.9	7.8	7.9	8.1	8.0	8.0	8.0	7.9	7.9
4	8.2	8.1	8.2	7.9	7.8	7.9	8.0	8.0	8.0	8.0	8.0	8.0
5	8.3	8.2	8.2	7.9	7.8	7.9	8.0	8.0	8.0	8.0	8.0	8.0
6	8.3	8.2	8.3	8.0	7.9	7.9	8.1	8.0	8.0	8.0	7.9	8.0
7	8.3	8.2	8.3	8.0	7.8	7.9	8.1	8.0	8.1	8.0	7.9	8.0
8	8.3	8.2	8.3	7.9	7.8	7.8	8.1	8.0	8.0	8.1	8.0	8.1
9	8.3	8.2	8.3	7.9	7.8	7.9	8.0	7.9	7.9	8.1	8.1	8.1
10	8.2	8.1	8.2	7.9	7.8	7.8	7.9	7.9	7.9	8.2	8.1	8.1
11	8.3	8.1	8.2	7.9	7.8	7.8	8.0	7.8	7.9	8.2	8.1	8.2
12	8.3	8.1	8.2	7.9	7.8	7.8	8.1	8.0	8.0	8.2	8.1	8.1
13	8.3	8.2	8.2	7.9	7.8	7.8	8.1	8.0	8.1	8.2	8.1	8.1
14	8.3	8.1	8.2	7.9	7.8	7.8	8.1	8.1	8.1	8.2	8.1	8.1
15	8.3	8.1	8.2	7.9	7.8	7.8	8.2	8.1	8.1	8.2	8.1	8.1
16	8.3	8.1	8.2	7.9	7.8	7.8	8.2	8.0	8.1	8.2	8.1	8.1
17	8.2	8.1	8.1	7.8	7.7	7.8	8.0	7.9	8.0	8.2	8.1	8.2
18	8.1	7.9	8.0	7.8	7.4	7.6	8.0	7.8	7.9	8.2	8.1	8.1
19	7.9	7.8	7.9	7.5	7.4	7.4	8.0	7.9	7.9	8.2	8.1	8.1
20	7.9	7.8	7.8	7.6	7.4	7.5	8.0	7.9	7.9	8.1	8.1	8.1
21	7.9	7.7	7.8	7.6	7.4	7.5	8.0	7.9	8.0	8.2	7.9	8.0
22	7.9	7.8	7.9	7.6	7.5	7.6	8.0	7.9	8.0	8.0	7.9	7.9
23	7.9	7.8	7.9	7.9	7.6	7.7	8.1	8.0	8.0	7.9	7.9	7.9
24	8.0	7.9	7.9	7.9	7.9	7.9	8.1	8.0	8.0	7.9	7.8	7.9
25	8.0	7.8	7.9	7.9	7.9	7.9	8.1	8.0	8.0	8.0	7.9	7.9
26	7.9	7.8	7.8	7.9	7.9	7.9	8.1	8.0	8.0	8.0	7.9	8.0
27	7.9	7.8	7.9	7.9	7.9	7.9	8.1	7.9	8.0	8.1	8.0	8.0
28	7.9	7.8	7.9	7.9	7.9	7.9	8.1	8.0	8.1	8.2	8.0	8.1
29	7.9	7.8	7.9	7.9	7.9	7.9	8.1	8.0	8.1	8.2	8.1	8.2
30	---	---	---	7.9	7.9	7.9	8.1	8.0	8.0	8.2	8.1	8.2
31	---	---	---	8.0	7.8	7.9	---	---	---	8.2	8.1	8.2
MONTH	8.3	7.7	8.1	8.0	7.4	7.8	8.2	7.8	8.0	8.2	7.8	8.1

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	8.2	8.2	8.0	7.9	8.0	8.0	7.9	8.0	8.1	7.7	8.0
2	8.2	8.1	8.2	8.1	8.0	8.0	8.1	8.0	8.1	8.1	8.0	8.1
3	8.2	7.8	8.2	8.1	8.1	8.1	8.2	8.1	8.1	8.1	8.1	8.1
4	8.0	7.8	7.9	8.2	8.1	8.2	8.2	8.1	8.1	8.1	8.0	8.1
5	7.8	7.7	7.7	8.3	8.2	8.2	8.1	7.7	7.9	8.1	8.0	8.1
6	7.8	7.8	7.8	8.2	8.0	8.2	7.9	7.7	7.8	8.1	8.1	8.1
7	8.0	7.8	7.9	8.2	8.1	8.2	7.9	7.8	7.8	8.2	8.1	8.2
8	8.0	8.0	8.0	8.3	8.2	8.2	7.9	7.8	7.9	8.2	8.2	8.2
9	8.1	8.0	8.0	8.3	8.2	8.2	8.1	7.9	8.0	8.2	8.2	8.2
10	8.1	8.0	8.1	8.3	8.2	8.2	8.0	8.0	8.0	8.2	8.2	8.2
11	8.1	8.1	8.1	8.2	8.2	8.2	8.1	8.0	8.1	8.2	8.2	8.2
12	8.2	8.1	8.1	8.2	7.9	8.0	8.1	8.0	8.1	8.2	8.2	8.2
13	8.2	8.1	8.1	8.0	7.9	8.0	8.2	8.1	8.1	8.2	8.0	8.2
14	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.1	8.1	8.2	8.1	8.2
15	8.2	8.1	8.1	8.1	8.0	8.1	8.1	8.0	8.1	8.2	8.1	8.2
16	8.2	8.1	8.2	8.1	8.0	8.1	8.1	8.1	8.1	8.2	8.2	8.2
17	8.2	8.2	8.2	8.2	8.1	8.1	8.1	8.1	8.1	8.2	7.9	8.0
18	8.2	8.2	8.2	8.2	8.1	8.2	8.1	8.0	8.1	8.0	7.9	7.9
19	8.3	8.2	8.2	8.2	8.1	8.2	8.1	8.0	8.0	7.9	7.8	7.8
20	8.3	8.2	8.2	8.3	8.2	8.2	8.1	8.1	8.1	8.0	7.9	7.9
21	8.3	8.2	8.3	8.2	8.0	8.1	8.1	8.1	8.1	8.1	8.0	8.0
22	8.3	8.2	8.3	8.1	7.9	8.0	8.1	8.1	8.1	8.1	8.0	8.0
23	8.3	8.3	8.3	7.9	7.8	7.8	8.1	8.1	8.1	8.0	8.0	8.0
24	8.3	8.0	8.2	7.9	7.8	7.9	8.2	8.1	8.1	8.0	8.0	8.0
25	8.3	8.3	8.3	8.0	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0
26	8.3	8.0	8.2	8.1	7.8	8.0	8.1	8.0	8.0	8.1	8.0	8.0
27	8.0	7.9	8.0	8.1	8.0	8.1	8.1	8.0	8.1	8.1	8.1	8.1
28	8.1	7.9	8.0	8.1	8.1	8.1	8.1	8.1	8.1	8.3	8.0	8.2
29	8.0	7.9	7.9	8.1	8.0	8.1	8.1	8.0	8.1	8.3	8.3	8.3
30	7.9	7.8	7.9	8.0	7.7	7.9	8.1	8.0	8.1	8.3	8.2	8.3
31	---	---	---	7.9	7.8	7.9	8.1	8.1	8.1	---	---	---
MONTH	8.3	7.7	8.1	8.3	7.7	8.1	8.2	7.7	8.1	8.3	7.7	8.1

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

GUADALUPE RIVER BASIN

259

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18.5	17.5	18.0	21.5	20.5	21.0	21.5	19.5	20.0	---	---	---
2	18.5	16.0	18.0	21.0	20.0	20.5	20.5	18.5	19.5	---	---	---
3	16.0	15.0	15.5	20.0	18.0	19.0	21.0	18.5	20.0	---	---	---
4	15.0	13.0	14.0	18.0	17.0	17.5	21.5	20.0	20.5	---	---	---
5	12.5	11.0	12.0	18.0	15.5	17.0	22.5	21.0	21.5	---	---	---
6	12.0	10.5	11.0	18.5	16.5	17.5	22.0	21.0	21.0	---	---	---
7	11.5	11.0	11.5	18.5	17.5	18.0	21.0	19.0	20.0	---	---	---
8	13.0	11.5	12.0	19.5	18.5	19.0	20.5	19.0	19.5	---	---	---
9	14.0	13.0	13.5	18.5	17.0	18.0	19.5	19.0	19.0	---	---	---
10	14.5	13.5	14.0	18.5	16.0	17.5	19.5	17.5	18.5	---	---	---
11	14.5	12.5	13.5	20.0	17.5	19.0	18.0	16.0	17.5	---	---	---
12	12.5	10.5	11.5	20.0	19.0	19.5	18.5	16.0	17.0	---	---	---
13	14.0	11.5	12.5	19.0	17.0	17.5	18.0	17.0	17.5	---	---	---
14	16.0	14.0	15.0	17.5	15.0	16.0	20.0	17.0	18.0	---	---	---
15	15.5	14.0	14.5	15.5	14.0	15.0	21.0	19.0	20.0	---	---	---
16	16.0	13.5	14.5	15.5	15.0	15.0	21.0	20.0	20.5	---	---	---
17	17.0	16.0	16.5	16.5	15.0	15.5	21.5	19.5	20.5	---	---	---
18	17.0	15.5	16.5	16.0	14.5	15.5	21.5	20.5	21.0	---	---	23.5
19	15.5	15.0	15.5	15.5	13.0	14.5	21.5	19.0	20.0	24.5	23.0	23.5
20	15.5	14.5	15.0	16.0	14.0	15.0	21.5	19.0	20.0	24.0	23.5	24.0
21	15.5	13.5	14.5	17.0	14.5	15.5	21.5	20.0	21.0	24.0	21.5	23.0
22	16.0	14.0	15.0	18.0	16.5	17.0	23.5	21.0	22.0	23.0	22.0	22.5
23	16.0	15.5	16.0	19.5	18.0	18.5	24.0	22.5	23.0	23.5	21.0	22.5
24	16.0	14.5	15.5	21.5	19.0	20.0	23.5	21.0	22.0	24.5	22.5	23.5
25	16.5	14.5	15.5	22.5	21.0	21.5	23.0	21.0	22.0	24.5	23.0	24.0
26	16.5	16.0	16.5	22.0	21.5	21.5	23.0	20.0	21.5	24.5	23.0	23.5
27	18.0	16.5	17.0	22.0	21.0	21.5	23.0	21.0	22.0	24.5	22.5	23.5
28	19.5	17.0	18.0	22.0	21.5	22.0	22.5	20.5	21.5	24.5	23.0	24.0
29	21.0	19.0	20.0	22.0	19.5	21.5	22.5	21.5	22.0	24.5	23.5	24.0
30	---	---	---	19.5	18.0	18.5	---	---	21.5	24.5	24.0	24.5
31	---	---	---	19.5	18.5	18.5	---	---	---	24.5	24.0	24.5
MONTH	21.0	10.5	15.0	22.5	13.0	18.0	24.0	16.0	20.5	24.5	21.0	23.5

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

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.8	5.9	6.3	7.1	6.7	6.9	7.8	7.2	7.5	8.1	7.5	7.8
2	7.1	6.1	6.6	6.9	6.5	6.7	8.0	7.4	7.7	7.6	7.3	7.4
3	7.2	6.3	6.7	6.9	6.5	6.7	7.8	7.3	7.5	7.3	7.0	7.1
4	7.4	6.6	7.0	7.0	6.4	6.7	7.9	7.2	7.5	7.1	6.7	6.9
5	7.4	6.5	7.0	6.8	6.4	6.6	7.6	7.1	7.4	7.0	6.6	6.7
6	7.4	6.5	6.9	6.7	6.2	6.5	7.3	6.6	7.0	6.9	6.4	6.6
7	7.5	6.6	7.0	6.9	6.4	6.6	7.7	6.5	7.1	7.3	6.4	6.6
8	7.5	6.6	7.0	6.9	6.2	6.5	7.9	6.7	7.3	8.3	6.3	6.9
9	7.2	6.5	6.8	---	---	6.5	8.7	6.7	7.7	8.8	7.4	7.7
10	7.2	6.3	6.7	---	---	---	8.7	7.7	8.2	7.6	7.0	7.3
11	7.1	6.3	6.7	---	---	---	8.9	7.7	8.3	7.4	6.8	7.0
12	7.2	6.4	6.8	---	---	---	9.1	7.6	8.4	7.5	6.7	7.1
13	7.5	6.5	7.0	---	---	---	8.5	7.8	8.2	8.6	6.9	7.4
14	7.4	6.6	7.0	---	---	---	9.3	7.8	8.5	7.7	7.1	7.3
15	7.3	6.5	6.9	---	---	---	10.7	8.8	9.8	8.5	7.2	7.7
16	7.2	6.4	6.8	---	---	---	11.0	9.6	10.3	8.8	7.7	8.1
17	7.2	6.3	6.7	---	---	7.5	10.3	9.5	9.8	9.0	8.0	8.4
18	7.2	6.4	6.7	7.4	6.8	7.1	9.8	8.9	9.4	10.2	8.3	9.1
19	7.0	6.4	6.7	7.7	6.8	7.3	8.8	7.7	8.4	12.3	9.1	10.4
20	7.3	6.4	6.8	8.0	7.3	7.6	9.0	7.8	8.7	13.8	10.6	12.2
21	7.8	6.8	7.3	8.2	7.6	7.9	---	---	9.1	14.0	11.4	12.7
22	7.8	7.2	7.4	7.8	7.4	7.6	---	---	9.1	15.8	11.9	13.6
23	7.4	6.4	7.0	7.4	6.9	7.1	8.7	8.4	8.7	13.3	11.6	12.5
24	6.9	6.2	6.6	6.8	6.3	6.5	8.4	8.0	8.2	12.9	11.3	12.1
25	6.7	6.2	6.4	7.0	5.8	6.5	8.6	7.8	8.0	13.3	11.4	12.3
26	6.8	6.0	6.3	6.7	6.2	6.5	9.1	8.6	8.8	15.8	12.1	13.9
27	7.3	6.4	6.8	7.7	6.6	7.3	9.6	9.1	9.3	16.7	13.2	14.7
28	7.6	7.0	7.3	7.7	7.3	7.5	9.9	9.5	9.7	13.2	10.0	10.9
29	7.5	7.0	7.2	7.4	7.0	7.3	9.6	9.2	9.4	10.4	9.5	10.0
30	7.2	6.9	7.1	7.4	7.0	7.2	9.1	8.6	8.8	11.1	9.5	10.2
31	7.3	6.8	7.0	---	---	---	9.7	8.1	8.4	12.0	10.0	11.0
MONTH	7.8	5.9	6.9	8.2	5.8	7.0	11.0	6.5	8.5	16.7	6.3	9.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.7	10.7	11.6	8.0	7.1	7.5	7.0	6.8	6.9	6.9	6.4	6.6
2	11.2	8.9	10.1	7.4	6.9	7.1	7.4	7.0	7.3	6.9	6.3	6.5
3	9.0	8.3	8.7	8.5	7.4	7.8	7.5	7.2	7.4	6.8	6.3	6.5
4	11.5	8.9	9.3	9.1	7.7	8.3	7.3	6.9	7.0	7.1	6.6	6.8
5	9.7	9.1	9.4	8.7	7.9	8.3	7.0	6.6	6.8	7.1	6.8	6.9
6	10.0	9.4	9.7	8.7	8.1	8.5	7.3	6.6	6.9	7.0	6.6	6.8
7	10.5	9.5	9.9	8.9	8.4	8.6	7.5	7.2	7.3	7.0	6.4	6.6
8	10.3	9.8	10.0	8.4	8.1	8.3	7.3	6.7	7.0	6.6	6.2	6.4
9	10.3	9.7	9.9	8.1	7.9	8.0	7.0	6.1	6.7	6.6	6.3	6.4
10	9.9	9.3	9.6	7.9	7.5	7.7	7.1	6.4	6.8	6.7	6.3	6.5
11	9.4	8.6	9.1	7.8	7.1	7.5	7.8	6.7	7.2	6.8	6.3	6.5
12	8.8	8.3	8.5	7.7	7.1	7.4	7.9	7.4	7.6	7.0	6.3	6.7
13	8.5	7.9	8.2	10.0	7.0	8.0	7.8	7.3	7.6	7.1	6.9	7.0
14	8.4	7.7	8.0	9.7	8.6	9.2	7.7	7.1	7.3	7.1	6.8	6.9
15	8.2	7.5	7.8	9.6	7.8	8.5	7.5	6.8	7.1	6.9	6.6	6.8
16	8.2	7.3	7.8	7.8	7.3	7.6	7.4	6.0	6.7	6.9	6.5	6.6
17	7.7	7.3	7.5	8.6	7.7	8.2	6.7	5.5	6.0	7.0	6.6	6.8
18	8.0	7.3	7.6	8.7	8.0	8.3	5.9	5.3	5.7	7.0	6.7	6.8
19	8.0	7.5	7.7	8.0	7.5	7.7	6.4	5.6	5.9	6.8	6.6	6.7
20	9.7	7.6	8.7	7.7	7.5	7.6	6.6	6.0	6.3	6.8	6.5	6.7
21	10.7	9.0	9.8	7.8	7.5	7.6	6.5	6.0	6.2	7.0	5.8	6.5
22	11.2	9.4	10.2	7.8	7.5	7.6	6.3	5.8	6.0	6.4	5.7	6.2
23	9.6	5.8	8.0	7.7	7.4	7.6	6.4	5.7	6.0	6.8	6.3	6.6
24	5.7	4.2	4.7	7.3	6.9	7.1	6.5	5.7	6.1	6.7	6.2	6.4
25	4.7	4.1	4.3	7.0	6.5	6.7	6.4	5.7	6.0	6.8	6.2	6.5
26	5.0	4.6	4.8	6.7	6.4	6.5	6.5	5.7	6.1	7.0	6.4	6.7
27	5.9	5.0	5.3	6.6	6.4	6.5	6.8	5.8	6.3	7.3	6.7	7.0
28	7.9	5.6	6.2	6.5	6.3	6.4	6.8	6.2	6.5	7.2	6.7	7.0
29	7.4	6.7	7.0	6.7	6.2	6.4	6.8	6.2	6.4	7.1	6.7	6.9
30	---	---	---	7.5	6.7	7.2	6.7	5.5	6.2	7.1	6.7	6.9
31	---	---	---	7.3	7.0	7.1	---	---	---	7.0	6.7	6.8
MONTH	12.7	4.1	8.3	10.0	6.2	7.6	7.9	5.3	6.6	7.3	5.7	6.7

GUADALUPE RIVER BASIN

261

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.0	6.6	6.8	5.7	5.5	5.6	5.9	5.4	5.5	6.8	6.2	6.5
2	7.0	6.5	6.8	5.6	5.3	5.5	6.1	5.4	5.7	6.7	6.2	6.4
3	8.3	4.9	6.3	5.6	5.5	5.6	6.1	5.7	5.9	6.9	6.3	6.5
4	7.8	6.8	7.4	6.0	5.5	5.7	6.3	5.8	6.0	7.0	6.0	6.5
5	7.0	6.7	6.9	6.1	5.8	5.9	6.3	4.6	5.2	7.4	6.5	6.9
6	6.9	6.7	6.8	6.0	4.2	5.3	5.2	4.7	4.9	7.6	6.8	7.1
7	6.7	6.2	6.6	6.1	5.2	5.8	5.2	4.9	5.0	7.6	6.8	7.1
8	6.3	6.0	6.2	6.6	6.1	6.2	5.3	4.8	5.1	7.6	6.7	7.0
9	6.1	5.9	6.1	6.7	6.3	6.5	5.4	4.9	5.1	7.5	6.6	6.9
10	6.1	5.9	5.9	6.7	6.3	6.4	5.4	4.9	5.2	7.5	6.7	7.0
11	6.3	6.1	6.2	6.7	6.2	6.4	5.6	5.1	5.4	7.5	6.7	7.0
12	6.6	6.3	6.4	6.8	5.7	6.3	5.6	5.1	5.4	7.1	6.4	6.8
13	6.6	6.4	6.5	5.9	5.6	5.7	5.8	5.3	5.6	6.7	5.0	6.3
14	6.6	6.5	6.6	5.9	5.5	5.7	5.9	5.3	5.6	6.7	5.8	6.2
15	6.6	6.1	6.3	6.0	5.7	5.8	6.0	3.6	5.2	6.5	5.6	5.9
16	6.5	6.2	6.3	6.2	5.8	6.0	6.0	5.4	5.7	6.1	5.7	5.9
17	6.5	6.2	6.4	6.3	5.8	6.1	6.1	5.6	5.9	6.1	5.1	5.5
18	6.6	6.1	6.4	6.4	5.7	6.1	6.3	5.6	6.0	5.6	5.0	5.3
19	6.7	6.3	6.5	6.4	5.7	6.1	6.2	5.7	5.9	5.0	4.7	4.8
20	6.8	6.3	6.5	6.6	5.8	6.1	6.2	5.6	5.9	5.4	4.9	5.1
21	6.6	6.2	6.5	7.1	5.8	6.3	6.3	5.6	5.9	5.8	5.4	5.6
22	6.7	6.2	6.5	7.4	6.5	7.0	6.3	5.6	5.9	5.9	5.6	5.7
23	6.8	6.3	6.6	6.7	6.2	6.6	6.5	5.8	6.1	5.8	5.4	5.6
24	6.6	3.8	6.0	6.2	6.0	6.1	6.3	5.7	6.0	5.7	5.5	5.6
25	6.7	6.1	6.4	6.2	6.0	6.1	6.4	5.5	6.0	6.0	5.6	5.8
26	6.6	4.8	6.1	6.1	5.9	6.0	6.5	5.8	6.1	6.2	5.8	6.0
27	5.2	5.0	5.2	6.0	5.9	6.0	6.9	5.9	6.3	6.4	6.0	6.2
28	6.4	4.8	5.6	6.4	5.8	6.1	6.7	6.0	6.3	6.5	6.1	6.3
29	6.2	5.3	5.7	6.3	5.3	5.8	7.1	5.8	6.4	6.4	6.0	6.2
30	5.7	5.3	5.5	5.6	4.4	5.3	6.9	6.0	6.4	6.5	6.2	6.3
31	---	---	---	5.5	4.8	5.4	7.0	6.3	6.5	---	---	---
MONTH	8.3	3.8	6.3	7.4	4.2	6.0	7.1	3.6	5.8	7.6	4.7	6.2

GUADALUPE RIVER BASIN

08178880 MEDINA RIVER AT BANDERA, TX

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

DRAINAGE AREA.--427 mi².

WATER-DISCHARGE RECORDS

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

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

REMARKS.--No estimated daily discharges. Records poor prior to Apr. 21 and good thereafter. Several small diversions upstream from station.

AVERAGE DISCHARGE.--6 years, 170 ft³/s (123,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,800 ft³/s June 3, 1987 (gage height, 24.90 ft), from rating curve extended above 27,000 ft³/s; minimum daily, 2.2 ft³/s Aug. 7, 11, 13, 14, 1984.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,500 ft³/s July 11 at 2100 hours (gage height, 21.80 ft, from flood-mark); minimum daily, 20 ft³/s June 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	75	71	71	62	60	50	36	43	40	120	46
2	83	75	70	69	61	60	49	38	43	36	120	47
3	81	76	68	66	61	58	49	37	45	33	112	47
4	82	74	70	65	61	57	46	34	50	31	108	45
5	84	72	69	64	61	56	45	33	47	28	104	45
6	83	72	69	65	60	57	43	32	42	27	106	43
7	83	71	67	63	60	56	44	31	39	29	94	42
8	83	111	66	64	60	57	49	31	37	29	91	41
9	83	123	67	66	59	56	47	30	34	28	87	40
10	82	96	67	66	58	57	46	29	33	29	90	39
11	80	85	66	59	58	59	48	29	32	6770	88	38
12	79	83	64	60	58	56	47	31	29	2510	83	38
13	79	82	65	59	58	55	46	32	27	638	78	36
14	82	80	65	59	58	54	46	34	26	381	76	36
15	83	82	67	59	58	54	46	32	24	296	75	35
16	81	101	65	58	60	53	45	31	24	239	72	34
17	79	99	63	60	59	64	47	30	23	204	70	69
18	77	94	66	63	62	58	46	30	22	179	71	72
19	77	85	75	61	58	60	43	28	21	161	66	150
20	79	82	97	59	61	58	41	30	21	224	65	105
21	77	82	99	60	61	59	38	113	23	246	62	74
22	75	80	87	62	60	57	36	121	22	220	59	64
23	76	82	75	60	60	56	36	84	20	183	57	58
24	77	82	74	58	58	56	34	69	20	164	55	56
25	81	84	76	61	58	57	34	60	21	153	54	54
26	79	75	85	64	60	53	33	53	28	143	52	52
27	78	79	76	60	62	52	32	50	39	133	50	50
28	76	73	67	61	59	51	32	47	61	128	50	49
29	75	73	67	60	60	52	33	44	52	123	50	49
30	74	71	69	61	---	48	36	44	45	126	49	52
31	76	---	70	61	---	49	---	43	---	124	47	---
TOTAL	2474	2499	2222	1924	1731	1735	1267	1366	993	13655	2361	1606
MEAN	79.8	83.3	71.7	62.1	59.7	56.0	42.2	44.1	33.1	440	76.2	53.5
MAX	90	123	99	71	62	64	50	121	61	6770	120	150
MIN	74	71	63	58	58	48	32	28	20	27	47	34
AC-FT	4910	4960	4410	3820	3430	3440	2510	2710	1970	27080	4680	3190

CAL YR 1987 TOTAL 166212 MEAN 455 MAX 15600 MIN 63 AC-FT 329700
WTR YR 1988 TOTAL 33833 MEAN 92.4 MAX 6770 MIN 20 AC-FT 67110

08178880 MEDINA RIVER AT BANDERA, TX--Continued

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

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 04...	1350	64	529	8.30	10.0	2	0.20	11.2	101	0.3	K6
MAY 09...	1609	30	510	8.10	24.5	1	0.60	7.9	99	0.6	K17
AUG 29...	1453	50	535	8.10	26.0	1	0.70	7.5	96	0.5	200
DATE	STREP- TOCOCCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN 04...	K22	280	81	82	18	7.5	0.2	1.1	198	75	12
MAY 09...	23	260	91	74	19	7.6	0.2	1.1	172	84	13
AUG 29...	24	280	98	78	20	7.6	0.2	1.3	180	81	12
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
JAN 04...	0.20	9.0	324	3	2	<0.010	0.500	0.010	--	<0.20	<0.010
MAY 09...	0.30	11	313	<1	<1	<0.010	0.200	0.020	--	<0.20	0.010
AUG 29...	0.20	13	321	3	<1	<0.010	0.300	0.010	0.39	0.40	0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)
JAN 04...	0.7	<1	37	<1	<5	1	3	<5	1	<0.1	<1
MAY 09...	1.6	--	--	--	--	--	--	--	--	--	--
AUG 29...	1.2	<1	36	1	<1	1	4	<5	1	<0.1	<1
DATE	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	
JAN 04...	<1.0	3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
MAY 09...	--	--	--	--	--	--	--	--	--	--	
AUG 29...	<1.0	8	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	
JAN 04...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
MAY 09...	--	--	--	--	--	--	--	--	--	--	
AUG 29...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

GUADALUPE RIVER BASIN
08178880 MEDINA RIVER AT BANDERA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 04...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 09...	--	--	--	--	--	--	--	--	--	--
AUG 29...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX

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

DRAINAGE AREA.--634 mi².

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

REVISED RECORDS.--WSP 1923: Drainage area.

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

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

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

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

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 289,900 acre-ft May 29, 1987 (gage height, 1,078.2 ft); minimum observed since lake first filled, 780 acre-ft about Apr. 11, 1948 (gage height, 944.0 ft).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 252,900 acre-ft Oct. 1-3 (gage height, 1,071.8 ft); minimum, 196,500 acre-ft July 11 (gage height, 1,060.9 ft).

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

1,060.0	192,000	1,070.0	242,400
1,065.0	217,200	1,075.0	271,400

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	252900	246500	244200	242400	239400	236900	232300	224800	212700	201100	217700	209100
2	252900	245900	243600	242400	239400	236900	231800	224300	212700	200600	218200	209100
3	252900	245900	243600	241900	239400	236900	231800	223800	213200	200600	217700	208600
4	252300	245900	243600	241900	238900	236900	231300	223800	212700	200100	217700	208100
5	251700	245300	243600	241900	238900	236900	231300	223300	212700	199100	217700	207600
6	251700	245300	243600	241900	238900	236900	231300	222800	212200	198600	217700	207100
7	251100	244700	243600	241900	238900	236400	230800	222300	211700	198600	217700	206600
8	251100	245900	243000	241400	238400	235900	230300	221800	211700	198100	217200	206100
9	250500	245900	243000	241400	238400	235900	230300	221200	211200	197500	217200	205600
10	250500	245900	242400	241400	238400	235400	230300	221200	211200	197000	216700	205600
11	250500	245900	242400	241400	238400	235400	229800	220700	210700	196500	216700	205100
12	250500	245300	242400	241400	238400	235400	229800	220700	210700	213200	216200	204600
13	250500	245300	242400	240900	238400	234900	229800	219700	209700	217200	216200	204100
14	249400	245300	242400	240900	238400	234900	229800	219200	209100	217700	215700	203600
15	249400	245300	242400	240900	238400	234400	229300	218700	208600	218200	215700	203100
16	249400	245300	241900	240900	237900	234400	229300	218200	208600	218700	215200	203100
17	248800	244700	241400	240900	237400	234400	228800	217700	208100	219200	215200	203600
18	248800	244700	241400	240900	237400	234400	228800	217200	207600	218200	214700	203600
19	248800	244700	241900	240900	238400	233900	228300	216700	206600	218200	214200	203600
20	248200	244700	242400	240400	237900	233900	227800	216200	206100	218200	214200	203600
21	248200	244700	243000	240400	237900	233900	227800	216200	205600	218200	214200	203600
22	248200	244700	242400	240400	237900	233900	227300	216200	205100	218200	213200	203600
23	248200	244200	242400	240400	237400	233400	227300	215700	204600	218700	212700	203100
24	248200	244200	242400	240400	237400	233400	227300	215700	204100	218200	212200	203100
25	247600	244200	242400	240400	236900	233400	227300	215200	204100	218200	212700	203100
26	247600	244200	242400	240400	236900	232800	226300	214700	203600	218200	212200	202600
27	247100	244200	242400	239900	236900	232800	225800	214700	202600	218200	211700	202600
28	247100	244200	242400	239400	236900	232300	225300	214200	202100	218200	210700	202100
29	247100	244200	242400	239400	236900	232300	225300	213700	201600	218200	210700	202100
30	246500	244200	242400	239400	---	232800	225300	213200	201100	218200	209700	202100
31	246500	---	242400	239400	---	232300	---	213200	---	217700	209700	---
MAX	252900	246500	244200	242400	239400	236900	232300	224800	213200	219200	218200	209100
MIN	246500	244200	241400	239400	236900	232300	225300	213200	201100	196500	209700	202100
(+)	1070.7	1070.3	1070.0	1069.4	1068.9	1068.0	1066.6	1064.2	1061.8	1065.1	1063.5	1062.0
(Φ)	-6400	-2300	-1800	-3000	-2500	-4600	-7000	-12100	+12100	+16600	-8000	-7600

CAL YR 1987 MAX 289900 MIN 241400 (Φ) -16200
WTR YR 1988 MAX 252900 MIN 196500 (Φ) -50800

(+) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

LOCATION.--Lat 29°30'19", long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal, 350 ft downstream from county highway bridge, 1,900 ft downstream from head of canal and diversion dam, 4.6 mi downstream from Medina Dam, 4.7 mi north of Riomedina, and 25 mi northwest of San Antonio.

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

REMARKS.--No estimated daily discharges. Records good. Station is above all diversions from canal. Canal diverts water from right end of Medina Diversion Dam 1,900 ft upstream from gage. Water is used for irrigation downstream near La Coste and Natalia. Prior to November 1984, double-barrel flume in canal 54 ft downstream from gage.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	61	29	13	50	58	64	157	116	119	80	117
2	63	60	30	13	58	58	63	156	125	127	74	119
3	73	57	33	13	63	58	63	158	91	125	68	116
4	72	59	41	26	57	56	63	171	51	124	67	110
5	73	59	40	33	39	56	68	186	64	134	65	106
6	76	58	40	31	34	58	69	194	80	135	64	110
7	77	58	40	27	34	59	79	192	83	124	63	113
8	76	48	52	27	43	67	94	198	108	111	84	115
9	77	29	54	27	48	70	89	201	114	110	101	116
10	78	34	54	26	48	63	87	203	125	114	98	116
11	79	37	54	26	53	64	85	193	121	37	94	116
12	82	37	54	26	55	67	88	185	114	37	91	116
13	90	37	54	26	53	81	95	179	120	57	89	115
14	89	37	55	26	53	95	90	173	131	70	87	112
15	92	37	56	12	57	93	91	167	138	85	98	91
16	91	27	56	.00	70	92	93	168	139	93	111	.01
17	91	19	43	.00	66	65	93	165	136	94	115	.02
18	88	19	26	8.3	51	31	95	166	133	108	117	.00
19	76	19	12	26	43	32	93	164	135	126	116	40
20	69	19	.00	26	43	31	92	166	135	139	109	56
21	69	19	.00	26	43	49	94	93	138	50	95	56
22	66	19	.00	32	52	62	103	65	138	.00	94	63
23	58	31	.00	30	59	62	117	76	142	.00	90	74
24	58	28	.00	30	60	62	129	68	149	.00	82	74
25	58	28	.00	29	59	63	130	83	154	.00	93	72
26	61	32	.00	30	59	62	130	96	152	44	104	72
27	63	27	.00	36	58	63	144	98	149	75	103	82
28	63	21	.00	43	58	64	159	99	115	73	103	90
29	62	21	.00	51	58	64	158	122	107	70	111	90
30	62	26	.00	50	---	64	160	135	115	70	114	89
31	61	---	6.1	50	---	64	---	124	---	69	114	---
TOTAL	2252	1063	829.10	819.30	1524	1933	2978	4601	3618	2520.00	2894	2546.03
MEAN	72.6	35.4	26.7	26.4	52.6	62.4	99.3	148	121	81.3	93.4	84.9
MAX	92	61	56	51	70	95	160	203	154	139	117	119
MIN	58	19	.00	.00	34	31	63	65	51	.00	63	.00
AC-FT	4470	2110	1640	1630	3020	3830	5910	9130	7180	5000	5740	5050
CAL YR 1987	TOTAL 15266.31	MEAN 41.8	MAX 111	MIN .00	AC-FT 30280							
1988	TOTAL 27577.43	MEAN 75.3	MAX 203	MIN .00	AC-FT 54700							

GUADALUPE RIVER BASIN

267

08180640 MEDINA RIVER AT LA COSTE, TX

LOCATION.--Lat 29°19'26", long 98°48'46", Medina County, Hydrologic Unit 12100302, at downstream side of bridge on Farm Road 471, 1.0 mi north of La Coste, 5.0 mi upstream from Sherer Creek, and 27.4 mi upstream from mouth.

DRAINAGE AREA.--805 mi², of which 634 mi² is above dam forming Medina Lake.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 667.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 35 mi upstream. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s May 30, 1987 (gage height, 24.05 ft); minimum daily, 24 ft³/s July 17, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 192 ft³/s June 3 at 1600 hours (gage height, 7.38 ft); minimum daily, 24 ft³/s July 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	85	92	e106	e64	52	43	45	42	41	45	26
2	101	85	91	e100	e64	52	44	42	40	39	49	26
3	101	85	88	e96	e62	50	44	46	121	40	46	26
4	92	87	85	e96	e62	49	47	46	71	38	45	27
5	88	88	82	e94	e62	49	48	41	46	37	45	26
6	88	88	78	e88	e60	49	45	42	43	36	e43	26
7	87	85	79	e86	e60	49	40	40	40	36	e42	25
8	84	100	77	e84	e62	48	40	43	39	35	e40	26
9	84	103	76	e84	e64	48	41	42	39	34	e39	26
10	84	108	70	e84	e60	46	42	39	40	36	38	26
11	85	103	71	e84	e58	46	44	43	38	34	37	27
12	84	80	72	e82	e56	45	45	45	37	34	37	29
13	84	81	72	e82	e56	45	46	43	35	32	34	29
14	78	83	72	e82	e54	45	45	42	32	29	36	29
15	75	86	72	e82	e54	45	45	42	33	26	37	30
16	77	91	72	e82	e54	45	42	39	33	25	36	28
17	77	92	72	e86	e54	59	44	37	43	24	37	37
18	77	97	73	e94	e96	75	46	37	e50	25	33	41
19	76	100	80	e92	e86	48	43	35	e47	e25	e33	38
20	75	97	90	e88	e62	46	44	40	43	e30	e33	37
21	74	96	e100	85	e58	46	44	53	41	80	33	37
22	74	97	e104	e80	55	46	49	45	39	e45	31	37
23	77	100	e104	e76	52	46	50	42	38	e40	30	38
24	90	97	e104	e74	52	48	49	41	37	e39	30	39
25	92	84	e110	e72	52	46	49	40	34	e40	31	39
26	93	90	e114	e70	52	46	48	43	48	e39	29	39
27	92	91	e110	e68	52	46	45	40	46	e40	29	37
28	83	91	e106	e66	52	46	43	42	44	e44	28	32
29	84	91	e106	e66	53	45	45	40	41	53	27	31
30	84	91	e106	e66	---	43	51	43	40	53	25	34
31	85	---	e106	e64	---	42	---	46	---	51	25	---
TOTAL	2630	2752	2734	2559	1728	1491	1351	1304	1320	1180	1103	948
MEAN	84.8	91.7	88.2	82.5	59.6	48.1	45.0	42.1	44.0	38.1	35.6	31.6
MAX	105	108	114	106	96	75	51	53	121	80	49	41
MIN	74	80	70	64	52	42	40	35	32	24	25	25
AC-FT	5220	5460	5420	5080	3430	2960	2680	2590	2620	2340	2190	1880

CAL YR 1987 TOTAL 266338 MEAN 730 MAX 18900 MIN 70 AC-FT 528300
WTR YR 1988 TOTAL 21100 MEAN 57.7 MAX 121 MIN 24 AC-FT 41850

e Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 720 microsiemens Sept. 3, 4, 1987; minimum, 340 microsiemens May 29, 1987.

pH: Maximum, 8.4 units Mar. 22-25, May 10, 1988; minimum, 6.8 units Aug. 4-5, 1988.

WATER TEMPERATURE: Maximum, 29.5°C July 19, 1988; minimum, 8.5°C Jan. 10, 11, 1988.

DISSOLVED OXYGEN: Maximum, 13.1 mg/L Jan. 10-11, 1988; minimum, 4.8 mg/L Sept. 19, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 680 microsiemens Oct. 21; minimum, 500 microsiemens June 8-10, July 22.

pH: Maximum, 8.4 units Mar. 22-25, May 10; minimum, 6.8 units Aug. 4-5.

WATER TEMPERATURE: Maximum, 29.5°C July 19; minimum, 8.5°C Jan. 10, 11.

DISSOLVED OXYGEN: Maximum, 13.1 mg/L Jan. 10-11; minimum, 6.1 mg/L Sept. 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CaCO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3
OCT 28...	1330	83	618	7.80	21.0	8.0	91	6.6	250	110
DEC 10...	1045	70	599	8.00	16.0	8.2	85	0.9	270	45
FEB 17...	1520	54	606	8.00	14.5	9.2	93	0.6	260	67
APR 26...	1115	31	610	8.00	22.0	7.9	93	--	260	54
JUN 30...	1145	46	556	7.90	27.5	7.1	93	1.0	230	37
AUG 30...	1115	37	540	7.80	27.0	7.0	90	0.8	230	30

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CaCO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 28...	72	17	23	0.7	2.0	138	48	24	0.30
DEC 10...	77	18	24	0.7	2.0	222	48	28	0.20
FEB 17...	75	18	25	0.7	3.7	195	51	26	0.30
APR 26...	73	18	24	0.7	2.2	203	53	22	0.30
JUN 30...	66	17	19	0.6	2.8	198	47	19	0.30
AUG 30...	64	17	21	0.6	2.2	200	47	20	0.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
OCT 28...	11	280	--	<0.010	6.20	0.030	0.67	0.70	0.040
DEC 10...	11	341	--	<0.010	6.10	0.020	0.28	0.30	0.010
FEB 17...	11	327	5.49	0.010	5.50	0.040	0.66	0.70	0.030
APR 26...	11	325	4.68	0.020	4.70	0.040	0.46	0.50	0.030
JUN 30...	14	304	3.89	0.010	3.90	0.040	0.26	0.30	0.030
AUG 30...	12	303	3.69	0.010	3.70	0.010	0.79	0.80	0.020

GUADALUPE RIVER BASIN

269

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	2630	647	362	2570	27	194	58	414	280
NOV. 1987	2752	601	332	2460	24	177	54	400	260
DEC. 1987	2734	583	321	2370	23	167	52	385	250
JAN. 1988	2559	572	313	2170	22	151	51	353	240
FEB. 1988	1728	595	328	1530	23	109	53	249	250
MAR. 1988	1491	604	334	1340	24	97	54	218	260
APR. 1988	1351	591	325	1190	23	84	53	193	250
MAY 1988	1304	585	321	1130	23	80	52	184	250
JUNE 1988	1320	545	296	1060	20	71	49	173	230
JULY 1988	1180	547	297	948	20	64	49	155	230
AUG. 1988	1103	550	300	893	20	61	49	146	230
SEPT 1988	948	535	290	742	19	49	48	122	230
TOTAL	21100	**	**	18400	**	1300	**	2990	**
WTD.AVG.	58	587	323	**	23	**	53	**	250

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	660	640	644	640	620	627	590	580	582	550	540	540
2	650	640	644	640	620	632	590	580	583	550	540	542
3	650	630	640	640	620	630	590	570	581	550	530	540
4	640	620	633	640	620	624	580	570	576	550	530	541
5	650	630	637	630	620	623	590	570	583	550	540	543
6	650	630	640	630	610	621	600	580	591	570	550	558
7	650	630	643	630	610	620	600	580	591	570	560	563
8	670	630	647	630	590	615	600	590	593	570	560	562
9	660	650	655	600	550	584	600	590	594	570	560	568
10	660	650	659	600	580	590	630	590	611	580	570	575
11	660	650	655	600	590	598	630	610	620	590	570	579
12	660	640	653	610	600	602	620	610	618	580	570	577
13	660	650	653	600	580	597	630	610	620	580	570	576
14	660	640	655	600	580	590	630	620	621	580	570	575
15	670	650	657	610	590	604	630	620	625	---	---	580
16	670	650	657	620	600	611	630	620	626	---	---	585
17	660	650	660	620	610	613	630	620	626	---	---	575
18	670	650	662	620	600	612	620	610	617	---	---	567
19	670	650	661	610	600	606	620	590	609	---	---	570
20	670	660	665	610	600	603	620	590	606	---	---	572
21	680	660	669	600	580	594	610	590	600	---	---	575
22	670	660	664	590	580	588	610	590	602	---	---	580
23	670	650	661	590	570	583	600	570	590	---	---	584
24	660	650	654	590	570	578	580	550	559	---	---	588
25	650	640	648	590	570	582	550	540	541	---	---	590
26	650	630	642	580	570	576	550	540	540	---	---	592
27	---	---	628	590	570	580	550	540	542	---	---	597
28	---	---	618	590	580	582	550	540	542	---	---	598
29	630	620	624	590	580	587	550	540	541	---	---	598
30	630	620	626	590	580	581	550	540	541	---	---	612
31	630	620	625	---	---	---	550	540	540	---	---	600
MONTH	680	620	648	640	550	601	630	540	587	590	530	574

GUADALUPE RIVER BASIN
08180640 MEDINA RIVER AT LA COSTE, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	607	610	600	605	610	590	597	597	585	590
2	---	---	601	620	600	607	600	590	594	608	587	594
3	---	---	598	610	600	602	600	590	592	600	589	597
4	---	---	610	610	600	602	600	580	590	602	590	596
5	---	---	601	620	600	606	600	590	595	604	592	597
6	---	---	600	620	600	608	600	580	591	608	586	598
7	---	---	610	620	600	610	600	580	589	614	598	604
8	---	---	584	620	610	615	600	570	584	622	604	610
9	---	---	580	620	610	613	590	580	584	636	600	622
10	---	---	585	620	600	613	590	580	582	631	594	615
11	---	---	588	620	600	614	590	580	583	621	584	606
12	---	---	590	620	610	614	590	580	585	602	579	593
13	---	---	597	620	600	612	590	580	585	596	572	584
14	---	---	611	620	600	612	600	580	586	592	570	583
15	---	---	607	620	600	611	600	580	590	599	567	584
16	---	---	612	620	600	611	600	570	585	597	576	584
17	---	---	606	610	580	603	590	580	587	595	564	581
18	---	---	560	610	580	593	590	580	587	594	563	580
19	---	---	575	600	530	574	590	580	587	593	572	581
20	---	---	590	620	590	604	600	580	590	592	571	579
21	---	---	592	610	580	598	601	590	594	571	561	568
22	---	---	594	600	580	592	601	581	594	581	551	566
23	---	---	595	610	590	600	601	581	595	570	550	566
24	600	590	597	610	590	601	602	591	595	580	560	568
25	610	590	600	610	600	604	602	592	597	570	560	567
26	610	590	597	610	590	602	603	582	593	580	560	568
27	610	590	597	610	600	606	603	593	598	580	560	569
28	610	590	599	610	600	603	604	593	597	580	560	569
29	610	590	601	610	590	598	604	594	598	570	560	568
30	---	---	---	600	590	595	596	585	594	570	560	566
31	---	---	---	600	590	595	---	---	---	570	560	571
MONTH	610	590	596	620	530	604	610	570	591	636	550	585
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	570	560	562	570	550	561	560	550	551	540	530	537
2	570	550	560	560	550	557	560	550	555	550	530	540
3	560	530	550	560	550	557	560	550	556	550	530	540
4	550	510	535	570	550	558	560	550	554	550	530	540
5	550	540	546	560	550	559	560	550	557	540	530	538
6	550	530	540	560	550	558	560	550	556	540	530	536
7	540	530	538	570	540	555	560	550	556	540	530	537
8	540	500	521	560	540	552	570	550	559	540	530	539
9	520	500	510	560	550	553	570	560	562	550	530	537
10	520	500	511	560	540	551	570	560	563	540	530	535
11	530	510	519	560	540	548	570	560	563	540	520	532
12	550	530	541	550	540	548	570	560	562	540	530	532
13	560	520	540	560	550	551	570	550	560	540	530	533
14	540	520	531	560	550	554	570	550	559	540	530	535
15	550	530	536	560	550	557	570	530	549	540	530	534
16	550	530	538	560	550	556	550	540	541	540	530	534
17	550	520	538	560	550	553	550	540	544	540	520	530
18	550	540	540	560	550	554	550	530	546	530	520	529
19	550	530	539	560	550	553	550	530	544	540	520	528
20	550	540	542	560	550	556	550	530	544	540	530	532
21	560	540	550	550	510	534	560	520	544	540	530	534
22	570	560	562	520	500	512	550	540	542	540	530	534
23	570	560	563	540	520	532	550	540	543	540	530	536
24	570	560	565	550	530	539	550	540	542	540	530	539
25	570	560	565	550	530	539	550	530	543	540	530	537
26	570	550	561	550	530	540	550	530	542	540	530	534
27	560	550	558	540	520	532	550	520	539	540	530	532
28	560	550	555	530	520	527	550	530	540	540	530	532
29	570	550	561	550	530	542	550	530	538	540	530	532
30	570	550	560	550	540	547	540	530	539	550	530	539
31	---	---	---	560	550	552	550	530	538	---	---	---
MONTH	570	500	545	570	500	548	570	520	549	550	520	535

GUADALUPE RIVER BASIN

271

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.8
2	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.9
3	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.8
4	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.8
5	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.0	8.0	7.8	7.9
6	7.9	7.9	7.9	8.1	7.9	8.0	8.0	8.0	8.0	8.0	7.9	7.9
7	7.9	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9
8	7.9	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9
9	7.9	7.9	7.9	8.0	7.8	7.9	8.0	8.0	8.0	7.9	7.9	7.9
10	7.9	7.9	7.9	7.9	7.9	7.9	8.0	8.0	8.0	8.0	7.9	7.9
11	7.9	7.9	7.9	7.9	7.8	7.9	8.0	8.0	8.0	7.9	7.9	7.9
12	7.9	7.9	7.9	7.9	7.8	7.8	8.0	8.0	8.0	7.9	7.8	7.9
13	7.9	7.9	7.9	7.9	7.8	7.8	8.0	8.0	8.0	7.9	7.9	7.9
14	7.9	7.9	7.9	7.9	7.8	7.8	8.0	7.9	8.0	7.9	7.8	7.9
15	7.9	7.9	7.9	7.8	7.8	7.8	8.0	7.9	8.0	---	---	---
16	7.9	7.9	7.9	7.9	7.8	7.8	8.0	7.9	8.0	---	---	---
17	7.9	7.9	7.9	7.9	7.8	7.8	8.0	7.9	8.0	---	---	---
18	7.9	7.9	7.9	7.9	7.8	7.8	8.0	7.9	7.9	---	---	---
19	7.9	7.9	7.9	7.9	7.8	7.9	8.0	7.9	7.9	---	---	---
20	8.0	7.9	7.9	7.9	7.8	7.9	8.0	7.9	8.0	---	---	---
21	8.0	8.0	8.0	7.9	7.8	7.9	8.1	8.0	8.0	---	---	---
22	8.0	8.0	8.0	7.9	7.8	7.9	8.1	7.9	8.0	---	---	---
23	8.0	7.9	7.9	7.9	7.8	7.9	8.0	7.9	7.9	---	---	---
24	8.0	7.9	8.0	---	---	---	8.0	7.8	7.9	---	---	---
25	8.0	7.9	8.0	---	---	---	7.9	7.8	7.8	---	---	---
26	8.0	8.0	8.0	7.5	---	---	7.8	7.7	7.8	---	---	---
27	---	---	---	8.0	7.9	7.9	7.8	7.7	7.7	---	---	---
28	---	---	---	8.0	8.0	8.0	7.8	7.7	7.7	---	---	---
29	7.9	7.9	7.9	8.0	8.0	8.0	7.8	7.7	7.8	---	---	---
30	8.0	7.9	7.9	8.1	8.0	8.0	7.9	7.7	7.8	---	---	---
31	8.0	7.8	7.9	---	---	---	7.9	7.8	7.8	---	---	---
MONTH	8.0	7.8	7.9	8.1	7.8	7.9	8.1	7.7	8.0	8.0	7.8	7.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	8.2	8.2	8.2	8.1	7.9	8.0	7.5	7.4	7.5
2	---	---	---	8.2	8.2	8.2	8.0	7.9	8.0	7.6	7.5	7.6
3	---	---	---	8.3	8.2	8.2	8.2	8.0	8.1	7.9	7.6	7.7
4	---	---	---	8.3	8.2	8.2	8.2	8.1	8.1	7.9	7.6	7.7
5	---	---	---	8.3	8.2	8.2	8.1	8.0	8.1	8.0	7.7	7.8
6	---	---	---	8.2	8.1	8.2	8.1	8.1	8.1	8.0	7.8	7.9
7	---	---	---	8.2	8.1	8.2	8.1	7.9	8.0	7.9	7.6	7.8
8	---	---	---	8.2	8.0	8.1	8.1	7.9	8.0	8.0	7.7	7.8
9	---	---	---	8.1	7.9	8.0	8.1	8.0	8.1	8.3	7.8	8.1
10	---	---	---	8.0	7.9	7.9	8.1	8.0	8.0	8.4	8.0	8.3
11	---	---	---	7.9	7.8	7.8	8.1	7.9	8.0	8.0	7.5	7.7
12	---	---	---	7.8	7.7	7.8	8.1	8.0	8.1	7.5	7.3	7.4
13	---	---	---	7.9	7.7	7.8	8.1	8.0	8.1	7.3	7.2	7.3
14	---	---	---	7.9	7.8	7.8	8.2	8.0	8.1	7.6	7.4	7.5
15	---	---	---	8.0	7.8	7.9	8.1	7.9	8.0	7.7	7.4	7.6
16	---	---	---	8.0	7.9	7.9	8.0	7.9	8.0	7.7	7.5	7.6
17	---	---	---	8.0	7.9	8.0	8.0	7.8	7.9	7.7	7.6	7.7
18	---	---	---	8.1	7.9	8.0	7.9	7.8	7.8	7.8	7.7	7.8
19	---	---	---	8.1	8.0	8.0	7.9	7.9	7.9	7.9	7.8	7.8
20	---	---	---	8.1	8.0	8.1	8.0	7.8	7.9	7.8	7.7	7.8
21	---	---	---	8.2	8.1	8.2	7.8	7.7	7.8	7.9	7.7	7.8
22	---	---	---	8.4	8.3	8.4	7.7	7.5	7.6	8.0	7.8	7.9
23	---	---	---	8.4	8.3	8.4	7.6	7.4	7.5	8.2	7.9	8.0
24	8.3	8.3	8.3	8.4	8.2	8.3	7.5	7.4	7.5	8.3	8.1	8.2
25	8.3	8.3	8.3	8.4	8.1	8.2	7.5	7.3	7.4	8.2	7.9	8.0
26	8.3	8.2	8.3	8.3	8.1	8.2	8.0	7.3	7.7	8.1	7.9	8.0
27	8.3	8.2	8.3	8.2	7.9	8.0	8.1	7.8	8.0	8.1	8.0	8.0
28	8.3	8.2	8.2	8.1	7.9	8.0	7.8	7.7	7.8	8.0	7.7	7.8
29	8.3	8.2	8.2	8.0	7.8	7.9	7.7	7.5	7.6	7.7	7.6	7.7
30	---	---	---	8.2	7.8	8.0	7.6	7.4	7.4	7.7	7.6	7.7
31	---	---	---	8.2	8.0	8.1	---	---	---	7.7	7.6	7.7
MONTH	8.3	8.2	8.3	8.4	7.7	8.1	8.2	7.3	7.9	8.4	7.2	7.8

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.6	7.5	7.6	8.3	8.1	8.2	7.9	7.8	7.8	8.0	7.9	8.0
2	7.6	7.5	7.6	8.3	8.1	8.2	8.0	7.8	7.9	8.0	7.9	8.0
3	7.9	7.6	7.7	8.2	8.0	8.1	8.0	7.0	7.6	8.0	7.9	8.0
4	7.7	7.5	7.6	8.1	7.9	8.0	7.1	6.8	6.9	8.1	7.9	8.0
5	7.7	7.5	7.6	8.0	7.9	8.0	7.0	6.8	7.0	8.1	8.0	8.0
6	7.8	7.6	7.7	8.1	7.9	8.0	7.0	6.9	7.0	8.0	7.8	7.9
7	7.9	7.7	7.8	8.3	8.0	8.1	7.1	6.9	7.0	8.0	7.9	8.0
8	7.9	7.7	7.8	8.2	7.8	8.0	7.2	7.0	7.1	8.1	7.9	8.0
9	7.8	7.7	7.7	7.8	7.3	7.6	7.5	7.2	7.3	8.0	7.6	7.9
10	7.9	7.8	7.8	7.4	7.3	7.3	7.6	7.3	7.5	7.6	7.3	7.5
11	8.0	7.8	7.9	7.5	7.3	7.4	7.7	7.6	7.6	7.5	7.2	7.4
12	8.1	7.9	8.0	7.9	7.5	7.6	7.8	7.6	7.7	7.2	7.2	7.2
13	8.2	7.9	8.0	8.0	7.8	7.9	7.8	7.7	7.8	7.4	7.1	7.3
14	8.2	7.7	7.9	7.9	7.8	7.9	7.9	7.8	7.8	7.6	7.4	7.4
15	7.7	7.6	7.6	7.9	7.8	7.9	8.1	7.9	8.0	7.8	7.6	7.7
16	7.7	7.5	7.6	8.0	7.8	7.9	8.0	7.9	8.0	7.9	7.8	7.9
17	7.8	7.5	7.6	7.9	7.8	7.8	8.0	7.9	8.0	8.0	7.9	8.0
18	8.1	7.8	8.0	7.9	7.8	7.8	8.0	7.9	7.9	8.0	8.0	8.0
19	8.1	7.9	8.1	8.1	7.7	7.9	7.9	7.9	7.9	8.1	7.9	8.0
20	8.3	8.0	8.1	8.0	7.3	7.6	7.9	7.8	7.8	8.2	8.1	8.1
21	8.1	7.9	8.0	7.6	7.2	7.4	7.9	7.8	7.8	8.2	8.1	8.1
22	7.9	7.5	7.6	7.5	7.2	7.3	7.9	7.8	7.9	8.2	8.1	8.1
23	7.7	7.3	7.5	7.4	7.2	7.4	8.1	7.9	8.0	8.1	8.0	8.1
24	7.8	7.6	7.7	7.3	7.2	7.3	8.0	7.9	8.0	8.0	8.0	8.0
25	8.2	7.8	8.0	7.4	7.3	7.4	8.1	8.0	8.0	8.0	7.9	8.0
26	8.3	8.1	8.2	7.5	7.4	7.5	8.1	7.9	8.0	8.0	7.9	8.0
27	8.3	8.0	8.2	7.8	7.5	7.7	8.1	7.8	8.0	8.0	7.9	8.0
28	8.2	8.0	8.1	7.8	7.7	7.8	8.0	7.8	7.9	8.0	7.9	8.0
29	8.2	8.0	8.1	7.8	7.7	7.7	8.0	7.9	8.0	8.0	7.9	8.0
30	8.3	8.1	8.2	7.8	7.7	7.8	8.0	7.9	7.9	8.2	7.9	8.0
31	---	---	---	7.8	7.7	7.7	8.0	7.9	8.0	---	---	---
MONTH	8.3	7.3	7.8	8.3	7.2	7.8	8.1	6.8	7.7	8.2	7.1	7.9

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

GUADALUPE RIVER BASIN

273

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	19.0	17.5	18.5	20.5	18.5	19.5	23.0	21.5	22.0
2	---	---	---	19.5	18.5	19.0	20.5	19.0	19.5	22.5	21.5	22.0
3	---	---	---	19.0	17.5	18.5	20.5	18.5	19.5	23.0	21.5	22.0
4	---	---	---	18.0	17.0	17.5	20.5	19.0	19.5	23.0	21.5	22.0
5	---	---	---	18.0	16.0	17.0	21.0	19.5	20.5	23.0	21.0	22.0
6	---	---	---	18.0	16.5	17.0	21.0	20.0	20.5	23.5	21.5	22.5
7	---	---	---	18.0	17.0	17.5	20.5	19.0	19.5	23.0	22.0	22.5
8	---	---	---	18.5	17.5	18.0	19.5	18.5	19.5	24.0	22.0	23.0
9	---	---	---	18.0	17.0	17.5	19.0	18.5	18.5	24.5	23.0	23.5
10	---	---	---	18.0	16.5	17.0	18.5	18.0	18.5	25.0	23.5	24.0
11	---	---	---	19.0	17.0	18.0	18.5	17.0	17.5	24.5	23.5	24.0
12	---	---	---	19.5	17.5	18.5	18.5	16.5	17.5	23.5	23.0	23.5
13	---	---	---	18.5	17.0	17.5	19.0	16.5	17.5	24.0	22.5	23.0
14	---	---	---	17.0	15.5	16.5	20.0	17.5	18.5	24.5	22.5	23.5
15	---	---	---	16.0	15.0	15.5	20.5	18.5	19.5	25.0	23.0	24.0
16	---	---	---	15.5	14.5	15.0	20.0	19.5	20.0	25.0	23.5	24.0
17	---	---	---	15.5	15.0	15.0	20.5	19.0	20.0	25.0	23.5	24.5
18	---	---	---	15.0	14.0	14.5	21.5	19.5	20.5	25.5	23.5	24.5
19	---	---	---	15.0	13.0	14.0	21.0	19.5	20.0	24.5	23.5	24.0
20	---	---	---	15.5	13.5	14.5	21.5	19.0	20.0	24.5	23.0	23.5
21	---	---	---	16.5	14.0	15.0	22.0	20.0	20.5	23.5	23.0	23.5
22	---	---	---	17.0	15.0	16.0	22.5	21.0	21.5	24.0	22.5	23.0
23	---	---	---	17.5	16.0	17.0	23.5	22.0	22.5	24.0	22.0	23.0
24	15.0	14.0	14.5	19.0	17.0	18.0	23.5	21.5	22.5	25.0	23.0	24.0
25	15.5	14.0	14.5	20.0	18.5	19.5	24.0	22.0	23.0	25.5	23.5	24.0
26	15.5	14.5	15.0	20.5	19.5	20.0	23.5	21.5	22.5	25.0	23.5	24.0
27	16.5	15.0	15.5	21.0	20.0	20.5	23.5	21.5	22.5	25.0	23.5	24.0
28	17.0	15.5	16.5	21.5	20.5	21.0	23.5	22.0	22.5	25.0	23.5	24.0
29	18.5	16.5	17.5	21.0	19.5	21.0	23.5	22.0	22.5	25.0	23.5	24.0
30	---	---	---	19.5	18.5	19.0	23.0	22.0	22.5	24.5	24.0	24.0
31	---	---	---	19.5	18.5	19.0	---	---	---	24.5	24.0	24.0
MONTH	18.5	14.0	15.5	21.5	13.0	17.5	24.0	16.5	20.5	25.5	21.0	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.5	24.0	24.5	29.0	27.0	28.0	27.0	26.0	26.5	28.0	26.5	27.0
2	26.5	24.5	25.5	29.0	27.5	28.5	27.5	26.0	27.0	27.5	26.5	27.0
3	25.5	25.0	25.5	29.0	27.5	28.5	27.0	26.5	27.0	27.5	26.5	27.0
4	25.0	24.5	25.0	29.0	28.0	28.5	27.5	26.0	27.0	27.0	26.0	26.5
5	25.5	24.0	25.0	29.0	27.5	28.0	28.0	26.5	27.0	26.0	24.5	25.5
6	25.5	24.0	24.5	29.0	27.5	28.0	28.0	26.5	27.5	25.5	24.0	25.0
7	26.0	24.0	25.0	28.5	27.5	28.0	28.5	26.5	27.5	25.5	24.0	24.5
8	26.5	24.5	25.5	28.0	27.0	27.5	29.0	27.0	28.0	25.5	24.0	24.5
9	27.0	25.0	26.0	28.0	26.5	27.5	29.0	27.5	28.0	25.5	24.0	24.5
10	27.0	25.5	26.5	27.5	27.0	27.0	29.0	27.5	28.5	25.0	23.5	24.5
11	26.5	25.5	26.0	27.0	26.5	27.0	29.0	27.5	28.5	25.0	23.5	24.5
12	27.0	25.0	26.0	27.5	26.5	27.0	29.0	27.5	28.5	25.0	24.0	24.5
13	26.5	25.0	26.0	28.5	26.5	27.5	29.0	27.5	28.5	26.0	24.5	25.0
14	27.0	25.5	26.0	28.5	27.0	27.5	29.0	27.5	28.5	26.5	25.0	25.5
15	27.5	25.5	26.5	28.5	27.0	27.5	29.0	27.5	28.0	26.5	25.0	25.5
16	27.5	25.5	26.5	28.5	27.0	28.0	29.0	27.5	28.0	26.0	25.5	25.5
17	27.5	25.5	26.5	29.0	27.0	28.0	29.0	27.5	28.5	26.5	25.5	26.0
18	27.5	26.0	26.5	29.0	27.5	28.0	28.5	27.5	28.0	26.5	25.5	26.0
19	27.5	26.0	27.0	29.5	27.5	28.5	28.0	27.0	27.5	26.0	25.5	26.0
20	28.0	26.0	27.0	28.5	28.0	28.0	28.5	27.0	27.5	26.5	25.5	26.0
21	28.0	26.0	27.0	27.5	27.0	27.5	28.5	27.0	28.0	27.0	25.5	26.0
22	28.0	26.5	27.0	28.0	27.0	27.5	28.5	27.5	28.0	27.0	25.5	26.0
23	28.0	26.0	27.0	28.5	27.0	27.5	29.0	27.5	28.0	26.5	25.5	26.0
24	28.0	26.5	27.0	28.5	26.5	27.5	29.0	27.5	28.0	27.0	25.5	26.0
25	28.0	26.5	27.5	29.0	27.0	28.0	29.0	27.5	28.5	26.5	25.5	26.0
26	28.0	26.5	27.5	28.5	27.0	28.0	29.0	27.5	28.0	26.5	25.0	26.0
27	28.5	27.0	27.5	28.0	27.0	27.5	29.0	27.5	28.0	26.0	25.0	25.5
28	28.5	27.0	27.5	28.5	27.0	27.5	28.5	27.5	28.0	26.0	24.5	25.5
29	28.5	27.0	28.0	28.5	27.0	27.5	28.5	27.0	27.5	26.0	25.0	25.5
30	29.0	27.0	28.0	27.5	26.5	27.0	28.0	27.0	27.5	25.5	24.0	24.5
31	---	---	---	27.0	26.5	26.5	28.0	26.5	27.5	---	---	---
MONTH	29.0	24.0	26.5	29.5	26.5	27.5	29.0	26.0	28.0	28.0	23.5	25.5

GUADALUPE RIVER BASIN
08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.0	6.6	7.4	7.9	7.3	7.7	---	---	---	10.6	10.0	10.3
2	8.0	6.7	7.4	7.9	7.3	7.7	---	---	---	10.7	10.0	10.4
3	8.0	6.6	7.4	7.9	7.3	7.6	---	---	---	11.0	9.9	10.6
4	8.5	6.8	7.7	7.9	7.5	7.7	---	---	---	11.2	10.0	10.7
5	8.1	6.9	7.7	7.9	7.3	7.7	---	---	---	11.2	10.1	10.6
6	8.0	6.7	7.5	7.9	7.3	7.7	---	---	---	10.7	9.2	9.9
7	8.1	6.9	7.6	7.9	7.5	7.7	---	---	---	11.5	9.6	10.6
8	8.2	6.9	7.6	7.7	7.2	7.4	---	---	---	12.2	9.7	11.2
9	8.2	6.7	7.6	7.8	7.1	7.4	---	---	---	13.0	11.7	12.2
10	8.4	6.9	7.7	8.4	7.6	7.9	---	---	---	13.1	11.8	12.5
11	8.3	7.0	7.8	8.5	8.0	8.3	8.4	8.1	8.3	13.1	11.9	12.4
12	8.3	6.9	7.7	9.0	8.2	8.5	8.5	8.1	8.3	12.3	11.4	11.8
13	8.3	6.9	7.7	8.8	8.2	8.5	8.5	8.3	8.4	11.8	11.1	11.5
14	8.3	7.0	7.7	8.8	8.4	8.6	---	---	---	11.7	11.0	11.4
15	8.3	7.0	7.6	8.8	8.1	8.5	---	---	---	---	---	---
16	8.1	6.9	7.5	8.7	7.9	8.3	---	---	---	---	---	---
17	7.4	6.8	7.2	8.6	7.8	8.3	---	---	---	---	---	---
18	8.1	7.0	7.3	8.6	8.0	8.3	---	---	---	---	---	---
19	7.5	7.1	7.3	8.7	8.0	8.4	---	---	---	---	---	---
20	8.3	7.0	7.6	8.8	8.4	8.6	---	---	---	---	---	---
21	8.1	7.5	7.8	9.0	8.5	8.8	---	---	---	---	---	---
22	7.8	7.3	7.5	9.0	8.5	8.8	---	---	---	---	---	---
23	7.4	7.0	7.2	9.2	8.5	8.7	9.1	8.6	8.8	---	---	---
24	7.6	7.0	7.3	8.6	8.1	8.3	8.7	8.4	8.6	---	---	---
25	7.8	7.2	7.6	8.6	7.9	8.3	8.6	8.3	8.5	---	---	---
26	7.9	7.2	7.6	8.5	8.1	8.4	9.1	8.6	8.8	---	---	---
27	---	---	---	8.5	8.1	8.3	9.7	9.0	9.4	---	---	---
28	---	---	---	8.8	8.2	8.5	10.1	9.4	9.7	---	---	---
29	8.1	7.6	7.9	---	---	---	10.4	9.8	10.1	---	---	---
30	8.0	7.3	7.7	---	---	---	10.6	10.0	10.3	---	---	---
31	8.0	7.3	7.8	---	---	---	10.8	10.0	10.4	---	---	---
MONTH	8.5	6.6	7.6	9.2	7.1	8.2	10.8	8.1	9.1	13.1	9.2	11.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	9.3	8.9	9.2	8.8	7.8	8.2	7.9	7.3	7.5
2	---	---	---	8.9	8.3	8.7	8.9	8.0	8.4	7.7	7.1	7.4
3	---	---	---	9.1	8.3	8.6	8.9	8.2	8.4	8.2	7.1	7.5
4	---	---	---	9.4	8.8	9.0	8.5	8.0	8.3	8.1	7.2	7.6
5	---	---	---	9.6	9.0	9.2	8.5	7.9	8.1	8.2	7.3	7.6
6	---	---	---	9.5	9.0	9.2	8.8	7.9	8.3	8.3	7.3	7.7
7	---	---	---	9.3	8.7	9.0	9.0	8.2	8.5	7.7	6.9	7.4
8	---	---	---	9.2	8.6	8.8	8.6	8.0	8.2	7.9	6.9	7.3
9	---	---	---	9.6	8.8	9.1	8.6	8.0	8.2	8.2	7.0	7.4
10	---	---	---	9.5	9.0	9.2	8.9	8.2	8.5	8.0	7.0	7.4
11	---	---	---	9.4	8.8	9.1	9.4	8.4	8.9	7.8	6.9	7.2
12	---	---	---	9.3	8.7	8.9	9.5	8.8	9.1	7.5	6.8	7.1
13	---	---	---	9.4	8.7	9.0	9.5	8.8	9.1	7.8	6.8	7.2
14	---	---	---	9.5	8.9	9.2	9.4	8.6	9.0	7.8	6.8	7.2
15	---	---	---	9.8	9.1	9.4	9.2	8.4	8.8	7.7	6.9	7.2
16	---	---	---	9.4	8.7	9.1	8.5	7.8	8.3	7.6	6.7	7.0
17	---	---	---	8.9	8.7	8.8	8.6	7.8	8.1	7.7	6.7	7.1
18	---	---	---	9.5	8.7	9.1	8.9	7.9	8.3	7.7	6.8	7.1
19	---	---	---	9.9	9.3	9.5	8.9	8.0	8.3	7.2	6.4	6.8
20	---	---	---	10.2	9.5	9.8	8.9	8.0	8.3	7.2	6.4	6.7
21	---	---	---	10.6	9.6	9.9	8.7	7.8	8.2	7.2	6.6	6.7
22	---	---	---	9.9	9.0	9.5	8.6	7.6	8.0	7.4	6.5	6.9
23	---	---	---	9.5	8.7	9.1	8.5	7.5	7.9	7.8	6.6	7.1
24	10.6	10.0	10.3	9.4	8.6	8.9	8.3	7.4	7.7	7.8	7.0	7.3
25	10.5	10.0	10.3	8.8	8.0	8.5	8.2	7.3	7.7	7.8	6.9	7.3
26	10.2	9.5	10.0	8.4	7.7	8.1	8.4	7.3	7.8	7.6	6.9	7.2
27	9.9	9.5	9.7	8.2	7.6	7.9	8.4	7.4	7.8	7.8	6.9	7.3
28	10.0	9.5	9.7	8.1	7.4	7.8	8.4	7.4	7.7	7.6	6.9	7.1
29	9.6	9.1	9.4	8.0	7.4	7.6	8.1	7.3	7.6	7.5	6.8	7.1
30	---	---	---	8.7	7.6	8.1	8.0	7.2	7.5	7.3	6.7	7.0
31	---	---	---	8.4	7.8	8.1	---	---	---	7.3	6.7	6.9
MONTH	10.6	9.1	9.9	10.6	7.4	8.9	9.5	7.2	8.2	8.3	6.4	7.2

GUADALUPE RIVER BASIN

275

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.6	6.8	7.1	7.8	6.6	7.1	7.5	6.7	7.0	7.7	6.8	7.1
2	7.6	6.8	7.1	7.7	6.6	7.0	8.0	6.8	7.2	7.6	6.6	7.0
3	7.0	6.5	6.8	7.6	6.5	7.0	7.7	6.8	7.2	7.7	6.7	7.0
4	7.3	6.4	6.8	7.7	6.5	6.9	7.9	6.8	7.2	7.8	6.6	7.1
5	7.5	6.8	7.1	7.6	6.6	7.0	8.1	6.9	7.4	7.9	6.8	7.2
6	7.6	6.8	7.2	7.7	6.6	7.0	8.0	7.1	7.4	8.0	6.8	7.3
7	7.7	6.9	7.2	---	---	---	8.0	7.0	7.4	8.1	7.0	7.4
8	7.6	6.7	7.1	---	---	---	8.0	6.9	7.3	8.2	7.1	7.5
9	7.6	6.7	7.0	---	---	---	8.0	6.8	7.2	8.0	7.1	7.4
10	7.2	6.4	6.7	---	---	---	7.9	6.8	7.2	8.0	7.1	7.4
11	7.5	6.4	6.9	---	---	---	7.9	6.6	7.1	7.9	7.0	7.4
12	7.7	6.6	7.1	---	---	---	7.8	6.6	7.0	8.3	7.0	7.5
13	7.5	6.3	6.9	---	---	---	7.7	6.5	7.0	7.7	6.9	7.2
14	7.5	6.4	6.9	---	---	---	7.7	6.6	7.0	7.7	6.8	7.1
15	7.5	6.5	6.9	---	---	---	7.6	6.5	6.9	7.7	6.9	7.2
16	7.6	6.5	6.9	---	---	---	7.7	6.4	6.9	7.8	6.8	7.1
17	7.6	6.4	6.9	---	---	---	7.9	6.4	7.0	7.4	6.7	7.0
18	7.6	6.2	6.8	---	---	---	7.7	6.5	6.9	7.3	6.7	6.9
19	7.6	6.4	6.9	---	---	---	7.7	6.4	6.8	7.0	6.2	6.7
20	7.7	6.4	6.9	7.3	6.4	6.8	7.7	6.4	6.9	7.1	6.2	6.5
21	7.9	6.4	7.1	6.9	6.3	6.6	7.6	6.4	6.9	7.2	6.5	6.7
22	7.9	6.7	7.2	6.9	6.3	6.6	7.6	6.4	6.9	7.2	6.3	6.7
23	7.9	6.7	7.2	7.5	6.5	6.9	7.7	6.5	6.9	7.0	6.3	6.5
24	7.7	6.7	7.1	8.0	6.8	7.2	7.6	6.5	6.9	7.0	6.1	6.5
25	7.7	6.7	7.1	7.9	6.7	7.1	7.6	6.5	6.9	7.1	6.2	6.5
26	7.5	6.5	6.9	7.7	6.6	7.0	7.8	6.5	7.0	7.2	6.4	6.7
27	7.5	6.5	6.9	7.5	6.5	6.9	7.9	6.6	7.1	7.4	6.4	6.8
28	7.6	6.4	6.9	7.4	6.4	6.8	7.9	6.6	7.1	7.6	6.5	6.9
29	7.7	6.5	7.0	7.6	6.6	7.0	8.1	6.7	7.2	7.8	6.7	7.0
30	7.7	6.5	7.0	7.3	6.5	6.8	7.9	6.8	7.2	7.8	6.7	7.0
31	---	---	---	7.4	6.6	6.9	7.9	6.7	7.2	---	---	---
MONTH	7.9	6.2	7.0	8.0	6.3	6.9	8.1	6.4	7.1	8.3	6.1	7.0

08180700 MEDINA RIVER NEAR MACDONA, TX

LOCATION.--Lat 29°20'05", long 98°41'22", Bexar County, Hydrologic Unit 12100302, at downstream side of Loop 1604 bridge, 0.1 mi downstream from Polecat Creek, 0.7 mi north of Macdonna, 2.2 mi downstream from Potranca Creek, and 21.2 mi upstream from mouth.

DRAINAGE AREA.--885 mi², of which 634 mi² is above dam forming Medina Lake.

PERIOD OF RECORD.--January 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 589.86 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 41 mi upstream. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Six observations of water temperature were made during the year.

AVERAGE DISCHARGE.--7 years, 181 ft³/s (131,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,800 ft³/s May 30, 1987 (gage height, 20.58 ft); minimum daily, 14 ft³/s Jan. 11, 12, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 610 ft³/s July 21 at 0900 hours (gage height, 6.14 ft); minimum daily, 32 ft³/s Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e124	106	117	123	e83	77	61	56	55	50	55	40
2	e121	107	113	117	83	77	59	53	50	50	54	40
3	e124	105	111	113	84	76	59	57	64	49	55	41
4	e124	106	110	111	82	76	59	55	109	48	53	41
5	121	106	106	111	83	78	60	54	69	47	52	38
6	118	106	102	105	82	76	59	53	61	45	50	38
7	115	107	100	102	82	73	57	55	55	50	48	36
8	113	115	97	101	84	74	58	57	53	43	46	35
9	110	119	96	100	85	72	63	53	53	42	43	36
10	109	126	93	100	82	70	62	53	54	47	42	39
11	109	121	91	100	81	70	60	53	52	48	42	37
12	109	108	90	100	80	66	59	58	52	46	42	37
13	109	109	90	99	79	65	57	58	48	53	41	36
14	108	110	91	100	78	65	62	55	43	45	40	32
15	104	111	89	99	78	69	60	54	43	44	40	36
16	105	121	92	100	77	69	59	54	43	42	41	35
17	105	116	92	111	78	100	63	52	42	40	40	44
18	105	117	100	114	132	102	60	50	40	38	40	46
19	103	119	102	114	108	70	56	49	46	34	40	45
20	101	119	104	107	87	65	53	45	42	35	40	44
21	99	117	118	101	80	65	54	60	37	193	40	44
22	99	120	126	95	78	65	55	60	41	100	41	43
23	106	122	125	94	75	64	55	56	46	63	39	42
24	109	122	126	89	73	65	53	56	47	54	39	41
25	113	113	129	88	73	65	53	55	47	51	41	44
26	114	116	134	e88	74	65	52	55	59	49	39	43
27	112	118	128	e87	78	65	52	51	56	51	38	42
28	108	113	123	e86	80	63	50	53	55	50	38	39
29	106	114	124	e86	79	61	51	55	51	53	39	37
30	106	118	122	e85	---	59	54	55	49	58	39	37
31	106	---	123	e84	---	60	---	54	---	58	39	---
TOTAL	3415	3427	3364	3110	2398	2187	1715	1684	1562	1676	1336	1188
MEAN	110	114	109	100	82.7	70.5	57.2	54.3	52.1	54.1	43.1	39.6
MAX	124	126	134	123	132	102	63	60	109	193	55	46
MIN	99	105	89	84	73	59	50	45	37	34	38	32
AC-FT	6770	6800	6670	6170	4760	4340	3400	3340	3100	3320	2650	2360

CAL YR 1987 TOTAL 308867 MEAN 846 MAX 22300 MIN 89 AC-FT 612600
WTR YR 1988 TOTAL 27062 MEAN 73.9 MAX 193 MIN 32 AC-FT 53680

e Estimated.

GUADALUPE RIVER BASIN

277

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'40", long 98°38'19", Bexar County, Hydrologic Unit 12100302, on right bank 37 ft downstream from centerline of Pearsall Road and 31 ft shoreward from right abutment of culvert, 1.2 mi southwest of Loop 410, and 5.0 mi upstream from mouth.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 596.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,140 ft³/s June 13, 1987 (gage height, 10.09 ft); minimum daily, 3.1 ft³/s Aug. 17 and Sept. 16, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,120 ft³/s Sept. 17 at 1400 hours (gage height, 8.31 ft); minimum daily, 3.1 ft³/s Aug. 17, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	4.2	5.2	e4.3	7.6	6.3	5.1	4.7	4.9	4.6	6.1	5.1
2	4.2	4.5	e4.8	4.5	6.3	5.8	5.0	4.9	6.8	4.3	5.0	5.4
3	4.3	4.1	4.5	4.8	6.3	5.8	4.7	4.8	18	4.4	4.2	5.6
4	3.9	3.7	5.6	5.2	e6.0	5.8	5.0	4.2	8.6	4.4	4.7	4.8
5	4.3	3.8	5.8	4.5	e6.0	6.3	5.5	4.2	6.2	4.0	3.9	4.6
6	3.9	4.3	6.5	e4.3	5.8	6.5	4.9	4.1	5.1	4.9	4.1	5.8
7	3.6	4.0	6.0	e4.1	5.6	6.7	4.5	3.8	4.8	4.4	4.2	4.3
8	3.5	9.0	5.6	e4.3	6.9	6.5	4.1	4.5	4.8	4.0	4.4	4.9
9	3.4	14	5.4	4.5	6.0	6.0	4.9	4.3	4.9	4.1	4.0	5.1
10	3.7	5.6	5.8	4.5	5.4	5.6	5.3	3.9	5.5	4.5	4.1	3.9
11	4.0	5.0	5.8	5.0	5.0	5.8	5.3	3.8	4.5	5.9	4.2	5.0
12	5.4	5.2	5.0	5.2	4.6	5.6	5.1	4.1	4.8	5.1	4.1	5.3
13	5.7	4.8	6.0	e4.5	4.5	5.8	4.7	3.7	4.8	4.8	4.2	4.3
14	5.0	5.0	6.5	4.8	5.0	5.4	4.8	3.8	4.9	4.7	3.9	3.6
15	3.6	5.8	5.8	5.0	4.6	4.1	4.7	4.5	4.5	3.9	3.7	3.4
16	3.5	17	6.3	5.4	4.6	4.6	5.8	4.2	4.8	4.2	3.7	3.1
17	3.3	6.1	6.0	5.4	4.3	25	8.0	4.0	4.8	3.9	3.1	316
18	3.3	4.9	17	5.6	34	18	7.2	3.9	4.8	3.9	4.1	39
19	4.2	4.8	18	5.8	9.6	6.3	5.0	3.8	6.5	3.2	3.4	10
20	4.0	4.6	9.1	5.2	7.6	5.8	4.9	4.1	5.8	3.5	3.5	6.9
21	3.6	e4.6	5.8	5.4	6.7	5.5	4.7	7.7	6.0	37	3.6	6.4
22	3.5	5.6	5.8	5.0	7.4	5.5	5.2	7.3	5.3	10	3.4	6.6
23	4.6	5.8	5.0	5.6	6.9	4.3	5.1	5.2	3.4	4.6	3.9	6.3
24	5.3	5.2	5.2	6.9	5.8	4.8	4.5	4.5	3.5	4.1	6.3	6.2
25	4.7	5.8	5.6	6.9	6.0	4.7	4.7	3.9	5.0	4.0	4.2	6.7
26	4.7	e6.5	e5.6	6.5	5.8	4.8	4.1	3.8	5.3	3.4	7.1	6.6
27	4.0	7.2	e5.4	6.3	5.8	5.2	4.1	3.9	5.0	4.6	5.4	6.1
28	3.7	6.3	5.4	6.3	6.3	5.3	4.0	4.0	5.2	4.3	5.2	5.6
29	3.7	6.0	4.8	6.5	6.5	4.9	4.5	4.1	4.8	5.1	5.4	5.6
30	3.8	6.3	4.5	5.6	---	4.5	4.6	4.3	3.9	4.6	5.1	6.0
31	3.8	---	4.3	7.4	---	4.6	---	5.4	---	5.2	5.4	---
TOTAL	126.5	179.7	198.1	165.3	202.9	201.8	150.0	137.4	167.2	173.6	175.4	508.2
MEAN	4.08	5.99	6.39	5.33	7.00	6.51	5.00	4.43	5.57	5.60	5.66	16.9
MAX	5.7	17	18	7.4	34	25	8.0	7.7	18	37	42	316
MIN	3.3	3.7	4.3	4.1	4.3	4.1	4.0	3.7	3.4	3.2	3.1	3.1
AC-FT	251	356	393	328	402	400	298	273	332	344	348	1010

CAL YR 1987 TOTAL 7052.5 MEAN 19.3 MAX 832 MIN 3.2 AC-FT 13990
WTR YR 1988 TOTAL 2386.1 MEAN 6.52 MAX 316 MIN 3.1 AC-FT 4730

e Estimated.

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1987 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens Mar. 5-8, 1987; minimum, 206 microsiemens June 13, 1987.

pH: Maximum, 8.8 units Jan. 30, Feb. 15, 1988; minimum, 7.0 units on several days during May and June 1987.

WATER TEMPERATURE: Maximum, 30.5°C on several days during summer months; minimum, 5.0°C Jan. 10, 11, 1988.

DISSOLVED OXYGEN: Maximum, 15.4 mg/L Mar. 10, 1987; minimum, 3.2 mg/L Apr. 13, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 990 microsiemens Mar. 15, 16; minimum, 220 microsiemens Sept. 17.

pH: Maximum, 8.8 units Jan. 30, Feb. 15; minimum, 7.5 units July 22.

WATER TEMPERATURE: Maximum, 30.5°C July 3, 5, 19; minimum, 5.0°C Jan. 10, 11.

DISSOLVED OXYGEN: Maximum, 14.4 mg/L Jan. 28; minimum, 4.5 mg/L July 28-30, Sept. 17.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CaCO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3
OCT 29...	1230	4.1	875	8.10	20.0	9.2	102	0.8	260	61
DEC 07...	1310	5.6	882	8.10	17.0	10.0	106	1.5	260	60
FEB 18...	1525	42	635	7.90	15.0	7.9	81	6.4	200	78
APR 26...	1240	4.6	920	8.20	23.5	11.2	135	--	270	62
JUN 30...	1245	3.6	825	8.20	29.0	8.5	114	1.3	240	18
AUG 30...	1230	5.8	848	7.90	27.5	7.2	94	1.6	250	41

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CaCO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 29...	78	16	75	2	8.6	200	65	96	0.30
DEC 07...	78	16	73	2	8.7	201	68	96	0.30
FEB 18...	63	11	50	2	8.4	125	75	71	0.30
APR 26...	82	17	79	2	8.7	213	68	110	0.30
JUN 30...	69	16	77	2	8.2	221	55	83	0.40
AUG 30...	77	15	69	2	8.2	213	62	81	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
OCT 29...	15	474	10.9	0.110	11.0	0.040	1.3	1.3	5.60
DEC 07...	15	476	11.9	0.050	12.0	0.030	0.97	1.0	5.90
FEB 18...	12	366	6.77	0.130	6.90	0.500	1.2	1.7	3.60
APR 26...	17	510	8.16	0.040	8.20	0.030	0.77	0.80	3.20
JUN 30...	17	458	3.17	0.030	3.20	0.050	0.55	0.60	4.40
AUG 30...	16	456	4.35	0.050	4.40	0.030	0.87	0.90	5.00

GUADALUPE RIVER BASIN

279

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	126.5	842	471	161	88	30	78	27	260
NOV. 1987	179.7	826	462	224	86	41	77	37	250
DEC. 1987	198.1	824	461	247	85	46	76	41	250
JAN. 1988	165.3	877	491	219	92	41	80	36	270
FEB. 1988	202.9	842	471	258	88	48	78	43	260
MAR. 1988	201.8	884	494	269	94	51	81	44	270
APR. 1988	150.0	892	499	202	95	38	81	33	270
MAY 1988	137.4	861	482	179	90	33	79	29	270
JUNE 1988	167.2	798	446	201	82	37	75	34	250
JULY 1988	173.6	755	423	198	76	36	71	33	230
AUG. 1988	175.4	761	426	202	77	37	71	34	240
SEPT 1988	508.2	595	333	456	57	78	58	80	190
TOTAL	2386.1	**	**	2800	**	516	**	470	**
WTD.AVG.	6.5	781	437	**	80	**	73	**	240

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	700	640	666	870	770	861	860	810	842	870	860	862
2	810	710	759	890	860	879	890	830	861	880	860	870
3	830	810	823	890	840	878	880	860	873	900	880	889
4	860	770	840	880	780	867	910	870	889	890	870	879
5	860	830	844	870	790	861	920	910	914	880	870	871
6	860	810	846	880	810	862	920	900	911	880	860	870
7	870	800	857	880	790	869	900	870	885	870	850	862
8	880	860	868	880	820	861	880	870	874	870	860	862
9	880	850	868	860	650	777	880	870	879	870	850	862
10	880	860	867	880	810	852	880	870	875	870	860	865
11	880	870	872	800	690	736	870	860	869	870	820	859
12	880	780	865	730	680	697	870	860	869	870	860	867
13	890	830	875	830	740	791	870	860	869	870	860	867
14	880	790	849	870	830	849	870	860	869	880	860	872
15	820	740	796	880	870	871	870	860	861	890	880	887
16	800	740	786	880	670	825	870	860	864	890	880	883
17	800	730	777	820	690	786	870	830	855	890	870	875
18	830	730	799	800	620	710	850	740	815	900	880	889
19	890	830	856	620	590	601	790	660	757	880	850	865
20	890	880	886	720	620	665	750	650	718	890	870	881
21	880	850	877	830	730	781	710	590	634	890	870	884
22	870	860	868	880	830	855	660	580	614	900	880	886
23	860	790	846	900	880	893	790	660	722	900	880	893
24	880	840	858	900	860	895	840	800	814	900	880	894
25	880	860	872	920	850	889	840	820	829	890	870	880
26	890	830	871	920	810	894	860	840	848	890	860	872
27	850	830	845	910	830	879	850	830	844	890	860	873
28	870	850	861	900	850	871	850	810	829	880	860	868
29	870	850	863	870	830	847	810	780	797	890	870	880
30	870	810	858	870	840	860	840	800	819	910	880	887
31	880	830	869	---	---	---	860	840	853	910	890	897
MONTH	890	640	842	920	590	825	920	580	831	910	820	876

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	920	910	912	940	890	924	930	900	912	900	890	895
2	920	910	911	950	890	924	940	920	927	900	880	891
3	910	900	906	920	900	916	940	910	922	890	880	884
4	900	890	898	910	900	905	930	910	920	900	880	889
5	910	880	896	930	900	920	920	910	917	910	890	899
6	910	890	896	930	910	917	930	910	916	900	890	896
7	900	890	893	930	920	924	920	900	909	900	890	896
8	890	860	876	930	920	929	910	890	900	900	890	896
9	890	860	874	950	900	935	910	890	895	920	890	902
10	890	870	877	960	940	949	920	900	909	920	860	889
11	900	880	894	960	950	956	910	890	904	871	841	857
12	900	880	889	970	940	957	910	890	901	852	841	847
13	890	880	889	970	940	956	900	890	896	843	832	837
14	890	870	880	980	940	967	910	890	897	844	833	842
15	910	890	899	990	960	977	910	890	903	865	844	848
16	920	900	907	990	940	978	920	880	905	865	846	852
17	930	910	921	940	620	874	890	860	878	858	838	850
18	920	540	755	720	630	682	870	830	852	871	849	856
19	660	600	631	740	710	723	870	820	856	873	861	866
20	660	630	646	760	720	738	850	830	839	877	857	868
21	750	660	697	820	760	785	860	840	852	847	785	834
22	840	740	787	890	810	851	890	820	867	842	794	817
23	890	830	865	900	890	893	900	890	894	863	806	838
24	910	880	899	920	900	911	890	870	883	848	770	798
25	910	900	903	940	920	928	880	870	878	830	789	808
26	930	900	913	940	920	932	900	870	884	860	830	843
27	930	910	923	940	900	930	900	880	887	880	860	864
28	940	920	929	930	910	924	900	890	894	880	860	866
29	940	920	933	920	910	917	900	890	898	880	860	865
30	---	---	---	920	900	909	900	880	890	880	860	871
31	---	---	---	910	900	908	---	---	---	890	860	872
MONTH	940	540	865	990	620	901	940	820	893	920	770	862
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	890	870	881	840	810	826	870	840	858	880	840	860
2	890	880	884	830	810	819	860	820	847	850	810	829
3	900	650	828	800	780	792	830	770	794	850	830	839
4	720	650	688	790	750	774	870	790	839	850	760	799
5	650	570	592	780	770	773	880	850	874	760	740	752
6	680	590	630	820	770	787	870	810	837	880	770	841
7	810	670	741	850	790	827	890	820	859	880	850	870
8	820	800	807	800	770	781	890	880	886	860	770	806
9	840	800	819	800	770	789	890	880	885	830	780	807
10	840	820	829	800	710	778	890	820	853	800	750	773
11	830	820	826	850	760	797	890	820	859	790	770	784
12	830	810	821	860	840	851	890	840	860	860	800	835
13	840	820	831	850	800	821	860	780	839	850	770	811
14	840	830	835	800	780	792	850	820	840	860	790	823
15	860	830	851	790	750	770	880	820	847	860	790	813
16	860	850	855	800	730	772	880	870	875	870	830	853
17	860	850	856	790	760	770	880	870	874	840	220	504
18	860	790	821	770	760	766	890	860	874	590	380	490
19	850	780	811	840	760	799	890	870	879	660	600	633
20	860	810	845	840	800	817	880	800	834	780	660	718
21	810	750	776	840	470	704	880	810	843	860	780	817
22	800	770	791	580	480	536	880	860	869	880	850	869
23	770	740	752	610	580	588	880	860	866	860	830	842
24	750	710	733	690	610	643	890	310	803	870	820	836
25	840	710	785	780	690	737	730	330	552	860	800	830
26	810	780	792	850	770	821	700	650	662	840	790	818
27	810	770	789	890	600	854	660	620	638	860	800	824
28	840	800	817	870	820	853	770	660	711	850	810	829
29	840	810	820	850	790	811	830	770	801	850	830	837
30	830	810	822	830	690	797	860	830	843	850	810	832
31	---	---	---	860	760	817	880	860	871	---	---	---
MONTH	900	570	798	890	470	776	890	310	825	880	220	792

GUADALUPE RIVER BASIN

281

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.1	7.8	8.0	8.2	8.0	8.1	8.2	7.8	8.0	8.3	8.2	8.3
2	8.2	7.9	8.0	8.2	8.0	8.0	8.3	7.9	8.0	8.3	8.2	8.2
3	8.3	7.9	8.1	8.2	8.0	8.0	8.3	7.9	8.0	8.4	8.2	8.3
4	8.3	8.0	8.2	8.2	7.9	8.0	8.1	7.9	8.0	8.4	8.2	8.3
5	8.3	8.0	8.2	8.2	7.9	8.0	8.2	7.9	8.0	8.4	8.2	8.3
6	8.3	8.0	8.2	8.2	7.9	8.0	8.2	7.9	8.0	8.2	8.1	8.2
7	8.4	8.1	8.2	8.2	8.0	8.1	8.0	7.8	7.9	8.4	8.1	8.3
8	8.4	8.1	8.2	8.0	7.9	8.0	8.1	7.7	7.9	8.5	8.3	8.3
9	8.4	8.1	8.1	8.0	7.8	7.9	8.1	7.8	7.9	8.5	8.3	8.4
10	8.3	8.0	8.1	8.0	7.8	7.9	8.2	7.8	8.0	8.6	8.3	8.4
11	8.3	8.0	8.1	8.0	7.8	7.9	8.2	7.8	8.0	8.4	8.2	8.3
12	8.3	8.0	8.1	8.0	7.9	7.9	8.2	7.9	8.0	8.5	8.2	8.4
13	8.1	7.9	8.0	8.1	8.0	8.0	8.1	7.9	8.0	8.5	8.2	8.3
14	8.1	7.9	8.0	8.1	8.0	8.0	8.1	7.9	7.9	8.4	8.2	8.3
15	8.2	7.9	8.0	8.1	7.9	8.0	8.2	7.8	8.0	8.5	8.2	8.3
16	8.2	7.9	8.0	8.0	7.8	7.9	8.2	8.0	8.1	8.4	8.2	8.3
17	8.2	7.9	8.0	7.9	7.7	7.8	8.1	8.0	8.1	8.5	8.1	8.3
18	8.2	7.9	8.0	8.0	7.8	7.9	8.2	8.0	8.0	8.5	8.0	8.2
19	8.3	7.9	8.1	7.9	7.7	7.8	8.0	7.8	7.9	8.5	8.0	8.3
20	8.4	8.0	8.2	8.0	7.7	7.8	7.9	7.7	7.8	8.5	8.0	8.3
21	8.3	8.0	8.1	8.1	7.8	7.9	7.9	7.7	7.8	8.4	8.1	8.3
22	8.2	8.0	8.1	8.1	7.9	7.9	8.0	7.7	7.9	8.5	8.2	8.3
23	8.2	8.0	8.1	8.0	7.8	7.9	8.0	7.8	7.9	8.6	8.2	8.4
24	8.2	8.0	8.1	7.9	7.8	7.8	8.0	7.9	7.9	8.6	8.2	8.4
25	8.2	8.0	8.1	8.0	7.7	7.8	8.0	7.9	7.9	8.6	8.2	8.4
26	8.2	8.0	8.1	8.1	7.8	7.9	8.0	7.9	7.9	8.6	8.2	8.4
27	8.3	8.0	8.1	8.0	7.9	7.9	8.1	7.9	8.0	8.7	8.2	8.4
28	8.3	8.1	8.2	8.1	7.8	8.0	8.2	8.0	8.1	8.7	8.2	8.4
29	8.2	8.1	8.2	8.1	7.9	7.9	8.2	8.0	8.1	8.7	8.2	8.4
30	8.2	8.0	8.1	8.1	7.9	8.0	8.3	8.1	8.2	8.8	8.3	8.5
31	8.2	8.0	8.1	---	---	---	8.4	8.2	8.3	8.7	8.3	8.5
MONTH	8.4	7.8	8.1	8.2	7.7	7.9	8.4	7.7	8.0	8.8	8.0	8.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.6	8.2	8.4	8.2	7.9	8.1	8.3	8.1	8.2	8.4	8.1	8.2
2	8.3	8.1	8.2	8.1	7.9	8.0	8.3	8.1	8.2	8.3	8.1	8.1
3	8.2	8.0	8.1	8.2	7.9	8.1	8.3	8.0	8.1	8.4	8.0	8.2
4	8.2	8.0	8.1	8.3	8.0	8.2	8.3	8.0	8.1	8.6	8.2	8.3
5	8.2	8.1	8.1	8.4	8.1	8.3	8.2	8.0	8.0	8.6	8.2	8.4
6	8.4	8.1	8.3	8.4	8.1	8.3	8.2	8.0	8.1	8.5	8.2	8.3
7	8.5	8.2	8.4	8.4	8.1	8.3	8.4	8.0	8.2	8.3	8.1	8.2
8	8.5	8.2	8.4	8.5	8.1	8.3	8.4	8.0	8.2	8.3	8.1	8.2
9	8.6	8.2	8.4	8.5	8.1	8.3	8.4	8.1	8.2	8.4	8.1	8.2
10	8.6	8.2	8.4	8.4	8.2	8.3	8.4	8.1	8.2	8.5	8.1	8.3
11	8.5	8.2	8.4	8.4	8.2	8.3	8.4	8.1	8.2	8.6	8.3	8.4
12	8.5	8.2	8.4	8.5	8.2	8.3	8.5	8.2	8.3	8.6	8.2	8.4
13	8.6	8.3	8.5	8.4	8.2	8.3	8.5	8.1	8.3	8.5	8.2	8.3
14	8.7	8.4	8.5	8.5	8.3	8.4	8.5	8.0	8.2	8.5	8.2	8.3
15	8.8	8.3	8.6	8.6	8.2	8.5	8.5	8.1	8.3	8.5	8.2	8.3
16	8.7	8.4	8.6	8.5	8.2	8.4	8.2	8.0	8.1	8.4	8.1	8.2
17	8.5	8.3	8.4	8.2	7.9	8.1	8.2	7.9	8.0	8.4	8.1	8.2
18	8.3	7.6	7.9	7.8	7.7	7.8	8.2	7.9	8.0	8.6	8.2	8.3
19	8.0	7.6	7.9	7.8	7.7	7.7	8.4	8.0	8.1	8.4	8.1	8.2
20	8.1	7.9	8.0	7.9	7.7	7.8	8.5	8.0	8.2	8.3	8.1	8.2
21	8.1	7.8	8.0	8.1	7.8	7.9	8.5	8.0	8.2	8.1	8.0	8.1
22	8.3	7.9	8.1	8.2	7.9	8.1	8.5	8.0	8.2	8.0	7.8	8.0
23	8.4	8.0	8.1	8.2	8.0	8.1	8.5	8.0	8.2	8.0	7.8	7.9
24	8.3	8.0	8.2	8.3	8.0	8.1	8.6	8.1	8.3	8.1	7.8	7.9
25	8.4	8.0	8.2	8.3	8.0	8.2	8.6	8.1	8.3	8.4	7.9	8.1
26	8.3	8.1	8.1	8.2	8.1	8.1	8.7	8.1	8.3	8.5	8.1	8.3
27	8.3	8.0	8.1	8.2	8.0	8.1	8.6	8.1	8.3	8.5	8.2	8.3
28	8.3	8.0	8.2	8.2	8.0	8.1	8.6	8.1	8.3	8.5	8.2	8.3
29	8.3	8.0	8.1	8.2	8.0	8.1	8.4	8.0	8.2	8.4	8.2	8.3
30	---	---	---	8.3	8.1	8.2	8.4	8.0	8.2	8.4	8.1	8.2
31	---	---	---	8.3	8.1	8.2	---	---	---	8.3	8.1	8.2
MONTH	8.8	7.6	8.2	8.6	7.7	8.2	8.7	7.9	8.2	8.6	7.8	8.2

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.3	8.1	8.2	8.3	8.1	8.2	8.2	8.1	8.1	8.2	8.0	8.1
2	8.3	8.0	8.2	8.3	8.2	8.2	8.1	8.0	8.1	8.2	8.1	8.2
3	8.2	7.8	8.0	8.3	8.2	8.2	8.2	8.1	8.1	8.1	8.1	8.1
4	7.9	7.7	7.8	8.4	8.2	8.3	8.4	8.0	8.2	8.3	8.1	8.2
5	8.1	7.8	7.9	8.3	8.1	8.2	8.5	8.4	8.4	8.4	8.3	8.3
6	8.3	7.9	8.1	8.2	8.1	8.1	8.4	8.3	8.4	8.3	8.2	8.2
7	8.3	7.9	8.1	8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.2	8.3
8	8.3	8.0	8.1	8.5	8.3	8.4	8.5	8.2	8.4	8.4	8.3	8.3
9	8.3	8.0	8.2	8.5	8.3	8.4	8.4	8.1	8.3	8.4	8.2	8.3
10	8.2	8.0	8.1	8.5	8.3	8.4	8.3	8.2	8.3	8.5	8.4	8.4
11	8.3	8.1	8.2	8.3	8.2	8.3	8.4	8.2	8.3	8.5	8.4	8.5
12	8.4	8.1	8.2	8.3	8.1	8.2	8.3	8.2	8.2	8.4	8.2	8.3
13	8.4	8.1	8.2	8.3	8.2	8.3	8.3	8.1	8.2	8.3	8.1	8.2
14	8.6	8.0	8.3	8.3	8.2	8.2	8.3	8.1	8.2	8.3	8.2	8.2
15	8.7	8.4	8.5	8.5	8.3	8.4	8.3	8.1	8.2	8.4	8.2	8.3
16	8.6	8.4	8.5	8.5	8.3	8.4	8.4	8.1	8.2	8.4	8.2	8.3
17	8.6	8.4	8.5	8.5	8.2	8.4	8.5	8.3	8.4	8.2	7.7	7.9
18	8.7	8.5	8.6	8.6	8.3	8.4	8.4	8.3	8.4	7.7	7.7	7.7
19	8.5	8.4	8.5	8.6	8.4	8.5	8.5	8.3	8.4	7.7	7.7	7.7
20	8.5	8.3	8.4	8.5	8.3	8.4	8.4	8.3	8.3	7.8	7.6	7.7
21	8.5	8.3	8.4	8.4	7.6	8.1	8.4	8.2	8.4	7.9	7.8	7.9
22	8.5	8.3	8.4	7.8	7.5	7.7	8.4	8.3	8.4	8.0	7.9	7.9
23	8.7	8.4	8.6	8.0	7.8	7.9	8.4	8.2	8.3	8.0	8.0	8.0
24	8.6	8.4	8.5	8.1	7.9	8.0	8.3	8.1	8.3	8.1	8.0	8.1
25	8.5	8.3	8.4	8.2	8.1	8.2	8.0	7.6	7.7	8.1	8.1	8.1
26	8.4	8.2	8.3	8.4	8.3	8.4	7.7	7.6	7.7	8.1	8.1	8.1
27	8.4	8.2	8.3	8.4	8.2	8.4	7.9	7.7	7.8	8.1	8.0	8.1
28	8.3	8.1	8.2	8.3	8.1	8.2	7.9	7.8	7.9	8.1	8.0	8.0
29	8.3	8.2	8.2	8.4	8.2	8.3	8.0	7.9	8.0	8.1	8.0	8.1
30	8.4	8.2	8.3	8.3	8.1	8.2	8.1	8.0	8.0	8.1	8.0	8.1
31	---	---	---	8.1	8.0	8.1	8.1	8.0	8.1	---	---	---
MONTH	8.7	7.7	8.3	8.6	7.5	8.3	8.5	7.6	8.2	8.5	7.6	8.1

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18.0	16.5	17.0	22.0	19.5	20.5	20.5	18.5	19.5	23.0	21.0	21.5
2	17.5	15.0	16.5	21.0	20.0	20.5	20.0	17.0	18.5	22.0	21.0	21.5
3	15.0	14.0	14.5	20.0	17.5	18.5	20.5	17.5	19.0	24.0	21.0	22.5
4	14.0	11.0	12.5	17.5	15.5	16.5	20.5	19.0	19.5	23.5	20.5	22.0
5	10.5	9.0	10.0	17.5	14.5	16.5	22.0	20.5	21.0	23.0	20.5	22.0
6	9.5	8.0	9.0	18.0	15.0	16.5	20.5	19.0	20.0	23.5	21.0	22.0
7	10.0	8.5	9.0	18.0	16.5	17.5	21.0	17.5	19.5	23.0	22.0	22.5
8	11.0	9.0	10.0	19.5	17.5	18.5	19.5	17.5	18.5	25.5	22.5	24.0
9	13.0	10.5	12.0	18.5	16.0	17.5	18.5	17.5	18.0	26.5	24.0	25.0
10	14.0	12.5	13.0	18.5	14.5	17.0	17.5	16.0	17.0	26.0	24.0	25.0
11	13.5	11.0	12.0	19.5	16.5	18.5	17.0	14.5	16.0	25.5	23.0	24.5
12	11.5	9.5	11.0	19.5	17.5	18.5	17.0	14.0	16.0	23.5	22.0	23.0
13	12.5	9.5	11.0	18.5	15.0	17.0	18.0	14.5	17.0	24.5	21.5	23.0
14	14.5	12.5	13.5	16.0	13.5	14.5	20.5	17.5	19.0	25.0	22.5	23.5
15	14.0	12.0	13.5	15.0	12.0	13.5	22.0	19.0	20.5	25.5	23.0	24.5
16	14.5	12.0	13.5	14.0	13.0	13.5	21.0	20.0	20.5	25.5	23.5	24.5
17	16.0	15.0	15.0	15.0	13.5	14.0	22.0	20.0	21.0	26.0	23.5	25.0
18	16.0	13.5	15.5	14.5	12.5	13.5	22.0	20.0	21.0	26.0	23.0	24.5
19	15.0	13.5	14.5	14.5	11.0	13.0	21.0	18.5	20.0	24.5	23.5	24.0
20	15.0	13.0	14.0	15.5	11.5	14.0	22.0	19.0	21.0	25.0	23.5	24.0
21	15.0	12.5	14.0	16.5	12.5	15.0	22.5	20.5	21.5	23.5	22.5	23.0
22	15.0	12.5	14.0	17.5	15.5	16.5	24.5	22.0	23.0	23.5	21.5	22.5
23	15.5	13.5	14.5	19.5	17.5	18.5	25.5	23.5	24.0	24.0	21.0	23.0
24	15.0	13.0	14.0	21.5	18.5	20.0	25.0	22.0	23.5	25.5	23.0	24.5
25	15.5	13.5	14.5	22.5	20.5	21.5	24.5	22.5	23.5	26.0	23.0	24.5
26	16.0	15.0	15.5	22.0	21.5	21.5	24.5	21.0	23.0	25.5	23.5	24.5
27	17.5	15.5	16.5	23.0	21.0	22.0	23.5	20.5	22.5	26.0	23.5	24.5
28	19.0	15.5	17.5	22.5	21.5	22.0	23.5	21.5	22.5	25.5	23.5	24.5
29	21.0	18.0	19.5	21.5	18.0	20.5	24.0	22.5	23.0	25.5	23.5	24.5
30	---	---	---	18.5	16.5	17.5	23.0	21.0	22.0	25.0	24.0	24.5
31	---	---	---	18.5	17.0	17.5	---	---	---	25.5	24.0	25.0
MONTH	21.0	8.0	13.5	23.0	11.0	17.5	25.5	14.0	20.5	26.5	20.5	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	26.5	24.5	25.5	30.0	27.5	28.5	27.5	26.0	27.0	28.0	26.0	27.0
2	28.0	25.5	26.5	30.0	28.0	29.0	28.5	26.5	27.5	27.5	26.5	27.0
3	26.5	25.0	26.0	30.5	28.5	29.0	28.0	27.0	27.5	28.0	26.0	27.0
4	25.0	23.5	24.5	30.0	28.0	28.5	28.5	26.5	27.5	27.0	25.0	26.0
5	25.5	23.5	24.5	30.5	27.5	28.5	29.0	26.5	28.0	25.5	23.0	24.5
6	26.0	23.0	24.5	30.0	28.0	28.5	29.5	27.0	28.5	25.0	23.0	24.0
7	27.0	24.0	25.5	28.5	27.5	28.0	29.5	27.0	28.5	25.0	23.0	24.0
8	28.0	24.5	26.5	28.0	26.5	27.0	29.5	27.0	28.5	25.0	23.0	24.0
9	28.5	25.5	27.0	28.0	26.0	27.0	30.0	27.5	29.0	25.0	23.0	24.0
10	28.0	26.5	27.0	27.5	26.5	27.0	29.5	27.5	29.0	25.0	22.5	24.0
11	27.5	25.0	26.5	27.0	26.5	26.5	29.5	27.5	28.5	25.0	23.0	24.0
12	27.5	25.0	26.5	28.5	26.0	27.0	29.5	27.5	28.5	25.5	24.0	25.0
13	27.0	24.5	26.0	29.0	26.5	28.0	29.5	28.0	28.5	26.5	25.0	26.0
14	28.0	25.0	26.5	29.5	27.5	28.5	29.5	27.5	28.5	27.5	25.5	26.5
15	27.5	25.5	26.5	30.0	27.5	28.5	29.5	27.0	28.0	27.5	25.0	26.0
16	27.5	25.5	26.5	29.5	28.0	29.0	29.5	27.0	28.0	26.5	25.5	26.0
17	28.0	25.5	26.5	30.0	27.5	29.0	29.5	27.0	28.0	26.5	24.5	25.5
18	28.5	25.5	27.0	30.0	27.5	29.0	28.5	27.0	27.5	26.5	26.0	26.5
19	28.0	25.5	27.0	30.5	27.5	29.0	28.0	26.5	27.0	26.5	26.0	26.5
20	28.5	26.0	27.0	28.5	27.5	28.0	29.0	27.0	28.0	27.0	26.0	26.5
21	28.5	26.0	27.0	27.5	26.0	26.5	29.0	27.0	28.0	27.0	26.0	26.5
22	28.0	26.0	27.0	27.5	25.5	26.5	29.5	27.5	28.5	27.0	26.0	26.5
23	28.5	25.5	27.0	28.5	26.0	27.5	30.0	27.5	29.0	27.0	26.0	26.5
24	28.0	25.5	27.0	29.0	26.5	28.0	30.0	24.5	28.0	27.0	26.0	26.5
25	29.5	26.5	28.0	29.5	27.0	28.5	28.0	25.0	27.0	27.0	25.5	26.0
26	29.0	26.5	27.5	29.5	27.5	28.5	28.5	26.5	28.0	26.5	25.5	26.0
27	29.0	27.5	28.0	29.5	27.5	28.0	28.5	27.0	28.0	26.0	24.5	25.5
28	29.0	27.5	28.0	29.0	27.0	28.0	28.5	27.0	28.0	26.0	24.5	25.5
29	29.5	27.5	28.5	29.0	27.0	28.0	28.0	27.0	27.5	26.5	25.0	25.5
30	30.0	27.5	28.5	28.0	26.5	27.0	28.0	26.5	27.0	25.0	23.0	24.0
31	---	---	---	27.5	26.0	26.5	28.0	26.5	27.0	---	---	---
MONTH	30.0	23.0	26.5	30.5	25.5	28.0	30.0	24.5	28.0	28.0	22.5	25.5

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.3	5.3	6.2	9.1	6.0	7.2	10.7	7.5	8.7	10.8	9.0	9.8
2	9.3	6.0	7.4	9.0	5.9	7.0	11.1	7.6	8.9	11.2	9.3	10.0
3	8.4	6.4	7.4	9.3	5.9	7.0	11.2	7.6	8.7	11.6	9.3	10.3
4	9.8	7.3	8.5	9.5	5.9	7.2	10.3	7.5	8.6	12.0	9.4	10.5
5	9.6	7.4	8.5	9.5	6.0	7.3	10.2	7.1	8.3	11.6	9.2	10.1
6	---	---	---	9.8	6.2	7.6	10.1	6.6	7.8	10.1	8.8	9.3
7	---	---	---	9.8	6.5	7.6	10.0	6.3	7.6	11.7	8.7	10.0
8	---	---	---	7.8	6.2	6.7	10.3	6.4	7.8	12.2	9.5	10.5
9	---	---	---	7.7	6.8	7.1	11.0	6.8	8.3	13.0	10.0	11.3
10	---	---	---	8.3	6.7	7.3	11.2	7.1	8.5	13.1	10.5	11.6
11	---	---	---	9.0	7.0	7.9	10.5	6.9	8.3	13.0	10.6	11.5
12	---	---	---	9.5	7.8	8.5	11.4	6.9	8.6	12.7	9.9	10.9
13	---	---	---	9.2	7.5	8.1	10.2	7.5	8.3	12.8	9.3	10.9
14	---	---	---	8.9	7.1	7.8	10.5	7.2	8.3	12.1	9.2	10.5
15	---	---	---	8.5	6.3	7.2	11.8	8.3	9.8	12.5	8.7	10.3
16	---	---	---	7.5	6.2	6.9	12.3	9.3	10.6	11.5	8.1	9.3
17	---	---	---	7.9	6.3	6.9	10.9	9.4	10.0	12.1	7.0	9.1
18	---	---	---	8.1	6.2	7.0	9.8	8.4	9.3	12.1	7.0	8.9
19	---	---	---	8.7	6.6	7.5	9.2	7.8	8.2	12.3	6.9	9.2
20	9.7	5.9	7.2	9.3	7.2	8.0	8.4	7.3	7.7	13.1	7.5	9.8
21	10.2	6.6	7.9	9.8	7.5	8.4	8.8	7.2	7.8	12.8	8.3	10.3
22	9.6	6.4	7.3	9.8	7.6	8.5	9.4	7.7	8.4	13.4	8.9	10.8
23	8.5	6.0	6.7	9.4	6.8	7.8	8.8	7.7	8.1	13.8	9.1	11.0
24	8.6	6.1	6.9	7.5	5.9	6.6	8.8	7.2	7.8	13.7	9.4	11.2
25	8.8	5.9	6.9	8.5	5.6	6.6	8.1	6.9	7.4	13.8	9.4	11.1
26	8.6	5.7	6.7	8.8	6.0	7.0	8.9	7.6	8.2	13.9	9.4	11.2
27	8.8	5.5	6.7	8.8	6.7	7.6	10.6	8.7	9.5	14.2	9.3	11.2
28	9.4	6.0	7.3	9.6	7.4	8.2	11.1	9.4	10.2	14.4	8.9	10.9
29	9.9	6.4	7.6	9.7	7.7	8.3	11.8	9.8	10.6	13.5	8.3	10.2
30	9.6	6.2	7.4	10.2	7.6	8.6	11.6	10.0	10.5	13.4	7.6	9.7
31	9.5	6.0	7.3	---	---	---	11.4	9.5	10.2	12.3	7.2	8.8
MONTH	10.2	5.3	7.3	10.2	5.6	7.5	12.3	6.3	8.7	14.4	6.9	10.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.0	6.4	7.9	11.3	6.0	8.2	8.9	6.1	7.3	10.8	5.8	7.6
2	8.9	5.6	6.9	9.5	5.7	7.1	9.5	6.3	7.6	9.3	6.0	7.0
3	8.7	6.1	7.0	10.3	5.8	7.7	9.6	6.2	7.4	10.2	6.0	7.6
4	8.9	6.4	7.4	11.0	6.6	8.6	9.1	6.1	7.2	10.8	6.1	7.8
5	9.5	7.6	8.4	11.4	7.2	9.0	8.7	5.8	6.7	10.7	6.1	8.0
6	12.1	8.7	10.3	11.4	7.1	9.0	9.7	5.8	7.3	10.9	6.0	7.9
7	12.2	9.6	10.7	10.9	6.9	8.5	10.8	6.0	7.6	8.5	5.9	6.9
8	12.1	9.3	10.5	10.8	6.3	8.1	9.3	5.8	7.0	9.5	5.7	7.1
9	12.1	8.7	10.2	11.1	6.7	8.7	10.0	6.2	7.5	9.2	5.5	6.9
10	11.4	8.1	9.5	11.1	6.9	8.8	11.0	6.8	8.3	9.0	5.3	6.8
11	11.8	8.0	9.8	11.2	6.7	8.7	11.4	7.4	8.8	8.8	5.0	6.4
12	12.0	8.7	10.2	11.2	6.3	8.5	11.6	7.4	9.0	8.7	5.4	6.7
13	12.8	9.1	10.7	10.9	6.8	8.7	12.3	6.8	8.9	9.6	5.6	7.0
14	12.5	8.6	10.2	11.5	7.0	9.2	11.9	6.1	8.2	9.3	5.5	6.9
15	12.9	8.4	10.4	12.2	8.1	10.0	12.0	6.0	8.1	8.9	5.4	6.7
16	13.1	8.6	10.5	9.8	8.4	9.1	8.0	5.6	6.2	8.7	5.2	6.4
17	10.6	7.8	8.8	9.1	7.6	8.2	8.4	5.7	6.3	8.8	5.2	6.6
18	8.6	6.6	7.7	8.8	8.0	8.3	8.8	5.3	6.6	9.0	5.2	6.7
19	8.8	7.6	8.1	9.0	8.0	8.4	10.5	5.6	7.3	7.7	5.2	6.1
20	9.3	7.5	8.2	9.3	7.6	8.4	10.9	5.4	7.3	8.0	5.1	6.1
21	10.0	7.7	8.6	9.4	7.4	8.2	11.0	5.2	7.4	7.0	5.3	6.0
22	10.7	7.8	9.0	9.5	7.0	8.0	11.0	4.9	7.3	7.5	5.5	6.3
23	11.4	7.9	9.4	9.2	6.5	7.5	11.2	4.8	7.1	8.0	5.2	6.4
24	12.1	8.1	9.9	9.2	6.2	7.4	11.4	5.0	7.2	8.1	5.0	6.2
25	12.6	8.3	10.1	8.6	5.7	6.8	10.8	4.9	7.1	9.2	4.9	6.6
26	12.0	8.0	9.4	7.3	5.4	6.1	11.2	5.1	7.3	8.9	5.1	6.7
27	12.4	7.4	9.3	8.0	5.3	6.3	11.2	5.3	7.5	9.5	5.3	6.9
28	12.5	7.5	9.6	7.4	5.3	6.1	11.0	5.5	7.5	9.3	5.5	6.9
29	12.3	6.9	8.8	7.4	5.2	6.1	9.7	5.4	6.8	8.6	5.5	6.7
30	---	---	---	8.9	6.1	7.3	10.2	5.5	7.3	8.2	5.3	6.3
31	---	---	---	8.3	6.5	7.1	---	---	---	7.8	5.5	6.4
MONTH	13.1	5.6	9.2	12.2	5.2	8.0	12.3	4.8	7.4	10.9	4.9	6.8

GUADALUPE RIVER BASIN

285

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.9	5.4	6.7	7.9	5.1	6.1	5.8	4.9	5.3	7.4	7.2	7.3
2	9.0	5.3	6.6	7.9	5.1	6.1	6.9	5.1	5.6	7.9	7.2	7.5
3	6.6	5.3	5.9	7.8	5.1	6.0	7.0	5.3	5.9	8.5	7.8	8.1
4	7.4	5.3	6.0	7.7	5.0	6.0	7.1	5.6	6.3	8.8	8.3	8.5
5	8.2	5.4	6.6	8.3	4.9	6.3	6.7	5.9	6.2	8.3	7.9	8.2
6	9.4	5.3	6.9	8.1	5.2	6.3	6.2	5.6	5.9	8.1	7.9	8.0
7	10.0	5.1	7.1	7.7	5.2	6.2	6.1	5.5	5.7	8.1	7.9	8.0
8	9.8	5.0	6.9	8.7	5.6	6.8	5.9	5.4	5.6	8.1	7.9	8.0
9	9.9	4.9	6.8	8.7	5.9	7.0	5.8	5.3	5.5	8.6	6.8	7.9
10	8.2	4.7	6.2	8.2	5.9	6.6	5.8	5.3	5.5	9.3	6.4	7.5
11	9.5	4.8	6.8	7.7	6.2	6.7	5.8	5.4	5.6	8.6	6.4	7.3
12	9.9	4.7	6.8	8.6	6.1	7.1	6.2	5.4	5.6	7.7	6.3	6.8
13	9.5	4.9	6.7	9.2	6.2	7.4	6.2	5.6	5.8	7.7	5.5	6.5
14	9.7	4.6	6.6	9.3	6.2	7.4	6.2	5.7	6.0	8.0	5.5	6.3
15	8.4	4.8	6.4	9.3	5.9	7.3	6.6	5.9	6.2	8.4	5.5	6.5
16	8.4	5.2	6.4	9.4	6.3	7.4	6.6	6.2	6.5	8.3	5.6	6.4
17	8.7	5.2	6.6	9.5	5.9	7.1	6.7	6.4	6.6	6.5	4.5	5.5
18	8.8	5.2	6.5	8.0	5.6	6.5	6.6	6.5	6.6	5.7	5.4	5.5
19	8.2	5.4	6.5	7.6	5.3	6.2	6.6	6.5	6.6	5.9	5.4	5.6
20	8.5	5.4	6.6	6.0	5.1	5.6	6.7	6.6	6.6	5.6	5.0	5.3
21	8.2	5.3	6.5	5.8	5.0	5.3	6.7	6.6	6.7	5.6	4.9	5.1
22	8.0	5.0	6.4	5.6	4.6	5.2	6.9	6.6	6.7	5.9	4.9	5.3
23	8.8	4.9	6.4	6.4	4.6	5.4	6.8	6.7	6.7	6.3	5.4	5.7
24	8.2	4.8	6.2	7.1	5.2	5.9	6.9	6.7	6.7	6.5	5.6	5.9
25	8.4	5.0	6.3	7.2	5.3	6.1	7.2	6.7	6.8	6.9	5.7	6.2
26	7.7	4.7	5.9	6.8	5.0	5.7	6.9	6.7	6.8	7.0	5.9	6.3
27	7.9	4.9	6.0	6.2	4.8	5.4	6.9	6.8	6.8	7.3	6.1	6.5
28	7.5	4.9	5.9	5.8	4.5	5.0	7.0	6.9	6.9	7.4	6.0	6.5
29	8.2	5.0	6.2	5.6	4.5	4.9	7.1	6.9	7.0	7.3	6.0	6.4
30	8.5	5.0	6.2	5.5	4.5	4.8	7.2	7.0	7.1	6.9	6.2	6.5
31	---	---	---	5.6	4.6	5.0	7.2	7.1	7.2	---	---	---
MONTH	10.0	4.6	6.5	9.5	4.5	6.2	7.2	4.9	6.3	9.3	4.5	6.7

GUADALUPE RIVER BASIN

08180800 MEDINA RIVER NEAR SOMERSET, TX

LOCATION.--Lat 29°15'45", long 98°34'56", Bexar County, Hydrologic Unit 12100302, on left bank 300 ft upstream from bridge on State Highway 16, 2.1 mi upstream from Elm Creek, 4.9 mi downstream from Medio Creek, 5.2 mi northeast of Somerset, and 14.1 mi upstream from mouth.

DRAINAGE AREA.--967 mi², of which 634 mi² is above dam forming Medina Lake.

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 493.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Medina Lake (station 08179500) 56 mi upstream and by Medina Diversion Lake (capacity, 4,500 acre-ft). For diversion of canal records, see Medina Canal near Rio-medina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Two observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--18 years, 251 ft³/s (181,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft³/s July 17, 1973 (gage height, 29.39 ft); minimum daily, 16 ft³/s Sept. 19, 20, 1984.

Maximum stage since about 1890, that of July 17, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 583 ft³/s Sept. 17 at 2100 hours (gage height, 8.91 ft); minimum daily, 38 ft³/s Sept. 8, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	124	140	147	102	92	81	75	60	55	60	42
2	151	126	138	144	101	91	80	72	58	55	59	42
3	148	126	136	139	99	91	78	70	65	54	59	45
4	147	126	136	138	99	90	77	70	89	55	59	46
5	142	128	137	139	99	89	78	69	77	55	58	41
6	144	128	134	137	99	89	77	67	67	53	56	42
7	139	127	131	131	99	88	76	67	64	54	54	41
8	137	132	128	129	99	89	76	69	62	55	51	38
9	135	152	127	128	98	89	77	69	60	51	51	40
10	134	149	127	127	95	86	78	66	60	52	51	41
11	134	150	125	127	94	84	78	65	60	55	50	42
12	133	139	122	127	91	82	76	67	59	55	50	43
13	133	134	122	125	88	78	75	67	59	54	49	41
14	132	134	122	125	87	77	75	65	55	55	48	41
15	129	134	123	125	86	76	76	63	54	52	49	38
16	127	148	122	125	85	78	78	62	53	50	49	43
17	128	149	125	130	85	84	80	62	53	49	48	163
18	128	147	132	138	100	126	81	60	51	48	47	156
19	127	145	141	138	116	105	77	58	51	45	48	70
20	125	145	143	136	99	91	74	59	54	43	48	58
21	122	142	144	126	91	88	74	63	49	106	46	53
22	119	144	152	121	88	85	74	66	50	106	43	51
23	125	145	153	120	88	84	72	64	51	75	41	50
24	127	147	153	118	87	84	71	63	52	63	41	49
25	132	143	155	116	85	85	71	62	52	59	59	50
26	133	135	158	116	84	84	70	61	59	56	59	50
27	131	141	155	113	87	85	70	61	58	54	47	49
28	129	137	152	110	96	84	69	59	59	57	44	47
29	127	137	148	109	93	84	69	60	57	56	41	46
30	128	140	148	106	---	82	78	60	55	59	40	45
31	126	---	148	104	---	81	---	59	---	64	41	---
TOTAL	4129	4154	4277	3914	2720	2701	2266	2000	1753	1800	1546	1603
MEAN	133	138	138	126	93.8	87.1	75.5	64.5	58.4	58.1	49.9	53.4
MAX	157	152	158	147	116	126	81	75	89	106	60	163
MIN	119	124	122	104	84	76	69	58	49	43	40	38
AC-FT	8190	8240	8480	7760	5400	5360	4490	3970	3480	3570	3070	3180

CAL YR 1987 TOTAL 345888 MEAN 948 MAX 22000 MIN 119 AC-FT 686100
WTR YR 1988 TOTAL 32863 MEAN 89.8 MAX 163 MIN 38 AC-FT 65180

GUADALUPE RIVER BASIN

287

08181400 HELOTES CREEK AT HELOTES, TX

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

DRAINAGE AREA.--15.0 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records good. An undetermined amount of flow is diverted for domestic use above station, and some streamflow enters the Edwards and associated limestones through the Balcones Fault Zone in the vicinity of the gage. Recording rain gage at station.

AVERAGE DISCHARGE.--20 years, 4.34 ft³/s (3.93 in/yr), 3,140 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 27	2015	*64	*2.27				

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.35	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.39
18	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.15	.00	.01	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.2	.00	.00
28	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.09	0.19	0.00	0.09	0.07	0.24	0.15	0.43	1.21	0.00	0.39
MEAN	.00	.003	.006	.00	.003	.002	.008	.005	.014	.039	.00	.013
MAX	.00	.05	.19	.00	.09	.07	.24	.15	.35	1.2	.00	.39
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.2	.4	.0	.2	.1	.5	.3	.9	2.4	.0	.8
CFSM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1987	TOTAL	4701.13	MEAN	12.9	MAX	932	MIN	.00	AC-FT	9320	CFSM	.86	IN.	11.66
WTR YR 1988	TOTAL	2.86	MEAN	.008	MAX	1.2	MIN	.00	AC-FT	5.7	CFSM	.00	IN.	.01

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'47", long 98°35'02", Bexar County, Hydrologic Unit 12100302, on left bank between bridges on Interstate Highway 35 in San Antonio, 1.7 mi northeast of the intersection of Interstate Highway 35 and Loop 410, and 11.8 mi upstream from mouth.

DRAINAGE AREA.--219 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 573.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,100 ft³/s June 11, 1987 (gage height, 22.30 ft), from rating curve extended above 11,000 ft³/s; minimum daily, 2.5 ft³/s Sept. 6, 11, 12, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,860 ft³/s Sept. 17 at 1215 hours (gage height, 10.96 ft); minimum daily, 2.5 ft³/s Sept. 6, 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	5.4	e10	7.9	9.0	6.5	7.6	6.3	6.2	e5.5	4.8	3.4
2	8.0	5.6	e9.5	7.7	9.4	7.6	6.5	6.0	5.6	e5.0	5.0	3.4
3	7.2	6.1	e9.4	7.7	9.2	6.8	5.5	5.4	6.1	e4.5	4.8	3.4
4	6.4	6.2	e9.3	8.0	9.4	6.1	5.5	6.7	9.8	e4.0	4.8	3.0
5	6.4	6.2	e9.2	8.9	9.2	5.9	6.9	6.1	7.6	e3.7	4.8	2.9
6	6.9	6.1	e9.2	12	9.0	5.3	7.0	5.7	6.1	e3.6	4.6	2.5
7	7.0	5.9	e9.0	11	8.7	5.5	6.8	5.8	6.0	e3.6	4.0	3.2
8	6.5	7.4	e9.0	9.5	9.0	6.1	9.6	4.6	5.8	e3.6	4.0	3.1
9	6.9	2.4	e8.8	9.1	9.0	6.2	11	4.7	5.4	e3.6	4.3	3.1
10	6.9	9.3	e8.8	8.7	9.0	e6.0	5.6	5.7	5.6	e10	4.5	3.0
11	6.1	6.9	8.8	8.8	8.6	e5.7	5.7	7.5	5.3	e8.0	4.3	2.5
12	5.8	5.9	9.2	9.5	9.0	e5.6	6.5	12	4.3	e6.5	4.5	2.5
13	5.9	6.1	9.0	9.4	8.9	e5.6	6.3	9.8	4.3	e5.5	4.4	3.0
14	6.7	6.1	9.8	9.2	8.9	e5.4	6.8	9.1	5.1	e5.0	3.9	2.8
15	6.6	5.8	9.6	9.1	8.6	e5.4	6.5	8.1	4.3	e5.0	4.6	2.9
16	6.7	e20	9.5	9.3	8.9	e10	12	8.1	e4.1	e4.5	4.1	3.2
17	7.8	e10	14	9.9	9.7	e150	15	8.5	3.9	e4.5	4.0	879
18	6.6	e8.0	41	11	102	e30	11	8.2	e3.8	e4.5	4.1	109
19	6.4	e7.0	41	10	17	e10	7.2	7.8	e3.7	e6.0	4.2	24
20	6.5	e6.5	24	9.9	10	e8.0	6.0	9.2	3.6	4.4	4.2	14
21	5.9	e6.2	20	11	8.1	e7.4	5.9	38	e3.6	142	3.9	10
22	6.9	e6.0	12	10	8.1	e7.0	5.8	8.3	e3.6	20	3.5	9.1
23	22	e6.0	11	10	8.5	e7.0	5.6	5.6	e3.5	11	4.0	8.3
24	9.2	e6.0	10	11	8.0	e7.0	4.7	5.9	3.5	8.3	14	7.5
25	7.3	e15	15	11	7.1	e6.6	4.2	5.5	e100	6.2	222	6.5
26	6.8	e12	12	11	7.0	e6.6	4.5	4.9	e20	6.0	11	6.4
27	6.6	e10	9.8	9.6	6.7	e6.6	4.7	4.9	e10	5.2	4.5	6.7
28	6.6	e9.5	9.6	11	6.0	e6.6	5.4	5.0	e8.0	5.5	3.5	6.4
29	6.9	e10	9.6	11	6.1	e15	6.0	4.0	e7.0	5.5	3.1	6.7
30	6.7	e9.5	9.6	10	---	e7.7	6.4	4.0	e6.0	12	3.3	6.4
31	6.3	---	8.9	8.8	---	e7.7	---	4.4	---	5.7	3.1	---
TOTAL	226.4	321.3	395.6	301.0	348.1	382.9	208.2	235.8	326.7	328.4	363.8	1147.9
MEAN	7.30	10.7	12.8	9.71	12.0	12.4	6.94	7.61	10.9	10.6	11.7	38.3
MAX	22	74	41	12	102	150	15	38	100	142	222	879
MIN	5.8	5.4	8.8	7.7	6.0	5.3	4.2	4.0	3.5	3.6	3.1	2.5
AC-FT	449	637	785	597	690	759	413	468	648	651	722	2280

CAL YR 1987 TOTAL 36068.2 MEAN 98.8 MAX 5580 MIN 5.4 AC-FT 71540
WTR YR 1988 TOTAL 4586.1 MEAN 12.5 MAX 879 MIN 2.5 AC-FT 9100

e Estimated.

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: July 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1984 to current year.

WATER TEMPERATURE: September 1984 to current year.

INSTRUMENTATION.--Since September 1984, specific conductance and water temperature are recorded continuously at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens Apr. 30, 1988; minimum, 94 microsiemens, Oct. 11, 1985.

WATER TEMPERATURE: Maximum, 31.0°C on several days during August and September 1985; minimum, 5.5°C Jan. 12, 13, 1985

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens Apr. 30; minimum, 132 microsiemens Sept. 17.

WATER TEMPERATURE: Maximum, 29.5°C Aug. 13, 14; minimum, 9.0°C Jan. 9-11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03
OCT 27...	1445	6.4	810	7.80	22.5	2	2.2	8.8	103	0.9	310	85
DEC 10...	1430	8.4	850	7.40	17.0	3	0.50	9.2	96	1.2	310	--
FEB 24...	1400	7.7	823	7.70	16.5	4	18	9.6	99	1.2	310	87
APR 07...	1115	7.7	882	7.60	19.5	3	3.6	6.9	77	1.4	280	22
JUN 08...	1430	5.9	700	7.90	26.5	3	4.8	8.4	108	1.2	260	42

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 27...	100	15	51	1	3.9	227	100	62	0.30	14	482
DEC 10...	100	15	66	2	4.2	--	110	75	0.40	13	--
FEB 24...	100	14	55	1	4.0	221	96	68	0.40	13	483
APR 07...	87	16	87	2	3.6	262	110	70	0.40	14	545
JUN 08...	82	14	48	1	3.5	221	77	39	0.40	12	409

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 27...	6	3	2.87	0.030	2.90	0.060	--	--	0.400	2.7	--
DEC 10...	2	<1	2.49	0.010	2.50	0.030	0.67	0.70	0.670	3.1	<1
FEB 24...	7	<1	2.58	0.020	2.60	0.090	0.41	0.50	0.070	3.1	2
APR 07...	8	2	2.51	0.090	2.60	0.120	0.48	0.60	0.240	3.6	2
JUN 08...	9	<1	1.58	0.020	1.60	0.040	0.36	0.40	0.130	3.4	2

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 27...	--	--	--	--	--	--	--	--	--	--	--
DEC 10...	81	2	8	2	27	<5	20	<0.1	<1	<1.0	20
FEB 24...	81	<1	<1	1	7	<5	47	0.1	<1	<1.0	6
APR 07...	75	2	<1	4	49	6	34	<0.1	<1	<1.0	20
JUN 08...	66	1	2	1	39	<5	23	<0.1	<1	<1.0	9

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	850	700	816	940	860	893	---	---	---	890	810	860
2	860	800	819	900	880	892	---	---	---	870	800	838
3	840	810	822	910	840	866	---	---	---	830	810	820
4	880	820	854	880	790	829	---	---	---	820	800	814
5	870	810	855	920	800	873	---	---	---	840	810	829
6	880	800	839	960	880	908	---	---	---	880	800	851
7	830	760	806	970	890	941	---	---	---	890	750	805
8	890	800	849	890	310	725	---	---	---	840	750	802
9	890	820	849	650	580	614	---	---	---	840	830	835
10	860	770	832	660	480	596	---	---	---	840	790	810
11	810	750	771	690	490	637	---	---	---	830	810	819
12	780	730	756	850	680	756	930	810	882	840	820	831
13	780	630	729	830	720	759	920	890	902	870	810	853
14	860	780	816	910	760	840	900	850	882	880	810	862
15	850	680	805	---	---	---	860	780	824	880	860	876
16	860	780	813	---	---	---	830	760	792	870	850	860
17	900	800	835	---	---	---	850	780	810	890	850	873
18	880	780	822	---	---	---	770	410	622	850	810	828
19	820	780	801	---	---	---	720	300	556	830	810	820
20	790	730	768	---	---	---	720	380	614	850	800	831
21	830	750	786	---	---	---	730	550	654	840	810	826
22	920	820	885	---	---	---	700	480	612	840	820	826
23	900	520	745	---	---	---	920	730	849	810	790	801
24	760	540	641	---	---	---	920	870	900	830	790	808
25	1000	740	887	---	---	---	860	790	825	820	750	784
26	930	840	876	---	---	---	800	680	733	790	770	782
27	860	790	816	---	---	---	790	700	774	820	750	783
28	920	800	868	---	---	---	780	760	775	850	800	818
29	960	830	906	---	---	---	760	720	750	850	800	837
30	950	850	911	---	---	---	800	720	770	870	800	836
31	920	820	865	---	---	---	850	800	817	890	860	876
MONTH	1000	520	821	970	310	795	930	300	767	890	750	829

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	880	800	862	870	820	842	---	---	---	1030	870	936
2	850	800	835	910	800	845	---	---	---	880	830	855
3	980	820	909	880	830	865	---	---	---	880	850	870
4	960	810	920	870	820	839	---	---	---	850	820	835
5	890	800	860	850	780	818	---	---	---	870	800	822
6	870	830	850	850	810	838	---	---	---	1000	880	952
7	890	860	880	850	800	828	---	---	---	1000	970	988
8	870	810	837	830	750	805	---	---	---	1000	940	968
9	830	790	808	---	---	---	---	---	---	980	940	968
10	840	790	815	---	---	---	980	580	663	940	860	903
11	870	810	838	---	---	---	890	790	843	870	810	844
12	880	850	862	---	---	---	850	830	841	890	790	856
13	880	800	839	---	---	---	850	830	836	850	760	816
14	820	780	801	---	---	---	910	850	888	780	750	771
15	860	820	840	---	---	---	910	870	885	830	750	785
16	830	790	811	---	---	---	920	830	879	890	830	857
17	820	800	806	---	---	---	730	400	527	870	840	860
18	810	310	555	---	---	---	790	580	731	840	810	825
19	530	410	494	---	---	---	790	740	759	850	810	826
20	660	530	585	---	---	---	800	760	776	870	850	858
21	750	670	710	---	---	---	870	800	840	910	300	590
22	820	760	795	---	---	---	840	810	827	650	620	629
23	830	810	817	---	---	---	850	810	832	730	660	704
24	860	800	827	---	---	---	970	850	921	730	710	720
25	980	840	882	---	---	---	1000	940	963	740	710	723
26	990	940	967	---	---	---	1010	910	968	820	730	774
27	960	860	896	---	---	---	910	840	889	890	810	840
28	870	810	846	---	---	---	970	840	873	900	860	879
29	880	860	872	---	---	---	1110	990	1050	880	860	876
30	---	---	---	---	---	---	1150	1040	1120	880	860	874
31	---	---	---	---	---	---	---	---	---	880	860	871
MONTH	990	310	814	910	750	835	1150	400	853	1030	300	835

GUADALUPE RIVER BASIN

291

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	930	850	876				---	---	---	815	694	772
2	940	790	913				---	---	---	793	738	772
3	840	210	551				---	---	---	848	749	808
4	610	550	569				---	---	---	870	815	843
5	740	610	689				---	---	---	815	771	802
6	720	680	700				---	---	---	771	738	757
7	720	700	707				---	---	---	749	727	738
8	730	710	717				---	---	---	738	694	721
9	860	730	811				---	---	---	826	694	755
10	850	820	833				---	---	---	870	826	851
11	910	820	878				---	---	---	848	738	836
12	870	830	852				---	---	---	859	826	843
13	850	810	830				947	903	930	870	826	860
14	---	---	---				925	881	903	826	782	809
15	---	---	---				881	859	870	782	760	774
16	880	790	843				859	771	834	826	738	768
17	890	860	879				804	771	788	892	132	381
18	920	850	884				848	760	790	429	220	319
19	900	860	886				848	804	839	562	429	502
20	880	840	858				815	760	803	650	562	616
21	---	---	---				804	782	800	870	661	768
22	---	---	---				793	760	772	914	815	856
23	---	---	---				859	793	830	936	859	907
24	---	---	---				826	341	775	859	804	837
25	---	---	---				429	176	318	903	848	868
26	---	---	---				507	396	452	881	826	856
27	---	---	---				595	507	555	837	760	808
28	---	---	---				705	595	661	870	771	801
29	---	---	---				705	683	693	892	837	867
30	---	---	---				727	683	708	892	815	884
31	---	---	---				716	694	705	---	---	---
MONTH	940	210	793				947	176	738	936	132	766

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	23.0	21.5	22.0	22.5	21.5	22.0	---	---	---	14.0	12.5	13.5
2	22.5	20.5	21.5	22.5	21.5	22.0	---	---	---	12.5	12.0	12.5
3	22.0	21.0	21.5	22.0	21.0	21.5	---	---	---	13.5	12.0	12.5
4	21.5	20.0	21.0	22.0	20.5	21.5	---	---	---	13.0	11.5	12.0
5	21.5	19.5	20.5	22.0	20.5	21.5	---	---	---	12.5	11.5	12.0
6	21.5	20.0	21.0	21.5	20.5	21.0	---	---	---	12.5	12.0	12.0
7	21.5	19.5	20.5	21.5	20.5	21.0	---	---	---	12.0	11.5	12.0
8	21.5	19.5	20.5	21.5	19.5	21.0	---	---	---	12.0	10.0	11.0
9	22.0	20.5	21.5	19.5	18.0	19.0	---	---	---	11.0	9.0	10.0
10	23.0	21.0	22.0	17.5	16.5	17.0	---	---	---	11.0	9.0	10.0
11	22.5	21.0	22.0	16.0	15.0	15.5	---	---	---	11.0	9.0	10.0
12	22.0	20.5	21.5	16.0	14.0	15.0	18.0	17.0	17.0	13.0	10.0	11.5
13	21.5	20.0	21.0	17.0	15.0	16.0	17.0	16.5	17.0	13.0	11.5	12.0
14	21.5	20.0	21.0	18.5	16.5	17.5	16.5	14.0	16.0	12.5	11.5	12.0
15	22.0	20.5	21.5	---	---	---	14.0	12.5	13.5	14.0	12.0	13.0
16	23.0	21.5	22.0	---	---	---	13.5	11.5	12.5	15.5	14.0	15.0
17	23.5	22.5	23.0	---	---	---	13.0	12.0	12.5	17.5	15.5	16.5
18	24.0	23.0	23.5	---	---	---	13.5	11.0	12.5	18.0	16.0	17.0
19	23.5	22.5	23.0	---	---	---	18.0	14.0	16.0	17.5	15.5	16.5
20	23.0	22.0	22.5	---	---	---	16.5	15.5	16.0	16.5	14.0	15.0
21	21.5	20.5	21.0	---	---	---	16.0	14.5	15.5	14.0	12.0	13.0
22	20.5	19.5	20.0	---	---	---	16.5	14.5	15.5	13.5	11.5	12.5
23	21.5	20.0	21.0	---	---	---	17.0	15.5	16.5	13.5	11.5	12.5
24	22.0	21.5	22.0	---	---	---	19.5	17.5	18.5	14.5	12.0	13.0
25	23.0	22.0	22.5	---	---	---	19.0	16.0	17.5	14.0	12.0	13.0
26	24.0	22.5	23.0	---	---	---	16.0	13.5	14.5	13.5	11.0	12.5
27	23.0	21.5	22.0	---	---	---	13.5	12.0	13.0	14.5	11.5	13.0
28	21.5	20.0	20.5	---	---	---	13.5	11.5	12.5	15.0	12.0	14.0
29	21.5	20.0	20.5	---	---	---	12.5	11.0	12.0	16.5	13.5	15.0
30	22.5	21.0	21.5	---	---	---	13.0	11.5	12.0	18.0	16.0	17.0
31	22.5	21.0	22.0	---	---	---	15.0	12.0	13.5	19.5	17.0	18.5
MONTH	24.0	19.5	21.5	22.5	14.0	19.5	19.5	11.0	14.5	19.5	9.0	13.0

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	20.0	18.0	19.5	23.0	20.5	21.5	---	---	---	22.5	21.0	22.0
2	19.5	17.0	18.5	22.0	20.5	21.0	---	---	---	22.0	21.0	21.5
3	17.0	16.0	16.5	20.5	18.5	19.5	---	---	---	24.0	21.5	22.5
4	16.0	13.5	14.5	19.0	17.0	18.0	---	---	---	22.5	21.0	22.0
5	13.5	12.0	12.5	19.0	15.0	17.5	---	---	---	22.5	21.0	21.5
6	13.0	11.0	12.0	20.0	16.5	18.5	22.0	20.5	21.0	23.0	21.0	22.0
7	13.0	11.5	12.5	19.5	17.5	19.0	21.5	18.5	20.0	22.5	22.0	22.0
8	14.0	12.0	13.0	20.5	19.0	19.5	20.5	19.0	19.5	25.0	22.0	23.5
9	16.0	13.5	14.5	---	---	---	20.0	19.0	19.5	25.5	24.0	24.5
10	17.0	14.5	15.5	---	---	---	19.0	17.5	18.5	25.5	23.5	24.5
11	16.0	13.5	14.5	---	---	---	18.5	16.0	17.5	24.5	23.0	24.0
12	14.5	11.5	13.0	---	---	---	19.0	15.0	17.5	23.5	22.5	23.0
13	15.0	11.5	13.5	---	---	---	19.5	16.0	18.0	23.5	21.5	22.5
14	17.5	14.5	16.0	---	---	---	21.5	18.5	20.0	24.0	22.5	23.0
15	17.0	14.0	16.0	---	---	---	23.0	20.0	21.5	25.0	23.0	23.5
16	16.5	13.5	15.5	---	---	---	22.0	21.0	21.5	25.0	23.5	24.0
17	18.0	16.0	17.0	---	---	---	22.0	20.5	21.0	25.5	23.5	24.0
18	18.0	12.0	14.5	---	---	---	23.0	20.5	21.5	25.0	23.0	24.0
19	14.5	13.0	14.0	---	---	---	22.0	19.0	20.5	23.5	23.0	23.5
20	16.5	13.5	15.0	---	---	---	22.0	19.5	21.0	24.5	23.0	23.5
21	17.0	14.0	15.5	---	---	---	22.5	20.5	21.5	23.0	21.0	22.0
22	17.0	14.0	16.0	---	---	---	24.5	22.0	23.0	23.5	21.0	22.0
23	17.5	15.5	16.5	---	---	---	25.5	23.0	24.0	23.5	21.0	22.5
24	17.0	15.0	16.0	---	---	---	24.5	22.0	23.0	24.5	22.0	23.0
25	17.5	15.0	16.5	---	---	---	24.5	22.5	23.5	25.0	22.5	23.5
26	18.0	16.5	17.0	---	---	---	24.0	21.0	22.5	24.0	23.0	23.5
27	19.5	17.5	18.5	---	---	---	23.5	21.5	22.5	24.5	22.5	23.5
28	21.0	17.5	19.0	---	---	---	23.0	21.5	22.5	24.5	23.0	23.5
29	22.0	19.0	20.5	---	---	---	23.5	22.0	22.5	24.5	23.0	23.5
30	---	---	---	---	---	---	23.0	21.0	22.0	24.5	23.5	24.0
31	---	---	---	---	---	---	---	---	---	24.5	23.5	24.0
MONTH	22.0	11.0	15.5	23.0	15.0	19.5	25.5	15.0	21.0	25.5	21.0	23.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.5	23.5	24.0	---	---	---	---	---	---	27.5	26.0	26.5
2	26.0	24.0	25.0	---	---	---	---	---	---	27.5	26.0	26.5
3	25.0	23.0	24.5	---	---	---	---	---	---	27.5	25.5	26.5
4	24.5	22.5	23.5	---	---	---	---	---	---	27.0	24.5	26.0
5	24.5	22.5	23.5	---	---	---	---	---	---	25.5	23.5	24.5
6	25.0	22.5	23.5	---	---	---	---	---	---	25.5	23.0	24.0
7	25.0	23.0	24.0	---	---	---	---	---	---	25.0	23.0	23.5
8	26.0	23.5	24.5	---	---	---	---	---	---	25.0	23.0	24.0
9	27.0	24.0	25.5	---	---	---	---	---	---	25.0	23.0	24.0
10	26.0	25.0	26.0	---	---	---	---	---	---	25.0	23.0	24.0
11	26.0	24.5	25.0	---	---	---	---	---	---	25.0	23.0	24.0
12	26.5	24.0	25.0	---	---	---	---	---	---	25.5	23.5	24.5
13	25.0	24.0	24.5	---	---	---	29.5	27.5	28.5	26.0	24.0	25.0
14	---	---	---	---	---	---	29.5	28.0	28.5	27.0	25.0	26.0
15	---	---	---	---	---	---	29.0	27.0	28.0	26.5	25.0	25.5
16	26.0	24.0	25.0	---	---	---	29.0	27.0	28.0	26.0	25.0	25.5
17	26.5	24.5	25.0	---	---	---	28.5	27.0	27.5	25.5	24.0	25.0
18	26.0	24.5	25.0	---	---	---	28.0	26.5	27.5	25.5	25.0	25.5
19	26.5	24.5	25.0	---	---	---	27.5	26.5	27.0	26.0	25.5	25.5
20	26.5	24.5	25.5	---	---	---	28.5	26.5	27.5	26.5	25.0	25.5
21	---	---	---	---	---	---	29.0	27.0	28.0	26.5	25.0	25.5
22	---	---	---	---	---	---	29.0	27.0	27.5	26.5	25.0	25.5
23	---	---	---	---	---	---	28.5	27.0	27.5	26.0	25.0	25.5
24	---	---	---	---	---	---	29.0	26.0	28.0	26.5	25.0	25.5
25	---	---	---	---	---	---	27.0	25.0	26.0	26.0	24.5	25.5
26	---	---	---	---	---	---	28.5	27.0	27.5	26.0	24.0	25.0
27	---	---	---	---	---	---	28.5	26.5	27.5	25.5	23.5	24.5
28	---	---	---	---	---	---	28.5	26.5	27.5	25.0	23.5	24.5
29	---	---	---	---	---	---	28.0	26.5	27.0	25.5	24.5	25.0
30	---	---	---	---	---	---	27.5	26.0	27.0	24.5	22.5	23.5
31	---	---	---	---	---	---	27.5	26.0	26.5	---	---	---
MONTH	27.0	22.5	24.5	---	---	---	29.5	25.0	27.5	27.5	22.5	25.0

GUADALUPE RIVER BASIN

293

08181500 MEDINA RIVER AT SAN ANTONIO, TX

LOCATION (REVISED).--Lat 29°15'14", long 98°28'20", Bexar County, Hydrologic Unit 12100302, near right bank at upstream side of pier of upstream bridge of two bridges on U.S. Highway 281 in San Antonio and 6.8 mi upstream from mouth.

DRAINAGE AREA.--1,317 mi², of which 634 mi² is above dam forming Medina Lake.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1929 to December 1930, and July 1939 to current year. October 1929 to December 1930, records below about 50 ft³/s in connection with seepage investigation (published as "at Losoya"). Published as "near San Antonio" July 1939 to September 1970.

REVISED RECORDS.--WSP 1562: 1957. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.0 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). October 1929 to December 1930, nonrecording gage at Losoya 1.5 mi downstream at different datum. July 27, 1939, to Sept. 30, 1987, at site near left bank at downstream side of pier of upstream bridge of two bridges at same datum.

REMARKS.--Records good. Flow is slightly regulated by Medina Lake (station 08179500) 60 mi upstream, and by diversion dam reservoir, capacity 4,500 acre-ft. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). For statement concerning losses into the Edwards and associated limestones formation, see Medina River near Somerset (station 08180800). Several small diversions below diversion dam reservoir. Records furnished by the city of San Antonio show that during the current year 26,130 acre-ft of sewage effluent was discharged from the Leon Creek plant and no sewage effluent was discharged from the Mitchell Lake plant into the Medina River above this station. Satellite telemeter at station.

AVERAGE DISCHARGE.--49 years (water years 1940-88), 189 ft³/s (136,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s July 17, 1973 (gage height, 43.59 ft); minimum daily, 3.3 ft³/s Apr. 18, Nov. 1, 1956, and Jan. 24, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 55 ft sometime prior to construction of Medina Dam in 1913, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,330 ft³/s Sept. 17 at 2000 hours (gage height, 11.57 ft); minimum daily, 64 ft³/s Aug. 30, 31, Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	222	177	200	205	165	156	147	135	112	107	99	65
2	215	177	195	204	162	155	143	134	110	106	96	68
3	205	175	191	200	157	158	142	134	169	100	98	67
4	199	176	191	198	158	154	136	128	179	102	98	73
5	197	179	189	195	159	149	140	124	163	115	94	70
6	197	180	187	198	168	150	132	123	134	108	92	66
7	195	178	184	194	163	150	132	122	119	106	83	66
8	192	194	181	186	165	154	134	123	122	109	79	65
9	189	272	178	191	154	151	140	124	117	101	76	67
10	186	218	181	188	161	146	139	115	114	99	75	68
11	187	217	181	189	153	145	142	110	109	107	74	66
12	188	199	180	186	145	139	139	119	103	116	78	67
13	186	190	176	185	142	129	135	120	101	113	76	64
14	187	193	175	185	144	127	130	120	96	104	70	66
15	184	196	174	188	143	122	131	111	92	97	71	69
16	181	235	171	187	141	115	138	117	91	93	78	83
17	186	247	174	190	137	143	152	114	92	94	78	690
18	186	219	222	200	211	283	149	112	89	91	74	567
19	185	205	246	201	222	203	133	110	89	88	74	182
20	184	205	241	197	179	166	128	116	93	84	76	114
21	183	204	226	186	164	151	128	161	88	232	72	98
22	176	202	228	179	153	149	123	158	86	320	70	93
23	193	206	223	175	148	147	125	140	90	167	71	86
24	196	209	222	175	142	154	122	124	89	120	72	84
25	195	209	219	174	140	153	124	112	87	108	227	84
26	200	192	225	176	147	147	119	112	136	102	129	86
27	194	210	220	172	150	144	118	111	115	97	86	85
28	187	201	217	167	159	145	114	108	110	101	75	84
29	184	196	210	170	162	151	118	112	114	97	71	77
30	183	200	211	169	---	145	140	112	110	90	64	73
31	181	---	211	164	---	142	---	116	---	100	64	---
TOTAL	5923	6061	6229	5774	4594	4723	3993	3777	3319	3574	2640	3493
MEAN	191	202	201	186	158	152	133	122	111	115	85.2	116
MAX	222	272	246	205	222	283	152	161	179	320	227	690
MIN	176	175	171	164	137	115	114	108	86	84	64	64
AC-FT	11750	12020	12360	11450	9110	9370	7920	7490	6580	7090	5240	6930

CAL YR 1987 TOTAL 383473 MEAN 1051 MAX 24400 MIN 171 AC-FT 760600
WTR YR 1988 TOTAL 54100 MEAN 148 MAX 690 MIN 64 AC-FT 107300

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1965 to current year. Pesticide analyses: April 1971 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens June 26, 1988; minimum, 230 microsiemens Sept. 17, 1988.

pH: Maximum, 8.5 units Jan. 9, 10, 1988; minimum, 7.3 units Feb. 13-16, 1988.

WATER TEMPERATURE: Maximum, 30.0°C on several days during July and August 1988; minimum, 9.0°C Jan. 11, 1988.

DISSOLVED OXYGEN: Maximum, 11.4 mg/L Jan. 10, 1988; minimum, 1.8 mg/L Oct. 17, Nov. 8, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens June 26; minimum, 230 microsiemens Sept. 17.

pH: Maximum, 8.5 units Jan. 9, 10; minimum, 7.3 units Feb. 13-16.

WATER TEMPERATURE: Maximum, 30.0°C on several days during July and August; minimum, 9.0°C Jan. 11.

DISSOLVED OXYGEN: Maximum, 11.4 mg/L Jan. 10; minimum, 1.8 mg/L Oct. 17, Nov. 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 27...	1400	192	840	7.80	22.5	4.0	46	0.6	320	75
DEC 10...	1345	160	860	7.80	17.5	5.3	56	4.9	340	88
FEB 18...	1300	135	925	7.70	17.0	5.0	53	>8.4	340	100
APR 12...	1530	140	925	8.20	18.5	8.3	90	2.0	330	100
JUN 30...	1210	91	895	8.10	28.0	6.4	85	2.3	270	70
AUG 17...	1340	62	920	8.00	28.0	7.2	95	3.1	300	80

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 27...	92	21	53	1	4.8	242	84	66	0.40	14
DEC 10...	98	22	57	1	4.3	248	95	72	0.40	12
FEB 18...	99	23	59	1	5.7	238	100	81	0.50	12
APR 12...	94	23	63	2	4.1	226	100	86	0.40	13
JUN 30...	72	21	65	2	6.5	197	83	84	0.60	15
AUG 17...	87	21	66	2	6.0	224	88	88	0.50	14

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT 27...	480	5.09	0.510	5.60	0.830	0.97	1.8	1.00	--	--
DEC 10...	509	5.00	0.500	5.50	1.10	0.60	1.7	0.670	--	--
FEB 18...	523	4.11	0.990	5.10	2.60	0.50	3.1	1.80	<1	65
APR 12...	519	7.75	0.050	7.80	0.120	0.68	0.80	2.30	1	58
JUN 30...	465	10.7	0.250	11.0	0.160	0.54	0.70	2.00	--	--
AUG 17...	505	9.68	0.020	9.70	0.080	1.2	1.3	2.00	--	--

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 27...	--	--	--	--	--	--	--	--	--	--
DEC 10...	--	--	--	--	--	--	--	--	--	--
FEB 18...	<1	1	<1	11	<5	20	<0.1	<1	<1.0	12
APR 12...	<1	1	1	5	<5	12	<0.1	1	<1.0	24
JUN 30...	--	--	--	--	--	--	--	--	--	--
AUG 17...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	5923	884	503	8050	75	1210	95	1510	310
NOV. 1987	6061	823	472	7720	68	1110	88	1450	300
DEC. 1987	6229	840	481	8090	70	1170	90	1520	300
JAN. 1988	5774	866	494	7700	73	1140	93	1450	310
FEB. 1988	4594	882	502	6230	75	934	94	1170	310
MAR. 1988	4723	908	515	6570	79	1000	97	1240	320
APR. 1988	3993	943	533	5750	83	898	100	1080	330
MAY 1988	3777	929	526	5360	81	830	99	1010	320
JUNE 1988	3319	886	504	4520	76	679	95	849	310
JULY 1988	3574	861	491	4740	73	701	92	889	310
AUG. 1988	2640	873	498	3550	74	529	93	666	310
SEPT 1988	3493	732	422	3980	58	550	79	745	270
TOTAL	54100	**	**	72300	**	10700	**	13600	**
WTD.AVG.	148	868	495	**	74	**	93	**	310

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	890	860	874	854	825	837	867	827	847	832	805	815
2	910	860	881	914	819	842	854	833	846	826	806	813
3	900	870	887	917	830	858	860	837	850	845	817	832
4	920	870	890	872	844	858	874	834	852	856	808	835
5	920	870	892	953	848	868	870	840	854	867	838	851
6	920	880	903	927	829	855	876	854	865	859	830	843
7	930	890	909	911	843	866	881	841	863	880	842	858
8	930	900	913	943	836	876	896	860	880	862	843	853
9	950	900	917	973	681	781	892	853	872	874	853	866
10	940	900	921	812	751	782	879	852	866	895	855	871
11	950	880	914	844	776	798	880	861	869	887	822	864
12	950	890	908	837	796	807	891	863	873	878	869	877
13	970	900	926	868	818	835	882	855	872	870	844	858
14	970	900	928	871	822	843	884	856	869	879	853	865
15	950	910	930	894	835	860	886	857	876	914	878	891
16	950	920	930	958	856	882	887	859	875	905	860	880
17	940	910	924	879	729	808	889	860	874	878	853	865
18	940	900	920	744	696	725	919	824	879	888	853	865
19	930	890	909	774	744	762	854	798	824	897	845	869
20	930	867	899	789	768	778	826	779	797	870	827	850
21	916	860	887	806	776	791	808	772	789	863	829	843
22	889	854	873	816	790	804	829	810	814	879	846	863
23	917	850	874	823	781	805	831	803	814	888	862	873
24	896	830	857	859	781	816	833	813	822	888	854	870
25	864	833	845	835	799	819	842	805	816	888	855	867
26	866	805	830	836	811	827	835	806	821	916	872	895
27	868	776	813	861	829	841	835	789	808	889	872	879
28	815	777	800	853	820	836	809	780	797	952	872	910
29	827	799	812	852	821	838	829	800	813	944	891	919
30	840	809	823	858	839	846	832	802	814	934	898	919
31	841	813	828	---	---	---	841	812	825	943	890	915
MONTH	970	776	884	973	681	800	919	772	843	952	805	867

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	916	872	901	895	857	879	957	918	937	962	932	948
2	925	898	912	897	861	878	947	906	933	972	941	952
3	937	907	918	902	875	885	944	923	934	971	941	958
4	948	907	927	894	868	881	941	872	921	960	940	952
5	948	918	932	907	862	885	960	909	933	979	949	959
6	938	897	921	892	855	875	938	906	928	989	948	970
7	938	887	917	895	866	882	946	895	926	968	938	953
8	938	897	918	917	878	898	943	902	924	967	937	951
9	958	908	932	910	873	894	932	910	925	957	927	942
10	939	908	929	905	875	891	930	889	912	986	936	963
11	929	898	915	906	878	895	907	887	898	975	925	959
12	939	898	922	919	891	907	947	906	928	994	945	974
13	939	918	925	932	894	915	957	926	943	964	933	950
14	970	928	947	954	897	925	956	926	942	963	933	953
15	970	929	949	967	908	938	966	936	951	952	932	943
16	989	939	970	1000	930	949	955	914	941	962	921	938
17	953	871	920	963	916	945	965	935	954	951	921	938
18	896	736	849	995	674	818	964	873	935	960	924	945
19	747	728	738	841	794	818	954	914	941	944	923	935
20	768	748	758	876	834	853	984	943	960	953	923	939
21	796	769	782	906	866	888	973	943	952	991	902	930
22	834	789	817	941	899	923	972	932	953	902	843	865
23	882	838	857	977	941	964	1000	952	981	882	842	862
24	868	823	850	997	964	977	1000	961	982	900	842	878
25	871	834	849	1010	972	991	981	921	964	929	881	902
26	866	837	851	993	940	963	981	920	962	919	879	902
27	886	858	872	969	938	954	1000	930	964	917	879	900
28	888	835	865	1010	946	974	986	954	971	917	878	900
29	873	845	854	996	943	972	985	953	968	898	867	883
30	---	---	---	953	921	938	973	953	963	887	857	877
31	---	---	---	950	911	930	---	---	---	905	876	889
MONTH	989	728	886	1010	674	912	1000	872	944	994	842	929
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	905	876	895	890	870	881	890	860	877	930	900	913
2	913	874	896	910	880	895	880	860	867	930	900	918
3	1110	815	902	910	880	896	880	830	864	930	910	924
4	863	795	830	900	880	888	870	830	858	930	900	914
5	814	785	805	900	870	884	870	850	862	930	900	909
6	833	804	817	890	870	881	890	840	870	930	890	910
7	841	817	828	910	880	888	890	860	882	920	890	906
8	848	808	832	910	880	900	910	870	890	920	880	907
9	867	828	849	930	900	914	920	890	912	900	870	896
10	878	849	863	930	890	912	930	900	916	930	890	915
11	878	849	868	920	890	905	940	890	923	930	900	922
12	889	860	879	930	900	914	930	910	919	920	820	903
13	899	860	877	910	880	896	950	910	934	930	890	911
14	900	871	887	920	880	902	940	900	928	940	890	918
15	930	881	904	940	900	927	940	900	924	940	910	926
16	921	892	907	940	910	931	930	910	918	930	900	920
17	932	902	921	940	910	932	950	910	922	920	230	531
18	932	913	925	930	910	920	940	910	920	550	440	489
19	934	914	920	950	920	936	950	910	927	660	570	611
20	964	904	937	960	930	946	970	930	947	750	670	720
21	964	935	948	970	560	880	970	920	953	810	760	782
22	966	935	950	690	610	650	940	900	922	830	800	815
23	956	926	939	750	610	712	940	910	925	860	820	843
24	987	926	963	780	720	747	950	910	933	880	760	842
25	997	957	976	850	770	807	1090	400	684	890	870	879
26	1150	798	942	880	850	867	820	670	752	900	770	876
27	889	808	861	880	860	871	870	800	830	900	770	877
28	889	869	879	910	870	892	880	840	861	880	840	869
29	889	869	880	910	890	898	880	850	867	900	860	885
30	910	870	890	920	870	897	910	870	889	910	840	891
31	---	---	---	910	860	886	920	890	904	---	---	---
MONTH	1150	785	892	970	560	879	1090	400	890	940	230	851

GUADALUPE RIVER BASIN

29/

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.8	7.9	7.8	7.7	7.7	8.0	7.9	8.0	8.3	7.8	8.0
2	7.9	7.9	7.9	7.8	7.7	7.7	8.0	7.9	8.0	8.3	8.0	8.1
3	7.9	7.9	7.9	7.7	7.7	7.7	8.0	7.9	8.0	8.2	8.0	8.1
4	7.9	7.9	7.9	7.7	7.7	7.7	8.0	7.9	7.9	8.1	8.0	8.1
5	7.9	7.9	7.9	7.7	7.7	7.7	7.9	7.9	7.9	8.2	8.0	8.1
6	7.9	7.8	7.9	7.7	7.7	7.7	7.9	7.9	7.9	8.1	8.0	8.1
7	7.9	7.8	7.8	7.7	7.7	7.7	7.9	7.9	7.9	8.2	7.9	8.1
8	7.8	7.7	7.8	7.8	7.7	7.7	7.9	7.8	7.9	8.4	8.0	8.2
9	7.8	7.7	7.8	7.8	7.6	7.7	7.9	7.8	7.8	8.5	8.1	8.3
10	7.8	7.7	7.8	7.9	7.7	7.8	7.9	7.8	7.8	8.5	8.2	8.3
11	7.9	7.7	7.8	7.9	7.8	7.9	7.8	7.7	7.8	8.3	8.0	8.2
12	7.8	7.7	7.8	7.9	7.8	7.9	7.8	7.7	7.7	8.3	8.0	8.2
13	7.8	7.7	7.8	7.9	7.8	7.9	7.9	7.6	7.8	8.4	8.1	8.3
14	7.9	7.8	7.8	7.9	7.8	7.9	7.9	7.9	7.9	8.3	8.2	8.3
15	7.8	7.8	7.8	7.9	7.8	7.9	8.0	7.9	7.9	8.2	8.2	8.2
16	7.8	7.8	7.8	7.9	7.8	7.9	8.0	7.9	8.0	8.3	8.2	8.3
17	7.8	7.8	7.8	8.0	7.9	7.9	8.0	7.9	7.9	8.3	8.2	8.3
18	7.8	7.8	7.8	7.9	7.8	7.9	7.9	7.8	7.9	8.3	8.2	8.3
19	7.8	7.8	7.8	7.9	7.8	7.9	7.9	7.8	7.9	8.2	8.2	8.2
20	7.9	7.8	7.8	8.0	7.8	7.9	8.1	7.8	8.0	8.2	8.2	8.2
21	7.9	7.8	7.8	8.0	7.9	8.0	8.0	7.9	8.0	8.3	8.2	8.2
22	7.8	7.8	7.8	8.0	7.9	7.9	7.9	7.9	7.9	8.3	8.1	8.2
23	7.8	7.8	7.8	7.9	7.8	7.9	7.9	7.8	7.9	8.2	8.1	8.1
24	7.8	7.8	7.8	7.9	7.8	7.9	7.8	7.7	7.8	8.2	8.0	8.1
25	7.8	7.8	7.8	8.0	7.9	7.9	7.8	7.7	7.8	8.1	8.0	8.1
26	7.8	7.8	7.8	8.0	7.9	8.0	8.1	7.8	7.9	8.1	8.0	8.1
27	7.8	7.8	7.8	8.0	7.9	8.0	8.1	7.9	8.0	8.1	8.0	8.1
28	7.9	7.8	7.8	8.0	7.8	7.9	8.0	7.8	7.9	8.1	7.9	8.0
29	7.9	7.8	7.8	8.0	7.9	7.9	8.0	7.8	7.9	8.1	7.9	8.0
30	7.8	7.8	7.8	8.0	7.9	7.9	8.0	7.8	7.9	8.1	7.8	8.0
31	7.8	7.7	7.8	---	---	---	8.0	7.8	7.9	8.0	7.8	7.9
MONTH	7.9	7.7	7.8	8.0	7.6	7.9	8.1	7.6	7.9	8.5	7.8	8.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.9	8.0	7.8	7.7	7.8	7.8	7.7	7.8	8.0	7.9	7.9
2	8.0	7.6	7.8	7.8	7.8	7.8	8.0	7.7	7.9	8.0	7.9	7.9
3	7.7	7.6	7.6	7.9	7.8	7.8	8.0	7.9	7.9	7.9	7.8	7.9
4	7.7	7.6	7.6	7.9	7.8	7.9	8.0	7.9	8.0	8.0	7.9	8.0
5	7.6	7.6	7.6	7.9	7.8	7.9	7.9	7.9	7.9	8.1	7.9	8.0
6	7.7	7.6	7.6	7.9	7.8	7.8	8.0	7.9	7.9	8.0	7.8	7.9
7	7.7	7.6	7.6	7.8	7.7	7.7	8.2	7.9	8.0	8.0	7.8	7.9
8	7.6	7.5	7.6	7.7	7.7	7.7	8.2	8.0	8.1	8.0	7.9	7.9
9	7.6	7.5	7.5	7.9	7.7	7.8	8.1	8.0	8.1	8.0	7.9	7.9
10	7.6	7.4	7.5	7.9	7.8	7.8	8.3	8.1	8.2	7.9	7.8	7.8
11	7.6	7.4	7.5	7.9	7.7	7.8	8.2	8.1	8.1	7.9	7.8	7.8
12	7.5	7.4	7.5	7.9	7.7	7.8	8.2	8.1	8.2	8.0	7.8	7.9
13	7.5	7.3	7.4	8.2	7.9	8.0	8.2	8.1	8.2	8.1	7.9	8.0
14	7.4	7.3	7.4	8.4	7.8	8.0	8.2	8.1	8.2	8.1	8.0	8.1
15	7.4	7.3	7.4	8.4	7.9	8.1	8.2	8.1	8.2	8.1	8.0	8.1
16	7.4	7.3	7.4	8.4	7.9	8.1	8.2	8.1	8.1	8.1	8.0	8.1
17	7.7	7.5	7.6	7.9	7.8	7.8	8.1	8.0	8.1	8.2	8.0	8.1
18	7.8	7.7	7.7	8.0	7.8	7.9	8.1	8.0	8.1	8.2	8.1	8.1
19	7.9	7.7	7.8	7.9	7.9	7.9	8.1	8.0	8.1	8.1	8.0	8.1
20	7.8	7.7	7.8	7.9	7.8	7.9	8.0	8.0	8.0	8.1	8.0	8.1
21	7.8	7.6	7.8	7.9	7.8	7.8	8.0	7.9	8.0	8.1	7.9	8.1
22	7.8	7.7	7.7	7.9	7.8	7.8	8.0	7.9	8.0	8.1	8.0	8.1
23	7.8	7.7	7.7	7.8	7.7	7.7	8.1	8.0	8.0	8.1	8.0	8.1
24	8.0	7.7	7.8	7.7	7.6	7.7	8.1	8.0	8.1	8.1	8.0	8.1
25	7.9	7.7	7.8	7.7	7.6	7.7	8.1	8.0	8.0	8.2	8.1	8.1
26	7.8	7.7	7.8	7.7	7.6	7.7	8.1	8.0	8.0	8.2	8.1	8.1
27	7.8	7.7	7.8	7.8	7.7	7.8	8.1	8.0	8.1	8.2	8.1	8.1
28	7.8	7.7	7.8	7.8	7.7	7.8	8.0	7.9	8.0	8.3	8.1	8.2
29	7.8	7.7	7.8	7.8	7.7	7.7	8.0	7.9	7.9	8.2	8.1	8.2
30	---	---	---	7.9	7.7	7.8	7.9	7.8	7.9	8.2	8.1	8.2
31	---	---	---	7.9	7.8	7.8	---	---	---	8.2	8.1	8.1
MONTH	8.0	7.3	7.7	8.4	7.6	7.8	8.3	7.7	8.0	8.3	7.8	8.0

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	8.1	8.1	8.0	7.9	8.0	8.1	8.0	8.1	8.3	8.1	8.2
2	8.1	8.0	8.1	8.1	8.0	8.0	8.1	8.0	8.1	8.3	8.2	8.2
3	8.1	8.0	8.1	8.0	7.9	8.0	8.1	8.1	8.1	8.3	8.2	8.3
4	8.2	8.1	8.2	8.0	7.9	8.0	8.1	8.0	8.1	8.3	8.2	8.3
5	8.2	8.1	8.1	8.0	7.9	7.9	8.1	8.1	8.1	8.3	8.2	8.3
6	8.1	8.0	8.1	7.9	7.8	7.9	8.2	8.1	8.1	8.3	8.2	8.3
7	8.1	8.0	8.0	7.9	7.8	7.9	8.2	8.1	8.1	8.3	8.2	8.3
8	8.2	8.1	8.2	8.1	7.9	8.0	8.2	8.1	8.1	8.3	8.2	8.3
9	8.2	8.1	8.2	8.1	7.9	8.0	8.2	8.1	8.1	8.3	8.2	8.3
10	8.2	8.1	8.2	8.0	7.9	7.9	8.2	8.1	8.1	8.3	8.2	8.3
11	8.2	8.1	8.2	8.0	7.9	8.0	8.2	8.1	8.1	8.3	8.2	8.3
12	8.2	8.1	8.2	8.0	7.9	7.9	8.2	8.1	8.1	8.3	8.2	8.3
13	8.2	8.2	8.2	8.1	7.9	8.0	8.2	8.1	8.1	8.3	8.2	8.2
14	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.1	8.2	8.3	8.2	8.2
15	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.1	8.1	8.3	8.2	8.2
16	8.2	8.1	8.1	8.1	8.0	8.1	8.2	8.1	8.1	8.3	8.2	8.2
17	8.2	8.1	8.1	8.1	8.0	8.1	8.1	7.9	8.0	8.3	7.8	8.0
18	8.2	8.1	8.1	8.1	8.0	8.1	8.0	7.9	7.9	8.0	7.9	7.9
19	8.2	8.1	8.1	8.1	8.0	8.1	8.0	7.9	7.9	8.1	8.0	8.0
20	8.2	8.1	8.2	8.1	8.0	8.1	8.0	7.9	7.9	8.1	8.1	8.1
21	8.2	8.1	8.2	8.0	7.8	8.0	8.1	7.9	8.0	8.2	8.1	8.1
22	8.2	8.1	8.1	8.0	7.9	7.9	8.1	8.0	8.1	8.2	8.1	8.2
23	8.2	8.1	8.1	7.9	7.9	7.9	8.1	8.0	8.1	8.2	8.1	8.2
24	8.2	8.1	8.2	7.9	7.9	7.9	8.1	8.0	8.1	8.2	8.2	8.2
25	8.2	8.1	8.2	8.0	7.9	8.0	8.1	7.7	7.9	8.2	8.1	8.2
26	8.2	8.1	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.2	8.1	8.2
27	8.2	8.1	8.2	8.1	8.0	8.0	8.1	8.0	8.0	8.2	8.2	8.2
28	8.2	8.1	8.2	8.1	8.0	8.0	8.2	8.0	8.1	8.2	8.0	8.2
29	8.2	8.1	8.2	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.2	8.2
30	8.2	8.0	8.1	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.2	8.2
31	---	---	---	8.1	8.0	8.1	8.2	8.1	8.1	---	---	---
MONTH	8.2	8.0	8.2	8.1	7.8	8.0	8.2	7.7	8.1	8.3	7.8	8.2

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	24.0	22.5	23.5	23.0	22.0	22.5	16.5	15.5	16.0	14.5	13.0	13.5
2	23.5	22.0	23.0	23.5	22.5	23.0	17.0	15.5	16.0	14.0	12.5	13.5
3	23.0	22.0	22.5	23.0	22.0	22.5	17.5	16.0	16.5	14.5	13.0	13.5
4	22.5	21.5	22.0	23.0	22.0	22.5	17.5	16.0	17.0	14.0	12.5	13.5
5	23.0	21.0	22.0	23.0	21.5	22.0	19.0	17.5	18.0	13.5	12.5	13.5
6	23.0	21.5	22.0	22.5	21.5	22.0	20.0	19.0	19.0	14.0	12.5	13.5
7	22.5	21.0	21.5	22.5	21.5	22.0	19.5	18.0	19.0	13.5	12.0	13.0
8	23.0	21.0	22.0	22.5	21.5	22.0	19.0	18.0	18.5	12.5	11.0	12.0
9	23.5	22.0	22.5	22.0	20.0	20.5	18.5	17.5	18.0	12.5	10.5	11.5
10	23.5	22.0	23.0	20.0	18.5	19.5	18.5	17.5	18.0	12.0	10.5	11.0
11	23.5	22.0	22.5	18.5	17.0	18.0	19.0	17.5	18.0	11.5	9.0	11.0
12	23.0	21.5	22.5	17.5	16.0	17.0	18.0	17.0	17.5	---	---	11.0
13	22.5	21.5	22.0	18.5	17.0	17.5	18.0	17.0	17.5	---	---	11.0
14	23.0	21.5	22.0	19.5	17.5	18.0	17.5	16.0	17.0	12.0	10.5	11.5
15	23.0	21.5	22.5	20.5	19.0	19.5	16.0	14.5	15.5	13.0	11.5	12.0
16	23.5	22.0	23.0	21.0	19.5	20.5	15.0	13.5	14.5	14.5	13.0	13.5
17	24.0	23.0	23.5	19.0	18.0	18.5	15.0	13.5	14.5	15.5	14.0	14.5
18	24.5	23.0	23.5	19.0	17.5	18.5	15.5	14.5	15.0	16.0	14.5	15.0
19	24.0	23.0	23.5	18.5	17.5	18.0	17.5	15.5	16.0	16.0	15.0	15.5
20	24.0	23.0	23.5	17.5	16.0	17.0	16.5	15.5	16.0	15.0	14.0	14.5
21	23.0	21.5	22.5	17.5	15.5	16.5	16.5	15.5	16.0	14.0	12.5	13.5
22	22.0	21.0	21.5	18.5	16.5	17.0	17.0	15.5	16.0	13.5	12.0	13.0
23	22.5	21.5	22.0	19.5	18.0	18.5	17.5	16.0	16.5	13.5	12.0	12.5
24	23.0	22.0	22.0	20.0	19.0	19.5	18.5	17.5	18.0	13.5	12.0	13.0
25	23.5	22.0	22.5	20.0	19.5	20.0	18.5	17.0	17.5	13.5	12.0	13.0
26	24.0	23.0	23.5	19.5	18.5	19.0	17.0	15.0	16.0	13.0	11.5	12.5
27	23.0	22.5	23.0	19.0	17.5	18.0	15.0	14.0	14.5	13.5	11.5	12.5
28	22.5	21.5	22.0	17.5	16.0	17.0	14.5	13.0	14.0	14.5	12.5	13.5
29	22.5	21.5	22.0	17.0	15.5	16.5	14.0	12.5	13.0	15.5	13.5	14.5
30	23.0	22.0	22.5	17.0	16.0	16.5	14.0	12.0	13.0	16.5	15.0	15.5
31	23.0	22.0	22.5	---	---	---	15.0	13.0	14.0	18.0	16.5	17.0
MONTH	24.5	21.0	22.5	23.5	15.5	19.5	20.0	12.0	16.5	18.0	9.0	13.0

GUADALUPE RIVER BASIN

295

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18.5	17.5	18.0	22.0	20.0	21.0	21.5	20.0	21.0	24.0	22.5	23.0
2	18.5	17.5	18.0	21.5	20.5	21.0	21.5	19.5	20.5	23.5	22.5	23.0
3	17.0	16.0	16.5	20.5	19.0	20.0	22.0	20.0	21.0	24.5	22.5	23.5
4	16.5	15.0	15.5	19.5	18.0	19.0	22.0	20.5	21.0	24.5	22.5	23.0
5	15.0	13.5	14.0	19.5	17.5	18.5	22.5	21.5	22.0	24.0	22.5	23.0
6	14.5	12.5	13.5	19.5	18.0	18.5	22.0	21.0	22.0	24.5	22.5	23.0
7	14.0	12.5	13.5	19.5	18.5	19.0	22.0	20.0	21.0	24.0	23.0	23.5
8	14.5	13.0	14.0	20.5	19.5	20.0	21.0	20.0	20.5	25.5	23.5	24.5
9	16.0	14.5	15.0	20.0	18.5	19.5	20.5	19.5	20.0	26.0	24.5	25.0
10	16.5	15.0	15.5	20.0	18.0	19.0	20.0	19.5	20.0	26.0	24.5	25.0
11	16.0	14.5	15.0	21.0	19.0	19.5	20.0	18.0	19.0	25.5	24.5	25.0
12	15.0	13.5	14.5	21.0	19.5	20.0	20.0	17.5	18.5	24.5	23.5	24.0
13	16.0	13.5	14.5	20.0	18.5	19.5	20.5	18.0	19.0	25.0	23.0	24.0
14	17.0	15.5	16.0	19.0	17.5	18.0	22.0	19.5	20.5	25.5	23.5	24.5
15	17.0	15.5	16.0	18.0	16.5	17.0	23.0	21.0	21.5	25.5	24.0	25.0
16	17.0	15.0	16.0	17.5	15.5	17.0	22.0	21.0	21.5	26.0	24.5	25.0
17	18.0	16.5	17.0	17.5	17.0	17.5	22.5	21.0	21.5	26.5	24.5	25.5
18	18.0	17.0	17.5	17.0	15.0	16.0	23.5	22.0	22.5	26.0	24.5	25.0
19	16.5	15.5	16.0	16.5	14.5	15.5	22.5	21.0	22.0	25.5	24.5	25.0
20	17.0	15.0	16.0	17.5	15.5	16.5	23.5	21.0	22.0	25.5	24.5	25.0
21	17.0	15.0	16.0	19.0	16.5	17.5	23.5	22.0	22.5	25.0	23.5	24.0
22	17.5	16.0	16.5	19.5	18.0	18.5	25.0	22.5	23.5	24.5	22.5	23.5
23	18.0	16.5	17.0	20.5	19.0	19.5	25.5	24.0	24.5	25.0	23.0	24.0
24	17.5	16.5	17.0	22.0	20.0	21.0	25.0	23.0	24.0	26.0	24.0	25.0
25	18.0	16.5	17.0	22.5	21.5	22.0	25.0	23.5	24.0	26.0	24.0	25.0
26	18.0	17.0	17.5	22.5	22.0	22.0	25.0	22.5	23.5	25.5	24.5	25.0
27	19.0	17.5	18.0	23.0	22.0	22.5	24.5	23.0	23.5	26.0	24.0	25.0
28	19.5	17.5	18.5	23.0	22.0	22.5	24.5	23.0	23.5	26.0	24.5	25.0
29	21.0	19.5	20.0	22.5	20.5	22.0	24.5	23.5	24.0	25.5	24.5	25.0
30	---	---	---	20.5	19.5	20.0	24.0	22.5	23.5	25.5	25.0	25.5
31	---	---	---	20.5	19.0	20.0	---	---	---	26.0	25.0	25.5
MONTH	21.0	12.5	16.0	23.0	14.5	19.5	25.5	17.5	22.0	26.5	22.5	24.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.0	25.0	26.0	29.5	27.5	28.5	28.0	27.0	27.5	28.5	27.5	28.0
2	27.5	25.5	26.5	29.5	28.0	28.5	28.5	27.0	28.0	28.0	27.5	27.5
3	26.5	25.5	26.0	30.0	28.0	29.0	28.0	27.5	28.0	28.5	27.0	27.5
4	25.5	24.5	25.0	29.5	28.0	28.5	28.0	27.0	27.5	28.0	27.0	27.5
5	26.0	24.5	25.0	29.5	27.5	28.5	29.0	27.0	28.0	26.5	25.0	26.0
6	26.5	24.5	25.0	29.0	28.0	28.5	29.0	27.5	28.5	26.5	25.0	25.5
7	27.0	25.0	26.0	29.0	27.5	28.0	29.5	27.5	28.5	26.5	24.5	25.5
8	27.5	25.5	26.5	28.5	27.5	28.0	29.5	28.0	29.0	26.5	25.0	25.5
9	28.0	26.0	27.0	28.5	27.0	27.5	29.5	28.0	29.0	26.5	25.0	26.0
10	27.5	27.0	27.5	28.0	27.5	27.5	30.0	28.5	29.0	26.5	24.5	25.5
11	27.5	26.0	27.0	28.0	27.0	27.5	30.0	28.5	29.0	26.5	24.5	25.5
12	27.5	26.0	26.5	28.5	27.0	27.5	30.0	28.5	29.5	27.0	25.5	26.0
13	27.0	26.0	26.5	29.5	27.5	28.5	29.5	28.5	29.0	27.5	26.0	27.0
14	28.0	26.0	27.0	30.0	28.0	28.5	29.5	28.5	29.0	28.0	26.5	27.0
15	28.0	26.5	27.0	30.0	28.0	29.0	29.0	28.0	28.5	28.0	26.5	27.0
16	27.5	26.0	27.0	29.5	28.0	29.0	29.5	28.0	28.5	27.5	27.0	27.5
17	28.0	26.0	27.0	30.0	28.5	29.0	29.5	28.0	29.0	27.5	24.5	26.0
18	28.0	26.5	27.0	30.0	28.0	29.0	29.0	28.0	28.5	27.0	26.0	26.5
19	28.0	26.0	27.0	30.0	28.5	29.0	29.0	27.5	28.0	27.0	26.5	27.0
20	28.0	26.5	27.5	29.0	28.5	28.5	29.5	28.0	28.5	27.5	26.5	27.0
21	28.5	26.5	27.5	28.5	27.0	28.0	29.5	28.0	29.0	28.0	26.5	27.0
22	28.5	26.5	27.5	28.0	26.5	27.0	29.5	28.0	29.0	28.0	26.5	27.0
23	28.5	26.5	27.5	28.5	27.0	27.5	29.5	28.5	29.0	27.5	26.5	27.0
24	28.5	26.5	27.5	29.0	27.5	28.0	30.0	28.5	29.0	27.5	26.5	27.0
25	29.0	27.0	28.0	29.5	27.5	28.5	29.0	27.0	28.0	27.5	26.0	27.0
26	28.5	27.0	27.5	29.5	28.0	28.5	29.5	27.5	28.5	27.5	26.0	26.5
27	28.5	27.5	28.0	29.5	28.0	28.5	29.5	28.0	28.5	27.0	25.5	26.0
28	29.0	27.5	28.0	29.5	28.0	28.5	29.0	28.0	28.5	27.0	25.5	26.0
29	29.0	27.5	28.0	29.0	28.0	28.5	29.0	28.0	28.5	27.0	26.0	26.5
30	29.0	27.5	28.5	28.5	27.5	28.0	28.5	27.5	28.0	26.0	24.5	25.0
31	---	---	---	27.5	27.0	27.5	28.5	27.5	28.0	---	---	---
MONTH	29.0	24.5	27.0	30.0	26.5	28.5	30.0	27.0	28.5	28.5	24.5	26.5

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	5.2	4.5	4.8	---	---	---	7.4	6.6	7.0	8.6	7.1	7.8
2	4.9	4.2	4.5	4.0	3.4	3.6	7.5	6.8	7.1	9.1	7.7	8.4
3	5.1	4.1	4.6	4.1	3.4	3.6	7.6	6.5	7.0	9.0	7.7	8.2
4	5.1	4.2	4.6	4.2	3.4	3.6	7.2	6.4	6.7	8.7	7.4	8.0
5	4.9	4.1	4.4	4.0	3.4	3.6	6.3	5.7	6.0	8.3	7.5	8.0
6	4.7	4.1	4.3	4.2	3.6	3.8	5.6	5.2	5.4	8.3	7.3	7.8
7	4.8	3.9	4.3	4.3	3.5	3.9	5.6	5.2	5.3	9.2	7.3	8.1
8	4.5	3.6	4.1	4.3	1.8	3.5	5.5	5.1	5.3	10.1	8.0	9.0
9	4.2	3.3	3.7	5.6	4.6	5.2	6.0	5.2	5.4	11.1	8.7	9.8
10	4.1	2.8	3.6	6.0	5.3	5.6	5.6	5.3	5.4	11.4	8.9	10.1
11	4.1	3.3	3.6	6.8	5.7	6.3	5.6	5.1	5.3	9.6	8.8	9.2
12	4.0	2.9	3.5	7.1	6.2	6.6	5.6	4.9	5.2	---	---	---
13	3.9	3.1	3.5	6.7	5.8	6.3	5.6	5.1	5.3	---	---	---
14	3.8	2.8	3.3	6.5	5.6	6.0	5.6	4.8	5.2	9.5	8.4	9.1
15	3.6	2.9	3.3	5.8	5.2	5.5	6.8	5.4	6.0	8.8	8.1	8.5
16	3.2	2.4	2.8	6.4	5.0	5.4	7.4	6.2	6.7	9.0	7.7	8.2
17	3.1	1.8	2.6	6.9	6.1	6.5	7.0	6.3	6.6	8.9	7.0	7.9
18	2.8	2.1	2.4	6.4	5.3	5.7	6.8	5.6	6.3	8.2	6.7	7.4
19	2.7	2.0	2.3	---	---	---	6.6	5.7	6.2	7.4	6.5	6.9
20	3.1	2.2	2.6	---	---	---	7.5	5.9	6.7	7.8	6.7	7.2
21	3.7	2.7	3.2	---	---	---	6.9	6.2	6.5	9.0	7.3	8.1
22	3.7	3.1	3.4	---	---	---	6.5	6.0	6.2	9.0	7.5	8.3
23	3.7	3.3	3.5	---	---	---	6.0	5.5	5.8	9.6	7.9	8.6
24	3.8	3.3	3.6	---	---	---	5.5	5.1	5.3	9.9	7.8	8.7
25	4.0	3.3	3.6	---	---	---	5.7	5.0	5.3	9.3	7.8	8.6
26	3.7	3.3	3.5	---	---	---	7.3	5.8	6.5	10.1	8.2	9.0
27	4.2	3.5	3.8	---	---	---	7.9	6.8	7.3	10.5	8.6	9.5
28	4.9	3.9	4.3	---	---	---	8.0	7.2	7.6	9.7	7.0	8.7
29	5.0	4.3	4.6	---	---	---	8.5	7.3	7.9	9.4	8.0	8.7
30	5.1	4.1	4.5	---	---	---	8.5	7.5	8.0	9.4	7.7	8.3
31	---	---	---	---	---	---	8.1	7.3	7.8	7.9	6.7	7.1
MONTH	5.2	1.8	3.7	7.1	1.8	5.0	8.5	4.8	6.3	11.4	6.5	8.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.6	5.8	6.2	4.2	3.8	4.0	6.6	6.1	6.4	7.1	6.5	6.8
2	5.9	5.0	5.3	4.2	3.6	3.9	6.9	5.9	6.4	7.0	6.5	6.7
3	5.7	5.1	5.4	5.1	3.8	4.3	6.7	6.2	6.5	6.9	6.4	6.6
4	6.4	5.4	5.9	5.4	4.4	4.8	6.8	6.4	6.6	6.9	6.3	6.5
5	7.0	6.2	6.6	5.8	4.7	5.2	6.5	6.1	6.3	7.0	6.4	6.7
6	9.3	6.9	7.8	6.0	4.6	5.2	6.8	6.1	6.4	6.5	5.9	6.2
7	9.5	7.3	8.2	5.2	4.3	4.6	7.4	6.9	7.1	6.4	5.6	6.0
8	8.7	7.4	8.0	4.4	3.8	4.2	7.2	7.1	7.2	6.4	5.9	6.2
9	7.7	6.8	7.3	5.8	4.3	5.0	7.6	7.2	7.4	6.2	5.4	5.7
10	7.9	6.4	7.1	6.1	4.8	5.4	7.8	7.4	7.6	5.4	5.0	5.1
11	8.9	6.3	7.5	5.8	4.8	5.3	8.0	7.6	7.8	5.8	4.9	5.3
12	8.5	6.9	7.8	5.8	4.4	4.9	8.4	7.7	8.0	6.3	5.4	5.8
13	8.8	5.3	7.6	8.7	4.7	6.1	8.2	8.0	8.1	6.9	6.2	6.6
14	7.5	5.0	6.4	9.9	5.4	6.6	8.0	7.6	7.8	7.0	6.5	6.7
15	7.0	5.6	6.3	9.9	5.6	7.0	7.8	7.4	7.6	6.9	6.4	6.7
16	6.3	4.7	5.6	9.6	6.1	7.5	7.5	7.0	7.1	6.8	6.4	6.6
17	4.7	4.1	4.3	8.6	5.6	6.4	7.4	6.9	7.1	6.6	6.1	6.4
18	4.6	3.3	4.0	8.2	5.8	7.3	7.2	6.8	7.0	7.2	6.1	6.6
19	5.5	4.9	5.2	7.9	7.4	7.7	7.3	6.7	7.0	6.8	6.3	6.6
20	6.0	4.8	5.3	7.5	6.9	7.3	7.3	7.0	7.2	7.0	6.2	6.6
21	5.5	4.6	5.0	6.8	6.3	6.6	7.2	6.8	7.0	7.1	5.9	6.7
22	4.9	4.3	4.5	6.5	5.8	6.3	7.0	6.7	6.8	7.3	7.1	7.2
23	4.8	4.1	4.4	6.3	5.6	6.0	7.0	6.3	6.7	7.3	7.2	7.3
24	4.9	4.2	4.6	6.2	5.7	5.9	7.2	6.6	6.9	7.1	6.9	7.0
25	5.2	4.3	4.8	5.6	5.2	5.4	7.1	6.5	6.8	7.3	6.9	7.1
26	4.9	4.3	4.6	5.4	5.0	5.2	7.2	6.6	6.9	7.4	7.1	7.3
27	4.8	4.2	4.5	5.8	4.9	5.3	7.3	6.9	7.1	7.5	7.2	7.3
28	5.3	4.2	4.7	5.8	4.9	5.2	7.1	6.7	6.9	7.3	7.0	7.2
29	4.5	4.1	4.3	5.5	4.9	5.1	6.8	6.4	6.5	7.2	6.9	7.1
30	---	---	---	7.2	5.7	6.6	6.7	6.0	6.5	7.1	6.6	6.7
31	---	---	---	6.9	6.5	6.7	---	---	---	6.6	5.9	6.3
MONTH	9.5	3.3	5.8	9.9	3.6	5.7	8.4	5.9	7.0	7.5	4.9	6.6

GUADALUPE RIVER BASIN

30.

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6.1	5.8	5.9	5.7	5.3	5.4	---	---	---	8.9	7.0	8.0
2	5.8	5.2	5.5	5.8	5.2	5.4	---	---	---	7.3	6.9	7.1
3	6.4	5.2	5.7	5.5	5.0	5.2	---	---	---	7.4	6.9	7.1
4	7.2	6.5	6.9	5.0	4.8	4.9	---	---	---	7.4	6.8	7.1
5	7.2	6.6	6.9	---	---	---	---	---	---	7.7	7.0	7.3
6	7.1	6.4	6.7	---	---	---	---	---	---	7.8	7.2	7.4
7	6.7	6.1	6.5	---	---	---	---	---	---	7.9	7.3	7.5
8	7.1	6.8	7.0	---	---	---	---	---	---	8.0	7.3	7.5
9	7.2	6.8	7.0	---	---	---	---	---	---	7.9	7.2	7.5
10	7.2	6.7	6.9	---	---	---	---	---	---	7.9	7.2	7.4
11	---	---	---	---	---	---	---	---	---	7.9	7.2	7.5
12	---	---	---	---	---	---	---	---	---	7.8	7.2	7.4
13	---	---	---	---	---	---	---	---	---	7.6	6.9	7.2
14	---	---	---	---	---	---	---	---	---	7.4	6.8	7.0
15	---	---	---	---	---	---	---	---	---	7.3	6.7	6.9
16	---	---	---	---	---	---	---	---	---	7.1	6.6	6.8
17	---	---	---	---	---	---	7.6	6.5	7.1	7.2	4.4	6.1
18	---	---	---	---	---	---	7.6	7.0	7.2	6.3	5.9	6.1
19	---	---	---	---	---	---	7.8	7.1	7.4	6.4	6.3	6.4
20	---	---	---	---	---	---	7.9	7.2	7.5	6.5	6.3	6.4
21	---	---	---	---	---	---	8.0	7.3	7.6	6.5	6.4	6.4
22	---	---	---	---	---	---	8.2	7.5	7.8	6.5	6.4	6.5
23	---	---	---	---	---	---	8.2	7.6	7.9	6.6	6.5	6.5
24	---	---	---	---	---	---	8.4	7.8	8.0	6.6	6.5	6.6
25	---	---	---	---	---	---	8.0	5.5	7.2	6.7	6.5	6.6
26	---	---	---	---	---	---	8.0	7.8	7.9	6.7	6.5	6.6
27	---	---	---	---	---	---	8.1	7.8	7.9	6.9	6.6	6.7
28	---	---	---	---	---	---	8.4	7.9	8.2	7.1	5.9	6.5
29	---	---	---	---	---	---	8.8	8.3	8.5	6.1	5.9	6.0
30	6.6	5.5	6.1	---	---	---	9.0	8.5	8.7	6.4	6.0	6.2
31	---	---	---	---	---	---	9.2	8.6	8.9	---	---	---
MONTH	7.2	5.2	6.5	5.8	4.8	5.2	9.2	5.5	7.9	8.9	4.4	6.9

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX

LOCATION.--Lat 29°14'16", long 98°22'00", Bexar County, Hydrologic Unit 12100301, on left bank at pump station to Braunig Plant Lake, 2.4 mi southwest of Elmendorf, 4.8 mi downstream from Medina River, and 208 mi upstream from mouth.

DRAINAGE AREA.--1,743 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 393.00 ft above National Geodetic Vertical Datum of 1929. Sept. 12, 1962, to Dec. 19, 1980, at site 0.3 mi downstream at different datum. Dec. 19, 1980, to Dec. 23, 1986, at site 2.4 mi downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow slightly regulated by Medina Lake (station 08179500) and by Olmos flood-control reservoir (combined capacity, 269,500 acre-ft). Storage began in Medina Lake in 1913, and Olmos Dam was completed in 1926. Water is diverted above station from Medina River for irrigation in the vicinity of Devine and Lytle, with some water diverted for irrigation near San Antonio. During the current year, the city of San Antonio discharged 136,500 acre-ft of sewage effluent into the San Antonio River from the Rilling Road, Leon Creek, Salado Creek, Dos Rios, and Mitchell Lake plants upstream from this station. Operation of the Rilling Road plant was discontinued Oct. 6, 1987. The San Antonio City Public Service Board pumped 7,180 acre-ft into Braunig Lake, released 120 acre-ft from Braunig Lake, pumped 21,340 acre-ft into Calaveras Lake, and released none from Calaveras Lake upstream from this station. For additional information relative to sewage effluent, see station 08181500. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

AVERAGE DISCHARGE.--26 years, 547 ft³/s (369,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s Sept. 27, 1973 (gage height, 47.60 ft), site and datum then in use; maximum gage height, 53.06 ft June 5, 1986; minimum discharge, 12 ft³/s Aug. 24-26, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 61 ft in 1946. Second highest stage was 53 ft in 1913, from information by local residents. At site and datum in use prior to Dec. 19, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 21	1500	*5,540	*25.41				

Minimum daily discharge, 106 ft³/s Sept. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	465	393	485	491	455	425	412	232	254	254	329	172
2	461	435	424	472	448	427	398	254	259	240	332	184
3	457	476	401	478	437	434	391	275	1620	228	277	214
4	446	462	401	473	394	426	386	261	762	228	200	202
5	448	458	393	415	404	399	361	253	370	252	e185	202
6	433	441	394	423	376	391	330	247	326	258	e171	109
7	397	436	397	461	385	411	309	234	318	250	e157	106
8	394	660	397	424	393	412	355	239	327	245	e163	143
9	390	1050	387	407	392	405	413	245	312	232	e156	131
10	399	532	395	406	384	395	381	243	303	221	e150	117
11	415	486	396	412	368	395	387	242	289	316	e144	106
12	404	468	404	409	362	387	339	296	284	527	e138	129
13	403	442	403	401	358	376	317	293	290	345	e133	165
14	402	437	401	398	357	379	306	275	266	247	e127	171
15	378	450	384	424	366	399	298	274	233	194	150	226
16	376	680	370	458	364	329	279	270	224	178	173	292
17	360	672	383	475	355	605	426	257	225	176	163	1170
18	363	507	871	488	805	858	373	228	215	184	193	1140
19	380	473	1150	485	545	355	330	234	209	184	200	356
20	372	461	837	455	397	e368	300	245	250	176	175	280
21	363	453	639	456	372	384	290	421	238	2200	135	244
22	354	454	556	457	369	417	275	301	211	1270	139	224
23	439	473	526	442	370	403	255	273	207	417	168	197
24	417	471	518	443	405	406	234	258	200	337	184	183
25	384	723	480	453	398	406	279	236	179	350	481	180
26	396	504	547	469	406	382	325	241	435	319	293	189
27	407	722	523	448	410	386	310	243	302	302	208	187
28	410	610	507	446	420	398	275	233	390	466	183	179
29	413	480	504	451	431	402	290	232	347	345	184	174
30	413	485	505	447	---	401	260	239	273	335	176	185
31	398	---	488	441	---	399	---	255	---	353	179	---
TOTAL	12537	15794	15466	13808	11926	12960	9884	8029	10118	11629	6046	7557
MEAN	404	526	499	445	411	418	329	259	337	375	195	252
MAX	465	1050	1150	491	805	858	426	421	1620	2200	481	1170
MIN	354	393	370	398	355	329	234	228	179	176	127	106
AC-FT	24870	31330	30680	27390	23660	25710	19600	15930	20070	23070	11990	14990

CAL YR 1987 TOTAL 579689 MEAN 1588 MAX 18000 MIN 354 AC-FT 1150000
WTR YR 1988 TOTAL 135754 MEAN 371 MAX 2200 MIN 106 AC-FT 269300

e Estimated.

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1964 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

pH: June 1984 to current year.

WATER TEMPERATURE: October 1966 to current year.

DISSOLVED OXYGEN: June 1984 to current year.

INSTRUMENTATION.--Beginning June 1984, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,240 microsiemens Jan. 29, 1973, Aug. 8, 1975; minimum, 200 microsiemens May 19, 1987, July 21, 1988.

pH: Maximum, 8.3 units on several days during 1988 water year; minimum, 7.3 units Aug. 13-17, 1984.

WATER TEMPERATURE: Maximum, 32.0°C on several days during some years; minimum, 5.5°C Jan. 10, 1973.

DISSOLVED OXYGEN: Maximum, 9.9 mg/L Jan. 10, 11, 1988; minimum, 0.0 mg/L Mar. 2, Apr. 14, 15, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,080 microsiemens May 27, June 24; minimum, 200 microsiemens July 21.

pH: Maximum, 8.3 units on many days during year; minimum, 7.4 units Mar. 26, 27, 29, 30.

WATER TEMPERATURE: Maximum, 31.5°C on several days during July and August; minimum, 12.5°C Jan. 9-11.

DISSOLVED OXYGEN: Maximum, 9.9 mg/L Jan. 10, 11; minimum, 3.3 mg/L Nov. 6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	
OCT 30...	1115	420	825	7.80	23.0	5.2	61	12	290	55	
DEC 08...	1200	438	830	7.80	19.5	4.8	53	>9.0	300	48	
FEB 23...	1440	388	866	7.70	19.0	6.1	67	3.7	300	81	
MAR 21...	1500	373	823	7.80	19.0	7.8	85	4.1	290	72	
JUN 09...	1130	289	920	8.00	27.0	6.6	86	--	300	83	
AUG 24...	1110	158	960	8.10	29.5	6.8	90	1.6	280	68	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 30...	84	19	61	2	6.1	233	72	75	0.40	14	
DEC 08...	88	19	60	2	5.6	250	66	71	0.40	14	
FEB 23...	88	19	65	2	6.3	217	78	84	0.40	13	
MAR 21...	85	18	59	2	5.6	215	78	75	0.30	13	
JUN 09...	88	19	68	2	6.9	215	88	93	0.50	15	
AUG 24...	80	19	81	2	8.5	210	70	110	0.50	16	
DATE		SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT 30...	471	4.86	0.640	5.50	0.770	1.2	2.0	1.90	--	--	
DEC 08...	474	2.90	0.600	3.50	4.00	2.0	6.0	2.10	--	--	
FEB 23...	484	7.89	0.010	7.90	0.290	1.2	1.5	3.00	2	58	
MAR 21...	463	7.30	0.300	7.60	0.460	1.2	1.7	2.70	1	54	
JUN 09...	507	8.37	0.130	8.50	0.170	1.2	1.4	2.90	--	--	
AUG 24...	511	10.9	0.050	11.0	0.150	1.2	1.4	4.40	--	--	

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 30...	--	--	--	--	--	--	--	--	--	--
DEC 08...	--	--	--	--	--	--	--	--	--	--
FEB 23...	<1	1	3	8	<5	25	<0.1	1	<1.0	13
MAR 21...	<1	6	4	7	<5	23	0.5	<1	<1.0	49
JUN 09...	--	--	--	--	--	--	--	--	--	--
AUG 24...	--	--	--	--	--	--	--	--	--	--

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	12537	853	481	16300	77	2620	73	2460	280
NOV. 1987	15794	797	452	19300	70	2960	70	2980	270
DEC. 1987	15466	800	453	18900	70	2930	70	2910	270
JAN. 1988	13808	834	471	17600	75	2780	72	2680	280
FEB. 1988	11926	857	483	15500	78	2520	73	2350	280
MAR. 1988	12960	856	482	16900	78	2740	73	2540	280
APR. 1988	9884	886	498	13300	82	2200	74	1990	290
MAY 1988	8029	948	529	11500	92	2000	77	1670	290
JUNE 1988	10118	860	483	13200	80	2190	72	1970	280
JULY 1988	11629	759	431	13500	66	2070	67	2100	260
AUG. 1988	6046	878	493	8050	81	1330	74	1210	280
SEPT 1988	7557	794	448	9150	71	1450	68	1390	260
TOTAL	135754	**	**	173000	**	27800	**	26300	**
WTD.AVG.	371	837	472	**	76	**	72	**	280

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	860	810	837	830	810	822	880	820	846	830	790	811
2	870	830	846	820	800	811	850	840	842	800	780	791
3	870	830	847	850	810	827	860	830	847	810	790	797
4	850	820	838	860	830	850	850	830	844	820	790	804
5	840	810	826	860	840	848	830	810	821	830	810	821
6	870	830	851	900	850	877	830	820	825	840	790	826
7	880	830	863	880	850	873	830	830	830	840	820	827
8	890	840	864	850	430	765	890	830	857	850	820	833
9	890	840	866	750	490	651	930	870	903	840	820	826
10	890	840	869	780	690	736	910	880	890	850	810	827
11	860	830	848	820	780	797	890	870	883	830	800	817
12	850	830	835	850	810	830	910	870	885	850	800	825
13	880	840	860	860	820	835	910	860	884	850	820	835
14	880	840	862	870	830	845	890	830	862	850	820	837
15	900	850	874	830	670	779	890	840	867	850	810	833
16	890	870	879	800	680	754	890	860	872	870	820	855
17	910	870	894	850	790	819	880	830	862	840	800	824
18	890	860	881	870	810	853	880	650	777	840	810	817
19	870	840	856	870	830	842	770	550	714	860	840	847
20	880	860	870	830	790	815	620	550	566	890	840	875
21	890	860	872	890	740	831	760	630	682	880	820	841
22	890	860	871	810	710	765	810	680	756	870	820	842
23	880	800	843	820	610	719	810	780	800	850	810	833
24	850	810	826	760	660	714	830	800	820	850	820	828
25	840	810	830	760	760	760	820	760	801	830	820	827
26	840	810	828	810	760	783	780	750	766	870	830	854
27	860	830	843	810	780	801	790	760	784	870	840	858
28	860	830	847	840	800	828	790	770	785	890	840	867
29	870	840	854	880	830	847	830	790	809	870	830	855
30	860	830	842	870	840	860	830	810	822	880	850	865
31	850	820	837	---	---	---	830	810	820	880	840	857
MONTH	910	800	854	900	430	805	930	550	817	890	780	834

GUADALUPE RIVER BASIN

305

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	860	820	841	910	880	894	862	803	842	---	---	926
2	880	840	861	920	870	893	866	803	838	---	---	912
3	880	850	872	910	860	881	848	818	835	---	---	894
4	890	850	876	900	840	874	860	811	831	---	---	915
5	900	850	878	900	870	883	895	811	864	---	---	933
6	890	850	874	890	840	867	920	867	891	---	---	958
7	870	830	854	860	840	846	951	862	926	990	970	980
8	870	830	852	900	870	883	955	898	920	970	930	954
9	900	850	883	920	870	903	889	818	860	950	920	935
10	900	850	879	950	880	919	913	847	886	980	940	966
11	890	860	880	940	890	912	924	858	899	1030	950	990
12	900	870	881	940	890	920	---	---	904	1020	960	991
13	920	870	892	930	870	906	---	---	911	1010	970	993
14	900	850	877	930	870	892	---	---	920	1010	970	993
15	900	850	869	970	890	940	---	---	926	990	930	971
16	920	870	890	960	910	941	---	---	930	960	930	946
17	950	870	909	1060	250	906	---	---	846	1010	940	978
18	930	520	727	720	350	585	---	---	860	1000	980	991
19	800	760	784	770	650	734	---	---	880	1010	970	991
20	820	780	801	800	740	773	---	---	892	1030	980	1010
21	830	810	820	860	770	807	---	---	899	1000	740	885
22	860	800	838	940	780	864	---	---	905	870	760	821
23	900	850	880	851	820	841	---	---	915	900	830	860
24	900	850	877	912	841	879	---	---	926	930	880	903
25	910	870	886	902	853	876	---	---	907	980	940	954
26	890	870	880	894	873	884	---	---	876	1000	970	983
27	920	870	899	874	825	850	---	---	887	1080	970	1000
28	920	850	893	846	825	833	---	---	909	1000	970	985
29	890	840	870	917	848	880	---	---	891	1010	970	988
30	---	---	---	899	849	868	---	---	910	970	920	945
31	---	---	---	890	821	863	---	---	---	930	910	919
MONTH	950	520	863	1060	250	864	955	803	890	1080	740	951

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	970	930	946	930	890	909	863	784	838	950	920	937
2	990	960	975	950	900	926	941	863	884	970	920	955
3	980	420	728	920	890	904	900	700	855	980	940	957
4	600	300	440	890	860	881	900	860	881	950	930	936
5	770	630	724	880	860	874	890	730	795	940	910	923
6	820	780	804	920	870	900	890	820	862	920	860	896
7	890	830	863	950	900	923	890	870	881	930	870	915
8	920	850	888	940	900	921	880	860	869	980	940	962
9	990	880	939	990	920	942	940	890	910	980	950	969
10	990	950	970	940	920	931	950	910	931	970	950	960
11	1010	970	987	920	850	887	950	910	928	960	940	949
12	990	960	973	910	620	746	960	920	939	970	920	946
13	960	940	953	870	760	835	960	910	942	960	900	930
14	990	960	974	930	870	901	920	890	910	960	910	945
15	1000	970	984	940	900	921	910	860	891	980	940	965
16	1050	990	1020	940	920	935	930	890	920	980	830	959
17	1030	1000	1020	940	900	918	950	900	933	880	320	607
18	1040	1000	1020	920	900	906	970	850	927	550	320	469
19	1000	980	992	940	910	927	920	860	898	730	560	655
20	990	920	969	960	920	938	960	930	936	830	730	772
21	1020	920	977	980	200	577	950	900	927	870	830	850
22	1040	1010	1020	590	390	472	920	880	905	940	870	899
23	1060	1000	1040	740	600	666	940	910	928	930	890	906
24	1080	1000	1050	824	745	765	970	910	951	950	920	930
25	1050	1020	1040	824	745	793	930	600	777	940	910	923
26	1040	660	973	941	745	851	840	610	709	920	900	911
27	890	670	781	941	863	905	880	830	861	940	910	919
28	900	830	863	941	667	778	890	870	881	970	930	944
29	880	700	784	863	745	821	900	880	891	970	950	957
30	900	810	863	941	824	867	930	900	918	960	940	950
31	---	---	---	863	745	797	940	920	935	---	---	---
MONTH	1080	300	919	990	200	849	970	600	891	980	320	893

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.8	7.8	7.8	7.7	7.7	7.7	7.7	7.7	8.0	8.0	8.0
2	7.8	7.8	7.8	7.8	7.6	7.7	7.8	7.7	7.7	8.1	8.0	8.0
3	7.8	7.8	7.8	7.8	7.7	7.8	7.8	7.7	7.7	8.1	8.0	8.0
4	7.9	7.8	7.8	7.8	7.7	7.8	7.8	7.8	7.8	8.1	7.9	8.0
5	7.9	7.8	7.9	7.7	7.7	7.7	7.8	7.7	7.8	8.0	7.9	8.0
6	7.9	7.8	7.9	7.8	7.7	7.7	7.8	7.7	7.8	8.0	7.9	8.0
7	7.9	7.9	7.9	7.8	7.8	7.8	7.8	7.7	7.7	8.0	7.9	8.0
8	7.9	7.9	7.9	7.9	7.7	7.8	7.9	7.7	7.8	8.2	7.9	8.1
9	7.9	7.8	7.9	7.9	7.8	7.8	7.9	7.9	7.9	8.3	8.2	8.2
10	7.8	7.8	7.8	7.9	7.8	7.8	8.0	7.9	7.9	8.3	8.2	8.2
11	7.8	7.7	7.8	8.1	7.8	8.0	8.0	8.0	8.0	8.2	8.1	8.1
12	7.8	7.7	7.8	8.0	8.0	8.0	8.0	7.9	8.0	8.1	8.0	8.1
13	7.7	7.7	7.7	8.1	7.8	8.0	8.0	7.9	8.0	8.1	8.0	8.0
14	7.8	7.7	7.7	8.1	8.0	8.1	8.0	7.9	7.9	8.1	7.9	8.0
15	7.8	7.6	7.8	8.2	8.1	8.2	7.9	7.8	7.9	8.0	7.9	8.0
16	7.8	7.8	7.8	8.1	8.0	8.0	7.8	7.7	7.7	8.0	7.9	8.0
17	7.8	7.7	7.8	8.1	8.0	8.0	7.7	7.6	7.7	8.1	7.8	8.0
18	7.8	7.7	7.8	8.0	7.7	7.9	7.7	7.6	7.7	8.0	7.7	7.9
19	7.8	7.8	7.8	8.0	7.8	8.0	8.0	7.6	7.7	8.0	7.6	7.8
20	7.8	7.8	7.8	8.0	7.9	8.0	7.9	7.8	7.8	8.0	7.8	7.9
21	7.9	7.8	7.8	8.0	7.9	7.9	8.0	7.9	8.0	8.0	7.9	8.0
22	7.9	7.8	7.8	7.9	7.8	7.9	8.0	7.9	7.9	8.2	7.9	8.0
23	7.9	7.8	7.9	8.1	7.8	7.9	7.9	7.9	7.9	8.2	7.9	8.1
24	7.8	7.8	7.8	7.9	7.8	7.9	7.9	7.9	7.9	8.1	7.9	8.1
25	7.8	7.8	7.8	7.9	7.7	7.8	8.0	7.9	7.9	8.1	8.0	8.0
26	7.8	7.8	7.8	7.8	7.7	7.8	8.0	7.9	7.9	8.1	8.0	8.0
27	7.8	7.7	7.8	7.8	7.7	7.8	8.0	7.9	8.0	8.1	7.9	8.1
28	7.8	7.7	7.7	7.8	7.7	7.8	8.0	8.0	8.0	8.1	7.9	8.1
29	7.8	7.7	7.7	7.8	7.7	7.7	8.0	7.9	8.0	8.1	7.7	8.0
30	7.8	7.7	7.7	7.8	7.7	7.7	8.0	7.9	8.0	8.1	7.9	8.0
31	7.7	7.5	7.7	---	---	---	8.0	7.9	8.0	8.1	7.9	8.0
MONTH	7.9	7.5	7.8	8.2	7.6	7.9	8.0	7.6	7.9	8.3	7.6	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.1	7.9	8.0	7.7	7.6	7.7	7.7	7.5	7.6	8.0	7.9	7.9
2	8.0	7.9	8.0	7.7	7.6	7.7	7.7	7.6	7.7	8.0	7.9	7.9
3	8.1	8.0	8.0	7.7	7.6	7.7	7.7	7.6	7.7	7.9	7.8	7.9
4	8.0	7.8	7.9	7.8	7.6	7.7	7.7	7.6	7.7	8.0	7.8	7.9
5	7.9	7.7	7.8	7.7	7.6	7.7	7.6	7.6	7.6	7.9	7.9	7.9
6	7.9	7.7	7.8	7.7	7.6	7.6	7.6	7.6	7.6	7.9	7.8	7.9
7	7.9	7.8	7.9	7.7	7.6	7.6	7.6	7.5	7.6	7.9	7.8	7.8
8	7.9	7.7	7.8	7.6	7.5	7.6	7.6	7.5	7.6	7.9	7.8	7.8
9	7.7	7.7	7.7	7.7	7.5	7.6	7.7	7.6	7.6	7.9	7.8	7.8
10	7.7	7.7	7.7	7.7	7.6	7.7	7.7	7.6	7.7	7.9	7.8	7.8
11	7.9	7.7	7.8	7.7	7.6	7.7	7.7	7.6	7.6	7.8	7.8	7.8
12	7.9	7.7	7.8	7.7	7.6	7.7	7.6	7.6	7.6	7.8	7.8	7.8
13	7.8	7.7	7.7	7.7	7.6	7.7	7.8	7.6	7.7	8.0	7.8	7.9
14	7.8	7.6	7.7	7.7	7.6	7.7	7.8	7.6	7.7	8.1	7.9	8.0
15	7.8	7.6	7.7	7.8	7.6	7.7	7.9	7.6	7.8	8.1	7.9	8.0
16	7.7	7.6	7.7	7.7	7.6	7.6	7.8	7.7	7.8	8.2	7.9	8.0
17	7.7	7.6	7.6	7.9	7.5	7.6	7.8	7.7	7.7	8.1	8.0	8.1
18	7.9	7.6	7.7	7.9	7.6	7.7	7.8	7.6	7.7	8.2	8.0	8.1
19	7.7	7.6	7.7	7.6	7.6	7.6	7.8	7.7	7.7	8.3	8.1	8.2
20	7.7	7.5	7.6	7.6	7.6	7.6	7.9	7.7	7.8	8.3	8.2	8.2
21	7.9	7.7	7.8	7.7	7.6	7.6	7.8	7.7	7.8	8.3	8.2	8.2
22	7.9	7.7	7.8	7.7	7.5	7.6	7.9	7.8	7.8	8.3	8.1	8.2
23	7.8	7.7	7.8	7.5	7.5	7.5	7.9	7.8	7.8	8.3	8.2	8.2
24	7.8	7.8	7.8	7.5	7.5	7.5	8.0	7.8	7.9	8.3	8.1	8.2
25	7.9	7.7	7.8	7.5	7.5	7.5	8.0	7.8	7.9	8.2	8.1	8.1
26	7.8	7.7	7.7	7.5	7.4	7.5	7.9	7.8	7.8	8.2	8.1	8.2
27	7.8	7.6	7.7	7.5	7.4	7.5	8.0	7.8	7.9	8.2	8.1	8.2
28	7.7	7.6	7.7	7.5	7.5	7.5	8.0	7.8	7.9	8.2	8.1	8.1
29	7.7	7.6	7.7	7.5	7.4	7.5	8.0	7.8	7.9	8.2	8.2	8.2
30	---	---	---	7.6	7.4	7.5	8.0	7.8	7.9	8.3	8.2	8.2
31	---	---	---	7.6	7.5	7.5	---	---	---	8.2	8.1	8.2
MONTH	8.1	7.5	7.8	7.9	7.4	7.6	8.0	7.5	7.7	8.3	7.8	8.0

GUADALUPE RIVER BASIN

30.

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.2	8.1	8.1	8.1	8.0	8.1	8.3	8.2	8.2	8.2	8.1	8.2
2	8.2	8.1	8.1	8.2	8.0	8.1	8.3	8.2	8.3	8.2	8.1	8.2
3	8.2	7.7	8.0	8.2	8.1	8.1	8.3	8.2	8.3	8.3	8.2	8.2
4	7.9	7.7	7.8	8.2	8.1	8.2	8.3	8.1	8.2	8.3	8.2	8.3
5	8.0	7.9	7.9	8.2	8.1	8.1	8.2	8.1	8.2	8.3	8.2	8.3
6	8.0	8.0	8.0	8.2	8.1	8.1	8.3	8.1	8.2	8.3	8.2	8.2
7	8.0	7.9	8.0	8.2	8.1	8.1	8.3	8.1	8.2	8.3	8.2	8.2
8	8.0	7.9	8.0	8.2	8.0	8.1	8.2	8.1	8.2	8.3	8.2	8.2
9	8.1	8.0	8.0	8.2	8.0	8.1	8.3	8.1	8.2	8.3	8.2	8.2
10	8.1	8.0	8.0	8.2	8.1	8.2	8.2	8.0	8.1	8.3	8.2	8.2
11	8.1	8.0	8.0	8.2	8.1	8.1	8.2	8.0	8.1	8.3	8.2	8.3
12	8.1	8.0	8.0	8.1	7.9	8.0	8.3	8.0	8.2	8.3	8.2	8.2
13	8.1	8.0	8.0	8.1	8.0	8.1	8.3	8.1	8.2	8.3	8.2	8.2
14	8.1	8.0	8.0	8.2	8.0	8.1	8.3	8.1	8.2	8.3	8.2	8.2
15	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.1	8.2	8.3	8.2	8.2
16	8.1	8.0	8.1	8.3	8.1	8.2	8.3	8.1	8.2	8.3	8.1	8.2
17	8.1	8.0	8.1	8.3	8.2	8.2	8.3	8.2	8.2	8.2	7.7	8.0
18	8.2	8.0	8.1	8.3	8.1	8.2	8.2	8.1	8.2	7.9	7.8	7.9
19	8.2	8.1	8.1	8.3	8.2	8.2	8.2	8.1	8.2	8.0	7.9	8.0
20	8.2	8.1	8.1	8.3	8.2	8.2	8.3	8.1	8.2	8.1	8.0	8.1
21	8.2	8.0	8.1	8.2	7.9	8.1	8.3	8.2	8.3	8.1	8.1	8.1
22	8.2	8.1	8.1	8.0	7.9	8.0	8.3	8.2	8.2	8.2	8.1	8.1
23	8.2	8.1	8.1	8.1	8.0	8.1	8.3	8.2	8.2	8.2	8.1	8.2
24	8.2	8.1	8.1	8.2	8.1	8.1	8.3	8.1	8.2	8.2	8.1	8.2
25	8.2	8.1	8.1	8.2	8.1	8.1	8.2	7.9	8.1	8.2	8.2	8.2
26	8.2	7.8	8.1	8.3	8.2	8.2	8.1	7.9	8.0	8.2	8.2	8.2
27	8.1	7.8	8.0	8.3	8.2	8.2	8.2	8.1	8.1	8.3	8.2	8.2
28	8.1	8.0	8.0	8.3	8.1	8.2	8.2	8.1	8.1	8.3	8.2	8.3
29	8.1	7.9	8.0	8.3	8.2	8.2	8.2	8.1	8.1	8.3	8.2	8.3
30	8.1	8.0	8.0	8.3	8.2	8.2	8.2	8.1	8.2	8.3	8.2	8.3
31	---	---	---	8.3	8.2	8.2	8.2	8.1	8.2	---	---	---
MONTH	8.2	7.7	8.0	8.3	7.9	8.1	8.3	7.9	8.2	8.3	7.7	8.2

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	25.5	23.5	24.5	24.5	23.0	23.5	19.5	18.0	19.0	16.5	15.0	15.5
2	25.5	23.0	24.0	24.5	23.5	24.0	19.0	18.5	18.5	15.0	14.0	14.5
3	25.0	23.5	24.0	24.5	23.0	24.0	19.5	18.5	19.5	16.0	14.5	15.0
4	24.0	22.5	23.5	24.5	23.0	24.0	21.5	19.5	20.5	16.0	14.5	15.5
5	24.5	22.0	23.0	24.5	23.0	23.5	21.5	20.0	21.0	15.5	15.0	15.5
6	24.5	23.0	23.5	24.0	23.0	23.5	21.0	20.0	20.5	15.5	14.5	15.0
7	24.5	22.0	23.5	23.5	22.0	23.0	20.5	20.0	20.0	15.0	14.0	14.5
8	24.5	22.5	23.5	23.0	21.0	22.5	21.0	19.5	20.0	14.0	13.0	13.5
9	25.0	23.0	24.0	21.0	20.5	20.5	20.5	19.0	20.0	14.0	12.5	13.0
10	25.5	23.5	24.5	20.5	19.5	20.0	20.5	18.5	19.5	14.0	12.5	13.0
11	25.0	23.0	24.0	19.5	18.0	19.0	20.0	18.5	19.5	14.0	12.5	13.0
12	24.5	22.5	24.0	19.5	17.5	18.5	20.5	19.0	19.5	15.5	13.5	14.5
13	24.5	22.5	23.5	20.5	19.0	19.5	20.0	18.5	19.0	15.5	14.0	15.0
14	24.5	22.5	23.5	21.0	19.0	20.0	19.0	18.0	18.5	15.0	14.0	14.5
15	24.5	23.0	23.5	22.5	21.0	21.5	18.0	16.0	17.0	16.0	14.5	15.0
16	25.5	23.5	24.0	20.5	19.5	20.0	17.0	15.0	16.0	17.5	16.0	16.5
17	25.5	24.0	25.0	21.0	19.0	19.5	16.5	15.5	16.0	18.5	17.0	17.5
18	25.5	24.5	25.0	20.0	18.0	19.0	17.0	15.5	16.5	19.0	17.5	18.0
19	25.5	24.0	25.0	19.0	17.5	18.0	19.0	16.5	17.0	18.5	17.5	18.0
20	25.5	24.0	25.0	22.0	19.0	20.5	18.5	16.5	17.0	18.0	16.5	17.0
21	24.5	22.5	23.5	22.0	21.5	21.5	17.5	16.5	17.0	16.5	15.0	15.5
22	23.0	22.0	22.5	21.5	19.5	20.5	18.5	17.0	17.5	16.0	14.5	15.0
23	23.0	22.5	23.0	20.5	18.5	19.0	19.0	18.0	18.0	16.0	14.5	15.0
24	24.0	23.0	23.5	18.5	16.5	18.0	20.5	19.0	19.5	16.0	14.5	15.0
25	25.0	23.5	24.0	18.0	17.5	17.5	20.5	18.5	19.5	16.0	14.0	15.0
26	25.5	24.0	24.5	18.0	17.5	18.0	18.0	16.0	17.0	16.0	14.0	15.0
27	25.0	23.5	24.0	19.0	17.5	18.5	16.0	15.0	15.5	16.5	14.0	15.0
28	24.0	22.5	23.0	19.0	17.5	18.5	16.0	14.5	15.0	17.0	15.0	16.0
29	24.0	22.5	23.0	18.5	17.0	17.5	16.0	14.5	15.0	18.0	16.0	17.0
30	24.5	23.0	23.5	19.0	18.0	18.5	15.5	14.5	15.0	19.0	17.5	18.0
31	24.5	23.0	23.5	---	---	---	17.0	15.0	16.0	20.0	18.5	19.0
MONTH	25.5	22.0	24.0	24.5	16.5	20.5	21.5	14.5	18.0	20.0	12.5	15.5

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	20.5	19.5	20.0	23.5	22.0	22.5	23.5	21.0	22.0	25.5	23.5	24.5
2	20.5	18.5	20.0	22.5	22.0	22.0	23.5	20.5	22.0	24.5	23.5	24.0
3	18.5	17.5	18.0	21.5	20.0	21.0	24.0	21.0	22.0	27.0	23.5	25.0
4	17.5	15.5	16.5	20.5	19.0	20.0	23.5	22.0	22.5	26.5	24.0	25.0
5	15.5	14.0	15.0	21.0	18.5	20.0	24.5	22.5	23.5	25.5	24.0	24.5
6	15.5	13.5	14.5	21.0	19.0	20.0	24.0	22.0	23.0	26.5	24.5	25.0
7	15.0	14.0	14.5	21.5	20.0	20.5	24.0	21.0	22.5	25.5	24.5	25.0
8	16.5	14.5	15.5	21.5	21.0	21.0	23.5	21.0	22.0	27.5	24.5	26.0
9	17.5	16.0	16.5	21.5	20.0	20.5	21.5	20.5	21.0	27.5	26.0	27.0
10	19.0	17.0	18.0	21.5	19.0	20.0	21.0	20.0	20.5	28.0	26.0	27.0
11	18.0	16.0	17.0	22.5	19.5	21.0	22.0	19.0	20.5	27.0	26.0	26.5
12	17.0	15.0	16.0	22.5	21.0	21.5	21.5	19.0	20.0	26.5	25.0	25.5
13	17.5	15.0	16.5	21.5	19.5	20.5	23.0	19.5	21.0	27.0	25.0	26.0
14	19.5	17.0	18.0	20.0	18.0	19.0	24.5	21.0	22.5	27.5	25.5	26.5
15	19.0	17.0	18.0	19.0	17.5	18.0	25.0	22.0	23.5	28.0	25.5	26.5
16	19.5	17.0	18.0	19.0	17.5	18.0	24.0	22.5	23.0	27.5	26.0	26.5
17	20.0	18.5	19.0	19.0	16.5	18.5	24.0	22.0	22.5	28.5	26.0	27.0
18	19.5	17.5	18.5	17.5	16.0	17.0	25.5	22.5	24.0	28.5	26.0	27.0
19	18.0	17.0	17.5	18.5	16.0	17.0	25.0	22.0	23.5	27.0	26.0	26.5
20	18.5	16.5	17.5	19.5	16.5	18.0	25.5	22.5	24.0	27.5	26.0	26.5
21	19.0	16.5	17.5	21.0	17.5	19.0	24.5	23.0	23.5	26.5	24.5	25.0
22	19.5	17.5	18.5	21.0	19.5	20.0	27.0	24.0	25.5	26.0	23.5	24.5
23	20.0	18.5	19.0	22.0	20.5	21.0	27.5	25.0	26.0	27.0	24.0	25.0
24	19.0	17.5	18.5	23.5	21.0	22.0	27.0	24.5	25.5	28.0	25.5	26.5
25	20.0	17.5	18.5	24.0	22.5	23.0	27.0	24.5	26.0	28.0	26.0	27.0
26	19.5	18.5	19.0	23.5	23.0	23.0	27.0	24.0	25.5	28.0	26.0	26.5
27	20.5	19.0	20.0	24.0	22.5	23.5	26.5	24.0	25.0	28.0	25.5	26.5
28	21.5	19.0	20.5	23.5	22.5	23.5	26.5	24.5	25.5	28.0	26.0	27.0
29	23.0	20.5	22.0	23.0	21.5	22.5	26.5	24.5	25.5	27.5	26.0	26.5
30	---	---	---	21.5	20.0	20.5	25.5	24.0	25.0	27.0	26.0	26.5
31	---	---	---	22.0	20.0	20.5	---	---	---	27.0	25.5	26.0
MONTH	23.0	13.5	18.0	24.0	16.0	20.5	27.5	19.0	23.5	28.5	23.5	26.0

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

GUADALUPE RIVER BASIN

30.

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	5.4	4.6	5.0	4.7	4.3	4.5	---	---	---	8.3	7.9	8.1
2	5.5	4.8	5.2	4.5	3.6	4.2	---	---	---	9.2	8.4	8.9
3	5.8	5.0	5.4	4.6	4.0	4.3	---	---	---	9.0	8.3	8.8
4	6.5	5.4	6.0	4.5	4.1	4.3	---	---	---	8.9	8.3	8.6
5	6.6	6.1	6.3	4.3	3.6	4.0	---	---	---	8.7	8.3	8.5
6	6.7	6.0	6.3	4.1	3.3	3.8	---	---	---	8.8	8.3	8.5
7	7.0	6.2	6.5	4.6	3.9	4.2	---	---	---	9.1	8.5	8.9
8	6.8	6.2	6.5	5.8	3.8	4.4	---	---	---	8.9	8.4	8.7
9	6.3	5.7	6.0	6.2	5.1	5.8	---	---	---	9.6	8.8	9.2
10	5.9	5.3	5.6	6.3	5.8	6.1	5.3	4.9	5.1	9.9	9.0	9.5
11	5.9	4.8	5.5	7.4	6.3	6.9	5.3	4.8	5.0	9.9	9.1	9.5
12	6.5	5.2	5.9	7.3	7.0	7.1	5.0	4.7	4.8	8.9	8.2	8.6
13	6.2	5.5	5.8	---	---	---	5.2	4.6	4.9	8.8	7.7	8.2
14	6.4	5.3	5.6	---	---	---	5.2	4.7	4.9	9.1	7.8	8.5
15	5.4	4.7	5.1	---	---	---	5.6	4.4	5.2	8.3	6.4	7.5
16	5.4	4.8	5.1	---	---	---	6.4	3.7	5.5	7.7	6.6	7.3
17	5.0	3.4	4.5	---	---	---	6.2	4.5	5.9	7.9	6.7	7.3
18	5.2	4.5	4.8	---	---	---	7.9	5.2	6.5	7.8	5.4	7.2
19	5.5	4.6	4.9	---	---	---	8.1	6.0	6.8	---	---	---
20	5.4	4.5	4.8	---	---	---	7.9	7.2	7.7	---	---	---
21	6.1	5.0	5.3	---	---	---	8.5	7.8	8.2	---	---	---
22	6.5	5.4	5.8	---	---	---	8.1	7.0	7.5	---	---	---
23	6.8	5.7	6.1	---	---	---	7.1	6.6	6.9	---	---	---
24	6.0	5.3	5.6	---	---	---	6.6	6.1	6.3	---	---	---
25	5.9	5.5	5.7	---	---	---	7.0	5.9	6.2	---	---	---
26	5.7	5.0	5.6	---	---	---	7.8	7.1	7.3	---	---	---
27	5.9	4.7	5.2	---	---	---	8.3	7.8	8.1	---	---	---
28	6.2	4.6	5.6	---	---	---	8.5	8.2	8.4	---	---	---
29	6.2	5.4	5.7	---	---	---	8.3	8.1	8.2	---	---	---
30	5.7	5.2	5.4	---	---	---	8.5	8.0	8.3	---	---	---
31	5.1	4.5	4.8	---	---	---	8.4	7.9	8.2	---	---	---
MONTH	7.0	3.4	5.5	7.4	3.3	5.0	8.5	3.7	6.6	9.9	5.4	8.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	5.1	4.5	4.8	7.0	5.9	6.4	6.6	5.8	6.3
2	---	---	---	5.4	4.4	4.8	7.0	6.5	6.8	6.6	5.8	6.2
3	---	---	---	6.3	4.9	5.5	7.2	6.1	6.7	6.3	5.2	5.9
4	---	---	---	7.0	5.5	6.2	7.0	6.6	6.7	6.3	5.4	5.9
5	6.8	4.6	6.1	6.6	5.8	6.2	6.6	5.7	5.9	6.5	5.1	5.8
6	8.1	6.2	6.9	7.3	6.2	6.8	6.0	5.5	5.7	6.8	5.0	5.8
7	8.2	7.2	7.7	7.3	6.3	6.9	5.9	5.4	5.6	6.7	5.0	5.7
8	7.9	6.3	7.3	6.6	5.7	6.1	5.9	5.3	5.6	6.4	5.7	6.0
9	6.2	5.3	5.9	6.8	5.6	6.1	7.0	5.9	6.5	6.2	5.5	5.9
10	5.7	4.6	5.1	7.0	5.9	6.4	7.5	7.1	7.2	6.3	5.4	5.9
11	7.4	4.7	6.2	6.9	6.1	6.4	7.5	7.1	7.4	6.3	5.3	5.7
12	8.2	6.2	7.3	6.7	5.8	6.2	7.2	6.6	7.0	6.6	5.5	6.0
13	7.2	6.0	6.6	7.2	6.3	6.7	7.6	6.8	7.2	6.8	5.9	6.3
14	6.6	5.3	5.9	7.4	6.8	7.1	7.2	6.5	7.0	6.8	5.5	6.2
15	6.5	4.7	5.9	8.2	6.6	7.1	7.1	6.4	6.7	6.6	5.7	6.1
16	5.7	4.5	5.4	7.6	6.4	6.8	6.6	6.0	6.3	6.7	5.8	6.2
17	4.7	4.2	4.6	7.6	5.6	6.5	6.9	6.5	6.7	6.8	6.0	6.4
18	7.6	4.3	6.3	8.1	7.3	7.8	6.8	6.3	6.5	6.7	5.8	6.2
19	7.1	6.5	6.8	8.0	7.3	7.8	6.8	5.7	6.2	6.7	6.1	6.3
20	7.0	5.8	6.5	7.6	7.3	7.5	6.9	6.1	6.5	6.3	5.8	6.1
21	7.5	6.8	7.2	7.4	6.6	7.2	6.5	5.7	6.0	6.8	6.0	6.4
22	7.0	6.5	6.9	7.0	6.1	6.8	6.0	5.4	5.7	7.2	6.1	6.7
23	6.5	5.7	6.1	6.7	6.4	6.6	6.2	5.1	5.5	7.1	6.8	6.9
24	6.8	6.0	6.4	6.4	5.9	6.1	6.6	5.6	6.1	7.0	6.6	6.8
25	6.8	5.9	6.3	5.9	5.5	5.7	6.4	5.6	5.9	7.0	6.4	6.6
26	6.4	5.0	5.7	5.6	5.3	5.4	6.4	5.3	5.9	7.0	6.4	6.6
27	5.8	5.1	5.4	6.0	5.4	5.7	6.8	5.8	6.3	6.7	6.2	6.5
28	5.7	5.1	5.4	6.1	5.6	5.9	6.5	5.1	5.8	6.9	6.1	6.4
29	5.6	4.9	5.2	5.9	5.3	5.5	6.5	5.3	5.9	7.1	6.6	6.8
30	---	---	---	7.2	5.7	6.3	6.4	5.8	6.1	7.2	6.6	6.9
31	---	---	---	7.2	6.2	6.5	---	---	---	7.2	6.6	7.0
MONTH	8.2	4.2	6.2	8.2	4.4	6.4	7.6	5.1	6.3	7.2	5.0	6.3

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.2	6.3	6.6	7.3	6.2	6.7	---	---	---	7.8	7.1	7.4
2	6.9	6.2	6.5	7.3	6.2	6.7	---	---	---	7.9	7.1	7.4
3	7.0	4.2	6.3	7.5	6.6	7.0	---	---	---	8.0	7.1	7.5
4	7.2	5.9	6.8	7.4	6.6	7.0	7.5	6.9	7.2	8.3	7.2	7.6
5	7.3	7.1	7.2	7.6	6.5	7.0	7.4	6.9	7.1	8.6	7.4	7.8
6	7.4	7.1	7.2	7.3	6.4	6.8	7.7	6.7	7.1	8.5	7.3	7.8
7	7.2	6.7	6.9	7.6	6.5	7.0	8.0	6.8	7.2	8.5	7.4	7.8
8	7.0	6.0	6.6	7.3	6.4	6.8	7.7	6.6	7.1	7.8	6.9	7.4
9	7.1	6.4	6.7	7.6	6.3	6.9	7.6	6.5	7.0	7.8	6.6	7.1
10	6.9	6.3	6.6	7.6	6.8	7.1	8.0	6.6	7.2	8.0	6.7	7.2
11	7.1	6.4	6.7	7.4	6.7	7.0	8.3	6.6	7.3	8.1	6.7	7.2
12	7.3	6.6	6.9	7.0	6.4	6.8	7.7	6.6	7.1	7.4	6.7	7.0
13	7.3	6.5	6.9	6.8	6.4	6.5	7.5	5.9	6.6	7.7	6.8	7.1
14	7.5	6.5	7.0	---	---	---	7.0	5.8	6.4	7.5	6.7	7.0
15	7.4	6.5	6.9	---	---	---	6.5	5.6	6.1	7.7	6.7	7.0
16	7.6	6.4	7.0	---	---	---	6.7	5.8	6.2	7.4	6.7	6.9
17	7.6	6.5	6.9	---	---	---	6.8	5.7	6.2	7.1	4.8	6.3
18	7.6	6.6	7.0	---	---	---	6.1	5.6	5.8	6.6	4.6	5.9
19	7.8	6.6	7.1	---	---	---	6.3	5.4	5.8	6.9	6.6	6.8
20	7.6	6.6	7.0	---	---	---	6.9	5.2	6.1	7.0	6.9	6.9
21	7.4	6.4	6.8	---	---	---	6.8	6.0	6.4	7.1	6.8	7.0
22	7.3	6.5	6.8	---	---	---	6.8	5.9	6.4	7.0	6.4	6.8
23	7.3	6.4	6.8	---	---	---	6.9	5.7	6.3	7.1	6.9	7.0
24	7.2	6.4	6.7	---	---	---	7.6	6.2	6.9	7.2	7.0	7.1
25	7.3	6.2	6.6	---	---	---	7.1	5.8	6.4	7.4	7.0	7.2
26	7.3	5.4	6.4	---	---	---	7.0	5.9	6.6	7.4	7.0	7.1
27	6.6	5.7	6.2	---	---	---	7.1	6.6	6.8	7.4	7.0	7.1
28	6.8	6.2	6.5	---	---	---	7.4	6.8	7.0	7.4	7.0	7.2
29	6.8	6.3	6.5	---	---	---	7.6	6.8	7.1	7.4	7.0	7.1
30	6.9	6.3	6.6	---	---	---	7.7	7.0	7.3	7.4	7.1	7.2
31	---	---	---	---	---	---	7.8	7.1	7.4	---	---	---
MONTH	7.8	4.2	6.8	7.6	6.2	6.9	8.3	5.2	6.7	8.6	4.6	7.1

GUADALUPE RIVER BASIN

31

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX

LOCATION.--Lat 28°57'05", long 98°03'50", Karnes County, Hydrologic Unit 12100303, on left bank 23 ft downstream from bridge on Farm Road 791, 0.9 mi upstream from Scared Dog Creek, 3.6 mi southwest of Falls City, and 150.5 mi upstream from mouth.

DRAINAGE AREA.--2,113 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 1732: 1947(M). WSP 1923: Drainage area. WDR TX-87-3: 1983-84.

GAGE.--Water-stage recorder. Datum of gage is 285.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. For diversions and regulation above station, see REMARKS for Salado Creek (upper station) at San Antonio (station 08178700), Medina River at San Antonio (station 08181500), and San Antonio River near Elmendorf (station 08181800). Flow slightly regulated by Calaveras Lake on Calaveras Creek, that enters the San Antonio River downstream from the station near Elmendorf. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 26,130 acre-ft. These structures control runoff from 73.8 mi². Records provided by the San Antonio City Public Service Board show that during the current year, no water was released into Calaveras Creek from Calaveras Lake. Satellite telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1926-88), 428 ft³/s (310,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Sept. 29, 1946 (gage height, 33.80 ft, from floodmark); minimum daily, 19 ft³/s June 27, 1956.
Maximum stage since at least 1875, that of Sept. 29, 1946.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1913 reached a stage of 28.4 ft, from floodmark, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 22	2400	*2,540	*4.68				

Minimum daily discharge, 94 ft³/s Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	515	433	558	578	493	454	442	337	250	293	372	178
2	484	423	557	576	481	455	438	301	260	246	326	183
3	466	423	558	569	484	446	457	269	294	227	323	170
4	461	494	524	565	476	452	435	307	972	210	318	226
5	454	488	485	559	461	454	421	308	1300	200	220	246
6	445	483	482	546	428	448	416	295	521	213	263	237
7	448	472	477	532	433	431	359	283	392	240	260	237
8	415	472	471	533	423	438	328	278	361	238	168	184
9	400	539	469	535	428	449	326	265	361	229	149	114
10	398	1080	475	498	430	443	436	261	346	221	157	106
11	394	665	475	476	431	440	438	275	340	208	152	117
12	419	558	470	511	411	429	413	272	312	241	146	103
13	411	542	478	515	401	423	406	308	294	452	142	94
14	398	525	477	482	401	411	344	336	287	453	144	115
15	416	510	466	455	393	401	331	323	296	319	137	158
16	401	521	460	446	389	410	332	307	244	202	129	187
17	389	597	451	478	398	430	345	298	215	170	148	378
18	387	801	458	517	392	385	546	295	209	148	145	879
19	369	614	455	538	566	1000	495	252	205	144	144	1500
20	384	561	457	553	724	611	405	229	192	152	186	634
21	386	539	583	541	490	481	354	323	187	159	145	413
22	376	530	892	525	422	449	314	371	228	1250	127	345
23	381	533	1270	518	401	451	305	477	205	1830	119	295
24	400	542	994	519	385	456	290	333	180	620	129	270
25	496	550	728	514	423	435	277	301	172	399	129	243
26	425	672	674	511	429	445	261	275	159	340	268	232
27	410	717	625	509	432	430	351	249	237	363	437	224
28	422	614	595	510	436	413	374	250	425	311	267	236
29	439	789	583	503	441	419	370	246	307	428	200	229
30	439	651	614	502	---	427	295	237	418	392	174	215
31	439	---	595	507	---	436	---	236	---	334	184	---
TOTAL	13067	17338	17856	16121	12902	14252	11304	9097	10169	11232	6208	8748
MEAN	422	578	576	520	445	460	377	293	339	362	200	292
MAX	515	1080	1270	578	724	1000	546	477	1300	1830	437	1500
MIN	369	423	451	446	385	385	261	229	159	144	119	94
AC-FT	25920	34390	35420	31980	25590	28270	22420	18040	20170	22280	12310	17350

CAL YR 1987 TOTAL 609576 MEAN 1670 MAX 19000 MIN 369 AC-FT 1209000
WTR YR 1988 TOTAL 148294 MEAN 405 MAX 1830 MIN 94 AC-FT 294100

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1959. Chemical and biochemical analyses: May 1965 to September 1981, October 1986 to current year. Sediment analyses: November 1958 to February 1975.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1987 to current year.

pH: January 1987 to current year.

WATER TEMPERATURE: January 1987 to current year.

DISSOLVED OXYGEN: January 1987 to current year.

INSTRUMENTATION.--Beginning January 1987, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen at this station.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,130 microsiemens Sept. 13, 14, 15, 1988; minimum, 280 microsiemens Sept. 19, 1988.

WATER TEMPERATURE: Maximum, 32.0°C Aug. 23, 1988; minimum, 9.5°C Jan. 11, 1988.

DISSOLVED OXYGEN: Maximum, 15.6 mg/L July 12, 1988; minimum, 0.0 mg/L May 16, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,130 microsiemens Sept. 13, 14, 15; minimum, 280 microsiemens Sept. 19.

WATER TEMPERATURE: Maximum, 32.0°C Aug. 23; minimum, 9.5°C Jan. 11.

DISSOLVED OXYGEN: Maximum, 15.6 mg/L July 12; minimum, 0.2 mg/L Dec. 5.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
OCT 26...	1358	439	880	7.90	23.5	6.6	79	2.0	300	70
DEC 09...	1310	470	895	7.60	18.5	2.6	28	9.0	310	67
FEB 17...	1245	404	940	7.90	16.5	6.8	70	1.9	310	94
APR 07...	1010	367	917	7.90	21.5	6.6	75	1.4	310	88
JUN 16...	1405	244	984	8.00	28.0	6.2	79	1.1	300	93
AUG 25...	1330	122	1120	8.10	30.5	6.7	90	3.8	320	78

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 26...	86	20	71	2	6.3	228	83	89	0.40
DEC 09...	93	20	64	2	5.5	248	79	81	0.40
FEB 17...	89	21	73	2	7.0	215	98	98	0.50
APR 07...	91	21	73	2	5.5	226	97	92	0.40
JUN 16...	89	20	78	2	7.3	212	100	100	0.50
AUG 25...	90	22	96	2	8.8	238	110	120	0.40

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
OCT 26...	14	506	6.04	0.160	6.20	0.090	0.81	0.90	2.00
DEC 09...	14	506	3.21	0.690	3.90	1.60	1.1	2.7	1.90
FEB 17...	12	527	8.15	0.250	8.40	0.160	0.94	1.1	2.30
APR 07...	13	528	8.46	0.040	8.50	0.090	0.71	0.80	2.50
JUN 16...	15	537	11.0	0.040	11.0	0.050	0.95	1.0	4.70
AUG 25...	15	605	9.38	0.120	9.50	0.100	1.4	1.5	3.20

GUADALUPE RIVER BASIN

31

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	13067	934	525	18500	91	3210	94	3310	300
NOV. 1987	17338	809	460	21500	72	3390	82	3830	280
DEC. 1987	17856	841	477	23000	77	3720	85	4090	280
JAN. 1988	16121	873	494	21500	81	3540	88	3830	290
FEB. 1988	12902	907	511	17800	87	3030	91	3180	300
MAR. 1988	14252	912	514	19800	88	3370	92	3530	300
APR. 1988	11304	862	488	14900	80	2440	87	2650	290
MAY 1988	9097	974	546	13400	98	2400	98	2400	310
JUNE 1988	10169	952	534	14700	94	2590	96	2630	300
JULY 1988	11232	779	442	13400	71	2140	79	2380	260
AUG. 1988	6208	933	525	8790	91	1530	94	1570	300
SEPT 1988	8748	754	428	10100	68	1610	76	1800	260
TOTAL	148294	**	**	197000	**	33000	**	35200	**
WTD.AVG.	405	873	493	**	82	**	88	**	290

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	900	870	913	914	865	894	780	690	735	826	800	814
2	930	870	909	909	840	896	800	780	786	828	811	820
3	950	900	927	913	899	906	830	800	807	849	824	837
4	960	910	937	914	858	886	860	830	850	857	841	848
5	970	940	951	881	848	867	900	850	880	851	838	846
6	970	940	953	914	874	889	900	860	877	853	834	843
7	960	940	949	926	905	915	900	860	879	859	850	855
8	960	920	940	931	904	910	890	860	880	869	850	859
9	990	950	970	957	904	928	940	860	895	878	840	858
10	1000	980	986	928	420	766	920	890	903	878	859	874
11	1000	980	989	680	430	555	940	910	930	887	869	879
12	1000	960	976	750	680	716	970	920	942	887	859	875
13	990	960	971	830	730	775	950	920	933	878	850	869
14	980	959	968	870	820	835	950	920	938	869	850	864
15	977	941	954	890	860	872	950	920	935	887	859	876
16	974	939	952	870	810	859	930	900	916	916	878	899
17	990	971	979	870	830	857	920	890	905	906	869	885
18	988	956	971	830	710	787	940	900	924	887	869	879
19	981	950	964	760	670	698	950	870	918	897	869	883
20	985	949	961	800	770	782	870	650	793	869	831	850
21	970	947	957	830	800	809	750	506	644	884	843	856
22	964	920	936	860	830	844	666	553	620	895	876	886
23	945	917	932	860	840	854	785	666	727	928	863	904
24	947	908	931	870	840	857	863	793	818	904	868	884
25	935	884	900	850	810	833	920	850	880	900	880	887
26	900	843	874	830	770	820	917	893	906	904	883	894
27	886	844	867	850	730	798	905	885	894	908	872	893
28	885	858	868	780	710	745	893	851	874	905	872	888
29	865	843	860	780	660	747	859	833	847	938	905	923
30	878	830	866	740	610	674	850	823	840	951	904	927
31	891	871	882	---	---	---	837	810	823	975	902	939
MONTH	1000	830	935	957	420	819	970	506	855	975	800	874

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	960	899	937	956	897	935	896	864	878	---	---	940
2	938	916	927	958	927	942	876	854	865	---	---	980
3	936	894	918	960	911	925	860	820	851	---	---	1010
4	904	882	895	963	902	935	845	817	827	---	---	1070
5	921	902	916	964	925	943	856	823	833	1080	958	1010
6	947	919	937	956	926	943	1030	859	925	985	932	943
7	955	926	943	979	927	956	1020	958	994	980	953	962
8	962	931	945	970	949	958	994	941	979	984	955	973
9	941	922	933	970	930	953	991	890	938	997	955	961
10	939	919	930	930	910	923	938	852	884	1000	955	974
11	925	895	912	970	920	955	887	807	846	1020	967	976
12	942	894	925	990	960	971	840	800	814	---	---	1080
13	950	921	933	990	950	974	837	821	828	---	---	960
14	956	928	940	990	950	970	836	811	824	---	---	920
15	972	935	951	990	960	974	833	794	809	---	---	925
16	970	923	947	990	960	974	817	778	790	---	---	930
17	950	930	940	980	940	959	819	801	810	---	---	935
18	941	912	920	1040	940	991	919	734	801	---	---	940
19	953	896	927	1020	510	880	---	---	780	---	---	970
20	916	599	851	760	500	631	---	---	820	---	---	990
21	794	551	657	---	770	800	---	---	860	---	---	1010
22	844	794	820	877	825	853	---	---	875	---	---	990
23	874	825	850	883	862	871	---	---	910	---	---	1010
24	896	856	877	898	870	884	---	---	930	---	---	1030
25	908	878	893	935	908	921	---	---	943	---	---	1000
26	939	888	910	921	900	910	---	---	990	---	---	956
27	951	930	941	934	905	920	---	---	800	---	---	996
28	962	923	944	---	906	918	---	---	830	---	---	885
29	955	935	949	---	912	912	---	---	870	---	---	921
30	---	---	---	921	883	896	---	---	920	---	---	922
31	---	---	---	881	839	867	---	---	---	---	---	999
MONTH	972	551	909	1040	500	918	1030	734	867	1080	932	973
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	1040	920	981	930	846	890	---	---	900	930	900	910
2	1020	940	990	---	---	895	---	---	910	930	890	910
3	909	833	879	970	926	955	---	---	910	1000	880	900
4	851	779	812	1050	950	996	---	---	920	---	---	910
5	884	786	837	1080	1040	1060	---	---	930	990	900	950
6	938	891	917	1090	1050	1060	---	---	940	1000	880	970
7	1040	928	986	1090	970	1050	---	---	940	1010	930	990
8	1060	990	1020	1040	985	990	---	---	950	990	920	981
9	1080	1050	1060	1040	967	989	---	---	970	1030	990	1010
10	1070	1060	1070	1080	952	1060	1010	900	980	1090	1000	1060
11	1090	1060	1080	1110	968	1080	1030	1000	1020	1110	1000	1080
12	1070	1050	1070	1110	957	1070	1030	1000	1020	1080	1010	1030
13	1060	1030	1040	1110	954	1040	1030	1000	1020	1130	1010	1090
14	1040	1000	1020	1010	749	868	1080	920	990	1130	1000	1110
15	1010	991	995	---	---	805	1080	1000	1040	1130	930	1080
16	1010	950	985	---	---	765	1100	1010	1050	1020	900	990
17	1050	977	1010	---	---	746	1120	1040	1070	1020	310	724
18	1080	1010	1040	---	---	790	1080	880	900	930	530	790
19	1050	914	990	---	---	848	1030	920	976	620	280	384
20	---	---	985	---	---	889	1020	900	946	530	300	450
21	---	---	993	---	---	923	1030	920	960	580	500	524
22	---	---	1000	---	---	629	1030	920	975	730	590	631
23	---	---	995	492	289	411	1100	990	1040	730	630	701
24	---	---	1000	672	461	598	1090	1010	1000	830	690	799
25	---	---	1010	758	578	719	1110	1000	1050	920	830	888
26	---	---	1020	842	563	737	1100	990	1040	930	900	915
27	---	---	989	930	550	797	930	900	910	980	910	924
28	1100	949	1040	930	600	826	830	690	720	1010	980	986
29	1090	646	861	---	---	923	890	600	766	1000	970	970
30	855	627	778	---	---	900	830	510	703	980	920	952
31	---	---	---	---	---	926	930	600	827	---	---	---
MONTH	1100	627	982	1110	289	879	1120	510	948	1130	280	887

GUADALUPE RIVER BASIN

31

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	7.9	7.8	7.9	---	---	---	---	---	---
2	---	---	---	8.0	7.8	7.9	---	---	---	---	---	---
3	7.5	7.2	7.5	---	---	---	---	---	---	---	---	---
4	7.7	7.6	7.7	---	---	---	---	---	---	---	---	---
5	7.7	7.5	7.7	---	---	---	---	---	---	---	---	---
6	8.0	7.7	7.9	---	---	---	---	---	---	---	---	---
7	7.9	7.8	7.9	---	---	---	---	---	---	8.3	7.7	8.1
8	8.1	7.9	8.0	---	---	---	---	---	---	8.1	7.7	8.1
9	8.1	7.9	8.0	---	---	---	7.8	7.6	7.7	8.1	7.7	8.0
10	8.1	7.9	8.0	---	---	---	7.8	7.6	7.8	8.0	7.8	7.9
11	8.0	7.9	8.0	8.0	7.9	7.9	7.7	7.5	7.7	8.0	7.7	7.9
12	8.0	7.8	7.9	8.1	8.0	8.0	7.5	7.3	7.4	8.0	7.7	7.9
13	8.1	7.9	8.0	8.0	7.9	7.9	7.4	7.3	7.4	8.1	7.7	8.0
14	8.0	7.1	7.7	8.0	7.8	7.9	7.5	7.3	7.4	8.1	7.8	8.0
15	7.1	6.9	7.0	7.8	7.5	7.7	7.5	7.3	7.4	---	---	---
16	7.1	6.9	7.0	7.7	7.5	7.6	7.7	7.3	7.5	---	---	---
17	7.2	7.1	7.1	7.7	7.5	7.6	7.7	7.5	7.6	---	---	---
18	7.3	7.1	7.1	7.5	7.2	7.3	7.6	7.4	7.5	---	---	---
19	7.1	7.0	7.1	7.2	6.9	7.0	7.6	7.5	7.5	---	---	---
20	7.5	7.1	7.2	6.9	6.8	6.9	7.6	7.4	7.5	---	---	---
21	7.7	7.5	7.6	7.4	6.8	7.2	---	---	---	7.7	7.3	7.5
22	7.6	7.5	7.6	7.4	7.1	7.3	---	---	---	7.5	7.3	7.4
23	7.9	7.5	7.7	7.7	7.1	7.5	---	---	---	7.4	7.3	7.4
24	8.0	7.8	7.9	7.7	7.6	7.7	---	---	---	7.4	7.0	7.3
25	8.1	7.9	8.0	7.7	6.9	7.4	---	---	---	7.8	7.3	7.6
26	8.0	7.6	7.8	7.2	7.0	7.1	---	---	---	7.5	7.1	7.3
27	7.7	7.5	7.6	7.4	7.1	7.2	---	---	---	7.4	7.1	7.3
28	7.8	7.6	7.7	---	---	---	---	---	---	7.4	7.0	7.2
29	7.9	7.8	7.8	---	---	---	---	---	---	7.6	7.0	7.2
30	7.9	7.6	7.8	---	---	---	---	---	---	7.6	7.3	7.5
31	7.9	7.7	7.8	---	---	---	---	---	---	7.6	7.2	7.4
MONTH	8.1	6.9	7.7	8.1	6.8	7.5	7.8	7.3	7.5	8.3	7.0	7.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.7	7.3	7.5	---	---	---	---	---	---	---	---	---
2	7.8	7.4	7.7	---	---	---	---	---	---	---	---	---
3	7.6	7.0	7.3	---	---	---	---	---	---	---	---	---
4	7.8	7.4	7.6	---	---	---	---	---	---	---	---	---
5	7.7	7.3	7.5	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	7.7	7.6	7.6	---	---	---	---	---	---
10	---	---	---	7.6	6.9	7.2	---	---	---	---	---	---
11	---	---	---	7.3	7.0	7.1	---	---	---	---	---	---
12	---	---	---	7.3	6.9	7.1	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	7.8	7.0	7.5	7.7	6.9	7.3	---	---	---	---	---	---

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	7.9	7.2	7.6	---	---	---	7.9	7.5	7.7
2	---	---	---	7.6	7.0	7.2	---	---	---	7.8	7.3	7.6
3	8.6	8.0	8.3	7.4	6.9	7.1	---	---	---	7.8	7.4	7.6
4	8.2	7.7	8.0	8.0	7.2	7.4	---	---	---	8.0	7.4	7.7
5	7.7	7.2	7.5	7.5	7.0	7.2	---	---	---	8.0	7.5	7.8
6	7.6	7.0	7.2	7.4	6.9	7.1	---	---	---	8.0	7.5	7.7
7	---	---	---	7.8	7.2	7.3	---	---	---	8.2	7.4	7.8
8	---	---	---	7.8	7.2	7.4	---	---	---	7.7	7.4	7.6
9	---	---	---	7.3	7.1	7.2	---	---	---	7.6	7.1	7.4
10	---	---	---	7.4	7.1	7.3	---	---	---	7.4	7.0	7.1
11	---	---	---	8.1	7.2	7.7	---	---	---	---	---	7.1
12	---	---	---	8.3	7.9	8.1	7.8	7.4	7.6	7.7	7.2	7.3
13	---	---	---	8.1	7.7	7.9	7.6	7.3	7.5	7.5	7.1	7.3
14	---	---	---	8.2	7.7	7.9	7.8	7.4	7.6	7.8	7.4	7.6
15	---	---	---	---	---	---	7.8	7.5	7.7	7.9	7.4	7.7
16	---	---	---	---	---	---	7.7	7.6	7.6	8.1	7.6	7.8
17	7.9	7.6	7.8	---	---	---	7.8	7.4	7.6	8.1	7.1	7.6
18	7.9	7.4	7.6	---	---	---	7.7	7.4	7.6	8.1	7.7	7.9
19	8.0	7.3	7.5	---	---	---	7.7	7.3	7.6	8.0	7.4	7.6
20	8.1	7.6	7.9	---	---	---	7.5	7.2	7.4	---	---	---
21	---	---	---	---	---	---	7.7	7.0	7.4	---	---	---
22	---	---	---	---	---	---	7.8	7.3	7.5	---	---	---
23	---	---	---	---	---	---	7.9	7.4	7.6	7.5	7.1	7.3
24	---	---	---	---	---	---	8.2	7.4	7.9	7.7	7.2	7.5
25	---	---	---	---	---	---	8.1	7.4	7.7	7.8	7.2	7.5
26	---	---	---	---	---	---	7.7	7.3	7.5	7.9	7.3	7.6
27	---	---	---	---	---	---	7.6	7.1	7.3	7.7	7.3	7.6
28	---	---	---	---	---	---	7.5	7.1	7.3	7.8	7.4	7.6
29	---	---	---	---	---	---	7.6	7.1	7.4	7.7	7.3	7.5
30	8.0	7.5	7.9	---	---	---	7.5	7.1	7.4	8.0	7.2	7.7
31	---	---	---	---	---	---	7.8	7.4	7.5	---	---	---
MONTH	8.6	7.0	7.7	8.3	6.9	7.5	8.2	7.0	7.5	8.2	7.0	7.6

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	25.0	24.5	24.5	22.5	22.0	22.5	16.0	15.0	15.5	14.0	13.5	13.5
2	24.5	23.5	24.0	23.0	22.0	22.5	16.0	15.0	15.5	13.5	13.0	13.0
3	24.0	23.0	23.5	22.5	22.0	22.5	16.5	15.5	16.0	13.5	13.0	13.0
4	23.5	22.0	23.0	22.5	22.0	22.5	17.0	16.5	16.5	13.5	13.0	13.0
5	23.0	21.5	22.5	22.5	22.0	22.5	18.0	17.0	17.5	13.0	12.5	12.5
6	23.0	22.0	22.5	22.5	21.5	22.0	19.0	18.0	18.5	12.5	12.5	12.5
7	22.5	21.5	22.0	21.5	21.0	21.5	19.0	18.0	18.5	12.5	11.5	12.0
8	22.5	21.5	22.0	21.5	21.0	21.5	19.0	18.5	18.5	11.5	11.0	11.0
9	23.0	22.0	22.5	21.5	20.5	20.5	19.0	18.0	18.5	11.0	10.5	10.5
10	23.0	22.0	23.0	20.5	19.0	20.0	18.5	18.0	18.5	11.0	10.0	10.5
11	23.5	22.5	23.0	19.0	17.5	18.0	19.0	18.5	18.5	10.0	9.5	10.0
12	23.0	22.5	23.0	17.5	17.0	17.0	18.5	18.0	18.0	11.0	10.0	10.5
13	23.0	22.0	22.5	17.5	17.0	17.0	18.0	17.5	17.5	11.0	10.5	11.0
14	22.5	21.5	22.5	18.0	17.0	17.5	17.5	16.5	17.0	11.5	10.5	11.0
15	22.5	22.0	22.0	19.5	18.0	18.5	16.0	14.5	15.5	12.5	11.5	12.0
16	23.0	22.0	22.5	20.0	19.0	19.5	14.5	14.0	14.0	13.5	12.5	13.0
17	24.0	23.0	23.5	19.5	19.0	19.5	14.0	13.5	14.0	14.5	13.5	14.0
18	24.0	23.0	23.5	19.5	19.0	19.5	14.5	14.0	14.0	16.0	14.5	15.5
19	24.0	23.5	23.5	19.5	18.0	18.5	16.0	14.5	15.0	16.5	15.5	16.0
20	24.0	23.5	24.0	17.5	17.0	17.5	16.0	15.5	16.0	16.0	15.0	15.5
21	23.5	22.5	23.0	17.0	16.5	17.0	17.0	15.5	16.0	15.5	14.5	15.0
22	22.5	22.0	22.0	17.5	16.5	17.0	17.0	16.0	16.5	14.5	13.5	14.0
23	22.0	22.0	22.0	18.5	17.5	18.0	16.0	16.0	16.0	13.5	13.0	13.5
24	22.5	22.0	22.5	19.5	18.5	19.0	17.0	16.0	16.5	13.5	12.5	13.0
25	23.0	22.5	23.0	20.0	19.5	20.0	17.5	17.0	17.5	13.5	12.0	13.0
26	24.0	23.0	23.5	20.0	19.5	20.0	17.0	16.5	16.5	13.0	12.0	12.5
27	23.5	23.0	23.0	19.5	18.5	19.0	16.5	15.5	16.0	13.5	12.0	12.5
28	23.0	22.0	22.5	18.5	17.0	18.0	15.5	14.5	15.0	14.0	12.5	13.5
29	22.5	22.0	22.0	17.0	16.0	17.0	14.5	13.5	14.0	15.0	13.5	14.0
30	22.5	22.0	22.5	16.5	16.0	16.0	13.5	13.0	13.5	16.0	14.5	15.5
31	22.5	22.0	22.0	---	---	---	14.0	13.0	13.5	17.5	16.0	16.5
MONTH	25.0	21.5	23.0	23.0	16.0	19.5	19.0	13.0	16.5	17.5	9.5	13.0

GUADALUPE RIVER BASIN

31

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18.5	16.5	18.0	21.5	20.0	20.5	21.0	20.5	20.5	24.5	23.5	24.0
2	19.0	18.0	18.5	21.5	21.0	21.0	21.0	20.0	20.5	24.0	23.5	23.5
3	18.0	17.0	17.5	21.0	20.0	20.5	21.0	20.0	20.5	24.0	23.0	23.5
4	17.0	15.5	16.5	20.0	19.0	19.5	22.0	21.0	21.5	24.0	23.5	23.5
5	15.5	14.0	15.0	19.5	18.0	19.0	22.5	21.5	22.0	24.0	23.5	23.5
6	14.0	13.0	13.5	19.0	18.0	18.5	22.5	21.0	22.0	24.0	23.0	23.5
7	13.0	12.5	12.5	19.0	18.5	19.0	21.5	20.5	21.0	24.0	23.5	23.5
8	13.0	12.5	12.5	20.0	19.0	19.5	21.0	20.0	20.5	25.0	23.5	24.0
9	13.5	13.0	13.0	20.0	19.0	19.5	20.0	19.5	20.0	25.5	24.5	25.0
10	15.0	13.5	14.5	20.0	18.5	19.5	19.5	19.0	19.5	25.5	25.0	25.5
11	15.0	14.0	14.5	20.5	19.0	20.0	19.0	18.5	19.0	25.5	25.5	25.5
12	14.5	13.5	14.0	20.5	19.5	20.5	19.0	18.0	18.5	25.0	24.5	25.0
13	15.0	13.5	14.5	20.0	19.0	19.5	19.5	18.0	18.5	25.0	24.5	24.5
14	16.0	15.0	15.5	19.5	18.0	18.5	20.5	19.0	20.0	25.0	24.5	25.0
15	16.0	15.0	15.5	18.5	17.5	18.0	21.5	20.5	21.0	25.5	24.5	25.0
16	16.5	15.0	15.5	17.5	17.0	17.5	21.5	21.0	21.5	25.5	25.0	25.0
17	17.0	16.0	16.5	17.5	17.0	17.0	22.0	21.0	21.5	26.0	25.0	25.5
18	18.0	17.0	17.5	17.0	16.0	16.5	23.0	22.0	22.5	26.5	25.5	26.0
19	17.0	16.5	16.5	17.5	15.5	16.5	23.0	21.5	22.5	26.0	25.5	26.0
20	17.5	17.0	17.0	17.0	16.5	17.0	23.5	22.0	22.5	26.0	25.5	25.5
21	16.5	15.5	16.0	17.5	16.5	17.0	23.5	23.0	23.0	25.5	24.0	24.5
22	16.5	15.5	16.0	18.5	17.5	18.0	24.5	23.5	24.0	24.0	23.0	23.5
23	17.5	16.0	16.5	19.5	18.5	19.0	25.5	24.5	25.0	25.0	24.0	24.5
24	17.0	16.0	16.5	21.0	19.0	20.0	25.5	24.5	25.0	25.5	24.5	25.0
25	17.0	16.5	16.5	22.0	21.0	21.5	25.5	24.5	25.0	26.0	25.0	25.5
26	17.5	17.0	17.0	22.0	21.5	22.0	25.5	24.5	25.0	26.0	25.5	25.5
27	18.0	17.5	17.5	23.0	22.0	22.5	25.5	24.5	25.0	26.0	25.0	25.5
28	18.5	17.5	18.0	23.0	22.5	22.5	25.5	24.5	25.0	26.5	25.5	26.0
29	20.0	18.5	19.0	22.5	21.5	22.5	25.0	24.5	25.0	26.0	25.5	26.0
30	---	---	---	21.5	20.5	20.5	24.5	24.0	24.5	26.0	25.5	26.0
31	---	---	---	20.5	20.0	20.0	---	---	---	26.0	25.5	25.5
MONTH	20.0	12.5	16.0	23.0	15.5	19.5	25.5	18.0	22.0	26.5	23.0	25.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	26.5	25.5	26.0	30.5	29.0	29.5	28.5	27.5	28.0	29.0	27.5	28.5
2	27.5	26.0	26.5	30.0	29.5	30.0	28.5	27.5	28.0	29.0	27.5	28.5
3	27.5	26.5	27.0	30.5	29.5	30.0	29.0	28.0	28.5	28.5	28.0	28.0
4	27.0	26.0	26.5	30.5	29.5	30.0	29.5	28.5	29.0	28.5	28.0	28.0
5	26.0	24.5	25.0	30.0	29.5	30.0	29.5	28.5	29.5	28.0	27.0	27.5
6	24.5	24.0	24.5	30.0	29.5	29.5	30.0	28.5	29.5	27.5	26.5	27.0
7	25.5	24.5	25.0	30.0	29.0	29.5	30.5	29.0	30.0	27.5	26.0	27.0
8	26.5	25.5	26.0	30.0	29.0	29.5	31.0	29.5	30.5	27.0	26.0	26.5
9	27.0	26.5	26.5	29.5	28.5	29.0	31.5	29.5	30.5	27.5	26.0	27.0
10	27.5	27.5	27.5	29.5	28.5	29.0	31.5	30.0	31.0	27.5	26.0	26.5
11	28.0	27.5	28.0	29.0	28.5	29.0	31.0	29.5	30.5	27.5	26.0	26.5
12	28.0	27.5	28.0	30.0	28.0	29.0	31.0	30.0	30.5	27.5	26.0	26.5
13	28.0	27.5	27.5	30.5	29.0	29.5	31.0	30.0	30.5	28.5	26.0	27.0
14	27.5	27.5	27.5	30.0	29.0	29.5	31.0	29.5	30.5	28.5	27.0	27.5
15	28.0	27.5	27.5	30.0	28.5	29.5	30.5	30.0	30.5	28.0	27.0	27.5
16	28.0	27.5	28.0	30.5	29.0	30.0	31.0	30.0	30.0	27.5	26.5	27.0
17	28.5	27.0	28.0	30.5	29.0	30.0	30.5	30.0	30.0	27.0	25.0	26.5
18	28.5	27.5	28.0	31.0	29.5	30.0	30.0	29.0	29.5	27.5	26.5	27.0
19	28.5	27.0	28.0	31.0	29.5	30.0	29.5	28.5	29.0	27.0	26.5	26.5
20	28.5	27.5	28.0	30.0	29.0	29.5	29.5	29.0	29.5	27.5	26.0	27.0
21	28.5	27.5	28.0	29.5	27.5	28.5	30.5	29.0	30.0	28.0	27.0	27.5
22	29.0	27.5	28.0	29.0	26.5	28.5	31.0	29.0	30.0	28.0	27.0	27.5
23	29.0	27.5	28.5	27.5	25.5	26.5	32.0	29.5	30.5	28.0	27.5	27.5
24	29.0	27.5	28.5	28.0	27.0	27.5	31.5	29.5	30.5	28.0	27.5	27.5
25	30.0	28.5	29.0	29.0	27.5	28.0	31.0	29.5	30.5	28.5	27.5	28.0
26	30.0	28.5	29.0	29.0	28.0	28.5	30.5	29.5	30.0	28.5	27.5	28.0
27	29.5	28.5	29.0	29.5	28.5	29.0	30.5	29.0	30.0	28.0	27.0	27.5
28	30.0	29.0	29.5	29.5	28.5	29.0	30.0	29.0	29.5	27.5	27.0	27.5
29	30.0	29.0	29.5	29.0	28.5	29.0	29.5	28.5	29.0	28.0	26.5	27.5
30	30.0	28.5	29.0	29.0	28.5	28.5	29.0	28.5	29.0	28.0	25.5	27.0
31	---	---	---	28.5	28.0	28.5	29.0	28.0	29.0	---	---	---
MONTH	30.0	24.0	27.5	31.0	25.5	29.0	32.0	27.5	30.0	29.0	25.0	27.5

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.0	4.7	5.2	7.1	5.4	5.9	8.6	6.5	7.7	8.3	7.9	8.2
2	6.8	4.4	5.3	7.0	5.5	5.9	7.7	2.9	5.8	8.6	7.7	8.2
3	6.8	5.0	5.6	6.2	5.2	5.7	7.1	2.0	5.0	8.4	7.7	8.0
4	7.5	5.6	6.3	6.3	4.9	5.4	4.7	.4	2.8	9.2	7.8	8.5
5	8.2	6.0	6.7	6.3	4.6	5.1	4.6	.2	2.0	9.1	8.3	8.7
6	8.2	6.0	6.7	6.6	4.6	5.4	4.7	1.3	2.6	8.7	8.0	8.4
7	7.9	6.0	6.6	6.3	5.1	5.5	3.7	1.7	2.4	8.8	8.0	8.4
8	8.1	5.7	6.6	6.0	5.0	5.4	3.9	1.9	3.1	8.7	8.0	8.4
9	7.4	6.0	6.5	6.2	5.3	5.6	3.0	1.2	2.1	9.4	8.3	8.8
10	7.8	5.9	6.4	6.4	3.3	5.1	3.0	1.3	2.1	9.7	8.4	9.0
11	8.5	6.2	6.8	5.1	3.4	4.3	2.9	1.1	1.8	8.3	7.8	8.0
12	8.4	5.9	6.6	6.7	5.0	6.1	3.2	1.8	2.6	8.7	7.7	8.2
13	---	---	---	7.3	6.5	6.8	3.2	2.1	2.6	9.8	8.5	9.0
14	7.3	5.6	6.2	7.4	5.5	6.8	3.9	2.3	3.0	8.9	8.1	8.5
15	7.1	5.4	5.9	5.7	4.3	5.2	4.0	2.9	3.4	7.9	7.2	7.5
16	7.4	5.4	5.9	5.9	2.9	4.6	5.2	3.5	4.2	7.7	6.1	7.0
17	7.1	5.0	5.6	6.2	2.6	4.7	5.2	3.3	4.3	8.3	6.6	7.4
18	6.9	5.1	5.6	6.6	6.2	6.3	4.6	3.2	3.8	7.7	4.1	6.2
19	7.2	5.3	5.8	6.7	5.2	5.9	5.9	2.7	4.2	7.7	4.0	6.1
20	6.2	5.0	5.4	7.0	5.6	6.3	3.2	1.0	1.9	7.3	6.2	6.7
21	7.4	5.0	5.9	7.2	5.6	6.3	4.2	.6	2.7	8.1	5.1	6.8
22	6.8	5.8	6.1	6.4	1.6	5.3	5.3	2.5	4.2	7.2	2.3	5.3
23	6.5	5.4	5.8	5.4	.8	3.0	6.6	5.5	6.0	5.4	.7	3.2
24	7.1	5.5	6.1	4.9	.5	3.2	6.6	3.3	4.6	8.3	3.7	6.2
25	6.8	5.9	6.3	6.3	1.0	4.7	5.7	2.6	4.5	8.6	5.7	6.9
26	7.0	5.4	6.0	6.2	2.6	5.1	6.2	5.2	5.7	8.6	6.2	7.3
27	6.3	4.8	5.3	5.4	2.0	3.6	6.9	5.4	6.3	9.0	6.7	7.7
28	7.3	5.3	5.8	5.1	3.3	4.1	8.1	6.8	7.5	8.6	6.2	7.2
29	6.9	5.5	5.9	8.0	5.3	6.6	8.7	8.1	8.2	9.0	5.3	7.0
30	6.3	5.1	5.6	7.7	6.0	6.8	8.6	8.3	8.5	8.3	4.9	6.5
31	6.6	5.4	5.8	---	---	---	8.5	7.6	8.1	7.0	3.1	5.1
MONTH	8.5	4.4	6.0	8.0	.5	5.4	8.7	.2	4.3	9.8	.7	7.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.1	3.0	4.7	7.9	5.7	7.0	6.0	4.0	5.2	6.2	5.2	5.6
2	6.0	3.5	5.0	---	---	---	6.5	5.0	5.6	6.0	5.5	5.8
3	6.2	4.6	5.7	7.9	6.0	6.8	5.9	5.0	5.5	6.5	5.6	6.0
4	7.0	6.1	6.7	7.4	5.6	6.4	5.9	4.8	5.2	6.7	5.8	6.2
5	7.2	5.7	6.2	7.6	5.7	6.5	5.9	4.6	5.2	6.8	6.0	6.3
6	8.8	6.8	7.8	8.0	5.8	6.8	6.7	5.0	5.7	6.9	6.0	6.3
7	8.3	7.9	8.1	7.8	5.7	7.0	6.9	6.0	6.4	---	---	---
8	8.3	7.6	7.9	7.5	5.3	6.6	6.5	5.8	6.2	---	---	---
9	8.1	7.1	7.8	7.3	5.7	6.4	6.5	5.7	6.0	---	---	---
10	9.6	7.9	8.6	7.6	6.1	6.7	6.8	5.7	6.2	---	---	---
11	10.0	8.8	9.2	6.9	5.6	6.3	7.1	5.8	6.3	---	---	---
12	8.8	7.2	7.9	7.0	5.1	6.2	7.8	6.4	7.2	---	---	---
13	8.5	7.0	7.7	7.2	5.8	6.5	8.3	7.2	7.5	7.0	6.3	6.5
14	9.8	7.6	8.8	7.8	6.5	7.0	8.1	7.0	7.5	7.0	6.1	6.5
15	10.0	8.9	9.3	7.6	6.6	7.1	---	---	---	7.1	6.0	6.4
16	10.9	9.0	9.8	7.5	6.5	7.1	7.3	6.5	7.0	7.3	6.1	6.6
17	9.8	6.8	7.9	7.7	6.8	7.3	---	---	---	7.6	6.5	6.8
18	8.4	7.1	7.5	7.9	7.1	7.5	7.4	6.3	6.7	---	---	---
19	7.5	6.6	7.1	7.7	3.3	6.2	6.7	5.5	6.1	7.4	6.5	6.8
20	5.8	4.1	5.0	6.2	3.3	5.0	6.0	5.2	5.5	7.3	6.5	6.8
21	6.4	4.1	5.2	7.0	6.0	6.4	6.3	5.4	5.8	7.2	6.1	6.7
22	8.3	6.0	7.1	7.6	5.9	6.7	6.0	5.2	5.6	6.2	5.5	5.9
23	7.5	5.5	6.7	7.0	5.2	6.2	6.3	5.3	5.7	7.0	6.3	6.6
24	8.8	6.8	7.6	7.4	4.9	6.2	6.5	5.4	5.8	7.2	6.0	6.5
25	8.9	7.5	7.9	5.5	4.4	5.0	6.5	5.1	5.7	7.2	5.9	6.3
26	8.1	7.1	7.7	5.9	4.5	5.2	6.4	5.3	5.8	---	---	---
27	7.7	6.5	7.1	6.3	4.4	5.4	6.8	5.5	6.0	---	---	---
28	7.7	6.7	7.2	5.7	4.3	5.1	6.8	5.6	6.0	---	---	---
29	7.9	5.8	6.9	5.7	4.6	5.3	6.2	5.4	5.8	---	---	---
30	---	---	---	6.4	5.5	5.9	6.2	5.4	5.7	---	---	---
31	---	---	---	6.5	5.8	6.0	---	---	---	---	---	---
MONTH	10.9	3.0	7.3	8.0	3.3	6.3	8.3	4.0	6.0	7.6	5.2	6.4

GUADALUPE RIVER BASIN

31

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1				---	---	---	6.4	5.6	5.9	6.9	5.5	5.8
2				6.1	4.9	5.3	6.9	5.8	6.3	6.6	5.8	6.1
3				6.0	4.9	5.3	6.8	6.0	6.4	6.5	5.9	6.2
4				5.6	4.9	5.2	6.9	6.4	6.6	6.5	6.1	6.3
5				6.2	5.1	5.5	6.6	5.9	6.2	6.8	6.1	6.4
6				6.3	5.2	5.7	6.8	5.9	6.3	7.2	6.4	6.8
7				6.4	5.5	5.8	7.2	6.1	6.5	7.3	6.4	6.9
8				6.4	5.6	5.8	7.4	6.1	6.5	7.8	6.4	6.9
9				6.3	5.4	5.8	7.3	6.0	6.4	8.8	6.8	7.3
10				8.4	6.4	7.2	7.7	6.2	6.6	9.2	6.8	7.5
11				13.3	8.3	11.0	7.8	6.4	6.9	9.6	6.8	7.8
12				15.6	13.4	14.2	8.4	6.5	7.0	9.3	7.0	8.1
13				---	---	---	7.2	5.9	6.4	10.3	6.8	8.1
14				---	---	---	6.8	6.2	6.4	9.6	7.0	7.9
15				---	---	---	7.0	6.2	6.4	8.3	7.2	7.7
16				---	---	---	7.8	6.1	6.5	---	---	---
17				---	---	---	7.2	6.4	6.6	6.9	5.0	6.3
18				---	---	---	---	---	---	6.6	4.8	6.3
19				---	---	---	8.0	6.2	6.7	4.6	2.8	3.8
20				---	---	---	7.3	6.3	6.7	5.0	4.0	4.6
21				---	---	---	7.5	6.2	6.6	5.1	4.8	4.9
22				---	---	---	7.7	5.9	6.5	5.5	4.9	5.2
23				---	---	---	12.7	5.9	8.6	5.6	5.3	5.5
24				---	---	---	8.3	6.2	6.9	5.7	5.3	5.5
25				---	---	---	7.2	5.6	6.5	5.7	5.3	5.5
26				---	---	---	6.7	5.2	6.0	6.0	5.5	5.7
27				---	---	---	5.5	4.5	5.0	5.8	5.4	5.7
28				6.2	5.7	6.0	5.1	4.3	4.7	6.2	5.8	6.0
29				6.6	5.9	6.2	5.3	4.1	4.7	6.6	5.8	6.0
30				6.3	5.8	6.1	5.8	4.3	4.9	6.8	5.9	6.2
31				6.2	5.6	5.9	6.2	5.4	5.6	---	---	---
MONTH				15.6	4.9	6.7	12.7	4.1	6.3	10.3	2.8	6.3

08183900 CIBOLO CREEK NEAR BOERNE, TX

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

DRAINAGE AREA.--68.4 mi².

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

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

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

REMARKS.--Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 8,850 acre-ft. These structures control runoff from 34.0 mi². Six observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 29.1 ft³/s (5.78 in/yr), 21,080 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0330	*405	*3.55				

Minimum daily discharge, 0.38 ft³/s Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	1.4	6.3	9.3	6.6	8.6	5.0	8.3	2.2	1.5	1.2	.87
2	3.9	1.4	5.9	8.5	6.6	7.6	4.9	7.8	2.6	1.5	3.0	.93
3	3.6	1.2	6.0	8.6	6.6	7.3	4.6	7.8	35	1.3	3.4	1.0
4	4.5	1.2	5.9	9.1	6.6	6.8	4.6	7.0	4.7	1.3	2.2	1.0
5	4.2	1.1	5.8	8.3	6.8	6.3	4.9	6.2	3.4	1.4	1.8	.82
6	3.9	1.0	6.0	9.1	6.5	5.8	5.3	5.6	2.8	1.4	1.5	1.2
7	3.7	.89	6.2	9.4	6.3	5.9	5.5	5.2	2.4	1.3	1.5	1.1
8	3.5	52	5.9	8.9	6.2	5.6	6.8	6.1	2.0	1.2	1.3	.92
9	3.0	5.5	5.3	8.4	6.4	5.5	7.8	5.9	1.5	1.2	1.5	.79
10	3.1	2.6	5.3	8.0	6.2	5.1	7.9	5.0	1.4	1.5	1.7	.54
11	2.8	2.3	5.5	7.8	6.3	5.0	8.6	5.3	1.4	2.0	1.3	.63
12	2.5	2.2	5.2	7.8	6.0	5.6	7.7	6.5	1.3	2.4	1.2	.73
13	2.3	2.4	5.0	7.8	5.5	5.3	6.8	4.8	1.1	1.8	1.2	.70
14	2.2	2.2	4.7	7.5	5.5	4.9	6.6	4.1	1.0	1.4	.98	.60
15	2.1	2.2	5.8	7.4	5.9	4.8	6.8	3.8	1.1	1.1	1.0	.48
16	2.1	5.4	5.0	8.0	5.5	4.7	6.9	3.7	1.1	.94	1.2	.70
17	2.0	3.0	5.1	8.3	5.5	50	9.4	3.9	1.1	.90	2.2	5.9
18	1.9	2.9	6.1	8.3	7.3	13	8.9	3.6	1.4	.74	1.2	4.2
19	1.8	2.9	27	8.2	8.0	9.9	8.3	3.2	1.5	.71	.85	1.3
20	2.1	2.8	14	7.6	7.2	8.5	7.3	4.3	1.4	.85	.75	.83
21	3.3	2.6	13	7.1	6.7	7.4	6.8	6.4	1.2	1.1	.83	.58
22	4.0	2.6	13	6.7	6.3	6.6	6.8	3.2	1.3	1.1	.81	.38
23	5.4	2.5	12	6.7	6.0	6.3	6.7	2.5	1.3	1.1	.82	.47
24	5.6	2.5	12	6.6	6.0	7.4	6.4	2.2	1.1	.94	.90	.50
25	4.0	55	12	6.6	5.7	6.2	6.7	2.3	1.4	.84	.94	.74
26	2.8	7.7	23	6.3	5.5	6.2	7.5	2.3	18	.71	.70	.92
27	2.8	8.1	22	6.0	5.7	5.6	7.3	2.6	8.3	.77	.56	.94
28	2.5	7.0	17	6.1	6.8	5.8	7.9	3.5	7.5	.71	.76	.88
29	2.3	6.4	14	6.0	7.3	5.8	8.6	3.1	2.3	.62	.66	1.4
30	2.0	6.5	12	6.4	---	5.3	9.5	2.9	1.6	.69	.71	4.6
31	1.7	---	11	6.6	---	5.0	---	2.7	---	.95	.84	---
TOTAL	96.1	197.49	303.0	237.4	183.5	243.8	208.8	141.8	114.4	35.97	39.51	36.65
MEAN	3.10	6.58	9.77	7.66	6.33	7.86	6.96	4.57	3.81	1.16	1.27	1.22
MAX	5.6	55	27	9.4	8.0	50	9.5	8.3	35	2.4	3.4	5.9
MIN	1.7	.89	4.7	6.0	5.5	4.7	4.6	2.2	1.0	.62	.56	.38
AC-FT	191	392	601	471	364	484	414	281	227	71	78	73
CFSM	.05	.10	.14	.11	.09	.11	.10	.07	.06	.02	.02	.02
IN.	.05	.11	.16	.13	.10	.13	.11	.08	.06	.02	.02	.02

CAL YR 1987 TOTAL 24817.39 MEAN 68.0 MAX 2110 MIN .89 AC-FT 49230 CFSM .99 IN. 13.50
WTR YR 1988 TOTAL 1838.42 MEAN 5.02 MAX 55 MIN .38 AC-FT 3650 CFSM .07 IN. 1.00

GUADALUPE RIVER BASIN

32

08185000 CIBOLO CREEK AT SELMA, TX

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

DRAINAGE AREA.--274 mi².

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

REVISED RECORDS.--WSP 1923: Drainage area.

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

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

AVERAGE DISCHARGE.--42 years, 16.1 ft³/s (11,660 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--No flow during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CAL YR 1987 TOTAL 31416.94 MEAN 86.1 MAX 9550 MIN .00 AC-FT 62320
WTR YR 1988 TOTAL 0.00 MEAN .00 MAX .00 MIN .00 AC-FT .0

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX

LOCATION.--Lat 29°00'50", long 97°55'48", Karnes County, Hydrologic Unit 12100304, on right bank at downstream side of pier of bridge on State Highway 123, 5.7 mi northeast of Falls City, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--827 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 733: 1931. WSP 1058: 1935. WSP 1562: 1931(M), 1933. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 264.28 ft above National Geodetic Vertical Datum of 1929. Nov. 4, 1930, to Aug. 4, 1940, water-stage recorder at site 1,600 ft upstream at datum 0.56 ft higher. Aug. 5 to Sept. 13, 1940, nonrecording gage at present site and datum.

REMARKS.--Records good. There are several diversions for irrigation above station. Much of the base flow is effluent from the Carrizo Sands in the vicinity of Sutherland Springs. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 16,620 acre-ft. These structures control runoff from 62.9 mi². Satellite telemeter at station.

AVERAGE DISCHARGE.--58 years, 123 ft³/s (89,110 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,600 ft³/s July 6, 1942 (gage height, 34.45 ft); maximum gage height, 35.44 ft Sept. 28, 1973; no flow July 30, 31, Aug. 4-22, 1956, and Aug. 1, 1971. Maximum stage since at least 1890, that of Sept. 28, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--In October 1913, a stage of 35 ft occurred (discharge, about 35,000 ft³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 21	1200	*487	*4.49				

Minimum daily discharge, 11 ft³/s Aug. 21, Sept. 3, 4, 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	34	44	45	39	41	34	32	19	47	40	13
2	41	34	42	45	39	41	33	28	19	36	28	12
3	38	33	41	46	39	40	32	29	105	29	25	11
4	36	34	40	45	39	38	31	29	60	26	23	11
5	36	34	40	44	38	39	31	27	64	28	22	15
6	38	33	41	47	39	39	31	26	59	33	21	13
7	37	32	44	46	39	37	30	25	43	25	21	14
8	37	35	41	45	39	38	30	24	36	22	19	14
9	37	41	41	45	40	37	31	22	32	22	17	13
10	35	37	41	45	41	36	33	23	28	21	17	13
11	34	46	40	44	42	35	31	23	27	21	17	12
12	33	43	40	44	40	35	31	24	27	22	16	12
13	34	38	40	44	40	34	31	23	26	21	17	11
14	34	36	41	43	40	33	29	22	25	30	15	12
15	34	36	41	43	41	33	27	22	24	32	16	14
16	35	41	40	44	41	34	32	22	23	25	14	15
17	34	42	41	44	42	38	38	22	21	22	12	19
18	35	38	43	43	42	80	34	22	19	19	12	18
19	34	38	53	42	54	47	33	24	18	18	14	17
20	35	37	80	45	53	51	32	22	17	18	12	21
21	35	35	116	43	49	44	30	65	16	159	11	29
22	36	35	89	43	46	42	29	36	16	37	12	24
23	40	36	65	42	44	41	27	27	19	21	12	20
24	40	38	57	42	43	40	25	26	18	52	12	21
25	37	40	53	41	42	39	24	26	17	37	13	21
26	38	39	50	37	41	38	24	24	16	30	13	18
27	40	47	48	38	40	38	23	22	31	26	13	16
28	36	40	48	38	40	37	23	20	22	23	20	14
29	34	42	46	38	40	35	29	19	20	21	18	13
30	33	47	44	38	---	34	92	18	44	19	15	13
31	34	---	43	39	---	34	---	18	---	22	14	---
TOTAL	1128	1141	1533	1328	1212	1228	960	792	911	964	531	469
MEAN	36.4	38.0	49.5	42.8	41.8	39.6	32.0	25.5	30.4	31.1	17.1	15.6
MAX	48	47	116	47	54	80	92	65	105	159	40	29
MIN	33	32	40	37	38	33	23	18	16	18	11	11
AC-FT	2240	2260	3040	2630	2400	2440	1900	1570	1810	1910	1050	930

CAL YR 1987 TOTAL 127316 MEAN 349 MAX 11200 MIN 32 AC-FT 252500
WTR YR 1988 TOTAL 12197 MEAN 33.3 MAX 159 MIN 11 AC-FT 24190

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1961 to current year. Chemical and biochemical analyses: December 1969 to current year. Sediment analyses: 1960, November 1965 to May 1975.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURE: October 1968 to current year.

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,270 microsiemens May 20, 21, 1971; minimum, 115 microsiemens Dec. 22, 23, 1986.

WATER TEMPERATURE: Maximum daily, 34.0°C July 31, Aug. 8, 9, 1980; minimum, 0.0°C Dec. 25, 26, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,580 microsiemens Mar. 20; minimum, 300 microsiemens July 21, 22.

WATER TEMPERATURE: Maximum, 32.5°C Aug. 8, 10, 11, and 24; minimum, 5.0°C Jan. 10, 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 18...	0900	48	1240	8.10	17.0	8.4	87	1.1	390	120
JAN 11...	0950	49	1200	8.60	4.0	13.8	104	0.9	390	150
MAR 07...	1120	40	1250	8.10	18.0	8.2	87	2.2	400	170
MAY 03...	1125	32	1330	7.90	21.0	6.8	77	9.3	370	150
JUL 11...	1245	22	1300	8.10	27.0	6.9	87	2.2	350	130
AUG 25...	1130	11	1360	8.10	29.0	6.2	81	1.2	370	150

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 18...	120	23	120	3	6.8	276	190	120	0.40
JAN 11...	120	23	120	3	7.0	240	220	130	0.30
MAR 07...	120	25	140	3	7.4	230	230	150	0.30
MAY 03...	110	22	130	3	8.2	220	230	150	0.40
JUL 11...	100	24	140	3	8.2	224	230	160	0.40
AUG 25...	110	24	140	3	8.2	220	240	160	0.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV 18...	12	758	1.77	0.030	1.80	0.130	1.2	1.3	0.500
JAN 11...	6.4	771	--	<0.010	2.50	0.030	0.37	0.40	0.370
MAR 07...	17	828	1.56	0.040	1.60	0.070	0.63	0.70	0.320
MAY 03...	14	797	0.960	0.040	1.00	0.210	0.49	0.70	0.530
JUL 11...	18	815	0.780	0.020	0.800	0.060	0.54	0.60	0.460
AUG 25...	20	834	0.390	0.010	0.400	0.070	0.83	0.90	0.390

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	1128	1210	749	2280	140	424	200	618	360
NOV. 1987	1141	1220	753	2320	140	431	200	629	360
DEC. 1987	1533	1180	731	3030	130	558	200	816	350
JAN. 1988	1328	1260	779	2790	150	526	210	762	370
FEB. 1988	1212	1300	808	2640	150	506	220	728	380
MAR. 1988	1228	1330	826	2740	160	529	230	758	380
APR. 1988	960	1290	803	2080	150	399	220	574	370
MAY 1988	792	1310	814	1740	160	335	230	481	380
JUNE 1988	911	1170	725	1780	130	330	200	482	340
JULY 1988	964	1030	633	1650	110	291	170	434	310
AUG. 1988	531	1220	755	1080	140	202	200	294	360
SEPT 1988	469	1240	770	975	140	183	210	266	360
TOTAL	12197	**	**	25100	**	4710	**	6840	**
WTD.AVG.	33	1230	763	**	140	**	210	**	360

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1110	908	1050	1250	1220	1240	1200	1190	1190	1240	1210	1220
2	1170	1110	1140	1260	1220	1240	1190	1190	1190	1240	1220	1230
3	1210	1170	1180	1250	1220	1230	1200	1190	1200	1230	1220	1230
4	1230	1200	1210	1250	1220	1230	1230	1200	1210	1230	1210	1220
5	1260	1220	1230	1250	1210	1230	1240	1230	1240	1230	1200	1220
6	1500	1270	1410	1240	1210	1220	1240	1230	1240	1240	1220	1230
7	1430	1230	1320	1230	1210	1230	1240	1220	1230	1240	1220	1240
8	1230	1220	1220	1240	1170	1220	1230	1210	1220	1250	1230	1250
9	1220	1200	1210	1230	1200	1220	1240	1220	1230	1270	1240	1260
10	1210	1200	1200	1220	1190	1200	1220	1210	1220	1270	1260	1260
11	1200	1190	1190	1200	1170	1190	1220	1210	1220	1270	1250	1260
12	1200	1180	1190	1230	1170	1200	1230	1220	1230	1280	1270	1270
13	1210	1190	1200	1190	1160	1170	1240	1230	1240	1290	1270	1270
14	1210	1190	1200	1210	1170	1190	1240	1230	1240	1280	1260	1270
15	1220	1200	1210	1230	1200	1220	1250	1240	1250	1290	1260	1270
16	1220	1210	1220	1240	1210	1220	1250	1240	1250	1290	1280	1280
17	1230	1210	1220	1230	1210	1220	1260	1240	1250	1290	1260	1280
18	1230	1220	1220	1210	1200	1200	1280	1260	1270	1290	1260	1280
19	1220	1210	1220	1220	1200	1210	1280	1240	1270	1300	1260	1280
20	1220	1210	1220	1250	1200	1240	1260	1170	1230	1280	1240	1260
21	1220	1200	1210	1240	1200	1230	1160	927	1050	1240	1210	1230
22	1220	1200	1210	1220	1200	1210	1100	1020	1060	1230	1210	1230
23	1210	1180	1200	1230	1220	1230	1140	1030	1070	1250	1210	1230
24	1220	1190	1210	1240	1230	1240	1170	1140	1160	1250	1230	1240
25	1220	1190	1210	1250	1230	1240	1150	1130	1140	1260	1230	1240
26	1220	1200	1210	1240	1210	1230	1170	1150	1160	1270	1240	1250
27	1250	1200	1230	1220	1180	1200	1170	1150	1160	1280	1260	1270
28	1220	1190	1200	1340	1140	1220	1170	1140	1160	1290	1260	1280
29	1210	1190	1210	1220	1210	1210	1170	1140	1160	1300	1270	1290
30	1220	1200	1210	1220	1190	1200	1190	1170	1180	1310	1280	1300
31	1230	1210	1230	---	---	---	1220	1190	1200	1340	1300	1320
MONTH	1500	908	1210	1340	1140	1220	1280	927	1200	1340	1200	1260

GUADALUPE RIVER BASIN

32^F

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1340	1300	1330	1320	1310	1310	1400	1310	1350	1100	731	896
2	1340	1310	1320	1320	1290	1310	1380	1300	1340	1260	1050	1200
3	1320	1290	1300	1310	1290	1300	1370	1300	1350	1370	1180	1280
4	1310	1280	1290	1300	1280	1290	1380	1310	1340	1390	1230	1350
5	1310	1290	1300	1320	1290	1310	1390	1320	1360	1470	1280	1400
6	1310	1300	1300	1330	1310	1320	1390	1330	1370	1420	1190	1290
7	1310	1290	1300	1340	1320	1330	1370	1300	1350	1380	1330	1340
8	1350	1310	1320	1340	1330	1330	1400	1310	1360	1420	1300	1350
9	1340	1310	1330	1360	1330	1340	1390	1320	1370	1410	1350	1370
10	1340	1290	1320	1330	1320	1330	1390	1350	1370	1420	1360	1410
11	1330	1280	1310	1360	1330	1340	1380	1310	1340	1430	1290	1360
12	1310	1280	1300	1370	1360	1360	1340	1240	1320	1410	1340	1390
13	1310	1280	1300	1370	1340	1360	1360	1280	1320	1430	1250	1340
14	1340	1290	1320	1370	1340	1350	1350	1300	1320	1450	1370	1400
15	1340	1290	1320	1370	1350	1360	1370	1290	1320	1460	1370	1420
16	1330	1280	1310	1380	1360	1380	1370	1260	1320	1460	1400	1430
17	1330	1310	1320	1400	1360	1380	1350	1270	1310	1440	1420	1430
18	1340	1310	1330	1390	1190	1320	1370	1250	1310	1430	1410	1420
19	1320	1290	1310	1220	1140	1180	1350	1230	1320	1430	1410	1420
20	1290	1210	1250	1580	1230	1430	1330	1110	1270	1420	1380	1400
21	1250	1230	1240	1500	1200	1280	1370	1200	1300	1390	822	1020
22	1250	1230	1240	1300	1240	1270	1370	1220	1290	1210	1030	1120
23	1290	1250	1270	1320	1290	1300	---	---	1300	1310	1110	1260
24	1310	1290	1300	1330	1310	1320	1380	1270	1330	1340	1290	1310
25	1320	1290	1300	1360	1280	1330	1410	1260	1340	1370	1230	1340
26	1330	1310	1320	1370	1300	1350	1420	1280	1350	1410	1270	1370
27	1320	1300	1310	1360	1330	1350	1420	1310	1370	1450	1410	1430
28	1310	1290	1300	1370	1310	1350	1420	1110	1250	1440	1340	1420
29	1310	1280	1300	1380	1310	1340	1420	880	1330	1420	1380	1410
30	---	---	---	1370	1320	1340	1360	741	941	1440	1420	1430
31	---	---	---	1400	1300	1360	---	---	---	1480	1440	1460
MONTH	1350	1210	1300	1580	1140	1330	1420	741	1320	1480	731	1340

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	1520	1470	1500	1080	986	1040	1240	1200	1220	1220	1180	1200
2	1540	1510	1520	1020	994	1010	1200	1070	1120	1240	1210	1230
3	1500	439	935	1020	985	1010	1130	1070	1090	1250	1230	1250
4	1080	536	820	1070	1020	1050	1160	1130	1140	1260	1240	1250
5	1190	1090	1130	1150	1070	1110	1170	1140	1150	1320	1260	1290
6	1140	983	1040	1210	1130	1160	1180	1140	1160	1350	1310	1330
7	1040	964	998	1200	1140	1180	1170	1140	1160	1340	1280	1310
8	1150	1040	1100	1210	1120	1150	1160	1130	1140	1310	1280	1290
9	1220	1150	1180	1250	1200	1220	1150	1110	1140	1320	1290	1300
10	1250	1210	1230	1290	1240	1270	1190	1150	1170	1320	1290	1300
11	1230	1150	1190	1300	1280	1290	1220	1190	1210	1320	1310	1310
12	1190	1110	1130	1290	1270	1270	1240	1210	1230	1320	1310	1320
13	1260	1160	1210	1270	1210	1250	1250	1230	1240	1320	1310	1320
14	1320	1190	1260	1210	1170	1190	1250	1210	1240	1330	1310	1320
15	1350	1230	1300	1170	1100	1140	1230	1200	1220	1340	1310	1330
16	1340	1310	1330	1100	1070	1090	1260	1220	1240	1350	1300	1340
17	1310	1280	1290	1130	1090	1110	1270	1250	1260	1320	1280	1300
18	1300	1270	1280	1160	1120	1140	1280	1250	1260	1280	1270	1280
19	1320	1270	1300	1170	1140	1160	1340	1270	1300	1280	1250	1270
20	1330	1310	1320	1190	1160	1170	1380	1340	1360	1290	1270	1280
21	1360	1300	1340	1200	300	755	1360	1320	1330	1270	1220	1260
22	1390	1300	1370	552	300	421	1330	1310	1310	1210	1120	1160
23	1400	1330	1370	897	561	705	1340	1310	1330	1140	1120	1130
24	1420	1340	1380	1240	935	1130	1330	1320	1330	1150	1130	1140
25	1410	1370	1390	1120	1060	1080	1340	1310	1330	1140	1130	1140
26	1390	1360	1380	1090	1060	1080	1350	1330	1340	1130	1110	1120
27	1410	1380	1400	1070	1050	1060	1330	1300	1320	1150	1120	1130
28	1410	1210	1340	1090	1060	1070	1310	1280	1300	1190	1150	1170
29	1230	1170	1190	1140	1090	1110	1300	1220	1280	1240	1190	1210
30	1280	1100	1230	1170	1130	1150	1220	1180	1190	1270	1230	1250
31	---	---	---	1230	1170	1190	1190	1170	1180	---	---	---
MONTH	1540	439	1250	1300	300	1090	1380	1070	1240	1350	1110	1250

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.5	20.5	22.0	22.5	20.5	21.5	14.5	12.5	13.5	11.5	10.0	10.5
2	23.5	20.0	21.5	22.5	21.0	21.5	14.5	12.0	13.5	10.0	9.0	9.5
3	22.5	19.5	21.0	22.5	21.0	21.5	15.0	13.0	14.0	11.0	9.0	10.0
4	22.0	19.0	20.5	23.0	20.5	21.5	15.5	14.0	15.0	11.0	8.5	10.0
5	22.0	18.5	20.0	22.5	20.0	21.5	18.0	15.5	16.5	10.5	9.0	10.0
6	21.5	19.0	20.5	21.5	19.5	20.5	19.0	17.5	18.0	10.0	9.5	10.0
7	21.5	18.5	20.0	21.0	19.0	20.0	18.5	16.5	17.5	9.0	8.0	9.0
8	22.0	18.5	20.0	21.0	19.5	20.5	18.0	16.5	17.0	8.0	6.5	7.0
9	23.0	19.5	21.0	19.5	18.0	19.0	17.5	15.5	16.5	7.5	6.0	6.5
10	23.0	20.5	21.5	18.0	16.0	17.0	17.5	15.5	16.5	7.5	5.0	6.5
11	23.0	20.5	21.5	16.5	14.5	15.5	18.5	16.5	17.0	7.0	5.0	6.0
12	22.0	19.5	21.0	15.5	13.0	14.5	17.0	15.5	16.0	8.5	7.0	7.5
13	21.5	19.0	20.5	16.5	14.5	15.5	16.5	15.0	16.0	9.0	7.0	8.0
14	22.0	19.0	20.5	17.5	15.0	16.5	15.0	12.5	14.5	9.0	7.0	8.0
15	22.0	19.5	20.5	20.0	18.0	19.0	12.5	11.0	12.0	10.0	8.5	9.5
16	23.0	20.5	21.5	20.0	18.0	19.0	11.5	9.5	11.0	11.5	10.5	11.0
17	23.5	21.5	22.5	18.5	16.5	17.5	11.5	10.5	11.0	14.5	11.5	12.5
18	24.0	21.5	23.0	18.5	16.0	17.0	13.5	11.5	12.5	15.5	12.5	14.0
19	23.5	21.5	22.5	17.0	15.0	16.0	16.0	13.5	15.0	15.5	13.0	14.5
20	23.0	21.0	22.5	15.5	13.5	14.5	14.5	13.5	14.5	14.0	12.0	13.0
21	21.5	19.5	20.5	15.0	12.5	14.0	13.5	12.5	13.0	12.5	9.5	11.0
22	20.0	19.0	19.5	16.0	14.0	15.0	14.0	12.5	13.0	11.5	8.5	10.5
23	21.0	19.5	20.0	18.0	16.0	17.0	15.0	13.0	14.0	11.0	9.0	10.0
24	22.5	20.0	21.5	18.5	17.5	18.0	17.0	15.0	16.0	12.0	9.5	10.5
25	23.5	21.5	22.5	19.0	18.0	18.5	17.0	14.0	16.0	11.5	8.5	10.0
26	24.5	22.0	23.0	17.5	16.5	17.5	14.0	11.5	13.0	11.5	7.5	9.5
27	23.0	21.0	22.0	16.5	15.0	16.0	11.5	10.5	11.0	11.5	8.0	10.0
28	21.5	19.0	20.5	15.0	13.0	14.5	11.5	9.5	10.5	13.0	9.0	11.0
29	21.5	19.0	20.5	14.0	13.0	13.5	11.0	8.5	10.0	14.5	10.5	12.5
30	22.0	20.0	21.0	14.5	13.0	13.5	10.0	8.5	9.5	16.0	12.5	14.5
31	22.5	20.0	21.0	---	---	---	12.5	9.5	11.0	17.5	15.0	16.0
MONTH	24.5	18.5	21.0	23.0	12.5	17.5	19.0	8.5	14.0	17.5	5.0	10.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18.5	16.5	17.5	22.5	19.5	21.0	22.0	19.0	20.0	23.5	19.0	21.0
2	18.0	14.5	16.5	20.5	19.5	20.5	22.5	18.5	20.5	21.5	21.5	21.5
3	14.5	13.5	14.0	19.5	17.0	18.5	22.5	18.5	20.5	25.5	21.0	23.0
4	13.5	10.5	12.0	17.5	15.5	16.5	22.0	20.0	21.0	25.0	21.5	23.0
5	10.5	9.0	10.0	19.0	14.5	16.5	23.5	21.5	22.5	24.0	22.0	23.0
6	10.5	8.0	9.0	19.5	15.0	17.5	22.5	20.0	21.0	24.5	21.5	23.0
7	9.5	8.5	9.0	19.0	17.0	18.0	22.0	18.5	20.0	23.5	22.5	23.0
8	11.0	9.0	9.5	20.0	18.0	19.0	20.0	18.0	18.5	27.0	23.0	24.5
9	12.0	10.0	11.0	20.5	16.5	18.5	19.0	18.0	18.5	27.0	24.5	25.5
10	14.5	11.5	12.5	20.0	15.0	17.5	18.5	17.0	18.0	27.0	24.5	25.5
11	13.5	10.0	12.0	21.5	17.0	19.0	19.0	15.0	17.0	26.0	23.5	25.0
12	12.5	9.0	10.5	21.0	18.0	19.5	19.0	14.5	16.5	25.0	23.0	24.0
13	13.0	9.0	11.0	20.5	16.0	18.0	20.0	15.0	17.5	26.5	22.5	24.0
14	15.0	12.5	13.5	17.5	14.0	15.5	22.0	18.0	19.5	26.5	23.0	24.5
15	15.5	12.0	13.5	15.5	13.5	14.5	23.0	19.5	21.0	27.5	23.5	25.0
16	15.5	11.5	13.5	14.5	14.0	14.5	21.5	20.5	21.0	26.5	24.0	25.0
17	16.0	14.5	15.0	16.0	13.5	15.0	22.5	20.5	21.0	28.0	24.0	25.5
18	16.0	14.5	15.5	15.5	12.5	14.0	24.0	21.0	22.0	27.5	23.5	25.5
19	15.0	13.0	14.0	16.5	11.5	14.0	23.0	19.5	21.0	26.0	23.5	25.0
20	15.5	12.5	14.0	17.5	12.0	15.0	23.5	19.5	21.5	26.0	24.0	25.0
21	16.5	11.5	14.0	19.0	13.5	16.0	23.5	21.0	22.0	25.0	21.0	22.5
22	16.5	12.0	14.5	19.5	16.0	17.5	25.5	22.5	24.0	25.0	21.0	23.0
23	17.0	14.0	15.5	20.5	18.0	19.0	26.5	24.0	25.0	26.0	21.5	23.5
24	16.5	13.5	15.0	23.5	19.0	21.0	26.0	22.5	24.5	27.5	24.0	25.5
25	16.5	13.5	15.0	23.5	21.0	22.0	26.0	23.5	24.5	27.5	24.0	25.5
26	16.5	14.5	15.5	22.5	21.5	22.0	26.5	22.0	24.0	26.5	24.0	25.0
27	18.0	16.0	17.0	23.5	21.5	22.5	25.5	22.0	23.5	27.5	23.5	25.5
28	20.5	16.0	18.0	23.0	21.5	22.0	25.5	23.0	24.0	27.5	23.5	25.5
29	22.0	18.0	19.5	22.0	19.0	21.0	25.0	21.5	23.5	27.0	24.0	25.5
30	---	---	---	19.0	17.0	18.0	22.0	19.5	21.0	26.5	24.5	25.5
31	---	---	---	19.0	17.0	18.0	---	---	---	26.5	24.5	25.5
MONTH	22.0	8.0	13.5	23.5	11.5	18.0	26.5	14.5	21.0	28.0	19.0	24.5

GUADALUPE RIVER BASIN

327

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	28.0	24.5	26.0	30.5	27.5	29.0	29.0	27.0	28.0	29.5	27.0	28.0
2	29.5	25.5	27.0	30.5	28.0	29.0	30.5	27.5	28.5	28.5	26.5	27.5
3	27.0	23.5	24.5	31.0	28.5	29.5	30.0	28.0	29.0	29.0	26.5	27.5
4	25.5	22.0	24.0	30.5	28.5	29.0	30.0	28.0	29.0	28.0	26.0	27.0
5	27.0	23.5	25.0	30.0	28.0	28.5	31.0	28.0	29.5	28.0	23.5	25.5
6	27.5	23.5	25.5	29.0	27.5	28.5	32.0	28.0	30.0	28.0	23.5	25.5
7	28.5	24.0	26.0	29.5	27.0	28.0	32.0	28.5	30.0	28.5	23.5	26.0
8	29.0	25.0	27.0	29.0	27.0	28.0	32.5	28.5	30.0	28.5	24.0	26.5
9	30.0	26.0	27.5	29.5	27.0	28.0	32.0	28.5	30.5	28.0	24.5	26.0
10	29.0	27.5	28.0	29.0	27.0	28.0	32.5	28.5	30.0	27.5	23.5	25.5
11	29.5	27.0	28.0	29.0	27.0	28.0	32.5	28.5	30.0	28.0	24.0	26.0
12	29.0	25.5	27.0	30.5	27.0	28.5	32.0	28.5	30.0	29.0	25.0	27.0
13	27.5	25.0	26.5	31.5	27.5	29.0	32.0	28.0	30.0	29.5	26.5	28.0
14	29.0	25.0	26.5	31.0	28.0	29.5	32.0	28.5	30.0	30.0	26.5	28.0
15	28.5	25.5	27.0	30.5	28.0	29.0	31.0	28.5	29.5	29.5	26.0	28.0
16	28.5	25.0	26.5	31.5	28.5	29.5	32.0	27.5	29.5	27.5	26.5	27.0
17	29.5	25.5	27.0	32.0	28.5	30.0	31.5	28.0	29.5	29.0	26.5	27.5
18	29.5	25.5	27.0	32.0	28.0	30.0	29.5	28.0	28.5	29.0	26.5	27.5
19	29.0	24.5	26.5	32.0	28.0	29.5	30.0	26.5	28.0	29.5	26.5	28.0
20	29.5	25.5	27.5	29.5	28.0	28.5	31.5	28.0	29.5	30.0	27.0	28.0
21	29.5	25.5	27.5	28.0	25.0	27.0	31.5	28.0	29.5	29.5	27.0	28.0
22	29.0	25.5	27.5	29.5	26.0	27.5	31.5	28.0	29.5	29.0	27.0	28.0
23	30.0	25.5	27.5	31.0	26.5	28.5	32.0	28.0	30.0	29.0	26.5	27.5
24	30.0	25.5	27.5	31.0	27.5	29.0	32.5	28.5	30.0	29.0	27.0	28.0
25	31.0	26.5	28.5	31.5	28.0	29.5	32.0	29.0	30.5	29.5	26.5	27.5
26	30.5	26.5	28.5	31.0	28.5	29.5	32.0	28.0	30.0	29.0	25.5	27.5
27	30.0	27.5	28.5	31.5	28.5	29.5	31.5	27.5	29.5	29.0	25.0	27.0
28	30.5	27.5	28.5	30.5	28.0	29.0	31.0	27.5	29.0	28.5	25.5	27.0
29	31.0	27.0	28.5	30.5	28.0	29.0	30.5	27.5	29.0	29.0	25.5	27.0
30	30.0	27.5	28.5	28.5	27.5	28.0	30.0	27.0	28.5	26.0	24.0	25.0
31	---	---	---	29.5	27.0	28.0	30.0	27.0	28.5	---	---	---
MONTH	31.0	22.0	27.0	32.0	25.0	29.0	32.5	26.5	29.5	30.0	23.5	27.0

GUADALUPE RIVER BASIN

08186500 ECLETO CREEK NEAR RUNGE, TX

LOCATION.--Lat 28°55'12", long 97°46'19", Karnes County, Hydrologic Unit 12100303, on left bank 55 ft downstream from Farm Road 81, 215 ft to left of left end of bridge, 2.6 mi upstream from Salt Branch, 4.5 mi northwest of Runge, and 5.2 mi upstream from mouth.

DRAINAGE AREA.--239 mi².

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

Water-quality records.--Sediment records: February 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 215.03 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--26 years, 38.0 ft³/s (2.16 in/yr), 27,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 74,000 ft³/s Aug. 31, 1981 (gage height, 34.10 ft, from floodmark), from rating curve extended above 7,300 ft³/s on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood information begins with the flood in June 1903, which reached a stage of 34 ft (discharge, 71,000 ft³/s). A stage of 32 ft (discharge, 39,000 ft³/s) occurred in September 1952, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	1330	*98	*3.09				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.29	.43	.60	.38	.51	.52	e.08	e.07	.07	.10	.00
2	.10	.30	.38	.54	.38	.56	e.50	e.07	e.07	.07	.10	.00
3	.11	.34	.37	.52	.38	.61	e.48	e.06	.33	.13	.07	.00
4	.14	.23	.34	.48	.38	.73	e.46	e.05	.33	.17	.05	.00
5	.13	.30	.36	.48	.38	.75	e.44	e.05	.14	.13	.04	.00
6	.13	.27	.38	.52	.37	.72	e.42	e.05	4.7	.12	.02	.00
7	.11	.30	.41	.54	.36	.61	e.40	e.05	2.9	.12	.00	.00
8	.16	.48	.46	.54	.38	.61	e.38	e.05	1.2	.12	.00	.00
9	.17	.48	.48	.54	.38	.61	e.36	e.05	.54	.11	.00	.00
10	.13	.34	.54	.50	.43	.70	e.37	e.05	.33	.10	.00	.00
11	.09	.30	.61	.50	.42	.75	e.40	e.05	.23	.10	.00	.00
12	.10	.32	.61	.54	.39	.69	e.40	e.05	.16	.14	.00	.00
13	.09	.37	.64	.50	.39	.61	e.35	e.04	.12	.16	.00	.00
14	.08	.38	.67	.43	.44	.61	e.30	e.04	.12	.15	.00	.00
15	.09	.37	.67	.43	.51	.61	e.26	e.04	.11	.10	.00	.00
16	.10	1.6	.67	.46	.47	.61	e.30	e.04	.10	.08	.00	.00
17	.09	.16	.63	.48	.43	.68	e.45	e.04	.10	e.08	.00	.00
18	.10	.17	.61	.50	.51	.81	e.30	e.04	.09	e.08	.00	.00
19	.10	.13	.78	.52	.58	.73	e.20	e.04	.07	e.08	.00	.00
20	.09	.16	.47	.48	.63	.67	e.15	e.04	.06	5.1	.00	.00
21	.10	.19	.21	.48	.54	.67	e.12	.04	.04	.57	.00	.00
22	.12	.19	.27	.48	.54	2.4	e.10	e.04	.75	13	.00	e.00
23	.16	.26	13	.48	.51	e1.3	e.09	1.5	.19	10	.00	e.00
24	.15	.30	7.7	.48	.42	e1.0	e.08	.96	.12	2.4	.00	e.00
25	.20	.34	3.7	.48	.38	e.90	e.07	.33	.09	.59	.00	e.00
26	.24	.34	2.1	.48	.38	e.80	e.06	.18	.09	.20	.00	e.00
27	.28	.42	1.3	.44	.40	e.70	e.06	.10	.10	.09	.00	e.00
28	.28	.42	.98	.38	.50	e.65	e.06	e.09	.12	.05	.00	e.00
29	.27	.37	.86	.38	.48	e.60	e.07	e.08	.09	.04	.00	e.00
30	.30	.40	.69	.37	---	e.56	.15	e.07	.08	.04	.00	e.00
31	.31	---	.68	.37	---	e.54	---	e.07	---	.07	.00	---
TOTAL	4.67	10.52	89.52	14.92	12.74	23.30	8.30	4.44	92.64	34.26	0.38	0.00
MEAN	.15	.35	2.89	.48	.44	.75	.28	.14	3.09	1.11	.012	.00
MAX	.31	1.6	.27	.60	.63	2.4	.52	1.5	.33	.13	.10	.00
MIN	.08	.13	.34	.37	.36	.51	.06	.04	.04	.04	.00	.00
AC-FT	9.3	21	178	30	25	46	16	8.8	184	68	.8	.0
CFSM	.00	.00	.01	.00	.00	.00	.00	.00	.01	.00	.00	.00
IN.	.00	.00	.01	.00	.00	.00	.00	.00	.01	.01	.00	.00

CAL YR 1987	TOTAL	33746.96	MEAN	92.5	MAX	6580	MIN	.08	AC-FT	66940	CFSM	.39	IN.	5.25
WTR YR 1988	TOTAL	295.69	MEAN	.81	MAX	33	MIN	.00	AC-FT	587	CFSM	.00	IN.	.05

e Estimated.

GUADALUPE RIVER BASIN

32

08188500 SAN ANTONIO RIVER AT GOLIAD, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°38'58", long 97°23'04", Goliad County, Hydrologic Unit 12100303, on right bank at upstream side of bridge on U.S. Highway 183, 1.2 mi southeast of courthouse in Goliad, 11.7 mi upstream from Manahuilla Creek, and 66.5 mi upstream from mouth.

DRAINAGE AREA.--3,921 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1924 to March 1929, February 1939 to current year.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 91.08 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1929, nonrecording gage at Texas and New Orleans Railroad Co. bridge 1.1 mi (revised) upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Many diversions and regulations above station (see station 08181800). Flow is affected at times by discharge from the flood-detention pools of 36 floodwater-retarding structures with a combined detention capacity of 66,730 acre-ft. These structures control runoff from 213 mi².

AVERAGE DISCHARGE.--53 years (water years 1925-28, 1940-88), 693 ft³/s (502,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft³/s Sept. 23, 1967 (gage height, 53.7 ft, from floodmark), from rating curve extended above 26,000 ft³/s on basis of slope-area measurement of peak flow; minimum observed, 1.2 ft³/s June 16, 1956.

Maximum stage since 1869, that of Sept. 23, 1967. Flood of July 9, 1942, reached a stage of 44.9 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1913 and June 15, 1935, reached about the same stage as flood in 1942. Maximum stage since about 1800 occurred in 1869 and was several feet higher than flood of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 24	1700	*1,850	*11.08				

Minimum daily discharge, 143 ft³/s Sept. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	590	477	740	634	544	504	498	518	284	361	425	222
2	629	479	633	624	547	510	503	404	279	447	379	224
3	574	474	599	615	540	524	500	365	314	362	414	222
4	541	465	602	611	536	520	496	345	403	317	371	219
5	523	472	576	593	538	508	510	313	429	300	362	210
6	517	524	534	597	528	516	488	331	1090	281	351	232
7	507	520	525	599	510	517	469	340	988	282	276	261
8	501	522	518	558	485	508	466	332	585	286	294	258
9	502	532	517	547	486	486	424	319	460	300	300	257
10	469	524	514	577	477	491	394	314	422	290	230	231
11	456	671	518	556	481	500	392	304	408	278	203	172
12	453	924	515	535	476	492	477	310	390	271	201	154
13	450	684	510	532	476	485	482	316	379	264	199	157
14	469	601	514	530	461	470	460	311	358	280	191	151
15	465	584	500	541	450	466	452	330	340	462	188	143
16	453	581	491	529	443	457	405	358	335	473	186	150
17	463	779	488	524	438	455	398	349	337	366	185	199
18	449	618	497	532	440	465	399	333	301	270	179	223
19	438	690	498	571	447	480	410	325	275	231	187	410
20	434	765	511	587	441	587	556	323	264	210	188	1000
21	419	641	792	596	661	894	515	306	258	262	183	1030
22	430	594	1120	601	722	668	434	308	249	253	210	596
23	444	575	1130	579	557	563	385	420	242	317	192	443
24	442	571	843	572	500	534	349	434	329	1450	174	380
25	438	582	763	568	476	533	334	487	360	1180	167	336
26	461	582	699	561	463	530	319	374	244	620	167	306
27	523	597	667	551	496	514	306	340	229	456	171	285
28	466	741	656	549	501	515	292	314	221	406	265	269
29	455	689	670	548	504	498	358	291	283	407	422	260
30	464	737	647	554	---	482	448	290	435	380	323	297
31	476	---	637	541	---	485	---	287	---	465	249	---
TOTAL	14901	18195	19424	17612	14624	16157	12919	10691	11491	12527	7832	9297
MEAN	481	606	627	568	504	521	431	345	383	404	253	310
MAX	629	924	1130	634	722	894	556	518	1090	1450	425	1030
MIN	419	465	488	524	438	455	292	287	221	210	167	143
AC-FT	29560	36090	38530	34930	29010	32050	25620	21210	22790	24850	15530	18440
CAL YR 1987	TOTAL 824634	MEAN 2259	MAX 32800	MIN 419	AC-FT 1636000							
WTR YR 1988	TOTAL 165670	MEAN 453	MAX 1450	MIN 143	AC-FT 328600							

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1941 to December 1942, November 1944 to September 1946, September 1958 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to May 1982. Sediment analyses: April 1959, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1942 to September 1946, September 1958 to current year.

WATER TEMPERATURE: September 1958 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens July 22, 1978; minimum daily, 138 microsiemens Oct. 27, 1960. WATER TEMPERATURE: Maximum daily, 36.0°C June 5, 1969; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,370 microsiemens Aug. 28; minimum daily, 465 microsiemens Sept. 22. WATER TEMPERATURE: Maximum daily, 33.0°C July 4, Aug. 6, 9; minimum daily, 7.0°C Jan. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 13...	1500	448	1100	8.00	23.0	23	7.6	88	0.6	120	160
DEC 14...	1530	482	969	8.00	17.5	27	7.8	82	5.3	K320	300
MAR 01...	1135	485	1060	7.60	21.0	21	7.8	87	1.4	130	K220
APR 12...	1640	494	1150	8.10	19.5	42	8.6	94	0.9	190	300
JUN 28...	1400	219	1250	8.00	31.0	33	6.1	82	1.6	88	K47
AUG 09...	1110	307	1060	8.10	30.5	4.2	6.5	87	1.5	84	--

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 13...	370	130	110	24	99	2	6.1	247	94	140	0.50
DEC 14...	340	87	100	22	88	2	6.2	254	110	120	0.40
MAR 01...	340	97	100	22	96	2	6.7	245	110	130	0.40
APR 12...	350	120	100	25	110	3	6.4	234	130	150	0.50
JUN 28...	370	130	110	24	120	3	8.1	247	130	170	0.20
AUG 09...	330	110	96	21	98	2	7.4	215	120	130	0.40

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
OCT 13...	18	717	671	5.88	5.89	0.020	0.010	5.90	5.90	0.030
DEC 14...	17	656	644	5.01	4.93	0.290	0.270	5.30	5.20	0.720
MAR 01...	14	672	664	7.48	7.08	0.020	0.020	7.50	7.10	0.030
APR 12...	16	738	717	7.18	7.58	0.020	0.020	7.20	7.60	0.030
JUN 28...	20	787	748	5.57	2.28	0.030	0.020	5.60	2.30	0.060
AUG 09...	18	667	656	6.79	6.59	0.010	0.010	6.80	6.60	0.030

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 13...	0.020	0.77	0.80	2.20	1.90	1.80	5.5	85	103	98
DEC 14...	0.740	0.78	1.5	1.90	1.90	1.30	4.0	87	113	65
MAR 01...	0.050	0.77	0.80	6.90	2.40	1.90	5.8	62	81	94
APR 12...	0.020	1.2	1.2	2.40	2.40	1.90	5.8	103	137	94
JUN 28...	0.050	1.1	1.2	2.70	2.60	2.10	6.4	104	61	91
AUG 09...	0.050	0.57	0.60	2.40	2.40	2.00	6.1	89	74	90

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 13...	<10	3	89	<0.5	<1	<1	<3	3	3	<5
DEC 14...	--	--	--	--	--	--	--	--	--	--
MAR 01...	<10	2	73	<0.5	<1	<1	<3	1	4	<5
APR 12...	--	--	--	--	--	--	--	--	--	--
JUN 28...	20	4	96	<0.5	<1	2	<3	2	3	<5
AUG 09...	10	4	87	<0.5	<1	<1	<3	2	5	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 13...	32	2	0.3	<10	5	1	1.0	1100	<6	4
DEC 14...	--	--	--	--	--	--	--	--	--	--
MAR 01...	32	2	<0.1	<10	8	2	<1.0	1000	<6	5
APR 12...	--	--	--	--	--	--	--	--	--	--
JUN 28...	41	4	0.2	<10	4	1	<1.0	1100	10	9
AUG 09...	32	3	0.2	<10	3	1	<1.0	1000	9	21

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	14901	1140	672	27000	150	5870	120	4880	350
NOV. 1987	18195	1010	591	29000	120	5850	100	5140	320
DEC. 1987	19424	970	568	29800	110	5890	100	5260	310
JAN. 1988	17612	1050	616	29300	130	6030	110	5220	330
FEB. 1988	14624	1090	638	25200	130	5300	110	4510	340
MAR. 1988	16157	1090	640	27900	140	5900	110	5010	340
APR. 1988	12919	1170	691	24100	150	5330	130	4370	350
MAY 1988	10691	1220	718	20700	160	4700	130	3790	360
JUNE 1988	11491	1020	597	18500	130	3900	110	3320	320
JULY 1988	12527	928	543	18400	110	3650	96	3240	300
AUG. 1988	7832	1160	684	14500	150	3210	120	2630	350
SEPT 1988	9297	955	560	14100	110	2870	100	2500	300
TOTAL	165670	**	**	278000	**	58500	**	49900	**
WTD.AVG.	453	1060	623	**	130	**	110	**	330

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAO, TX--Continued
(National stream-quality accounting network)

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	1190	906	971	1070	1100	1150	1210	1240	1180	925	1100
2	1090	1080	943	994	1050	1090	1150	925	1260	1140	1010	972
3	1050	1100	852	993	1060	1080	1110	1240	1270	896	1050	1110
4	1060	1110	934	1010	1070	1110	1120	1350	1150	1040	921	1040
5	1050	1120	981	1040	1070	1100	1130	1270	1190	1180	1020	1140
6	1090	1100	1000	1040	1080	1090	1130	1270	750	1040	1060	1170
7	1120	1080	1050	1040	1060	1080	1130	1280	553	1180	997	1170
8	1140	1050	1070	1030	1060	1110	1130	1270	559	1140	1090	1140
9	1150	1050	1080	1040	1100	1120	1150	1250	619	1070	1080	1160
10	1150	1080	1080	1050	1130	1120	1180	1270	745	1020	1140	1130
11	1170	1080	1070	1040	1130	1110	1210	1300	860	1200	1200	1180
12	1160	978	1080	1070	1130	1130	1220	1290	978	1170	1220	1240
13	1190	941	1070	1080	1130	1110	1190	1270	1030	1160	1240	1280
14	1190	746	1070	1080	1120	1120	1170	1310	1090	1190	1280	1310
15	1170	925	1090	1080	1120	1140	1140	1300	1130	1160	1250	1310
16	1170	938	1100	1070	1140	1140	1140	1250	1130	1050	1310	1330
17	1160	900	1100	1080	1150	1150	1170	1230	1150	1030	1310	1350
18	1150	1000	1120	1080	1160	1150	1200	1220	1170	1070	1320	1320
19	1150	1050	1100	1100	1160	1160	1200	1230	1210	1040	1320	1310
20	1180	985	1080	1070	1180	1150	1190	1260	1240	1050	1340	1060
21	1190	946	1070	1050	1140	1040	1150	1260	1250	1060	1340	570
22	1200	904	949	1060	1020	1020	1110	1270	1260	1250	1350	465
23	1180	989	805	1040	1030	809	1130	1250	1300	1210	1340	511
24	1180	1020	685	1040	846	998	1120	1140	1300	817	1300	677
25	1190	1020	746	1060	1030	1040	1200	1030	1250	467	1310	706
26	1180	1050	834	1090	1060	1070	1240	1090	1220	560	1330	826
27	1160	1050	894	1070	1090	1040	1300	1180	1320	575	1340	898
28	1130	1020	964	1060	1080	1100	1320	1180	1310	661	1370	976
29	1130	955	982	1070	1080	1110	1330	1120	1330	774	1260	1050
30	1100	1000	989	1050	---	1140	1210	1180	1250	833	1010	1030
31	1120	---	984	1020	---	1160	---	1180	---	938	1090	---
MEAN	1140	1020	990	1050	1090	1090	1180	1220	1100	1000	1200	1050

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.5	23.5	16.0	12.0	19.5	22.5	24.0	25.0	29.5	31.0	31.0	30.0
2	22.0	22.0	14.5	11.0	19.0	21.0	23.0	24.0	28.0	29.5	30.0	28.5
3	23.5	23.5	15.0	11.0	15.5	19.0	24.0	26.0	27.5	32.0	30.5	28.0
4	24.0	23.0	18.0	11.0	14.0	18.5	24.0	28.0	28.5	33.0	30.5	30.0
5	20.5	24.0	19.0	12.0	11.0	18.5	24.0	24.0	28.5	30.0	32.5	28.5
6	23.5	22.5	20.0	12.0	11.5	20.5	22.0	26.0	28.0	30.5	33.0	27.5
7	23.5	21.5	19.5	10.5	11.0	20.5	23.0	24.0	27.0	29.5	32.5	26.0
8	20.5	22.0	18.5	9.0	11.0	21.0	20.0	26.5	29.0	31.0	32.0	27.5
9	21.0	20.5	17.5	8.0	14.0	19.5	20.5	28.0	30.0	31.0	33.0	25.5
10	21.5	19.5	19.0	7.5	16.0	19.0	19.0	27.5	29.5	30.0	32.0	27.5
11	21.0	17.5	20.5	7.0	13.0	22.0	19.0	28.0	30.0	30.5	32.5	27.0
12	21.0	17.5	18.5	11.0	14.0	21.0	20.5	25.0	29.0	32.0	31.0	28.5
13	23.0	17.0	20.0	11.5	15.0	21.0	20.0	23.5	28.0	31.0	31.5	29.0
14	20.5	19.0	17.5	10.0	16.0	20.0	24.0	27.0	30.0	30.5	31.5	27.5
15	22.0	19.5	14.5	10.0	16.0	16.0	24.0	26.0	29.0	30.0	32.0	27.0
16	24.5	19.5	12.0	12.0	17.0	16.5	23.0	28.0	29.0	31.0	31.0	27.5
17	22.5	19.0	12.5	13.5	18.0	18.0	24.5	28.0	28.0	30.0	31.0	27.5
18	24.5	19.0	15.0	14.5	16.5	18.5	24.5	29.0	29.0	32.0	28.0	27.5
19	22.0	17.0	18.0	18.0	16.0	17.5	24.0	28.0	29.5	31.0	28.0	27.5
20	24.0	15.0	15.5	14.0	16.0	18.0	25.0	26.0	31.0	29.0	28.5	28.0
21	21.0	16.0	15.0	11.5	16.5	19.0	25.5	25.0	29.0	32.0	28.0	28.5
22	20.0	18.0	14.5	11.0	18.0	19.0	27.0	26.0	31.0	30.5	28.5	28.5
23	22.5	19.0	15.0	11.0	18.5	21.0	22.0	27.5	31.0	31.0	30.0	28.5
24	21.0	20.5	18.5	12.0	18.5	22.0	28.0	26.0	30.0	31.5	30.0	27.0
25	23.0	20.0	19.0	13.0	17.0	23.5	28.0	29.5	29.5	28.5	29.5	27.5
26	23.5	18.0	14.5	14.5	18.5	23.5	27.0	28.0	31.0	30.5	31.0	29.0
27	24.5	17.0	13.0	14.0	19.5	23.5	27.0	25.5	32.0	31.0	29.5	27.0
28	21.5	18.5	14.0	11.0	20.0	24.0	26.5	28.5	32.0	30.0	28.0	28.0
29	22.5	14.5	13.0	16.0	22.5	22.0	25.0	28.0	31.0	30.5	28.5	28.5
30	23.0	16.0	14.0	14.5	---	23.0	26.0	27.5	32.0	28.0	28.0	27.5
31	23.0	---	12.5	16.5	---	21.0	---	27.5	---	30.0	29.0	---
MEAN	22.5	19.5	16.5	12.0	16.0	20.5	24.0	26.5	29.5	30.5	30.5	28.0

333

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 311 ft³/s July 7, 1968; no flow at times in 1968-74 and 1977-88.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	64	39	48	54	48	98	77	136	267	112	215
2	144	64	39	47	64	48	104	96	144	282	118	171
3	144	58	32	32	64	40	103	102	144	272	118	131
4	144	48	32	17	36	32	104	130	144	265	103	112
5	144	48	11	14	34	39	112	165	148	256	88	112
6	144	48	.00	57	48	14	105	217	164	249	80	131
7	144	48	8.0	64	48	.00	91	285	226	240	80	152
8	165	48	34	39	48	.00	87	282	234	234	82	168
9	176	48	22	16	48	.00	51	272	247	204	88	173
10	161	48	48	16	48	.00	32	265	265	192	104	178
11	144	48	41	42	36	15	41	176	225	192	104	192
12	144	40	32	55	16	16	85	74	233	192	94	164
13	144	32	32	48	16	16	112	68	240	199	96	144
14	144	32	47	29	16	23	132	96	240	214	112	144
15	138	32	80	16	16	48	164	96	240	217	133	54
16	122	32	80	16	16	64	227	88	271	192	144	.00
17	112	40	66	37	16	64	208	107	282	184	153	.00
18	106	57	32	50	6.3	52	193	185	288	198	160	.00
19	96	81	16	48	5.0	16	170	235	288	225	155	.00
20	96	67	16	48	16	16	156	244	278	224	144	.00
21	92	16	27	48	16	16	135	245	272	208	147	.00
22	97	16	32	48	23	33	148	194	280	192	160	12
23	98	16	32	48	32	58	176	193	296	201	160	69
24	80	11	32	48	32	64	176	180	288	196	169	156
25	80	16	32	48	32	94	181	198	283	166	176	184
26	86	16	32	46	32	106	179	213	272	160	176	224
27	96	16	32	.00	32	90	179	208	272	160	182	229
28	96	16	40	.00	32	80	226	202	272	160	215	247
29	96	16	48	.00	41	91	239	158	271	146	243	256
30	80	26	48	10	---	71	127	137	264	128	250	248
31	64	---	48	31	---	83	---	128	---	120	229	---
TOTAL	3721	1148	1110.00	1066.00	923.3	1337.00	4141	5316	7207	6335	4375	3866.00
MEAN	120	38.3	35.8	34.4	31.8	43.1	138	171	240	204	141	129
MAX	176	81	80	64	64	106	239	285	296	282	250	256
MIN	64	11	.00	.00	5.0	.00	32	68	136	120	80	.00
AC-FT	7380	2280	2200	2110	1830	2650	8210	10540	14300	12570	8680	7670
CAL YR 1987	TOTAL 30778.00	MEAN 84.3	MAX 212	MIN .00	AC-FT 61050							
WTR YR 1988	TOTAL 40545.30	MEAN 111	MAX 296	MIN .00	AC-FT 80420							

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX

LOCATION.--Lat 28°30'20", long 96°53'04", Calhoun-Refugio County line, Hydrologic Unit 12100204, on right bank at diversion and saltwater barrier, one orifice located upstream and one downstream, 550 ft downstream from Calhoun County Irrigation Canal intake, 0.4 mi downstream from San Antonio River, 3.5 mi north of Tivoli, and at mile 10.2. Water-quality sampling site on left bank 474 ft upstream.

DRAINAGE AREA.--10,128 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WRD TX-68-1: Drainage area.

GAGE.--Duplex water-stage recorder. Datum of gage is 0.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Many small diversions above station. Some regulation by powerplants. Upstream regulation same as that for Guadalupe River at Cuero (station 08175800) and San Antonio River at Goliad (station 08188500).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height (upstream from barrier), 13.7 ft Sept. 22, 1967; minimum, 1.2 ft July 2, 1984. Maximum gage height (downstream from barrier), 13.6 ft Sept. 22, 1967; minimum, 0.5 ft July 12, 14, 1967.

Maximum stage since at least 1936, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1936 reached a stage of 11 ft, present site and datum. Levees along the Navigation Canal from San Antonio Bay to Victoria were built in 1961 thus decreasing the flood plain.

EXTREMES FOR CURRENT YEAR.--Maximum gage height (upstream from barrier), 7.0 ft Oct. 1; minimum, 2.6 ft Apr. 13. Maximum gage height (downstream from barrier), 6.8 ft Oct. 1, 3-6; minimum, 1.2 ft Apr. 13.

DAY	GAGE HEIGHT, FEET, WATER YEAR		OCTOBER 1987		TO SEPTEMBER 1988							
	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.0	6.8	5.8	5.6	6.7	6.5	5.3	5.2	4.0	3.4	4.1	3.2
2	6.8	6.7	5.8	5.6	6.6	6.4	5.0	4.9	4.1	3.5	4.1	3.4
3	6.9	6.8	5.7	5.5	6.4	6.3	5.0	4.9	4.0	3.2	4.0	3.5
4	6.9	6.8	5.6	5.4	6.2	6.1	5.0	4.9	4.0	3.2	3.7	3.6
5	6.9	6.8	5.5	5.3	6.0	5.8	4.9	4.7	4.0	3.3	3.7	3.5
6	6.9	6.8	5.3	5.1	5.8	5.7	4.9	4.8	3.9	3.5	3.7	3.6
7	6.8	6.7	5.4	5.2	5.5	5.4	4.8	4.6	3.8	3.5	3.8	3.7
8	6.6	6.5	5.4	5.2	5.4	5.2	4.6	4.4	4.1	3.5	3.8	3.7
9	6.4	6.3	5.3	5.1	5.2	5.0	4.5	4.4	4.1	3.4	3.6	3.5
10	6.2	6.1	5.1	4.9	5.1	4.9	4.4	4.3	4.1	3.4	3.5	3.4
11	6.0	5.9	5.0	4.8	4.9	4.8	4.3	4.2	4.0	3.3	3.8	3.7
12	5.8	5.7	5.1	4.9	4.8	4.7	4.3	4.2	4.1	2.9	3.9	3.8
13	5.4	5.2	5.5	5.4	4.7	4.6	4.3	4.2	4.1	2.8	3.6	3.5
14	5.3	5.2	5.5	5.4	4.8	4.7	4.3	4.1	4.1	2.8	3.6	3.5
15	5.2	5.1	5.5	5.3	4.3	4.1	4.3	4.2	4.1	2.9	3.3	3.3
16	5.2	5.1	5.5	5.4	4.1	4.0	4.3	4.2	4.1	2.9	3.5	3.5
17	5.2	5.0	5.5	5.4	4.2	4.1	3.9	3.8	4.1	3.1	3.9	3.8
18	5.1	4.9	5.9	5.7	4.4	4.3	3.9	3.8	4.1	3.1	3.5	3.4
19	5.0	4.8	5.9	5.7	4.7	4.6	3.8	3.7	4.1	3.0	3.1	2.9
20	4.8	4.6	5.6	5.4	4.6	4.5	3.7	3.6	4.1	2.9	3.8	3.7
21	5.1	5.0	5.5	5.4	4.5	4.4	3.6	3.5	4.1	2.9	5.1	5.0
22	5.2	5.0	5.5	5.3	5.7	5.6	3.6	3.6	3.9	3.6	5.8	5.7
23	5.8	5.7	5.4	5.2	6.4	6.3	3.6	3.5	4.0	3.7	5.8	5.7
24	5.8	5.7	5.1	4.9	6.7	6.6	3.5	3.4	4.2	3.7	5.5	5.4
25	5.7	5.6	5.8	5.7	6.8	6.7	4.6	3.3	4.1	3.5	5.0	4.9
26	5.7	5.5	6.1	5.9	6.6	6.4	4.1	3.1	4.1	3.2	4.4	4.4
27	5.6	5.4	6.0	5.8	6.3	6.2	4.1	3.8	4.1	3.0	4.1	4.0
28	5.8	5.6	5.9	5.7	6.1	5.9	4.1	3.8	4.1	3.0	4.1	4.0
29	5.8	5.7	6.4	6.2	5.8	5.7	4.3	3.8	4.1	3.1	4.1	4.0
30	5.8	5.6	6.7	6.5	5.6	5.4	4.1	3.3	---	---	3.5	3.4
31	5.8	5.6	---	---	5.4	5.3	4.1	3.4	---	---	4.0	3.9
MAX	7.0	6.8	6.7	6.5	6.8	6.7	5.3	5.2	4.2	3.7	5.8	5.7
MIN	4.8	4.6	5.0	4.8	4.1	4.0	3.5	3.1	3.9	2.8	3.1	2.9

GUADALUPE RIVER MAIN STEM

335

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

DAY	GAGE HEIGHT, FEET, WATER YEAR		OCTOBER 1987		TO SEPTEMBER 1988							
	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	4.0	3.9	3.8	---	4.2	3.6	4.2	3.1	3.7	3.6	4.2	2.9
2	3.9	3.8	3.8	---	4.5	4.3	4.2	2.9	3.9	3.8	4.2	3.1
3	3.8	3.7	3.9	---	4.8	4.5	4.2	2.9	3.9	3.7	4.3	3.0
4	3.8	3.7	4.0	---	4.5	4.3	4.1	2.8	3.9	3.7	4.2	2.8
5	3.7	3.7	4.0	---	4.2	4.0	4.1	2.7	3.9	3.8	4.2	2.8
6	3.6	3.6	4.0	---	4.2	3.9	4.0	2.6	4.0	3.8	4.2	3.0
7	3.4	3.4	4.0	---	4.8	4.6	4.1	2.9	3.9	3.8	4.3	3.0
8	3.4	3.3	4.0	---	5.2	5.0	4.2	3.0	3.6	3.5	4.3	3.1
9	3.3	3.2	4.0	---	5.2	5.0	4.2	3.3	3.5	3.4	4.2	3.0
10	3.3	3.2	4.0	---	4.6	4.4	4.2	3.4	3.7	3.6	4.3	3.1
11	2.9	2.8	4.0	---	4.1	3.9	4.2	3.4	3.7	3.6	4.3	2.9
12	2.8	2.7	4.1	---	3.7	3.6	4.2	3.2	3.3	3.2	4.3	2.7
13	4.2	2.7	4.0	---	3.8	3.6	4.1	3.0	3.2	3.1	4.3	2.7
14	4.2	3.0	4.0	---	4.4	3.5	4.1	2.8	3.3	3.2	4.3	2.7
15	4.2	3.0	4.0	---	4.5	3.4	4.1	2.9	3.4	3.3	4.4	3.2
16	4.2	3.0	4.0	---	4.3	3.4	4.1	2.8	3.4	3.3	4.3	3.9
17	4.2	3.1	4.0	---	4.3	3.3	4.2	2.8	4.4	3.2	4.9	4.8
18	4.3	2.9	4.0	---	4.2	3.0	4.2	3.1	4.2	2.9	4.9	4.8
19	4.0	---	3.9	---	4.2	3.0	4.2	3.1	4.2	2.8	4.6	4.4
20	4.0	---	3.9	---	4.2	3.0	4.2	3.2	4.2	3.0	4.3	3.5
21	4.0	---	3.9	---	4.0	2.6	4.2	3.0	4.2	2.9	4.3	3.2
22	4.0	---	3.9	---	4.1	2.9	4.2	3.0	4.2	3.1	4.4	3.8
23	4.0	---	3.9	---	4.1	2.8	4.2	3.1	4.2	3.1	4.4	3.8
24	4.0	---	4.0	---	4.1	2.7	4.2	3.1	4.2	3.0	4.4	3.0
25	4.0	---	4.0	---	4.2	3.1	4.9	4.7	4.2	2.8	4.4	2.8
26	3.9	---	4.2	2.9	4.2	3.0	5.0	5.0	4.2	2.7	4.2	3.0
27	3.9	---	4.2	3.1	4.2	2.9	4.9	4.8	4.2	2.8	4.1	2.8
28	3.9	---	4.2	3.1	4.1	2.8	4.2	4.1	4.2	2.9	4.1	2.6
29	3.9	---	4.2	3.4	4.0	2.6	3.8	3.7	4.2	2.9	4.1	2.7
30	4.0	---	4.2	3.5	4.1	2.8	3.7	3.6	4.2	2.8	4.2	2.7
31	---	---	4.2	3.6	---	---	3.6	3.5	4.2	2.8	---	---
MAX	4.3	---	4.2	---	5.2	5.0	5.0	5.0	4.4	3.8	4.9	4.8
MIN	2.8	---	3.8	---	3.7	2.6	3.6	2.6	3.2	2.7	4.1	2.6

GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1965 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1965 to October 1982.

WATER TEMPERATURES: August 1965 to October 1982.

INSTRUMENTATION.--Beginning July 1965, specific conductance was recorded continuously at this station. Beginning March 1981, water temperature was recorded continuously at this station. Continuous recording of specific conductance and water temperature was discontinued October 1982.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,000 microsiemens June 1, 1971, Aug. 3, 1978; minimum daily, 159 microsiemens Apr. 28, 1980.

WATER TEMPERATURES (1966-69, 1981-82): Maximum daily, 32.0°C on many days during summer months; minimum daily 8.0°C Jan. 15, 1968.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARB WH WAT TOT FLD (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	
OCT 07...	1415	642	8.10	22.0	7.8	88	2.4	260	37	75	18	34	
DEC 02...	1541	597	8.10	15.0	8.9	87	2.0	220	40	66	14	38	
JAN 28...	1155	776	8.30	11.5	10.6	95	1.6	290	58	83	20	53	
MAR 29...	1030	816	8.10	22.5	6.9	79	1.9	270	64	80	17	61	
MAY 26...	1135	837	8.20	27.0	6.8	84	1.4	290	70	83	20	62	
JUL 28...	1330	499	7.90	30.5	6.2	82	0.8	200	32	55	15	25	
DATE		SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY WAT WH TOT FET (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT 07...	0.9	3.0	225	40	47	0.30	13	365	--	<0.010	1.80	0.020	
DEC 02...	1	4.1	183	44	49	0.30	12	337	2.34	0.060	2.40	0.050	
JAN 28...	1	3.6	232	61	71	0.40	8.0	439	2.91	0.090	3.00	0.110	
MAR 29...	2	4.1	206	75	83	0.30	13	457	2.97	0.030	3.00	0.070	
MAY 26...	2	4.4	220	71	89	0.40	16	478	3.68	0.020	3.70	0.040	
JUL 28...	0.8	3.1	167	35	31	0.30	13	278	1.69	0.010	1.70	<0.010	
DATE		NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT 07...	0.68	0.70	0.340	--	--	--	--	--	--	--	--	--	--
DEC 02...	0.55	0.60	0.810	--	--	--	--	--	--	--	--	--	--
JAN 28...	0.29	0.40	0.770	1	75	<1	<1	2	5	<5	3	0.1	
MAR 29...	0.53	0.60	0.680	--	--	--	--	--	--	--	--	--	--
MAY 26...	1.3	1.3	0.850	--	--	--	--	--	--	--	--	--	--
JUL 28...	--	1.5	0.380	3	66	1	<1	2	12	<5	1	0.2	
DATE		SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PCN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)
OCT 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	<1	<1.0	13	<0.1	7	<0.10	<1.0	<0.010	<0.1	<0.1	4.0	<0.010	
MAR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 28...	<1	<1.0	<3	0.1	<1	<0.10	<1.0	<0.010	<0.1	<0.1	5.0	<0.010	

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

COPANO CREEK MAIN STEM

08189200 COPANO CREEK NEAR REFUGIO, TX

LOCATION.--Lat 28°18'12", long 97°06'44", Refugio County, Hydrologic Unit 12100405, on right bank at downstream end of bridge on Farm Road 774, 3.6 mi upstream from Alameda Creek, 8.1 mi east of Refugio, and 11.9 mi upstream from mouth.

DRAINAGE AREA.--87.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 17.25 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Recording rain gage at station.

AVERAGE DISCHARGE.--18 years, 44.7 ft³/s (6.91 in/yr), 32,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,300 ft³/s Sept. 12, 1971 (gage height, 21.00 ft), from rating curve extended above 3,800 ft³/s; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1921, 22 ft in September 1967, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 24	0400	*199	*8.09				

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.56	1.0	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.30	.72	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.15	.50	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.06	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.02	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.0	.13	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.03	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.06	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.06	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.03	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.01	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	38	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	177	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	100	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	34	.64	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	15	2.5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	7.0	1.9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	3.7	.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	2.0	.69	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	1.0	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	377.70	9.34	3.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	12.2	.31	.097	.00	.00	.00	.00	.00	.00	.00	.00	.00
MAX	177	2.5	1.0	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	749	19	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
CFSM	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
IN.	.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1987	TOTAL 5816.98	MEAN 15.9	MAX 356	MIN .00	AC-FT 11540	CFSM .18	IN. 2.46
WTR YR 1988	TOTAL 390.05	MEAN 1.07	MAX 177	MIN .00	AC-FT 774	CFSM .01	IN. .17

08189200 COPANO CREEK NEAR REFUGIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1970 to December 1987. Pesticide analyses: July 1970 to July 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)
DEC 01...	0915	1.0	244	7.40	11.5	6.4	58	3.9	63
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DEC 01...	0	20	3.1	22	1	6.9	66	19	25
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
DEC 01...	0.20	18	154	0.030	<0.100	0.100	1.2	1.3	0.090

MISSION RIVER MAIN STEM

08189500 MISSION RIVER AT REFUGIO, TX

LOCATION.--Lat 28°17'30", long 97°16'44", Refugio County, Hydrologic Unit 12100406, on left bank at upstream side of upstream bridge of two bridges on U.S. Highway 77, 560 ft upstream from Missouri Pacific Railroad Co. bridge, and 0.2 mi southwest of Refugio.

DRAINAGE AREA.--690 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.00 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 25, 1958, nonrecording gage at site 59 ft downstream at same datum. Nov. 26, 1958, to Apr. 18, 1963, nonrecording gage at present site and datum.

REMARKS.--Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--49 years, 117 ft³/s (2.30 in/yr), 84,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,000 ft³/s Sept. 12, 1971 (gage height, 38.25 ft); minimum daily, 0.01 ft³/s July 19 and Aug. 14-16, 1988.
Maximum stage since about 1899, that of Sept. 12, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1914 and May 17, 1938, reached a stage of 32.3 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 17	1400	*625	*8.97				

Minimum daily discharge, 0.01 ft³/s July 19, Aug. 14-16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	5.6	7.3	8.3	6.2	6.5	5.5	3.4	2.1	2.1	3.3	.28
2	5.8	5.8	7.2	8.8	6.2	6.2	5.3	3.1	2.3	1.9	2.0	1.5
3	5.5	5.8	6.9	8.6	6.2	6.2	5.2	3.1	6.3	2.4	1.8	3.1
4	5.3	5.8	6.8	7.6	6.4	6.2	5.2	3.1	3.8	2.2	1.4	2.2
5	5.1	6.0	6.8	7.6	7.7	6.2	5.2	2.8	4.3	1.8	1.1	1.5
6	5.0	5.8	7.2	7.6	6.5	6.2	5.2	2.3	3.6	1.9	1.1	1.2
7	5.0	5.8	6.8	7.6	6.5	6.2	4.9	2.3	3.5	1.9	.87	.41
8	4.5	7.4	6.8	7.6	6.5	6.2	3.8	2.3	2.9	1.9	.52	.31
9	4.5	8.4	6.8	7.6	6.5	6.1	3.8	2.3	2.3	1.9	.46	.14
10	4.5	6.8	6.5	7.6	6.2	6.1	5.0	2.3	2.1	1.9	1.0	.04
11	4.5	7.7	6.5	7.6	6.2	6.2	4.6	3.8	1.7	1.7	.16	.04
12	4.5	7.5	6.5	7.6	6.2	6.2	4.3	235	1.7	1.4	.07	.04
13	4.5	7.2	6.5	7.5	6.2	5.9	4.3	262	1.7	.99	.02	.04
14	4.5	6.8	6.5	7.2	6.2	5.5	4.3	57	1.7	.45	.01	.04
15	4.5	6.8	6.2	7.0	6.2	e5.5	3.8	20	1.7	.30	.01	.15
16	4.6	11	6.2	6.5	5.9	e5.5	3.8	13	1.7	.13	.01	87
17	4.7	7.7	6.2	6.6	6.2	e5.5	4.3	9.6	1.5	.06	.04	601
18	4.7	6.6	6.2	6.8	6.2	e5.5	7.1	7.4	1.4	.02	.65	504
19	4.7	6.8	6.7	6.8	6.2	e5.5	6.7	6.1	1.4	.01	.47	210
20	4.9	6.4	8.3	6.8	6.2	e5.5	5.6	5.1	1.2	.04	.71	79
21	5.1	5.4	7.8	6.8	6.2	e5.5	5.4	5.3	1.2	2.9	.81	21
22	5.0	5.2	7.9	6.8	6.2	e5.5	4.9	4.6	1.6	5.4	.47	13
23	5.8	5.2	8.4	6.8	6.2	e5.5	4.6	3.9	5.4	3.4	.34	9.1
24	6.2	5.2	8.7	6.8	6.2	e5.5	4.3	3.8	7.9	2.1	.07	7.0
25	6.2	8.4	8.4	6.5	6.2	e5.5	3.8	3.3	6.7	1.7	.07	7.4
26	6.2	8.6	8.3	6.5	e6.2	e5.5	3.6	2.9	5.2	1.0	.07	15
27	5.9	13	8.3	6.5	e6.2	e5.5	2.9	2.7	4.5	.57	.03	9.7
28	5.6	11	8.3	6.3	e6.5	e5.5	1.6	2.5	3.5	.64	.03	5.2
29	5.5	9.5	8.3	6.2	e6.5	e5.5	4.7	2.2	3.0	.80	.03	4.0
30	5.5	8.3	8.2	6.2	---	e5.5	4.9	2.1	2.4	.59	.03	6.5
31	5.5	---	8.2	6.2	---	e5.5	---	2.1	---	3.3	.04	---
TOTAL	159.8	217.5	225.7	220.9	183.0	179.4	138.6	681.4	90.3	47.40	17.69	1589.89
MEAN	5.15	7.25	7.28	7.13	6.31	5.79	4.62	22.0	3.01	1.53	.57	53.0
MAX	6.2	13	8.7	8.8	7.7	6.5	7.1	262	7.9	5.4	3.3	601
MIN	4.5	5.2	6.2	6.2	5.9	5.5	1.6	2.1	1.2	.01	.01	.04
AC-FT	317	431	448	438	363	356	275	1350	179	94	35	3150
CFSM	.01	.01	.01	.01	.01	.01	.01	.03	.00	.00	.00	.08
IN.	.01	.01	.01	.01	.01	.01	.01	.04	.00	.00	.00	.09

CAL YR 1987 TOTAL 36970.1 MEAN 101 MAX 4650 MIN 4.5 AC-FT 73330 CFSM .15 IN. 1.99
WTR YR 1988 TOTAL 3751.58 MEAN 10.3 MAX 601 MIN .01 AC-FT 7440 CFSM .01 IN. .20

e Estimated.

08189500 MISSION RIVER AT REFUGIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1961 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: October 1970 to April 1979. Sediment analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1961 to September 1981.

WATER TEMPERATURE: September 1961 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 100,000 microsiemens Nov. 28, 1965; minimum daily, 85 microsiemens Sept. 13, 1971.

WATER TEMPERATURE: Maximum daily, 39.0°C June 20, 1981; minimum daily, 0.0°C Jan. 18, 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
OCT 13...	1625	4.5	2640	8.00	22.5	3.5	8.2	95	1.5	K24	K32	510
MAR 01...	1215	6.5	2650	7.90	22.0	8.1	8.3	95	1.7	K52	40	530
JUN 28...	1600	3.3	2450	8.00	32.0	3.7	8.1	111	1.0	62	100	470
AUG 09...	1455	0.17	6980	7.50	31.0	0.60	6.6	91	1.1	340	--	910
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT 13...	270	150	33	360	7	4.0	244	64	690	0.40	45	1510
MAR 01...	280	150	38	380	7	3.7	252	79	690	0.30	16	1440
JUN 28...	280	130	35	320	7	4.7	192	70	650	0.10	30	1510
AUG 09...	760	260	62	1100	17	8.2	155	61	2200	0.30	22	4410
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	SEDI- MENT, SUS- PENDED (MG/L)
OCT 13...	1500	--	--	0.030	--	0.57	0.60	0.030	0.010	--	--	42
MAR 01...	1510	<0.010	<0.100	0.020	0.040	0.48	0.50	0.030	0.010	<0.010	--	115
JUN 28...	1360	<0.010	<0.100	0.040	0.040	0.46	0.50	0.020	0.020	<0.010	--	28
AUG 09...	3820	<0.010	<0.100	0.110	0.110	0.79	0.90	0.030	0.030	0.030	0.09	38
DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	
OCT 13...	0.51	62	<10	5	600	<10	<1	3	1	2	<10	
MAR 01...	2.0	71	<10	6	600	<10	<1	<1	<1	1	<10	
JUN 28...	0.25	70	<10	6	560	<0.5	<1	<1	<3	1	6	
AUG 09...	0.02	82	<10	2	1400	<10	<1	1	1	1	20	
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 13...	<5	60	30	3.0	1	<1	<1	<1.0	2700	17	<10	
MAR 01...	<5	60	150	0.7	2	4	1	<1.0	2800	21	<10	
JUN 28...	<5	59	43	0.3	<10	<1	<1	<1.0	2300	7	14	
AUG 09...	<5	180	170	1.3	<1	1	<1	1.0	8000	21	10	

ARANSAS RIVER MAIN STEM

08189700 ARANSAS RIVER NEAR SKIDMORE, TX

LOCATION.--Lat 28°16'56", long 97°37'14", Bee County, Hydrologic Unit 12100407, on right bank 160 ft downstream from centerline of county road bridge, 3.8 mi downstream from confluence of West Aransas and Poesta Creeks, and 4.4 mi northeast of Skidmore.

DRAINAGE AREA.--247 mi².

PERIOD OF RECORD.--March 1964 to current year.

Water-quality records: Chemical analyses: October 1965 to September 1966. Sediment records: February 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 72.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion. Chase Field Naval Air Station and the city of Beeville discharge sewage effluent into the stream via Poesta Creek.

AVERAGE DISCHARGE.--24 years, 37.2 ft³/s (2.05 in/yr), 26,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft³/s Sept. 22, 1967 (gage height, 42.22 ft, from floodmark), from rating curve extended above 14,000 ft³/s on basis of slope-area measurements of 29,600 and 82,800 ft³/s; no flow at times.

Maximum stage since at least 1914, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1954 reached a stage of 33 ft (discharge, 19,600 ft³/s), from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 3	1000	806	10.89	Sept. 30	1300	*2,100	*15.65
Sept. 17	1000	525	9.03				

Minimum daily discharge, no flow July 14-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	2.5	3.2	3.8	4.4	3.4	3.1	2.2	2.0	1.1	.25	2.2
2	2.4	2.2	3.1	4.1	4.2	4.0	3.0	2.2	1.8	.62	1.2	2.5
3	2.1	2.2	2.9	4.2	4.2	3.8	2.6	1.6	320	.31	1.4	2.9
4	1.7	2.2	2.9	4.2	4.2	3.7	3.0	1.3	48	.12	1.8	2.8
5	1.6	2.2	2.9	4.2	4.3	3.9	2.8	1.0	16	.08	1.8	2.3
6	1.5	2.2	3.1	4.2	4.4	3.6	2.8	.88	8.9	.03	1.4	1.8
7	1.5	2.0	3.3	4.2	4.5	3.5	2.5	.76	5.3	2.2	1.1	1.6
8	1.5	2.2	3.2	4.2	4.6	3.5	2.5	.59	3.7	3.7	.90	1.4
9	1.3	4.5	2.9	4.2	4.6	3.5	2.5	.39	3.0	2.0	.55	1.2
10	1.5	12	2.9	4.1	4.5	3.2	2.9	.76	2.5	1.1	.35	1.0
11	1.6	5.4	3.0	4.0	4.2	2.8	2.9	.96	1.9	.57	.20	.78
12	2.0	3.3	3.3	4.0	4.1	2.7	2.4	198	1.6	.25	.09	.59
13	1.6	2.9	3.5	4.0	3.7	2.9	2.3	42	1.9	.10	.12	.53
14	1.5	2.7	3.6	4.0	3.8	2.9	2.3	17	1.7	.00	.13	.53
15	1.5	2.6	3.6	4.0	3.7	2.6	2.3	9.5	1.1	.00	.08	.53
16	1.5	4.0	3.1	4.0	3.3	2.6	2.3	6.5	.79	.00	.07	6.7
17	1.5	11	3.0	4.1	5.1	3.4	3.0	5.0	.57	.00	1.2	306
18	1.5	8.0	3.0	4.3	4.5	5.2	3.9	4.1	.60	.00	1.4	63
19	1.6	4.0	3.1	4.4	4.0	6.9	4.6	3.7	.70	.00	1.4	23
20	1.7	3.2	3.3	4.2	3.8	5.0	4.6	3.6	.65	.76	1.8	13
21	1.7	3.0	3.7	3.9	3.7	3.6	4.2	3.8	.65	1.4	4.7	8.9
22	1.8	2.7	6.6	3.7	3.3	3.5	3.2	4.1	.81	1.6	2.9	7.1
23	2.5	2.7	7.9	3.6	3.2	3.5	3.2	3.8	.50	1.2	1.6	5.8
24	3.2	2.7	4.9	3.7	3.2	3.4	2.4	3.8	.45	.67	.90	4.8
25	4.4	2.8	4.1	3.6	3.2	3.3	2.0	2.9	.52	.31	.51	4.6
26	3.5	3.0	3.8	3.5	3.2	3.3	1.5	2.4	.59	.14	.43	4.3
27	2.6	3.3	3.8	3.5	3.0	3.3	1.2	1.9	.61	.05	.29	3.7
28	2.5	3.2	3.6	3.5	3.4	3.3	.99	1.8	1.1	.03	.16	3.6
29	2.3	3.1	3.6	3.5	3.3	3.2	.90	2.0	2.7	.03	.08	3.6
30	1.9	3.3	3.8	3.9	---	3.2	.99	2.2	1.9	.05	1.0	1140
31	2.3	---	3.8	4.4	---	3.2	---	2.2	---	.14	1.7	---
TOTAL	62.6	111.1	112.5	123.2	113.6	109.9	78.88	332.94	432.54	18.56	31.51	1620.76
MEAN	2.02	3.70	3.63	3.97	3.92	3.55	2.63	10.7	14.4	.60	1.02	54.0
MAX	4.4	12	7.9	4.4	5.1	6.9	4.6	198	320	3.7	4.7	1140
MIN	1.3	2.0	2.9	3.5	3.0	2.6	.90	.39	.45	.00	.07	.53
AC-FT	124	220	223	244	225	218	156	660	858	37	63	3210
CFSM	.01	.01	.01	.02	.02	.01	.01	.04	.06	.00	.00	.22
IN.	.01	.02	.02	.02	.02	.02	.01	.05	.07	.00	.00	.24

CAL YR 1987 TOTAL 10881.19 MEAN 29.8 MAX 2440 MIN .50 AC-FT 21580 CFSM .12 IN. 1.64
WTR YR 1988 TOTAL 3148.09 MEAN 8.60 MAX 1140 MIN .00 AC-FT 6240 CFSM .03 IN. .47

NUECES RIVER MAIN STEM

343

08190000 NUECES RIVER AT LAGUNA, TX

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

DRAINAGE AREA.--737 mi².

WATER-DISCHARGE RECORDS

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

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

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

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

AVERAGE DISCHARGE.--65 years, 152 ft³/s (2.80 in/yr), 110,100 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	1600	*694	*4.01				

Minimum daily discharge, 64 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	174	157	142	122	120	97	76	103	198	141	75
2	267	174	155	141	122	117	97	77	96	184	141	74
3	259	175	154	140	122	115	96	75	100	173	139	74
4	250	174	151	139	122	113	96	74	101	164	137	72
5	247	172	149	137	122	111	96	72	96	156	135	71
6	243	169	149	139	121	109	93	72	91	150	131	70
7	236	168	148	138	121	109	93	71	88	145	126	70
8	230	175	147	137	121	109	92	71	85	141	122	69
9	225	176	145	137	120	109	93	70	83	138	118	68
10	221	173	145	136	119	108	94	69	81	137	116	68
11	219	172	144	135	118	107	93	70	80	140	116	67
12	215	172	143	135	118	106	92	70	79	202	110	66
13	212	172	142	133	118	104	90	71	77	247	106	65
14	208	170	142	131	117	103	88	70	75	208	104	65
15	206	170	140	130	116	103	88	69	74	191	106	65
16	205	170	141	132	115	104	89	69	73	176	102	64
17	204	166	143	131	116	105	90	68	71	166	100	86
18	201	167	144	129	116	105	88	67	70	158	98	83
19	200	167	166	128	116	104	87	68	69	150	97	86
20	199	165	162	127	115	104	85	71	68	148	95	84
21	196	162	160	127	114	101	84	84	67	168	93	81
22	192	162	157	127	113	100	82	78	66	160	90	80
23	194	161	155	126	113	100	81	79	65	154	87	81
24	194	160	154	125	112	100	79	86	65	149	86	82
25	192	161	153	124	112	100	79	89	68	143	85	82
26	192	160	155	124	113	99	77	92	359	139	84	82
27	187	160	153	123	114	99	76	91	502	138	82	81
28	183	158	150	122	113	100	75	89	354	144	80	79
29	182	158	148	121	112	98	75	87	255	132	78	80
30	180	158	145	121	---	98	74	132	217	136	77	86
31	177	---	144	121	---	97	---	125	---	140	76	---
TOTAL	6588	5021	4641	4058	3393	3257	2619	2452	3678	4975	3258	2256
MEAN	213	167	150	131	117	105	87.3	79.1	123	160	105	75.2
MAX	272	176	166	142	122	120	97	132	502	247	141	86
MIN	177	158	140	121	112	97	74	67	65	132	76	64
AC-FT	13070	9960	9210	8050	6730	6460	5190	4860	7300	9870	6460	4470
CFSM	.29	.23	.20	.18	.16	.14	.12	.11	.17	.22	.14	.10
IN.	.33	.25	.23	.20	.17	.16	.13	.12	.19	.25	.16	.11
CAL YR 1987	TOTAL 146386	MEAN 401	MAX 5520	MIN 140	AC-FT 290400	CFSM .54	IN. 7.39					
WTR YR 1988	TOTAL 46196	MEAN 126	MAX 502	MIN 64	AC-FT 91630	CFSM .17	IN. 2.33					

NUECES RIVER MAIN STEM

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1949 to June 1952, September 1964 to current year. Chemical, biochemical, and pesticide analyses: February 1970 to current year. Sediment analyses: January 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
JAN 05...	0920	138	434	8.20	13.5	3	0.30	9.9	96	0.1	K130	
MAY 12...	0912	69	413	8.10	21.0	<1	0.20	8.1	94	0.4	K14	
SEP 01...	0915	76	416	7.80	25.0	<1	0.40	7.2	91	0.4	21	
DATE		STREP- TOCOCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN 05...	K16	220	28	63	15	9.9	0.3	0.80	191	16	18	
MAY 12...	35	200	20	57	14	9.3	0.3	0.60	180	18	16	
SEP 01...	62	200	23	57	15	8.7	0.3	1.1	181	13	13	
DATE		FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
JAN 05...	0.20	10	248	<1	<1	1.49	0.010	1.50	0.020	0.48	0.50	
MAY 12...	0.20	11	234	<1	<1	--	<0.010	1.10	<0.010	--	0.20	
SEP 01...	0.10	13	229	6	<1	--	<0.010	0.700	<0.010	--	0.30	
DATE		PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
JAN 05...	<0.010	0.8	0.05	<1	44	50	<1	<5	1	7	<5	
MAY 12...	<0.010	1.0	--	--	--	--	--	--	--	--	--	
SEP 01...	<0.010	1.0	--	<1	42	--	2	<1	1	3	5	
DATE		MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN 05...	<1	<0.1	<1	<1.0	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAY 12...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 01...	<1	<0.1	<1	<1.0	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
DATE		DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 05...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
MAY 12...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 01...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01

NUECES RIVER MAIN STEM

345

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 05...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 12...	--	--	--	--	--	--	--	--	--	--	--
SEP 01...	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX

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

DRAINAGE AREA.--694 mi².

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

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

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

REMARKS.--Records good except those for estimated daily discharges, which are fair. In ordinary years, a large part of streamflow is lost by seepage into the Balcones Fault Zone of the Edwards and associated limestones above station. No known diversion above station.

AVERAGE DISCHARGE.--43 years (water years 1940-50, 1957-88), 34.4 ft³/s (24,920 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	0700	*1,610	*6.21	No other peak greater than base discharge.			
Minimum daily discharge, 0.06 ft ³ /s Sept. 1-4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e33	e.85	.32	.50	.62	.72	.44	.33	.56	1.6	.76	.06
2	e30	e.80	.36	.53	.60	.69	.44	.33	.49	1.5	.71	.06
3	e28	.75	.36	.56	.56	.53	.50	.28	.55	1.2	.64	.06
4	e26	.76	.36	.56	.48	.52	.50	.28	.40	1.1	.59	.06
5	e24	.71	.36	.56	.45	.55	.50	.28	.39	.96	.47	.07
6	e22	.72	.36	.56	.45	.56	.45	.29	.29	.82	.44	.07
7	e20	.67	.36	.45	.45	.62	.40	.31	.26	.71	.39	.07
8	e18	.67	.39	.40	.48	.55	.40	.30	.22	.54	.36	.07
9	e16	.48	.40	.40	.55	.45	.60	.28	.18	.50	.34	.07
10	e15	.40	.40	.40	.56	.52	.76	.28	.18	.50	.31	.07
11	e13	.43	.40	.40	.44	.62	.43	.30	.18	.50	.29	.07
12	e11	.46	.40	.40	.54	.54	.40	.33	.19	568	.23	.07
13	e10	.50	.45	.40	.62	.53	.43	.31	.21	86	.21	.07
14	e9.0	.50	.34	.40	.54	.56	.45	.28	.21	9.3	.18	.07
15	e8.0	.50	.28	.42	.53	.59	.43	.28	.21	5.9	.18	.07
16	e6.8	.41	.34	.50	.69	.62	.42	.28	.20	4.8	.16	.07
17	e6.0	.40	.51	.45	.76	.59	.42	.28	.18	4.4	.16	.57
18	e5.3	.39	.57	.46	.62	.36	.34	.28	.16	3.8	.16	.85
19	e4.5	.39	.71	.42	.50	.43	.34	.31	.18	3.3	.16	3.6
20	e4.0	.40	.59	.38	.53	.53	.36	.34	.18	3.0	.14	4.9
21	e3.5	.40	.62	.39	.58	.56	.36	.48	.18	3.0	.14	4.5
22	e3.0	.40	.62	.44	.68	.62	.40	.36	.18	2.4	.14	2.9
23	e2.7	.40	.62	.45	.60	.58	.35	.31	.18	2.2	.12	1.8
24	e2.5	.40	.62	.43	.56	.56	.34	.34	.18	2.1	.11	1.3
25	e2.2	.35	.58	.40	.58	.56	.33	.39	.25	1.8	.10	1.3
26	e2.0	.35	.48	.40	.56	.56	.31	.52	.39	1.5	.08	1.2
27	e1.8	.32	.44	.44	.56	.56	.31	.50	.31	1.3	.07	.96
28	e1.5	.31	.46	.58	.56	.61	.31	.45	.56	1.2	.07	.87
29	e1.3	.31	.50	.62	.58	.46	.31	.45	1.2	1.1	.07	.83
30	e1.1	.31	.50	.62	---	.39	.31	.47	1.6	.94	.07	.85
31	e1.0	---	.50	.62	---	.47	---	.54	---	.83	.07	---
TOTAL	332.2	14.74	14.20	14.54	16.23	17.01	12.34	10.76	10.45	716.80	7.92	27.51
MEAN	10.7	.49	.46	.47	.56	.55	.41	.35	.35	23.1	.26	.92
MAX	33	.85	.71	.62	.76	.72	.76	.54	1.6	568	.76	4.9
MIN	1.0	.31	.28	.38	.44	.36	.31	.28	.16	.50	.07	.06
AC-FT	659	29	28	29	32	34	24	21	21	1420	16	55

CAL YR 1987 TOTAL 10634.74 MEAN 29.1 MAX 1000 MIN .28 AC-FT 21090
WTR YR 1988 TOTAL 1194.70 MEAN 3.26 MAX 568 MIN .06 AC-FT 2370

e Estimated.

08192000 NUECES RIVER BELOW UVALDE, TX

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

DRAINAGE AREA.--1,861 mi².

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

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

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

REMARKS.--Records good. Part of the flow of the Nueces River enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin downstream from Laguna (station 08190000) and upstream from this station. At low stage, most of headwater flow enters this formation. There are many small diversions above station for irrigation.

AVERAGE DISCHARGE.--49 years, 127 ft³/s (92,010 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	1730	a*398	*4.07	June 28	2400	b153	3.57

a Stage falling; peak occurred Sept. 16, 1987.

b Maximum independent peak discharge.

Minimum daily discharge, 33 ft³/s June 23, 24, 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	382	220	179	160	125	100	78	e49	40	109	62	40
2	375	220	176	157	124	100	77	49	39	97	63	40
3	365	217	176	157	119	98	75	49	39	88	63	40
4	353	214	173	156	120	96	73	48	38	81	64	40
5	348	213	173	153	119	94	74	48	39	74	62	39
6	342	211	171	154	118	93	72	48	38	69	61	40
7	335	208	169	153	116	93	70	47	38	65	60	39
8	328	216	169	153	116	92	70	46	38	61	58	39
9	320	216	166	150	116	90	69	46	38	59	56	39
10	313	210	166	150	113	91	69	46	38	58	54	39
11	308	207	164	149	111	90	68	46	38	58	52	38
12	305	206	163	146	110	88	68	45	38	57	49	38
13	303	208	160	146	109	88	68	45	37	58	47	38
14	298	208	155	143	106	86	67	45	37	96	46	37
15	289	208	154	143	e105	86	66	44	36	104	45	37
16	285	213	153	143	e104	86	68	44	36	96	45	37
17	283	205	157	143	e104	84	65	44	36	87	44	51
18	279	203	160	142	e103	81	61	43	35	79	44	43
19	278	198	170	139	e103	82	62	43	35	73	44	41
20	270	196	182	136	e102	82	62	44	34	67	43	40
21	259	193	181	134	e101	82	61	44	34	75	43	40
22	256	192	180	134	e101	82	60	42	34	83	42	39
23	257	192	176	134	e100	81	e59	42	33	82	42	39
24	255	192	175	132	e100	81	e58	42	33	76	42	39
25	255	190	174	130	e100	80	e57	41	34	71	43	39
26	250	187	170	128	e100	81	e56	46	33	68	42	39
27	244	184	169	128	e100	81	e55	43	34	65	41	37
28	237	183	168	128	e100	80	e54	42	34	68	42	37
29	234	182	166	127	e100	79	e52	42	148	60	41	37
30	232	180	163	126	---	79	e50	41	127	61	41	35
31	227	---	163	125	---	79	---	41	---	61	40	---
TOTAL	9065	6072	5221	4399	3145	2685	1944	1385	1325	2300	1520	1176
MEAN	292	202	168	142	108	86.6	64.8	44.7	44.2	74.2	49.0	39.2
MAX	382	220	182	160	125	100	78	49	148	109	64	51
MIN	227	180	153	125	100	79	50	41	33	57	40	35
AC-FT	17980	12040	10360	8730	6240	5330	3860	2750	2630	4560	3010	2330

CAL YR 1987 TOTAL 187610 MEAN 514 MAX 15700 MIN 105 AC-FT 372100
WTR YR 1988 TOTAL 40237 MEAN 110 MAX 382 MIN 33 AC-FT 79810

e Estimated.

NUECES RIVER MAIN STEM

08193000 NUECES RIVER NEAR ASHERTON, TX

LOCATION.--Lat 28°30'00", long 99°40'54", Dimmit County, Hydrologic Unit 12110103, on right bank 28 ft downstream from bridge on Farm Road 190, 0.1 mi downstream from El Moro Creek, 5.8 mi northeast of Asherton, and at mile 266.0.

DRAINAGE AREA.--4,082 mi².

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

REVISED RECORDS.--WSP 1118: 1944.

GAGE.--Water-stage recorder. Datum of gage is 470.92 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 2, 1940, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Part of flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Since March 1948, flow slightly regulated by Upper Nueces Reservoir (capacity, 7,590 acre-ft), 13 mi upstream. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--49 years, 186 ft³/s (134,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,500 ft³/s Oct. 6, 1959 (gage height, 30.88 ft); no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 33 ft June 17, 1935; flood of June 30, 1913, reached about same stage, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	0100	a*350	*5.40	Nov. 9	0600	b210	4.19

a Falling stage, peak occurred Sept. 17, 1987.
b Maximum independent peak discharge.

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	348	178	158	128	64	46	29	.00	.00	.00	.00	.00
2	335	175	148	138	66	45	25	.00	.00	.00	.00	.00
3	331	172	144	140	64	39	25	.00	.20	.00	.00	.00
4	325	167	138	139	58	31	30	.00	.00	.00	.00	.00
5	322	163	129	129	58	28	35	.00	.00	.00	.00	.00
6	316	161	124	116	62	28	35	.00	.00	.00	.00	.00
7	302	159	130	117	67	30	24	.00	.00	.00	.00	.00
8	290	167	128	116	76	33	15	.00	.00	.00	.00	.00
9	275	204	118	121	80	32	6.0	.00	.00	.00	.00	.00
10	261	191	111	133	79	32	2.8	.00	.00	.00	.00	.00
11	256	179	108	142	80	34	2.0	.01	.00	.00	.00	.00
12	261	163	102	136	79	37	2.3	.01	.00	.00	.00	.00
13	256	161	100	114	79	36	4.4	.01	.00	.00	.00	.00
14	251	170	105	101	76	35	3.0	.01	.00	.00	.00	.00
15	241	172	107	96	78	34	1.2	.01	.00	.00	.00	.00
16	230	188	107	92	78	32	.43	.01	.00	.00	.00	.00
17	226	195	110	87	75	28	.16	.01	.00	.00	.00	.00
18	224	183	115	86	71	27	.26	.00	.00	.00	.00	.00
19	222	171	130	87	68	27	.22	.01	.00	.00	.00	.00
20	216	157	145	83	65	25	7.5	.01	.00	.00	.00	.00
21	205	150	150	80	59	27	7.9	1.0	.00	.00	.00	.00
22	201	149	153	82	54	30	2.4	.47	.00	.00	.00	.00
23	203	155	150	84	52	31	.50	.46	.00	.00	.00	.00
24	204	157	152	90	51	27	.12	.05	.00	.00	.00	.00
25	205	157	160	97	48	20	.04	.02	.00	.00	.00	.00
26	205	158	166	96	52	16	.03	.01	.00	.00	.00	.00
27	202	163	161	87	51	15	.02	.01	.00	.00	.00	.00
28	193	164	156	82	45	18	.00	.01	.27	.00	.00	.00
29	187	168	140	80	44	24	.00	.02	.00	.00	.00	.00
30	186	167	127	74	---	27	.00	.01	.00	.00	.00	.00
31	183	---	125	69	---	27	---	.01	---	.00	.00	---
TOTAL	7662	5064	4097	3222	1879	921	259.28	2.16	0.47	0.00	0.00	0.00
MEAN	247	169	132	104	64.8	29.7	8.64	.070	.016	.00	.00	.00
MAX	348	204	166	142	80	46	35	1.0	.27	.00	.00	.00
MIN	183	149	100	69	44	15	.00	.00	.00	.00	.00	.00
AC-FT	15200	10040	8130	6390	3730	1830	514	4.3	.9	.0	.0	.0

CAL YR 1987 TOTAL 225928 MEAN 619 MAX 8470 MIN 46 AC-FT 448100
WTR YR 1988 TOTAL 23106.91 MEAN 63.1 MAX 348 MIN .00 AC-FT 45830

08194000 NUECES RIVER AT COTULLA, TX

LOCATION.--Lat 28°25'34", long 99°14'23", La Salle County, Hydrologic Unit 12110105, on left bank at downstream side of bridge on U.S. Highway 81, 0.4 mi upstream from Missouri Pacific Railroad Co. bridge, 0.8 mi southwest of Cotulla, 1.0 mi upstream from Lind Dam, and at mile 216.9.

DRAINAGE AREA.--5,171 mi².

PERIOD OF RECORD.--November 1923 to current year. November 1923 to September 1926 monthly discharge only, published in WSP 1312; figures of daily discharge for Oct. 31, 1923, to Sept. 30, 1926, published in WSP 588, 608, and 628, have been found to be unreliable and should not be used. Gage-height records collected in this vicinity in 1914-17 and since 1922 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1732: 1957(M). WDR TX-83-3: Drainage area. See PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 368.08 ft above National Geodetic Vertical Datum of 1929. From Oct. 31, 1923, to Aug. 3, 1924, nonrecording gage at approximate site of present gage at datum 7.28 ft higher. Aug. 4, 1924, to Nov. 19, 1934, nonrecording gage at site 5,000 ft downstream at datum 8.42 ft higher. From Nov. 20, 1934, to July 14, 1938, water-stage recorder, and July 15, 1938, to Apr. 30, 1963, nonrecording gage, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Part of the flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Low flow is slightly regulated by small storage reservoirs above station, with most diverted above station by pumping (see REMARKS for Nueces River near Asherton, station 08193000). Satellite telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1925-88), 271 ft³/s (196,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,600 ft³/s June 18, 1935 (gage height, 32.4 ft, from floodmark), from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times each year.

Maximum stage since at least 1879, that of June 18, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 19, 1899, reached a stage of 29.7 ft, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	0100	a*410	*9.45	Nov. 11	1300	b201	8.77

a Stage falling; peak occurred Sept. 22, 1987.

b Maximum independent peak.

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	403	181	168	135	77	49	18	2.0	.01	.00	.00	.00
2	378	179	169	129	71	44	20	2.0	.00	.00	.00	.00
3	361	176	163	129	65	42	23	1.8	.02	.00	.00	.00
4	346	171	153	138	62	44	25	1.3	.00	.00	.00	.00
5	336	169	148	143	64	44	24	.77	.00	.00	.00	.00
6	330	163	143	144	58	38	23	.32	.00	.00	.00	.00
7	317	160	135	139	55	32	23	.13	.00	.00	.00	.00
8	310	161	130	126	56	29	31	.06	.00	.00	.00	.00
9	298	161	132	120	63	27	34	.02	.00	.00	.00	.00
10	288	169	135	120	73	27	29	.00	.00	.00	.00	.00
11	270	196	126	121	79	30	24	.00	.00	.00	.00	.00
12	255	193	117	132	79	30	20	.00	.00	.00	.00	.00
13	249	182	111	144	79	31	15	.00	.00	.00	.00	.00
14	255	167	106	143	79	37	11	.00	.00	.00	.00	.00
15	252	162	100	126	79	39	8.8	.00	.00	.00	.00	.00
16	246	175	99	111	78	38	6.3	.00	.00	.00	.00	.00
17	241	173	105	106	76	37	5.0	.00	.00	.00	.00	.00
18	227	188	111	100	82	37	22	.00	.00	.00	.00	.00
19	224	196	113	94	79	34	52	.00	.00	.00	.00	.00
20	219	186	115	88	72	29	8.6	.00	.00	.00	.00	.00
21	216	171	136	87	69	28	5.0	34	.00	.00	.00	.00
22	214	160	147	87	65	30	4.1	29	.00	.00	.00	.00
23	206	151	154	82	61	30	3.7	11	.00	.00	.00	.00
24	198	146	159	81	54	31	2.6	5.2	.00	.00	.00	.00
25	204	151	157	82	51	35	2.3	3.1	.00	.00	.00	.00
26	204	154	155	87	50	36	2.0	1.8	.00	.00	.00	.00
27	201	155	162	92	48	31	1.5	1.0	.00	.00	.00	.00
28	197	157	171	97	48	25	1.5	.60	.00	.00	.00	.00
29	198	162	168	93	52	22	1.3	.24	.00	.00	.00	.00
30	191	166	164	87	---	19	1.5	.08	.00	.00	.00	.00
31	185	---	152	83	---	18	---	.04	---	.00	.00	---
TOTAL	8019	5081	4304	3446	1924	1023	448.2	94.46	0.03	0.00	0.00	0.00
MEAN	259	169	139	111	66.3	33.0	14.9	3.05	.001	.00	.00	.00
MAX	403	196	171	144	82	49	52	34	.02	.00	.00	.00
MIN	185	146	99	81	48	18	1.3	.00	.00	.00	.00	.00
AC-FT	15910	10080	8540	6840	3820	2030	889	187	.06	.0	.0	.0

CAL YR 1987 TOTAL 257359 MEAN 705 MAX 9680 MIN 46 AC-FT 510500
WTR YR 1988 TOTAL 24339.69 MEAN 66.5 MAX 403 MIN .00 AC-FT 48280

NUECES RIVER BASIN

08194200 SAN CASIMIRO CREEK NEAR FREER, TX

LOCATION.--Lat 27°57'53", long 98°58'00", Webb County, Hydrologic Unit 12110105, at downstream side of bridge on State Highway 44, 11.4 mi upstream from mouth, and 22 mi northwest of Freer.

DRAINAGE AREA.--469 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 298 ft, from State Department of Highways and Public Transportation datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--26 years, 61.1 ft³/s (44,270 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,000 ft³/s Oct. 17, 1971 (gage height, 26.87 ft), from rating curve extended above 21,000 ft³/s on basis of flow-through-culverts, contracted opening, and flow-over-road determination of 82,000 ft³/s; no flow for many days each year.
Maximum stage since at least 1946, that of Oct. 17, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 26 ft (discharge 65,200 ft³/s), occurred in 1954, from information by State Department of Highways and Public Transportation.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 19	1400	*846	*15.19	No other peak greater than base discharge.			

Minimum daily discharge, no flow for most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	.00	.00	.00	.00	.00	.00	.00	e.00	e5.0	.00	.64
2	1.9	.00	.00	.00	.00	.00	.00	.00	e.00	e2.5	.00	.03
3	1.1	.00	.00	.00	.00	.00	.00	.00	e.00	e1.0	.00	.01
4	.64	.00	.00	.00	.00	.00	.00	.00	e.00	e.50	.00	.00
5	.41	.00	.00	.00	.00	.00	.00	.00	e.00	e.30	.00	.00
6	.30	.00	.00	.00	.00	.00	.00	.00	e.00	e.20	.00	.00
7	.17	.00	.00	.00	.00	.00	.00	.00	.00	e.10	.00	.00
8	.06	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
9	.03	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
10	.01	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	26
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	357
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	690
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	73
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	.00	16
22	.00	.00	.00	.00	.00	.00	.00	e.50	.00	e.00	.00	6.5
23	.00	.00	.00	.00	.00	.00	.00	e2.0	.00	e.00	.00	1.9
24	.00	.00	.00	.00	.00	.00	.00	e1.0	.00	e.00	.00	.74
25	.00	.00	.00	.00	.00	.00	.00	e.50	.00	e.00	.00	1.6
26	.00	.00	.00	.00	.00	.00	.00	e.20	.00	e.00	.00	1.7
27	.00	.00	.00	.00	.00	.00	.00	e.00	e.50	e.00	.00	.20
28	.00	.00	.00	.00	.00	.00	.00	e.00	e3.0	e.00	.00	.10
29	.00	.00	.00	.00	.00	.00	.00	e.00	e30	e.00	.00	.06
30	.00	.00	.00	.00	---	.00	.00	e.00	e10	e.00	.00	123
31	.00	---	.00	.00	---	.00	---	e.00	---	e.00	.03	---
TOTAL	10.62	0.00	0.00	0.00	0.00	0.00	0.00	4.20	43.50	9.60	0.03	1298.48
MEAN	.34	.00	.00	.00	.00	.00	.00	.14	1.45	.31	.001	43.3
MAX	6.0	.00	.00	.00	.00	.00	.00	2.0	30	5.0	.03	690
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	21	.0	.0	.0	.0	.0	.0	8.3	86	19	.06	2580

CAL YR 1987 TOTAL 14821.49 MEAN 40.6 MAX 2230 MIN .00 AC-FT 29400
WTR YR 1988 TOTAL 1366.43 MEAN 3.73 MAX 690 MIN .00 AC-FT 2710

e Estimated.

NUECES RIVER MAIN STEM

351

08194500 NUECES RIVER NEAR TILDEN, TX

LOCATION.--Lat 28°18'31", long 98°33'25", McMullen County, Hydrologic Unit 12110105, on right bank at downstream side of pier of bridge on State Highway 16, 1.8 mi upstream from Kings Branch, 10.5 mi south of Tilden, and at mile 135.4.

DRAINAGE AREA.--8,093 mi².

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

REVISED RECORDS.--WSP 1512: 1947. WSP 1732: 1951(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.5 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Part of flow of Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Some loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Some diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1944-88), 426 ft³/s (308,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,500 ft³/s Sept. 24, 1967 (gage height, 26.57 ft); no flow at times. Maximum stage since about 1902, that of Sept. 24, 1967. Flood of Oct. 11, 1946, reached a stage of 26.46 ft (discharge, 70,000 ft³/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in June 1935 reached a stage of 23.7 ft and in July 1942 about 22 ft, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 1	2000	*684	*9.43				
Minimum daily discharge, 0.04 ft ³ /s June 23, Sept. 9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	448	168	139	149	85	e52	e20	3.0	1.8	618	2.7	1.3
2	418	164	143	145	82	e52	e17	2.6	1.4	433	10	1.1
3	364	159	147	137	77	e50	e14	2.5	2.0	87	29	.86
4	339	155	148	125	74	e52	e13	2.4	1.7	31	14	.71
5	320	153	148	116	70	e50	12	2.2	1.2	15	9.3	.51
6	305	149	146	115	65	e50	12	2.0	1.1	7.6	39	.32
7	294	146	137	119	63	e45	12	1.9	1.1	7.3	34	.14
8	286	145	129	124	62	e43	14	1.9	1.0	12	19	.06
9	280	148	125	127	59	e40	15	1.7	.87	43	17	.04
10	274	141	119	124	55	e35	16	1.5	.74	23	32	7.3
11	267	142	114	117	54	e30	15	9.9	.64	11	18	7.7
12	258	139	113	110	55	e28	14	47	.55	118	8.8	2.1
13	249	141	116	108	60	e25	9.3	14	.49	126	4.5	1.2
14	239	163	114	108	68	e25	11	3.5	.33	12	2.5	.92
15	228	170	107	112	71	e27	16	1.8	.23	4.9	1.7	.76
16	222	167	101	122	73	e29	17	1.4	.15	2.9	1.4	.59
17	222	152	97	130	73	e31	17	1.1	.13	2.2	1.1	7.4
18	221	146	92	122	72	e33	55	.95	.09	1.8	.96	2.3
19	217	149	91	110	72	e35	68	.87	.07	1.5	1.0	6.7
20	211	149	94	99	71	e38	15	.85	.06	1.3	1.1	335
21	201	156	99	92	71	e37	8.2	114	.05	1.2	1.3	602
22	195	168	101	86	72	e35	17	228	.05	3.0	1.5	355
23	192	167	104	82	69	e32	25	18	.04	5.8	1.4	141
24	190	157	115	79	64	e30	24	4.7	.07	12	1.4	56
25	189	146	126	79	61	e26	15	33	.13	24	1.2	29
26	182	136	134	77	58	e24	8.7	39	.31	21	1.6	16
27	176	132	138	75	e54	e28	5.7	17	.72	8.7	1.7	8.7
28	172	132	138	73	e52	e31	9.7	8.7	.24	3.9	1.7	5.3
29	170	136	136	75	e52	e35	5.1	4.9	.11	2.4	1.7	4.4
30	170	138	139	79	---	e30	3.6	3.1	83	2.4	1.7	3.1
31	170	---	147	84	---	e25	---	2.1	---	2.9	1.5	---
TOTAL	7669	4514	3797	3300	1914	1103	504.3	575.57	100.37	1645.8	263.76	1597.51
MEAN	247	150	122	106	66.0	35.6	16.8	18.6	3.35	53.1	8.51	53.3
MAX	448	170	148	149	85	52	68	228	83	618	39	602
MIN	170	132	91	73	52	24	3.6	.85	.04	1.2	.96	.04
AC-FT	15210	8950	7530	6550	3800	2190	1000	1140	199	3260	523	3170

CAL YR 1987 TOTAL 260778 MEAN 714 MAX 10900 MIN 44 AC-FT 517300
WTR YR 1988 TOTAL 26984.31 MEAN 73.7 MAX 618 MIN .04 AC-FT 53520

e Estimated.

NUECES RIVER BASIN

08195000 FRIO RIVER AT CONCAN, TX

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

DRAINAGE AREA.--389 mi².

WATER-DISCHARGE RECORDS

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

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

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

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

AVERAGE DISCHARGE.--63 years (water years 1925-29, 1931-88), 118 ft³/s (4.12 in/yr), 85,490 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 25	0930	5,610	8.09	July 11	2030	*20,000	*13.33
June 26	0530	3,690	7.09				

Minimum daily discharge, 43 ft³/s June 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	226	147	125	111	96	91	73	72	71	257	185	94
2	221	145	124	111	95	87	75	70	67	229	177	92
3	213	145	123	110	98	84	74	68	75	211	175	91
4	208	144	122	108	98	86	74	67	74	200	173	88
5	204	141	122	108	95	84	74	67	70	194	167	86
6	201	141	120	110	95	84	73	66	65	180	161	84
7	195	138	118	108	95	83	71	64	61	175	153	83
8	192	163	118	108	95	83	72	63	60	169	148	81
9	188	147	118	108	95	82	74	60	59	160	144	80
10	186	141	117	108	92	80	75	59	57	159	140	79
11	185	137	115	105	89	80	74	58	55	3250	140	77
12	181	136	115	105	92	80	74	61	56	1850	137	77
13	180	137	115	105	91	80	73	60	54	643	132	76
14	179	137	110	104	91	79	73	59	53	444	132	75
15	176	139	111	102	89	78	72	57	52	373	130	73
16	176	144	111	105	89	79	73	56	51	330	129	74
17	173	146	113	105	89	85	75	56	50	303	126	90
18	173	140	118	104	91	80	72	56	49	281	121	94
19	170	135	145	102	90	80	71	57	50	265	119	89
20	169	133	143	101	89	79	69	62	48	257	116	86
21	165	130	142	102	89	79	69	74	46	262	112	83
22	163	129	129	101	87	78	69	121	45	242	109	80
23	162	131	126	98	86	78	67	114	43	223	107	80
24	165	130	122	98	87	78	67	90	45	213	106	80
25	162	129	121	98	86	78	67	83	1070	205	106	78
26	160	126	120	98	86	78	66	77	2060	196	104	77
27	157	125	122	98	86	78	64	74	1100	191	101	74
28	154	125	118	98	86	79	62	73	550	188	98	73
29	152	125	115	96	86	76	66	72	367	187	97	73
30	150	126	115	96	---	76	68	72	296	180	96	77
31	149	---	112	95	---	76	---	71	---	194	95	---
TOTAL	5535	4112	3745	3206	2633	2498	2126	2159	6799	12211	4036	2444
MEAN	179	137	121	103	90.8	80.6	70.9	69.6	227	394	130	81.5
MAX	226	163	145	111	98	91	75	121	2060	3250	185	94
MIN	149	125	110	95	86	76	62	56	43	159	95	73
AC-FT	10980	8160	7430	6360	5220	4950	4220	4280	13490	24220	8010	4850
CFSM	.46	.35	.31	.27	.23	.21	.18	.18	.58	1.01	.33	.21
IN.	.53	.39	.36	.31	.25	.24	.20	.21	.65	1.17	.39	.23

CAL YR 1987 TOTAL 143799 MEAN 394 MAX 9460 MIN 110 AC-FT 285200 CFSM 1.01 IN. 13.75
WTR YR 1988 TOTAL 51504 MEAN 141 MAX 3250 MIN 43 AC-FT 102200 CFSM .36 IN. 4.93

NUECES RIVER BASIN

353

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: June 1952, December 1964 to July 1965. Chemical, biochemical, and pesticide analyses: August 1968 to current year. Pesticide analyses: August 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 05...	1450	108	420	8.30	11.5	1	0.20	11.0	103	0	K16
MAY 11...	1329	58	382	8.20	24.5	1	0.20	8.5	106	0.5	K19
AUG 31...	1416	98	398	8.00	27.5	<1	0.20	8.4	111	0.4	58
DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN 05...	K14	220	24	64	14	7.7	0.2	0.80	194	15	14
MAY 11...	K38	190	23	53	14	7.8	0.3	0.80	167	15	14
AUG 31...	21	200	27	56	15	7.8	0.2	0.90	175	15	12
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 05...	0.20	10	242	<1	<1	<0.010	1.20	<0.010	0.30	<0.010	0.6
MAY 11...	0.20	12	217	11	7	<0.010	0.600	<0.010	<0.20	0.020	1.5
AUG 31...	0.10	13	225	2	<1	<0.010	0.600	<0.010	<0.20	<0.010	1.0
DATE	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
JAN 05...	0.03	<1	32	30	<1	<5	1	4	<5	1	<0.1
MAY 11...	0.03	--	--	50	--	--	--	--	--	--	--
AUG 31...	--	<1	36	--	2	<1	1	10	5	<1	<0.1
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
JAN 05...	<1	<1.0	4	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
MAY 11...	--	--	--	--	--	--	--	--	--	--	--
AUG 31...	<1	<1.0	12	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	
JAN 05...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
MAY 11...	--	--	--	--	--	--	--	--	--	--	
AUG 31...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER BASIN

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 05...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 11...	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

355

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX

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

DRAINAGE AREA.--126 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--36 years, 36.1 ft³/s (3.89 in/yr), 26,180 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	1700	*575	*3.87	No other peak greater than base discharge.			
Minimum daily discharge, 3.2 ft ³ /s June 24.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	27	22	20	16	18	12	7.2	7.4	45	11	5.6
2	40	27	22	20	16	15	11	7.4	6.9	39	11	5.3
3	38	27	21	19	16	15	11	7.1	11	35	10	5.2
4	38	27	21	19	16	14	10	6.8	9.1	32	11	5.0
5	37	27	21	19	16	14	11	6.8	8.3	31	11	4.4
6	37	26	21	19	16	14	10	6.5	7.4	28	10	4.1
7	36	26	21	19	16	14	10	6.5	6.9	25	9.1	4.1
8	35	40	21	19	16	14	10	6.7	6.9	24	8.2	4.1
9	34	38	21	18	15	13	10	6.3	6.4	23	7.5	4.1
10	34	30	21	18	15	13	11	6.2	6.0	22	7.6	4.0
11	32	28	22	18	15	13	10	6.1	5.7	26	7.2	3.9
12	32	28	20	18	14	12	10	6.8	5.3	26	6.2	3.8
13	32	28	19	18	15	12	9.8	6.6	4.8	22	6.0	3.8
14	31	27	19	17	15	11	9.6	6.5	4.7	20	6.5	3.8
15	31	28	19	17	14	11	9.7	6.1	4.6	20	9.0	4.0
16	31	30	19	18	14	12	10	5.9	4.2	19	7.6	4.0
17	31	27	21	18	14	14	10	5.9	4.5	19	6.9	7.9
18	30	26	23	17	15	13	10	5.6	4.4	18	6.6	14
19	30	25	36	17	14	12	9.7	5.9	4.2	18	6.7	14
20	30	24	34	17	14	12	9.4	7.1	3.9	18	6.2	13
21	29	23	32	16	14	12	9.4	14	3.5	20	5.9	11
22	29	23	28	16	14	12	9.6	11	3.3	20	5.9	10
23	29	24	25	16	14	12	9.3	8.6	3.3	17	5.7	9.8
24	29	24	25	16	13	12	8.6	7.6	3.2	15	5.5	9.6
25	30	24	24	16	13	12	8.0	7.1	4.3	14	5.4	8.9
26	30	23	24	16	14	12	7.5	7.0	266	13	5.3	8.5
27	29	23	23	16	14	12	7.4	6.9	165	13	5.1	8.2
28	28	22	22	16	14	12	7.3	6.9	121	13	5.2	7.8
29	28	22	22	16	14	12	7.5	6.7	73	12	5.3	7.9
30	28	22	21	16	---	11	7.4	6.9	55	12	5.5	8.7
31	27	---	21	16	---	11	---	7.3	---	12	5.5	---
TOTAL	996	796	711	541	426	396	286.2	220.0	820.2	671	225.6	208.5
MEAN	32.1	26.5	22.9	17.5	14.7	12.8	9.54	7.10	27.3	21.6	7.28	6.95
MAX	41	40	36	20	16	18	12	14	266	45	11	14
MIN	27	22	19	16	13	11	7.3	5.6	3.2	12	5.1	3.8
AC-FT	1980	1580	1410	1070	845	785	568	436	1630	1330	447	414
CFSM	.25	.21	.18	.14	.12	.10	.08	.06	.22	.17	.06	.06
IN.	.29	.24	.21	.16	.13	.12	.08	.06	.24	.20	.07	.06

CAL YR 1987	TOTAL 39810	MEAN 109	MAX 5100	MIN 19	AC-FT 78960	CFSM .87	IN. 11.75
WTR YR 1988	TOTAL 6297.5	MEAN 17.2	MAX 266	MIN 3.2	AC-FT 12490	CFSM .14	IN. 1.86

NUECES RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1966 to current year. Pesticide analyses: January 1974 to current year. Sediment analyses: January 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 05...	1300	21	406	8.30	10.5	2	0.30	10.9	100	0	K4
MAY 11...	1542	6.6	363	8.20	23.0	1	0.20	8.4	102	0.5	51
AUG 31...	1818	5.5	358	8.00	29.0	<1	0.50	8.3	113	0.5	140
DATE	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN 05...	K16	210	24	61	13	6.9	0.2	0.50	182	15	12
MAY 11...	94	180	20	53	12	7.2	0.2	0.70	162	17	13
AUG 31...	96	180	20	51	13	6.9	0.2	0.70	161	13	11
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
JAN 05...	0.10	8.5	226	<1	<1	<0.010	1.20	<0.010	--	0.20	<0.010
MAY 11...	0.20	10	210	<1	<1	<0.010	0.400	0.020	0.38	0.40	<0.010
AUG 31...	0.10	12	204	5	<1	<0.010	0.200	<0.010	--	0.30	<0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 05...	<0.1	0.03	<1	34	50	<1	<5	1	<3	<5	<1
MAY 11...	1.7	--	--	--	--	--	--	--	--	--	--
AUG 31...	1.5	--	<1	38	--	1	<1	<1	11	5	1
DATE	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)
JAN 05...	<0.1	<1	<1.0	3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAY 11...	--	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.1	<1	<1.0	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
DATE	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)
JAN 05...	<0.01	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
MAY 11...	--	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.01	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01

NUECES RIVER BASIN

357

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 05...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 11...	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08197500 FRIO RIVER BELOW DRY FRIO RIVER NEAR UVALDE, TX

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

DRAINAGE AREA.--631 mi².

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

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

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

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

AVERAGE DISCHARGE.--36 years, 34.6 ft³/s (25,070 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,600 ft³/s May 29, 1987 (gage height, 25.05 ft, from floodmark), from rating curve extended above 12,000 ft³/s on basis of slope-area measurements of 24,400, 53,000, and 88,500 ft³/s; no flow most of time each year.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	2300	2,150	6.69	July 12	0300	*12,900	*11.58

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	.00	.45	.00	.00	.00	.00	.00	.00	8.1	.03	.00
2	2.3	.00	.45	.00	.00	.00	.00	.00	.00	1.8	.03	.00
3	2.2	.00	.45	.00	.00	.00	.00	.00	.00	.77	.03	.00
4	2.2	.00	.24	.00	.00	.00	.00	.00	.00	.09	.03	.00
5	2.1	.00	.00	.00	.00	.00	.00	.00	.00	.03	.03	.00
6	1.9	.00	.00	.00	.00	.00	.00	.00	.00	.03	.01	.00
7	1.8	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
8	1.7	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
9	1.5	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
10	1.3	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
11	1.2	.00	.00	.01	.00	.00	.00	.00	.00	.03	.00	.00
12	.98	.00	.00	.16	.00	.00	.00	.00	.00	3520	.00	.00
13	.93	.00	.00	.25	.00	.00	.00	.00	.00	488	.00	.00
14	.93	.03	.00	.25	.00	.00	.00	.00	.00	188	.00	.00
15	.87	.18	.00	.25	.00	.00	.00	.00	.00	96	.00	.00
16	.69	.29	.00	.27	.00	.00	.00	.00	.00	49	.00	.00
17	.50	.30	.00	.30	.00	.00	.00	.00	.00	19	.00	.00
18	.16	.30	.00	.30	.00	.00	.00	.00	.00	4.7	.00	.00
19	.00	.31	.00	.30	.00	.00	.00	.00	.00	1.5	.00	.00
20	.13	.30	.00	.30	.00	.00	.00	.00	.00	1.0	.00	.00
21	.35	.35	.00	.29	.00	.00	.00	.00	.00	.59	.00	.00
22	.46	.37	.00	.08	.00	.00	.00	.00	.00	.10	.00	.00
23	.53	.37	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00
24	.60	.39	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00
25	.62	.47	.00	.00	.00	.00	.00	.00	23	.07	.00	.00
26	.67	.45	.00	.00	.00	.00	.00	.00	847	.05	.00	.00
27	.72	.40	.00	.00	.00	.00	.00	.00	1210	.05	.00	.00
28	.72	.44	.00	.00	.00	.00	.00	.00	322	.05	.00	.00
29	.72	.45	.00	.00	.00	.00	.00	.00	119	.04	.00	.00
30	.53	.45	.00	.00	---	.00	.00	.00	42	.03	.00	.00
31	.13	---	.00	.00	---	.00	---	.00	---	.03	.00	---
TOTAL	31.84	5.85	1.59	2.76	0.00	0.00	0.00	0.00	2563.00	4379.32	0.16	0.00
MEAN	1.03	.19	.051	.089	.00	.00	.00	.00	85.4	141	.005	.00
MAX	2.4	.47	.45	.30	.00	.00	.00	.00	1210	3520	.03	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
AC-FT	63	12	3.2	5.5	.0	.0	.0	.0	5080	8690	.3	.0

CAL YR 1987 TOTAL 78340.48 MEAN 215 MAX 24100 MIN .00 AC-FT 155400
WTR YR 1988 TOTAL 6984.52 MEAN 19.1 MAX 3520 MIN .00 AC-FT 13850

NUECES RIVER BASIN

359

08198000 SABINAL RIVER NEAR SABINAL, TX

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

DRAINAGE AREA.--206 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. There are several small diversions above station for irrigation.

AVERAGE DISCHARGE.--46 years, 60.4 ft³/s (3.98 in/yr), 43,760 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 11	2000	*10,300	*12.21	No other peak greater than base discharge.			
Minimum daily discharge, 4.1 ft ³ /s June 24.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	52	45	42	32	29	22	15	13	21	42	18
2	81	52	44	42	32	29	22	16	12	19	38	17
3	81	51	45	42	30	28	21	16	15	17	37	17
4	79	48	44	40	31	26	20	15	11	15	35	17
5	79	46	44	40	32	26	20	14	11	14	36	15
6	75	46	42	40	32	26	20	13	9.5	13	37	15
7	73	44	39	40	32	26	20	13	8.8	13	34	14
8	73	61	39	39	32	26	20	13	8.1	13	32	14
9	73	58	39	39	32	25	20	12	7.6	12	30	13
10	71	51	39	37	32	25	20	12	7.4	12	28	13
11	69	48	39	35	31	24	19	11	6.8	1490	28	13
12	67	46	39	37	30	24	19	11	6.7	555	27	12
13	67	46	39	37	30	23	19	11	6.7	153	24	12
14	67	48	38	37	30	23	19	11	6.2	90	25	12
15	67	48	35	37	30	23	19	11	6.1	70	26	11
16	66	50	36	37	30	23	19	11	6.1	62	25	11
17	63	55	37	37	30	26	20	11	5.6	55	24	13
18	63	53	39	36	30	29	19	10	5.5	49	24	14
19	63	48	56	35	30	26	18	10	5.2	44	24	16
20	62	46	63	34	30	25	17	12	5.1	43	24	17
21	58	45	58	34	30	24	17	21	5.0	60	23	16
22	58	44	50	34	29	24	17	30	4.5	53	21	14
23	59	45	49	34	29	24	17	23	4.5	45	20	14
24	61	46	50	34	29	24	16	19	4.1	42	19	14
25	62	46	47	34	29	24	15	17	5.1	38	20	13
26	61	44	46	33	29	24	14	16	17	37	20	13
27	58	44	46	32	29	24	13	15	157	36	19	12
28	56	44	46	32	29	23	13	13	55	35	18	11
29	54	44	44	32	29	22	13	13	36	33	18	11
30	54	44	44	32	---	22	14	13	26	32	18	11
31	53	---	44	32	---	22	---	13	---	39	18	---
TOTAL	2058	1443	1365	1126	880	769	542	441	477.6	3210	814	413
MEAN	66.4	48.1	44.0	36.3	30.3	24.8	18.1	14.2	15.9	104	26.3	13.8
MAX	85	61	63	42	32	29	22	30	157	1490	42	18
MIN	53	44	35	32	29	22	13	10	4.1	12	18	11
AC-FT	4080	2860	2710	2230	1750	1530	1080	875	947	6370	1610	819
CFSM	.32	.23	.21	.18	.15	.12	.09	.07	.08	.50	.13	.07
IN.	.37	.26	.25	.20	.16	.14	.10	.08	.09	.58	.15	.07

CAL YR 1987	TOTAL	95775	MEAN	262	MAX	7130	MIN	35	AC-FT	190000	CFSM	1.27	IN.	17.30
WTR YR 1988	TOTAL	13538.6	MEAN	37.0	MAX	1490	MIN	4.1	AC-FT	26850	CFSM	.18	IN.	2.44

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1964 to July 1965. Chemical and biochemical analyses: February 1970 to current year. Pesticide analyses: August 1971 to current year. Sediment analyses: November 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		STREAM-FLOW, INSTANTANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 06...	1020	40	476	8.20	10.5	3	0.10	10.4	96	0.2	88
MAY 11...	0926	11	443	7.90	24.0	2	0.40	7.4	91	0.9	150
AUG 31...	0905	18	435	7.80	26.0	1	0.40	7.0	90	0.7	K350
DATE	STREP-TOCOCCEI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
JAN 06...	58	240	29	74	14	9.0	0.3	0.90	214	27	14
MAY 11...	99	220	32	65	13	9.2	0.3	0.90	184	29	15
AUG 31...	260	220	33	63	14	8.8	0.3	2.4	182	26	13
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOUS TOTAL (MG/L AS P)
JAN 06...	0.20	11	278	<1	<1	<0.010	0.900	0.020	--	<0.20	<0.010
MAY 11...	0.30	13	256	<1	<1	<0.010	0.300	0.010	0.39	0.40	0.010
AUG 31...	0.20	14	251	2	<1	<0.010	0.200	<0.010	--	0.80	<0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)
JAN 06...	0.8	--	--	--	--	--	--	--	--	--	--
MAY 11...	2.1	--	--	--	--	--	--	--	--	--	--
AUG 31...	1.1	<1	35	2	<1	1	11	5	2	0.1	<1
DATE	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	
JAN 06...	--	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
MAY 11...	--	--	--	--	--	--	--	--	--	--	
AUG 31...	<1.0	8	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	
JAN 06...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
MAY 11...	--	--	--	--	--	--	--	--	--	--	
AUG 31...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER BASIN

361

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 06...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 11...	--	--	--	--	--	--	--	--	--	--
AUG 31...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08198500 SABINAL RIVER AT SABINAL, TX

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

DRAINAGE AREA.--241 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records good. Several small diversions for irrigation above station. Most of low flow of the Sabinal River enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin upstream from this station and downstream from Sabinal River near Sabinal (station 08198000). Several observations of water temperature were made during the year. Satellite telemeter at station.

AVERAGE DISCHARGE.--36 years, 34.5 ft³/s (25,000 acre-ft/yr).

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	0100	*7,010	*14.95	No other peak greater than base discharge.			

Minimum daily discharge, 1.5 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	6.8	5.8	5.1	4.1	3.0	4.3	2.3	2.1	1.9	3.3	3.3
2	10	6.6	5.8	5.0	3.8	3.0	4.2	2.3	1.9	2.0	2.9	3.1
3	9.6	6.4	5.7	5.0	3.7	3.0	4.2	2.0	2.6	2.0	2.9	2.8
4	9.1	6.4	5.5	4.8	3.7	3.0	4.4	2.2	2.1	1.9	3.0	2.9
5	8.7	6.4	5.4	4.8	3.9	2.8	4.3	2.1	2.4	1.7	3.0	2.6
6	8.6	6.6	5.1	4.6	3.9	2.6	4.1	2.2	2.5	1.8	2.8	2.7
7	8.5	6.5	5.1	4.6	3.9	2.6	3.6	2.2	2.5	1.9	2.7	2.3
8	8.4	7.8	5.3	4.5	3.9	2.4	3.5	2.2	2.5	1.9	2.6	2.4
9	8.2	8.2	5.4	4.5	3.8	2.4	3.4	2.2	2.4	2.0	2.7	2.8
10	8.1	7.9	5.5	4.3	3.7	2.4	3.2	2.2	2.2	2.4	2.7	2.8
11	8.1	7.7	5.3	4.3	3.6	2.3	2.8	2.1	2.3	8.6	2.8	3.2
12	8.2	7.5	5.1	4.3	3.6	2.2	2.8	2.3	2.4	1290	2.8	2.8
13	8.1	7.3	5.2	4.3	3.6	2.2	3.2	2.2	2.3	79	2.7	2.8
14	8.1	7.1	5.3	4.2	3.5	2.1	3.4	2.2	2.4	22	2.7	2.6
15	8.0	6.9	6.5	4.2	3.4	2.3	3.4	2.0	2.2	8.1	2.7	1.9
16	7.9	7.3	6.9	4.2	3.3	2.5	3.6	1.8	2.2	3.8	2.8	1.5
17	7.7	7.4	7.1	4.2	3.2	2.7	3.2	2.0	2.1	2.5	2.8	2.2
18	8.2	7.3	7.1	4.2	3.9	2.6	2.9	2.1	2.2	2.0	2.9	2.2
19	8.5	7.1	7.6	4.2	3.6	3.2	3.1	2.1	2.0	1.9	2.9	3.3
20	9.0	7.1	7.7	4.4	3.6	4.1	3.2	2.5	2.0	2.1	2.9	2.7
21	9.4	6.9	7.7	4.6	3.5	4.2	3.1	3.0	1.8	3.2	2.9	2.7
22	8.9	6.8	7.5	4.1	3.2	4.2	2.9	2.5	2.0	2.5	2.9	2.7
23	8.8	6.8	7.1	4.0	2.8	4.2	2.8	2.9	1.7	2.7	2.9	2.8
24	8.2	6.6	7.1	4.0	2.6	4.0	2.9	3.2	1.8	2.6	2.9	3.0
25	8.1	6.7	7.0	4.2	2.6	4.0	2.6	3.2	1.8	2.8	2.8	2.7
26	7.9	6.6	14	4.2	2.6	3.6	2.6	2.9	2.0	2.9	2.6	2.6
27	7.8	6.5	13	4.2	2.7	2.9	2.4	2.7	2.0	3.0	2.2	2.9
28	7.7	6.3	11	4.2	2.8	2.7	2.4	3.0	2.0	3.3	2.1	3.6
29	7.3	6.0	9.0	4.2	3.0	2.8	2.3	2.8	2.1	3.3	2.9	3.6
30	7.2	6.0	7.4	4.2	---	3.3	2.4	1.7	1.8	3.3	3.3	3.5
31	7.1	---	5.8	4.2	---	3.6	---	1.9	---	3.8	3.3	---
TOTAL	259.4	207.5	215.0	135.8	99.5	92.9	97.2	73.0	64.3	1472.9	87.4	83.0
MEAN	8.37	6.92	6.94	4.38	3.43	3.00	3.24	2.35	2.14	47.5	2.82	2.77
MAX	10	8.2	14	5.1	4.1	4.2	4.4	3.2	2.6	1290	3.3	3.6
MIN	7.1	6.0	5.1	4.0	2.6	2.1	2.3	1.7	1.7	1.7	2.1	1.5
AC-FT	515	412	426	269	197	184	193	145	128	2920	173	165

CAL YR 1987 TOTAL 72859.9 MEAN 200 MAX 9600 MIN 5.1 AC-FT 144500
WTR YR 1988 TOTAL 2887.9 MEAN 7.89 MAX 1290 MIN 1.5 AC-FT 5730

NUECES RIVER BASIN

363

08200000 HONDO CREEK NEAR TARPLEY, TX

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

DRAINAGE AREA.--95.6 mi².

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft, from Magnolia Oil Co. datum.

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

AVERAGE DISCHARGE.--36 years, 41.0 ft³/s (5.82 in/yr), 29,700 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 11	1330	*1,960	*5.02	No other peak greater than base discharge.			
Minimum daily discharge, 0.90 ft ³ /s June 13-15, 23-25.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.0	9.5	16	11	7.9	6.1	3.3	e1.8	e1.8	14	5.5
2	11	7.0	9.2	16	11	7.5	5.6	3.4	e2.1	e1.8	13	5.6
3	10	6.9	9.1	16	11	6.8	5.9	3.5	e2.5	e1.7	12	5.8
4	10	6.8	8.9	16	11	6.4	5.9	3.0	e2.0	e1.6	12	4.8
5	11	6.4	8.8	15	11	6.3	6.0	2.9	e1.7	e1.6	12	4.8
6	10	6.2	8.6	17	10	6.2	5.6	2.8	e1.6	e1.6	11	4.8
7	9.9	6.4	8.2	18	10	6.1	5.4	2.9	e1.5	e1.6	11	4.7
8	9.4	6.6	8.0	18	10	6.3	5.9	3.3	e1.4	e1.6	10	4.5
9	9.0	34	7.6	17	10	6.1	6.1	2.8	e1.3	e1.6	10	4.4
10	8.9	15	7.6	16	9.8	5.6	5.6	2.4	e1.1	e2.0	10	4.3
11	8.7	13	7.5	15	9.7	5.7	5.1	2.4	e1.0	469	9.2	4.1
12	8.6	12	7.2	15	8.8	5.2	5.1	2.7	e.95	72	8.6	4.0
13	8.9	12	7.2	14	8.7	5.1	5.1	2.6	e.90	43	8.2	4.2
14	8.1	11	7.2	15	8.7	5.0	5.0	2.3	e.90	33	8.0	3.9
15	8.2	11	6.5	14	8.5	4.9	4.9	2.1	e.90	29	7.8	3.6
16	8.3	16	6.7	14	8.3	5.2	6.0	2.2	e.95	26	7.5	3.6
17	8.4	13	7.4	14	8.3	11	6.3	2.2	e1.0	23	7.5	5.7
18	8.1	12	8.8	15	9.3	8.6	4.9	1.8	e1.0	21	7.6	7.3
19	8.0	11	24	14	9.1	7.6	4.5	1.7	e1.0	19	7.4	38
20	7.9	11	21	14	8.4	7.4	4.7	2.0	e1.0	21	7.1	11
21	7.5	10	17	13	7.8	6.9	5.4	6.4	e1.0	22	6.8	8.6
22	7.6	10	18	13	7.5	6.5	8.1	2.6	e.95	18	6.6	7.9
23	8.5	10	17	12	7.4	6.7	4.6	1.6	e.90	17	6.4	7.8
24	9.7	11	16	12	7.1	6.4	3.8	1.5	e.90	16	6.2	7.5
25	8.4	17	17	12	7.0	6.3	3.7	1.6	e.90	15	6.0	7.1
26	7.9	10	28	11	7.2	6.3	3.7	1.8	e7.0	14	5.8	6.6
27	7.5	11	19	11	7.3	7.0	3.5	1.7	2.5	14	5.8	6.3
28	7.3	9.6	18	11	7.2	7.2	3.6	1.4	e2.3	14	5.9	6.0
29	7.3	9.9	16	11	7.0	6.7	4.2	1.5	e2.2	17	5.7	6.0
30	7.2	9.9	16	11	---	6.0	4.8	1.6	e2.0	14	5.7	7.4
31	7.0	---	16	11	---	6.0	---	1.9	---	15	5.7	---
TOTAL	269.3	392.1	387.0	437	258.1	202.9	155.1	75.9	47.25	948.9	260.5	205.8
MEAN	8.69	13.1	12.5	14.1	8.90	6.55	5.17	2.45	1.57	30.6	8.40	6.86
MAX	11	66	28	18	11	11	8.1	6.4	7.0	469	14	38
MIN	7.0	6.2	6.5	11	7.0	4.9	3.5	1.4	.90	1.6	5.7	3.6
AC-FT	534	778	768	867	512	402	308	151	94	1880	517	408
CFSM	.09	.14	.13	.15	.09	.07	.05	.03	.02	.32	.09	.07
IN.	.10	.15	.15	.17	.10	.08	.06	.03	.02	.37	.10	.08

CAL YR 1987 TOTAL 59008.4 MEAN 162 MAX 7600 MIN 6.2 AC-FT 117000 CFSM 1.69 IN. 22.96
WTR YR 1988 TOTAL 3639.85 MEAN 9.94 MAX 469 MIN .90 AC-FT 7220 CFSM .10 IN. 1.42

e Estimated.

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1965 to September 1969. Chemical and biochemical analyses: February 1970 to current year. Pesticide analyses: August 1971 to current year. Sediment analyses: November to December 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 07...	1110	20	421	8.30	7.0	1	0.20	11.4	96	0.2	K26
MAY 10...	0934	2.7	418	8.00	23.5	2	0.30	6.8	83	1.1	99
AUG 30...	0856	5.3	349	7.80	25.5	1	0.60	6.6	84	0.7	56
DATE	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN 07...	K2	210	34	69	10	7.5	0.2	1.0	180	34	12
MAY 10...	67	200	53	60	12	9.3	0.3	1.2	147	49	15
AUG 30...	250	160	42	48	10	7.4	0.3	1.3	119	37	10
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOL- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
JAN 07...	0.20	9.3	251	<1	<1	<0.010	0.400	0.020	--	<0.20	<0.010
MAY 10...	0.30	14	249	<1	<1	<0.010	0.200	0.020	0.68	0.70	0.010
AUG 30...	0.20	13	198	3	<1	<0.010	0.100	<0.010	--	<0.20	0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)
JAN 07...	0.7	--	--	--	--	--	--	--	--	--	--
MAY 10...	1.9	--	--	--	--	--	--	--	--	--	--
AUG 30...	1.8	<1	32	1	<1	<1	15	<5	2	<0.1	<1
DATE	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	
JAN 07...	--	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
MAY 10...	--	--	--	--	--	--	--	--	--	--	
AUG 30...	<1.0	33	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	
JAN 07...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
MAY 10...	--	--	--	--	--	--	--	--	--	--	
AUG 30...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 07...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 10...	--	--	--	--	--	--	--	--	--	--
AUG 30...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER MAIN STEM

08200700 HONDO CREEK AT KING WATERHOLE NEAR HONDO, TX

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

DRAINAGE AREA.--149 mi².

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

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

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

REMARKS.--Records good. Most of the low flow of Hondo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin between Tarpley (station 08200000) and this station. There are several small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 16.4 ft³/s (11,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft³/s May 29, 1987 (gage height, 17.19 ft), from rating curve extended above 16.0 ft; no flow most of time.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 11	2330	*241	*2.70				

Minimum daily discharge, no flow most of year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	62	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.0	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.86	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.90	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.58	.00	.00
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	62	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	158	.0	.0

CAL YR 1987 TOTAL 46360.20 MEAN 127 MAX 10500 MIN .00 AC-FT 91960
WTR YR 1988 TOTAL 79.90 MEAN .22 MAX 62 MIN .00 AC-FT 158

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX

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

DRAINAGE AREA.--45.0 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

AVERAGE DISCHARGE.--27 years, 19.7 ft³/s (5.94 in/yr), 14,270 acre-ft/yr.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1430	*229	*2.64				

Minimum daily discharge, 0.36 ft³/s June 13, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	3.1	3.9	5.4	3.6	3.1	2.5	1.6	.91	1.1	2.8	1.1
2	5.3	3.1	3.9	5.3	3.6	2.8	2.4	1.3	1.1	.81	2.8	1.1
3	4.9	3.1	3.9	5.3	3.6	2.8	2.2	1.3	.98	.76	2.8	1.2
4	4.6	3.1	3.9	4.9	3.8	2.8	2.2	1.2	.76	.68	3.1	1.1
5	4.6	3.1	3.6	4.7	3.5	2.8	2.4	1.0	.68	.65	4.3	1.1
6	4.6	2.8	3.6	5.6	3.4	2.6	2.5	.92	.65	.58	2.7	1.2
7	4.6	2.6	3.4	5.6	3.4	2.6	2.4	.92	.58	.58	2.2	1.0
8	4.4	40	3.4	4.9	3.4	2.6	2.4	1.0	.58	.58	2.1	.91
9	4.3	11	3.2	4.4	3.3	2.4	2.5	1.1	.55	.58	2.0	.79
10	4.3	6.7	3.1	4.3	3.1	2.4	2.3	1.0	.50	.74	2.0	.79
11	4.3	5.7	3.1	4.2	2.9	2.4	2.0	.90	.49	29	1.8	.69
12	4.3	5.1	3.1	4.3	2.8	2.2	1.8	.87	.42	20	1.6	.72
13	4.3	4.8	3.1	4.2	2.8	2.3	1.8	.87	.36	11	1.5	1.1
14	4.2	4.6	2.9	3.9	2.9	2.6	1.8	1.0	.36	8.7	1.6	.92
15	3.9	4.6	2.5	3.9	2.8	2.6	1.8	.88	.39	7.3	2.7	.85
16	3.9	8.0	2.6	4.4	2.8	2.7	2.1	.79	.46	6.3	1.8	.68
17	3.9	5.1	2.8	4.4	2.8	4.2	2.5	.79	.50	5.5	1.6	1.3
18	3.9	4.9	3.2	4.3	3.1	4.0	2.0	.79	.50	4.9	1.8	1.6
19	3.9	4.4	11	4.1	3.1	3.6	1.7	.76	.50	4.3	1.6	2.9
20	3.9	4.4	7.6	3.9	3.1	3.6	1.7	1.1	.48	5.5	1.4	2.0
21	3.6	4.6	7.7	3.7	2.9	3.4	1.7	3.0	.50	7.1	1.4	1.4
22	3.6	4.6	6.6	3.5	2.7	3.1	1.8	1.8	.49	4.8	1.3	1.4
23	3.6	4.6	6.4	3.6	2.6	3.1	1.7	1.4	.42	4.2	1.3	1.3
24	3.6	4.6	6.5	3.7	2.6	3.1	1.5	1.2	.42	3.9	1.3	1.2
25	3.6	5.3	6.6	3.8	2.6	2.6	1.5	.89	1.6	3.6	1.2	1.1
26	3.6	4.3	7.6	3.6	2.6	2.0	1.4	.68	5.9	3.4	1.2	.92
27	3.6	4.3	7.0	3.5	2.6	1.8	1.3	.68	4.5	3.1	1.2	.87
28	3.5	4.3	6.6	3.4	2.6	2.6	1.3	.68	2.2	3.6	1.2	.79
29	3.4	4.3	6.2	3.4	2.7	2.7	1.4	.68	1.6	3.4	1.2	.79
30	3.4	4.1	5.9	3.5	---	2.5	1.6	.68	1.5	3.1	1.2	1.2
31	3.2	---	5.7	3.6	---	2.4	---	.74	---	2.9	1.2	---
TOTAL	126.1	175.2	150.6	131.3	87.7	86.4	58.2	32.52	30.88	152.66	57.9	34.02
MEAN	4.07	5.84	4.86	4.24	3.02	2.79	1.94	1.05	1.03	4.92	1.87	1.13
MAX	5.3	40	11	5.6	3.8	4.2	2.5	3.0	5.9	29	4.3	2.9
MIN	3.2	2.6	2.5	3.4	2.6	1.8	1.3	.68	.36	.58	1.2	.68
AC-FT	250	348	299	260	174	171	115	65	61	303	115	67
CFSM	.09	.13	.11	.09	.07	.06	.04	.02	.02	.11	.04	.03
IN.	.10	.14	.12	.11	.07	.07	.05	.03	.03	.13	.05	.03
CAL YR 1987	TOTAL 24447.8	MEAN 67.0	MAX 2870	MIN 2.5	AC-FT 48490	CFSM 1.49	IN. 20.21					
WTR YR 1988	TOTAL 1123.48	MEAN 3.07	MAX 40	MIN .36	AC-FT 2230	CFSM .07	IN. .93					

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1965 to September 1969. Chemical and biochemical analyses: March 1970 to current year. Pesticide analyses: January 1974 to current year. Sediment analyses: November 1965.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 06...	1500	5.3	431	8.40	9.5	2	0.20	11.1	100	0.3	31
MAY 10...	1434	0.50	397	8.30	33.0	2	0.60	7.9	114	1.0	400
AUG 30...	1424	1.1	388	8.20	33.0	1	0.60	10.3	150	0.5	200
DATE	STREP- TOCOCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN 06...	K15	210	47	67	11	7.7	0.2	0.90	166	49	13
MAY 10...	34	180	69	53	12	11	0.4	1.2	113	64	16
AUG 30...	K8	180	70	51	12	8.5	0.3	1.1	107	61	14
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
JAN 06...	0.20	9.7	258	<1	<1	<0.010	0.500	0.020	--	<0.20	<0.010
MAY 10...	0.30	14	239	<1	<1	<0.010	<0.100	0.010	0.59	0.60	0.010
AUG 30...	0.20	14	226	6	<1	<0.010	<0.100	<0.010	--	<0.20	<0.010
DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)
JAN 06...	0.7	--	--	--	--	--	--	--	--	--	--
MAY 10...	2.5	--	--	--	--	--	--	--	--	--	--
AUG 30...	1.9	<1	32	<1	<1	1	6	5	<1	<0.1	<1
DATE	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	
JAN 06...	--	--	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
MAY 10...	--	--	--	--	--	--	--	--	--	--	
AUG 30...	<1.0	7	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	
DATE	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	
JAN 06...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
MAY 10...	--	--	--	--	--	--	--	--	--	--	
AUG 30...	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER BASIN

369

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
JAN 06...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAY 10...	--	--	--	--	--	--	--	--	--	--
AUG 30...	<0.01	<0.01	<0.01	<0.1	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08202700 SECO CREEK AT ROWE RANCH NEAR D'HANIS, TX

LOCATION.--Lat 29°21'43", long 99°17'05", Medina County, Hydrologic Unit 12110107, on left bank 2.9 mi north of D'Hanis and 8.0 mi downstream from Rocky Creek.

DRAINAGE AREA.--168 mi².

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

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

REMARKS.--No estimated daily discharges. Records good. All of the low flow of Seco Creek enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin between Miller Ranch (station 08201500) and this station. No known diversion above station.

AVERAGE DISCHARGE.--27 years (water years 1962-88), 9.10 ft³/s (6,590 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,800 ft³/s May 29, 1987 (gage height, 28.20 ft), from rating curve extended above 25,100 ft³/s on basis of slope-area measurement of 35,800 ft³/s; no flow most of time each year.

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

EXTREMES FOR CURRENT YEAR.--No flow during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CAL YR 1987 TOTAL 18952.41 MEAN 51.9 MAX 8310 MIN .00 AC-FT 37590
WTR YR 1988 TOTAL 0.00 MEAN .00 MAX .00 MIN .00 AC-FT .0

08205500 FRIO RIVER NEAR DERBY, TX

LOCATION.--Lat 28°44'11", long 99°08'40", Frio County, Hydrologic Unit 12110106, on right bank 17 ft downstream from centerline of railroad tracks, 35 ft right of the Missouri Pacific Railroad Co. bridge abutment, 167 ft downstream from Interstate Highway 35, 917 ft downstream from Leona River, 2.5 mi south of Derby, and 115.1 mi upstream from mouth.

DRAINAGE AREA.--3,429 mi².

PERIOD OF RECORD.--August 1915 to current year.

REVISED RECORDS.--WSP 568: 1915-16, 1918-22. WSP 1312: 1917-18(M). WSP 1923: 1954. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 449.11 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1915, to Apr. 21, 1931, nonrecording gage, and Apr. 22, 1931, to Mar. 6, 1940, water-stage recorder at same site and datum. Mar. 7, 1940, to May 4, 1972, water-stage recorder, and May 5 to Nov. 1, 1972, nonrecording gage at site 167 ft upstream at same datum.

REMARKS.--Records good. Part of flow of Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for stations 08197500, 08198500, 08200700, and 08202700). There is considerable loss of flow into various permeable formations downstream from the Balcones Fault Zone. There are many small diversions for irrigation above station. Satellite telemeter at station.

AVERAGE DISCHARGE.--73 years, 144 ft³/s (104,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s July 4, 1932 (gage height, 29.45 ft, from floodmarks), from rating curve extended above 76,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times most years.

Maximum stage since at least 1860, that of July 4, 1932.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 13	2000	*1,610	*4.93	No other peak greater than base discharge.			

Minimum daily discharge, 11 ft³/s June 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	187	132	150	160	139	111	95	60	47	191	23	19
2	180	133	148	160	137	108	95	62	46	127	22	21
3	179	133	149	160	135	110	95	63	47	80	20	22
4	175	134	147	160	137	110	96	62	101	60	21	22
5	170	135	147	158	137	108	95	62	143	46	23	21
6	164	133	147	158	132	105	95	61	82	38	24	21
7	163	130	147	160	130	102	92	58	64	32	24	23
8	163	129	147	161	130	102	92	55	55	30	23	24
9	160	139	147	163	130	101	89	53	49	26	22	24
10	156	142	147	163	130	103	86	53	48	23	19	24
11	153	157	146	163	130	105	84	54	43	22	17	24
12	153	155	147	163	128	103	87	57	38	22	19	26
13	150	150	147	161	127	102	86	55	33	1030	17	24
14	150	147	147	160	127	95	86	55	29	1090	16	23
15	150	149	143	160	124	90	87	55	26	550	16	23
16	150	158	139	160	124	90	85	55	25	299	14	22
17	150	158	138	162	122	93	85	53	23	188	14	27
18	150	160	140	165	118	96	87	50	20	131	13	29
19	150	159	150	166	118	95	88	49	20	88	13	34
20	149	151	171	160	173	106	86	47	19	63	e14	56
21	145	148	177	157	159	107	83	48	17	53	e14	50
22	141	149	182	151	142	105	81	50	16	67	15	36
23	143	148	175	147	131	105	79	53	14	51	16	37
24	144	148	172	147	130	107	76	62	14	42	16	37
25	146	153	169	145	130	106	75	58	12	39	17	37
26	150	153	169	146	125	105	72	56	12	37	26	37
27	147	153	169	143	121	102	68	54	11	33	22	37
28	141	150	168	141	122	99	69	49	458	31	20	35
29	138	150	168	141	118	97	70	47	671	31	20	35
30	135	150	165	138	---	96	64	52	352	28	19	34
31	133	---	163	138	---	95	---	52	---	25	19	---
TOTAL	4765	4386	4821	4817	3806	3159	2528	1700	2535	4573	578	884
MEAN	154	146	156	155	131	102	84.3	54.8	84.5	148	18.6	29.5
MAX	187	160	182	166	173	111	96	63	671	1090	26	56
MIN	133	129	138	138	118	90	64	47	11	22	13	19
AC-FT	9450	8700	9560	9550	7550	6270	5010	3370	5030	9070	1150	1750

CAL YR 1987 TOTAL 280294 MEAN 768 MAX 24900 MIN 74 AC-FT 556000
WTR YR 1988 TOTAL 38552 MEAN 105 MAX 1090 MIN 11 AC-FT 76470

e Estimated.

NUECES RIVER BASIN

08206600 FRIO RIVER AT TILDEN, TX

LOCATION.--Lat 28°28'02", long 98°32'50", McMullen County, Hydrologic Unit 12110108, on left end at downstream side of bridge on State Highway 16 in Tilden, 300 ft downstream from Leoncita Creek, 1.3 mi upstream from Salt Branch, 1.8 mi downstream from Big Slough, and 44.2 mi upstream from mouth.

DRAINAGE AREA.--4,493 mi².

PERIOD OF RECORD.--July 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 216.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Part of flow of Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone that crosses basin upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--10 years, 229 ft³/s (165,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,900 ft³/s June 9, 1987 at 1600 hours (gage height, 29.18 ft); no flow for many days in 1984-85.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1932 reached a stage of 38.44 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 12	1500	*1,580	*15.44	No other peak greater than base discharge.			
Minimum daily discharge, 3.0 ft ³ /s Sept. 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	119	135	147	133	112	88	69	71	517	76	45
2	163	117	136	143	133	108	86	68	e75	648	119	43
3	165	116	136	142	131	103	85	65	81	516	123	42
4	158	118	135	140	131	99	85	64	83	188	84	40
5	153	118	136	140	129	98	84	64	75	115	73	38
6	151	118	136	142	128	99	84	63	72	85	68	37
7	148	117	136	140	129	99	83	62	94	72	65	36
8	147	118	136	140	128	97	84	62	107	66	63	35
9	145	119	135	140	126	92	83	61	84	73	63	34
10	146	117	134	139	126	93	80	60	75	60	62	33
11	144	116	135	140	125	93	77	63	69	57	61	33
12	140	119	135	143	124	90	75	110	66	887	59	33
13	138	126	134	142	125	91	72	83	64	249	57	32
14	136	134	130	141	125	90	75	79	62	84	56	32
15	134	131	129	142	124	88	76	68	60	165	56	31
16	132	137	129	144	123	86	78	65	57	475	56	32
17	132	142	128	145	122	89	79	64	56	699	55	43
18	131	146	125	147	122	88	83	62	54	850	54	52
19	131	144	127	146	120	88	87	61	53	482	54	74
20	130	143	129	145	117	88	83	59	52	169	53	52
21	128	145	134	146	115	89	82	226	50	147	52	37
22	128	142	143	144	122	90	82	273	48	188	51	35
23	128	138	157	142	147	94	81	172	47	197	50	38
24	126	136	159	139	137	94	80	103	46	134	49	43
25	126	137	159	135	124	91	77	97	45	101	48	38
26	127	137	152	132	115	91	76	84	44	96	47	35
27	127	139	150	132	110	93	74	82	43	85	46	34
28	128	140	149	133	108	93	72	79	44	77	45	33
29	127	139	147	133	108	90	70	76	91	74	44	32
30	124	137	147	134	---	87	69	75	349	75	47	30
31	121	---	147	134	---	88	---	73	---	75	46	---
TOTAL	4283	3905	4300	4352	3607	2891	2390	2692	2217	7706	1882	1152
MEAN	138	130	139	140	124	93.3	79.7	86.8	73.9	249	60.7	38.4
MAX	169	146	159	147	147	112	88	273	349	887	123	74
MIN	121	116	125	132	108	86	69	59	43	57	44	30
AC-FT	8500	7750	8530	8630	7150	5730	4740	5340	4400	15280	3730	2280

CAL YR 1987 TOTAL 345290 MEAN 946 MAX 20100 MIN 80 AC-FT 684900
WTR YR 1988 TOTAL 41377 MEAN 113 MAX 887 MIN 30 AC-FT 82070

e Estimated.

08206700 SAN MIGUEL CREEK NEAR TILDEN, TX

LOCATION.--Lat 28°35'14", long 98°32'44", McMullen County, Hydrologic Unit 12110109, on left bank 25 ft downstream from State Highway 16, 0.3 mi upstream from mouth of Bruce Branch, 0.9 mi downstream from mouth of Far Live Oak Creek, 3 mi upstream from San Patricio Creek, 7 mi downstream from Clear Creek, 8.7 mi north of Tilden, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--783 mi².

PERIOD OF RECORD.--January 1964 to current year.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 242.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are five diversions above station (amounts unknown). At times, excess water from Bexar-Medina-Atascosa Counties Water Improvement District No. 1 system enters San Miguel Creek basin via Chacon Creek 52 mi upstream (amounts unknown). Satellite telemeter at station.

AVERAGE DISCHARGE.--24 years, 63.6 ft³/s (46,080 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s May 16, 1980 (gage height, 27.31 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1919, 32.6 ft in 1942; stage of 1919 flood not known, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 28	1100	*2,820	*16.99	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.95	.51	.80	3.4	1.8	6.6	2.8	4.5	.89	23	1.5	.00
2	.97	.35	1.7	2.9	2.8	15	2.4	3.8	.24	13	.79	.00
3	.74	.35	2.0	2.6	3.2	17	2.0	3.1	9.5	51	.52	.00
4	.74	.35	2.0	2.1	2.9	12	1.6	2.1	3.3	22	.25	.00
5	.72	.35	2.7	1.9	2.8	8.7	1.4	.89	1.7	17	.12	.00
6	.44	.35	2.5	1.8	2.3	8.3	.84	.12	7.3	13	.07	.00
7	.35	.35	2.8	1.8	2.2	7.4	.71	.10	4.7	12	.04	.00
8	.35	.97	2.5	1.8	2.2	5.8	.36	.04	15	16	.03	.00
9	.23	.84	2.2	1.7	1.9	4.9	.17	.03	9.7	12	.02	.00
10	.16	.24	2.1	1.4	2.1	4.0	.07	.02	5.8	11	.02	.00
11	.15	.34	2.0	1.2	2.8	3.4	.05	.03	3.5	15	.01	.00
12	.10	.51	2.3	1.2	2.9	2.9	.06	24	1.7	88	.01	.00
13	.10	.75	2.3	1.0	2.2	2.7	.06	2.4	.41	9.5	.00	.00
14	.12	3.8	2.1	.97	2.2	2.0	.11	.74	.04	6.4	.00	.00
15	.16	3.4	2.3	.97	1.9	1.5	.16	.14	.02	5.6	.00	.00
16	.16	3.3	2.3	.97	1.9	2.2	.16	.03	.01	12	.00	.07
17	.16	2.2	1.7	.97	2.0	3.0	.16	.02	.00	8.1	.00	.43
18	.16	2.1	1.3	4.4	2.0	3.2	.11	.01	.00	5.3	.00	.02
19	.16	1.4	1.3	7.0	2.0	3.2	.05	.01	.00	3.4	.00	.01
20	.16	1.3	1.6	6.0	2.0	3.9	.04	.00	.00	2.4	.00	.00
21	.11	.84	4.0	4.8	2.4	4.1	.04	.02	.00	1.7	.00	.00
22	.10	.37	7.8	4.2	3.2	5.0	.03	.01	.00	125	.00	.00
23	.49	.14	14	4.1	3.0	12	.29	.01	.95	61	.00	.00
24	.57	.10	12	4.1	2.4	9.6	13	63	57	8.8	.00	.00
25	.87	.08	10	3.9	2.2	7.7	15	56	3.5	25	.00	.00
26	.97	.12	9.4	3.6	2.1	5.9	12	30	.34	16	.00	.00
27	.80	.35	7.0	2.1	2.0	4.9	10	15	.03	8.9	.00	.00
28	.74	1.2	5.4	1.9	1.6	4.3	7.2	7.7	1350	5.9	.00	.00
29	.74	1.4	4.6	2.2	1.3	3.7	6.0	4.9	290	4.0	.00	.00
30	.51	1.1	4.1	2.2	---	3.4	4.9	3.5	75	3.0	.00	.00
31	.51	---	3.9	2.0	---	3.1	---	2.0	---	2.2	.00	---
TOTAL	13.49	29.46	122.70	81.18	66.3	181.4	81.77	224.22	1840.63	607.2	3.38	0.53
MEAN	.44	.98	3.96	2.62	2.29	5.85	2.73	7.23	61.4	19.6	.11	.018
MAX	.97	3.8	14	7.0	3.2	17	15	63	1350	125	1.5	.43
MIN	.10	.08	.80	.97	1.3	1.5	.03	.00	.00	1.7	.00	.00
AC-FT	27	58	243	161	132	360	162	445	3650	1200	6.7	1.1

CAL YR 1987	TOTAL 27297.20	MEAN 74.8	MAX 3900	MIN .08	AC-FT 54140
WTR YR 1988	TOTAL 3252.26	MEAN 8.89	MAX 1350	MIN .00	AC-FT 6450

NUECES RIVER BASIN

08206900 CHOKE CANYON RESERVOIR NEAR THREE RIVERS, TX

LOCATION.--Lat 28°29'01", long 98°14'44", Live Oak County, Hydrologic Unit 12110108, at Choke Canyon Dam on Frio River, 3.9 mi upstream from Atascosa River, and 4.0 mi west of Three Rivers.

DRAINAGE AREA.--5,490 mi².

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.-- The reservoir is formed by a rolled earthfill dam, 3.5 mi long. The dam was completed and deliberate impoundment began on Oct. 12, 1982. The spillway has seven radial gates, each 50 ft long and 24 ft high. Water for municipal and industrial use to meet the needs of the Coastal Bend area is released downstream through a 5.0- x 5.0-foot square slide gate. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	241.1	
Top of spillway gates.....	222.5	743,900
Crest of spillway.....	199.5	269,600
Lowest gated outlet (invert).....	136.3	52

COOPERATION.--Capacity table computed June 1, 1983, provided by the city of Corpus Christi. Elevation record provided by the city of Corpus Christi and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 733,100 acre-ft June 21, 1987 (elevation, 222.1 ft); minimum, 4,500 acre-ft Oct. 1-9, 1984 (elevation, 156.9 ft).

EXTREMES (AT 0600 HOURS) FOR CURRENT YEAR.--Maximum contents, 693,700 acre-ft Oct. 1 (elevation, 220.6 ft); minimum, 660,700 acre-ft Sept. 30 (elevation, 219.3 ft).

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

219.0	653,200
220.0	678,300
221.0	704,100

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	693700	683400	683400	686000	688600	691100	688600	683400	680900	673300	683400	673300
2	691100	683400	683400	686000	688600	691100	688600	683400	680900	675800	686000	670700
3	691100	683400	683400	686000	688600	691100	688600	683400	683400	675800	683400	670700
4	691100	683400	683400	686000	688600	691100	688600	680900	683400	675800	683400	670700
5	691100	683400	683400	686000	688600	691100	688600	680900	683400	675800	683400	670700
6	691100	680900	683400	686000	688600	688600	686000	680900	680900	678300	683400	668200
7	688600	680900	683400	686000	688600	691100	686000	680900	680900	678300	683400	668200
8	688600	680900	683400	686000	688600	691100	686000	680900	680900	675800	683400	668200
9	688600	683400	683400	686000	688600	691100	686000	680900	680900	675800	680900	668200
10	688600	683400	683400	686000	688600	691100	686000	680900	680900	675800	680900	665700
11	688600	680900	686000	686000	691100	688600	686000	678300	680900	675800	680900	665700
12	688600	680900	683400	686000	688600	688600	686000	683400	680900	678300	680900	665700
13	686000	680900	686000	688600	688600	688600	686000	683400	678300	680900	678300	665700
14	686000	680900	686000	688600	688600	688600	683400	680900	678300	678300	678300	665700
15	686000	680900	683400	686000	688600	688600	683400	680900	678300	678300	678300	665700
16	686000	686000	683400	688600	688600	686000	683400	680900	678300	678300	678300	663200
17	686000	686000	683400	688600	688600	688600	686000	680900	675800	678300	678300	665700
18	686000	686000	683400	688600	691100	688600	688600	680900	675800	680900	678300	665700
19	686000	686000	683400	688600	691100	688600	686000	680900	675800	680900	678300	665700
20	686000	683400	683400	688600	691100	688600	686000	680900	675800	680900	678300	665700
21	686000	683400	686000	688600	691100	688600	686000	683400	675800	683400	675800	665700
22	683400	683400	686000	688600	691100	688600	686000	683400	675800	686000	675800	665700
23	683400	683400	686000	688600	691100	688600	686000	683400	673300	686000	675800	665700
24	686000	683400	686000	688600	688600	688600	686000	683400	673300	686000	675800	665700
25	686000	686000	686000	688600	688600	688600	686000	683400	673300	686000	675800	665700
26	686000	683400	688600	688600	688600	688600	686000	683400	673300	686000	673300	663200
27	686000	686000	688600	688600	688600	688600	683400	683400	673300	683400	673300	663200
28	683400	683400	686000	688600	688600	688600	683400	680900	670700	683400	673300	663200
29	683400	683400	686000	688600	688600	688600	683400	680900	673300	683400	673300	663200
30	683400	683400	686000	688600	---	688600	683400	680900	673300	683400	673300	660700
31	683400	---	686000	688600	---	688600	---	680900	---	686000	673300	---
MAX	693700	686000	688600	688600	691100	691100	688600	683400	683400	686000	686000	673300
MIN	683400	680900	683400	686000	688600	686000	683400	678300	670700	673300	673300	660700
(↑)	220.2	220.2	220.3	220.4	220.4	220.4	220.2	220.1	219.8	220.3	219.8	219.3
(Φ)	-10300	0	+2600	+2600	0	0	-5200	-2500	-7600	+12700	-12700	-12600
CAL YR 1987	MAX 733100	MIN 309800	(Φ)	+376200								
WTR YR 1988	MAX 693700	MIN 660700	(Φ)	-33000								

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

NUECES RIVER BASIN

375

08208000 ATASCOSA RIVER AT WHITSETT, TX

LOCATION.--Lat 28°37'19", long 98°16'52", Live Oak County, Hydrologic Unit 12110110, on right bank at downstream side of bridge on Farm Road 99, 1.1 mi southwest of Whitsett, 4.2 mi downstream from La Parita Creek, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--1,171 mi².

PERIOD OF RECORD.--September 1924 to May 1926, May 1932 to current year.

GAGE.--Water-stage recorder. Datum of gage is 159.04 ft above National Geodetic Vertical Datum of 1929. Prior to May 8, 1926, nonrecording gage at bridge at site 200 ft upstream at 1.38 ft higher datum. May 8, 1926, to Feb. 16, 1983, water-stage recorder at site 1,000 ft upstream at same datum.

REMARKS.--Records good. Considerable loss of flow into various permeable formations occurs upstream from this station. The Campbellton water wells discharge into the Atascosa River 12 mi upstream from this station to supplement stream-flow during dry periods; however, records furnished by the city of Corpus Christi indicate that during the current year, the Campbellton water wells did not discharge into the Atascosa River. There are several small diversions above station.

AVERAGE DISCHARGE.--57 years (water years 1925, 1933-88), 127 ft³/s (92,010 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft³/s Sept. 23, 1967 (gage height, 41.3 ft, from floodmark), from rating curve extended above 24,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times. Maximum stage since at least 1881, that of Sept. 23, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 41 ft (discharge 106,000 ft³/s), occurred in September 1919.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 13	0200	*252	*7.85				

Minimum daily discharge, no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	1.1	e6.4	3.0	6.3	3.7	4.2	1.9	2.7	.05	2.0	.00
2	3.5	1.1	e5.9	3.0	5.1	3.5	3.8	1.1	2.6	.02	2.1	.00
3	3.4	1.1	e5.5	2.8	4.8	3.4	3.5	5.1	7.1	.03	2.2	.00
4	2.8	1.0	e5.1	2.7	5.4	3.2	3.5	4.4	9.6	.03	3.0	2.4
5	2.4	1.1	e4.8	2.7	5.3	2.3	3.8	2.2	31	.03	3.1	4.6
6	2.3	1.2	e4.5	3.1	5.3	2.0	3.8	1.2	21	.05	3.1	.72
7	2.1	1.1	e4.2	3.4	5.3	2.0	4.2	.85	11	3.6	2.9	.43
8	2.1	1.3	4.0	3.7	5.5	2.4	3.7	.78	6.4	72	1.1	.21
9	2.0	2.1	6.2	3.8	5.4	2.7	3.7	.81	4.5	27	.69	.12
10	1.8	1.9	6.4	3.8	5.1	2.4	3.4	.63	5.3	11	.49	.02
11	1.7	1.8	5.5	4.1	5.5	2.3	2.6	3.6	4.5	3.9	.32	.00
12	1.5	2.0	4.6	4.3	5.3	2.3	2.1	44	1.9	119	.18	.00
13	1.4	2.1	4.1	4.4	4.7	1.7	2.0	48	.71	182	.11	.00
14	1.4	1.8	3.9	4.4	4.8	1.6	2.0	29	.43	59	.08	.00
15	1.3	1.4	3.9	4.4	5.3	1.7	2.0	16	.26	26	.09	.00
16	1.3	3.8	3.7	4.6	5.7	2.8	1.9	7.7	.16	14	.25	.05
17	1.3	5.1	3.7	5.0	5.8	3.6	2.2	5.4	.09	9.1	.16	25
18	1.3	5.0	3.8	5.6	6.2	4.1	2.6	4.0	.05	5.8	.12	69
19	1.3	2.8	4.3	5.8	6.4	3.8	3.2	3.0	.02	3.5	.17	94
20	1.3	6.0	7.1	5.8	6.4	3.4	2.8	2.0	.0	3.1	.19	27
21	1.2	6.6	23	5.5	6.0	3.8	2.1	4.1	.00	12	.17	17
22	1.1	5.2	67	5.3	6.2	5.3	2.2	17	.00	41	.13	11
23	1.1	4.1	31	5.4	6.0	5.4	2.1	52	.00	7.0	.11	8.4
24	1.2	3.7	22	5.7	4.9	5.2	2.0	35	9.4	3.7	.01	6.2
25	1.1	3.7	13	5.8	4.2	4.1	1.5	25	.99	1.8	.00	3.9
26	1.3	3.8	6.9	5.5	4.1	4.1	1.0	15	.08	1.1	.00	2.2
27	1.2	3.5	4.7	5.0	4.4	4.2	.81	8.2	.01	.78	.00	1.1
28	1.1	6.0	4.0	4.9	4.7	3.7	.66	5.5	60	.67	.00	.49
29	.94	7.2	3.5	5.2	4.0	3.3	.53	6.2	6.3	.49	.00	.28
30	1.1	e6.9	3.3	5.5	---	3.5	.59	5.0	.36	.57	.00	.18
31	1.1	---	3.0	5.8	---	3.9	---	3.6	---	2.4	.00	---
TOTAL	51.54	95.5	279.0	140.0	154.1	101.4	74.49	358.27	186.46	610.72	22.77	274.30
MEAN	1.66	3.18	9.00	4.52	5.31	3.27	2.48	11.6	6.22	19.7	.73	9.14
MAX	3.5	7.2	67	5.8	6.4	5.4	4.2	52	60	182	3.1	94
MIN	.94	1.0	3.0	2.7	4.0	1.6	.53	.63	.00	.02	.00	.00
AC-FT	102	189	553	278	306	201	148	711	370	1210	45	544

CAL YR 1987 TOTAL 48608.74 MEAN 133 MAX 5620 MIN .94 AC-FT 96420
WTR YR 1988 TOTAL 2348.55 MEAN 6.42 MAX 182 MIN .00 AC-FT 4660

e Estimated.

NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX
(National stream-gaging accounting network)

LOCATION.--Lat 28°25'38", long 98°10'40", Live Oak County, Hydrologic Unit 12110111, on right bank at U.S. Highway 281, 1.0 mi downstream from Frio River, 2.2 mi south of Three Rivers, and at mile 100.2.

DRAINAGE AREA.--15,427 mi², of which 5,490 mi² is above Choke Canyon Dam. See Remarks.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1915 to current year. Monthly discharge only for November 1919 to January 1920, published in WSP 1312.

REVISED RECORDS.--WSP 548: 1920-21. WSP 1562: 1916, 1918-21, 1922(M), 1923, 1929. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 99.26 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 5, 1932, nonrecording gage at railroad bridge 0.8 mi upstream at datum 1.87 ft higher. Apr. 5, 1932, to Aug. 9, 1983, recording gage at a site 0.8 mi upstream at datum 1.87 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow of the Frio River is impounded in Choke Canyon Reservoir (conservation-pool storage of 696,800 acre-ft), about 11 mi upstream on the Frio River. Part of flow of the Nueces and Frio Rivers and their headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions for irrigation and municipal supply above station. There is minor upstream regulation by small reservoirs and by ground-water supplements (see station 08208000 Atascosa River at Whitsett). Satellite telemeter at station.

AVERAGE DISCHARGE.--67 years (water years 1916-82) prior to partial regulation by Choke Canyon Reservoir, 857 ft³/s (620,900 acre-ft/yr); 6 years (water years 1983-88) partly regulated, 444 ft³/s (321,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s Sept. 23, 1967 (gage height, 49.21 ft), site and datum then in use; no flow at times. Maximum stage since about 1875, that of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 629 ft³/s July 2 at 1900 hours (gage height, 6.88 ft); minimum daily, 11 ft³/s June 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	511	225	195	201	126	88	59	41	43	46	49	34
2	488	223	193	202	127	98	59	39	41	546	44	34
3	455	217	197	199	123	82	57	39	48	421	39	34
4	414	211	201	190	119	80	54	39	47	131	44	34
5	394	209	203	179	115	80	52	41	46	80	53	33
6	375	207	202	172	108	79	50	39	59	60	45	34
7	360	204	197	168	104	77	48	38	55	52	43	33
8	353	205	190	171	101	74	47	39	49	60	66	33
9	349	210	184	178	100	71	48	38	44	92	53	33
10	341	206	179	181	98	70	48	38	42	75	46	33
11	334	199	176	177	92	67	51	38	41	71	52	33
12	326	202	167	170	90	65	50	126	42	59	53	34
13	317	200	164	159	91	61	48	125	39	352	44	34
14	308	203	166	155	97	59	48	95	17	338	40	33
15	296	222	161	156	103	57	46	62	12	108	39	33
16	284	288	156	163	108	56	48	50	11	64	39	36
17	279	268	149	175	110	57	54	44	14	51	37	65
18	280	213	147	183	111	62	103	42	29	45	37	79
19	275	204	143	173	108	59	149	40	37	41	37	148
20	244	206	138	157	108	61	113	40	36	40	35	95
21	232	207	149	145	107	62	63	178	36	46	35	271
22	224	216	176	136	107	64	49	359	36	55	35	567
23	222	224	201	130	108	65	45	301	36	64	34	359
24	244	220	180	125	104	65	52	116	36	57	34	165
25	246	211	183	122	100	64	57	75	37	46	34	92
26	244	199	189	121	98	63	52	60	40	46	34	62
27	235	192	193	118	96	61	46	83	39	54	34	52
28	230	185	194	116	92	59	42	65	45	47	34	45
29	227	187	192	114	87	58	40	54	78	42	34	41
30	224	195	191	115	---	57	43	49	42	41	35	40
31	223	---	195	120	---	58	---	45	---	60	34	---
TOTAL	9534	6358	5551	4871	3038	2079	1721	2438	1177	3290	1272	2619
MEAN	308	212	179	157	105	67.1	57.4	78.6	39.2	106	41.0	87.3
MAX	511	288	203	202	127	98	149	359	78	546	66	567
MIN	222	185	138	114	87	56	40	38	11	40	34	33
AC-FT	18910	12610	11010	9660	6030	4120	3410	4840	2330	6530	2520	5190

CAL YR 1987 TOTAL 408589 MEAN 1119 MAX 13800 MIN 120 AC-FT 810400
WTR YR 1988 TOTAL 43948 MEAN 120 MAX 567 MIN 11 AC-FT 87170

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National Stream-gaging accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: August 1941 to September 1952. Chemical and biochemical analyses: May 1965 to current year. Pesticide analyses: January 1968 to May 1982. Sediment analyses: October 1941 to August 1945, March 1951 to September 1952, October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1941 to September 1952, October 1974 to September 1981.

WATER TEMPERATURE: October 1950 to September 1952, October 1974 to September 1981.

SUSPENDED-SEDIMENT DISCHARGE: October 1950 to September 1951.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,310 microsiemens Jan. 17, 1977; minimum daily, 157 microsiemens May 26, 1975.

WATER TEMPERATURE: Maximum daily, 32.0°C on several days during summer of 1977-78 and 1981; minimum daily, 7.0°C Jan. 2, 3, 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV 18...	1130	238	532	8.10	18.5	21	8.8	93	1.6	K280	270
JAN 11...	1145	183	611	8.30	6.5	12	12.7	102	1.1	84	80
MAR 07...	1500	88	805	7.90	19.0	19	9.3	101	2.2	K52	K48
MAY 03...	1450	39	743	7.90	25.0	20	8.4	102	2.4	180	28
JUL 11...	1600	63	561	8.00	29.0	39	6.9	90	2.4	170	K140
AUG 24...	1530	35	727	8.00	31.0	27	7.6	102	0.7	30	--

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 18...	180	36	55	11	34	1	4.0	147	37	52	0.20
JAN 11...	240	54	71	15	45	1	4.2	185	49	68	0.20
MAR 07...	220	62	66	13	87	3	6.7	157	71	130	0.20
MAY 03...	230	66	73	11	54	2	9.4	162	69	94	0.20
JUL 11...	160	26	50	8.0	51	2	7.9	132	48	65	0.10
AUG 24...	220	80	65	13	54	2	9.9	137	63	94	0.10

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
NOV 18...	7.6	298	292	--	--	<0.010	<0.010	0.600	0.560	0.030
JAN 11...	7.5	379	374	--	--	<0.010	<0.010	0.600	0.640	0.010
MAR 07...	6.5	491	477	--	--	<0.010	<0.010	0.300	0.380	0.060
MAY 03...	10	433	419	0.180	0.230	0.020	0.010	0.200	0.240	0.090
JUL 11...	12	332	324	0.380	0.380	0.020	0.020	0.400	0.400	0.030
AUG 24...	12	401	394	0.190	--	0.010	<0.010	0.200	0.100	0.060

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM
NOV 18...	0.040	0.27	0.30	0.080	0.070	0.040	0.12	34	22	98
JAN 11...	0.040	0.29	0.30	0.060	0.050	0.040	0.12	27	13	94
MAR 07...	0.040	0.64	0.70	0.060	0.050	0.030	0.09	42	10	96
MAY 03...	0.080	0.41	0.50	0.070	0.060	0.060	0.18	75	7.9	92
JUL 11...	0.010	0.67	0.70	0.180	0.130	0.100	0.31	61	10	98
AUG 24...	0.050	0.44	0.50	0.050	0.050	0.030	0.09	31	2.9	95

NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 18...	20	2	85	<0.5	<1	<1	<3	2	8	<5
JAN 11...	--	--	--	--	--	--	--	--	--	--
MAR 07...	20	2	96	<0.5	<1	<1	<3	2	10	<5
MAY 03...	--	--	--	--	--	--	--	--	--	--
JUL 11...	20	4	100	0.8	<1	<1	<3	2	20	<5
AUG 24...	20	2	110	<0.5	<1	<1	<3	1	9	<5
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 18...	11	5	<0.1	<10	<1	<1	<1.0	320	<6	6
JAN 11...	--	--	--	--	--	--	--	--	--	--
MAR 07...	35	26	<0.1	<10	4	<1	1.0	430	<6	<3
MAY 03...	--	--	--	--	--	--	--	--	--	--
JUL 11...	22	6	<0.1	<10	2	<1	1.0	330	8	6
AUG 24...	17	14	0.2	<10	<1	<1	<1.0	410	<6	<3

NUECES RIVER BASIN

379

08210400 LAGARTO CREEK NEAR GEORGE WEST, TX

LOCATION.--Lat 28°03'34", long 98°05'48", Live Oak County, Hydrologic Unit 12110111, near right bank 75 ft downstream from bridge on U.S. Highway 281, 0.6 mi upstream from Dix Hollow, and 19.3 mi south of George West.

DRAINAGE AREA.--155 mi².

PERIOD OF RECORD.--April 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 197.77 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion.

AVERAGE DISCHARGE.--16 years, 1.76 ft³/s (1,280 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,350 ft³/s Aug. 11, 1980 (gage height, 16.50 ft); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1887, 25.1 ft Oct. 17, 1971 (discharge, 33,500 ft³/s). Second highest stage, 24.3 ft occurred Sept. 12, 1971 (discharge, 29,500 ft³/s). The third and fourth highest floods occurred in 1914 and September 1967 (stage and discharge unknown).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 30	0700	*0.58	*4.51				

Minimum daily discharge, no flow Oct. 1 to Sept. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.10
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.003
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2

CAL YR 1987	TOTAL 0.00	MEAN .00	MAX .00	MIN .00	AC-FT .0
WTR YR 1988	TOTAL 0.10	MEAN .000	MAX .10	MIN .00	AC-FT .2

08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°52'15", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, on right up-stream corner of outlet tower at right end of Wesley E. Seale Dam on Nueces River, 0.6 mi upstream from bridge on State Highway 359, and 4.5 mi southwest of Mathis.

DRAINAGE AREA.--16,656 mi².

PERIOD OF RECORD.--September 1948 to current year. Prior to October 1960, month end records only. The Soil Conservation Service, U.S. Department of Agriculture, in cooperation with the Texas Board of Water Engineers (now Texas Department of Water Resources), collected fragmentary gage-height records in connection with sedimentation studies from Feb. 2, 1942, to July 10, 1947.

REVISED RECORDS.--WSP 1923: 1953(M), 1957(M).

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1957, nonrecording gage at various sites 0.2 mi upstream at datum 0.52 ft higher. Oct. 1, 1957, to Apr. 3, 1961, nonrecording gage near left end of Mathis Dam 0.2 mi upstream at present datum.

REMARKS.--Mathis Dam was completed and storage began July 24, 1934. The original capacity at spillway crest (elevation, 74.5 ft) was 54,000 acre-ft, but by March 1948 had decreased to 39,400 acre-ft because of sedimentation. Wesley E. Seale Dam was completed and deliberate impoundment began on Apr. 26, 1958, submerging the old Mathis Dam. Wesley E. Seale Dam is a rolled earthfill dam, 5,930 ft long, including two spillways. The 1,320-foot north spillway has 33 gates that are operated by movable hydraulic lifts. The 1,080-foot south spillway has 27 gates that are electrically operated from the control tower. The gates were repaired and modified in August 1966. All gates in both spillways are 37.5 by 8.75 ft wide. Water for municipal supply for the city of Corpus Christi is released downstream through a 4.0-foot-diameter cylinder valve and three 2.5- by 4.0-foot rectangular openings. The releases are diverted from the river at Calallen 35 mi downstream for domestic, municipal, irrigation, mining, and industrial uses in the Corpus Christi area. The city of Alice withdrew 4,550 acre-ft from the lake during the current year for municipal use. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	106.0	
Top of north spillway gates.....	94.46	281,300
Top of south spillway gates.....	94.0	272,000
Crest of spillways.....	88.0	170,200
Lowest gated outlet (invert).....	55.5	646

COOPERATION.--The capacity curve is from an October 1972 survey. Elevation record provided by the city of Corpus Christi and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 320,000 acre-ft Sept. 22, 1967, and Sept. 12, 1971; maximum elevation, 94.82 ft Sept. 22, 1967; minimum contents, 14,740 acre-ft May 5, 1951 (elevation, 67.62 ft).

EXTREMES (AT 0600) FOR CURRENT YEAR.--Maximum contents, 272,400 acre-ft Oct. 1-14, 20, 21, 24-28, Nov. 9, 10, 27 (elevation, 94.0 ft); minimum, 176,200 acre-ft Sept. 12, 14-16, 18-25, 28, 29 (elevation, 88.4 ft).

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

88.0	170,200	92.0	235,300
90.0	201,400	94.0	272,400

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272400	270400	268500	266600	262800	259000	247900	237000	226500	211200	198100	183900
2	272400	270400	268500	266600	262800	257100	249700	235300	226500	211200	198100	182400
3	272400	270400	268500	264700	262800	259000	247900	235300	226500	211200	196500	182400
4	272400	270400	268500	264700	264700	259000	247900	235300	228200	211200	196500	182400
5	272400	270400	268500	264700	264700	259000	247900	235300	228200	211200	196500	182400
6	272400	270400	268500	264700	264700	259000	247900	233500	226500	211200	194900	180800
7	272400	270400	268500	266600	264700	257100	247900	233500	224800	211200	194900	179300
8	272400	268500	268500	266600	262800	257100	246100	233500	224800	211200	194900	179300
9	272400	272400	268500	266600	262800	257100	246100	231700	223000	211200	193400	179300
10	272400	272400	268500	264700	262800	257100	246100	231700	224800	209600	193400	177800
11	272400	270400	268500	264700	262800	255300	244200	231700	224800	207900	191800	177800
12	272400	268500	268500	264700	260900	257100	244200	233500	223000	207900	191800	176200
13	272400	270400	268500	264700	260900	255300	244200	233500	221300	206300	190200	177800
14	272400	268500	268500	264700	260900	257100	242400	233500	221300	206300	190200	176200
15	270400	268500	268500	264700	260900	253400	242400	233500	221300	207900	190200	176200
16	270400	268500	266600	264700	260900	253400	242400	231700	219600	206300	188600	176200
17	270400	270400	266600	264700	260900	253400	242400	231700	219600	206300	188600	177800
18	270400	270400	264700	264700	260900	257100	242400	231700	217900	204600	188600	176200
19	270400	270400	264700	266600	260900	253400	242400	231700	217900	204600	188600	176200
20	272400	268500	266600	266600	260900	251600	240600	230000	216200	203000	188600	176200
21	272400	268500	266600	264700	260900	251600	238800	230000	216200	203000	187100	176200
22	270400	268500	266600	264700	259000	251600	238800	231700	216200	203000	187100	176200
23	270400	268500	266600	264700	259000	251600	238800	231700	216200	203000	187100	176200
24	272400	268500	264700	264700	260900	251600	238800	230000	214600	203000	185500	176200
25	272400	268500	266600	264700	259000	251600	238800	230000	214600	201400	185500	176200
26	272400	270400	268500	262800	259000	251600	238800	230000	214600	201400	185500	179300
27	272400	272400	266600	262800	259000	249700	238800	230000	214600	199800	185500	177800
28	272400	268500	264700	262800	259000	247900	237000	230000	214600	199800	185500	176200
29	270400	268500	266600	262800	257100	249700	237000	230000	212900	199800	185500	176200
30	270400	268500	264700	262800	---	249700	237000	228200	212900	198100	185500	182400
31	270400	---	264700	262800	---	249700	---	226500	---	198100	183900	---
MAX	272400	272400	268500	266600	264700	259000	249700	237000	228200	211200	198100	183900
MIN	270400	268500	264700	262800	257100	247900	237000	226500	212900	198100	183900	176200
(↑)	93.9	93.8	93.6	93.5	93.2	92.8	92.1	91.5	90.7	89.8	88.9	88.8
(Φ)	-3900	-1900	-3800	-1900	-5700	-7400	-12700	-10500	-13600	-14800	-14200	-1500

CAL YR 1987 MAX 280200 MIN 257100 (Φ) -7700
WTR YR 1988 MAX 272400 MIN 176200 (Φ) -91900

(↑) Elevation, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

NUECES RIVER MAIN STEM

381

08211000 NUECES RIVER NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°51'36", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, at downstream side of bridge on State Highway 359, 0.6 mi downstream from Wesley E. Seale Dam, 4 mi southwest of Mathis, and at mile 46.7.

DRAINAGE AREA.--16,660 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 26.53 ft above National Geodetic Vertical Datum of 1929. Aug. 5, 1939, to Aug. 29, 1984, on left bank 9 ft upstream at datum 1.0 ft higher. Aug. 29 to Nov. 5, 1984, on left bank 9 ft upstream at present datum. Nov. 5, 1984, to Aug. 5, 1987, on left bank 154 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Lake Corpus Christi (station 08210500) 0.6 mi upstream. Upstream from Lake Corpus Christi, flow is affected by recharge to permeable formations, small diversions, and minor regulation. Water for municipal and industrial uses at Corpus Christi is released from Lake Corpus Christi above gage and is diverted from river at Calallen 34 mi downstream. Satellite telemeter at station.

AVERAGE DISCHARGE.--49 years, 793 ft³/s (574,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft³/s Sept. 24, 1967 (gage height, 48.7 ft, from floodmark), present datum; minimum daily, 6.8 ft³/s Aug. 15, 1940.
Maximum stage since at least 1888, that of Sept. 24, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of about 41 ft, present datum, occurred Sept. 20, 1919, from information by Texas and New Orleans Railroad Co. and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,490 ft³/s Dec. 14 at 2200 hours (gage height, 9.79 ft); minimum daily, 105 ft³/s Feb. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221	134	135	276	113	112	134	130	219	212	187	187
2	196	133	124	202	115	116	130	133	195	207	201	174
3	252	133	124	121	113	145	140	147	169	196	201	164
4	204	138	124	116	192	124	122	167	140	191	201	158
5	177	156	121	116	171	115	144	172	162	198	201	173
6	235	132	136	119	147	140	147	168	160	199	195	180
7	168	130	125	200	113	137	135	152	172	199	192	182
8	144	163	109	120	112	131	129	159	175	200	209	182
9	141	652	109	153	113	166	129	160	173	199	223	193
10	152	391	108	136	113	141	139	189	188	176	218	182
11	169	179	109	115	484	138	125	182	193	210	217	186
12	192	148	130	117	120	136	155	137	194	196	217	186
13	139	147	132	161	115	144	155	124	194	203	215	185
14	136	142	590	117	116	149	185	128	203	207	210	176
15	134	136	313	116	115	130	187	131	181	207	212	185
16	135	332	135	117	135	120	157	164	183	208	194	130
17	137	142	133	115	137	165	147	134	188	207	180	110
18	135	135	127	116	152	408	174	151	190	211	182	128
19	133	455	124	158	121	124	174	166	190	212	172	129
20	187	143	126	250	119	118	156	166	193	207	172	129
21	168	126	165	125	105	119	164	150	197	171	176	129
22	132	126	124	115	123	132	148	145	199	197	177	130
23	173	126	124	114	114	141	150	171	190	184	177	156
24	168	127	123	146	132	136	161	181	191	196	176	169
25	164	157	212	148	116	132	154	181	194	194	198	172
26	161	130	439	113	116	135	176	174	187	204	202	169
27	163	406	186	111	116	145	176	180	176	206	194	185
28	144	137	127	111	116	145	160	162	173	206	191	164
29	135	125	132	113	121	157	161	174	186	211	178	163
30	134	132	117	113	---	133	136	168	208	209	181	216
31	134	---	117	113	---	130	---	180	---	182	175	---
TOTAL	5063	5713	5000	4263	3975	4464	4550	4926	5563	6205	6024	4972
MEAN	163	190	161	138	137	144	152	159	185	200	194	166
MAX	252	652	590	276	484	408	187	189	219	212	223	216
MIN	132	125	108	111	105	112	122	124	140	171	172	110
AC-FT	10040	11330	9920	8460	7880	8850	9020	9770	11030	12310	11950	9860

CAL YR 1987 TOTAL 381824 MEAN 1046 MAX 11800 MIN 96 AC-FT 757300
WTR YR 1988 TOTAL 60718 MEAN 166 MAX 652 MIN 105 AC-FT 120400

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURE: October 1947 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens Apr. 19, 20, 1977; minimum daily, 216 microsiemens Sept. 19, 1971.

WATER TEMPERATURE: Maximum daily, 36.0°C Aug. 8, 1964; minimum daily, 3.0°C Jan. 19, 1968.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 604 microsiemens Sept. 29; minimum daily, 426 microsiemens June 8.

WATER TEMPERATURE: Maximum daily, 32.0°C Aug. 6, 7, 24, 25; minimum daily, 11.0°C Jan. 10, 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
NOV 18...	1400	117	482	20.0	180	25	56	8.6	31
JAN 11...	1315	117	491	6.0	180	35	57	9.2	32
MAR 08...	0945	111	525	16.0	180	21	56	9.2	33
MAY 04...	0915	147	557	23.0	190	27	60	10	36
JUL 12...	1015	180	532	28.5	160	22	47	10	39
AUG 24...	1320	182	582	29.5	180	38	54	11	49

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
NOV 18...	1	9.0	151	30	49	0.20	16	290
JAN 11...	1	9.7	146	34	50	0.20	16	296
MAR 08...	1	8.7	157	32	51	0.20	15	299
MAY 04...	1	8.7	164	36	54	0.20	13	316
JUL 12...	1	8.7	137	33	64	0.10	15	299
AUG 24...	2	9.0	142	41	75	0.20	16	340

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	5063	500	292	4000	54	733	32	443	160
NOV. 1987	5713	505	296	4560	55	844	33	507	160
DEC. 1987	5000	521	304	4110	58	779	34	462	170
JAN. 1988	4263	520	304	3500	58	663	34	393	170
FEB. 1988	3975	532	311	3330	60	643	35	377	170
MAR. 1988	4464	529	309	3730	60	717	35	421	170
APR. 1988	4550	519	303	3720	58	707	34	419	170
MAY 1988	4926	543	317	4220	62	830	36	481	170
JUNE 1988	5563	487	285	4280	51	770	31	471	160
JULY 1988	6205	528	309	5170	59	993	35	584	170
AUG. 1988	6024	572	333	5420	68	1110	39	629	180
SEPT 1988	4972	580	338	4540	70	941	39	529	180
TOTAL	60718	**	**	50600	**	9730	**	5720	**
WTD.AVG.	166	528	309	**	59	**	35	**	170

NUECES RIVER MAIN STEM

383

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	486	490	514	516	526	430	456	527	475	567	562	559
2	485	495	514	515	528	495	486	501	446	552	551	557
3	485	501	518	508	526	520	457	467	456	546	551	567
4	487	500	515	517	522	514	484	463	454	553	558	552
5	490	504	508	540	524	521	460	523	452	548	565	547
6	492	504	511	517	526	495	458	511	474	547	563	532
7	495	503	522	511	525	534	433	503	467	547	567	544
8	499	506	518	514	524	530	483	474	426	544	565	580
9	503	502	520	512	529	495	512	513	463	553	574	583
10	500	503	516	517	527	522	530	560	479	546	572	594
11	501	505	521	516	524	528	463	568	511	546	572	591
12	499	498	518	520	530	510	488	562	499	543	573	580
13	508	504	517	518	528	519	494	559	463	524	573	576
14	505	503	517	523	531	527	489	507	470	541	573	575
15	502	504	521	529	530	534	530	559	481	518	572	585
16	501	502	519	527	528	538	522	565	466	515	568	583
17	499	500	531	510	526	538	516	571	481	540	572	585
18	511	505	520	525	526	535	515	564	486	539	574	594
19	503	501	522	516	537	533	538	571	500	527	576	599
20	505	547	520	517	526	536	558	567	507	522	575	596
21	506	550	520	543	581	552	555	564	515	519	577	599
22	502	511	522	528	544	548	559	566	500	510	578	595
23	500	521	522	513	534	541	548	551	512	505	579	592
24	505	509	527	515	538	550	562	563	509	494	577	591
25	500	504	521	519	561	548	565	565	507	513	581	583
26	503	502	517	539	543	540	569	564	496	517	583	598
27	507	503	530	540	537	541	562	558	519	502	585	600
28	512	503	523	527	539	548	565	564	521	502	583	603
29	512	508	537	525	546	549	563	565	521	497	579	604
30	511	512	558	520	---	576	572	566	526	484	579	593
31	512	---	527	520	---	541	---	559	---	519	584	---
MEAN	501	507	521	521	533	529	516	543	486	528	572	581

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.0	24.0	18.0	13.0	14.0	16.5	19.0	25.0	27.0	29.5	29.5	30.0
2	27.0	24.0	18.0	13.0	14.5	17.0	19.5	24.5	27.5	29.5	30.0	30.0
3	27.0	24.0	19.0	13.5	14.0	16.0	19.5	24.5	28.0	30.5	30.0	30.0
4	26.0	24.0	18.5	13.5	12.5	16.0	20.5	25.0	27.0	29.0	30.0	29.0
5	26.5	24.5	18.5	13.5	12.0	17.0	21.0	25.0	28.0	30.0	30.0	29.0
6	25.5	24.5	18.5	13.5	12.0	17.0	21.0	25.0	29.0	30.5	32.0	29.0
7	25.5	24.0	18.0	12.0	11.5	16.5	22.0	25.0	29.0	30.5	32.0	30.0
8	26.0	24.0	18.0	12.0	12.0	17.5	21.5	25.0	28.0	30.0	31.0	30.0
9	26.0	23.5	18.0	12.0	12.0	18.0	20.5	25.5	29.0	30.0	---	30.5
10	26.0	23.5	18.0	11.0	12.0	18.0	19.0	25.0	29.0	30.0	---	30.5
11	26.0	23.0	18.0	11.0	12.0	20.0	20.0	25.0	29.0	30.5	30.5	30.5
12	26.0	23.5	18.0	11.5	13.0	20.0	21.0	24.0	28.5	30.0	30.5	30.0
13	26.0	23.5	18.0	12.0	14.5	20.0	22.0	26.0	28.0	30.0	31.0	30.0
14	26.0	23.5	17.0	12.0	14.5	18.0	23.0	26.0	29.0	30.0	30.5	30.0
15	25.0	24.0	16.0	12.0	14.0	17.5	23.0	26.0	29.0	30.0	30.0	30.0
16	25.0	22.0	16.0	14.0	13.0	17.0	21.0	26.0	29.0	30.5	30.0	30.0
17	25.0	22.5	16.0	14.0	14.0	18.0	22.0	26.0	29.0	30.5	30.0	29.0
18	25.5	21.5	16.5	15.0	14.0	18.0	24.0	26.0	29.0	30.0	29.0	30.0
19	24.5	19.5	17.0	14.0	14.0	16.0	25.0	26.0	29.0	30.0	29.0	30.0
20	25.0	19.5	17.0	12.0	14.0	17.0	25.0	25.0	29.0	30.0	29.5	29.0
21	24.5	19.5	16.5	13.0	17.0	18.5	22.5	25.5	29.0	30.0	30.0	29.0
22	24.5	20.0	16.5	12.0	16.0	17.5	23.0	25.5	29.0	30.0	30.0	30.0
23	24.5	20.5	17.5	12.5	16.5	19.0	23.0	26.0	30.0	30.0	30.0	30.0
24	25.0	20.0	17.0	12.5	16.5	19.5	23.0	26.5	30.0	30.0	32.0	30.0
25	25.0	20.0	17.0	12.0	16.0	19.5	23.5	26.5	30.0	30.0	32.0	30.0
26	24.5	20.0	16.0	14.0	16.0	19.5	23.5	28.0	30.0	29.0	31.0	30.0
27	24.0	20.0	15.0	14.0	16.5	19.5	24.0	28.0	30.5	30.0	31.0	30.0
28	24.0	20.0	15.0	14.0	16.5	20.0	25.0	27.0	31.0	29.0	30.0	29.5
29	24.0	20.0	14.0	14.0	16.5	19.0	25.0	28.0	30.5	30.0	30.5	29.0
30	24.0	18.0	14.0	14.0	---	19.5	25.0	27.5	30.0	29.0	31.5	29.0
31	24.0	---	14.0	14.0	---	19.0	---	26.0	---	30.0	31.0	---
MEAN	25.5	22.0	17.0	13.0	14.0	18.0	22.0	26.0	29.0	30.0	30.5	30.0

OSO CREEK MAIN STEM

08211520 OSO CREEK AT CORPUS CHRISTI, TX

LOCATION.--Lat 27°42'40", long 97°30'06", Nueces County, Hydrologic Unit 12110202, on left downstream end of bridge on Farm Road 763, 1.5 mi south of intersection of Farm Roads 763 and 665, 1.6 mi downstream from mouth of West Osó Creek, and 1.9 mi southwest of intersection of Farm Road 665 and State Highway 357.

DRAINAGE AREA.--90.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1.91 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversions above station. An undetermined amount of water from oil field operations enters stream upstream at various points.

AVERAGE DISCHARGE.--16 years, 31.6 ft³/s (22,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s Aug. 10, 1980 (gage height, 29.37 ft); minimum daily, 0.27 ft³/s Mar. 12, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 24.5 ft occurred in May 1968, from information by local resident.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 30	1000	*551	*13.09				

Minimum daily discharge, 0.27 ft³/s Mar. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.0	1.2	1.7	2.1	1.4	.71	2.7	3.6	2.1	1.2	2.4	2.3
2	e2.0	1.3	1.5	2.6	1.2	.74	1.4	4.9	1.7	1.2	2.1	12
3	e1.7	1.2	1.4	2.6	.93	.65	1.1	4.9	4.3	1.2	1.8	14
4	e1.5	1.2	1.4	2.4	1.1	.62	1.0	4.3	6.2	1.2	1.6	10
5	e1.4	1.1	1.5	2.7	4.4	.62	.88	3.0	7.0	1.2	5.3	11
6	1.3	.99	1.6	2.8	4.0	.61	.61	3.0	5.3	1.2	2.7	6.2
7	1.3	1.1	1.4	3.2	4.2	.53	.59	3.1	4.2	3.1	2.4	3.2
8	1.2	3.6	1.4	3.1	3.9	.49	.79	2.7	3.5	65	2.3	2.4
9	1.2	16	1.4	3.2	3.2	.40	1.0	2.5	2.3	37	2.1	2.2
10	1.2	11	1.3	2.7	2.6	.34	.87	2.2	1.9	13	1.9	2.0
11	1.4	13	1.5	2.1	2.1	.36	.90	2.1	1.7	5.7	1.8	1.9
12	1.6	5.6	1.7	1.8	1.8	.27	.92	26	1.6	2.8	1.7	1.9
13	1.5	3.3	1.8	2.0	1.7	.30	.76	17	1.5	1.8	1.7	1.9
14	1.3	2.1	2.1	1.9	1.6	.45	.71	14	1.5	1.4	1.7	1.9
15	1.1	1.7	1.6	1.9	1.4	.30	.62	7.0	1.3	1.2	1.7	1.9
16	1.1	1.5	1.5	3.3	1.4	.90	.89	3.5	1.2	1.2	2.0	47
17	1.4	1.3	1.5	2.7	1.3	1.0	1.3	2.2	1.2	1.2	12	58
18	1.7	1.1	1.9	2.9	1.3	.77	1.3	1.7	1.2	1.2	14	33
19	1.7	1.1	2.7	2.8	1.1	1.0	1.2	1.5	1.2	1.2	15	22
20	6.3	1.1	3.3	2.5	.84	1.1	1.2	1.5	1.4	5.4	19	10
21	1.8	1.1	3.3	2.1	.64	.83	1.1	1.4	1.3	3.1	11	5.0
22	2.4	1.1	4.1	1.7	.58	.65	1.1	1.4	1.2	6.5	5.6	2.9
23	34	1.0	3.3	1.6	.64	.63	1.7	1.4	1.2	7.7	3.3	2.3
24	14	.93	3.3	1.6	.67	.72	3.0	1.4	1.2	4.9	2.9	2.1
25	7.4	1.3	3.0	1.6	.67	.82	2.2	1.4	1.3	2.5	2.7	2.0
26	5.1	1.4	2.5	1.4	.67	.88	1.2	1.3	1.3	1.7	2.6	1.9
27	3.0	1.5	2.5	1.2	.62	.88	1.2	1.3	1.2	1.3	2.5	1.8
28	2.2	1.3	2.3	1.3	.73	.92	1.2	1.2	1.2	1.3	2.4	1.8
29	1.5	1.2	2.1	1.2	.76	.98	1.2	1.4	1.2	1.3	2.6	1.8
30	1.1	1.4	2.0	1.1	---	4.7	5.2	1.9	1.2	2.4	2.4	364
31	1.1	---	2.2	1.2	---	3.3	---	2.0	---	1.6	2.3	---
TOTAL	109.5	82.72	64.8	67.3	47.45	27.47	39.84	126.8	64.6	182.7	135.5	630.4
MEAN	3.53	2.76	2.09	2.17	1.64	.89	1.33	4.09	2.15	5.89	4.37	21.0
MAX	34	16	4.1	3.3	4.4	4.7	5.2	26	7.0	65	19	364
MIN	1.1	.93	1.3	1.1	.58	.27	.59	1.2	1.2	1.2	1.6	1.8
AC-FT	217	164	129	133	94	54	79	252	128	362	269	1250

CAL YR 1987 TOTAL 11122.33 MEAN 30.5 MAX 1580 MIN .42 AC-FT 22060
WTR YR 1988 TOTAL 1579.08 MEAN 4.31 MAX 364 MIN .27 AC-FT 3130

e Estimated.

OSO CREEK MAIN STEM

385

08211520 OSO CREEK AT CORPUS CHRISTI, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: July 1972 to August 1988. Pesticide analyses: July 1972 to July 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3
NOV 19...	0830	1.9	6220	7.70	16.5	7.8	80	1.5	990	820
JAN 11...	1415	10	5760	8.00	8.5	12.5	107	7.6	1100	940
MAR 08...	1215	0.33	7040	7.70	21.0	7.6	87	4.0	1100	920
MAY 04...	1100	1.4	3150	7.70	22.5	4.4	51	8.5	520	320
JUL 12...	1200	2.7	2720	7.40	28.5	4.3	56	3.4	510	380
AUG 24...	1100	3.2	3630	7.50	29.0	3.6	47	1.9	650	490
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 19...	300	59	940	14	16	173	290	1800	0.60	9.3
JAN 11...	350	62	960	13	23	189	300	1900	0.40	15
MAR 08...	350	59	1100	15	20	202	330	2100	0.60	7.2
MAY 04...	160	29	440	9	20	195	180	800	0.80	22
JUL 12...	160	27	370	7	6.0	136	130	770	0.30	20
AUG 24...	200	36	540	10	11	155	190	1000	0.30	24
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
NOV 19...	3520	--	<0.010	<0.100	0.020	0.78	0.80	0.200	12	300
JAN 11...	3720	5.08	0.220	5.30	5.00	1.0	6.0	4.20	--	--
MAR 08...	4090	2.78	0.120	2.90	0.180	2.0	2.2	2.80	17	300
MAY 04...	1770	1.94	0.360	2.30	0.930	0.87	1.8	6.70	--	--
JUL 12...	1570	0.540	0.060	0.600	0.210	1.1	1.3	1.80	18	<100
AUG 24...	2090	0.450	0.050	0.500	0.200	0.90	1.1	1.80	21	400
DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 19...	<1	<1	2	30	<5	280	0.2	<1	<1.0	10
JAN 11...	--	--	--	--	--	--	--	--	--	--
MAR 08...	1	1	2	30	<5	780	0.2	1	1.0	10
MAY 04...	--	--	--	--	--	--	--	--	--	--
JUL 12...	2	<1	2	40	<5	260	0.1	<1	<1.0	10
AUG 24...	1	<1	1	30	<5	240	0.2	<1	<1.0	10

SAN FERNANDO CREEK MAIN STEM

08211800 SAN DIEGO CREEK AT ALICE, TX

LOCATION.--Lat 27°45'59", long 98°04'31", Jim Wells County, Hydrologic Unit 12110204, at bridge on Edith Drive in Alice, 540 ft downstream from Texas and New Orleans Railroad Co. bridge, and 3.2 mi upstream from confluence with Chiltipin Creek.

DRAINAGE AREA.--319 mi².

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

REVISED RECORDS.--WDR TX-72-1: 1971.

GAGE.--Water-stage recorder. Datum of gage is 189.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 35,980 acre-ft. These structures control runoff from 170 mi² in the San Diego-Rosita drainage basins.

AVERAGE DISCHARGE.--25 years, 7.82 ft³/s (5,670 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s Oct. 17, 1971 (gage height, 17.70 ft); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1928, 18.2 ft April 1949, equivalent gage height in channel modified in 1955, 17.2 ft, from information by local residents.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 30	0600	*127	*5.67				

Minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.14	.00	.00	.03	.00	.00	.00	.00	.00	.00
2	.00	.00	.12	.00	.00	.02	.00	.00	.00	.00	.00	.00
3	.00	.00	.10	.00	.00	.02	.00	.00	.00	.00	.00	.00
4	.00	.00	.11	.00	.00	.01	.00	.00	.00	.00	.00	.00
5	.00	.00	.10	.00	.02	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.07	.00	.03	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.05	.00	.03	.00	.00	.00	.00	.00	.00	.00
8	.00	.32	.05	.00	.02	.00	.00	.00	.00	.00	.00	.00
9	.00	1.2	.04	.00	.02	.00	.00	.00	.00	.00	.00	.00
10	.00	.86	.04	.00	.02	.00	.00	.00	.00	.00	.00	.00
11	.00	1.1	.05	.00	.02	.00	.00	.00	.00	.00	.00	.00
12	.00	.45	.05	.00	.01	.00	.00	.00	.00	.00	.00	.00
13	.00	.23	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.14	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.11	.03	.01	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.09	.02	.09	.00	.00	.00	.00	.00	.00	.03	.00
17	.00	.03	.02	.08	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.02	.04	.08	.00	.00	.00	.00	.00	.00	.00	.15
19	.00	.03	.31	.05	.00	.00	.00	.00	.00	.00	.00	.73
20	.00	.03	.26	.03	.00	.00	.00	.00	.00	.00	.00	.01
21	.00	.03	.14	.03	.00	.00	.00	.00	.01	.00	.00	.00
22	.00	.04	.07	.01	.00	.00	.00	.00	.00	.00	.00	.00
23	.02	.10	.04	.01	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.19	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.01	.17	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.06	.14	.01	.00	.00	.00	.00	.00	.29	.00	.00	.00
27	.02	.15	.01	.00	.00	.00	.00	.00	.15	.00	.00	.00
28	.01	.12	.01	.00	.02	.00	.00	.00	.00	.00	.00	.00
29	.00	.12	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00
30	.00	.14	.00	.00	---	.00	.00	.00	.00	.00	.00	42
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	0.12	5.81	2.02	0.39	0.22	0.08	0.00	0.00	0.45	0.00	0.03	42.89
MEAN	.004	.19	.065	.013	.008	.003	.00	.00	.015	.00	.001	1.43
MAX	.06	1.2	.31	.09	.03	.03	.00	.00	.29	.00	.03	42
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.2	12	4.0	.8	.4	.2	.0	.0	.9	.0	.06	85

CAL YR 1987 TOTAL 2851.29 MEAN 7.81 MAX 1270 MIN .00 AC-FT 5660
WTR YR 1988 TOTAL 52.01 MEAN .14 MAX 42 MIN .00 AC-FT 103

RIO GRANDE BASIN

387

08364000 RIO GRANDE AT EL PASO, TX

LOCATION.--Lat 31°48'10", long 106°32'25", El Paso County, Hydrologic Unit 13030102, at gaging station on the downstream side of the Courchesne Bridge, 5.6 mi upstream from the Santa Fe Street-Juarez Avenue bridge between El Paso, Tex., and Cd. Juarez, Mex., and 1.7 mi upstream from the American Dam.

DRAINAGE AREA.--29,267 mi².

PERIOD OF RECORD.--Chemical analyses: February 1930 to December 1977. Chemical and biochemical analyses: January 1978 to November 1986. Sediment analyses: January 1978 to November 1986.

REMARKS.--Records of specific conductance and discharge for water year 1988 are given in International Boundary and Water Commission Water Bulletins Nos. 57 and 58.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 21...	1045	326	1760	7.80	14.5	410	160	120	26
NOV 16...	0830	276	1720	8.00	11.0	400	160	120	25
DEC 15...	0930	210	1800	7.90	--	380	140	110	26
JAN 29...	1300	230	1810	7.90	10.0	390	150	110	27
FEB 17...	0845	137	1870	8.00	11.0	390	140	110	27
APR 21...	0700	890	1030	7.80	16.5	240	70	70	16
MAY 19...	0720	480	1090	8.00	11.0	250	67	75	16
JUN 16...	0710	1750	949	8.10	21.0	230	58	66	15
JUL 21...	0710	300	1010	7.80	20.0	240	65	69	16
AUG 19...	0735	1200	909	7.50	20.0	220	70	63	15
SEP 22...	0715	812	1120	7.90	15.5	250	120	72	17

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 21...	240	5	9.8	246	380	190	24	1140
NOV 16...	220	5	9.4	246	380	170	23	1090
DEC 15...	240	6	9.0	239	420	200	24	1170
JAN 29...	260	6	11	239	410	200	20	1180
FEB 17...	260	6	10	245	420	170	20	1160
APR 21...	120	3	6.9	171	210	95	15	635
MAY 19...	130	4	6.6	187	220	100	13	673
JUN 16...	110	3	6.2	169	190	78	13	580
JUL 21...	120	4	6.5	174	210	90	15	631
AUG 19...	100	3	5.9	149	170	77	17	537
SEP 22...	130	4	6.9	131	230	110	18	662

RIO GRANDE BASIN

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX
(National stream-quality accounting network)

LOCATION.--Lat 29°46'50", long 101°45'20", Val Verde County, Hydrologic Unit 13040212, at gaging station 0.1 mi downstream from Terrell-Val Verde County line, 16.9 mi from Langtry, and 597.2 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--80,742 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: July 1975 to June 1982. Sediment analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURE: October 1974 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,110 microsiemens Dec. 4, 1974; minimum daily, 225 microsiemens May 2, 1981.

WATER TEMPERATURE: Maximum daily, 32.0°C June 13, 1977, July 25, 26 1979, July 4, 1980, and June 8, 1981; minimum daily, 9.0°C Jan. 12, 1975, Jan. 8, 1976, and Jan. 18, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
NOV 18...	1055	1000	1670	8.30	15.5	33	11.6	120	3.6	20	24	350
JAN 20...	1050	876	1700	8.20	12.0	7.4	10.2	98	2.7	K7	K6	390
MAY 11...	1040	1190	1610	8.30	25.0	230	9.8	124	4.0	180	3100	320
AUG 03...	1450	3190	1220	8.30	28.0	1400	8.4	112	2.4	680	700	270
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS S102)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 18...	190	98	26	210	5	6.7	166	370	190	1.3	22	1070
JAN 20...	220	110	27	210	5	7.5	171	390	210	1.3	16	1080
MAY 11...	180	83	26	220	6	6.3	135	370	220	1.2	13	1050
AUG 03...	120	85	14	150	4	6.1	148	300	110	1.3	21	793
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDE (MG/L)
NOV 18...	1030	<0.010	0.580	0.020	0.010	0.98	1.0	0.010	<0.010	<0.010	--	91
JAN 20...	1080	<0.010	0.400	<0.010	<0.010	--	0.40	0.030	0.010	<0.010	--	39
MAY 11...	1020	<0.010	<0.100	0.030	0.030	0.57	0.60	0.020	<0.010	<0.010	--	318
AUG 03...	783	<0.010	1.00	0.030	0.020	0.27	0.30	2.40	<0.010	0.020	0.06	3620
DATE	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. STIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	
NOV 18...	246		97	<10	7	100	<0.5	<1	<1	<3	2	4
JAN 20...	92		62	<10	7	76	<0.5	<1	1	<3	<1	4
MAY 11...	1020		97	<10	5	88	<0.5	<1	<1	<3	1	4
AUG 03...	31200		94	<10	11	85	<0.5	<1	<1	<3	2	7

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 18...	<5	110	<1	<0.1	10	3	1	<1.0	2000	7	3
JAN 20...	<5	110	2	0.1	<10	3	<1	<1.0	1900	<6	<3
MAY 11...	<5	120	3	<0.1	<10	2	1	<1.0	1800	<6	<3
AUG 03...	<5	85	<1	<0.1	<10	2	1	<1.0	1400	13	<3

08407500 PECOS RIVER AT RED BLUFF, NM
(National stream-quality accounting network station)

LOCATION.--Lat 32°04'30", long 104°02'21", in SW1/4NW1/4NE1/4 sec.1, T.26 S., R.28 E., Eddy County, Hydrologic Unit 13060011, on right bank at Red Bluff, 0.2 mi downstream from Red Bluff Draw, 1.6 mi northwest of the El Paso Natural Gas (Pecos River) compressor station, 5.2 mi north of the New Mexico-Texas state line, 5.5 mi upstream from Delaware River, and at mile 411.2.

DRAINAGE AREA.--19,540 mi², approximately (contributing area).

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,850.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by many reservoirs and diversion dams. Diversions and ground-water withdrawals upstream from station for irrigation of about 202,000 acres, 1959 determination. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--51 years, 164 ft³/s (118,820 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 111,000 ft³/s Aug. 23, 1966 (gage height, 33.32 ft), from rating curve extended above 32,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.19 ft³/s Aug. 1, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1904 reached a stage of 28.0 ft, from information by Panhandle and Santa Fe Railway Co. (For dates of other historical floods see stations 08404000, 08406500).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 483 ft³/s Sept. 23 (gage height, 5.61 ft); minimum, 36 ft³/s part of each day June 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	101	99	97	101	87	60	71	53	67	53	92
2	77	104	98	96	101	78	69	60	48	72	51	87
3	63	111	97	96	101	71	83	56	45	70	49	132
4	51	111	97	98	99	73	83	59	45	66	50	85
5	51	103	97	99	101	66	80	65	47	68	65	86
6	72	99	97	100	104	63	75	66	44	74	105	72
7	77	99	97	100	108	66	71	73	44	65	79	65
8	76	99	96	102	103	68	64	80	43	82	65	62
9	80	98	95	100	102	66	67	67	41	81	63	58
10	78	96	95	100	102	62	67	74	42	97	61	60
11	72	95	95	100	100	61	64	72	43	111	60	56
12	72	96	95	101	99	60	61	64	53	115	132	58
13	75	97	96	100	98	57	61	67	51	94	112	58
14	74	98	106	99	99	56	67	66	59	86	68	55
15	79	98	119	97	98	59	65	63	51	101	63	64
16	89	99	112	96	95	65	61	53	42	94	72	72
17	106	98	100	104	95	71	68	45	44	121	74	71
18	100	97	99	101	99	77	78	45	43	126	70	69
19	99	97	107	99	99	76	78	46	42	94	66	60
20	111	96	114	103	99	70	73	62	43	78	61	54
21	106	95	114	98	99	70	82	81	38	249	61	69
22	96	97	104	96	99	69	81	72	44	187	57	229
23	87	99	100	98	97	76	71	64	46	97	50	308
24	122	99	99	98	91	73	66	61	42	70	57	271
25	124	98	100	98	104	84	63	79	46	67	69	170
26	107	96	99	98	96	82	68	70	50	57	67	113
27	96	97	98	98	96	77	64	69	102	53	59	97
28	93	98	97	98	102	80	65	65	142	50	66	94
29	95	98	96	98	99	61	70	59	97	49	66	89
30	113	98	96	99	---	65	72	60	81	61	98	86
31	102	---	96	101	---	62	---	59	---	58	103	---
TOTAL	2733	2967	3110	3068	2886	2151	2097	1993	1611	2760	2172	2942
MEAN	88.2	98.9	100	99.0	99.5	69.4	69.9	64.3	53.7	89.0	70.1	98.1
MAX	124	111	119	104	108	87	83	81	142	249	132	308
MIN	51	95	95	96	91	56	60	45	38	49	49	54
AC-FT	5420	5890	6170	6090	5720	4270	4160	3950	3200	5470	4310	5840
CAL YR 1987	TOTAL	82529	MEAN	226	MAX	901	MIN	51	AC-FT	163700		
WTR YR 1988	TOTAL	30490	MEAN	83.3	MAX	308	MIN	38	AC-FT	60480		

08408500 DELAWARE RIVER NEAR RED BLUFF, NM

LOCATION.--Lat 32°01'23", long 104°03'15", in NE1/4SW1/4SE1/4 sec.23, T.26 S., R.28 E., Eddy County, Hydrologic Unit 13070002, near center of channel on downstream side of pier of bridge on U.S. Highway 285, 2.1 mi north of the New Mexico-Texas state line, 3.6 mi southwest of Red Bluff, 3.7 mi upstream from mouth, 14 mi south of Malaga, and at mouth at Pecos River mile 405.6.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--April 1912 to September 1913, May 1914 to June 1915, October 1937 to current year. Published as "near Malaga" 1912-13, and as "near Angeles, Tex." 1914-15.

GAGE.--Water-stage recorder. Elevation of gage is 2,900.66 ft above National Geodetic Vertical Datum of 1929 (U.S. Boundary Commission post). Prior to May 1914, at site 3.0 mi upstream at different datum. May 1914 to June 1915, at site 2.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. One small upstream diversion. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--51 years (water years 1938-88), 12.8 ft³/s (9,270 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,400 ft³/s Oct. 2, 1955 (gage height, 27.0 ft), from floodmarks, from rating curve extended above 6,500 ft³/s on basis of slope-area measurements at gage heights, 12.84 ft, 17.55 ft, and 27.0 ft; no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 21	1130	*102	3.85				

Minimum discharge, 1.4 ft³/s part or all of each day July 29 to Aug. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	5.8	6.6	7.0	6.9	6.8	6.3	5.7	4.2	3.1	1.4	4.1
2	5.4	5.9	6.7	7.0	6.9	6.8	6.2	5.4	4.1	3.0	1.6	4.3
3	5.4	5.9	6.8	6.9	6.9	6.7	6.2	5.2	4.0	2.9	1.9	3.2
4	5.4	5.7	6.8	6.8	6.9	6.7	6.2	5.0	4.1	2.8	1.5	2.8
5	5.5	5.6	6.9	6.8	6.9	6.8	6.2	5.1	4.0	2.7	2.9	2.7
6	5.5	5.8	6.9	6.8	7.0	6.8	6.2	5.0	4.0	2.7	15	2.6
7	5.5	5.9	6.8	6.8	7.0	6.7	6.3	4.7	3.9	2.7	3.2	2.6
8	5.5	5.8	6.7	6.7	7.0	6.7	6.5	4.5	3.9	2.9	2.7	2.5
9	5.5	5.6	6.7	6.6	7.1	6.7	6.4	4.5	3.8	3.1	2.8	2.5
10	5.4	5.6	6.7	6.7	7.0	6.7	6.2	4.5	3.8	3.6	5.2	2.4
11	5.5	5.7	6.8	6.8	6.9	6.7	6.2	4.4	3.8	3.6	5.3	2.4
12	5.5	5.8	6.7	6.9	6.8	6.6	6.2	4.4	3.8	3.3	5.1	2.4
13	5.6	6.1	6.8	6.8	6.7	6.5	6.3	4.4	3.8	3.0	3.2	2.4
14	5.4	6.1	7.3	6.7	6.7	6.6	6.3	4.4	3.8	2.7	3.1	2.4
15	5.4	6.0	7.4	6.8	6.6	6.6	6.3	4.3	3.7	2.6	2.9	2.4
16	5.5	5.9	7.0	6.9	6.6	6.7	6.2	4.2	3.7	2.8	2.8	2.4
17	5.7	5.9	7.0	6.9	6.6	6.6	6.1	4.2	3.7	2.8	2.8	2.4
18	6.0	5.9	7.1	6.8	6.7	6.5	6.1	4.2	3.6	2.7	2.7	2.7
19	5.9	5.9	7.5	6.7	6.7	6.6	6.1	4.2	3.5	2.7	2.7	2.8
20	5.7	5.9	7.7	6.7	6.8	6.7	6.0	4.4	3.5	2.7	2.6	2.6
21	5.6	6.0	7.5	6.7	6.7	6.6	5.9	4.3	3.4	21	2.6	2.8
22	5.6	6.2	7.3	6.7	6.8	6.5	5.9	4.2	3.4	5.4	2.7	2.8
23	5.8	6.2	7.2	6.9	6.7	6.5	5.9	4.2	3.4	2.5	2.7	3.1
24	5.9	6.2	7.2	6.9	6.7	6.5	5.9	4.1	3.4	2.0	2.9	2.7
25	5.8	6.2	7.1	6.9	6.7	6.4	5.9	4.0	3.4	1.8	2.7	2.6
26	5.6	6.2	7.0	6.9	6.9	6.3	5.8	4.0	3.4	1.8	2.6	2.5
27	5.6	6.4	7.0	6.9	6.9	6.4	5.8	4.0	4.4	1.7	2.7	2.5
28	5.5	6.5	7.0	7.0	6.9	6.4	5.8	4.4	3.4	1.7	3.0	2.4
29	5.7	6.6	7.0	7.0	6.8	6.3	6.1	4.4	3.4	1.5	3.0	2.4
30	5.7	6.6	7.2	7.0	---	6.2	5.9	4.3	3.4	1.4	3.2	2.4
31	5.7	---	7.1	7.0	---	6.3	---	4.2	---	1.4	3.0	---
TOTAL	173.3	179.9	217.5	212.0	197.8	203.9	183.4	138.8	111.7	100.6	102.5	80.8
MEAN	5.59	6.00	7.02	6.84	6.82	6.58	6.11	4.48	3.72	3.25	3.31	2.69
MAX	6.0	6.6	7.7	7.0	7.1	6.8	6.5	5.7	4.4	21	15	4.3
MIN	5.4	5.6	6.6	6.6	6.6	6.2	5.8	4.0	3.4	1.4	1.4	2.4
AC-FT	344	357	431	421	392	404	364	275	222	200	203	160
CAL YR 1987	TOTAL	3202.6		MEAN	8.77	MAX	239	MIN	3.3	AC-FT	6350	
WTR YR 1988	TOTAL	1902.2		MEAN	5.20	MAX	21	MIN	1.4	AC-FT	3770	

08410000 RED BLUFF RESERVOIR NEAR ORLA, TX

LOCATION.--Lat 31°54'04", long 103°54'35", Reeves County, Hydrologic Unit 13070001, at right end of Red Bluff Dam on the Pecos River, 2.8 mi upstream from Salt Creek, and 5.2 mi north of Orla.

DRAINAGE AREA.--20,720 mi², approximately (contributing area).

PERIOD OF RECORD.--February 1937 to current year. Monthly contents only for some periods, published in WSP 1312.

GAGE.--Nonrecording gage. Datum of gage is 0.43 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rock-faced earthfill dam 9,200 ft long. The dam was completed and storage began in September 1936. The dam and reservoir are owned and operated by the Red Bluff Water Power Control District. The water is used for power development and for irrigation from Mentone to Grandfalls. The uncontrolled emergency spillway, 790-foot wide, is a cut through natural ground located to the right of right end of dam. The controlled service spillway is equipped with 12 tainter gates that are 25- by 15-foot high. Inflow is regulated by many reservoirs and diversions dams. The capacity curve is based on Geological Survey topographic map and aerial photography, survey of 1986. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	2,856.0	-
Crest of emergency spillway.....	2,845.0	324,000
Top of gates (top of conservation pool).....	2,842.0	289,700
Crest of service spillway and bottom of tainter gates.....	2,827.0	155,700
Lowest gated outlet (invert).....	2,764.0	2,800

COOPERATION.--Gage-height records and capacity curve were furnished by the Red Bluff Water Power and Control District.

EXTREMES (AT 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 352,000 acre-ft Sept. 27, 28, 1941 (gage height, 2,846.2 ft); observed on nonrecording gage at service spillway (affected by variable drawdown due to flow through tainter gates); minimum observed, 11,080 acre-ft May 13, 1948 (gage height, 2,781.4 ft).

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents observed, 226,500 acre-ft Feb. 28 to Mar. 13 (gage height, 2,835.8 ft); minimum observed, 179,300 acre-ft Sept. 12-17, 20-22 (gage height, 2,830.2 ft).

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

2,830.0	177,700	2,834.0	210,400
2,832.0	193,500	2,836.0	228,500

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224700	217600	217600	222000	222900	226500	224700	209900	201800	191800	187800	180900
2	224700	217600	217600	222000	222900	226500	224700	209900	201800	191800	187800	180900
3	224700	217600	217600	222000	223800	226500	224700	209000	200700	191800	187000	180900
4	223800	217600	217600	222000	223800	226500	224700	209000	200700	191000	187000	180900
5	222900	217600	217600	222000	223800	226500	224700	209000	199900	190200	186200	180900
6	222000	217600	217600	222000	223800	226500	223800	209000	199100	190200	186200	180900
7	222000	217600	218500	222000	223800	226500	222900	209000	199100	190200	186200	180100
8	222000	217600	218500	222000	223800	226500	222000	208100	198300	191800	186200	180100
9	222000	217600	218500	222000	223800	226500	221100	208100	198300	191800	185400	180100
10	221100	217600	218500	222000	224700	226500	220200	208100	197500	191800	185400	180100
11	221100	217600	218500	222000	224700	226500	219300	208100	197500	191800	185400	180100
12	221100	217600	218500	222000	224700	226500	218500	208100	196700	191800	184900	179300
13	221100	217600	218500	222000	224700	226500	217600	207200	196700	191800	184900	179300
14	220200	217600	218500	222000	224700	226500	216700	207200	196700	191800	184900	179300
15	220200	217600	219300	222000	224700	226500	215800	207200	195900	191800	184900	179300
16	220200	217600	219300	222000	224700	226500	214900	207200	195900	191800	184900	179300
17	220200	217600	219300	222000	224700	226500	214000	206300	195900	191800	184100	179300
18	220200	217600	219300	222000	224700	226500	213100	205400	195100	191800	184100	180100
19	220200	217600	219300	222900	226500	226500	212200	205400	195100	191800	184100	180100
20	220200	217600	220200	222000	226500	226500	212200	205400	195100	191800	184100	179300
21	219300	217600	220200	222900	226500	226500	211300	204500	194300	191000	183300	179300
22	219300	217600	220200	222900	226500	226500	210400	204500	194300	191000	183300	179300
23	219300	217600	220200	222900	226500	226500	209900	204500	194300	191000	182500	180100
24	219300	217600	220200	222900	226500	226500	209900	204500	193500	191000	182500	180900
25	218500	217600	221100	222900	226500	226500	209900	203600	193500	190200	182500	180900
26	218500	217600	221100	222900	226500	226500	209900	203600	192600	190200	181700	180900
27	218500	217600	221100	222900	226500	226500	209900	203600	192600	190200	181700	180900
28	218500	217600	221100	222900	226500	226500	209900	203600	192600	189400	180900	180900
29	218500	217600	221100	222900	226500	226500	209900	202700	192600	189400	180900	180900
30	217600	217600	221100	222900	---	226500	209900	202700	192600	188600	180900	180900
31	217600	---	222000	222900	---	224700	---	202700	---	188600	180900	---
MAX	224700	217600	222000	222900	226500	226500	224700	209900	201800	191800	187800	180900
MIN	217600	217600	222000	222900	224700	209900	202700	192600	188600	180900	179300	179300
(↑)	2834.8	2834.8	2835.3	2835.4	2835.8	2835.6	2833.9	2833.1	2831.9	2831.4	2830.4	2830.4
(Φ)	-8000	0	+4400	+900	+3600	-1800	-14800	-7200	-10100	-4000	-7700	0
CAL YR 1987	MAX 284200	MIN 217600	(Φ) -21000									
WTR YR 1988	MAX 226500	MIN 179300	(Φ) -44700									

(↑) Gage height, in feet, at end of month.
(Φ) Change in contents, in acre-feet.

393

LOCATION.--Lat 31°52'21", long 103°49'52", Reeves County, Hydrologic Unit 13070001, on right bank at bridge on Farm Road 652, 5.5 mi downstream from Salt Creek (Screw Bean Arroyo), 5.9 mi northeast of Orla, and 8.5 mi downstream from Red Bluff Reservoir.

DRAINAGE AREA.--21,210 mi², approximately (contributing area).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1937 to current year.

REVISED RECORDS.--WSP 928: 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,730.86 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 16, 1969, at site 6.9 mi downstream at datum 12.81 ft lower.

REMARKS.--No estimated daily discharges. Records good. Most of flow is releases from storage in Red Bluff Reservoir (station 08410000) 8.5 mi upstream. Occasional runoff occurs from draws between dam and station. There are many diversions above Red Bluff Reservoir for irrigation.

AVERAGE DISCHARGE.--51 years (water years 1938-88), 155 ft³/s (112,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s Sept. 29, 1941 (gage height, 20.74 ft), site and datum then in use; no flow at times in 1946 and 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 809 ft³/s July 8 at 0830 hours (gage height, 7.21 ft); minimum daily, 20 ft³/s on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136	130	25	26	22	21	54	51	248	150	155	51
2	135	129	26	25	67	22	42	50	222	168	154	55
3	133	129	26	25	59	22	41	49	148	154	150	54
4	133	129	25	26	45	24	41	83	147	151	152	51
5	130	100	25	26	41	26	107	101	145	152	155	51
6	129	41	24	95	22	25	480	101	143	152	171	50
7	128	39	24	276	22	27	494	99	141	152	175	50
8	129	39	24	102	22	26	496	99	140	494	164	49
9	125	38	24	98	22	26	500	99	140	91	158	49
10	127	37	24	96	22	26	498	99	140	80	156	49
11	126	37	24	85	21	26	498	98	140	91	157	49
12	125	37	24	29	21	25	500	99	140	43	148	48
13	124	35	24	23	21	24	500	99	121	38	103	48
14	124	34	24	23	21	24	498	98	97	35	108	63
15	126	33	25	22	20	24	496	99	97	34	104	72
16	127	33	24	22	21	24	496	97	97	33	104	51
17	127	31	25	22	21	23	494	191	97	32	102	49
18	129	30	25	22	21	23	494	457	97	65	101	49
19	132	28	25	22	21	23	493	209	97	107	101	50
20	132	29	25	21	21	23	491	189	97	109	100	49
21	129	28	25	21	21	23	491	58	98	108	100	49
22	131	27	25	21	21	23	356	52	99	106	113	48
23	131	26	25	21	21	23	57	51	99	105	146	48
24	131	25	25	21	20	23	55	53	103	102	146	48
25	130	25	25	21	20	22	51	72	147	114	145	48
26	131	26	25	20	20	26	52	75	149	148	146	48
27	129	26	25	20	20	96	51	112	149	156	147	47
28	127	26	25	20	20	98	51	277	152	155	148	46
29	128	25	25	20	21	96	51	248	152	154	123	45
30	128	24	26	20	---	97	51	248	152	153	52	45
31	128	---	26	20	---	89	---	248	---	155	51	---
TOTAL	4000	1396	769	1311	737	1100	8979	3961	3994	3787	4035	1509
MEAN	129	46.5	24.8	42.3	25.4	35.5	299	128	133	122	130	50.3
MAX	136	130	26	276	67	98	500	457	248	494	175	72
MIN	124	24	24	20	20	21	41	49	97	32	51	45
AC-FT	7930	2770	1530	2600	1460	2180	17810	7860	7920	7510	8000	2990
CAL YR 1987	TOTAL 78872	MEAN 216	MAX 1770	MIN 24	AC-FT 156400							
WTR YR 1988	TOTAL 35578	MEAN 97.2	MAX 500	MIN 20	AC-FT 70570							

08412500 PECOS RIVER NEAR ORLA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1937 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1937 to current year.

WATER TEMPERATURE: March 1953 to current year.

REMARKS.--October 1937 to September 1969, this station was published as 08410100 Pecos River below Red Bluff Dam, near Orla. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 29,400 microsiemens May 16, 1978; minimum daily, 1,600 microsiemens June 19, 1984.

WATER TEMPERATURE: Maximum daily, 31.0°C Aug. 13, 1978, and Aug. 13, 1982; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 13,300 microsiemens Dec. 22; minimum daily, 6,200 microsiemens Jan. 7.

WATER TEMPERATURE: Maximum daily, 29.0°C July 16; minimum daily, 3.0°C Dec. 16, 27.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT									
07...	1230	128	6490	20.0	1500	1400	390	130	1000
JAN									
05...	0915	26	12700	6.0	2300	2200	590	200	2000
APR									
06...	1400	488	6440	16.0	1400	1300	370	120	900
MAY									
03...	1500	51	8360	19.0	1600	1500	420	140	1200
JUN									
07...	1600	141	6910	25.0	1700	1600	440	150	980
JUL									
06...	1600	152	7090	25.0	1700	1600	420	160	1000

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT								
07...	12	19	117	1400	1600	0.70	11	4620
JAN								
05...	19	27	115	2200	3400	1.0	11	8500
APR								
06...	11	10	118	1400	1300	0.60	8.7	4180
MAY								
03...	13	28	121	1700	1800	0.80	11	5370
JUN								
07...	11	18	118	1400	1600	0.60	9.6	4670
JUL								
06...	11	17	110	1500	1500	0.60	11	4670

RIO GRANDE BASIN

395

08412500 PECOS RIVER NEAR ORLA, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	4000	7010	4720	51000	1800	19300	1300	13900	1400
NOV. 1987	1396	9830	6660	25100	2600	9870	1700	6380	1900
DEC. 1987	769	11300	7680	15900	3100	6360	1900	3950	*
JAN. 1988	1311	9340	6320	22400	2500	8760	1600	5740	1800
FEB. 1988	737	10700	7250	14400	2900	5710	1800	3630	*
MAR. 1988	1100	9730	6590	19600	2600	7670	1700	5000	1900
APR. 1988	8979	6660	4490	109000	1700	40900	1200	29800	1400
MAY 1988	3961	7360	4960	53100	1900	20100	1300	14300	1500
JUNE 1988	3994	6990	4710	50800	1800	19200	1300	13900	1400
JULY 1988	3787	7770	5240	53600	2000	20500	1400	14300	1600
AUG. 1988	4035	7750	5230	57000	2000	21700	1400	15300	1600
SEPT 1988	1509	8710	5890	24000	2300	9250	1500	6310	1700
TOTAL	35578	**	**	496000	**	189000	**	133000	**
WTD.AVG.	97	7640	5160	**	2000	**	1400	**	1500

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7100	7210	9620	12000	11900	11200	7880	8140	6770	7020	7130	8180
2	7740	7320	10400	12500	8980	11300	8010	8330	6840	6960	7230	9540
3	7160	7370	10400	12400	8560	11500	8250	8470	7000	7160	7260	9000
4	6860	7390	10700	12400	9120	11300	8310	7700	6970	7080	7270	9200
5	6640	7460	9740	12100	9100	11300	7460	7290	6950	7100	7450	9360
6	6530	9180	8370	10600	9610	11300	6570	7320	6950	7070	8200	9270
7	6450	11700	10500	6200	11700	11300	6480	7310	6960	7090	9610	8820
8	6410	12000	11700	7770	12000	11100	6470	7310	6920	8040	9100	8780
9	6420	12000	11000	7820	12200	11300	6480	7330	6930	11000	8100	8640
10	6390	11900	10100	7850	12200	11400	6480	7300	6930	9620	7740	8540
11	6380	11800	8500	7830	12200	11300	6520	7280	6950	8010	7600	8410
12	6430	11600	9540	8480	12000	11200	6550	7260	6960	10000	7720	8350
13	6430	11500	9280	11600	11800	11300	6600	7230	6950	11600	7800	8310
14	6440	11600	9080	12000	11700	11200	6600	7220	7010	12200	8660	8270
15	6810	11600	9930	12100	11700	11100	6580	7230	7080	12000	7780	7880
16	7000	11800	11900	12100	11500	11000	6570	7250	7110	11300	7610	7840
17	7050	11800	12400	12000	11200	11000	6560	7070	7090	10800	7580	7930
18	7200	11900	12900	12000	10400	11000	6550	6700	7080	9100	7560	8040
19	7400	11800	12700	12000	11200	11000	6560	7050	7070	7530	7560	9280
20	7610	11700	12200	11700	11100	11200	6580	7000	7080	7020	7510	9250
21	7510	11800	13000	11900	11300	11400	6560	7500	7040	7760	7530	8950
22	7460	11900	13300	11700	11200	11400	6580	8210	7040	7600	7540	9040
23	7310	12000	13000	11700	11400	11400	7440	8250	7070	7570	7550	9560
24	7360	12100	12900	11700	11300	11500	8130	8120	7150	7540	7410	9160
25	7330	12400	12600	11600	11200	11500	8220	7480	7110	7490	7390	9020
26	7280	12400	12400	11700	11200	11800	8280	7440	7050	7320	7420	8800
27	7230	12500	12400	11500	11100	8200	8280	8390	7040	7280	7410	8650
28	7350	12600	12500	11500	11200	7900	8060	9340	7080	7280	7460	8610
29	7280	12600	12600	11500	11300	8020	8010	6880	7030	7260	7560	8560
30	7260	12700	12700	11700	---	7110	8000	6810	7030	7250	8110	8490
31	7220	---	12200	11600	---	7220	---	6720	---	7100	8150	---
MEAN	7000	11100	11300	11000	11100	10700	7190	7510	7010	8360	7740	8720

RIO GRANDE BASIN

08412500 PECOS RIVER NEAR ORLA, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	19.0	7.0	5.0	8.0	13.5	12.0	20.0	18.5	21.5	23.0	24.0
2	10.5	18.5	---	5.0	9.0	14.5	12.0	17.0	22.0	22.5	24.0	24.0
3	19.0	19.0	10.0	4.0	8.0	11.5	14.5	16.5	20.0	25.0	24.0	23.0
4	19.0	19.5	12.0	5.0	8.0	12.0	14.5	15.5	---	23.0	27.0	23.0
5	18.5	18.0	11.0	5.5	6.0	---	15.5	17.0	20.5	23.0	24.0	21.0
6	19.0	17.0	11.0	6.5	4.0	12.0	13.0	18.0	25.0	22.0	24.0	22.0
7	19.0	16.5	10.5	6.0	4.0	12.0	14.0	17.0	25.0	22.0	24.5	21.5
8	19.0	15.5	10.5	6.0	5.5	12.0	14.0	16.0	21.0	22.5	24.5	22.0
9	19.0	14.0	8.5	4.0	7.5	9.5	13.0	15.5	22.0	23.5	24.0	22.5
10	19.0	12.0	8.0	4.5	8.0	14.5	13.5	---	21.0	23.0	24.5	22.0
11	19.0	10.0	9.0	4.0	7.0	13.0	15.0	16.5	21.0	23.0	25.0	22.0
12	18.5	10.5	9.0	7.0	7.0	12.0	13.0	17.0	21.0	25.5	25.0	22.5
13	---	10.5	8.5	7.0	---	11.5	14.5	17.0	21.0	27.5	24.0	---
14	19.0	11.5	6.0	5.0	9.5	10.0	14.5	19.0	---	28.0	24.0	23.0
15	20.0	13.0	4.0	4.0	8.0	10.0	14.0	18.0	21.0	28.5	24.0	21.5
16	19.0	10.5	3.0	6.0	9.0	12.0	---	19.0	26.0	29.0	24.0	23.0
17	18.5	---	5.0	7.0	9.0	10.5	16.5	19.0	22.0	28.5	24.0	24.0
18	21.0	10.0	5.0	5.0	9.0	---	15.5	18.5	21.5	---	25.0	25.5
19	---	8.5	8.0	7.0	9.0	9.5	18.0	18.0	22.0	24.0	24.0	23.0
20	19.5	11.0	8.0	5.5	7.0	11.0	15.5	18.0	22.0	25.0	25.0	22.5
21	18.0	---	7.5	4.0	9.0	13.0	16.0	17.0	22.0	22.5	25.0	23.5
22	19.0	---	7.5	5.5	9.0	13.0	18.0	19.0	22.0	22.0	---	23.5
23	19.5	---	7.0	5.5	10.0	14.0	16.0	20.0	21.5	---	---	23.0
24	18.5	11.0	9.0	5.0	9.0	---	16.0	24.0	21.5	23.0	24.5	21.5
25	19.0	10.5	7.0	4.5	10.0	15.0	16.5	20.0	21.5	23.0	24.5	22.0
26	---	9.5	4.0	5.5	12.5	17.0	19.5	19.0	21.5	24.0	25.0	23.0
27	18.5	8.0	3.0	5.5	19.5	13.0	17.0	---	21.5	23.0	24.0	23.5
28	18.0	7.0	5.0	5.5	14.0	13.0	19.0	19.0	22.0	24.0	24.0	22.5
29	18.0	7.0	---	9.0	14.0	10.0	17.0	19.0	22.0	25.0	23.0	20.5
30	18.0	10.0	4.5	7.0	---	12.0	21.0	20.0	22.0	23.0	23.0	18.5
31	18.0	---	6.0	8.0	---	11.0	---	19.5	---	23.0	24.5	---
MEAN	18.5	12.5	7.5	5.5	9.0	12.0	15.5	18.0	22.0	24.0	24.5	22.5

08414500 REEVES COUNTY WATER IMPROVEMENT DISTRICT NO. 2 CANAL NEAR MENTONE, TX

LOCATION.--Lat 31°37'57", long 103°34'30", Loving County, Hydrologic Unit 13070001, on right bank 173 ft downstream from headgate, 5.3 mi south of Mentone, and 15 mi northwest of Pecos.

PERIOD OF RECORD.--February 1922 to July 1925, August 1939 to May 1941, March 1942 to September 1957, and March 1964 to September 1986 (continuous-record station), October 1986 to current year (seasonal records only). Records from August 1939 to October 1940, not equivalent because diversion was not included. Published as "Farmers Independent Canal near Porterville" 1922-25.

GAGE.--Water-stage recorder. Concrete weir since Mar. 1, 1964. Elevation of gage is 2,640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 22, 1925, at site 250 ft downstream at different datum. Mar. 10, 1939, to Oct. 4, 1940, at site 2.5 mi downstream at different datum. Oct. 5, 1940, to Feb. 19, 1943, at site 123 ft upstream at datum 1.10 ft higher. Feb. 20, 1943, to Mar. 1, 1954, at site 123 ft upstream at present datum.

REMARKS.--No estimated daily discharge. Records good. At times, runoff is deleted from daily discharge record. Water is diverted from right bank of Pecos River and is used for irrigation between Mentone and Pecos. Discharges for irrigation season only, after September 1986.

AVERAGE DISCHARGE.--40 years (water years 1923-24, 1940, 1943-57, 1965-86), 7.46 ft³/s (5,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 160 ft³/s June 14, 1922; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.00	.00	.02	15	10	17	15
2	---	---	---	---	---	.00	.00	.01	15	4.0	17	15
3	---	---	---	---	---	.00	.00	.02	14	.16	17	15
4	---	---	---	---	---	.00	.00	.02	9.9	.09	17	16
5	---	---	---	---	---	.00	.00	.02	.07	.07	16	16
6	---	---	---	---	---	.00	.00	.02	.04	.06	17	15
7	---	---	---	---	---	.00	.00	.01	.06	.00	17	15
8	---	---	---	---	---	.00	.00	.0	3.7	.0	17	15
9	---	---	---	---	---	.00	.00	.00	7.1	.00	16	15
10	---	---	---	---	---	.00	.00	.86	5.5	.00	15	15
11	---	---	---	---	---	.00	.00	7.7	4.8	.00	14	14
12	---	---	---	---	---	.00	.00	11	13	.00	13	14
13	---	---	---	---	---	.00	.00	12	13	.00	15	12
14	---	---	---	---	---	.00	.00	15	13	.00	4.4	6.5
15	---	---	---	---	---	.00	7.5	12	13	.00	.07	.30
16	---	---	---	---	---	.00	6.1	5.5	12	.00	.02	.20
17	---	---	---	---	---	.00	8.8	.01	13	.00	.02	.18
18	---	---	---	---	---	.00	10	6.9	13	.00	.02	.22
19	---	---	---	---	---	.00	10	13	13	.00	.02	.19
20	---	---	---	---	---	.00	8.7	11	13	.00	.01	.13
21	---	---	---	---	---	.00	7.2	11	12	.00	.00	.14
22	---	---	---	---	---	.00	.09	11	.00	.00	.00	.14
23	---	---	---	---	---	.00	.07	13	.00	.00	.00	.12
24	---	---	---	---	---	.00	.02	13	.00	.00	.00	.07
25	---	---	---	---	---	.00	.02	13	.00	.00	.00	.07
26	---	---	---	---	---	.00	.02	14	.00	.00	.00	.07
27	---	---	---	---	---	.00	.02	12	.01	1.8	.0	.07
28	---	---	---	---	---	.00	.02	13	9.2	15	.00	.06
29	---	---	---	---	---	.00	.01	13	15	16	.00	.0
30	---	---	---	---	---	.00	.02	13	14	18	.00	.00
31	---	---	---	---	---	.00	---	14	---	17	9.9	---
TOTAL	---	---	---	---	---	0.00	58.59	235.09	241.38	82.18	222.46	200.46
MEAN	---	---	---	---	---	.00	1.95	7.58	8.05	2.65	7.18	6.68
MAX	---	---	---	---	---	.00	10	15	15	18	17	16
MIN	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
AC-FT	---	---	---	---	---	.0	116	466	479	163	441	398

CAL YR 1987 TOTAL -- MEAN -- MAX -- MIN -- AC-FT --
WTR YR 1988 TOTAL -- MEAN -- MAX -- MIN -- AC-FT --

08418000 WARD COUNTY IRRIGATION DISTRICT NO. 1 CANAL NEAR BARSTOW, TX

LOCATION.--Lat 31°32'26", long 103°29'42", Ward County, Hydrologic Unit 13070001, on left bank 0.6 mi downstream from headgate and 7.9 mi northwest of Barstow.

PERIOD OF RECORD.--February 1922 to September 1925 (published as "Barstow Canal near Barstow"), August 1939 to May 1941, October 1941 to September 1957, and March 1964 to September 1986 (continuous-record station), October 1986 to current year (seasonal record only).

GAGE.--Water-stage recorder. Concrete weir since Nov. 20, 1968. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 15, 1939, at site about 3,000 ft upstream at different datum.

REMARKS.--Records good prior to May 6, except those for estimated daily discharges, Apr. 11-20, and those after May 6, which are poor. At times, local runoff is deleted from daily discharge record. Water is diverted from left bank of Pecos River and is used for irrigation in the vicinity of Barstow. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--42 years (water years 1923-25, 1940, 1942-57, 1965-86), 25.1 ft³/s (18,180 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 385 ft³/s Aug. 30, 1923; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.00	24	17	112	73	99	25
2	---	---	---	---	---	.00	30	15	110	75	99	25
3	---	---	---	---	---	.00	32	15	108	69	99	25
4	---	---	---	---	---	.00	31	39	106	69	98	13
5	---	---	---	---	---	.00	10	42	104	79	99	6.0
6	---	---	---	---	---	.00	5.0	37	105	88	98	6.0
7	---	---	---	---	---	.00	26	43	103	98	101	5.4
8	---	---	---	---	---	.00	30	43	96	74	98	2.7
9	---	---	---	---	---	.00	7.4	43	85	32	103	19
10	---	---	---	---	---	.00	2.2	44	68	22	103	28
11	---	---	---	---	---	.00	2.2	52	63	4.0	104	25
12	---	---	---	---	---	.00	2.2	59	47	25	108	25
13	---	---	---	---	---	.00	2.2	62	48	28	76	25
14	---	---	---	---	---	.00	2.2	63	48	46	52	26
15	---	---	---	---	---	.00	6.4	60	47	48	52	30
16	---	---	---	---	---	.00	21	61	47	41	51	24
17	---	---	---	---	---	.00	25	55	47	33	49	.22
18	---	---	---	---	---	.00	25	60	48	25	49	.20
19	---	---	---	---	---	.00	25	55	47	20	47	.20
20	---	---	---	---	---	.00	54	57	47	39	43	10
21	---	---	---	---	---	.00	63	71	47	60	45	26
22	---	---	---	---	---	.00	64	76	47	69	48	26
23	---	---	---	---	---	.00	35	38	47	71	49	28
24	---	---	---	---	---	.00	2.9	24	47	70	70	35
25	---	---	---	---	---	.00	1.1	18	48	71	86	33
26	---	---	---	---	---	.00	18	18	48	74	102	32
27	---	---	---	---	---	.00	23	35	57	72	102	32
28	---	---	---	---	---	.00	23	35	67	99	99	32
29	---	---	---	---	---	.00	21	81	69	99	94	20
30	---	---	---	---	---	.00	16	94	73	99	92	.20
31	---	---	---	---	---	.00	---	106	---	99	91	---
TOTAL	---	---	---	---	---	0.00	629.8	1518	2036	1871.0	2506	584.92
MEAN	---	---	---	---	---	.00	21.0	49.0	67.9	60.4	80.8	19.5
MAX	---	---	---	---	---	.00	64	106	112	99	108	35
MIN	---	---	---	---	---	.00	1.1	15	47	4.0	43	.20
AC-FT	---	---	---	---	---	.0	1250	3010	4040	3710	4970	1160
CAL YR 1987	TOTAL --	MEAN --	MAX --	MIN --	AC-FT --							
WTR YR 1988	TOTAL --	MEAN --	MAX --	MIN --	AC-FT --							

08436500 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 2 (UPPER DIVERSION) CANAL NEAR GRANDFALLS, TX

LOCATION.--Lat 31°18'43", long 102°55'10", Ward County, Hydrologic Unit 13070001, on left bank about 2.5 mi upstream from bridge on State Highway 18, 4.6 mi southwest of Grandfalls, and 12.5 mi downstream from headgate of canal.

PERIOD OF RECORD.--March 1922 to July 1925 (published as "Imperial Highline Canal near Grandfalls"), August 1939 to September 1957, and March 1964 to September 1986 (discontinued as a continuous-record station; converted to seasonal).

GAGE.--Water-stage recorder. Concrete weir since Dec. 8, 1947. Elevation of gage is 2,455 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 21, 1939, water-stage recorder at site 8.5 mi upstream at different datum. Aug. 21 to Oct. 3, 1939, and May 25 to Aug. 4, 1941, staff gage, Oct. 4, 1939, to May 21, 1941, and Aug. 5, 1941, to Sept. 30, 1957, water-stage recorder at site 2.5 mi downstream at different datum.

REMARKS.--Records good. At times, local runoff is deleted from daily discharge record. Water is diverted from right bank of Pecos River and is used for irrigation and to supply water for Imperial Reservoir. Water is released from Imperial Reservoir into Pecos County Water Improvement District No. 2 canal and into Pecos County Water Improvement District No.3 canal for irrigation. Discharges are published for irrigation season only since September 1986.

AVERAGE DISCHARGE.--41 years (water years 1924, 1940-57, 1965-86), 28.1 ft³/s (20,360 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 368 ft³/s Sept. 18, 1923; no flow at times each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.00	.00	.02	17	.00	.00	.00
2	---	---	---	---	---	.00	.00	.00	21	.00	.00	.00
3	---	---	---	---	---	.00	.00	.00	18	.00	.00	.00
4	---	---	---	---	---	.00	.00	.00	20	.00	.00	.00
5	---	---	---	---	---	.00	.00	.00	24	.00	.00	.00
6	---	---	---	---	---	.00	.00	.00	16	.00	.00	.00
7	---	---	---	---	---	.00	.00	.00	9.0	.00	.00	.00
8	---	---	---	---	---	.00	.00	.00	7.9	.00	.00	.00
9	---	---	---	---	---	.00	.00	.00	5.9	.00	.00	.00
10	---	---	---	---	---	.00	.00	.00	9.7	.00	.00	.00
11	---	---	---	---	---	.00	.00	.00	4.7	.00	.00	.00
12	---	---	---	---	---	.00	.00	.00	.0	7.6	.00	.00
13	---	---	---	---	---	.00	.00	.00	.00	17	.00	.00
14	---	---	---	---	---	.00	31	.00	.00	73	.00	.00
15	---	---	---	---	---	.00	238	.00	.00	39	.00	.00
16	---	---	---	---	---	.00	238	.00	.00	21	.00	.00
17	---	---	---	---	---	.00	238	.00	.00	1.9	.00	.00
18	---	---	---	---	---	.00	238	.00	.00	.00	.00	.00
19	---	---	---	---	---	.00	238	.00	.00	.00	.00	.00
20	---	---	---	---	---	.00	237	.00	.00	.00	.00	.00
21	---	---	---	---	---	.00	238	.00	.00	.00	.00	.00
22	---	---	---	---	---	.00	238	.00	.00	.00	.00	.00
23	---	---	---	---	---	.00	235	.00	.00	.00	.00	.00
24	---	---	---	---	---	.00	234	.00	.00	.00	.00	.00
25	---	---	---	---	---	.00	237	.00	.00	.00	.00	.00
26	---	---	---	---	---	.00	233	.00	.00	.00	.00	.00
27	---	---	---	---	---	.00	142	.00	.00	.00	.00	.00
28	---	---	---	---	---	.00	74	.00	.00	.00	.00	.00
29	---	---	---	---	---	.00	49	.00	.00	.00	.00	.00
30	---	---	---	---	---	.00	3.3	.00	.00	.00	.00	.00
31	---	---	---	---	---	.00	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	0.00	3141.30	0.02	153.20	159.50	0.00	0.00
MEAN	---	---	---	---	---	.00	105	.001	5.11	5.15	.00	.00
MAX	---	---	---	---	---	.00	238	.02	24	73	.00	.00
MIN	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
AC-FT	---	---	---	---	---	.0	6230	.04	304	316	.0	.0

CAL YR 1987 TOTAL -- MEAN -- MAX -- MIN -- AC-FT --
WTR YR 1988 TOTAL -- MEAN -- MAX -- MIN -- AC-FT --

LOCATION.--Lat 31°16'38", long 102°43'54", Pecos County, Hydrologic Unit 13070001, on left bank about 2.4 mi west of Imperial and 7.7 mi downstream from Imperial Reservoir.

PERIOD OF RECORD.--April 1940 to May 1941, March 1942 to September 1957, and March 1964 to September 1986 (continuous-record station); October 1986 to current year (seasonal record only). Records since March 1942 are equivalent to earlier records if diversions to Pecos County Water Improvement District No. 3 canal near Imperial (station 08437600) are added to flow past this station.

GAGE.--Water-stage recorder. Wooden weir June 1, 1943, to Feb. 29, 1964, and concrete weir since Mar. 1, 1964. Elevation of gage is about 2,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 11, 1940, at site 1.5 mi upstream at different datum. July 12, 1940, to Mar. 23, 1942, at site 2.5 mi upstream at datum 3.36 ft higher. Mar. 24, 1942, to May 31, 1943, at site 0.5 mi upstream at datum 0.70 ft higher.

REMARKS.--No estimated daily discharges. Records good. At times, local runoff is deleted from daily discharge record. Water is diverted from Imperial Reservoir (on right bank of Pecos River) for irrigation in the vicinity of Imperial, and at times includes water diverted from the Pecos River through Cut Around Canal. The total flow at this station does not include water diverted from canal 75 ft upstream, or water diverted into Pecos County Improvement District No. 3 canal (see station 08437600), 0.6 mi upstream. Discharges are published for irrigation season only since September 1986.

AVERAGE DISCHARGE.--37 years (water years 1943-57, 1965-86). 10.7 ft³/s (7,750 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 144 ft³/s July 27, 28, 31, Aug. 1, 1945; no flow at times each year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.00	.00	.00	15	.00	1.6	14
2	---	---	---	---	---	.00	.00	.00	.00	.00	.00	17
3	---	---	---	---	---	.00	.00	.00	.00	.00	8.3	17
4	---	---	---	---	---	.00	.00	.00	.00	.00	24	15
5	---	---	---	---	---	.00	.00	.00	.00	.00	25	17
6	---	---	---	---	---	.00	.00	.00	.00	.00	38	16
7	---	---	---	---	---	.00	.00	.00	.00	.00	37	16
8	---	---	---	---	---	.00	.00	.00	.00	.00	27	16
9	---	---	---	---	---	1.4	.00	.00	.00	.00	28	21
10	---	---	---	---	---	40	.00	.00	4.5	.00	26	31
11	---	---	---	---	---	28	.00	.00	5.1	.00	3.6	31
12	---	---	---	---	---	16	.00	.00	2.7	.00	.00	30
13	---	---	---	---	---	.82	.00	.00	13	.00	.00	21
14	---	---	---	---	---	.00	.00	.00	11	.00	.00	6.6
15	---	---	---	---	---	.00	.00	.00	.02	.00	.00	.00
16	---	---	---	---	---	1.7	.00	.00	.00	.00	.00	.00
17	---	---	---	---	---	.72	.00	14	.00	.00	.00	.00
18	---	---	---	---	---	.0	.00	19	.00	.00	.00	.00
19	---	---	---	---	---	.00	.00	19	.00	.00	.00	.00
20	---	---	---	---	---	.00	.00	19	.00	.00	.00	.00
21	---	---	---	---	---	.00	.00	18	.00	.00	.00	.00
22	---	---	---	---	---	.00	.00	18	.00	11	.00	.00
23	---	---	---	---	---	.00	21	18	.00	17	.00	.00
24	---	---	---	---	---	.00	32	18	.00	17	.00	.00
25	---	---	---	---	---	.00	34	29	.00	16	.00	.00
26	---	---	---	---	---	.00	43	39	.00	18	.00	.00
27	---	---	---	---	---	.00	31	25	.00	17	.00	.00
28	---	---	---	---	---	.00	20	25	.00	20	.00	.00
29	---	---	---	---	---	.00	15	22	.00	16	.00	.00
30	---	---	---	---	---	.00	1.2	18	.00	17	.00	.00
31	---	---	---	---	---	.00	---	19	---	19	.00	---
TOTAL	---	---	---	---	---	88.64	197.20	320.00	51.32	168.00	218.50	268.60
MEAN	---	---	---	---	---	2.86	6.57	10.3	1.71	5.42	7.05	8.95
MAX	---	---	---	---	---	40	43	39	15	20	38	31
MIN	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
AC-FT	---	---	---	---	---	176	391	635	102	333	433	533
CAL YR 1987	TOTAL	---	MEAN	---	MAX	---	MIN	---	AC-FT	---		
WTR YR 1988	TOTAL	---	MEAN	---	MAX	---	MIN	---	AC-FT	---		

LOCATION.--Lat 31°16'51", long 102°44'26", Pecos County, Hydrologic Unit 13070001, on left bank about 220 ft upstream from bridge on Farm Road 11, 0.3 mi downstream from headgate (Pecos No. 2 canal), and 2.9 mi west of Imperial.

PERIOD OF RECORD.--March 1940 to September 1941, March 1942 to September 1957, and March 1964 to September 1986 (continuous-record station), October 1986 to current year (seasonal records only).

GAGE.--Water-stage recorder. Concrete weir since Mar. 7, 1944. Elevation of gage is 2,390 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 10, 1941, at site 350 ft downstream at datum 6.79 ft lower. Jan. 10, 1941, to Mar. 29, 1942, at site 200 ft downstream at datum 3.65 ft lower.

REMARKS.--No estimated daily discharges. Records good. At times local runoff is deleted from daily discharge record. Water is diverted from Imperial Reservoir (on right bank of Pecos River), 7.6 mi upstream, for irrigation in the vicinity of Imperial, and at times includes water diverted from the Pecos River by Cut Around Canal. After September 1986, there are discharges from March to September only.

AVERAGE DISCHARGE.--38 years (water years 1941, 1943-57, 1965-86), 7.97 ft³/s (5,770 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 175 ft³/s Aug. 11, 1940; no flow at times each year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.00	.00	.00	4.4	.00	24	.00
2	---	---	---	---	---	.00	.00	.00	22	.00	25	.00
3	---	---	---	---	---	.00	.00	.00	6.3	.00	25	.00
4	---	---	---	---	---	.00	.00	.00	.00	.00	24	.00
5	---	---	---	---	---	.00	.00	.00	.00	.00	20	.00
6	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
7	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
8	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
9	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
10	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
11	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
12	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
13	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
14	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
15	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
16	---	---	---	---	---	7.1	.00	.00	.00	.00	.00	.00
17	---	---	---	---	---	15	.00	.00	.00	.00	.00	.00
18	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
19	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
20	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
21	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
22	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
23	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
24	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
25	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
26	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
27	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
28	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
29	---	---	---	---	---	.00	3.8	.00	.00	.00	.00	.00
30	---	---	---	---	---	.00	17	.00	.00	.00	.00	.00
31	---	---	---	---	---	22.10	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	22.10	20.80	0.00	32.70	0.00	118.00	0.00
MEAN	---	---	---	---	---	.71	.69	.00	1.09	.00	3.81	.00
MAX	---	---	---	---	---	15	17	.00	22	.00	25	.00
MIN	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
AC-FT	---	---	---	---	---	44	41	.0	65	.0	234	.0
CAL YR 1987	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		
WTR YR 1988	TOTAL	--	MEAN	--	MAX	--	MIN	--	AC-FT	--		

LOCATION.--Lat 31°06'47", long 102°25'02", Pecos County, Hydrologic Unit 13070008, on right bank 2.1 mi upstream from Comanche Creek, 3.8 mi northwest of Girvin, and 7.2 mi upstream from bridge on U.S. Highway 67.

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

Water-quality records.--Chemical analyses: October 1939 to June 1941, October 1946 to September 1947, October 1953 to September 1982. Pesticide analyses: October 1968 to September 1974.

GAGE.--Water-stage recorder with concrete gage control and measuring flume. Datum of gage not determined. Supplementary water-stage recorder, used as regular gage prior to July 17, 1951, is now used only for peaks exceeding about 400 ft³/s, 7.2 mi downstream at datum 2,269.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, Jan. 14 to Apr. 4, which are fair. Flow is largely regulated by Red Bluff Reservoir (station 08410000). Numerous diversions above station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s Oct. 5, 1941 (gage height, 20.49 ft, at supplementary gage); minimum daily, 1.9 ft³/s June 19, July 14, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 230 ft³/s Apr. 16 at 1400 hours (gage height, 2.37 ft); minimum daily, 18 ft³/s Aug. 29, 30.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	110	52	55	55	52	58	41	44	46	26	37
2	70	98	52	55	55	52	61	42	40	54	26	35
3	72	92	52	55	55	52	85	64	38	61	32	30
4	78	90	52	55	55	52	85	67	49	59	30	46
5	99	88	53	55	55	52	90	66	55	65	37	54
6	122	86	56	55	55	52	90	65	53	53	37	46
7	127	90	56	55	55	52	81	66	52	51	33	40
8	127	93	56	55	55	52	70	67	53	60	36	37
9	127	91	56	55	56	52	62	61	53	76	37	30
10	126	98	55	55	58	52	59	52	47	57	34	26
11	125	113	55	55	59	52	61	54	43	53	31	25
12	125	114	55	55	61	52	74	60	42	55	33	28
13	114	93	55	55	59	52	125	61	42	58	34	30
14	99	77	55	74	58	52	187	61	45	81	33	30
15	96	70	54	102	56	52	214	62	50	134	33	30
16	94	66	54	111	55	51	227	57	52	112	32	26
17	98	63	54	111	55	51	199	51	54	70	30	24
18	115	61	54	111	52	51	113	46	56	44	30	44
19	124	59	54	93	52	50	83	47	55	35	33	56
20	122	58	54	69	52	50	81	51	55	34	34	36
21	123	57	54	62	52	50	78	45	52	40	29	37
22	127	56	54	61	52	50	76	45	45	39	25	41
23	129	56	54	60	52	50	74	47	41	37	24	43
24	134	55	55	59	52	50	72	65	38	33	24	47
25	137	55	55	58	52	50	71	114	37	29	25	47
26	138	54	55	57	52	49	67	114	39	26	23	45
27	133	54	55	56	52	48	64	90	42	24	22	39
28	121	52	55	56	52	48	65	69	43	23	21	35
29	114	52	55	55	52	48	62	53	42	23	18	33
30	113	52	55	55	---	51	50	45	47	27	18	32
31	113	---	55	55	---	55	---	43	---	27	26	---
TOTAL	3505	2253	1686	2020	1581	1582	2784	1871	1404	1586	906	1109
MEAN	113	75.1	54.4	65.2	54.5	51.0	92.8	60.4	46.8	51.2	29.2	37.0
MAX	138	114	56	111	61	55	227	114	56	134	37	56
MIN	63	52	52	55	52	48	50	41	37	23	18	24
AC-FT	6950	4470	3340	4010	3140	3140	5520	3710	2780	3150	1800	2200
CAL YR 1987	TOTAL 64053											
WTR YR 1988	TOTAL 22287											
MEAN	175	60.9	52.7	65.2	52.7	51.8	92.8	60.4	46.8	51.2	29.2	37.0
MAX	138	114	56	111	61	55	227	114	56	134	37	56
MIN	63	52	52	55	52	48	50	41	37	23	18	24

RIO GRANDE BASIN

403

08447410 PECOS RIVER NEAR LANGTRY, TX
(National stream-quality accounting network)

LOCATION.--Lat 29°48'10", long 101°26'45", Val Verde County, Hydrologic Unit 13040212, at gaging station 7.4 mi east of Langtry, 15.0 mi upstream from confluence with the Rio Grande, and 638.2 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--35,179 mi².

PERIOD OF RECORD.--Chemical analyses: October 1954 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: July 1975 to June 1982. Sediment analyses: October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1970 to September 1976, October 1980 to September 1985.

WATER TEMPERATURE: October 1970 to September 1985.

INSTRUMENTATION.--Specific conductance and water temperature were recorded continuously from November 1980 to September 1985.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,000 microsiemens Mar. 21, 22, 1981; minimum daily, 230 microsiemens Oct. 11, 1981.

WATER TEMPERATURE: Maximum daily, 32.5°C June 8, 1981; minimum daily, 1.5°C Dec. 26, 27, 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV 18...	1450	242	5010	8.27	14.5	0.60	12.0	124	2.3	K6	20	910
JAN 20...	1510	218	5790	8.10	12.0	1.3	9.9	97	1.6	K6	K5	1100
MAR 23...	1240	178	5670	8.10	19.0	0.60	10.6	122	1.2	K3	K4	980
MAY 11...	1420	163	5180	8.20	26.0	4.0	9.0	118	1.1	K13	24	1000
JUL 12...	1435	211	5010	8.20	29.5	2.3	8.3	116	0.7	48	K17	1100
AUG 03...	1030	166	4770	8.30	27.5	4.9	8.3	111	1.3	27	32	880
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 18...	760	210	93	770	11	14	158	700	1200	0.90	16	3300
JAN 20...	960	250	120	860	12	12	161	870	1300	0.90	14	3820
MAR 23...	830	210	110	870	12	11	150	890	1200	0.90	11	3770
MAY 11...	880	220	110	850	12	11	127	870	1300	0.90	14	3640
JUL 12...	1000	250	120	700	9	10	118	770	1200	0.80	17	3200
AUG 03...	760	200	92	680	10	9.0	128	750	1100	0.70	17	3090
DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
NOV 18...	3100	--	<0.010	0.610	0.060	0.060	0.44	0.50	<0.010	<0.010	0.010	0.03
JAN 20...	3530	--	<0.010	0.700	0.050	0.050	0.45	0.50	<0.010	<0.010	<0.010	--
MAR 23...	3390	--	--	--	0.090	--	--	--	<0.010	<0.010	--	--
MAY 11...	3460	0.330	0.010	0.340	0.080	0.100	0.52	0.60	<0.010	<0.010	<0.010	--
JUL 12...	3140	--	<0.010	0.250	0.020	0.020	0.68	0.70	0.030	0.040	<0.010	--
AUG 03...	2930	--	<0.010	0.330	0.080	0.060	0.32	0.40	<0.010	<0.010	<0.010	--

RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 18...	22	14	70	<10	1	100	<10	<1	1	<1	1	10
JAN 20...	28	16	81	<10	1	<100	<10	<1	2	<1	<1	20
MAR 23...	19	9.1	46	--	--	--	--	--	--	--	--	--
MAY 11...	11	4.8	63	<10	1	100	<10	1	2	<1	2	20
JUL 12...	54	31	90	--	--	--	--	--	--	--	--	--
AUG 03...	39	17	97	10	1	100	<10	1	1	2	<1	30
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
NOV 18...	<5	90	10	0.2	8	3	<1	<1.0	4200	18	<10	
JAN 20...	<5	120	10	0.2	8	<1	<1	<1.0	4900	22	10	
MAR 23...	--	--	--	--	--	--	--	--	--	--	--	
MAY 11...	<5	100	<10	0.7	7	3	<1	<1.0	4800	27	<10	
JUL 12...	--	--	--	--	--	--	--	--	--	--	--	
AUG 03...	<5	90	<10	0.6	9	2	<1	<1.0	3600	22	<10	

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX

LOCATION.--Lat 29°40'35", long 101°00'00", Val Verde County, Hydrologic Unit 13040302, on left bank 10 mi east of Comstock, and 25.5 mi upstream from mouth.

DRAINAGE AREA.--3,961 mi².

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1967 to current year. Sediment analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1978 to September 1985.

WATER TEMPERATURE: February 1978 to September 1985.

INSTRUMENTATION.--From August 1980 to September 1985, specific conductance and water temperature were continuously recorded at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 763 microsiemens Oct. 18, 1984; minimum daily, 105 micromhos Oct. 20, 1983.

WATER TEMPERATURE: Maximum daily, 38.0°C May 6, 1984; minimum daily, 0.0 °C Feb. 1, 2, 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

								OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)					
NOV 17...	1345	365	391	8.26	17.0	0.20	10.8	116	1.6	K1	K1	
JAN 19...	1540	305	419	8.20	15.5	0.20	10.5	110	1.5	K2	K3	
MAY 10...	1240	263	379	8.20	25.5	0.60	10.2	130	0.1	K1	K4	
AUG 02...	1505	392	362	8.20	26.5	1.8	9.7	125	1.2	36	K7	
DATE		HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 17...	200	20	60	13	8.2	0.3	1.4	184	8.8	18		0.30
JAN 19...	210	26	61	14	8.3	0.3	1.4	185	11	15		0.30
MAY 10...	190	20	51	14	8.7	0.3	1.1	166	8.7	14		0.40
AUG 02...	180	21	52	13	7.7	0.3	1.3	163	8.1	11		0.30
DATE		SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV 17...	15		207	243	--	<0.010	1.80	<0.010	0.020	--	0.20	<0.010
JAN 19...	14		237	245	--	<0.010	1.80	<0.010	<0.010	--	0.20	<0.010
MAY 10...	15		208	231	--	<0.010	3.90	0.020	0.020	0.28	0.30	<0.010
AUG 02...	14		209	211	1.29	0.010	1.30	0.020	0.020	--	<0.20	<0.010
DATE		PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV 17...	<0.010	<0.010		13	13	47	<10	1	110	<0.5	<1	<1
JAN 19...	<0.010	<0.010		11	9.1	88	<10	1	110	<0.5	1	<1
MAY 10...	0.010	<0.010		18	13	52	<10	1	110	<0.5	1	<1
AUG 02...	<0.010	<0.010		5	5.3	67	<10	1	100	<0.5	<1	1
DATE		COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)
NOV 17...	<3	2	<3	<5	7	<1	<0.1	<10	4	<1	<1.0	
JAN 19...	<3	2	6	<5	7	<1	<0.1	<10	2	<1	<1.0	
MAY 10...	<3	<1	8	<5	10	2	<0.1	<10	1	<1	<1.0	
AUG 02...	<3	1	9	<5	8	<1	<0.1	<10	3	<1	<1.0	

RIO GRANDE BASIN

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
NOV 17...	480	8	<3	--	--	--	--	--	--	--	--
JAN 19...	490	9	<3	1.7	<0.4	1.9	<0.4	1.3	<0.4	0.16	1.1
MAY 10...	500	9	8	--	--	--	--	--	--	--	--
AUG 02...	450	8	8	--	--	--	--	--	--	--	--

RIO GRANDE BASIN

407

08450900 RIO GRANDE BELOW AMISTAD DAM NEAR DEL RIO, TX

LOCATION.--Lat 29°25'30", long 101°27'00", Val Verde County, Hydrologic Unit 13080001, 2.2 mi downstream from Amistad Dam and 10 mi northwest of Del Rio.

DRAINAGE AREA.--123,143 mi².

PERIOD OF RECORD.--Chemical analyses: July 1968 to current year.

REMARKS.--The flow is controlled largely by releases from Amistad Reservoir. Records of daily mean discharge for water year 1988 are given in International Boundary and Water Commission Water Bulletins Nos. 57 and 58.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 21...	0715	154	1330	7.50	18.5	310	160	89	21
NOV 18...	0800	2020	1350	7.80	19.5	300	170	83	22
DEC 16...	0845	1370	1320	7.90	14.0	300	160	82	22
JAN 20...	1300	2090	1370	8.00	10.5	300	170	85	22
FEB 17...	0800	1800	1490	8.00	11.5	340	200	93	25
MAR 18...	0800	1250	1490	7.90	11.0	320	180	87	24
APR 28...	0830	2010	1440	7.90	14.0	310	180	86	24
MAY 18...	0655	3740	1440	8.00	15.0	320	180	88	24
JUN 15...	0800	3370	1480	8.00	18.0	320	180	87	24
JUL 28...	1215	3840	1490	7.70	16.5	330	190	89	26
AUG 18...	0700	3960	1500	7.60	19.5	330	200	89	27
SEP 22...	0700	9110	1450	7.70	20.5	310	170	85	24

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 21...	170	4	5.9	146	250	180	16	819
NOV 18...	160	4	6.2	130	270	180	15	814
DEC 16...	160	4	6.2	132	280	180	15	824
JAN 20...	170	4	7.6	136	250	180	15	811
FEB 17...	190	5	7.7	140	300	220	16	936
MAR 18...	180	5	6.6	139	310	210	15	916
APR 28...	170	4	6.0	139	300	190	15	874
MAY 18...	180	5	5.8	141	290	200	15	887
JUN 15...	180	5	5.9	141	290	210	15	896
JUL 28...	180	4	5.6	143	300	210	15	911
AUG 18...	180	4	5.9	138	300	210	15	910
SEP 22...	180	5	5.9	141	280	200	16	875

RIO GRANDE BASIN

08461300 RIO GRANDE BELOW FALCON DAM, TX

LOCATION.--Lat 26°33'25", long 99°10'05", Starr County, Hydrologic Unit 13090001, U.S. Tailrace at Falcon Dam.

DRAINAGE AREA.--159,270 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: July 1955 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1988 are given in International Boundary and Water Commission Water Bulletins Nos. 57 and 58.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
19...	0930	2.0	1020	7.70	26.0	250	130	70	18
NOV									
16...	0945	160	1020	7.80	21.0	250	130	71	18
DEC									
14...	1030	1000	1020	7.80	19.0	250	130	69	19
JAN									
22...	1000	453	1070	7.90	13.5	270	130	75	19
FEB									
19...	0930	1000	1070	7.80	13.5	260	130	74	19
MAR									
17...	1300	1500	1060	7.90	15.5	270	130	75	19
APR									
21...	1300	2600	1070	7.90	19.0	260	130	74	19
MAY									
16...	1300	8580	1080	8.00	21.0	260	130	74	19
JUN									
16...	0900	5570	1120	8.00	25.5	260	140	70	20
JUL									
21...	0945	3440	1170	7.80	27.0	270	160	75	21
AUG									
19...	0930	200	1200	7.50	28.0	270	160	72	23
SEP									
20...	0900	36	1220	7.80	27.0	280	170	74	23

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT								
19...	120	3	5.1	121	200	120	14	620
NOV								
16...	110	3	5.1	123	190	120	14	602
DEC								
14...	120	3	5.5	124	220	130	14	652
JAN								
22...	120	3	6.3	131	190	130	14	633
FEB								
19...	120	3	6.0	135	210	130	14	654
MAR								
17...	120	3	5.3	131	220	130	14	662
APR								
21...	120	3	4.9	131	210	130	13	649
MAY								
16...	120	3	4.9	135	210	130	13	652
JUN								
16...	130	4	5.1	121	230	140	12	680
JUL								
21...	130	4	5.0	116	240	150	13	704
AUG								
19...	140	4	5.4	114	250	150	13	722
SEP								
20...	140	4	5.8	112	250	160	14	734

RIO GRANDE BASIN

409

08464700 RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TX

LOCATION.--Lat 26°22'05", long 98°48'20", Starr County, Hydrologic Unit 13090001, at gaging station about 1 mi downstream from Rio Grande City, 3.9 mi downstream from mouth of Rio San Juan, and 1,014.3 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--174,362 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: January 1959 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1988 are given in International Boundry and Water Commission Water Bulletins Nos. 57 and 58.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 19...	1000	2750	1020	7.70	25.5	250	140	70	19
NOV 16...	1215	930	1200	7.90	24.0	290	160	80	22
DEC 14...	1315	1150	1090	7.90	20.0	260	140	73	20
JAN 15...	1315	1490	1110	7.90	12.0	270	140	77	20
FEB 16...	1300	970	1280	7.90	19.0	290	160	81	21
MAR 17...	1415	2040	1100	7.80	19.0	270	140	76	20
APR 15...	1200	2810	1080	7.80	21.0	270	140	74	20
MAY 17...	1140	7000	1140	8.00	25.0	270	140	76	20
JUN 13...	1116	4150	1160	7.90	26.5	270	150	73	21
JUL 19...	1106	3360	1170	7.80	29.0	260	140	70	21
AUG 15...	1200	3980	1210	7.60	29.0	270	160	70	23
SEP 26...	1100	13700	701	7.80	26.5	220	120	67	14

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 19...	120	3	5.1	117	200	120	13	617
NOV 16...	150	4	6.5	126	240	170	11	755
DEC 14...	130	4	5.4	125	230	140	12	685
JAN 15...	140	4	6.5	131	230	150	13	715
FEB 16...	150	4	6.0	131	240	180	10	767
MAR 17...	130	4	5.5	130	230	140	14	693
APR 15...	120	3	5.0	128	220	130	12	658
MAY 17...	130	4	5.1	135	220	150	13	695
JUN 13...	130	4	5.7	123	230	150	12	695
JUL 19...	140	4	5.1	118	250	150	13	720
AUG 15...	140	4	5.4	111	250	160	13	728
SEP 26...	50	2	4.4	105	150	58	9.3	416

RIO GRANDE BASIN

08466300 RIO GRANDE NEAR LOS EBANOS, TX

LOCATION.--Lat 26°14'15", long 98°33'49", Hidalgo County, Hydrologic Unit 13090001, on Farm Road 886 at U.S. Border Port of Entry near Los Ebanos and at mile 204.37.

PERIOD OF RECORD.--Chemical analyses: June 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 19...	1140	3810	1030	7.70	25.5	260	140	71	19
NOV 17...	1145	347	1430	7.80	22.0	360	210	99	27
DEC 16...	1400	2050	1190	7.80	14.5	290	150	78	22
JAN 19...	1345	1590	1250	7.80	18.0	290	160	82	21
FEB 17...	1315	1900	1420	8.00	20.0	330	180	90	25
MAR 21...	1315	2430	1190	7.80	20.0	290	160	81	22
APR 18...	1245	4660	1100	7.80	25.0	270	140	76	20
MAY 17...	1235	8620	1120	8.00	25.0	270	130	74	20
JUN 13...	1359	5270	1210	8.00	29.5	280	160	77	22
JUL 19...	1401	3500	1230	7.80	31.0	290	160	78	22
AUG 19...	1115	2880	1200	7.60	28.0	260	150	70	20
SEP 26...	1350	13700	725	7.80	30.0	240	130	70	15

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 19...	120	3	5.2	118	200	130	12	628
NOV 17...	160	4	6.6	148	290	190	13	874
DEC 16...	140	4	5.5	131	250	160	12	746
JAN 19...	150	4	6.6	136	240	160	14	755
FEB 17...	170	4	6.1	145	290	200	12	880
MAR 21...	140	4	5.6	133	250	150	14	742
APR 18...	120	3	5.3	128	230	130	14	672
MAY 17...	120	3	4.9	135	220	140	13	673
JUN 13...	140	4	5.3	128	240	150	13	724
JUL 19...	140	4	5.4	122	260	160	13	752
AUG 19...	140	4	5.0	111	240	160	12	714
SEP 26...	54	2	4.5	110	150	60	9.7	429

08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX

LOCATION.--Lat 26°08'00", long 98°20'05", Hidalgo County, Hydrologic Unit 13090002, at gaging station 0.5 mi downstream from Anzalduas Dam, 12.2 mi from Hidalgo, and 1,077.1 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--176,112 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 45.

PERIOD OF RECORD.--Chemical analyses: March 1959 to current year. Pesticide analyses: October 1967 to July 1972.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

REMARKS.--Records of and discharge for water year 1988 are given in International Boundary and Water Commission Water Bulletins Nos. 57 and 58. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,310 microsiemens Feb. 12, 1984; minimum daily, 368 microsiemens Sept. 6, 1987

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,460 microsiemens Feb. 5; minimum daily, 526 microsiemens Sept. 20.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 21...	0920	2010	1120	7.90	22.0	280	160	77	21
NOV 20...	0840	400	1420	8.00	19.0	360	220	100	27
DEC 14...	1000	650	1320	8.00	21.0	320	180	85	25
JAN 19...	0915	350	1570	8.00	15.0	360	210	100	27
FEB 16...	0800	810	1530	8.10	18.0	350	200	96	27
MAR 14...	1030	1390	1250	8.10	16.5	290	150	82	21
APR 18...	0915	1610	1130	7.90	23.0	270	140	77	20
MAY 16...	0735	1860	1180	8.00	26.0	280	140	76	21
JUN 15...	0915	3200	1310	8.00	28.0	290	160	78	23
JUL 20...	0900	1750	1310	7.90	29.0	300	170	79	24
AUG 17...	0900	3000	1290	7.80	29.0	280	170	74	24
SEP 22...	0845	30100	722	7.80	25.0	230	130	69	15

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS ST02)	SOLIDS, SUM OF CONSTIT- TUENTS, DIS- SOLVED (MG/L)
OCT 21...	130	4	5.1	121	220	150	13	689
NOV 20...	160	4	5.8	141	280	190	12	859
DEC 14...	150	4	5.7	138	250	190	12	800
JAN 19...	210	5	6.9	149	310	230	15	988
FEB 16...	200	5	6.0	148	330	230	15	993
MAR 14...	140	4	5.5	138	260	170	12	773
APR 18...	120	3	5.0	131	230	140	13	684
MAY 16...	130	4	4.9	135	230	150	13	706
JUN 15...	160	4	5.3	130	270	180	13	807
JUL 20...	160	4	5.6	126	270	180	13	807
AUG 17...	150	4	5.5	116	270	170	14	777
SEP 22...	55	2	4.5	107	160	60	8.9	437

RIO GRANDE BASIN

08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1987 TO SEPTEMBER 1988

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- SIEMENS)	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. 1987	95470	1100	674	174000	140	35300	240	62200	260
NOV. 1987	34172	1190	729	67300	150	14000	260	23800	280
DEC. 1987	19663	1340	825	43800	180	9510	290	15300	310
JAN. 1988	15971	1340	826	35600	180	7790	290	12400	310
FEB. 1988	25148	1680	1040	70400	250	16900	350	23500	380
MAR. 1988	48040	1240	760	98500	160	20800	270	34800	290
APR. 1988	45939	1140	702	87000	140	17900	250	31000	270
MAY 1988	95520	1130	694	179000	140	36700	250	63900	270
JUNE 1988	87750	1240	762	180000	160	38100	270	63600	290
JULY 1988	64160	1250	765	133000	160	28000	270	46700	290
AUG. 1988	33029	1150	708	63100	150	13100	250	22400	270
SEPT 1988	231628	783	479	299000	91	56700	180	109800	190
TOTAL	796490	**	**	1431000	**	295000	**	509000	**
WTD.AVG.	2176	1090	665	**	140	**	240	**	260

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1140	1060	1230	1330	2260	1570	1230	1190	1150	1250	1420	1490
2	1170	1120	1310	1300	2280	1480	1220	1100	1140	1250	1210	1450
3	1110	1130	1280	1250	2260	1370	1210	1100	1150	1240	958	1480
4	1090	1140	1350	1160	2450	1360	1210	1100	1180	1220	672	1500
5	1060	1140	1250	1150	2460	1200	1220	1100	1170	1310	585	1550
6	1100	1160	1230	1130	2030	1160	1230	1100	1220	1180	1090	1580
7	1110	1190	1310	1200	1720	1160	1210	1120	1220	1230	1150	1550
8	1090	1240	1340	1180	1480	1170	1220	1100	1230	1230	1130	1550
9	1040	1230	1570	1230	1410	1160	1210	1110	1300	1250	1150	1580
10	1060	1130	1460	1230	1440	1150	1210	1110	1280	1310	1170	1570
11	1050	1130	1420	1300	1440	1200	1240	1010	1290	1340	1200	1400
12	1060	1120	1390	1410	1390	1170	1230	1140	1250	1290	1270	1340
13	1070	1120	1340	1510	1400	1330	1220	1120	1280	1280	1270	1460
14	1070	1110	1290	1560	1390	1250	1200	1120	1290	1250	1250	1640
15	1080	1120	1290	1560	1430	1240	1290	1120	1250	1230	1230	1590
16	1100	1150	1270	1490	1500	1220	1150	1120	1240	1440	1230	1720
17	1110	1180	1280	1460	1510	1210	1150	1140	1240	1230	1280	1560
18	1110	1270	1280	1530	1610	1220	1120	1150	1230	1260	1230	1510
19	1090	1300	1310	1510	1680	1240	1100	1200	1230	1270	1240	1280
20	1130	1360	1320	1530	1690	1240	1090	1190	1280	1280	1050	526
21	1120	1400	1310	1580	1550	1230	1100	1160	1300	1250	938	769
22	1120	1430	1270	1500	1470	1220	1110	1170	1270	1230	983	715
23	1140	1510	1260	1500	1450	1260	1100	1160	1250	1210	1020	681
24	1130	1450	1240	1540	1440	1200	1080	1170	1260	1210	1220	705
25	1110	1560	1250	1560	1470	1180	1080	1170	1250	1200	1240	707
26	1120	1390	1310	1520	1480	1190	1140	1170	1250	1100	962	706
27	1120	1350	1360	1590	1510	1220	1100	1160	1400	1240	838	697
28	1130	1270	1450	1800	1570	1240	1080	1150	1310	1250	1030	740
29	1130	1250	1300	1900	1590	1270	1090	1140	1170	1240	1170	785
30	1130	1240	1390	2150	---	1260	1100	1140	1240	1220	1450	828
31	1130	---	1650	2240	---	1220	---	1140	---	1190	1560	---
MEAN	1100	1240	1330	1480	1670	1240	1160	1130	1240	1250	1140	1220

RIO GRANDE BASIN

413

08470400 ARROYO COLORADO AT HARLINGEN, TX

WATER-QUALITY RECORDS

LOCATION.--Lat 26°10'24", long 97°42'01", Cameron County, Hydrologic Unit 13090002, on downstream side of northbound service road on U.S. Highways 83 & 77, about 18 mi from point of main floodway that divides into North Floodway and Arroyo Colorado.

PERIOD OF RECORD.--Chemical and biochemical analyses: November 1986 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
NOV 19...	1200	248	4350	7.90	20.0	90	8.8	96	3.9	640	270	920
JAN 12...	1330	113	3870	7.60	15.0	67	8.8	88	3.9	2900	280	960
MAR 09...	1240	284	4760	7.90	21.5	88	7.8	89	4.2	4100	200	930
MAY 05...	1130	313	4140	7.90	26.0	130	7.2	89	5.1	--	--	880
JUL 13...	1200	334	3550	7.90	29.5	100	6.9	91	3.5	--	190	1000
AUG 23...	1420	250	4180	8.10	31.5	140	10.6	145	5.6	480	--	970
DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 19...	690	220	89	700	10	11	235	830	990	0.80	16	3150
JAN 12...	730	240	88	550	8	11	230	820	810	--	26	--
MAR 09...	710	230	84	680	10	14	222	880	860	0.80	24	3120
MAY 05...	660	210	87	610	9	10	226	790	840	0.80	25	2740
JUL 13...	830	230	110	510	7	11	203	710	810	0.80	25	2570
AUG 23...	740	230	94	660	10	10	225	810	880	0.70	29	2980
DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
NOV 19...	3020	3.80	0.200	4.00	0.160	0.120	0.94	1.1	0.630	0.640	0.560	1.7
JAN 12...	2700	3.52	0.180	3.70	0.490	0.470	0.71	1.2	0.660	0.590	0.520	1.6
MAR 09...	2930	3.74	0.260	4.00	0.070	0.050	1.2	1.3	0.510	0.440	0.380	1.2
MAY 05...	2730	4.30	0.200	4.50	0.060	0.070	0.64	0.70	0.480	0.360	0.290	0.89
JUL 13...	2540	1.97	0.030	2.00	0.030	0.040	1.2	1.2	0.510	0.380	0.340	1.0
AUG 23...	2860	2.06	0.040	2.10	0.060	0.060	1.9	2.0	0.550	0.480	0.440	1.3
DATE	SEDI- MENT, DIS- SOLVED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 19...	151	101	98	<10	5	100	<10	<1	<1	<1	3	20
JAN 12...	105	32	99	--	--	--	--	--	--	--	--	--
MAR 09...	213	163	95	<10	9	200	<10	<1	<1	<1	2	20
MAY 05...	312	264	92	--	--	--	--	--	--	--	--	--
JUL 13...	262	236	95	10	9	<100	<10	<1	<1	1	2	20
AUG 23...	173	117	99	<10	9	200	<10	1	<1	<1	2	20

RIO GRANDE BASIN

08470400 ARROYO COLORADO AT HARLINGEN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 19...	<5	130	20	0.8	16	1	2	<1.0	4700	24	10
JAN 12...	--	--	--	--	--	--	--	--	--	--	--
MAR 09...	<5	150	<10	0.3	18	2	1	1.0	5200	34	<10
MAY 05...	--	--	--	--	--	--	--	--	--	--	--
JUL 13...	<5	120	10	0.4	14	1	1	<1.0	3800	36	<10
AUG 23...	<5	130	<10	0.2	15	2	2	<1.0	4400	35	<10

08475000 RIO GRANDE NEAR BROWNSVILLE, TX
(National stream-quality accounting network)

LOCATION.--Lat 25°52'35", long 97°27'15", Cameron County, Hydrologic Unit 13090002, at International Boundary and Water Commission gaging station, 1,000 ft downstream from El Jardin pumping plant, 6.8 mi below International Bridge between Brownsville and Matamoros, Tamps., Mex., and 48.8 mi above the Gulf of Mexico.

DRAINAGE AREA.--176,333 mi².

PERIOD OF RECORD.--Chemical analyses: January 1932, March 1943 to February 1944, February 1966 to September 1974.
Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: May 1975 to May 1982.
Sediment analyses: February 1966 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1943 to February 1944, April 1967 to September 1983.

WATER TEMPERATURE: October 1966 to September 1983.

SUSPENDED-SEDIMENT DISCHARGE: February 1966 to September 1983.

REMARKS.--Records of discharge furnished by International Boundary and Water Commission.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,130 microsiemens May 29, 1972; minimum daily, 337 microsiemens Sept. 3, 1967.
WATER TEMPERATURE (1966-69, 1970-75, 1977-83): Maximum daily, 35.0°C on several days during summer months of 1982 and 1983; minimum daily, 8.0°C Jan. 10, 1967.

SEDIMENT CONCENTRATION: Maximum daily mean, 6,000 mg/L Feb. 28, 1983; minimum daily mean, 4 mg/L Apr. 26, 1970, Aug. 16, 18, 24, 27, 1977.

SEDIMENT LOAD: Maximum daily, 181,000 tons Feb. 28, 1983; minimum daily, 0.12 tons Aug. 26, 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)
NOV 19...	1500	354	1200	8.30	22.0	17	9.0	101	3.0	120	K16	330
JAN 12...	1515	250	1260	8.00	13.0	16	10.7	101	1.8	240	84	340
MAR 09...	1025	1280	1250	8.00	20.0	62	8.0	87	3.1	640	800	300
MAY 05...	0930	172	1140	8.00	26.0	24	7.9	96	3.3	710	180	280
JUL 13...	0930	138	1220	8.00	30.0	23	7.1	94	3.0	400	240	290
AUG 23...	1115	313	1210	8.10	30.0	76	7.3	96	1.5	1800	--	300

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 19...	180	90	24	130	3	5.4	143	250	150	0.60	15	791
JAN 12...	190	93	25	160	4	6.3	148	280	180	0.60	14	869
MAR 09...	180	83	23	150	4	5.7	126	270	180	0.70	13	822
MAY 05...	150	79	20	130	4	5.4	128	240	140	0.70	13	704
JUL 13...	170	78	22	140	4	5.7	121	260	160	0.60	13	771
AUG 23...	180	78	24	150	4	6.0	120	260	170	0.60	14	781

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
NOV 19...	752	--	<0.010	<0.100	0.030	0.020	0.67	0.70	0.310	0.010	<0.010	--
JAN 12...	850	0.410	0.010	0.420	0.080	0.100	0.52	0.60	0.070	0.040	0.030	0.09
MAR 09...	804	0.360	0.020	0.380	0.050	0.050	0.55	0.60	0.080	0.070	0.060	0.18
MAY 05...	706	0.300	0.010	0.310	0.040	0.040	0.16	0.20	0.080	0.030	0.030	0.09
JUL 13...	753	--	<0.010	<0.100	<0.010	<0.010	--	0.60	0.080	0.020	0.010	0.03
AUG 23...	778	0.310	0.010	0.320	0.020	<0.010	0.48	0.50	0.050	0.040	0.030	0.09

RIO GRANDE BASIN

08475000 RIO GRANDE NEAR BROWNSVILLE, TX--Continued
(National stream-quality accounting network)

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 19...	40	38	74	<10	3	120	<0.5	<1	<1	<3	2	<3
JAN 12...	25	17	97	--	--	--	--	--	--	--	--	--
MAR 09...	104	359	99	<10	7	90	<0.5	<1	<1	<3	3	6
MAY 05...	56	26	97	--	--	--	--	--	--	--	--	--
JUL 13...	41	15	98	10	3	110	<0.5	<1	<1	<3	1	5
AUG 23...	71	60	98	20	4	130	<0.5	<1	<1	<3	3	11
DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
NOV 19...	<5	42	2	0.3	<10	1	<1	<1.0	1500	<6	5	
JAN 12...	--	--	--	--	--	--	--	--	--	--	--	
MAR 09...	<5	57	2	<0.1	<10	3	<1	<1.0	1400	<6	<3	
MAY 05...	--	--	--	--	--	--	--	--	--	--	--	
JUL 13...	<5	54	2	<0.1	<10	<1	<1	<1.0	1400	<6	5	
AUG 23...	<5	54	1	<0.1	<10	1	<1	<1.0	1400	<6	7	

Because the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than continuous stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage of those events. The data collected for special reasons are called measurements at miscellaneous sites.

Streamflow data collected at partial-record stations where water-quality data other than observations of water temperature are not obtained are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations; the second is a table of annual maximum stage and (or) discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low and high flows are given in a third table. Discharge measurements and water-quality data collected at partial-record stations are presented in downstream order in the section of this report entitled "Gaging-station records."

Low-flow partial-record stations

Measurements of streamflow at low-flow partial-record stations that are not published in the gaging-station section are given in the following table. Most of the measurements of low flow were made during periods when streamflow was sustained primarily by ground-water discharge. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will indicate the low-flow potential of the stream. The years listed in the column headed "Period of record" identifies the water years in which measurements were made at the same or at practically the same site.

Discharge measurements made at low-flow partial-record station during water year 1988						
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Colorado River basin						
08129500	Dove Creek Spring near Knickerbocker, Tex.	Lat 31°11'06", long 100°43'51", Irion County, at headquarters ranchhouse, 500 ft upstream from Dove Creek, 1.8 mi upstream from Stilson Dam on Dove Creek, and 8.5 mi southwest of Knickerbocker.	(a)	1944-58†, 1959-88	11-14-87 3- 4-88 4-20-88 6- 8-88 7-26-88 8-29-87	19.2 16.9 18.5 16.1 18.0 18.0
08143900	Springs at Fort McKavett, Tex.	Lat 30°50'03", long 100°05'37", Menard County, at Fort McKavett.	(a)	1902, 1905, 1922, 1942, 1948-49, 1951-52, 1955-56, 1958-88	1-28-88 8-17-88	25.2 22.6
08146500	San Saba Springs, at San Saba, Tex.	Lat 31°11'44", long 98°42'42", San Saba County, 150 ft upstream from bridge on U.S. Highway 190 at San Saba and 0.8 mi east of courthouse.	(a)	1939, 1952, 1957, 1959-88	1-26-88 6- 1-88	8.99 6.31
08149400	South Llano River near Telegraph, Tex.	Lat 30°15'43", long 99°56'01", Edwards County, 3.7 mi upstream from Paint Creek, 5.7 mi south of Telegraph, and 18.7 mi southwest of Junction.	(a)	1939, 1952, 1956, 1959-88	1-28-88 8-17-88	33.3 34.2
08149500	Seven Hundred Springs near Telegraph, Tex.	Lat 30°16'12", long 99°55'22", Edwards County, about 3 mi upstream from Paint Creek, about 5 mi south of Telegraph, and about 18 mi southwest of Junction.	(a)	1939, 1952, 1955-56, 1959-88	1-28-88 8-17-88	22.5 19.7
08155400	Barton Creek above Barton Springs at Austin, Tex.	Lat 30°15'48", long 97°46'19", Travis County, just upstream from upper dam of Barton Creek swimming pool in Zilker Park and upstream from all springs known as Barton Springs at Austin.	125	1919-88	2-11-88 3-30-88 5-18-88 7- 6-88 8-23-88	0 0 0 0 0
Guadalupe River basin						
08168000	Hueco Springs near New Braunfels, Tex.	Lat 29°45'33", long 98°08'23", Comal County, two springs located 400 and 500 ft west of the Guadalupe River, 600 ft downstream from the mouth of Elm Creek, and 4.2 mi north of New Braunfels.	(a)	1944-88	10-13-87 12-10-87 2- 9-88 4-11-88 6- 7-88 8- 4-88	70.1 38.8 27.2 21.1 24.0 16.6
08168600	Blieiders Creek at New Braunfels, Tex.	Lat 29°43'14", long 98°07'23", Comal County, at Grove Avenue crossing in northwest New Braunfels and 0.25 mi upstream from mouth.	-	1962-88	2- 9-88 6- 9-88	0 0
08168700	Panther Canyon at New Braunfels, Tex.	Lat 29°42'47", long 98°08'14", Comal County, at Landa Park Drive crossing in Landa Park at New Braunfels.	-	1962-88	2- 9-88 6- 9-88	0 0
08168800	Dry Comal Creek at New Braunfels, Tex.	Lat 29°41'52", long 98°08'11", Comal County, at Floral Avenue crossing in New Braunfels, 0.6 mi upstream from Missouri Pacific Railroad Co. bridge, and 0.9 mi upstream from mouth.	-	1962-88	2- 9-88 6- 9-88	.99 1.29

† Operated as a continuous-record station.

a Not applicable.

Discharge measurements made at low-flow partial-record stations during water year 1988--Continued						
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Nueces River basin						
08204000	Leona River spring flow near Uvalde, Tex.	Lat 29°09'15", long 99°44'35", Uvalde County, at old road crossing on White's Ranch, 2.0 mi downstream from Cooks Slough, and 4.7 mi south-east of Uvalde.	(a)	1935-65†, 1966-88	11- 3-87 1- 6-88 3- 3-88 5- 5-88 7- 1-88 8-25-88	85.7 91.1 61.0 39.2 29.5 28.3
Rio Grande Basin						
08425500	Phantom Lake Spring near Toyahvale, Tex.	Lat 30°56'01", long 103°50'43", Jeff Davis County, 375 ft downstream from source of spring, 3.5 mi southwest of Toyahvale, and 7.0 mi southwest of Balmorhea.	(a)	1931-33†, 1942-66†, 1967-86†, 1987-88	10- 7-87 12- 1-87 1- 4-88 4- 6-88 7- 5-88 9- 8-88	2.22 2.41 2.09 2.04 1.41 1.98
08427000	Giffin Springs at Toyahvale, Tex.	Lat 30°56'51", long 103°47'19", Reeves County, 2,000 ft northwest of post office in Toyahvale.	(a)	1919, 1922-23, 1925, 1932-33†, 1941-86, 1988	1- 4-88 7- 5-88	2.88 4.11
08456300	Las Moras Springs at Brackettville, Tex. c/	Lat 29°18'33", long 100°25'13", Kinney County, in springflow pool at Brackettville, 160 ft south of U.S. Highway 90, and 1,550 ft upstream from bridge on Brackettville-Fort Clark Road.	(a)	1896, 1899-1900, 1902, 1904-06, 1910, 1912, 1925, 1928, 1951-88	10-13-87 11-10-87 12- 9-87 1-12-88 2- 9-88 3- 8-88 4-12-88 5-10-88 6-14-88 7-13-88 8- 8-88 9-14-88	37.3 45.5 36.8 29.2 20.2 20.1 16.8 10.5 10.9 16.5 21.0 14.7

† Operated as a continuous-record station.

a Not applicable.

c Records were furnished by the International Boundary and Water Commission.

Crest-stage partial-record stations

The following table contains annual maximum stage and (or) discharge at partial-record stations operated primarily for the purpose of defining the flooding characteristics of the streams. At stations where discharge is given, or is footnoted "to be determined", a stage-discharge relation has been, or will be, defined by discharge measurements obtained by current meter or by indirect procedures. Water-stage recorders are located at these flood-hydrograph stations to facilitate complete hydrograph definition. At stations where only the maximum stage is given (discharge column is dashed), data are generally collected for use in stage-frequency studies of flood-profile definition. Gages at these stations usually consist of a device that will register the peak stage occurring between inspections of the gage. The years used in the column "Period of record" identify the years in which the annual maximum has been determined.

Annual maximum stage and (or) discharge during water year 1988							
Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Annual	maximum	Dis-charge (ft ³ /s)
					Date	Gage height (feet)	
Colorado River basin							
08133500	North Concho River at Sterling City, Tex.	Lat 31°49'48", long 100°59'36", Sterling County, on right bank 100 ft upstream from bridge on State Highway 163, 0.5 mi south of Sterling City, 4.0 mi upstream from Sterling Creek, 5.1 mi downstream from Lacy Creek, and at mile 57.2.	588	1939-88	9-18-88	6.24	109
08142000	Hords Creek at Coleman, Tex.	Lat 31°50'50", long 99°25'25", Coleman County, on right bank in city park, 1,250 ft downstream from bridge on U.S. Highways 84 and 283 and State Highway 206, 1 mi north of courthouse in Coleman, 3.9 mi downstream from Bachelor Creek, 12 mi downstream from Hords Creek Dam, and at mile 14.3.	107	1941-70† 1971-88	6- 1-88	3.59	639
08158050	Boggy Creek at U.S. Highway 183, Austin, Tex.	Lat 30°15'47", long 97°40'20", Travis County, on U.S. Highway 183, 1.6 mi south of intersection at Webberville Road and U.S. Highway, 183, 4.1 mi east of State Capitol Building in Austin, and 0.7 mi upstream from mouth.	13.1	1975-86† 1987-88	3-17-88	11.54	2,330
08158100	Walnut Creek at Farm road 1325 near Austin, Tex.	Lat 30°24'35", long 97°42'41", Travis County, at downstream side of bridge on Farm Road 1325 and 9.5 mi north of the State Capitol Building in Austin.	12.6	1975-88	--	--	(*)
08158200	Walnut Creek at Dessau Road, Austin, Tex.	Lat 30°22'30", long 97°39'37", Travis County, on downstream side of bridge on Dessau Road and 8.4 mi northeast of the State Capitol Building in Austin.	26.2	1975-88	11-25-87	9.54	1,530
08158300	Ferguson Branch at Springdale Road, Austin, Tex.	Lat 30°19'53", long 97°39'12", Travis County, on downstream side of bridge on Springdale Road in Austin.	1.63	1975-88	6- 3-88	7.52	298
08158380	Little Walnut Creek at Georgian Drive Austin, Tex.	Lat 30°21'15", long 97°41'52", Travis County, on left upstream side of bridge on Georgian Drive in Austin.	5.22	1983-88	11-25-87	9.78	1,920
08158880	Boggy Creek (South) at Circle S Road, Austin, Tex.	Lat 30°10'50", long 97°46'55", Travis County, on downstream side of bridge on Circle S Road in Austin.	3.58	1976-88	3-17-88	4.74	253
Guadalupe River basin							
08169500	Guadalupe River at New Braunfels, Tex.	Lat 29°41'52", long 98°06'23", Comal County, Comal Mills in New Braunfels and 0.4 mi upstream from Interstate Highway 35.	1,652	1898-1902, 1915-27† 1974-88	5-29-88	12.15	4,940
08173900	Guadalupe River at Gonzales, Tex.	Lat 29°29'49", long 97°27'17", Gonzales County, at Gonzales Hydro Station in Gonzales and 1.4 mi upstream from U.S. Highway 183.	-	1977-88	11-26-87	20.15	6,400
08177820	Olmos Creek at Hildebrand Street San Antonio, Tex.	Lat 29°27'56", long 98°28'01", Bexar County, at downstream side of bridge on Hildebrand Street, 0.8 mi downstream from Olmos dam in San Antonio.	34.8	1980-88	6- 3-88	7.49	1,010
08177900	San Antonio River at Navarro Street, San Antonio, Tex.	Lat 29°25'50", long 98°29'24", Bexar County, at bridge on Navarro Street in San Antonio.	-	1973-88	7-21-88	a636.0	-
08177920	San Antonio River at Dolorosa Street, San Antonio, Tex.	Lat 29°25'24", long 98°29'32", Bexar County, just downstream from Dolorosa Street in San Antonio.	-	1980-88	11-26-87	21.45	-
08178100	San Pedro Creek at Santa Rosa Street, San Antonio, Tex.	Lat 29°25'51", long 98°29'49", Bexar County, at bridge on Santa Rosa Street in San Antonio.	-	1973-88	7-21-88	a645.78	-
08178350	Martinez Creek at Fredericksburg Road, San Antonio, Tex.	Lat 29°27'22", long 98°31'04", Bexar County, at bridge on Fredericksburg Road in San Antonio.	-	1973-88	7-21-88	a682.32	-
08178400	Alazan Creek at West Martin Street San Antonio, Tex.	Lat 29°25'51", long 98°30'51", Bexar County, at bridge on West Martin Street in San Antonio.	-	1973-88	7-21-88	a637.85	-

* Due to bridge construction throughout the year, not determined.

† Operated as a continuous-record station.

a Elevation, in feet, above National Geodetic Vertical Datum of 1929.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum stage and (or) discharge during water year 1988--Continued							
Station no.	Station name	Location	Drainage area (mi)	Period of record	Annual Date	Annual maximum Gage height (feet)	Dis-charge (ft ³ /s)
Guadalupe River basin--Continued							
08178450	Apache Creek at South Zarzamora Street, San Antonio, Tex.	Lat 29°24'47", long 98°31'42", Bexar County, at bridge on South Zarzamora Street in San Antonio.	-	1973-88	7-21-88	a630.80	-
08178500	San Pedro Creek at Furnish Street, San Antonio, Tex.	Lat 29°24'22", long 98°30'38", Bexar County, at bridge on Furnish Street in San Antonio.	-	1973-88	7-21-88	a608.27	-
08178550	San Antonio River at Ashley Street (Berg's Mill), San Antonio, Tex.	Lat 29°20'04", long 98°27'20", Bexar County, at bridge on Ashley Street in San Antonio.	-	1973-88	7-21-88	a517.92	-
Nueces River basin							
08207220	Rutledge Hollow at 7th Street, Poteet, Tex.	Lat 29°02'07", long 98°34'18", Atascosa County, in city of Poteet at 7th Street and 2.0 mi above Atascosa River.	9.74	1979-88	6- 3-88	a418.55	-
08207300	Atascosa River at U.S. Highway 281, Pleasanton, Tex.	Lat 28°57'44", long 98°28'51", Atascosa County, at bridge on U.S. Highway 281 in Pleasanton.	-	1973-88	5-22-88	a341.97	-
08211500	Nueces River at Calallen, Tex.	Lat 27°52'34", long 97°37'32", Nueces County, at the Cunningham pumping station in Corpus Christi, and 0.4 mi upstream from Calallen dam.	16,920	e1915-50, 1983-88	10-24-87	5.81	700
San Fernando Creek basin							
08212300	Tranquitas Creek at Kingsville, Tex.	Lat 27°31'33", long 97°52'02", Kleberg County, at bridge on U.S. Highway 77 Business Route in Kingsville, 4.9 mi above San Fernando Creek, and 5.9 mi downstream from Tranquitas Dam.	48.5	1965-82, 1984-88	1988	<1.74	-

< Less than value shown.

† Operated as a continuous-record station.

a Elevation, in feet, above National Geodetic Vertical Datum of 1929.

e Gage heights only during 1918-50.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

421

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table:

Discharge measurements made at miscellaneous sites during water year 1988						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurement Date	Dis-charge (ft ³ /s)
Guadalupe River basin						
San Antonio Springs	San Antonio River	Lat 29°27'56", long 98°28'04", Bexar County, just below Hildebrandt Street in San Antonio, Tex.	-	1951-52, 1959-62, 1972, 1974-77, 1979-87	1- 8-88 2-29-88 5-16-88 8-29-88 9-15-88	71.8 48.7 0 0 0
San Pedro Springs	San Pedro Creek	Lat 29°26'42", long 98°30'06", Bexar County, at San Pedro Park in San Antonio, Tex.	-	1933-35, 1951-52, 1958-61, 1966, 1971, 1974-77, 1979-87	12-10-87 1- 8-88 2-29-88 4-12-88 5-16-88 8-29-88 9-15-88	10.6 11.1 8.87 7.10 3.02 0 0
Rio Grande basin						
Mud Springs 1/	Mud Creek	Lat 29°27'10", long 100°37'30", Kinney County, on Mays Ranch and about 16 mi northwest of Brackettville, Tex.	-	1939-41, 1952-53, 1962, 1965-87	10-13-87 11-10-87 12- 9-87 1-12-88 2- 9-88 3- 8-88 4-12-88 5-10-88 6-14-88 7-13-88 8- 8-88 9-14-88	28.9 29.1 30.6 29.5 27.8 25.9 25.2 24.0 23.4 23.1 21.4 21.7
Pinto Springs 1/	Pinto Creek	Lat 29°24'10", long 100°27'15", Kinney County, on C.C. Belcher Ranch and 7.5 mi northwest of Brackettville, Tex.	-	1939-41, 1952-53, 1965-87	10-13-87 11-12-87 12- 9-87 4-12-88 5-10-88 6-14-88 7-13-88 8- 8-88 9-14-88	7.5 6.7 4.6 0 0 0 0 0 0

1/ Measurements by International Boundary and Water Commission.

INDEX

	Page		Page
Access to WATSTORE data.....	14	Diatoms, definition of.....	18
Accuracy of the records.....	10	Discharge, at partial-record stations and miscellaneous sites.....	417-421
Acre-foot, definition of.....	14	definition of.....	16
Adenosine triphosphate (ATP), definition of.....	14	measurements at miscellaneous sites.....	421
Alazan Creek at West Martin Street, San Antonio.....	419	Dissolved, definition of.....	16
Algae, definition of.....	14	Dissolved-solids concentration, definition of.....	16
growth potential (AGP), definition of.....	14	Diversity index, definition of.....	16
Apache Creek at South Zarzamora Street, San Antonio.....	420	Dove Creek at Knickerbocker.....	70
Aransas River near Skidmore.....	342	Dove Creek Spring near Knickerbocker.....	417
Arrangement of records.....	11	Downstream order numbering.....	7
Arroyo Colorado at Harlingen.....	413-414	Drainage area, definition of.....	16
Artificial substrate, definition of.....	20	Drainage basin, definition of.....	16
Ash mass, definition of.....	15	Dry Comal Creek at New Braunfels.....	417
Atascosa River, at Whitsett.....	375	Dry Frio River near Reagan Wells.....	355-357
at U.S. Highway 281 at Pleasanton.....	420	Dry mass, definition of.....	15
Bacteria, definition of.....	14	East Elm Creek at San Antonio.....	247-248
Barton Creek, above Barton Springs at Austin.....	417	Ecleto Creek near Runge.....	328
at Loop 360, Austin.....	120-121	Elm Creek at Ballinger.....	63-66
near Camp Craft Road.....	119	Estimated daily discharge, identification of.....	10
Barton Springs at Austin.....	122-124	E.V. Spence Reservoir near Robert Lee.....	52-57
Beals Creek, near Coahoma.....	36-39	Explanation of the records.....	7
near Westbrook.....	40-45		
Bear Creek below Farm Road 1826 near Driftwood.....	143-144	Fecal coliform bacteria, definition of.....	15
Beaver Creek near Mason.....	101	Fecal streptococcal bacteria, definition of.....	15
Bed load, definition of.....	19	Ferguson Branch at Springdale Road, Austin.....	419
discharge, definition of.....	19	Fifteenmile Creek near Weser.....	219
Bed material, definition of.....	15	Frio River, at Concan.....	352-354
Biochemical oxygen demand (BOD), definition of.....	15	at Tilden.....	372
Biomass, definition of.....	15	below Dry Frio River near Uvalde.....	358
Blanco River, at Wimberley.....	206-208	near Derby.....	371
near Kyle.....	209	Gage height, definition of.....	16
Blieiders Creek at New Braunfels.....	417	Gaging station, definition of.....	16
Blue-green algae, definition of.....	18	Gaging-station records.....	25-416
Boggy Creek at U.S. Highway 183, Austin.....	419	Garcitas Creek near Inez.....	188-189
Boggy Creek (South) at Circle S Road, Austin.....	419	Giffin Springs at Toyahvale.....	418
Bottom material, definition of.....	15	Green algae, definition of.....	18
Bull Creek at Loop 360 near Austin.....	109-110	Guadalupe-Blanco River Authority Calhoun Canal Flume No. 1 near Long Mott.....	333
Canyon Lake near New Braunfels.....	199	Guadalupe River, above Comal River at New Braunfels... at Comfort.....	201
Cells/volume, definition of.....	15	at Cuero.....	216
Chemical oxygen demand (COD), definition of.....	15	at Gonzales.....	419
Chlorophyll, definition of.....	15	at Hunt.....	192
Choke Canyon Reservoir near Three Rivers.....	374	at Kerrville.....	194-196
Cibola Creek, at Selma.....	321	at New Braunfels.....	419
near Boerne.....	320	at Sattler.....	200
near Falls City.....	322-327	at Victoria.....	217-218
Classification of records.....	11	below New Braunfels.....	203-204
Coleta Creek, at Arnold Road Crossing near Schroeder... inflow (Guadalupe Diversion) near Schroeder.....	220	near Spring Branch.....	198
near Victoria.....	228	near Tivoli.....	334-337
Coleta Creek Reservoir, (Condenser No. 1) near Fannin.....	223-224	Guadalupe River basin, crest-stage partial-record stations in.....	419-420
near Victoria.....	225	Guadalupe River basin, discharge measurements at miscellaneous sites.....	421
(Outlet) near Victoria.....	226-227	gaging-station records in.....	191-337
Color unit, definition of.....	15	low-flow partial-record stations in.....	417
Colorado River, above LaGrande.....	162	Hardness, definition of.....	16
above Silver.....	46-51	Helotes Creek at Helotes.....	287
at Austin.....	134-137	Hondo Creek, at King Waterhole near Hondo.....	366
at Bastrop.....	153-161	near Tarpley.....	363-365
at Colorado City.....	31-34	Hords Creek, at Coleman.....	419
at Columbus.....	164	near Valera.....	87
at Robert Lee.....	58	Hords Creek Lake near Valera.....	86
at Wharton.....	165-169	Hueco Springs near New Braunfels.....	417
at Winchell.....	84-85	Hydrologic bench-mark network.....	16
below Austin.....	140	Hydrologic conditions.....	2
below Mansfield Dam, Austin.....	107-108	Hydrologic unit.....	17
near Ballinger.....	59-62	Identifying estimated daily discharge.....	10
near Bay City.....	170-171	Illustrations.....	3,5
near Cuthbert.....	27-30	Index.....	423-425
near Gail.....	25	Instantaneous discharge, definition of.....	16
near Ira.....	26	Introduction.....	1
near San Saba.....	94-97	Johnson Creek near Ingram.....	193
near Stacy.....	81-83	Laboratory measurements.....	13
Colorado River basin, crest-stage partial-record stations in.....	419	Lagarto Creek near George West.....	379
gaging-station records in.....	25-171	Lake Austin at Austin.....	111-118
low-flow partial-record stations in.....	417	Lake Buchanan near Burnet.....	98
Comal River at New Braunfels.....	202	Lake Colorado City near Colorado City.....	35
Computation, data collection and.....	8	Lake Corpus Christi near Mathis.....	380
Concho River, at San Angelo.....	76	Lake Nasworthy near San Angelo.....	72
at Paint Rock.....	77-80	Lake Texana near Edna.....	182-187
Contents, definition of.....	15	Lake Travis near Austin.....	106
Continuous-record station, definition of.....	11	Lake Surveys (Water Quality): E. V. Spence Reservoir near Robert Lee.....	53-57
Control, definition of.....	16	Lake Austin at Austin.....	111-118
structure.....	16	Texana, Lake, near Edna.....	182-187
Cooperation.....	1	Town Lake at Austin.....	127-133
Copano Creek near Refugio.....	338-339	Lakes and reservoirs: Austin, Lake, at Austin.....	111-118
Crest-stage partial-record measurements.....	419-421	Buchanan, Lake, near Burnet.....	98
Crest-stage partial-record station, definition of.....	7	Canyon Lake near New Braunfels.....	199
Cubic foot-per-second day, definition of.....	15	Choke Canyon Reservoir near Three Rivers.....	374
Cubic foot per second (ft ³ /s, ft ³ /s), definition of...	16		
Cubic foot per second per square mile, definition of...	16		
Data collection and computation.....	8		
presentation.....	9,13		
Definition of terms.....	14-22		
Delaware River near Red Bluff, NM.....	391		
Devils River at Pafford Crossing near Comstock.....	405-406		

	Page		Page
Lakes and reservoirs:		Pecos River, at Red Bluff, NM.....	390
Colorado City, Lake, near Colorado City.....	35	near Girvin.....	402
Corpus Christi, Lake, near Mathis.....	380	near Langtry.....	403-404
E.V. Spence Reservoir near Robert Lee.....	52-57	near Orla.....	393-396
Hurd Creek Lake near Valera.....	86	Pedernales River, near Fredericksburg.....	104
Medina Lake near San Antonio.....	265	near Johnson City.....	105
Nasworthy, Lake, near San Angelo.....	72	Percent composition, definition of.....	18
O.C. Fisher Lake at San Angelo.....	74	Periphyton, definition of.....	18
Olmos Reservoir at San Antonio.....	231	Perdido Creek at Farm Road 622 near Fannin.....	222
Red Bluff Reservoir near Orla.....	392	Pesticides, definition of.....	18
Texana, Lake, near Edna.....	182-187	Phantom Lake Spring near Toyahvale.....	418
Town Lake at Austin.....	127-133	Phytoplankton, definition of.....	18
Travis, Lake, near Austin.....	106	Picocurie, definition of.....	18
Twin Buttes Reservoir near San Angelo.....	71	Placedo Creek near Placedo.....	190
Las Moras Springs at Brackettville.....	418	Plankton, definition of.....	18
Lavaca River, at Hallettsville.....	173	Plum Creek, at Lockhart.....	212
near Edna.....	174-176	near Luling.....	213
Lavaca River basin, gaging-station records in.....	173-181	Polychlorinated biphenyls (PCBs), definition of.....	18
Leona River spring flow near Uvalde.....	418	Primary productivity, definition of.....	19
Leon Creek at I.H. 35 at San Antonio.....	288-292	Programs, special networks and.....	6
Little Walnut Creek at Georgian Drive, Austin.....	419	Publications of techniques of water-resources	
Llano River, at Llano.....	102	investigations.....	12,23
near Junction.....	99	Radiochemical program.....	19
near Mason.....	100	Records, accuracy of.....	10
Lorence Creek at Shadow Cliff Drive, San Antonio.....	242-243	arrangement of.....	11
Low-flow partial-record measurements.....	417-418	classification of.....	11
Low-flow partial-record station, definition of.....	7	explanation of.....	7
Martinez Creek at Fredericksburg Road, San Antonio....	419	Records, of stage and water discharge.....	7
Mean concentration, definition of.....	19	of surface-water quality.....	11
Mean discharge, definition of.....	16	other available.....	11
Medina Canal near Riomedina.....	266	Recoverable from bottom material, definition of.....	19
Medina Lake near San Antonio.....	265	Red Bluff Reservoir near Orla.....	392
Medina River, at Bandera.....	262-264	Redgate Creek near Columbus.....	163
at La Coste.....	267-275	Reeves County Water Improvement District No. 2	
at San Antonio.....	293-301	canal near Mentone.....	397
near Macdona.....	276	Remark codes.....	13
near Somerset.....	286	Reservoirs. See Lakes and reservoirs.	
Medio Creek at Pearsall Road at San Antonio.....	277-285	Return period, definition of.....	19
Metamorphic stage, definition of.....	17	Rio Grande, at El Paso.....	387
Methylene blue active substance, definition of.....	17	at Fort Ringgold, Rio Grande City.....	409
Micrograms per gram, definition of.....	17	at Foster Ranch near Langtry.....	388-389
Micrograms per liter, definition of.....	17	below Amistad Dam near Del Rio.....	407
Middle Concho River above Tankersley.....	68	below Anzalduas Dam.....	411-412
Milligrams of carbon per area or volume per unit time.....	19	below Falcon Dam.....	408
Milligrams of oxygen per area or volume per unit time.....	19	near Brownsville.....	415-416
Milligrams per liter, definition of.....	17	near Los Ebanos.....	410
Miscellaneous sampling sites.....	11	Rio Grande basin, discharge measurements at	
Miscellaneous sites.....	421	miscellaneous sites.....	421
Mission River at Refugio.....	340-341	gaging-station records in.....	387-416
National Geodetic Vertical Datum of 1929 (NGVD),		low-flow partial-record stations in.....	418
definition of.....	17	Runoff in inches, definition of.....	19
National stream-quality accounting network (NASQAN),		Rutledge Hollow at 7th Street, Poteet.....	420
definition of.....	17	Sabinal River, at Sabinal.....	362
National Trends Network (NTN), definition of.....	17	near Sabinal.....	359-361
Natural substrates, definition of.....	20	Salado Creek, at lower station at San Antonio.....	252-261
Navidad River, near Hallettsville.....	177	at upper station at San Antonio.....	249-251
near Speaks.....	178	Sample collection, and on site measurements.....	11
Networks and programs, special.....	6	San Antonio River, at Ashley Street (Berg's Mill),	
North Concho River, at San Angelo.....	75	San Antonio.....	420
at Sterling City.....	419	at Dolorosa Street, San Antonio.....	419
near Carlsbad.....	73	at Goliad.....	329-332
North Fork Guadalupe River near Hunt.....	191	at Loop 410 at San Antonio.....	235-241
Nueces River, at Calallen.....	420	at Navarro Street, San Antonio.....	419
at Cotulla.....	349	at San Antonio.....	232-234
at Laguna.....	343-345	near Elmendorf.....	302-310
below Uvalde.....	347	near Falls City.....	311-319
near Asherton.....	348	San Casimiro Creek near Freer.....	350
near Mathis.....	381-383	San Diego Creek at Alice.....	386
near Three Rivers.....	376-378	Sandies Creek near Westhoff.....	214-215
near Tilden.....	351	Sandy Creek, near Kingsland.....	103
Nueces River basin, crest-stage partial-record		near Louise.....	179-180
station in.....	420	San Fernando Creek basin, crest-stage partial-	
gaging-station records in.....	343-383	records in.....	420
low-flow partial-record station in.....	418	gaging-station records in.....	386
O.C. Fisher Lake at San Angelo.....	74	San Marcos River at Luling.....	210-211
Olmos Creek, at Dresden Drive, San Antonio.....	229-230	San Marcos River spring flow at San Marcos.....	205
at Hildebrandt Street, San Antonio.....	419	San Miguel Creek near Tilden.....	373
Olmos Reservoir at San Antonio.....	231	San Pedro Creek, at Furnish Street, San Antonio.....	420
Onion Creek, at U.S. Highway 183 near Austin.....	151-152	at Santa Rosa Street, San Antonio.....	419
near Driftwood.....	141-142	San Saba River, at Menard.....	91
On-site measurements and sample collection.....	11	at San Saba.....	93
Organic mass, definition of.....	15	near Brady.....	92
Organism, definition of.....	17	San Saba Springs at San Saba.....	417
Organism count/area, definition of.....	17	Seco Creek, at Rowe Ranch near D'Hanis.....	370
Organisms count/volume, definition of.....	17	at Miller Ranch near Utopia.....	367-369
Oso Creek at Corpus Christi.....	384-385	Sediment, collection and examination.....	19
Other records available.....	11	definition of.....	12
Panther Canyon at New Braunfels.....	417	Seven Hundred Springs near Telegraph.....	417
Parameter code, definition of.....	17	Shoal Creek at 12th Street, Austin.....	125-126
Partial-record station, definition of.....	11,18	Slaughter Creek at Farm Road 1826 near Austin.....	145-146
Partial-record stations, crest-stage.....	419-420	Sodium adsorption ratio (SAR), definition of.....	20
low-flow.....	417-418	Solute, definition of.....	20
Particle size, definition of.....	18	South Concho River at Christoval.....	67
Particle-size classification, definition of.....	18	South Llano River near Telegraph.....	417
Pecan Bayou near Mullin.....	88-90	Special networks and programs.....	6
Pecos County Water Improvement District No. 2		Specific conductance, definition of.....	20
canal near Imperial.....	400	Spring Creek above Tankersley.....	69
Pecos County Water Improvement District No. 2 (upper		Springs at Fort McKavett.....	417
diversion) canal near Grandfalls.....	399	Stage, records of.....	7
Pecos County Water Improvement District No. 3		Stage-discharge relation, definition of.....	20
canal near Imperial.....	401	Station identification numbers.....	7
		Streamflow, definition of.....	20
		yearly summary.....	4

	INDEX	425
	Page	Page
Substrate, definition of.....	20	Tranquitas Creek at Kingsville..... 420
Surface area, definition of.....	20	Tres Palacios River near Midfield..... 172
Surficial bed material, definition of.....	20	Tritium network..... 21
Suspended (as used in tables of chemical analyses), definition of.....	20	Twin Buttes Reservoir near San Angelo..... 71
Suspended, recoverable, definition of.....	20	Walnut Creek, at Dessau Road, Austin..... 419
Suspended-sediment concentration, definition of.....	19	at Farm Road 1325 near Austin..... 419
Suspended sediment, definition of.....	19	at Webberville Road, Austin..... 138-139
Suspended-sediment discharge, definition of.....	19	Ward County Irrigation District No. 1 canal near Barstow..... 398
Suspended-sediment load, definition of.....	20	Water discharge, records of stage and..... 7
Suspended, total, definition of.....	21	Water quality..... 4
Taxonomy, definition of.....	21	Water temperature, explanation of..... 12
Temperature, collection and examination.....	12	Water year, definition of..... 22
Terms, definition of.....	14-22	WATSTORE data, access to..... 14
Thermograph, definition of.....	21	WDR, definition of..... 22
Time-weighted average, definition of.....	21	Weighted average, definition of..... 22
Tons per acre-foot, definition of.....	21	West Elm Creek at San Antonio..... 244-246
Tons per day, definition of.....	21	West Mustang Creek near Ganado..... 181
Total coliform bacteria, definition of.....	15	West Nueces River near Brackettville..... 346
Total (in tables of chemical analyses), definition of.....	21	Wet mass, definition of..... 15
Total discharge.....	17	Williamson Creek, at Jimmy Clay Road, Austin..... 150
Total organism count, definition of.....	21	at Oak Hill..... 147-149
Total, recoverable, definition of.....	20	WSP, definition of..... 22
Total sediment discharge.....	20	
Total sediment load, definition of.....	20	
Town Lake at Austin.....	127-133	Zooplankton, definition of..... 18

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
8011 Cameron Road, Bldg. 1
Austin, TX 78753

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300
SPECIAL 4TH CLASS BOOK RATE

2 ALL
U.S. GEOLOGICAL SURVEY LIBRARY
ATTN: SERIAL RECORDS UNIT
NATIONAL CENTER - MS 950
RESTON, VA 22092

USGS LIBRARY - RESTON



3 1818 00455306 9

