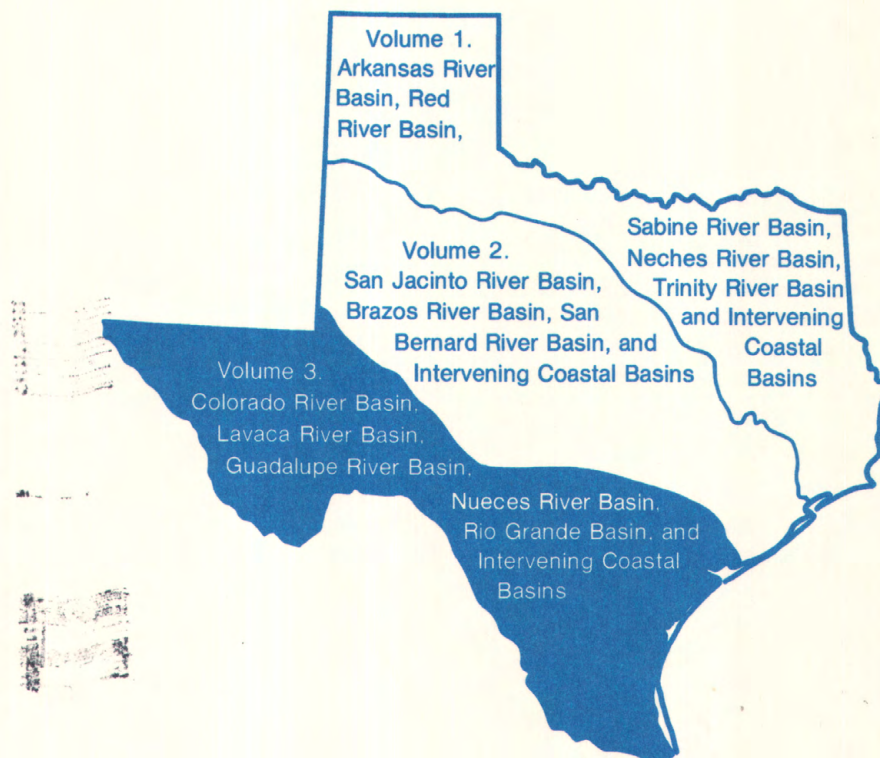




Water Resources Data Texas Water Year 1993

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
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Prepared in cooperation with the State of Texas
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CALENDAR FOR WATER YEAR 1993

1992

OCTOBER

S	M	T	W	T	F	S
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1993

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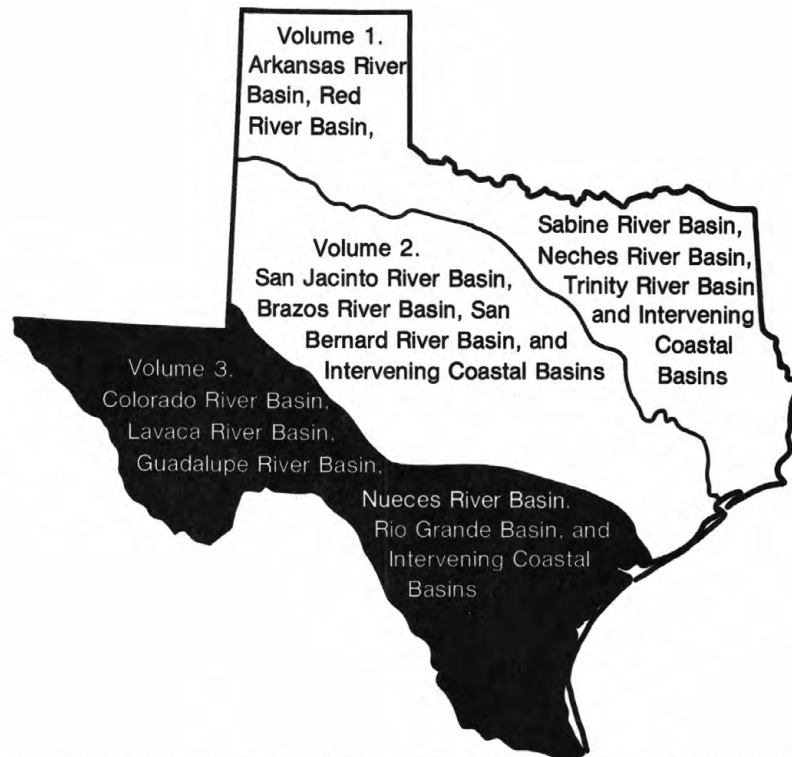
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Water Resources Data Texas Water Year 1993

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

by S.C. Gandara, E.M. McPherson, W. Gibbons, B.A. Hinds, and F.L. Andrews



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-93-3

Prepared in cooperation with the State of Texas
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

**For additional information write to:
District Chief, Water Resources Division
U.S. Geological Survey
8011A Cameron Rd.
Austin, Texas 78754-3898**

1994

PREFACE

This edition of the annual hydrologic data report of Texas is one of a series of annual reports that document hydrologic data collected from the U.S. Geological Survey's collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by Federal, State, local agencies, and the private sector for developing and managing land and water resources in Texas which are contained in 4 volumes:

- Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, Trinity River Basin, and intervening 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
- Volume 4. Ground-Water Data

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had the primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, most of the data were collected, computed, and processed from Subdistrict and Field Offices. The following supervised the collection, processing, and tabulation of the data:

Stanley Baldys
Dana L. Barbie
James C. Fisher
Charles C. Kidwell
William H. Martin

Harry C. McWreath
George B. Ozuna
Roberto Perez
William E. Reeves
H. Dean Stephens

The following individuals contributed to the collection, processing and preparation of the data:

District Office

H.D. Buckner	Ruth E. Jones
Mike Dorsey	Joyce Stewart
	Phil Tovar

San Antonio Subdistrict Office

James M. Briers	Olga H. Munoz
Allan K. Clark	M.E. Torres-Pastor
Robert J. Ferris	Jorge O. Pena
Allen L. Furlow	Brian L. Petri
Jon R. Gilhousen	Richard N. Slattey
C.A. Hartmann, Jr.	Michael W. Thomas
Joyce Knapick	John A. Tomlinson
Addis M. Miller	John F. Wojcik

San Angelo Field Office

Henry Jacques, Jr.	Jimmy G. Pond
Lawanna M. Kiser	James B. Schiller
Jimmy N. Lee	Tim E. Teagarden

Wichita Falls Field Office

Paul Bennett	Doris F. Tipps
W.C. Damschen	

El Paso Field Office

Donald E. White

Houston Subdistrict Office

Dexter W. Brown	Mark C. Kasmarek
J. Pat Bruchmiller	Patrick O. Keefe
Mike R. Burnich	Vidal A. Mendoza
Al Campodonico	Edna M. Paul
Lee B. Goldstein	C. Sal Ramirez
Stan R. Cole	Horacio X. Santos
Laura S. Coplin	John S. Sawyer
Rick L. Goss	Alberta G. Swanson
Jim S. Hutchison	J. Ken VanZandt

Fort Worth Subdistrict Office

Jack D. Benton	Ralph H. Ollman
H. Sue Butler	Darryl G. Pinion
Ben J. Carr	Timothy H. Raines
Martin J. Danz	Glenn A. Rivers
Judith H. Donohue	Jeffery T. Sandlin
Richard E. Faux	Clyde T. Schoultz
Philip W. Golden	J.M. Taylor
Vernon L. Hastings	David V. Tudor
Bradley L. Mansfield	Charles M. Wood

Austin Field Office

Keith D. Ging	Raymond R. Salazar
Searcy M. Jacobs	Venezia Shearer
Milton M. Miller	Keith R. Snider
C.E. Ranzau	Milton W. Sunvison
	K. Craig Weiss

This report was prepared in cooperation with the State of Texas and other agencies under the supervision of Richard O. Hawkinson, District Chief.

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16. Abstract (limit: 200 words) Water-resources data for the 1993 water year for Texas are presented in four volumes, and consist of records of stage, discharge, and water quality of streams and canals; and stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. Volume 3 contains records for water discharge at 134 gaging stations; stage only at 1 gaging stations; stage and contents at 13 lakes and reservoirs; water quality at 81 gaging stations; and data for 30 partial-record and 4 flood-hydrograph partial-record stations. Also included are lists of discontinued surface-water discharge or stage-only stations and discontinued surface-water-quality stations; 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 Federal, State, and local 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 temperature, Sampling sites, Water levels, Water analyses b. Identifiers/Open-Ended Terms c. COSATI Field/Group			
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CONTENTS

	Page
Preface	iii
List of gaging stations, in downstream order, for which records are published	v
List of discontinued surface-water discharge or stage-only stations	x
List of discontinued surface-water-quality stations	xiv
Introduction	1
Cooperation	2
Hydrologic conditions	2
Streamflow	2
Water quality	3
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	7
Data presentation	8
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	12
Data presentation	13
Remark codes	14
Access to WATSTORE data	14
Definition of terms	14
Publications of techniques of water-resources investigations	22
Gaging-station records	25
Discharge at partial-record stations and miscellaneous sites	495
Low-flow partial-record stations	495
Crest-stage partial-record stations	497
Discharge measurements at miscellaneous sites	498
Index	499

ILLUSTRATION

Figure 1. Area of Texas covered by volume 3 and location of selected streamflow and water-quality stations in volume 3	4
2. Comparison of monthly mean discharges at four long-term hydrologic index gaging stations during the 1993 water year with median of the monthly mean discharges for 1951-80 water years	5

TABLES

Table 1. Streamflow at six selected stations for water year 1993	3
2. Comparison of records of discharge-weighted-average concentrations of dissolved solids for the 1993 water year	6

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

[Type of data collected: (d) discharge; (c) chemical; (b) biological; (t) water temperature;
(s) sediment; (e) elevation, gage heights, or contents.]

	Station number	Page
WESTERN GULF OF MEXICO BASINS		
COLORADO RIVER BASIN		
Colorado River near Gail (d) -----	08117995	25
Colorado River near Cuthbert (d) (c) (t) -----	08120700	26
Colorado River at Colorado City (d) (c) (t) -----	08121000	31
Morgan Creek:		
Lake Colorado City near Colorado City (e) -----	08123000	36
Beals Creek near Westbrook (d) (c) (t) -----	08123800	37
Colorado River above Silver (d) (c) (b) (t) (s) -----	08123850	44
E.V. Spence Reservoir near Robert Lee (e) -----	08123950	50
Colorado River at Robert Lee (d) -----	08124000	51
Colorado River near Ballinger (d) (c) (t) -----	08126380	53
Elm Creek at Ballinger (d) -----	08127000	58
South Concho River (head of Concho River):		
South Concho River at Christoval (d) -----	08128000	59
Middle Concho River above Tankersley (d) -----	08128400	61
Spring Creek above Tankersley (d) -----	08129300	62
Dove Creek at Knickerbocker (d) -----	08130500	63
Twin Buttes Reservoir near San Angelo (e) -----	08131200	64
South Concho River:		
Lake Nasworthy near San Angelo (e) -----	08132000	65
South Concho River:		
North Concho River at Sterling City (e) -----	08133500	66
North Concho River near Carlsbad (d) -----	08134000	67
O.C. Fisher Lake at San Angelo (e) -----	08134500	69
Concho River at San Angelo (d) -----	08136000	70
Concho River at Paint Rock (d) (c) (b) -----	08136500	72
O.H. Ivie Reservoir near Voss (e) -----	08136600	76
Colorado River near Stacy (d) (c) (t) -----	08136700	77
Colorado River at Winchell (d) (c) (b) (t) -----	08138000	81
Pecan Bayou:		
Jim Ned Creek:		
Hords Creek:		
Hords Creek Lake near Valera (e) -----	08141000	88
Pecan Bayou near Mullin (d) (c) -----	08143600	89
San Saba River at Menard (d) -----	08144500	92
San Saba River near Brady (d) -----	08144600	94
San Saba River at San Saba (d) -----	08146000	95
Colorado River near San Saba (d) (c) (b) (s) -----	08147000	97
Colorado River:		
Llano River near Junction (d) -----	08150000	101
Llano River near Mason (d) -----	08150700	102
Beaver Creek near Mason (d) -----	08150800	103
Llano River at Llano (d) -----	08151500	104
Sandy Creek near Kingsland (d) -----	08152000	106
Pedernales River near Fredericksburg (d) -----	08152900	107
Pedernales River near Johnson City (d) -----	08153500	108
Bull Creek at Loop 360 near Austin (d) (c) (b) -----	08154700	110
Lake Austin at Austin (c) (t) -----	08154900	115
Colorado River (Town Lake):		
Barton Creek at State Highway 71 near Oak Hill (d) (c) (b) -----	08155200	119
Barton Creek at Barton Creek Blvd. near Austin (c) -----	08155220	125
Barton Creek at Lost Creek Boulevard, Austin (d) (c) (b) -----	08155240	126
Barton Creek at Loop 360, Austin (d) (c) (b) -----	08155300	132
Barton Springs at Austin (d) (c) (b) -----	08155500	136
Shoal Creek at 12th Street, Austin (d) (c) (b) -----	08156800	140
Town Lake at Austin (c) (t) -----	08157900	143
Colorado River at Austin (d) (c) -----	08158000	153
Walnut Creek at Webberville Road, Austin (d) (c) (b) -----	08158600	156

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

vii

	Station number	Page
WESTERN GULF OF MEXICO BASINS—Continued		
COLORADO RIVER BASIN—Continued		
Colorado River:		
Colorado River below Austin (c) (b) -----	08158650	160
Onion Creek near Driftwood (d) (c) (b) -----	08158700	162
Onion Creek at Buda (d) -----	08158800	164
Onion Creek:		
Bear Creek below Farm Road 1826 near Driftwood (d) (c) (b) -----	08158810	166
Slaughter Creek at Farm Road 1826 near Austin (d) (c) (b) -----	08158840	170
Williamson Creek at Oak Hill (d) (c) (b) -----	08158920	172
Onion Creek at U.S. Highway 183 near Austin (d) -----	08159000	174
Colorado River at Bastrop (d) (c) (t) -----	08159200	176
Colorado River above Lagrange (d) -----	08160400	185
Cummins Creek:		
Redgate Creek near Columbus (d) -----	08160800	186
Colorado River at Columbus (d) -----	08161000	188
Colorado River at Wharton (d) (c) (b) (s) -----	08162000	190
Colorado River near Bay City (d) -----	08162500	194
TRES PALACIOS RIVER BASIN		
Tres Palacios River near Midfield (d) -----	08162600	195
LAVACA RIVER BASIN		
Lavaca River at Hallettsville (d) -----	08163500	197
Lavaca River near Edna (d) (c) (b) (s) -----	08164000	199
Navidad River near Hallettsville (d) -----	08164300	203
Sandy Creek near Louise (d) (c) (b) -----	08164450	205
Mustang Creek:		
West Mustang Creek near Ganado (d) (c) (b) -----	08164503	209
Lake Texana near Edna (c) (t) -----	08164525	212
GARCITAS CREEK BASIN		
Garcitas Creek near Inez (d) -----	08164600	218
PLACEDO CREEK BASIN		
Placedo Creek near Placedo (d) -----	08164800	220
GUADALUPE RIVER BASIN		
Guadalupe River:		
North Fork Guadalupe River near Hunt (d) -----	08165300	221
Guadalupe River at Hunt (d) -----	08165500	223
Johnson Creek near Ingram (d) -----	08166000	225
Guadalupe River at Kerrville (d) -----	08166200	227
Guadalupe River at Comfort (d) -----	08167000	229
Guadalupe River near Spring Branch (d) (c) (b) -----	08167500	231
Canyon Lake near New Braunfels (e) (c) (b) (t) -----	08167700	234
Guadalupe River at Sattler (d) (c) (b) -----	08167800	255
Guadalupe River above Comal River at New Braunfels (d) -----	08168500	257
Comal River at New Braunfels (d) -----	08169000	258
Guadalupe River below New Braunfels (c) -----	08169580	259
San Marcos River Springflow at San Marcos (d) -----	08170000	260
Blanco River at Wimberley (d) (c) (b) -----	08171000	262
Blanco River near Kyle (d) -----	08171300	266
San Marcos River at Luling (d) (c) -----	08172000	268
Plum Creek at Lockhart (d) -----	08172400	270
Plum Creek near Luling (d) -----	08173000	271
Sandies Creek near Westhoff (d) (c) -----	08175000	273
Guadalupe River at Cuero (d) -----	08175800	276
Guadalupe River at Victoria (d) (c) (b) (s) -----	08176500	278
Coleta Creek:		
Fifteenmile Creek near Weser (d) -----	08176550	282
Coleta Creek at Arnold Road Crossing near Schroeder (d) -----	08176900	283
Coleta Creek Reservoir inflow (Guadalupe Diversion) near Schroeder (d) -----	08176990	284
Perdido Creek at Farm Road 622 near Fannin (d) -----	08177300	285
Coleta Creek Reservoir (Condenser No. 1) near Fannin (t) -----	08177360	286
Coleta Creek Reservoir near Victoria (e) -----	08177400	288
Coleta Creek Reservoir (outflow) near Victoria (t) -----	08177410	289
Coleta Creek near Victoria (d) -----	08177500	291

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

	Station number	Page
WESTERN GULF OF MEXICO BASINS—Continued		
GUADALUPE RIVER BASIN—Continued		
Guadalupe River:		
San Antonio River:		
Olmos Creek at Dresden Drive, San Antonio (e) (c) (b) -----	08177700	293
San Antonio River at San Antonio (d) -----	08178000	296
San Antonio River at Mitchell Street, San Antonio (d) (c) (b) -----	08178050	298
San Antonio River at Loop 410 at San Antonio (d) (c) (b) (t) -----	08178565	301
Salado Creek (upper station) at San Antonio (d) (c) (b) -----	08178700	309
Salado Creek (lower station) at San Antonio (d) (c) (b) (t) -----	08178800	313
Medina River at Bandera (d) (c) (b) -----	08178880	324
Medina Lake near San Antonio (e) -----	08179500	327
Diversion Lake:		
Medina Canal near Riomedina (d) -----	08180000	328
Medina River at Lacoste (d) (c) (b) (t) -----	08180640	329
Medina River near Macdona (d) -----	08180700	338
Medio Creek at Pearsall Road at San Antonio (d) (c) (b) (t) -----	08180750	339
Medina River near Somerset (d) -----	08180800	349
Culebra Creek:		
Helotes Creek at Helotes (d) (c) (b) -----	08181400	350
Leon Creek at I.H. 35 at San Antonio (d) (c) (b) (t) -----	08181480	353
Medina River at San Antonio (d) (c) (b) (t) -----	08181500	362
San Antonio River near Elmendorf (d) (c) (b) (t) -----	08181800	371
San Antonio River near Falls City (d) (c) (b) (t) -----	08183500	381
Cibolo Creek near Boerne (d) -----	08183900	391
Cibolo Creek at Selma (d) -----	08185000	392
Cibolo Creek near Falls City (d) (c) (b) -----	08186000	393
San Antonio River at Goliad (d) (c) (b) (t) (s) -----	08188500	397
Guadalupe-Blanco River Authority Calhoun Canal Pump Station near Long Mott (d) -----	08188600	402
Guadalupe River near Tivoli (e) (c) -----	08188800	403
COPANO CREEK BASIN		
Copano Creek near Refugio (d) -----	08189200	407
MISSION RIVER BASIN		
Mission River at Refugio (d) (c) (b) (s) -----	08189500	408
ARANSAS RIVER BASIN		
Aransas River near Skidmore (d) -----	08189700	411
NUECES RIVER BASIN		
Nueces River at Laguna (d) (c) (b) -----	08190000	413
West Nueces River near Brackettville (d) -----	08190500	416
Nueces River below Uvalde (d) -----	08192000	418
Nueces River near Asherton (d) -----	08193000	419
Nueces River at Cotulla (d) -----	08194000	420
San Casimiro Creek near Freer (d) -----	08194200	422
Nueces River near Tilden (d) -----	08194500	423
Frio River at Concan (d) (c) (b) -----	08195000	424
Dry Frio River near Reagan Wells (d) (c) (b) -----	08196000	428
Frio River below Dry Frio River near Uvalde (d) -----	08197500	432
Sabinal River near Sabinal (d) (c) (b) -----	08198000	433
Sabinal River at Sabinal (d) -----	08198500	437
Hondo Creek near Tarpley (d) (c) (b) -----	08200000	439
Hondo Creek at King Waterhole near Hondo (d) -----	08200700	443
Seco Creek at Miller Ranch near Utopia (d) (c) (b) -----	08201500	444
Seco Creek at Rowe Ranch near D'Hanis (d) -----	08202700	448
Frio River near Derby (d) -----	08205500	449
Frio River at Tilden (d) -----	08206600	450
San Miguel Creek near Tilden (d) -----	08206700	451
Choke Canyon Reservoir near Three Rivers (e) -----	08206900	453
Choke Canyon Reservoir (Outflow Works Channel) near Three Rivers (d) -----	08206910	454
Atascosa River at Whitsett (d) -----	08208000	456
Nueces River near Three Rivers (d) (c) (b) -----	08210000	457
Lake Corpus Christi near Mathis (e) -----	08210500	461
Nueces River near Mathis (d) -----	08211000	463
Nueces River above Calallen (d) -----	08211200	464
Nueces River at Calallen (d) -----	08211500	466

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

ix

	Station number	Page
WESTERN GULF OF MEXICO BASINS—Continued		
OSO CREEK BASIN		
Oso Creek at Corpus Christi (d) -----	08211520	467
RIO GRANDE BASIN		
Rio Grande near El Paso (c) -----	08364000	468
Rio Grande at Foster Ranch near Langtry (c) -----	08377200	469
Pecos River at Red Bluff, NM (d) -----	08407500	471
Delaware River near Red Bluff, NM (d) -----	08408500	473
Red Bluff Reservoir near Orla (e) -----	08410000	474
Pecos River near Orla (d) (c) (t) -----	08412500	475
Pecos River near Girvin (d) -----	08446500	478
Pecos River near Langtry (c) -----	08447410	479
Devils River at Pafford Crossing near Comstock (c) -----	08449400	481
Rio Grande below Amistad Dam near Del Rio (c) -----	08450900	483
Rio Grande at Laredo (c) -----	08459000	484
Rio Grande below Falcon Dam (c) -----	08461300	485
Rio Grande at Fort Ringgold, Rio Grande City (c) -----	08464700	486
Rio Grande near Los Ebanos (c) -----	08466300	487
Rio Grande below Anzalduas Dam (d) (c) (t) -----	08469200	488
Arroyo Colorado at Harlingen (c) -----	08470400	490
Rio Grande near Brownsville (c) -----	08475000	492

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Texas have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the title page of this report.

[Letters after station name designate the type of data collected: (d) discharge, (e) elevation (stage only).]

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Bull Creek near Ira (d)	08118500	26.30	1947-53
Bluff Creek near Ira (d)	08119000	42.60	1958-62
Colorado River near Ira (d)	08119500	3,483	1948-65
Deep Creek near Dunn (d)	08120500	198	1959-89
Morgan Creek near Westbrook (d)	08121500	273	1953-86
Graze Creek near Westbrook (d)	08122000	21.70	1954-63
Morgan Creek near Colorado City (d)	08122500	313	1947-49
Champion Creek near Colorado City (d)	08123500	198	1948-59
Beals Creek above Big Spring (d)	08123650	9,319	1959-79
Beals Creek at Big Spring (d)	08123700	9,341	1957-58
Beals Creek near Coahoma (d)	08123720	9,383	1983-88
Colorado River near Silver (d)	08123900	14,997	1957-70
Colorado River at Ballinger (d)	08126500	16,420	1907-79
South Concho Irrigation Co. Canal at Christoval (d)	08127500	N/A	1940-83
Middle Concho River near Tankersley (d)	08128500	2,653	1930-61
Dove Creek Springs near Knickerbocker (d)	08129500*	N/A	1944-58
Spring Creek near Tankersley (d)	08131000	699	1930-60
Pecan Creek near San Angelo (d)	08131400	81.10	1961-86
Tom Green Co. WCID No. 1 Canal near San Angelo (d)	08131600	N/A	1963-81
South Concho River at San Angelo (d)	08132500	3,866	1931-53
North Concho River at San Angelo (d)	08135000	1,525	1915-31, 1947-90
Mukewater Creek at Trickham (d)	08137500	70	1952-73
Deep Creek near Mercury (d)	08139500	43.90	1954-73
Dry Prong Deep Creek near Mercury (d)	08140500	8.31	1951-71
Pecan Bayou near Cross Cut (d)	08140700	532	1968-78
Jim Ned Creek near Coleman (d)	08140800	333	1965-80
Hords Creek near Valera	08141500	54.20	1947-90
Hords Creek near Coleman (d)	08142000*	107	1941-70
Brown County WID No. 1 Canal near Brownwood (d)	08142500	N/A	1950-83
Pecan Bayou at Brownwood (d)	08143500	1,660	1924-28, 1929-83
Noyes Canal at Menard (d)	08144000	N/A	1924-83
Brady Creek near Eden (d)	08144800	101	1962-85
Brady Creek at Brady (d)	08145000	588	1939-86
Lake Buchanan near Burnet (e)	08148000	31,910	1937-89
North Llano River near Junction (d)	08148500	914	1915-77
Llano River near Castell (d)	08151000	3,747	1924-39
Pedernales River at Stonewall (d)	08153000	647	1925-34
Pedernales River near Spicewood (d)	08154000	1,294	1924-37
Lake Travis near Austin (d)	08154500	38,755	1940-89
Colorado River below Mansfield Dam, Austin (d)	08154510	38,755	1975-90
Barton Creek near Camp Craft Road near Austin (d)	08155260	109	1983-89
Shoal Creek at Northwest Park at Austin (d)	08156700	6.52	1975-84
Waller Creek at 38th Street, Austin (d)	08157000	2.31	1955-80
Waller Creek at 23rd Street, Austin (d)	08157500	4.13	1955-80
Boggy Creek at U.S. Highway 183, Austin (d)	08158050*	13.10	1976-86
Walnut Creek at Farm-Market 1325 near Austin (d)	08158100	12.60	1986
Walnut Creek at Dessau Road, Austin (d)	08158200	26.20	1986
Little Walnut Creek at Georgian Drive, Austin (d)	08158380	5.22	1986
Onion Creek at Buda (d)	08158800	N/A	1979-83
Bear Creek at Farm-Market Road 1626 near Manchaca (d)	08158820	N/A	1982-83
Little Bear Creek at Farm-Market Road 1626 near Manchaca (d)	08158825	N/A	1979-80

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Boggy Creek (South) at Circle S Road, Austin (d)	08158880	3.58	1985-86
Williamson Creek at Manchaca Road, Austin (d)	08158930	19	1984
Williamson Creek at Jimmy Clay Road, Austin (d)	08158970	27.60	1976-86
Wilbarger Creek near Pflugerville (d)	08159150	4.61	1964-80
Big Sandy Creek near McDade (d)	08159165	38.70	1979-85
Big Sandy Creek near Elgin (d)	08159170	63.80	1979-85
Colorado River at Smithville (d)	08159500	39,880	1931-75
Dry Creek at Buescher Lake near Smithville (d)	08160000	1.48	1940-66
Colorado River at La Grange (d)	08160500	40,430	1939-55
Colorado River above Columbus (d)	08160700	41,403	1984-85
Colorado River at Matagorda (e)	08162504	42,240	1977-82
Colorado River near Tiger Island Cut near Matagorda (e)	08162508	N/A	1977-82
Culver Cut near Matagorda (e)	08162512	N/A	1977-82
Matagorda Bay near Matagorda Peninsula near Matagorda (e)	08162515	N/A	1977-82
Navidad River near Speaks (d)	08164350	437	1982-89
Navidad River near Ganado (d)	08164500	826	1939-80
Lavaca River near Lolita (e)	08164530	N/A	1973-82
Lavaca River near Vanderbilt (e)	08164555	N/A	1974-82
Saluria Bayou near Port O'Connor (e)	08164985	N/A	1971-82
Guadalupe River above Bear Creek at Kerrville (d)	08166140	N/A	1978-86
Guadalupe River near Comfort (d)	08166500	762	1918-32
Rebecca Creek near Spring Branch (d)	08167600	10.90	1960-79
Guadalupe River at New Braunfels (d)	08169500*	1,652	1915-27
San Marcos River at San Marcos (d)	08170500	93	1915-21
Plum Creek near Lockhart (d)	08172500	184	1925-30
San Marcos River at Ottine (d)	08173500	1,249	1915-43
Peach Creek below Dilworth (d)	08174600	460	1960-79
Guadalupe River below Cuero (d)	08176000	4,923	1903-06
			1917-19
			1921-35
Coleta Creek near Schroeder (d)	08177000	369	1930-33
			1953-79
West Elm Creek at San Antonio (d)	08178640	2.45	1986
Medina River near Pipe Creek (d)	08179000	474	1923-35
			1953-82
Red Bluff Creek near Pipe Creek (d)	08179100	56.30	1956-81
Medina River near Riomedina (d)	08180500	650	1924-26
			1931
			1953-73
			1978
Ranch Creek near Helotes (d)	08181410		1969-79
Leon Creek Tributary at Kelly Air Force Base (d)	08181450	1.19	1955-71
Calaveras Creek near Elmendorf (d)	08182500	77.20	1918-25
San Antonio River at Calaveras (d)	08183000	1,786	1946-65
Cibolo Creek near Bulverde (d)	08184000	198	1946-51
Cibolo Creek above Bracken (d)	08184500	250	1924-29
Cibolo Creek at Sutherland Springs (d)	08185500	665	1962-89
Ecleto Creek near Runge (d)	08186500	239	1955-73
Escondido Creek at Kenedy (d)	08187500	72.40	
Guadalupe-Blanco River Authority Calhoun Canal-Flume No. 2 near Long Mott (d)	08188750	N/A	1972-86
Guadalupe River at State Hwy. 35 near Tivoli (e)	08188810	N/A	1975-82
Medio Creek near Beeville (d)	08189300	204	1962-77
Chiltipin Creek at Sinton (d)	08189800	128	1970-91
Nueces River near Uvalde (d)	08191500	1,930	1928-39
Nueces River near Cinonia (d)	08192500	2,150	1915-25
Nueces River at Simmons (d)	08194600	8,561	1965-77
Dry Frio River at Knippa (d)	08196500	179	1953
Frio River near Frio Town (d)	08199700	1,460	1924-27
Hondo Creek near Hondo (d)	08200500	132	1953-64
Seco Creek near Utopia (d)	08202000	53.20	1953-61
Seco Creek near D'Hanis (d)	08202500	87.40	1953-64
Leona River Spring Flow near Uvalde (d)	08204000	N/A	1939-65

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Leona River near Divot (d)	08204500	565	1924-29
Frio River at Calliham (d)	08207000	5,491	1925-26 1932-81
Atascosa River near McCoy (d)	08207500	530	1951-57
Lucas Creek near Pleasanton (d)	08207700	32.80	1967-74
Ramirena Creek near George West (d)	08210300	84.40	1968-72
Lagarto Creek near George West (d)	08210400	155	1972-89
Nueces River below Mathis (d)	08211100	16,726	1966-67
Nueces River above Calallen (d)	08211200	16,772	1966-67
San Diego Creek at Alice (d)	08211800	319	1972-90
San Fernando Creek at Alice (d)	08211900	507	1965-87
San Fernando Creek near Alice (d)	08212000	N/A	1962-63
Los Olmos Creek near Falfurrias (d)	08212400	480	1967-83
Franklin Canal at El Paso	08355550	N/A	1969-72
McKelligon Canyon at El Paso (d)	08365600	2.30	1958-77
Inlet to Fort Bliss Sump at El Paso (d)	08365700	3.50	1961
Government Ditch at El Paso (d)	08365800	6.40	1958-77
Riverside Canal near Socorro (d)	08366400	N/A	1969-72
Tornillo Drain at mouth near Tornillo (d)	08368000	N/A	1969-72
Tornillo Canal near Tornillo (d)	08368300	N/A	1969-72
Hudspeth Feeder Canal near Tornillo (d)	08368900	N/A	1969-72
Cibola Creek near Presidio (d)	08373200	276	1972-77
Alamito Creek near Presidio (d)	08374000	1,504	1932-71
Sanderson Canyon at Sanderson (d)	08376300	195	1968-80
Salt Screwbean Draw near Orla (d)	08411500	464	1939-40 1944-57
Pecos River near Mentone (d)	08414000	21,650	1922-26 1969-73
Reeves County WID No. 2 Canal near Mentone (d)	08414500	N/A	1942-57 1970-90
Ward County WID No. 3 Canal near Barstow (d)	08415000	N/A	1940-57 1970-90
Pecos River above Barstow (d)	08416500	21,800	1916-21
Ward County Irrigation District No. 1 Canal near Barstow (d)	08418000	N/A	1922-25 1939-57 1970-90
Madera Canyon near Toyahvale (d)	08424500	53.80	1932-49
Phantom Lake Spring near Toyahvale (d)	08425500	N/A	1932-33 1949-66
Giffin Springs at Toyahvale (d)	08427000	N/A	1932-33
San Solomon Springs at Toyahvale (d)	08427500	N/A	1931-33 1941-65
West Sandia Spring at Balmorhea (d)	08429000	N/A	1931-33
East Sandia Spring at Balmorhea (d)	08430000	N/A	1931-33
Toyah Creek near Pecos (d)	08431000	1,024	1940 1944-45
Salt Draw near Pecos (d)	08431500	1,882	1940 1944-45
Dry Escondido Creek near Kenedy (d)	08188000	9.43	1954-59
Limpia Creek above Fort Davis (d)	08431700	52.40	1965-86
Limpia Creek below Fort Davis (d)	08431800	227	1961-77
Limpia Creek near Fort Davis (d)	08432000	303	1925-26 1927-32
Barrilla Draw near Saragosa (d)	08433000	612	1925-26 1932 1976-83
Toyah Creek below Toyah Lake near Pecos (d)	08434000	3,709	1940-51
Grandfalls-Big Valley Canal near Barstow (d)	08435000	N/A	1939-57 1970-76
Pecos River below Barstow (d)	08435500	25,980	1939-40
Toronto Creek near Alpine (d)	08435600	27.90	1971-76

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

xiii

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
Alpine Creek at Alpine (d)	08435620	18.10	1971-76
Moss Creek near Alpine (d)	08435660	11.30	1971-76
Sunny Glen Canyon near Alpine (d)	08435700	29.70	1968-77
Coyanosa Draw near Fort Stockton (d)	08435800	1,182	1964-77
Pecos County WID No. 2 (Upper Div) Canal near Grandfalls (d)	08436500	N/A	1922-25 1939-57 1970-90
Pecos County WID No. 2 Canal near Imperial (d)	08437500	N/A	1940-90
Pecos County WID No. 3 Canal near Imperial (d)	08437600	N/A	1970-90
Ward County WID No. 2 Canal near Grandfalls (d)	08437700	N/A	1939-57 1970-90
Pecos River near Grandfalls (d)	08438100	27,810	1916-26
Comanche Springs at Fort Stockton (d)	08444500	N/A	1941-64
Pecos River near Sheffield (d)	08447000	31,600	1922-25 1940-49
Independence Creek near Sheffield (d)	08447020	763	1974-85
Pecos River near Langtry (d)	08447410	35,179	1976-78 1981-85
Devils River near Juno (d)	08449000	2,730	1925-49 1964-73
Devils River at Pafford Crossing near Comstock (d)	08449400	3,961	1978-85
Pinto Creek near Del Rio (d)	08455000	249	1929-68 1969 1971

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following stations were discontinued as continuous-record surface-water-quality stations prior to the 1992 water year. Daily records of specific conductance, temperature, sediment, color, pH, dissolved oxygen, or chloride were collected and published for the record shown for each station.

[SC, specific conductance; T, temperature; S, sediment; C, color; pH, pH; DO, dissolved oxygen; Cl, chloride.]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Colorado River above Bull Creek near Knapp	08118200	N/A	SC, T	1950-52
Bull Creek near Ira	08118500	26.30	SC, T	1950
Bluff Creek near Ira	08119000	42.60	SC, T	1950
Colorado River near Ira	08119500	3,483	SC, T	1950-52 1958-70 1974-82 1951-52
Deep Creek near Dunn	08120500	198	SC, T	1953-54
Morgan Creek near Westbrook	08121500	273	T	1954-55
Graze Creek near Westbrook	08122000	21.70	T	1954-55
Morgan Creek near Colorado City	08122500	313	SC, T	1947-49
Lake Colorado City near Colorado City	08123000	340	T	1954-55
Beals Creek above Big Spring	08123650	9,319	SC, T	1973-78
Beals Creek near Big Spring	08123700	9,341	SC, T	1956-57
Beals Creek near Coahoma	08123720	9,383	SC, T	1983-88
Colorado River near Silver	08123900	14,997	SC, T	1956-68
Colorado River at Robert Lee	08124000	15,307	SC, T S	1947-51 1949-51
Oak Creek near Blackwell	08126000	N/A	SC, T	1950
Colorado River at Ballinger	08126500	16,420	SC, T S	1961-79 1978-79
Concho River at Paint Rock	08136500	6,574	SC, T	1946-49 1967-90
Pecan Bayou at Brownwood	08143500	1,660	SC, T	1948-49
Pecan Bayou near Mullin	08143600	2,073	SC, T	1967-91
San Saba River near San Saba	08145500	N/A	SC, T	1962-65
San Saba River at San Saba	08146000	3,046	SC, T	1962-69
Colorado River near San Saba	08147000	19,819	SC, T	1947-92
Llano River at Llano	08151500	4,197	SC, T	1979-81
Lake Austin at Austin	08154900	N/A	SC, T	1964-80
Waller Creek at 23rd Street at Austin	08157500	4.13	T	1955-60
Colorado River at Austin	08158000	39,009	SC, T	1947-91
Colorado River above Columbus	08160700	41,403	SC, T	1983-85
Colorado River at Columbus	08161000	41,460	SC T S	1966-73 1957-70 1957-73
Colorado River at Wharton	08162000	30,600	SC T	1944-92 1945-48 1950-92
Lavaca River near Edna	08164000	817	SC, T	1977-81
Navidad River near Ganado	08164500	826	SC, T	1959-80
Guadalupe River near Spring Branch	08167500	1,315	SC	1942-45
Guadalupe River at Sattler	08167800	1,436	T	1984-87
Blanco River at Wimberley	08171000	355	T	1976-78
Plum Creek near Luling	08173000	309	SC, T	1967-86
Guadalupe River at Victoria	08176500	5,198	SC T	1945-81 1950-81
San Antonio River at Loop 410 at San Antonio	08178565	N/A	SC, pH, T, DO	1986-88
Escondido Creek SWS #1 near Kenedy	08187000	3.29	S	1955-65
Guadalupe River at Tivoli	08188800	128	SC, T	1965-82
Mission River at Refugio	08189500	690	SC, T	1961-81
Nueces River at Cotulla	08194000	5,171	SC	1942
Nueces River near Tilden	08194500	8,093	SC, T, S	1949-50
Frio River at Calliham	08207000	5,491	SC, T	1967-81

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Nueces River near Three Rivers	08210000	5,427	SC	1941-52
			SC, T	1974-81
			T	1950-52
			S	1950-51
Los Olmos Creek near Falfurrias	08212400	480	SC	1974-81
			T	1974-79
Rio Grande at Fort Quitman	08370500	31,944	SC, T	1974-78
Rio Grande at Foster Ranch near Langtry	08377200	80,742	SC, T	1974-81
Pecos River below Red Bluff Dam near Orla	08410100	20,720	SC	1937-69
			T	1953-69
Salt Draw near Orla	08411500	464	SC, T	1943-48
Pecos River near Mentone	08414000	21,650	SC	1939
Pecos River at Pecos	08420500	22,100	SC	1939-41
Toyah Creek near Pecos	08431000	1,024	SC	1939-40
				1943-44
Salt Draw near Pecos	08431500	1,882	SC	1939-40
				1943-44
Toyah Creek below Toyah Lake near Pecos	08434000	3,709	SC	1940-50
			CI	1940
Pecos River below Grandfalls	08441500	27,820	SC	1939-42
				1946-56
Pecos River near Girvin	08446500	29,560	SC	1939-41
				1946-47
				1953-82
			T	1953-59
				1964-82
Pecos River near Sheffield	08447000	31,600	SC	1939-41
				1946-47
Pecos River near Langtry	08447410	35,179	SC, T	1970-76
				1980-85
Devils River at Pafford Crossing near Comstock	08449400	3,961	SC, T	1978-85
Rio Grande at Laredo	08459000	132,578	SC	1954-86
			T	1973-76
Rio Grande at Roma	08462500	166,464	SC	1942-43
Rio Grande at Mission Pumping Plant	08468000	N/A	SC	1945-50
Rio Grande at Cameron Co. WID #2 near San Benito	08473800	N/A	SC	1942-43
Rio Grande at Los Fresnos Pumping Plant near Brownsville	08474130	N/A	SC	1945-46
Rio Grande near Brownsville	08475000	176,333	SC	1943-44
				1967-83
			T, S	1966-83

WATER RESOURCES DATA - TEXAS, 1993

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 four 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 134 gaging stations; stage only at 1 gaging station; stage and contents at 13 lakes and reservoirs; and water quality at 81 gaging stations. Also included are data for 30 partial-record and 4 flood-hydrograph partial-record stations. Additional water data were collected at 7 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-93-3." 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. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc.

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) 873-3000. A limited number of CD-ROM discs will be available for sale by the Books & Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

COOPERATION

Federal agencies that assisted the Geological Survey in the collection of data in this report in the form of funds or services in 1993 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 Water Development Board or through direct joint funding agreements with the Geological Survey are:

Texas Water Development Board, G.E. Kretschmar, Executive Administrator; the cities of Abilene, Arlington, Austin, Corpus Christi, Dallas, Fort Worth, Gainesville, Garland, Georgetown, Graham, Houston, Lubbock, Nacogdoches, San Angelo, San Antonio, and Wichita Falls; Bexar, Medina, and Atascosa Counties Water Improvement District No. 1; Barton Springs/Edwards Aquifer Conservation District; Brazos River Authority; Canadian River Municipal Water Authority; Coastal Water Authority; Colorado River Municipal Water District; Dallas Public Works Department; Dallas Water Utilities; Edwards Underground Water District; El Paso Public Service Board; Fort Bend Subsidence District; Galveston County; Greenbelt Municipal and Industrial Water Authority; Guadalupe-Blanco River Authority; Harris County Flood Control District; Harris-Galveston Coastal Subsidence District; Lavaca-Navidad River Authority; Lower Colorado River Authority; Lower Neches Valley Authority; North Central Texas Council of Governments; North Central Texas Municipal Water Authority; Northeast Texas Municipal Water District; North Texas Municipal Water District; Orange County; Pecos River Commission; Red Bluff Water Power Control District; Red River Authority; Sabine River Authority of Texas; Sabine River Compact Administration; San Antonio City Public Service Board; San Antonio City Water System; San Antonio River Authority; San Jacinto River Authority; Somervell County Water District; Tarrant County Water Control and Improvement District No. 1; Texas Soil & Water Conservation Board; Texas State Department of Highways & Public Transportation; Texas Natural Resources Conservation Commission; Texas Water Development Board; Titus County Fresh Water Supply District No. 1; Trinity River Authority; Upper Guadalupe River Authority; Upper Neches River Municipal Water Authority; 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.

Streamflow across the State during water year 1993 generally was normal at the beginning of the water year, becoming above normal from December through April, and then returning to normal for the remainder of the year.

Conservation storage in 77 selected reservoirs throughout the State, with a combined conservation capacity of 34,857,000 acre-feet, decreased from 90 percent at the end of September 1992 to 84 percent at the end of September 1993. Records from these reservoirs indicate that storage increased in 7, decreased in 64, and remained the same in 6.

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 Gulf Coast. Average annual runoff ranges from less than 0.1 inch in parts of west Texas to more than 10 inches in some places along the Texas Gulf Coast. The area described in volume 3 and the location of selected streamflow and water-quality stations in the area are shown in figure 1.

Streamflow

Streamflow during water year 1993 for the area covered by volume 3 ranged from normal to above normal. Three of six selected streamflow stations in the area had above normal streamflow and three stations, the Colorado River near San Saba, the Guadalupe River near Spring Branch, and the Pecos River near Girvin, had normal streamflow. Streamflow for water year 1993 and streamflow for the period of record at the six selected stations (fig. 1), for which data are included in volume 3, is presented in table 1.

At the four long-term hydrologic index stations in the State, streamflow during water year 1993 ranged from normal to above normal. Monthly mean discharges for water year 1993 and the median of the long-term monthly means for water years 1951-80 for the four long-term hydrologic index stations in the State are shown in figure 2. Streamflow at the hydrologic index station North Concho River near Carlsbad was above-

normal (discharges within the highest 25 percent of record) from November through April and normal for the remaining 6 months. Streamflow for the Guadalupe River near Spring Branch was above normal from November through March and normal for the remaining 7 months. The Neches River near Rockland had above-normal streamflow during December, January, March, April, June and July, and normal streamflow for the remaining 6 months. The North Bosque River near Clifton had above-normal streamflow from December through March and normal streamflow for the remaining 8 months of water year 1993.

Conservation storage in 20 selected reservoirs in this area of the State, with a total combined conservation capacity of 9,340,000 acre-feet, decreased from 90 percent of capacity at the end of September 1992 to 80 percent of capacity at the end of September 1993. Records from these reservoirs indicate that storage increased in 1 and decreased in 19.

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 substantial fluctuations in precipitation and runoff.

Records of discharge-weighted-average concentrations of dissolved solids for water year 1993 are compared with those for the water years 1989-93 for selected long-term daily or continuous-record water-quality stations (fig. 1) in the Colorado River, Guadalupe River, and Rio Grande Basins. Results are shown in table 2.

Table 1.—Streamflow at six selected stations for water year 1993

Station no. and name	Discharge during 1993 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Max.	Min.	Mean	Max.	Min.	Mean
<u>Colorado River Basin</u>						
08134000 North Concho River near Carlsbad, Tex. ^{1/}	12	0	6.1	94,600	0	31.0 (1925-93)
08147000 Colorado River near San Saba, Tex. ^{2/}	4,030	48	356	47,400	0	734 (1969-93)
<u>Guadalupe River Basin</u>						
08167500 Guadalupe River near Spring Branch, Tex. ^{1/}	2,840	75	318	160,000	0	348 (1923-93)
08176500 Guadalupe River at Victoria, Tex.	17,700	604	2,426	179,000	42	2,105 (1963-93)
<u>Nueces River Basin</u>						
08210000 Nueces River near Three Rivers, Tex. ^{2/}	9,120	39	306	18,300	0	483 (1983-93)
<u>Rio Grande Basin</u>						
08446500 Pecos River near Girvin, Tex.	59	7.4	28.8	20,000	1.9	77.4 (1940-93)

^{1/} Hydrologic index station.

^{2/} National Stream Quality Accounting Network (NASQAN) site.

WATER RESOURCES DATA - TEXAS, 1993

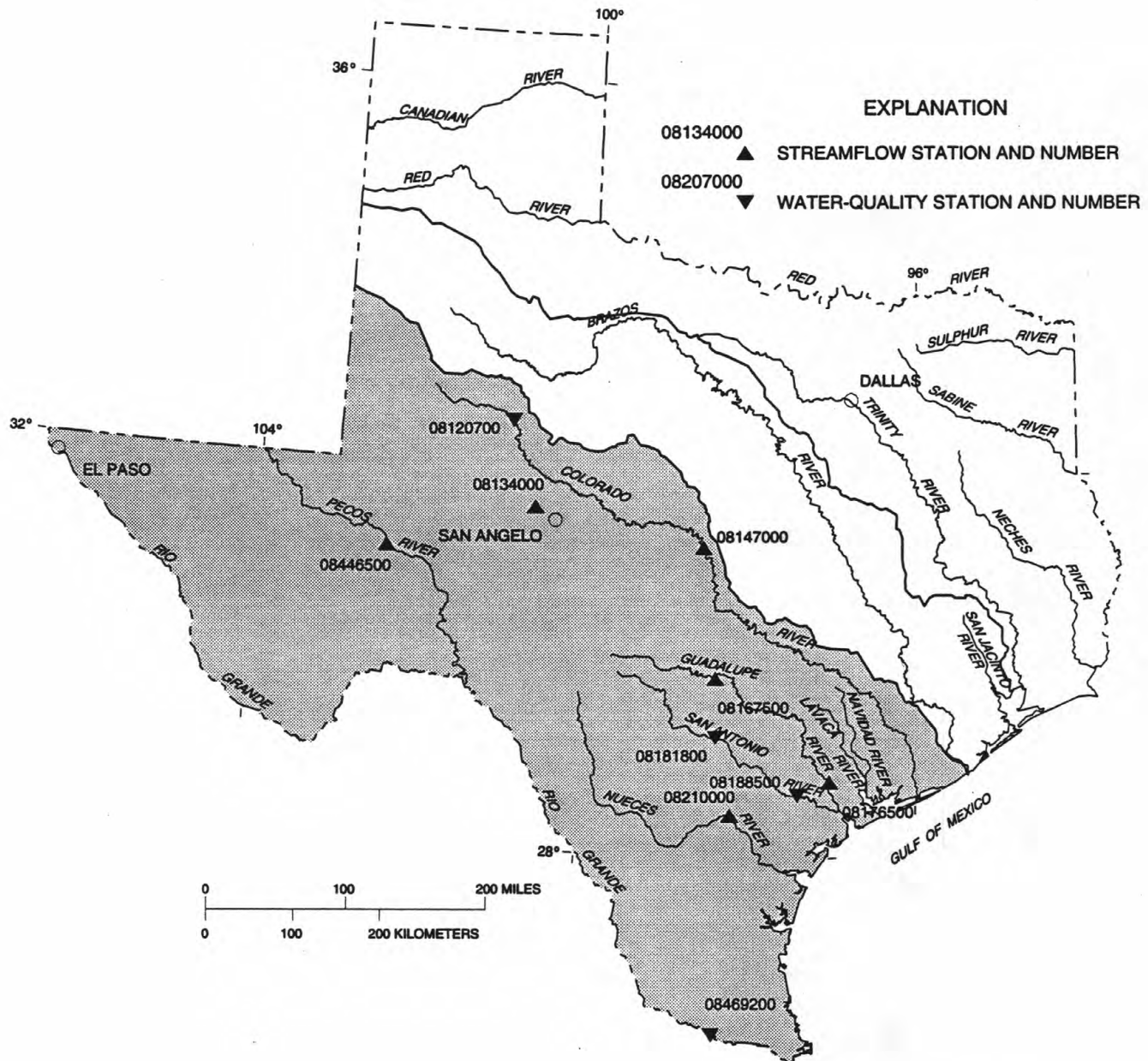


Figure 1. Area of Texas covered by volume 3 (shaded) and location of selected streamflow and water-quality stations in volume 3.

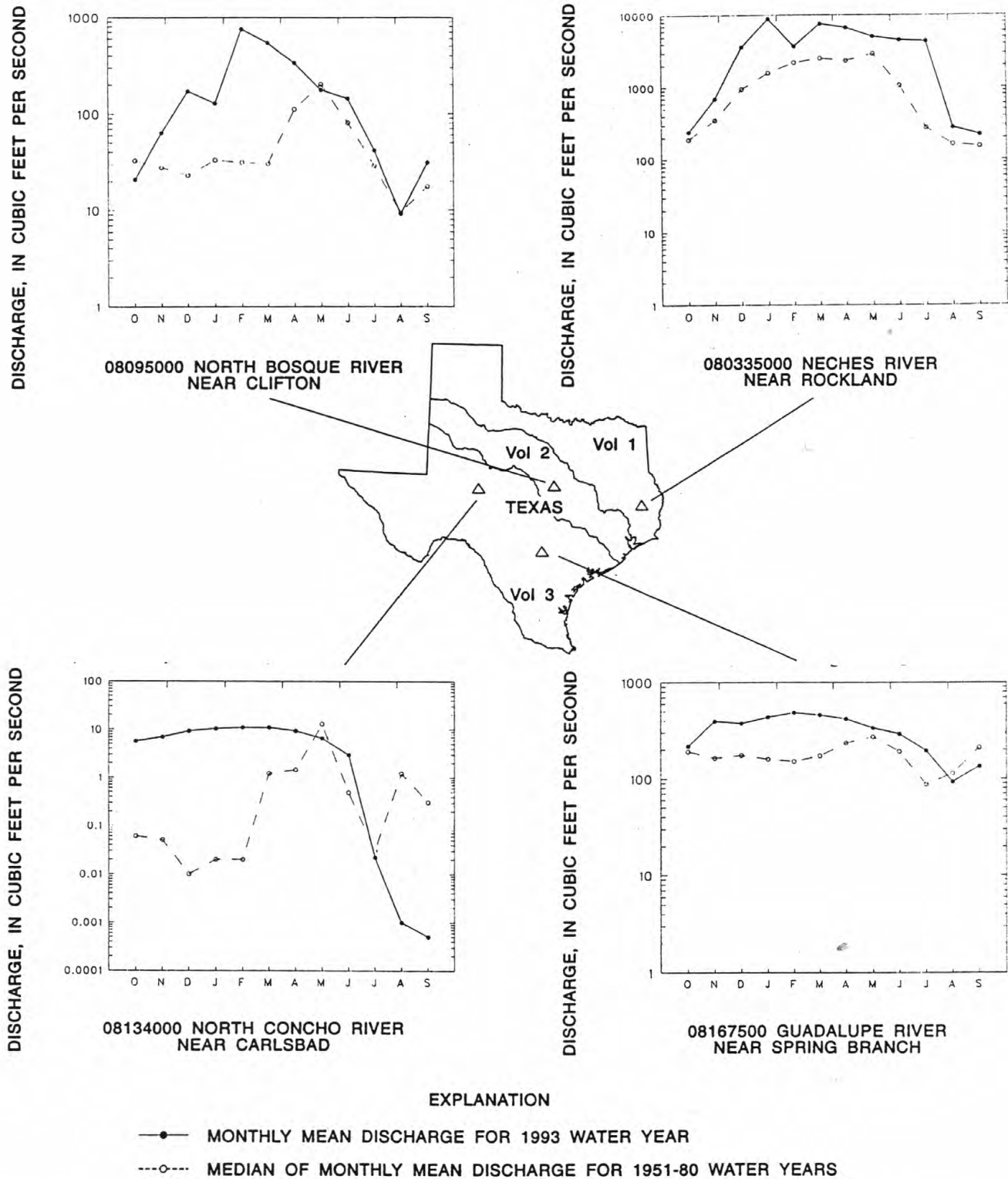


Figure 2.-- Monthly mean discharges at four long-term hydrologic index gaging stations during the 1993 water year and median of the monthly mean discharges for 1951-80 water years.

Table 2.—Comparison of records of discharge-weighted average concentrations of dissolved solids for the 1993 and 1989-93 water years

Station no. and name	Mean discharge (cubic feet per second)		Discharge-weighted-average concentration of dissolved solids (milligrams per liter)	
	1993	1989-93	1993	1989-93
Colorado River Basin				
08120700 Colorado River near Cuthbert, Tex.	12	26.8	2,840	1,580
Guadalupe River Basin				
08181800 San Antonio River near Elmendorf, Tex.	659	707	361	348
08188500 San Antonio River at Goliad, Tex.	1,191	1,174	401	361
Rio Grande Basin				
08469200 Rio Grande below Anzalduas Dam, Tex.	174	1,725	735	771

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.

National Water-Quality Assessment program (NAWQA) is a nationwide program that started full-scale implementation by the U.S. Geological Survey in 1991. The long-term goals of the NAWQA program are to describe the status and trends in the quality of a large, representative part of the Nation's surface-water, ground-water resources and to provide a sound, scientific understanding of the primary natural and human factors affecting the quality of these resources. The principle building blocks of the NAWQA program are the study-unit investigations on which national-level assessments are based. Study-unit investigations are comprehensive and include information on water, sediment, biota, and aquatic and terrestrial habitats within its boundaries. Of the 60 study-unit investigations that comprise the NAWQA program, one is located in Texas; the Trinity River basin. Some of the surface-water data collected for the basic and intensive network phase are included in this report.

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1993 water year that began October 1, 1992, and ended September 30, 1993. 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 8-digit number for each station, such as 08057000, which appears just to the left of the station name, includes the 2-digit Part number "08" plus the 6-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 the 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 which the revisions apply to. 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 manuscripts 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 one 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 Region 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 (alkalinity), 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 alkalinity 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. The 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 the 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.

Historical and current (1991) dissolved trace-element concentrations are reported herein for water that was collected, processed, and analyzed by using either ultraclean or other than ultraclean techniques. If ultraclean techniques were used, then those concentrations are reported in nanograms per liter. If other than ultraclean techniques were used, then those concentrations are reported in micrograms per liter and could reflect contamination introduced during some phase of the procedure.

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, radio-chemical 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, WATSTORE, 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:

PRINTED OUTPUT**REMARK**

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 the 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

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk; and, as noted in the introduction, on CD-ROM discs. All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc. A limited number of CD-ROM discs will be available for sale by the Books & Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

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 multicelled 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 microorganisms, 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).

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 (ft³/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-foot-per-second day [(ft³/s)/d] 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.

Cubic feet per second per square mile [(ft³/s)/mi²] 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:

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

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 (CaCO₃).

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 8-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 developmen-

tal 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	0.004 - 0.062	Sedimentation
Sand	0.062 - 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 [$\text{mg O}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}/(\text{m}^3 \cdot \text{time})$] or 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 streambed.

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 USGS 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 μ m membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

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

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, 1991, is called the "water year 1991."

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.
- 1-D2. **Guidelines for collection and field analysis of ground-water samples for selected unstable constituents**, by W.W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 p.
- 2-D1. **Application of surface geophysics to ground-water investigations**, by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 p.
- 2-D2. **Application of seismic-refraction techniques to hydrologic studies**, by F.P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 p.
- 2-E1. **Application of borehole geophysics to water-resources investigations**, by W.S. Keys and L.M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 p.
- 2-E2. **Borehole geophysics applied to ground-water investigations**, by W. Scott Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 p.
- 2-F1. **Application of drilling, coring, and sampling techniques to test holes and wells**, by Eugene Shuter and Warren E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 p.
- 3-A1. **General field and office procedures for indirect discharge 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 in streams by dye tracing**, by F.A. Kilpatrick, and J.F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 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-A18. **Determination of stream reaeration coefficients by use of tracers**, by F.A. Kilpatrick, R.E. Rathbun, N. Yotsukura, G.W. Parker, and L.L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 p.
- 3-A19. **Levels of streamflow gaging stations**, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 27 p.
- 3-B1. **Aquifer-test design, observation, and data analysis**, by R.W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 p.

- 3-B2. **Introduction to ground-water hydraulics, a programmed text for self instruction**, by G.D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 p.
- 3-B3. **Type curves for selected problems of flow to wells in confined aquifers**, by J.E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 p.
- 3-B4. **Regression modeling of ground-water flow**, by Richard L. Cooley and Richard L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 p.
- 3-B5. **Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction**, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 p.
- 3-B6. **The principle of superposition and its application in ground-water hydraulics**, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 p.
- 3-B7. **Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow**, by Eliezer J. Wexler: USGS--TWRI Book 3, Chapter B7. 1992. 90 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.
- 4-D1. **Computation of rate and volume of stream depletion by wells**, by C.T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 p.
- 5-A1. **Methods for determination of inorganic substances in water and fluvial sediments**, by M.J. Fishman and L.C. Friedman: USGS--TWRI Book 5, Chapter A1. 1989. 545 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 the determination of organic substances in water and fluvial sediments**, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 p.
- 5-A4. **Methods for collection and analysis of aquatic biological and microbiological samples**, by L.J. Britton and P.E. Greeson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 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.
- 6-A1. **A modular three-dimensional finite-difference ground-water flow model**, by M.G. McDonald and A.W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 p.
- 6-A2. **Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model**, by S.A. Leake and D.E. Prudic: USGS--TWRI Book 6, Chapter A2. 1991. 68 p.
- 6-A3. **A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual**, by L.J. Torak: USGS--TWRI Book 6, Chapter A3. 1993. 136 pages.
- 6-A4. **A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions**, by R.L. Cooley: USGS--TWRI Book 6, Chapter A4. 1992. 108 pages.
- 6-A5. **A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details**, by L.J. Torak: USGS--TWRI Book 6, Chapter A5. 1993. 243 pages.
- 7-C1. **Finite difference model for aquifer simulation in two dimensions with results of numerical experiments**, by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 p.
- 7-C2. **Computer model of two-dimensional solute transport and dispersion in ground water**, by L.F. Konikow and J.D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 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-A1. **Methods of measuring water levels in deep wells**, by M.S. Garber and F.C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 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, 5.0 mi north of junction with 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 1988 to current year.

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. No known regulation or diversions above station. Several observations of water temperature were made during the year.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 10	0930	2,150	15.97	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.49	.72	1.9	2.3	.00	.00	.00	.00	.00	2.1	.20	.55
2	.45	.62	1.9	2.5	.00	.00	.00	.00	.00	1.9	.18	.24
3	.40	.47	1.8	2.5	.00	.00	.00	.00	.00	1.6	.18	.14
4	.32	.40	1.7	2.6	.00	.00	.00	.00	.00	1.3	.28	.11
5	.32	.35	1.7	3.1	.00	.00	.00	.00	.00	.88	.25	.08
6	.32	.42	1.7	3.7	.00	.00	.00	.00	.00	1.5	.20	.06
7	.31	.49	1.7	3.6	.00	.00	.00	.00	.00	1.5	.20	.03
8	.31	.55	1.7	2.9	.00	.00	.00	.00	.00	.52	.20	.03
9	.28	.63	2.0	2.7	.00	.00	.00	.00	.00	.32	.20	.03
10	.28	.72	2.1	2.7	.00	.00	.00	.00	1520	.26	.20	.03
11	.29	.80	2.1	2.7	.00	.00	.00	.00	129	.21	.20	.03
12	.29	1.2	2.1	2.7	.00	.00	.00	.00	40	.16	.20	.04
13	.29	1.6	2.2	2.7	.00	.00	.00	.00	22	2.2	.17	.12
14	.29	1.6	3.1	2.7	.00	.00	.00	.00	15	.25	.17	.12
15	.30	1.6	3.4	2.7	.00	.00	.00	.00	14	1.3	.17	.09
16	.29	1.6	3.1	2.7	.00	.00	.00	.00	12	2.0	.15	.06
17	.29	1.6	2.9	2.7	.00	.00	.00	.00	11	.40	.15	.06
18	.29	1.6	2.9	2.7	.00	.00	.00	.00	10	.28	.17	.06
19	.39	2.1	2.9	5.1	.00	.00	.00	.00	8.6	.42	.17	.06
20	.49	2.2	2.9	6.9	.00	.00	.00	.00	7.0	110	.15	.04
21	.49	6.5	2.9	5.7	.00	.00	.00	.00	6.2	24	.14	.00
22	.49	27	2.8	4.2	.00	.00	.00	.00	7.2	8.9	.12	.00
23	.49	8.2	2.5	4.0	.00	.00	.00	.00	14	6.1	.12	.00
24	.49	6.2	2.3	3.4	.00	.00	.00	.00	9.2	3.6	.24	.16
25	.49	4.5	2.2	3.2	.00	.00	.00	.00	6.5	2.3	11	10
26	.55	3.3	2.2	.00	.00	.00	.00	.00	5.1	1.7	.79	.86
27	.63	2.6	2.2	.00	.00	.00	.00	.00	4.2	1.0	.27	.80
28	.63	2.2	2.2	.00	.00	.00	.00	.00	3.6	.50	.19	.24
29	.63	2.0	2.2	.00	.00	.00	.00	.00	3.3	.35	.11	.14
30	.63	1.9	2.2	.00	.00	.00	.00	.00	2.6	.31	.36	.08
31	.63	---	2.2	.00	.00	.00	.00	.00	---	.26	16	---
TOTAL	12.84	85.67	71.7	82.70	0.00	0.00	0.00	0.00	1850.50	219.70	33.13	14.26
MEAN	.41	2.86	2.31	2.67	.000	.000	.000	.000	61.7	7.09	1.07	.48
MAX	.63	27	3.4	6.9	.00	.00	.00	.00	1520	110	16	10
MIN	.28	.35	1.7	.00	.00	.00	.00	.00	.00	.16	.11	.00
AC-FT	25	170	142	164	.00	.00	.00	.00	3670	436	66	28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	2.84	1.58	3.83	3.36	5.51	3.87	9.97	53.3	51.9	21.8	5.75	24.8
MAX	10.6	4.71	15.6	8.42	23.8	10.0	51.5	263	166	107	15.5	49.1
(WY)	1992	1992	1992	1992	1992	1990	1990	1992	1992	1988	1991	1989
MIN	.000	.000	.000	.48	.000	.000	.000	.000	.000	.13	.28	.48
(WY)	1990	1990	1990	1991	1991	1991	1991	1993	1990	1990	1988	1993

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1988 - 1993
ANNUAL TOTAL	16132.78	2370.50	
ANNUAL MEAN	44.1	6.49	15.8
HIGHEST ANNUAL MEAN			46.2
LOWEST ANNUAL MEAN			5.99
HIGHEST DAILY MEAN	2060	1520	2060
LOWEST DAILY MEAN	.28	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.29	.00	.00
INSTANTANEOUS PEAK FLOW		2150	4010
INSTANTANEOUS PEAK STAGE		15.97	16.43
INSTANTANEOUS LOW FLOW		.00	.00
ANNUAL RUNOFF (AC-FT)	32000	4700	11480
10 PERCENT EXCEEDS	49	3.8	11
50 PERCENT EXCEEDS	5.0	.20	.52
90 PERCENT EXCEEDS	.63	.00	.00

a Result of earthen dam.

* No flow for many days most years.

COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX

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 discharges. Records good. Since July 1952, flow largely regulated by Lake J. B. Thomas (capacity, 203,600 acre-ft), 27 mi upstream. There are numerous diversions from Lake J. B. Thomas for municipal use and for oil field operations.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	6.9	5.0	14	9.2	23	14	46	3.0	.72	.00	.07
2	4.0	6.9	5.0	14	10	47	13	41	2.8	.63	.00	.06
3	4.0	6.9	5.0	15	11	32	11	42	2.4	.54	.00	.02
4	3.8	7.5	5.1	15	11	27	9.8	29	2.1	.49	.00	.09
5	3.6	7.2	5.6	13	10	23	11	21	1.9	.40	.00	.29
6	3.9	7.2	5.5	16	9.8	22	11	17	1.7	.32	.00	.30
7	4.3	7.4	5.8	13	9.4	20	12	15	1.6	.25	.00	.17
8	4.2	7.9	6.5	13	10	19	12	12	1.5	.10	.00	.11
9	4.3	8.9	7.1	14	11	19	12	9.2	2.1	.07	.00	.10
10	4.2	9.5	9.7	14	12	18	11	7.4	204	.06	.00	.08
11	4.0	11	10	13	12	17	11	7.3	116	.06	.00	.04
12	4.0	11	10	13	11	17	11	6.2	90	.06	.00	2.3
13	4.3	11	11	13	11	18	10	6.1	54	.06	.00	19
14	4.9	9.9	17	13	11	18	75	6.6	24	2.4	.00	5.8
15	4.7	11	27	13	25	18	40	5.6	13	2.1	.00	4.0
16	4.7	13	25	12	40	19	31	4.6	8.4	.74	.00	3.5
17	4.5	13	16	11	23	19	26	4.4	5.7	.55	.00	2.8
18	4.5	14	15	11	18	18	30	4.0	4.8	.39	.00	2.3
19	4.7	17	15	13	18	20	40	3.6	3.8	.41	.00	1.7
20	5.6	18	15	24	18	23	46	3.6	2.2	.42	.00	1.5
21	6.1	33	15	26	18	23	45	3.0	1.7	.21	.00	1.2
22	6.0	60	14	19	16	22	45	3.3	1.6	24	.00	1.1
23	6.0	22	14	16	15	22	47	23	1.4	6.6	.00	1.1
24	6.0	14	13	14	14	21	47	14	1.9	1.5	.00	1.0
25	5.9	11	13	12	15	21	48	7.5	1.6	.87	.00	1.0
26	5.9	5.7	13	10	16	19	46	6.2	1.2	.60	.46	1.5
27	6.1	5.3	13	8.8	15	16	46	4.0	1.1	.44	.30	3.6
28	6.0	5.0	13	8.6	15	17	44	4.3	.84	.26	.17	4.6
29	6.1	4.7	14	9.4	---	18	78	3.6	.78	.08	.05	4.2
30	6.4	4.9	15	9.2	---	18	77	3.5	.74	.00	.02	3.9
31	6.6	---	14	9.0	---	16	---	3.1	---	.00	.26	---
TOTAL	153.5	370.8	372.3	419.0	414.4	650	959.8	367.1	557.86	45.33	1.26	67.43
MEAN	4.95	12.4	12.0	13.5	14.8	21.0	32.0	11.8	18.6	1.46	.041	2.25
MAX	6.6	60	27	26	40	47	78	46	204	24	.46	19
MIN	3.6	4.7	5.0	8.6	9.2	16	9.8	3.0	.74	.00	.00	.02
AC-FT	304	735	738	831	822	1290	1900	728	1110	90	2.5	134

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1993, BY WATER YEAR (WY)

	MEAN	33.8	8.68	8.73	7.85	11.2	11.4	32.4	83.9	82.8	19.6	65.3	58.1
MAX	304	37.1	51.5	30.2	86.5	66.0	204	403	592	131	771	810	
(WY)	1987	1985	1992	1992	1992	1973	1981	1965	1982	1988	1971	1980	
MIN	.000	.092	.53	.68	.82	.20	.39	.044	.000	.000	.000	.000	
(WY)	1969	1971	1971	1971	1971	1971	1971	1967	1984	1970	1970	1983	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1965 - 1993

ANNUAL TOTAL	20950.8	4378.78	
ANNUAL MEAN	57.2	12.0	34.8
HIGHEST ANNUAL MEAN			104
LOWEST ANNUAL MEAN			4.15
HIGHEST DAILY MEAN	2030	May 26	8770
LOWEST DAILY MEAN	3.6	Oct 5	.00
ANNUAL SEVEN-DAY MINIMUM	4.0	Oct 1	.00
INSTANTANEOUS PEAK FLOW			363
INSTANTANEOUS PEAK STAGE			7.05
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	41560	8690	25190
10 PERCENT EXCEEDS	82	24	29
50 PERCENT EXCEEDS	15	7.4	4.5
90 PERCENT EXCEEDS	5.1	.07	.02

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.--From March 1965 to October 1987, specific conductance was recorded continuously at this station. From April 1983 to October 1987, water temperature was recorded continuously at this station. Since October 1989, specific conductance and water temperature are continuously recorded at this station.

REMARKS.--Estimated mean specific conductance 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, 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, 9,320 microsiemens Aug. 27; minimum, 1,120 microsiemens June 13.

WATER TEMPERATURE: Maximum, 34.0°C July 25; minimum, 2.0°C Dec. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 05...	1307	3.6	5300	18.5	1000	810	250	100	780
JAN 11...	1340	13	4840	4.0	1000	740	240	98	720
MAR 02...	1230	45	4350	11.0	1000	750	220	110	600
APR 26...	1510	46	5160	21.5	1200	890	270	120	790
JUN 21...	1352	1.6	2840	28.5	550	350	140	48	420
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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...		11	8.2	220	750	1200	0.80	11	3230
JAN 11...		10	6.2	260	850	1100	1.2	7.3	3180
MAR 02...		8	6.7	250	850	890	1.0	6.4	2830
APR 26...		10	7.9	280	950	1100	1.3	4.5	3410
JUN 21...		8	8.5	190	350	640	0.70	13	1740
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. 1992	153.5	5260	3290	1360	1200	495	780	325	970
NOV. 1992	370.8	5260	3290	3290	1200	1200	780	784	970
DEC. 1992	372.3	5000	3120	3140	1100	1130	750	757	930
JAN. 1993	419.0	4820	3010	3410	1100	1220	730	827	900
FEB. 1993	414.4	4830	3020	3370	1100	1210	730	819	900
MAR. 1993	650	4760	2980	5220	1100	1860	720	1270	890
APR. 1993	959.8	4860	3040	7870	1100	2830	730	1900	910
MAY 1993	367.1	4580	2870	2840	1000	1010	700	695	870
JUNE 1993	557.86	2550	1600	2410	530	797	420	629	510
JULY 1993	45.33	4480	2800	343	990	121	680	84	850
AUG. 1993	1.26	6900	4280	15	1700	5.7	950	3.2	1200
SEPT 1993	67.43	3150	1980	360	670	121	510	92	620
TOTAL	4378.78	**	**	33600	**	12000	**	8190	**
WTD. AVG.	12	4550	2840	**	1000	**	690	**	860

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	5580	5250	5390	5730	5610	5670	5060	4890	4960	5020	4890	4960
2	5490	5260	5360	5740	5650	5700	5190	5060	5120	5010	4930	4960
3	5620	5390	5530	5740	5620	5690	5360	5190	5320	5010	4800	4930
4	5730	5400	5530	5910	5620	5780	5440	5360	5410	4890	4800	4830
5	5630	5300	5440	5590	4890	5130	5490	5360	5430	4920	4800	4850
6	5550	5470	5510	5590	5180	5430	5370	5290	5350	4960	4880	4920
7	5590	5030	5280	5600	5470	5540	5370	5330	5350	4920	3610	4540
8	4990	4750	4830	5520	5480	5500	5380	5220	5290	4880	4830	4870
9	4790	4670	4730	5560	5480	5510	5300	5090	5180	4920	4790	4860
10	4750	4630	4690	5610	5400	5510	5140	5020	5080	4910	4870	4890
11	4790	4590	4680	5410	5240	5350	5020	4820	4910	4910	4830	4860
12	5030	4790	4910	5490	5290	5360	5110	4940	5030	4920	4800	4850
13	5110	4950	5030	5700	5460	5530	5240	4990	5090	4930	4850	4900
14	5150	4910	5060	5830	5620	5710	5370	4870	5120	4900	4850	4880
15	4910	4710	4790	6080	5870	5980	5250	4500	4870	4940	4860	4910
16	4960	4750	4840	6080	5450	5690	4800	4550	4690	4950	4860	4910
17	5040	4920	4950	5490	5370	5420	4930	4350	4650	4950	4790	4870
18	5120	5000	5050	5700	5370	5440	4970	4430	4740	4830	4750	4800
19	5520	5080	5240	5820	5420	5530	5130	4960	5040	5000	4680	4810
20	5600	5280	5510	5710	5540	5610	5210	5000	5140	4840	4560	4700
21	5280	4960	5060	5790	4130	5380	5130	5000	5090	4600	4160	4320
22	5080	4960	5010	6490	3690	5190	5040	4960	5000	4770	4450	4640
23	5170	4930	5070	4300	2590	3400	5040	4910	4970	4940	4770	4840
24	5260	5170	5230	4990	4340	4770	4950	4910	4950	4980	4870	4930
25	5580	5260	5400	4910	4140	4520	4990	4910	4950	4990	4830	4880
26	5830	5580	5730	5080	4960	4990	5030	4950	4990	5040	4960	5000
27	5870	5630	5760	5250	5000	5170	5110	5030	5070	4960	4800	4900
28	5710	5510	5620	5330	5250	5290	5110	5020	5070	4890	4800	4860
29	5760	5600	5690	5330	5250	5290	5020	4940	5000	4930	4810	4870
30	5760	5650	5710	5300	4890	5110	5020	4940	4980	4940	4850	4890
31	5730	5690	5710	---	---	---	5020	4930	4980	4990	4900	4950
MONTH	5870	4590	5240	6490	2590	5340	5490	4350	5060	5040	3610	4840
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5030	4950	5000	5190	4890	5030	4930	4810	4900	5680	4780	5270
2	5040	4920	4970	5060	4010	4510	5000	4960	4980	5550	4410	4920
3	4920	4840	4880	4800	4570	4660	5150	4960	5080	4630	3820	4100
4	4880	4760	4840	4950	4260	4760	5190	5080	5120	4390	4090	4290
5	4850	4810	4830	4910	4260	4660	5120	4890	5020	4110	4010	4060
6	4860	4730	4810	4990	4870	4950	5000	4890	4950	4200	4110	4150
7	4860	4780	4820	4950	4680	4810	5000	4920	4970	4550	4160	4380
8	4910	4790	4840	4790	4560	4690	5000	4930	4980	4820	4510	4650
9	4880	4750	4820	4640	4530	4600	4930	4850	4900	5010	4830	4910
10	4840	4800	4820	4750	4640	4700	4930	4820	4850	5200	4890	5000
11	4890	4800	4830	4790	4720	4760	4930	4860	4900	5200	4990	5100
12	4900	4810	4860	4870	4790	4820	4900	4820	4860	5080	4950	5000
13	4940	4820	4890	4870	4680	4770	4940	4220	4860	5100	4960	5040
14	4910	4820	4860	4830	4710	4780	4180	1970	3140	5070	4810	4980
15	5080	4710	4850	4860	4790	4820	4860	3720	4270	4990	4820	4930
16	5380	4000	4460	4860	4790	4830	4640	3800	4250	5060	4830	4970
17	4560	4340	4470	4860	4710	4800	4710	4260	4570	5290	5060	5170
18	4850	3850	4240	4790	4710	4750	4180	4030	4100	5210	5040	5120
19	5020	4730	4920	4780	4710	4750	4380	4110	4250	5190	5100	5150
20	5270	4770	5100	4820	4670	4750	4840	4340	4590	5200	4890	5090
21	5230	4980	5110	4710	4630	4680	5030	4840	4930	5170	4900	5000
22	5020	4850	4940	4750	4630	4700	5260	4950	5130	4920	4780	4860
23	4940	4850	4880	4860	4710	4770	5300	5180	5240	4930	3540	4290
24	4940	4850	4900	4820	4710	4760	5640	5300	5460	4000	3460	3750
25	5020	4890	4930	4780	4700	4750	5760	5640	5690	3930	3830	3910
26	5100	5020	5060	4860	4780	4810	5720	5340	5550	4120	3620	3930
27	5060	5020	5040	4930	4820	4900	5530	5330	5390	4360	4120	4230
28	5140	5020	5080	4970	4820	4920	5380	5130	5370	4560	4320	4410
29	---	---	---	4890	4820	4870	5470	3540	4600	4940	4560	4740
30	---	---	---	4890	4820	4860	7100	3920	5740	4960	4780	4880
31	---	---	---	4890	4810	4860	---	---	---	4820	4420	4580
MONTH	5380	3850	4860	5190	4010	4780	7100	1970	4890	5680	3460	4670

COLORADO RIVER MAIN STEM

29

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	4420	4290	4360	5050	4560	4850	---	---	---	5010	4760	4870
2	4410	4170	4280	5280	5050	5150	---	---	---	4900	4670	4760
3	4540	4180	4430	5350	5160	5260	---	---	---	4950	4770	4840
4	4640	4470	4570	5410	5230	5330	---	---	---	5090	4820	4960
5	4740	4640	4680	5430	5290	5340	---	---	---	7330	4920	5620
6	4880	4740	4800	5630	5350	5460	---	---	---	7950	6850	7430
7	5020	4880	4930	5820	5550	5660	---	---	---	6850	6150	6420
8	5150	4980	5070	6240	5820	5960	---	---	---	6160	5790	6070
9	5300	4880	5090	6390	6070	6220	---	---	---	6310	6120	6190
10	5640	1440	2650	6500	6220	6340	---	---	---	6320	6220	6280
11	4460	2190	3130	6690	6410	6530	---	---	---	6380	6240	6300
12	4470	1160	2380	6800	6570	6680	---	---	---	6380	2870	5220
13	1250	1120	1180	6690	6580	6630	---	---	---	4220	1850	2870
14	1510	1250	1360	7730	4080	6160	---	---	---	---	---	e2800
15	1720	1460	1580	5360	2730	4350	---	---	---	---	---	e2800
16	1940	1720	1830	3780	2090	2570	---	---	---	---	---	e2900
17	2290	1940	2070	6530	3780	5360	---	---	---	---	---	e3000
18	2390	2210	2280	7500	6530	7150	---	---	---	---	---	e3100
19	2620	2350	2490	7590	6830	7330	---	---	---	---	---	e3200
20	2810	2620	2690	6830	6190	6480	---	---	---	---	---	e3300
21	3150	2810	2920	6190	5960	6070	---	---	---	---	---	e3300
22	3500	3150	3290	6470	1880	4130	---	---	---	---	---	e3400
23	3730	3460	3600	5320	3620	4740	---	---	---	---	---	e3400
24	3740	3500	3640	4820	3670	4140	---	---	---	---	---	e3500
25	3610	3470	3540	3670	3350	3460	---	---	---	---	---	e3500
26	3610	3190	3330	3350	3300	3340	8390	3470	5400	---	---	e3400
27	3650	3240	3470	3440	3210	3320	9320	8390	9000	---	---	e3300
28	3880	3650	3760	3580	3390	3460	8970	8600	8840	---	---	e3000
29	4200	3880	4040	3580	3400	3480	8600	8430	8500	---	---	e3100
30	4560	4160	4360	3580	3530	3560	6880	6440	6610	---	---	e3100
31	---	---	---	---	---	---	6530	4950	5570	---	---	---
MONTH	5640	1120	3390	7730	1880	5150	9320	3470	7320	7950	1850	4200
YEAR	9320	1120	4810									

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	9.0	4.5	6.5	12.5	8.0	9.5	19.5	13.5	16.5	25.5	19.5	22.0
2	10.0	6.0	8.0	13.5	9.0	11.0	19.0	13.0	16.0	21.5	17.5	19.5
3	11.0	8.0	9.5	13.5	9.0	11.5	21.0	14.5	17.5	23.0	16.5	20.0
4	10.0	8.0	9.0	11.5	9.0	10.5	18.5	13.5	16.0	25.5	19.0	22.0
5	10.0	7.0	8.5	12.5	7.5	10.0	19.5	13.0	16.0	25.5	21.5	23.5
6	10.0	6.0	8.0	12.0	8.0	10.0	21.5	15.0	18.0	27.0	20.5	23.5
7	9.5	5.5	7.5	14.0	8.0	10.5	21.5	16.0	19.0	27.0	22.5	24.5
8	10.5	5.5	8.0	15.5	9.5	12.5	18.5	14.5	16.0	27.0	21.5	24.0
9	11.5	8.0	10.0	17.0	11.0	14.0	19.5	11.5	15.5	25.5	21.5	23.5
10	12.0	8.5	10.5	15.0	12.0	13.5	21.5	13.5	17.5	23.5	18.5	21.0
11	11.0	8.0	9.5	12.5	10.0	11.5	23.5	15.5	19.0	23.0	17.5	20.5
12	11.0	6.5	9.0	10.5	6.5	8.5	25.0	17.5	21.0	22.0	18.0	20.0
13	11.0	7.0	9.0	10.0	4.0	7.0	26.0	19.5	23.0	24.5	17.5	21.0
14	9.5	7.5	8.5	10.0	5.5	8.0	16.5	13.0	14.0	26.0	19.5	22.5
15	10.5	6.5	8.5	15.0	8.0	11.0	17.5	11.5	14.0	26.5	20.5	24.0
16	8.5	6.5	7.5	16.5	10.5	13.5	19.0	13.0	16.0	26.5	20.5	24.0
17	6.0	3.5	4.5	14.5	10.5	12.5	22.0	15.5	18.5	25.5	23.0	24.5
18	5.5	3.0	4.0	13.5	10.5	12.0	23.0	16.5	20.0	25.5	21.0	23.5
19	9.5	4.0	6.5	13.0	12.0	12.5	24.0	17.5	20.5	25.5	19.5	22.5
20	11.5	7.5	9.5	14.5	11.0	12.5	22.0	16.5	19.5	27.0	21.5	24.0
21	13.5	9.0	11.0	13.0	11.5	12.5	22.0	16.0	19.0	24.5	22.5	23.5
22	12.5	9.0	11.0	14.0	12.5	13.0	22.5	16.5	19.5	23.5	21.0	22.5
23	11.5	8.5	10.5	16.5	10.0	13.0	21.5	18.0	20.0	27.0	21.0	24.0
24	10.0	8.5	9.0	20.0	12.5	16.0	24.0	17.5	20.5	27.0	22.0	24.5
25	13.0	8.0	10.0	20.5	14.5	17.5	23.0	18.0	21.0	28.0	22.0	25.0
26	11.0	7.0	9.5	19.5	14.5	17.0	23.5	18.0	21.0	27.5	22.5	25.5
27	10.5	7.5	9.0	20.5	15.0	18.0	22.0	19.0	20.5	28.0	22.5	25.5
28	9.5	8.0	8.5	21.5	16.0	19.0	23.5	19.5	21.5	27.5	22.5	25.5
29	---	---	---	20.5	16.0	18.5	22.5	19.5	21.0	27.5	23.5	25.5
30	---	---	---	20.5	15.0	17.5	23.5	19.5	21.5	29.0	23.0	26.0
31	---	---	---	20.5	14.5	17.5	---	---	---	29.0	23.5	26.5
MONTH	13.5	3.0	8.5	21.5	4.0	13.0	26.0	11.5	18.5	29.0	16.5	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	28.5	24.0	26.0	31.0	26.0	28.0	---	---	---	24.5	19.5	21.5
2	28.5	23.5	26.0	32.0	25.							

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 Company 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 July 1952, flow largely regulated by Lake J. B. Thomas (capacity, 203,600 acre-ft) 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 for oil field operations.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--6 years (water years 1947-52) prior to completion of Lake J.B. Thomas, 85.4 ft³/s (61,870 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1947-52).--Maximum discharge, 24,900 ft³/s July 6, 1948 (gage height, 22.37 ft, from floodmark); 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.24	.32	1.5	1.3	14	1.5	1.6	18	.47	.12	.09	.36
2	.24	.28	1.1	1.2	19	17	.92	27	.46	.11	.09	.20
3	.24	.24	1.0	1.2	19	3.8	.92	27	.25	.18	.12	.12
4	.24	.23	1.1	1.2	19	1.0	.77	17	.24	.37	.09	.09
5	.24	.24	.92	1.2	19	18	.62	1.7	.32	.12	.09	.09
6	.24	.29	.92	1.8	18	22	.86	6.6	.43	.08	.09	.09
7	.25	1.7	.92	1.5	13	21	.73	13	.48	.17	.14	.09
8	.22	8.3	.94	19	1.6	21	.55	1.8	.35	.15	.15	.09
9	.41	8.9	1.2	20	.39	21	.41	2.9	.53	.12	.13	.09
10	.41	9.2	1.1	19	.42	20	.85	1.5	72	.06	.11	.09
11	.41	10	1.0	19	.41	19	14	1.2	204	.07	.09	.09
12	.41	9.9	1.3	20	.89	19	15	2.4	111	.08	.11	.11
13	.41	9.4	1.7	19	.54	12	14	1.8	58	.07	.10	.28
14	.41	9.2	1.9	19	.70	1.4	59	1.9	35	.07	.11	.34
15	.37	9.2	25	19	.95	1.1	7.9	1.9	26	.05	.12	.21
16	.35	9.8	27	18	.28	.92	3.6	1.6	17	.53	.10	.15
17	.34	10	21	19	36	.92	23	1.3	13	.46	.12	.15
18	.41	12	20	19	25	.99	19	1.3	13	.19	.12	.15
19	.53	14	19	14	23	1.2	17	1.2	2.2	.15	.12	.15
20	.46	13	18	2.0	22	1.2	11	1.2	.92	.11	.09	.15
21	.31	28	17	4.9	21	1.2	1.1	1.2	.62	3.1	.08	.15
22	.21	53	18	2.6	20	3.3	.58	713	.46	5.4	.09	.15
23	.24	46	17	1.5	19	21	.46	7.6	.38	.54	.13	.15
24	.22	28	17	1.2	12	21	.41	1.3	.32	.15	.14	.15
25	.24	21	17	4.8	1.7	13	.41	.62	.21	.53	.12	.40
26	.23	19	16	18	1.2	1.4	.41	.62	.15	1.2	.12	.37
27	.15	16	16	18	11	1.5	.41	.49	.14	.28	.09	.21
28	.15	15	17	18	1.7	17	6.5	.41	.14	.15	.09	.17
29	.18	15	12	19	---	18	3.4	.46	.13	.15	.09	.24
30	.20	11	1.8	19	---	18	48	.80	.13	.15	.19	.24
31	.26	---	1.4	19	---	14	---	.41	---	.14	1.1	---
TOTAL	9.22	388.20	296.80	361.4	320.78	333.43	253.41	859.21	558.33	15.05	4.42	5.32
MEAN	.30	12.9	9.57	11.7	11.5	10.8	8.45	27.7	18.6	.49	.14	.18
MAX	.53	53	27	20	36	22	59	713	204	5.4	1.1	.40
MIN	.15	.23	.92	1.2	.28	.92	.41	.41	.13	.05	.08	.09
AC-FT	18	770	589	717	636	661	503	1700	1110	30	8.8	11

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993#, BY WATER YEAR (WY)

MEAN	42.1	7.96	6.38	5.00	10.2	8.46	40.6	109	82.4	23.0	44.7	64.5
MAX	339	61.1	49.6	33.6	99.0	88.3	332	1047	745	197	684	817
(WY)	1987	1985	1992	1992	1957	1973	1957	1957	1982	1961	1971	1962
MIN	.000	.000	.026	.051	.061	.000	.010	.001	.000	.000	.000	.000
(WY)	1969	1956	1955	1971	1971	1956	1955	1970	1953	1974	1954	1954

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1953 - 1993#
ANNUAL TOTAL	20061.51	3405.57	
ANNUAL MEAN	54.8	9.33	37.1
HIGHEST ANNUAL MEAN			143
LOWEST ANNUAL MEAN			.41
HIGHEST DAILY MEAN	1760 May 28	713 May 22	9560 May 25 1957
LOWEST DAILY MEAN	.15 Oct 27	.05 Jul 15	.00 Oct 4 1952
ANNUAL SEVEN-DAY MINIMUM	.20 Oct 24	.07 Jul 9	.00 Oct 4 1952
INSTANTANEOUS PEAK FLOW		1860 May 22	a/13000 May 25 1957
INSTANTANEOUS PEAK STAGE		14.65 May 22	27.81 Sep 29 1980
INSTANTANEOUS LOW FLOW		.03 Aug 20	.00 at times
ANNUAL RUNOFF (AC-FT)	39790	6750	26870
10 PERCENT EXCEEDS	86	19	28
50 PERCENT EXCEEDS	9.8	1.0	.70
90 PERCENT EXCEEDS	.41	.12	.00

Period of regulated streamflow.

a/ See EXTREMES FOR PERIOD PRIOR TO REGULATION paragraph in manuscript.

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, 32,900 microsiemens Sept. 27; minimum daily, 1,950 microsiemens June 11.

WATER TEMPERATURE: Maximum daily, 34.5°C July 29; minimum daily, 3.5°C Jan. 10, 11.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
OCT 21...	1700	0.36	16400	23.5	1500	1300	350	160	3400
DEC 18...	1200	19	5810	7.0	1100	830	240	110	930
FEB 18...	1410	24	5620	5.0	1100	810	240	110	830
APR 07...	1400	1.0	6110	23.0	1200	920	250	130	1000
JUN 03...	1155	0.27	7800	27.5	1100	820	240	120	1500
JUL 20...	0745	0.18	7480	25.0	930	770	190	110	1400

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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 21...	38	14	190	1900	4800	1.3	3.5	10700
DEC 18...	12	7.3	220	900	1400	0.90	4.4	3730
FEB 18...	11	6.0	240	920	1200	1.0	4.4	3450
APR 07...	13	6.8	240	1300	1200	1.3	3.4	4030
JUN 03...	20	8.0	270	1500	1700	1.0	9.6	5240
JUL 20...	20	10	160	1300	1600	0.90	8.5	4710

COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

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. 1992	9.22	14300	9160	228	4000	100	1700	43	*
NOV. 1992	388.20	6430	4060	4260	1600	1680	910	953	840
DEC. 1992	296.80	6510	4110	3290	1600	1300	920	740	860
JAN. 1993	361.4	6340	4000	3900	1600	1530	900	882	840
FEB. 1993	320.78	5920	3730	3230	1500	1260	850	737	790
MAR. 1993	333.43	6330	3990	3590	1600	1410	900	813	840
APR. 1993	253.41	6130	3870	2650	1500	1040	880	600	810
MAY 1993	859.21	3790	2380	5520	900	2100	560	1300	520
JUNE 1993	558.33	2860	1790	2700	670	1010	430	650	400
JULY 1993	15.05	6490	4100	167	1600	66	910	37	850
AUG. 1993	4.42	18500	12000	143	5600	66	2000	24	*
SEPT 1993	5.32	28700	18900	271	9600	138	2500	36	*
TOTAL	3405.57	**	**	29900	**	11700	**	6820	**
WTD.AVG.	9.3	5170	3260	**	1300	**	740	**	690

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9140	18000	5960	5880	6010	6080	6260	5550	7470	5820	e13000	24400
2	9540	18600	6020	e5850	6030	6140	6200	5250	7600	5930	13300	24800
3	9990	19000	6060	e5800	6070	6000	e6200	6660	7790	e6000	13600	25300
4	10400	19200	6020	5750	6120	6100	6150	5830	7760	e6000	14000	25500
5	10900	19300	e6000	5830	6170	6260	6190	5890	e7800	6240	14500	25800
6	11300	19400	e5970	6260	6230	e6100	6190	5990	e7800	6320	15200	25900
7	11800	e17000	5940	7970	6170	e6000	6080	6440	7830	6500	15300	25900
8	12200	e12000	6080	8500	6150	5920	5920	e6400	7900	6600	15600	e26000
9	12500	9790	5900	7000	6130	5780	6280	e6350	7660	6720	17400	e26000
10	e12800	7960	6280	6140	6190	5970	e6500	6260	4250	6810	17600	e26000
11	e13200	7850	6350	5930	6320	6190	e7000	6280	1950	6920	17600	e26000
12	13600	7650	6320	6010	6300	6170	7610	6340	3130	6990	17500	e26500
13	14100	7450	6190	6020	e6500	e6000	7030	6780	4000	6940	17200	e27000
14	14500	7530	7000	6020	e5600	e5900	6170	7310	2210	e7000	e17000	e28000
15	14800	7470	9200	6010	4600	e5800	5600	7800	2080	e7000	e16500	e29000
16	14900	7400	8080	e6020	5200	5740	4740	7930	2600	e6500	16400	e29500
17	15100	7230	6080	e6030	6500	5870	4290	8000	3080	e6700	15900	29500
18	15300	7120	5830	6040	5650	5870	5000	8020	3480	e7000	15600	29100
19	15700	6950	e5850	5930	5410	5840	5750	8270	e4000	e7200	15400	29000
20	16100	6990	e5900	5100	5410	5860	5610	8360	e4200	7480	15300	29000
21	16400	e6000	e5950	6740	5620	5900	5700	8420	4410	e6000	15000	28900
22	16500	e5000	e6000	8520	5380	6200	5800	e3300	4650	e5000	14800	29200
23	16700	5100	e6050	7800	5970	7800	5830	e5800	4860	5580	14600	29700
24	e16800	5750	e6100	e7500	5910	7250	e5900	7720	4990	6090	14100	29500
25	e16900	6030	e6150	e8500	5880	6110	e6000	7770	5120	6400	13600	e31000
26	17100	5880	e6200	e7000	5900	6000	6120	7680	5260	11400	13100	e32000
27	17400	5580	6250	e6200	e6000	e6000	6210	7650	5370	10800	14100	32900
28	17500	5620	6220	6140	6040	e7000	7100	7630	5480	10900	e15000	32100
29	17300	6030	6220	6000	---	6420	7030	7590	5580	11000	e16000	31500
30	17200	6000	6100	e6000	---	6340	6690	5810	5710	11900	19100	31200
31	17400	---	5890	6000	---	6320	---	7260	---	12100	27300	---
MEAN	14400	9700	6260	6470	5910	6160	6100	6850	5200	7410	15800	28200

e Estimated

COLORADO RIVER MAIN STEM

35

08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.5	15.0	5.5	4.5	6.0	14.0	20.0	20.0	25.5	31.0	---	24.5
2	16.0	12.5	5.5	---	9.0	10.0	13.0	16.0	30.0	26.0	25.5	22.0
3	17.0	12.5	9.5	---	12.0	12.0	---	20.5	30.5	---	25.5	21.5
4	16.0	12.0	6.5	10.5	9.0	7.5	13.0	20.0	22.0	---	31.5	22.5
5	15.0	12.0	---	6.5	9.0	8.5	18.0	22.5	---	24.5	25.0	22.5
6	16.0	9.5	---	10.5	8.5	---	16.0	28.0	---	27.0	24.0	22.0
7	16.0	---	4.5	10.0	9.0	---	14.0	26.0	24.5	33.0	24.5	22.5
8	19.5	---	8.0	9.0	6.0	15.5	12.0	---	27.0	25.0	25.5	---
9	12.5	16.5	13.0	9.5	11.5	14.0	16.0	---	20.5	25.0	31.0	---
10	---	18.5	11.5	3.5	11.5	13.0	---	23.5	22.0	25.0	27.0	---
11	---	22.0	11.0	3.5	13.0	12.0	---	19.5	22.0	27.0	27.0	---
12	16.0	14.5	9.5	6.0	5.5	8.0	20.0	20.5	23.0	26.0	32.5	---
13	19.0	10.5	10.5	7.0	---	---	21.5	20.0	24.5	28.0	26.0	---
14	22.0	10.5	5.5	8.5	---	---	15.5	20.0	29.0	---	---	---
15	22.0	11.0	6.0	6.5	6.5	---	13.0	21.5	25.0	---	---	---
16	19.5	13.0	9.0	---	6.0	13.5	14.0	23.0	24.0	---	32.0	---
17	13.5	15.0	9.0	---	6.0	11.5	16.0	26.0	24.0	---	26.5	18.0
18	15.5	15.0	6.5	7.5	4.5	12.5	18.0	22.5	24.5	---	33.0	22.0
19	17.0	14.0	---	4.5	5.0	13.0	21.5	28.5	---	---	23.0	24.0
20	19.5	11.5	---	10.5	9.0	11.5	16.0	29.0	---	---	23.0	30.0
21	21.5	---	---	8.0	11.0	12.5	21.0	22.0	28.0	---	26.0	26.0
22	21.0	---	---	8.0	10.0	14.0	22.0	---	28.0	---	24.5	30.0
23	18.5	9.0	---	10.5	10.0	12.5	18.0	---	32.5	25.0	32.0	30.0
24	---	8.0	---	---	10.0	12.0	---	27.0	27.0	26.5	26.0	25.0
25	---	13.0	---	---	15.0	20.0	---	24.5	27.0	28.0	31.0	---
26	17.5	5.0	---	---	7.0	14.5	20.0	30.5	26.0	30.5	30.5	---
27	17.0	4.5	6.5	---	---	---	20.5	24.0	25.0	26.5	24.0	25.0
28	22.0	4.5	10.0	10.0	7.0	---	20.0	23.0	25.5	26.0	---	18.5
29	16.0	6.5	12.5	6.5	---	18.5	20.0	23.0	27.0	34.5	---	23.5
30	16.0	5.5	13.0	---	---	17.0	20.5	23.5	27.0	33.5	26.0	20.0
31	16.5	---	8.5	6.0	---	19.5	---	23.5	---	27.0	21.0	---
MEAN	17.6	11.6	8.6	7.6	8.7	13.2	17.6	23.3	25.8	27.7	27.1	23.7

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.

Water-quality records.--Chemical analyses: October 1969 to September 1984.

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 (capacity 42,500 acre-ft), 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, 27,740 acre-ft Oct. 1 at 0000 hours (elevation, 2,068.89 ft); minimum, 25,390 acre-ft Aug. 29 (elevation, 2,065.91 ft).

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

2,065.0	24,140	2,068.0	28,400
2,066.0	25,510	2,069.0	29,910
2,067.0	26,930		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29710	28780	28210	27910	27690	27470	26900	26330	25540	26060	25840	25640
2	29670	28730	28180	27910	27660	27370	26870	26290	25500	26040	25840	25650
3	29640	28690	28180	27900	27710	27440	26890	26260	25470	25980	25810	25620
4	29610	28640	28140	27890	27690	27430	26840	26220	25460	25950	25790	25620
5	29560	28600	28120	27870	27680	27420	26820	26190	25460	25940	25820	25640
6	29520	28570	28110	27870	27660	27400	26820	26160	25440	25910	25820	25620
7	29460	28540	28090	27870	27660	27390	26750	26120	25460	25880	25770	25620
8	29410	28510	28110	27870	27650	27370	26700	26060	25440	25840	25750	25620
9	29380	28490	28090	27860	27650	27340	26690	26020	25510	25810	25750	25620
10	29340	28490	28080	27830	27650	27310	26660	25990	25520	25790	25740	25620
11	29290	28480	28050	27810	27620	27280	26650	25940	26060	25810	25720	25600
12	29280	28430	28050	27800	27560	27250	26620	25880	26090	25850	25710	25610
13	29230	28400	28110	27780	27550	27220	26630	25850	26110	25840	25680	25680
14	29230	28400	28090	27770	27580	27180	26630	25820	26120	25820	25670	25650
15	29200	28370	28060	27770	27610	27190	26600	25780	26120	25820	25640	25650
16	29140	28340	28050	27750	27580	27180	26560	25740	26120	25860	25620	25640
17	29120	28330	28030	27750	27550	27170	26520	25720	26120	25860	25600	25640
18	29090	28400	28030	27740	27530	27150	26490	25680	26120	25850	25580	25640
19	29060	28390	28020	27780	27520	27150	26450	25640	26130	25860	25550	25640
20	29050	28370	28000	27800	27530	27150	26400	25610	26150	25810	25540	25650
21	29030	28480	28000	27800	27520	27150	26360	25570	26150	25840	25510	25650
22	29020	28430	27990	27770	27520	27060	26320	25780	26150	25850	25480	25640
23	29000	28420	27970	27770	27500	27060	26290	25790	26150	25850	25470	25620
24	28990	28370	27960	27750	27500	27060	26250	25750	26130	25850	25460	25640
25	28970	28330	27940	27740	27490	27060	26210	25720	26130	25910	25440	25710
26	28940	28300	27930	27740	27470	27030	26160	25680	26160	25890	25410	25690
27	28910	28270	27930	27710	27460	27030	26140	25640	26150	25880	25410	25690
28	28900	28250	27910	27710	27460	26990	26230	25600	26130	25880	25410	25680
29	28880	28240	27930	27690	---	26960	26330	25680	26110	25880	25390	25640
30	28870	28220	27930	27680	---	26940	26320	25650	26080	25880	25550	25580
31	28840	---	27900	27680	---	26920	---	25610	---	25860	25640	---
MAX	29710	28780	28210	27910	27710	27470	26900	26330	26160	26060	25840	25710
MIN	28840	28220	27900	27680	27460	26920	26140	25570	25440	25790	25390	25580
(†)	2068.29	2067.88	2067.66	2067.51	2067.36	2066.99	2066.57	2066.07	2066.40	2066.25	2066.09	2066.05
(Φ)	-900	-620	-320	-220	-220	-540	-600	-710	+470	-220	-220	-60
CAL YR 1992	MAX	38040	MIN	24780	(Φ)	+3100						
WTR YR 1993	MAX	29710	MIN	25390	(Φ)	-4160						

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

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.--No estimated daily discharges. Records good. Low flow is affected by diversion upstream from station.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 29	2215	849	8.66	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.4	1.7	1.9	1.6	2.2	1.7	61	7.9	.18	.19	41
2	1.5	1.4	1.6	1.9	1.4	5.4	1.8	27	3.3	.17	.15	5.8
3	1.4	1.5	1.7	1.9	1.5	8.5	1.6	16	1.7	.16	.14	1.3
4	1.3	1.5	1.8	1.9	1.3	3.9	1.5	14	1.3	.15	.14	.42
5	1.2	1.6	1.6	1.9	1.2	2.8	1.4	11	1.2	.15	.12	.22
6	1.2	1.9	1.7	1.8	1.1	2.3	1.5	130	1.1	.15	.14	.12
7	1.4	2.0	1.8	1.8	1.1	2.1	1.4	404	1.0	.14	.18	.09
8	1.5	2.3	1.9	1.7	1.0	2.1	1.2	87	.92	.13	.16	.07
9	1.5	2.8	1.9	1.8	1.1	2.1	1.3	60	.98	.12	.13	.05
10	1.5	2.8	1.9	1.7	1.2	2.0	1.3	50	67	.13	.12	.05
11	1.5	2.7	1.9	1.6	1.1	1.9	1.2	41	80	.13	.11	.04
12	1.6	2.3	2.0	1.6	1.0	2.0	1.1	31	45	.14	.11	.04
13	1.7	2.1	2.1	1.5	1.1	1.9	1.1	23	12	.66	.10	.07
14	1.5	2.0	2.6	1.6	.91	2.1	1.9	16	5.3	.17	.10	.16
15	1.5	2.2	3.6	1.6	1.6	2.1	1.9	12	3.0	.15	.10	.06
16	1.4	2.4	3.8	1.5	5.9	2.1	11	8.5	2.0	.25	.10	.05
17	1.4	2.4	3.3	1.4	8.9	2.1	5.0	5.8	1.4	.21	.09	.04
18	1.4	2.6	2.5	1.5	3.8	2.1	3.1	4.5	1.5	.15	.09	.04
19	1.5	3.1	2.2	1.8	2.5	2.2	1.9	3.7	1.4	.11	.08	.04
20	1.5	3.0	1.9	2.3	2.1	2.2	1.5	3.6	.94	140	.09	.04
21	1.7	3.2	1.8	6.0	2.1	2.4	1.2	3.4	.81	27	.09	.04
22	1.7	3.3	1.7	4.3	2.1	2.6	1.1	6.4	.70	8.6	.09	.03
23	1.7	4.2	1.6	2.3	2.1	2.5	.92	29	.57	38	.09	.03
24	1.8	3.9	1.5	1.7	5.0	2.5	.90	23	.45	8.1	.10	.03
25	1.7	2.4	1.6	1.5	5.6	2.4	.85	7.3	.38	5.5	.10	1.2
26	1.5	1.8	1.5	1.4	1.3	2.1	.84	6.3	.33	5.3	.21	10
27	1.6	1.6	1.5	1.2	1.7	2.0	.86	2.8	.30	4.7	.24	2.0
28	1.6	1.6	1.6	1.2	1.7	1.9	.93	2.5	.26	1.3	.16	.46
29	1.5	1.6	1.7	1.5	---	1.9	396	2.5	.22	.60	.12	.22
30	1.5	1.6	1.8	1.5	---	1.7	486	34	.20	.35	.18	.12
31	1.5	---	1.8	1.6	---	1.7	---	19	---	.24	138	---
TOTAL	46.9	69.2	61.6	58.9	63.01	77.8	934.00	1145.3	243.16	254.03	141.82	63.83
MEAN	1.51	2.31	1.99	1.90	2.25	2.51	31.1	36.9	8.11	8.19	4.57	2.13
MAX	1.8	4.2	3.8	6.0	8.9	8.5	486	404	80	140	138	41
MIN	1.2	1.4	1.5	1.2	.91	1.7	.84	2.5	.20	.12	.08	.03
AC-FT	93	137	122	117	125	154	1850	2270	482	504	281	127

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	MIN	WY	MEAN	MAX	MIN	WY	MEAN	MAX	MIN	WY	MEAN	MAX	MIN	WY	MEAN	MAX	MIN	WY
1959	45.0	572	.000	1987	6.70	29.4	.060	1987	6.18	49.2	.12	1990	5.81	47.0	.10	1959	8.76	94.9	.13	1986
1960	45.0	572	.000	1988	6.70	29.4	.060	1988	6.18	49.2	.12	1991	5.81	47.0	.10	1960	8.76	94.9	.13	1987
1961	45.0	572	.000	1989	6.70	29.4	.060	1989	6.18	49.2	.12	1992	5.81	47.0	.10	1961	8.76	94.9	.13	1988
1962	45.0	572	.000	1990	6.70	29.4	.060	1990	6.18	49.2	.12	1993	5.81	47.0	.10	1962	8.76	94.9	.13	1989
1963	45.0	572	.000	1991	6.70	29.4	.060	1991	6.18	49.2	.12	1994	5.81	47.0	.10	1963	8.76	94.9	.13	1990
1964	45.0	572	.000	1992	6.70	29.4	.060	1992	6.18	49.2	.12	1995	5.81	47.0	.10	1964	8.76	94.9	.13	1991
1965	45.0	572	.000	1993	6.70	29.4	.060	1993	6.18	49.2	.12	1996	5.81	47.0	.10	1965	8.76	94.9	.13	1992
1966	45.0	572	.000	1994	6.70	29.4	.060	1994	6.18	49.2	.12	1997	5.81	47.0	.10	1966	8.76	94.9	.13	1993
1967	45.0	572	.000	1995	6.70	29.4	.060	1995	6.18	49.2	.12	1998	5.81	47.0	.10	1967	8.76	94.9	.13	1994
1968	45.0	572	.000	1996	6.70	29.4	.060	1996	6.18	49.2	.12	1999	5.81	47.0	.10	1968	8.76	94.9	.13	1995
1969	45.0	572	.000	1997	6.70	29.4	.060	1997	6.18	49.2	.12	2000	5.81	47.0	.10	1969	8.76	94.9	.13	1996
1970	45.0	572	.000	1998	6.70	29.4	.060	1998	6.18	49.2	.12	2001	5.81	47.0	.10	1970	8.76	94.9	.13	1997
1971	45.0	572	.000	1999	6.70	29.4	.060	1999	6.18	49.2	.12	2002	5.81	47.0	.10	1971	8.76	94.9	.13	1998
1972	45.0	572	.000	2000	6.70	29.4	.060	2000	6.18	49.2	.12	2003	5.81	47.0	.10	1972	8.76	94.9	.13	1999
1973	45.0	572	.000	2001	6.70	29.4	.060	2001	6.18	49.2	.12	2004	5.81	47.0	.10	1973	8.76	94.9	.13	2000
1974	45.0	572	.000	2002	6.70	29.4	.060	2002	6.18	49.2	.12	2005	5.81	47.0	.10	1974	8.76	94.9	.13	2001
1975	45.0	572	.000	2003	6.70	29.4	.060	2003	6.18	49.2	.12	2006	5.81	47.0	.10	1975	8.76	94.9	.13	2002
1976	45.0	572	.000	2004	6.70	29.4	.060	2004	6.18	49.2	.12	2007	5.81	47.0	.10	1976	8.76	94.9	.13	2003
1977	45.0	572	.000	2005	6.70	29.4	.060	2005	6.18	49.2	.12	2008	5.81	47.0	.10	1977	8.76	94.9	.13	2004
1978	45.0	572	.000	2006	6.70	29.4	.060	2006	6.18	49.2	.12	2009	5.81	47.0	.10	1978	8.76	94.9	.13	2005
1979	45.0	572	.000	2007	6.70	29.4	.060	2007	6.18	49.2	.12	2010	5.81	47.0	.10	1979	8.76	94.9	.13	2006
1980	45.0	572	.000	2008	6.70	29.4	.060	2008	6.18	49.2	.12	2011	5.81	47.0	.10	1980	8.76	94.9	.13	2007
1981	45.0	572	.000	2009	6.70	29.4	.060	2009	6.18	49.2	.12	2012	5.81	47.0	.10	1981	8.76	94.9	.13	2008
1982	45.0	572	.000	2010	6.70	29.4	.060	2010	6.18	49.2	.12	2013	5.81	47.0	.10	1982	8.76	94.9	.13	2009
1983	45.0	572	.000	2011	6.70	29.4	.060	2011	6.18	49.2	.12	2014	5.81	47.0	.10	1983	8.76	94.9	.13	2010
1984	45.0	572	.000	2012	6.70	29.4	.060	2012	6.18	49.2	.12	2015	5.81	47.0	.10	1984	8.76	94.9	.13	2011
1985	45.0	572	.000	2013	6.70	29.4	.060	2013	6.18	49.2	.12	2016	5.81	47.0	.10	1985	8.76	94.9	.13	2012
1986	45.0	572	.000	2014	6.70	29.4	.060	2014	6.18	49.2	.12	2017	5.81	47.0	.10	1986	8.76	94.9	.13	2013
1987	45.0	572	.000	2015	6.70	29.4	.060	2015	6.18	49.2	.12	2018	5.81	47.0	.10	1987	8.76	94.9	.13	2014
1988	45.0	572	.000	2016	6.70	29.4	.060	2016	6.18	49.2	.12	2019	5.81	47.0	.10	1988	8.76	94.9	.13	2015
1989	45.0	572	.000	2017	6.70	29.4	.060	2017	6.18	49.2	.12	2020	5.81	47.0	.10	1989	8.76	94.9	.13	2016
1990	45.0	572	.000	2018	6.70	29.4	.060	2018	6.18	49.2	.12	2021	5.81	47.0	.10	1990	8.76	94.9	.13	2017
1991	45.0	572	.000	2019	6.70	29.4	.060	2019	6.18	49.2	.12	2022	5.81	47.0	.10	1991	8.76	94.9	.13	2018
1992	45.0	572	.000	2020	6.70	29.4	.060	2020	6.18	49.2	.12	2023	5.81	47.0	.10	1992	8.76	94.9	.13	2019
1993	45.0	572	.000	2021	6.70	29.4	.060	2021	6.18	49.2	.12	2024	5.81	47.0	.10	1993	8.76	94.9	.13	2020

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1959 - 1993

ANNUAL TOTAL	20974.8	3159.55	
ANNUAL MEAN	57.3	8.66	
HIGHEST ANNUAL MEAN			26.8
LOWEST ANNUAL MEAN			107
HIGHEST DAILY MEAN	2120	May 26	4.30
LOWEST DAILY MEAN	1.0	Aug 24	1983
ANNUAL SEVEN-DAY MINIMUM	1.4	Oct 2	5890
INSTANTANEOUS PEAK FLOW			1980
INSTANTANEOUS PEAK STAGE			1958
INSTANTANEOUS LOW FLOW			1958
ANNUAL RUNOFF (AC-FT)	41600		1961
10 PERCENT EXCEEDS	119		1961
5			

COLORADO RIVER BASIN

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

REMARKS.--Estimated mean specific conductance and estimated mean temperature values and interruptions in the mean temperature 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, 24,500 microsiemens Aug. 9, 1989; minimum, 180 microsiemens May 25, 1986.
WATER TEMPERATURE: Maximum, 37.0°C June 28, 1960, and July 3, 1976; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 16,800 microsiemens Apr. 17; minimum, 642 microsiemens Aug. 31, Sept. 1.
WATER TEMPERATURE: Maximum, 35.5°C July 29; minimum, 2.5°C Dec. 6, Feb. 18.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 05...	1136	1.4	10200	18.0	2200	2000	370	310	1500
JAN 11...	1259	1.6	11400	4.0	2300	2100	380	340	1800
MAR 02...	1358	2.8	9440	14.5	1900	1700	310	280	1300
MAY 07...	0945	504	2680	21.5	560	480	110	70	350
JUN 17...	1245	1.4	2860	24.0	570	440	110	71	380
JUL 20...	1104	184	2930	25.5	550	480	110	68	390

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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...	14	34	200	1600	2500	0.80	4.8	6440
JAN 11...	16	16	230	1600	3200	1.1	4.0	7480
MAR 02...	13	14	200	1300	2400	0.60	1.6	5730
MAY 07...	6	16	85	440	530	0.40	8.5	1580
JUN 17...	7	9.5	130	340	670	0.70	5.6	1660
JUL 20...	7	10	78	450	660	0.90	7.8	1740

COLORADO RIVER BASIN

39

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

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. 1992	46.9	11000	7330	929	2900	369	1800	227	*
NOV. 1992	69.2	12300	8380	1570	3300	617	2100	390	*
DEC. 1992	61.6	11500	7760	1290	3100	511	1900	318	*
JAN. 1993	58.9	11500	7770	1240	3100	489	1900	304	*
FEB. 1993	63.01	11200	7490	1280	3000	505	1800	314	*
MAR. 1993	77.8	12000	8100	1700	3200	671	2000	422	*
APR. 1993	934.00	5530	3570	8990	1400	3650	830	2100	1200
MAY 1993	1145.3	5390	3450	10700	1400	4350	800	2460	1200
JUNE 1993	243.16	3060	1890	1240	790	517	420	274	670
JULY 1993	254.03	2890	1780	1220	740	508	390	265	640
AUG. 1993	141.82	2110	1280	490	540	206	270	105	470
SEPT 1993	63.83	1960	1210	208	500	87	260	45	430
TOTAL	3159.55	**	**	30800	**	12500	**	7220	**
WTD.AVG.	8.7	5580	3610	**	1500	**	850	**	1200

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10100	9780	9970	11900	11700	11800	12200	12100	12200	11100	11000	11100
2	10000	9890	9980	11800	11600	11700	12200	12100	12100	11100	11000	11100
3	10100	9890	10000	11600	11400	11600	12100	12000	12000	11100	10900	11000
4	10400	10000	10200	11500	11400	11400	12000	11900	11900	11100	10900	11000
5	10400	10200	10300	11400	11300	11400	12000	11900	12000	11400	11200	11300
6	10600	10400	10400	11300	11200	11300	12000	11800	11900	11500	11300	11400
7	10700	10500	10600	11300	11100	11200	12000	11900	11900	11600	11500	11600
8	10800	10600	10700	11400	11200	11300	12000	11800	11900	11700	11600	11700
9	10700	10600	10700	11500	11300	11400	11800	11700	11700	11700	11400	11500
10	10700	10600	10700	12200	11500	11900	11800	11700	11700	11600	11500	11600
11	10800	10600	10700	12200	12100	12200	11700	11500	11600	11600	11200	11400
12	10800	10700	10800	12200	12100	12200	11500	11200	11400	11300	11100	11200
13	11000	10700	10800	12100	12000	12100	11200	11000	11200	11200	11000	11100
14	11000	10800	10900	12000	11900	12000	11200	10900	11000	11100	11000	11000
15	11000	10800	10900	11900	11800	11900	11700	11200	11400	11200	11100	11100
16	11000	10900	10900	12200	11800	12000	11800	11600	11700	11300	11200	11300
17	10900	10800	10900	12400	12200	12300	12400	11800	12200	11300	11200	11200
18	10900	10800	10800	12400	12000	12300	12400	12000	12200	11400	11300	11300
19	10900	10800	10800	12700	12100	12300	12000	11500	11700	11400	11100	11300
20	11000	10800	10900	13000	12700	12900	11500	11300	11400	11500	11200	11400
21	11100	10900	11000	12900	12400	12600	11300	11000	11100	12500	11400	11900
22	11300	11000	11200	12900	12400	12700	11100	10900	11000	12600	12400	12500
23	11400	11200	11300	13400	12900	13000	11100	11000	11000	12300	12000	12100
24	11500	11400	11400	14100	13600	14000	11000	11000	11000	12000	11800	11900
25	11800	11500	11600	14000	13700	13800	11100	11000	11100	11800	11500	11700
26	11800	11700	11700	13700	13400	13500	11100	11000	11100	11600	11500	11500
27	11800	11700	11700	13400	13000	13200	11100	10800	11000	11600	11500	11600
28	11800	11700	11700	13000	12600	12800	11000	11000	11000	11700	11500	11600
29	11800	11700	11800	12600	12400	12500	11000	10900	11000	11600	11500	11600
30	11900	11700	11800	12400	12200	12300	11100	11000	11100	11800	11600	11700
31	12000	11800	11900	---	---	---	11200	11100	11100	11800	11600	11700
MONTH	12000	9780	10900	14100	11100	12300	12400	10800	11500	12600	10900	11500

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	11700	11600	11700	8970	8100	8370	11400	11000	11300	---	---	e4000
2	11600	11400	11500	11400	9000	9520	11500	11200	11400	---	---	e6000
3	11500	11400	11500	14700	11600	13900	11700	11300	11500	---	---	e8000
4	11500	11400	11500	14500	13600	14200	11700	11600	11600	---	---	e10000
5	11500	11400	11500	13600	12600	13000	12100	11600	11800	---	---	e12000
6	11400	11300	11400	12600	11700	12000	12300	12100	12200	---	---	8400
7	11400	11300	11300	11700	11100	11400	12300	11700	12100	---	---	2700
8	11900	11400	11600	11100	11000	11000	12400	12200	12300	---	---	e4000
9	12300	11900	12100	11000	10900	11000	12500	12300	12400	---	---	e5000
10	12500	12300	12400	11000	10900	11000	12800	12400	12600	---	---	e5500
11	12400	12200	12300	11000	10900	11000	13000	12700	12800	---	---	e6000
12	12200	11700	12000	11100	10900	11000	13000	12700	12800	---	---	e7000
13	11700	11400	11500	11300	11100	11100	13400	12700	13000	---	---	e8000
14	11400	11100	11300	11500	11300	11400	12900	12400	12700	---	---	e10000
15	11100	10800	10900	11800	11500	11700	13400	12500	13000	---	---	e11000
16	12100	10700	11300	12000	11800	11900	16400	13500	15400	---	---	e11500
17	13000	12300	12800	12100	12000	12000	16800	15900	16300	---	---	e11500
18	12900	12100	12600	12000	11900	12000	16700	15600	16100	---	---	e12000
19	12100	11500	11800	11900	11800	11900	16400	15400	16100	---	---	e12000
20	11900	11600	11800	12000	11800	11800	15400	15100	15300	---	---	e12000
21	11900	11500	11700	12700	12000	12300	15100	14900	15100	---	---	e12000
22	11600	11400	11500	13100	12700	12900	14900	14500	14700	---	---	e11000
23	11800	11600	11700	13100	12900	13000	14600	14200	14400	---	---	e9000
24	11800	10800	11500	13000	12900	12900	14600	14000	14200	---	---	e7000
25	9510	4950	6810	12900	12700	12800	14400	13900	14100	---	---	e8000
26	9610	8600	9300	12800	12400	12600	14200	13800	14000	---	---	8500
27	9540	7080	8000	12300	11800	12000	14000	13900	14000	---	---	e9000
28	8290	7470	8090	11800	11400	11600	14000	13800	13900	---	---	e10000
29	---	---	---	11500	11300	11400	---	---	e8000	---	---	e10000
30	---	---	---	11400	11200	11300	---	---	e2600	---	---	e6000
31	---	---	---	11300	10800	11200	---	---	---	---	---	e5000
MONTH	13000	4950	11200	14700	8100	11800	16800	11000	12900	---	---	8450

e Estimated

COLORADO RIVER BASIN

41

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	e6000	4990	4680	4850	3760	3340	3460	1490	642	921
2	---	---	e7000	---	---	5000	3810	3670	3740	2090	1490	1920
3	---	---	e7500	---	---	e5000	3910	3770	3840	2370	2010	2160
4	---	---	e8000	---	---	e5100	4010	3910	3940	3170	2370	2770
5	---	---	e8000	---	---	e5100	4240	3960	4060	3860	3170	3510
6	---	---	e8000	---	---	e5200	4340	4200	4270	4460	3860	4130
7	---	---	e8000	---	---	e5300	4350	4250	4310	4870	4420	4520
8	---	---	e9000	---	---	e5400	4540	4300	4400	4990	4790	4890
9	---	---	e9000	---	---	e5400	4680	4500	4570	5270	4950	5040
10	---	---	e4000	---	---	e5500	4780	4640	4700	---	---	5200
11	---	---	e2000	---	---	e5600	4880	4740	4780	---	---	e5250
12	---	---	e2100	---	---	e5700	4890	4790	4840	---	---	e5300
13	---	---	e2300	---	---	e5700	4940	4800	4880	---	---	e5200
14	---	---	e2500	---	---	e5800	5040	4940	4970	---	---	e5000
15	---	---	e2600	---	---	e5900	5140	5040	5080	---	---	e5100
16	---	---	e2700	---	---	e6000	5280	5090	5160	---	---	5200
17	---	---	2880	---	---	e6000	5400	5140	5270	5210	5040	5150
18	3030	2860	2960	---	---	e6100	5480	5360	5410	5210	5050	5130
19	3040	2910	2980	---	---	5900	5560	5480	5530	5210	5010	5100
20	3130	3000	3070	---	---	2900	5640	5560	5600	5300	5100	5180
21	3260	3080	3160	2500	2310	2390	5770	5640	5690	5550	5220	5340
22	3350	3220	3260	2730	2500	2620	5850	5690	5770	5630	5430	5520
23	3520	3310	3430	4030	1390	2900	5850	5810	5820	5760	5550	5640
24	3700	3440	3590	3950	1670	2480	5850	5770	5810	5920	5720	5810
25	3920	3660	3760	1670	1310	1510	5850	5770	5800	5890	4070	5210
26	4100	3830	3940	1310	1040	1200	5890	5770	5800	7220	3230	4780
27	4280	3970	4110	1860	1180	1450	5810	5570	5670	4610	3920	4430
28	4500	4150	4320	2460	1860	2190	5610	5410	5510	4530	4000	4230
29	4720	4320	4500	2780	2460	2610	5420	5300	5340	4130	3960	4020
30	4900	4500	4690	3060	2780	2850	5300	3610	5170	4380	4050	4180
31	---	---	---	3340	3010	3150	5060	642	2030	---	---	---
MONTH	4900	2860	4640	4990	1040	4280	5890	642	4880	7220	642	4530
YEAR	16800	642	9060									

e Estimated

COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	25.0	17.5	21.0	19.0	15.0	17.5	10.0	5.5	7.5	7.5	6.0	6.5
2	24.0	16.5	20.0	17.5	12.5	15.0	8.5	5.5	7.0	9.0	6.0	7.0
3	24.0	16.5	20.0	14.5	12.0	13.0	9.5	6.0	7.5	13.0	9.5	11.0
4	24.0	16.5	20.0	13.5	9.5	11.5	9.0	5.5	7.5	12.5	9.0	11.0
5	23.5	16.5	20.0	12.0	7.5	10.0	5.0	3.5	4.0	9.0	7.0	8.0
6	24.0	17.5	20.5	14.5	9.0	11.5	8.0	2.5	5.0	10.0	7.0	8.5
7	22.5	18.0	20.0	15.0	9.0	12.0	8.5	5.0	6.5	14.0	9.0	11.0
8	20.5	14.0	17.0	17.5	11.5	14.0	11.5	7.0	9.0	12.0	9.5	10.5
9	21.0	14.0	17.5	20.0	14.5	17.0	12.0	8.5	10.0	10.5	6.5	9.5
10	21.5	16.0	18.5	21.0	17.0	19.0	11.5	7.5	9.5	6.0	3.5	4.0
11	22.0	15.0	18.0	22.0	17.0	19.5	11.0	7.0	9.0	5.5	3.0	4.0
12	24.0	17.0	20.0	16.5	12.5	15.0	12.0	9.0	10.5	9.0	5.0	6.5
13	25.0	18.5	21.5	14.5	9.5	12.0	12.0	9.5	11.0	6.5	4.0	5.5
14	23.0	18.5	20.5	14.5	9.5	12.0	9.0	6.5	7.5	9.0	4.0	6.5
15	25.0	19.5	21.5	15.0	9.5	12.5	9.0	5.5	7.0	11.0	5.5	8.0
16	21.0	17.5	19.5	17.5	13.0	15.0	9.5	6.0	7.5	10.5	5.5	8.0
17	21.0	15.0	17.5	18.5	14.0	16.0	9.0	4.5	6.5	11.5	7.0	9.0
18	21.5	16.0	18.5	16.0	15.0	15.5	10.0	5.5	7.5	9.5	6.5	8.0
19	22.0	17.5	19.5	15.0	13.0	14.5	14.0	9.0	11.0	6.5	4.5	5.5
20	22.0	18.5	20.0	15.5	11.5	13.5	10.5	7.5	9.0	11.0	5.0	7.5
21	23.0	18.0	20.5	13.5	9.5	12.0	12.0	9.0	10.5	11.0	6.0	8.5
22	21.5	18.0	19.5	12.0	8.0	9.5	13.5	10.5	12.0	13.0	7.5	10.0
23	21.5	18.0	20.0	12.5	7.5	10.0	12.5	9.5	11.0	15.5	10.0	12.0
24	23.0	18.0	20.0	11.5	7.5	10.0	9.5	7.0	8.5	11.5	6.5	8.5
25	23.5	18.0	20.5	9.0	5.0	7.0	10.0	8.0	9.0	10.5	5.0	8.0
26	23.0	17.5	20.0	8.0	4.0	6.0	10.5	6.5	8.5	11.0	4.5	7.5
27	22.0	16.0	19.0	8.5	3.5	6.0	11.0	6.5	9.0	11.0	6.5	8.5
28	21.5	17.0	19.0	9.0	4.0	6.5	12.5	10.0	11.0	10.0	8.0	9.5
29	21.0	17.0	19.0	9.5	5.5	7.5	17.0	12.0	14.5	9.5	6.0	7.0
30	22.5	16.5	19.0	8.0	5.0	7.0	17.0	15.0	16.0	7.5	5.0	6.0
31	22.0	16.5	19.0	---	---	---	15.5	7.5	12.0	9.0	6.0	7.5
MONTH	25.0	14.0	19.5	22.0	3.5	12.0	17.0	2.5	9.0	15.5	3.0	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.5	5.5	9.0	14.5	9.0	11.0	21.0	14.0	17.5	24.0	18.0	20.5
2	12.5	8.0	10.0	16.5	8.5	12.0	20.0	14.0	17.0	22.5	16.5	19.5
3	15.0	9.5	12.0	16.5	10.0	13.0	22.0	14.5	18.0	24.0	16.0	20.0
4	11.5	9.5	10.5	16.0	10.0	13.0	20.0	13.0	16.5	27.0	18.5	22.5
5	12.5	7.5	10.0	16.5	9.5	12.5	21.0	13.5	17.0	27.0	22.0	24.0
6	13.0	6.0	9.5	15.5	9.5	12.5	22.5	15.0	18.5	27.0	17.0	22.5
7	13.0	6.5	9.5	18.0	9.5	13.5	22.5	16.0	19.0	25.0	17.0	21.5
8	14.5	7.5	11.0	19.5	12.0	15.5	19.0	14.0	16.5	25.5	21.0	23.0
9	13.0	10.5	12.0	20.0	12.5	16.0	22.0	12.0	16.5	25.0	21.5	23.0
10	15.0	10.0	12.5	16.5	13.0	15.0	23.0	13.5	18.0	23.5	18.5	21.0
11	13.5	8.5	11.0	13.5	10.5	12.0	25.5	15.5	20.0	23.5	17.5	20.5
12	14.0	7.0	10.5	11.0	6.0	8.5	27.0	18.5	22.5	22.5	18.0	20.5
13	13.5	8.0	11.0	12.0	4.0	7.5	26.0	19.5	22.5	25.5	17.5	21.5
14	11.5	9.0	10.0	12.5	6.5	9.5	21.5	14.5	17.0	27.5	19.0	23.0
15	14.0	7.5	10.0	17.5	9.5	13.0	20.5	11.5	15.5	28.0	21.0	24.5
16	10.5	7.5	9.0	20.5	12.0	16.0	21.5	14.0	17.5	28.0	20.5	24.0
17	7.5	4.0	5.0	16.5	11.5	13.5	24.5	15.5	19.5	25.0	22.0	23.5
18	8.0	2.5	5.0	15.0	11.5	13.0	24.5	17.0	20.5	26.0	20.0	23.0
19	13.0	5.5	8.5	15.0	13.5	14.0	25.5	17.0	21.0	28.0	19.0	23.0
20	14.5	9.5	12.0	18.0	12.5	14.5	23.5	15.5	19.5	28.5	20.5	24.5
21	16.5	10.0	13.0	14.5	12.5	13.5	23.5	15.5	19.0	26.5	21.5	23.5
22	15.5	9.5	12.5	15.0	13.0	14.0	23.5	15.5	19.0	25.5	20.5	22.5
23	14.0	9.5	12.0	19.5	10.0	14.5	20.0	16.5	18.5	27.5	20.5	24.0
24	11.0	9.0	10.5	23.0	14.0	18.0	24.5	16.5	20.0	28.0	22.5	25.0
25	16.0	8.5	11.5	24.0	16.0	19.5	25.0	17.0	20.5	29.5	22.0	25.5
26	14.0	7.5	10.5	21.5	15.5	18.5	25.5	16.5	21.0	29.5	22.5	25.5
27	12.0	8.0	10.0	21.0	15.0	18.0	22.0	17.5	20.0	30.5	22.5	26.0
28	10.0	9.0	9.5	23.0	16.5	19.5	25.0	19.0	21.5	29.0	22.5	25.5
29	---	---	---	22.5	17.5	19.5	20.5	9.0	15.0	29.0	22.5	25.5
30	---	---	---	21.0	15.0	18.0	20.0	9.5	16.0	28.0	22.5	25.5
31	---	---	---	21.0	15.0	18.0	---	---	---	29.5	23.5	26.5
MONTH	16.5	2.5	10.5	24.0	4.0	14.5	27.0	9.0	18.5	30.5	16.0	23.0

COLORADO RIVER BASIN

43

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	30.5	23.5	26.5	31.0	24.5	27.0	34.0	26.0	29.0	24.0	20.0	21.5
2	30.0	21.5	25.5	31.0	24.0	27.0	29.0	25.0	27.0	29.5	22.0	25.0
3	29.5	22.5	25.5	30.5	23.5	26.0	29.5	24.0	26.5	29.0	22.5	25.5
4	30.5	21.5	25.5	30.0	23.0	25.5	30.5	24.5	27.0	30.5	22.0	26.0
5	29.0	23.0	25.5	27.5	23.5	25.5	31.0	24.0	27.0	31.0	23.0	26.5
6	29.5	24.0	26.0	29.5	23.5	26.0	28.5	24.0	26.0	29.0	23.5	26.0
7	29.5	23.5	26.0	29.0	23.5	26.0	31.5	24.0	26.5	30.0	23.0	26.0
8	30.5	24.0	27.0	28.5	23.5	25.5	31.5	24.5	27.5	26.0	23.5	24.5
9	25.5	20.5	23.5	28.0	23.0	25.5	32.5	24.5	28.0	28.5	20.5	24.0
10	25.0	19.0	21.5	28.5	23.5	26.0	32.0	24.5	28.0	---	---	e24.0
11	27.0	20.0	23.0	29.5	24.0	26.5	31.5	25.0	28.0	---	---	---
12	29.0	23.0	25.5	29.0	24.5	27.0	32.0	24.5	28.0	---	---	---
13	30.5	23.5	26.5	29.5	25.5	27.5	31.0	24.5	27.5	---	---	---
14	31.5	24.0	27.5	29.0	25.0	27.0	30.0	24.5	27.0	---	---	---
15	29.5	24.0	27.0	29.0	25.0	27.0	31.5	24.0	27.5	---	---	---
16	28.0	24.0	26.0	28.5	24.5	26.5	31.0	24.5	27.5	---	---	e22.5
17	26.0	23.5	24.5	30.0	24.5	27.0	30.5	24.5	27.5	27.0	19.5	23.0
18	28.5	22.5	25.0	28.0	25.0	26.5	30.0	24.5	27.0	28.5	21.0	24.0
19	29.5	23.5	26.0	31.5	25.0	27.0	29.5	23.5	26.5	29.5	22.5	26.0
20	30.5	24.5	27.0	28.0	24.5	26.5	29.5	23.0	26.5	30.0	23.5	26.5
21	31.5	24.0	27.0	28.0	24.5	26.5	29.5	23.5	26.5	29.0	23.5	26.5
22	33.0	25.0	28.0	32.0	25.0	28.0	29.5	24.0	26.5	28.0	23.5	25.5
23	32.0	24.5	28.0	31.5	25.5	28.0	28.5	24.0	26.0	28.5	23.0	25.5
24	32.5	24.5	28.0	32.5	25.0	28.5	29.5	23.5	26.0	28.0	23.5	25.5
25	32.5	25.5	28.0	33.5	25.5	28.5	29.0	23.0	26.0	25.5	22.5	23.5
26	31.0	24.5	27.5	32.5	25.0	28.0	31.5	23.5	26.5	25.0	21.0	22.5
27	31.5	24.0	27.0	33.0	25.0	28.5	29.5	24.5	27.0	25.5	18.0	21.5
28	31.0	23.5	27.0	34.0	26.0	29.5	28.0	23.0	25.5	26.0	18.0	22.0
29	31.0	24.0	27.0	35.5	27.0	30.5	27.5	23.5	25.5	26.0	18.5	21.5
30	31.0	24.0	27.0	33.5	26.5	29.5	28.0	24.0	25.5	25.5	18.5	21.5
31	---	---	---	34.0	26.5	29.5	24.0	20.5	22.0	---	---	---
MONTH	33.0	19.0	26.0	35.5	23.0	27.0	34.0	20.5	27.0	31.0	18.0	24.5
YEAR	35.5	2.5	18.5									

e Estimated

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 station 08121000. There is also regulation upstream by Lake J. B. Thomas (capacity 203,600 acre-ft), by Lake Colorado City (see station 08123000), and by Champion Creek Reservoir (capacity, 42,500 acre-ft).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	8.4	25	21	30	19	24	295	41	5.5	3.0	184
2	10	8.1	25	19	30	18	25	91	30	4.9	2.5	55
3	10	7.6	21	18	29	14	19	62	22	4.7	19	22
4	11	7.6	17	16	27	21	11	56	17	3.7	9.8	13
5	11	7.6	15	15	29	25	9.5	54	14	3.4	2.0	9.0
6	11	7.6	14	15	29	15	9.2	45	14	3.2	1.4	6.9
7	9.6	8.7	14	16	30	15	8.2	278	12	3.3	1.6	5.6
8	8.7	10	15	15	29	28	8.1	237	11	2.6	1.5	3.9
9	8.9	11	14	15	28	28	7.9	93	9.7	2.2	1.2	3.0
10	9.6	11	14	18	22	27	7.8	70	54	2.0	.81	2.5
11	8.8	18	14	27	17	27	6.9	59	164	1.5	.83	2.1
12	9.0	21	14	27	16	26	7.1	51	229	1.6	.78	1.7
13	9.6	22	14	27	15	26	7.1	42	180	2.3	.34	4.7
14	8.6	23	14	29	14	27	20	35	98	1.5	.29	24
15	7.6	22	15	29	16	26	23	26	56	1.5	.29	12
16	7.6	22	16	29	16	17	59	20	40	1.6	.30	7.0
17	7.9	22	24	29	16	12	29	17	35	2.5	.39	5.3
18	8.2	23	32	29	20	11	21	17	30	4.3	.39	5.4
19	8.5	30	31	30	39	11	23	11	27	4.0	.39	4.1
20	11	27	29	31	41	9.9	26	9.0	25	2.8	.39	3.2
21	8.6	27	28	31	37	11	24	15	20	121	.39	2.7
22	9.1	26	28	24	33	11	22	51	15	39	.43	2.0
23	8.9	46	28	22	32	11	16	650	12	18	.36	1.8
24	8.8	55	27	20	32	11	11	541	9.7	30	.53	1.9
25	9.4	41	27	19	37	16	7.6	87	8.8	23	.67	2.0
26	9.1	32	26	16	36	26	6.3	50	8.1	14	.34	11
27	8.6	29	26	16	21	26	5.5	39	7.1	11	.22	8.8
28	8.8	28	27	22	16	20	5.4	33	6.8	8.8	.21	10
29	8.8	27	28	29	---	14	61	29	6.9	8.2	.25	8.6
30	8.8	26	28	29	---	15	507	27	6.3	6.2	.30	6.5
31	9.8	---	26	29	---	22	---	42	---	4.0	41	---
TOTAL	286.3	654.6	676	712	737	585.9	1017.6	3132.0	1209.4	342.3	91.90	429.7
MEAN	9.24	21.8	21.8	23.0	26.3	18.9	33.9	101	40.3	11.0	2.96	14.3
MAX	11	55	32	31	41	28	507	650	229	121	41	184
MIN	7.6	7.6	14	15	14	9.9	5.4	9.0	6.3	1.5	.21	1.7
AC-FT	568	1300	1340	1410	1460	1160	2020	6210	2400	679	182	852

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1993, BY WATER YEAR (WY)

MEAN	146	22.0	21.8	20.5	32.5	32.6	57.4	155	177	61.4	98.2	182
MAX	1834	67.5	120	90.7	256	280	599	574	1242	313	1122	1853
(WY)	1987	1973	1992	1987	1992	1973	1981	1992	1982	1988	1971	1980
MIN	.000	.000	.30	1.17	1.02	.36	2.19	1.91	.23	.000	.010	.000
(WY)	1969	1971	1971	1971	1971	1971	1980	1984	1984	1970	1984	1968

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1968 - 1993

ANNUAL TOTAL	54907.9	9874.70	84.0
ANNUAL MEAN	150	27.1	298
HIGHEST ANNUAL MEAN			11.7
LOWEST ANNUAL MEAN			15900
HIGHEST DAILY MEAN	3460	May 27	Sep 30
LOWEST DAILY MEAN	7.6	Oct 15	Aug 2
ANNUAL SEVEN-DAY MINIMUM	7.9	Nov 1	Aug 2
INSTANTANEOUS PEAK FLOW			18900
INSTANTANEOUS PEAK STAGE			22.73
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	108900	19590	60830
10 PERCENT EXCEEDS	347	41	108
50 PERCENT EXCEEDS	35	15	11
90 PERCENT EXCEEDS	11	2.0	.23

COLORADO RIVER MAIN STEM

45

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

REMARKS.--Estimated mean specific conductance and estimated mean temperature 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, 154 microsiemens Sept. 21, 1990.

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, 14,700 microsiemens Nov. 18; minimum, 1,070 microsiemens Apr. 30.

WATER TEMPERATURE: Maximum, 32.5°C July 23, 25; minimum, 2.5°C Dec. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 KF AGAR (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV												
03...	1315	7.6	7370	7.9	14.5	3.5	10.7	115	3.7	48	21	2000
JAN												
21...	1325	32	6010	8.2	8.5	6.2	14.1	132	1.2	25	21	1400
MAR												
03...	1305	14	5890	8.2	12.5	3.9	11.4	118	2.2	66	22	1300
MAY												
04...	1345	55	4210	8.8	22.0	24	16.0	202	8.1	130	200	890
AUG												
11...	1115	0.68	5010	7.8	29.0	25	7.3	104	6.8	420	2400	1500

DATE	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	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)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA- LINITY WAT DIS TOT IT (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												
03...	1900	460	210	1000	10	15	0	158	129	1700	1700	0.80
JAN												
21...	1200	300	150	900	11	7.4	0	231	190	1100	1400	0.80
MAR												
03...	1200	290	140	850	10	9.4	0	179	146	1100	1300	0.80
MAY												
04...	780	190	100	590	9	13	14	110	114	760	920	0.70
AUG												
11...	1400	380	130	570	6	12	0	117	96	1400	820	0.50

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)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)
NOV											
03...	7.3	5530	5180	--	--	0.020	<0.010	<0.050	<0.050	0.040	0.060
JAN											
21...	2.1	3970	3980	0.063	0.063	--	0.020	0.083	0.083	--	0.010
MAR											
03...	2.1	4040	3780	0.031	0.031	--	0.020	0.051	0.051	--	<0.010
MAY											
04...	2.7	2820	2650	--	--	--	<0.010	--	<0.050	--	0.040
AUG											
11...	18	3680	3400	--	--	--	<0.010	--	<0.050	--	0.060

COLORADO RIVER MAIN STEM

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (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)
NOV 03...	0.56	0.60	0.070	0.040	0.040	0.040	0.12	28	0.57	94	<10
JAN 21...	0.49	0.50	0.020	<0.010	<0.010	--	--	20	1.7	98	<10
MAR 03...	0.60	0.60	0.040	<0.010	<0.010	--	--	18	0.68	99	--
MAY 04...	2.0	2.0	0.180	0.030	<0.010	--	--	88	13	100	<10
AUG 11...	0.84	0.90	0.100	0.050	0.010	--	0.03	68	0.12	99	<10
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
NOV 03...	<100	<1	<10	170	140	8	1	2	<1.0	7600	19
JAN 21...	<100	<1	10	110	20	7	1	2	<1.0	5000	36
MAR 03...	--	--	--	--	--	--	--	--	--	--	--
MAY 04...	<100	<1	10	80	20	19	3	<1	<1.0	3000	35
AUG 11...	200	1	<10	110	300	1	<1	1	<1.0	7700	31
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. 1992	286.3	7680	5100	3950	1800	1390	1500	1160	1700		
NOV. 1992	654.6	7290	4830	8540	1700	3000	1400	2520	1600		
DEC. 1992	676	6390	4170	7620	1500	2660	1200	2240	1400		
JAN. 1993	712	6310	4120	7910	1400	2770	1200	2320	1300		
FEB. 1993	737	6380	4170	8300	1500	2900	1200	2440	1400		
MAR. 1993	585.9	6460	4230	6680	1500	2340	1200	1960	1400		
APR. 1993	1017.6	5080	3270	8980	1100	3120	960	2630	1100		
MAY 1993	3132.0	3700	2340	19800	810	6850	680	5770	770		
JUNE 1993	1209.4	3770	2390	7800	830	2700	700	2280	790		
JULY 1993	342.3	5330	3480	3220	1200	1120	1000	945	1100		
AUG. 1993	91.90	4690	2990	742	1000	257	870	217	990		
SEPT 1993	429.7	2430	1500	1740	520	598	430	504	500		
TOTAL	9874.70	**	**	85300	**	29700	**	25000	**		
WTD.AVG.	27	4950	3200	**	1100	**	940	**	1100		

COLORADO RIVER MAIN STEM

47

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

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7400	7290	7340	7450	7350	7410	6140	5910	6020	6170	6090	6120
2	7400	7340	7370	7430	7360	7400	6430	6090	6230	6250	6130	6180
3	7460	7350	7420	7420	7330	7370	6840	6470	6710	6250	6180	6210
4	7510	7410	7470	7440	7350	7390	6830	6330	6610	6220	6140	6170
5	7630	7470	7560	7510	7380	7450	6320	5930	6100	6260	6140	6200
6	7750	7610	7660	7540	7470	7500	5930	5770	5860	6490	6260	6370
7	7890	7750	7820	7610	7480	7550	5840	5730	5780	6750	6490	6620
8	7860	7690	7800	7610	7520	7580	6050	5830	5930	6870	6720	6800
9	7980	7770	7880	7610	7550	7580	6300	6040	6190	6840	6760	6830
10	8020	7830	7950	7610	7540	7570	6550	6330	6450	6840	6760	6800
11	8020	7840	7950	7710	7570	7640	6800	6550	6690	6990	6840	6900
12	8030	7810	7940	7740	7610	7680	6900	6760	6830	7000	6700	6950
13	8050	7920	7980	7780	7610	7720	6960	6880	6910	6630	5290	5830
14	8040	7900	7970	7890	7520	7790	7020	6840	6930	5290	4960	5080
15	7970	7830	7910	7480	6980	7180	7160	6980	7060	8630	5110	7190
16	7960	7860	7920	7020	6930	6960	7290	7070	7190	7300	6300	6650
17	7910	7740	7860	6930	6640	6750	7280	7170	7220	6260	6110	6200
18	7880	7800	7840	14700	6760	10400	7230	6780	7050	6150	5970	6070
19	7820	7750	7780	14300	8740	11000	6740	5380	6170	6010	5930	5960
20	7790	7700	7750	8620	7700	7990	5380	4970	5170	6050	5930	6000
21	7820	7700	7760	7770	7440	7640	10100	4860	6170	6050	5970	6000
22	7770	7540	7720	7480	7310	7410	10100	6760	8080	6020	5940	5990
23	7710	7610	7660	7350	7150	7250	6690	6250	6440	6030	5950	5990
24	7650	7510	7610	7250	6230	6770	6250	6210	6230	6000	5880	5950
25	7710	7550	7630	6690	5440	6290	6210	6140	6180	6160	5930	6040
26	7710	7590	7670	6280	5470	6000	6260	6140	6180	6430	6120	6280
27	7610	7450	7540	6580	6280	6460	6140	5930	6040	7000	6430	6650
28	7480	7350	7440	6340	5750	5970	6120	5960	6040	7190	6900	7090
29	7420	7290	7360	5900	5790	5850	6150	6040	6110	6870	6670	6730
30	7400	7300	7350	6000	5890	5940	6160	6010	6060	7170	6130	6940
31	7430	7330	7370	---	---	---	6160	6090	6120	6010	5380	5520
MONTH	8050	7290	7690	14700	5440	7380	10100	4860	6410	8630	4960	6330

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5920	5460	5560	---	---	5780	---	---	6150	3260	1830	2560
2	7350	6030	6870	---	---	6140	---	---	e6100	3950	2670	3480
3	6450	6190	6300	6190	6080	6130	---	---	e6000	4030	3670	3820
4	6280	6200	6220	6940	6230	6490	---	---	e6100	5440	3880	4380
5	---	---	6270	7010	6730	6850	---	---	e6100	6160	5440	5990
6	---	---	6370	7310	7080	7200	---	---	e6150	5960	5640	5760
7	---	---	6300	7810	7220	7370	---	---	e6200	10800	2000	5470
8	---	---	6220	7770	6170	6750	---	---	6260	2840	2280	2450
9	---	---	6190	6750	6170	6490	---	---	e6400	3160	2400	2760
10	---	---	6210	6790	5560	6160	---	---	e6500	4190	3160	3640
11	---	---	6220	7520	5790	6910	---	---	e6600	4710	4190	4400
12	---	---	6220	6610	5690	6050	---	---	6720	5390	4710	5090
13	---	---	6250	6670	5990	6340	---	---	e6700	6590	5150	5980
14	---	---	6260	6030	5870	5930	---	---	e6600	6860	6540	6690
15	---	---	6240	6010	5900	5940	---	---	e6500	6940	6700	6800
16	---	---	6400	6040	5990	6020	---	---	e6000	7180	6820	6970
17	---	---	6690	6030	5990	6000	---	---	e6100	---	---	7140
18	---	---	6930	6030	5950	5990	---	---	e6200	---	---	e7150
19	---	---	7180	6080	6000	6030	---	---	e6300	---	---	e7200
20	---	---	7540	6120	6040	6070	---	---	e6400	---	---	e7300
21	---	---	6560	---	---	6150	---	---	e6500	---	---	e7000
22	---	---	5220	---	---	6300	---	---	e6600	---	---	e5500
23	---	---	7020	---	---	6900	---	---	e6700	---	---	e3200
24	---	---	6890	---	---	7300	---	---	e6800	---	---	e2000
25	---	---	6130	---	---	7500	---	---	e6900	---	---	e3500
26	---	---	5820	---	---	7000	---	---	6950	---	---	5530
27	---	---	5840	---	---	6750	6880	6730	6790	---	---	e5600
28	---	---	5740	---	---	5650	6730	6620	6640	---	---	e5800
29	---	---	---	---	---	6600	6620	5200	5620	---	---	e6000
30	---	---	---	---	---	7150	11400	1070	3910	---	---	e6200
31	---	---	---	---	---	6550	---	---	---	---	---	e5800
MONTH	7350	5460	6340	7810	5560	6470	11400	1070	6320	10800	1830	5200

e Estimated

COLORADO RIVER MAIN STEM

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

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	e5900	4560	4440	4470	4600	4240	4420	4850	1750	2530
2	---	---	e6200	4680	4560	4600	4720	4560	4650	1990	1270	1530
3	---	---	e6400	4800	4640	4730	4800	4520	4710	1290	1200	1240
4	---	---	e6600	4920	4760	4840	4840	4600	4750	1490	1290	1370
5	---	---	e6800	5040	4920	4960	5040	4800	4920	1630	1460	1540
6	---	---	e7000	5160	5040	5090	5080	4960	5030	1800	1630	1720
7	---	---	e7200	5280	5120	5200	5080	4920	4970	1920	1800	1860
8	---	---	e7400	5400	5240	5300	5120	4920	5010	2170	1920	2050
9	---	---	e7600	5440	5320	5370	5200	5080	5140	2270	2170	2220
10	---	---	e5500	5440	5280	5370	5280	5120	5230	2420	2240	2340
11	---	---	e4800	5520	5400	5420	5360	5200	5300	2630	2390	2520
12	---	---	e2400	5520	5440	5490	5400	5320	5350	2810	2630	2720
13	---	---	e2600	5600	5480	5540	5480	5320	5390	2890	2710	2810
14	---	---	e2700	5560	5480	5530	5480	5400	5460	2710	2240	2360
15	---	---	e2800	5600	5520	5560	5520	5440	5480	2340	1890	2110
16	---	---	e3000	5640	5520	5590	5560	5480	5520	2550	1890	2320
17	---	---	3300	5480	5400	5430	5640	5520	5580	2820	2550	2710
18	4200	3800	4060	5640	5400	5500	5660	5570	5630	3000	2820	2890
19	4080	3800	3940	5960	5680	5900	5670	5620	5660	3120	2970	3030
20	3760	3360	3580	6000	5920	5930	5710	5590	5670	3270	3090	3190
21	3360	3240	3300	13000	6040	8310	5760	5640	5700	3490	3270	3390
22	3480	3320	3390	5520	2840	3720	5780	5690	5750	3710	3460	3600
23	3640	3480	3530	2760	2080	2380	5790	5740	5760	3890	3680	3770
24	3720	3600	3660	2880	1880	2220	5760	5640	5730	4090	3860	3960
25	3840	3680	3750	3400	2920	3250	5640	5460	5510	4130	4030	4080
26	3880	3800	3820	3520	3320	3420	5480	5310	5390	4190	3660	4000
27	4040	3880	3950	3360	3240	3290	5390	5290	5340	3710	3590	3660
28	4200	4000	4090	3480	3240	3330	5300	5150	5240	4050	3680	3930
29	4360	4160	4240	3800	3480	3630	5210	5090	5150	4310	3970	4200
30	4440	4280	4360	4000	3840	3930	5090	4770	4990	4330	4200	4250
31	---	---	---	4240	4000	4160	4950	2580	4470	---	---	---
MONTH	4440	3240	4600	13000	1880	4760	5790	2580	5250	4850	1200	2800
YEAR	14700	1070	5800									

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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

COLORADO RIVER MAIN STEM

49

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

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.0	6.5	9.0	---	---	11.0	---	---	---	23.5	14.5	19.0
2	11.0	8.5	10.0	---	---	12.0	---	---	---	21.5	17.5	19.5
3	14.0	9.5	11.5	16.0	10.0	13.0	---	---	---	23.5	16.5	20.0
4	11.5	9.5	10.5	16.0	10.5	12.5	---	---	---	26.0	18.5	22.0
5	---	---	10.0	16.0	9.0	12.0	---	---	---	25.5	22.0	23.5
6	---	---	9.5	15.5	10.0	12.5	---	---	---	28.0	20.5	24.0
7	---	---	10.0	17.5	8.5	11.5	---	---	---	26.0	21.0	24.0
8	---	---	11.5	18.5	11.0	14.0	---	---	---	25.5	21.0	23.0
9	---	---	12.0	19.0	12.5	15.0	---	---	---	25.5	22.0	23.5
10	---	---	12.5	17.0	14.0	15.0	---	---	---	24.0	19.0	22.0
11	---	---	11.5	13.0	10.5	12.0	---	---	---	24.0	18.5	21.5
12	---	---	10.5	11.0	6.5	9.0	---	---	---	23.0	18.5	21.0
13	---	---	11.5	11.0	4.0	7.0	---	---	---	25.5	18.5	22.0
14	---	---	11.5	12.0	6.0	9.0	---	---	---	28.5	20.5	24.0
15	---	---	11.0	16.5	9.0	12.0	---	---	---	29.5	22.0	25.5
16	---	---	10.0	19.0	11.0	14.0	---	---	---	29.0	21.5	24.5
17	---	---	7.0	15.5	12.0	12.5	---	---	---	---	---	25.5
18	---	---	5.5	15.0	11.5	13.0	---	---	---	---	---	---
19	---	---	7.5	14.5	10.5	12.0	---	---	---	---	---	---
20	---	---	11.5	16.0	12.5	14.0	---	---	---	---	---	---
21	---	---	12.0	---	---	14.5	---	---	---	---	---	---
22	---	---	13.0	---	---	13.5	---	---	---	---	---	---
23	---	---	12.0	---	---	13.0	---	---	---	---	---	---
24	---	---	11.0	---	---	16.0	---	---	---	---	---	---
25	---	---	13.0	---	---	17.0	---	---	---	---	---	---
26	---	---	12.0	---	---	15.5	---	---	20.5	---	---	27.5
27	---	---	11.5	---	---	---	21.5	17.5	20.0	---	---	---
28	---	---	10.5	---	---	---	25.0	19.5	21.5	---	---	---
29	---	---	---	---	---	---	26.0	18.5	22.0	---	---	---
30	---	---	---	---	---	---	23.5	14.0	17.5	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	14.0	6.5	10.5	19.0	4.0	13.0	26.0	14.0	20.5	29.5	14.5	23.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	---	---	26.5	30.5	27.0	29.0	23.0	20.0	21.0
2	---	---	---	---	---	26.5	30.0	26.5	28.0	28.0	21.5	24.5
3	---	---	---	---	---	26.0	28.0	25.5	27.0	28.0	23.0	25.5
4	---	---	---	---	---	26.0	28.0	26.0	26.5	28.5	22.0	25.5
5	---	---	---	---	---	26.0	28.5	26.0	27.0	29.5	22.0	26.0
6	---	---	---	---	---	26.0	28.0	26.0	26.5	29.5	23.5	26.5
7	---	---	---	---	---	26.0	26.5	25.0	25.5	30.5	23.5	26.5
8	---	---	---	---	---	26.0	28.5	25.5	27.0	26.5	24.0	25.0
9	---	---	---	---	---	26.0	28.5	25.5	27.0	29.0	20.5	24.5
10	---	---	---	---	---	26.5	---	---	27.5	27.0	21.5	24.5
11	---	---	---	---	---	26.5	---	---	28.0	27.0	21.0	24.0
12	---	---	---	---	---	26.5	---	---	27.0	25.5	22.5	24.0
13	---	---	---	---	---	26.5	---	---	27.0	24.0	22.5	23.5
14	---	---	---	---	---	26.5	28.5	26.0	27.5	22.5	18.5	20.5
15	---	---	---	---	---	26.5	---	---	27.5	24.0	17.5	20.5
16	---	---	---	---	---	26.5	28.5	26.0	27.5	25.0	18.0	21.5
17	---	---	24.5	---	---	27.0	28.5	26.5	27.5	26.5	20.5	23.0
18	28.5	23.0	25.5	---	---	27.0	28.5	26.0	27.5	26.5	21.0	24.0
19	29.0	24.0	26.0	---	---	27.0	28.0	25.0	26.5	30.0	22.5	25.5
20	30.0	25.0	26.5	---	---	27.5	27.5	25.0	26.0	30.5	23.5	27.0
21	31.0	25.0	27.5	---	---	28.0	27.5	25.0	26.5	28.5	24.5	26.5
22	30.5	26.0	28.0	---	---	28.5	28.5	25.5	27.0	27.5	23.5	25.5
23	30.5	24.5	27.5	32.5	26.5	29.0	27.5	25.0	26.5	28.0	23.5	25.0
24	30.0	24.5	27.0	---	---	29.0	28.0	25.0	26.5	27.0	23.0	25.0
25	29.0	25.5	27.0	32.5	26.5	29.0	---	---	e26.5	24.5	22.5	23.0
26	28.0	24.0	26.0	32.0	26.5	29.0	---	---	---	25.5	21.5	23.0
27	28.5	25.0	26.5	30.0	24.5	27.5	---	---	---	26.0	18.0	22.0
28	29.5	24.5	27.0	29.0	25.0	27.0	---	---	---	25.0	18.5	22.0
29	30.0	24.5	27.0	30.0	26.5	28.0	---	---	---	24.0	18.5	21.5
30	29.0	24.5	26.5	29.5	27.0	28.0	---	---	---	24.0	19.0	21.5
31	---	---	---	30.5	27.0	29.0	25.0	21.0	22.0	---	---	---
MONTH	31.0	23.0	26.5	32.5	24.5	27.0	30.5	21.0	27.0	30.5	17.5	24.0
YEAR	32.5	2.5	17.5									

e Estimated

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.

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

Water-Quality records.--Chemical analyses: November 1969 to August 1988. Biochemical analyses: January 1978 to August 1988.

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 (capacity, 283,600 acre-ft), Lake Colorado City (station 08123000), and Champion Creek Reservoir (capacity, 42,500 acre-ft). 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, 229,500 acre-ft Oct. 1 (elevation, 1,874.20 ft); minimum, 189,900 acre-ft Sept. 30 (elevation, 1,869.06 ft).

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

1,869.0	189,400	1,872.0	211,900	1,874.0	227,900
1,870.0	196,900	1,873.0	219,900	1,875.0	235,900
1,871.0	204,400				

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	229300	223300	219700	218300	217600	216400	213600	212500	212500	208400	201100	194400
2	228500	223000	219400	218600	217700	216200	213400	212300	212200	208000	200800	194400
3	228400	222600	219800	218800	217700	216200	213700	212300	212000	207600	201100	194400
4	228200	222200	219400	218500	217700	216200	213000	212100	211900	207400	201100	194100
5	228000	221900	219400	218400	217500	216100	212900	211900	211500	207100	200800	193800
6	227600	221900	219300	218400	217400	216000	212900	212100	211300	206500	200500	193600
7	227200	221600	219100	218400	217400	216000	212800	212300	211200	206400	200200	193400
8	227000	221500	219500	218400	217500	215900	212600	212600	211000	206000	200100	193100
9	226800	221600	219300	218500	217500	215700	212500	212600	211100	205700	199800	193100
10	226600	221600	219200	218300	217400	215500	212300	212500	211300	205300	199700	192700
11	226500	221500	219000	218200	217100	215500	212100	212300	211000	205300	199300	192600
12	226300	221100	219200	218200	217100	215300	212100	212100	211300	205000	199000	192300
13	226000	221100	219400	217700	217100	214900	212000	212100	211500	204700	198800	193200
14	226100	220900	219200	218000	216800	215000	212300	212000	211600	204400	198600	192900
15	225900	220800	219000	218100	216900	214300	212000	212000	211500	204000	198300	192700
16	225600	220600	218800	217900	216600	214300	211800	211800	211400	203900	198000	192500
17	225400	220700	218800	218100	216500	213800	211900	211500	211200	203700	197700	192300
18	225100	221300	218900	218000	216300	213800	211800	211400	211200	203500	197400	192100
19	225000	221200	218900	218200	216800	214100	211600	211300	211200	203200	197100	192000
20	225000	221000	218800	218200	216700	214100	211500	211000	211000	203200	196800	191900
21	224800	221000	218700	218100	216500	214100	211300	211000	210800	203100	196500	191600
22	224800	220700	218900	218100	216500	214000	211100	211000	210600	203200	196000	191300
23	224800	220900	218800	218100	216100	214000	211100	211800	210300	203000	195900	191200
24	224800	220800	218600	218000	216500	214100	210900	213500	210300	202800	195600	191100
25	224500	220300	218700	218000	216200	213900	210600	213600	210000	202500	195400	191100
26	224200	220200	218500	217900	216200	213700	210300	213300	209900	201700	195100	190800
27	224000	220200	218500	217900	215900	213700	210200	213200	209400	201600	195000	190500
28	223800	220000	218400	217800	216100	214100	210200	212900	209200	201400	194700	190400
29	223700	219900	218500	217700	---	214400	211300	212800	208900	201200	194400	190200
30	223700	219800	218600	217500	---	213900	211500	212900	208600	201700	194200	189900
31	223700	---	218500	217500	---	213700	---	212700	---	201500	194200	---
MAX	229300	223300	219800	218800	217700	216400	213700	213600	212500	208400	201100	194400
MIN	223700	219800	218400	217500	215900	213700	210200	211000	208600	201200	194200	189900
(↑)	1873.47	1872.99	1872.83	1872.70	1872.53	1872.23	1871.95	1872.10	1871.55	1870.61	1869.64	1869.06
(Φ)	-5800	-3900	-1300	-1000	-1400	-2400	-2200	+1200	-4100	-7100	-7300	-4300

CAL YR 1992 MAX 241300 MIN 155100 (Φ) +63500
WTR YR 1993 MAX 229300 MIN 189900 (Φ) -42600

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

COLORADO RIVER MAIN STEM

51

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".
Water-quality records.--Chemical analyses: October 1947 to September 1957.

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. Since 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 FOR PERIOD PRIOR TO REGULATION.--19 years (water years 1924-27, 1940-55) prior to completion of Robert Lee Dam, 207 ft³/s (150,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1924-27, 1940-55).--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; 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	4.3	2.2	1.9	.62	.90	5.1	4.2	3.6	2.9	5.6	7.3
2	4.5	3.8	2.1	1.3	.58	.82	4.7	4.2	3.5	2.9	6.2	6.7
3	4.5	3.9	2.1	.96	.67	.65	4.7	4.1	3.3	3.0	5.9	6.5
4	4.4	3.9	2.2	.79	.71	.60	4.7	4.1	3.4	3.3	5.8	6.5
5	4.5	4.0	2.1	.77	.68	.54	4.6	4.0	3.4	3.3	5.7	6.7
6	4.4	4.0	2.2	.73	.64	.50	4.7	4.2	3.4	3.2	5.9	6.6
7	4.4	4.1	2.2	.71	.64	.62	4.7	4.2	3.4	3.0	6.1	6.6
8	4.2	4.1	2.2	.71	.64	.60	4.6	4.7	3.3	3.1	6.0	6.6
9	4.3	4.0	2.2	.64	.78	.40	4.4	4.0	4.3	3.0	5.9	6.6
10	4.2	3.9	2.0	.75	1.6	.45	4.1	3.7	4.8	3.0	5.6	6.5
11	4.3	3.9	2.1	.79	1.2	.45	4.3	3.8	3.2	3.1	5.6	6.2
12	4.3	3.8	2.2	.75	.96	.46	4.3	3.7	3.1	3.1	5.6	6.4
13	4.2	3.8	2.2	.70	.77	.58	4.2	3.9	3.2	3.1	5.6	9.5
14	4.1	3.8	2.7	.66	.72	.61	4.8	4.0	3.1	2.9	5.6	8.1
15	3.8	3.8	2.1	.61	.87	.59	4.5	3.9	3.1	3.0	5.6	6.5
16	3.8	3.8	1.9	.57	.93	2.4	4.3	3.7	2.9	3.0	5.8	6.5
17	3.9	3.9	1.9	.61	.70	3.9	4.4	3.7	3.4	3.0	5.7	6.6
18	4.0	4.2	2.1	.56	.55	4.1	4.4	3.7	3.3	3.1	5.6	6.5
19	4.0	4.6	2.2	.57	.49	4.6	4.2	3.8	3.1	3.2	5.5	6.5
20	3.9	3.4	2.2	.65	.46	4.4	4.3	3.8	3.0	3.1	5.7	6.6
21	3.8	2.3	2.1	.73	.51	4.3	4.5	3.6	3.1	3.1	5.8	6.5
22	3.9	1.9	2.1	.59	.52	4.4	4.7	3.8	3.1	3.3	5.8	6.5
23	4.0	1.8	2.1	.42	.49	4.3	4.6	5.2	3.0	3.1	5.9	6.7
24	4.1	2.0	2.1	.67	.53	4.4	4.2	3.8	3.0	3.0	6.0	6.6
25	4.2	1.6	2.1	.54	.65	4.5	4.1	3.6	3.0	3.0	6.0	7.4
26	4.0	2.0	2.1	.49	.77	4.7	4.3	3.6	3.0	3.2	5.9	7.2
27	3.9	2.1	2.2	.51	.61	4.9	4.3	3.6	3.0	4.6	5.9	6.9
28	4.1	2.1	2.1	.53	.72	8.4	4.4	3.5	2.9	4.7	5.9	7.1
29	4.2	2.1	2.2	.69	---	5.2	8.1	3.6	2.9	4.6	6.0	7.0
30	4.3	2.1	2.1	.82	---	5.3	4.4	4.0	2.8	6.0	6.2	6.8
31	4.3	---	2.1	.73	---	5.0	---	3.6	---	5.7	7.3	---
TOTAL	128.9	99.0	66.4	22.45	20.01	83.57	137.6	121.3	97.6	105.6	181.7	204.7
MEAN	4.16	3.30	2.14	.72	.71	2.70	4.59	3.91	3.25	3.41	5.86	6.82
MAX	4.5	4.6	2.7	1.9	1.6	8.4	8.1	5.2	4.8	6.0	7.3	9.5
MIN	3.8	1.6	1.9	.42	.46	.40	4.1	3.5	2.8	2.9	5.5	6.2
AC-FT	256	196	132	45	40	166	273	241	194	209	360	406

COLORADO RIVER MAIN STEM

08124000 COLORADO RIVER AT ROBERT LEE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1993#, BY WATER YEAR (WY)

MEAN	26.0	10.4	1.58	1.24	1.47	1.54	2.61	6.22	39.4	45.0	44.4	37.6
MAX	578	219	9.85	9.14	9.34	9.73	29.0	68.1	473	495	512	438
(WY)	1987	1987	1990	1991	1990	1990	1989	1987	1989	1988	1988	1986
MIN	.005	.008	.12	.049	.046	.015	.020	.011	.000	.000	.011	.034
(WY)	1969	1979	1974	1980	1969	1980	1972	1971	1980	1970	1985	1984

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1969 - 1993#
ANNUAL TOTAL	1050.39	1268.83	
ANNUAL MEAN	2.87	3.48	18.2
HIGHEST ANNUAL MEAN			182 1987
LOWEST ANNUAL MEAN			1.04 1969
HIGHEST DAILY MEAN	37 Jun 9	9.5 Sep 13	5600 Sep 9 1980
LOWEST DAILY MEAN	.53 Jul 10	.40 Mar 9	.00 Oct 1 1968
ANNUAL SEVEN-DAY MINIMUM	.59 Jul 7	.50 Mar 6	.00 Oct 14 1968
INSTANTANEOUS PEAK FLOW		21 Sep 13	24500 Sep 9 1980
INSTANTANEOUS PEAK STAGE		1.86 Sep 13	20.63 Sep 9 1980
INSTANTANEOUS LOW FLOW		.25 Jan 23	.00 at times
ANNUAL RUNOFF (AC-FT)	2080	2520	13180
10 PERCENT EXCEEDS	4.3	6.0	9.2
50 PERCENT EXCEEDS	2.2	3.7	.38
90 PERCENT EXCEEDS	.87	.64	.01

Period of regulated streamflow.

COLORADO RIVER MAIN STEM

53

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. Many diversions upstream from station for irrigation, municipal supplies, and for oil field operations. Flow is also affected by E. V. Spence (station 08123950) and Oak Creek Reservoirs (capacity, 39,360 acre-ft), and at times by discharge from the floodwater-retarding structures in the Kickapoo and Valley Creeks drainage basins.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--61 years (water years 1908-68) prior to completion of Robert Lee Dam, 336 ft³/s (243,400 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1908-68).--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).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	20	32	36	29	31	39	35	12	6.3	1.8	19
2	14	21	32	36	29	32	35	37	11	4.4	1.5	12
3	14	19	32	36	29	31	32	28	10	3.9	1.5	9.5
4	14	20	32	36	29	30	31	22	7.9	3.4	1.5	8.7
5	14	18	32	36	29	29	28	18	6.5	3.2	1.4	8.5
6	15	16	33	36	29	28	26	17	5.9	3.2	1.2	7.6
7	15	17	33	36	28	28	29	15	4.9	4.5	1.5	7.1
8	13	17	33	35	28	27	28	54	2.6	3.0	1.5	6.9
9	13	17	37	35	28	26	26	78	5.5	2.3	1.9	6.7
10	11	18	35	36	31	24	23	36	346	1.9	3.0	6.7
11	12	19	32	36	31	24	22	24	139	1.5	3.8	6.7
12	13	19	32	35	31	24	23	17	62	1.5	2.6	6.7
13	12	17	33	33	31	23	23	9.0	41	1.5	2.2	11
14	12	16	39	33	31	21	25	7.7	34	1.5	2.0	43
15	13	17	39	32	36	20	22	7.7	29	1.5	1.8	20
16	13	17	39	31	36	20	21	6.9	25	1.6	1.8	20
17	13	17	38	31	35	20	20	5.5	30	1.9	1.8	17
18	12	25	36	31	32	20	17	5.3	29	2.4	1.8	14
19	13	49	36	31	31	25	15	3.7	25	2.7	1.8	12
20	16	53	36	32	30	30	12	2.6	24	2.4	1.7	11
21	17	47	34	33	30	29	11	3.8	24	2.1	1.5	10
22	15	40	33	33	29	30	9.5	3.8	22	1.9	1.5	10
23	15	37	32	34	28	31	7.7	14	20	1.8	1.5	11
24	14	38	33	33	28	32	6.9	16	17	1.8	1.5	11
25	15	36	33	30	36	30	6.3	14	15	1.8	2.6	11
26	15	33	33	30	33	30	4.9	10	15	1.8	3.3	12
27	16	32	33	29	31	29	3.9	8.9	13	1.8	3.0	12
28	17	31	33	29	30	34	4.4	10	12	1.8	4.1	12
29	17	31	33	29	---	76	14	8.8	10	1.8	4.5	10
30	18	31	34	29	---	62	17	12	8.4	1.8	4.3	11
31	16	---	35	29	---	48	---	12	---	1.8	12	---
TOTAL	441	788	1057	1021	858	944	582.6	542.7	1006.7	74.8	77.9	364.1
MEAN	14.2	26.3	34.1	32.9	30.6	30.5	19.4	17.5	33.6	2.41	2.51	12.1
MAX	18	53	39	36	36	76	39	78	346	6.3	12	43
MIN	11	16	32	29	28	20	3.9	2.6	2.6	1.5	1.2	6.7
AC-FT	875	1560	2100	2030	1700	1870	1160	1080	2000	148	155	722

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1993#, BY WATER YEAR (WY)

MEAN	118	42.8	35.0	30.1	61.5	42.3	36.3	81.0	125	58.6	106	139
MAX	1194	374	259	159	756	299	122	377	739	455	639	833
(WY)	1987	1987	1992	1992	1992	1987	1992	1969	1982	1987	1987	1986
MIN	.78	.82	2.33	2.48	1.52	.67	.47	1.07	1.13	.000	.000	.23
(WY)	1980	1980	1984	1986	1984	1980	1980	1971	1974	1984	1984	1983

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1969 - 1993#

ANNUAL TOTAL	54759		7757.8		72.9	
ANNUAL MEAN	150		21.3		405	1987
HIGHEST ANNUAL MEAN					7.18	1984
LOWEST ANNUAL MEAN					9220	Aug 28 1986
HIGHEST DAILY MEAN	3950	Feb 4	346	Jun 10	.00	Mar 20 1971
LOWEST DAILY MEAN	11	Oct 10	1.2	Aug 6	.00	Mar 20 1971
ANNUAL SEVEN-DAY MINIMUM	12	Sep 22	1.4	Aug 2	.00	Mar 20 1971
INSTANTANEOUS PEAK FLOW			525	Jun 10	16600	Aug 3 1978
INSTANTANEOUS PEAK STAGE			7.08	Jun 10	27.50	Sep 21 1990
INSTANTANEOUS LOW FLOW			1.1	Aug 5, 6	.00	at times
ANNUAL RUNOFF (AC-FT)	108600		15390		52810	
10 PERCENT EXCEEDS	291		36		120	
50 PERCENT EXCEEDS	59		19		13	
90 PERCENT EXCEEDS	16		1.9		.87	

Period of regulated streamflow.

COLORADO RIVER MAIN STEM

55

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 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, 4,570 microsiemens Sept. 3; minimum daily, 1090 microsiemens June 11.

WATER TEMPERATURE: Maximum daily, 35.0°C July 31, Aug. 1; minimum daily, 7.5°C Nov. 28, Dec. 5, 6, Jan. 1, 30.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 27...	0830	14	3630	19.0	1400	1200	340	130	350
JAN 04...	1030	36	2560	10.5	960	760	230	94	260
FEB 10...	1215	31	2610	12.5	960	750	220	100	240
APR 12...	0935	23	2610	20.0	910	700	200	100	250
JUN 04...	0825	8.3	2950	26.5	1100	960	290	100	280
JUL 28...	1130	1.8	3860	32.0	2000	1800	520	170	240

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 27...	4	8.6	180	1200	500	0.60	11	2650
JAN 04...	4	6.4	200	740	390	0.50	9.0	1850
FEB 10...	3	5.8	210	720	360	0.60	9.1	1780
APR 12...	4	6.4	210	750	350	0.60	6.7	1790
JUN 04...	4	7.4	180	930	430	0.60	11	2150
JUL 28...	2	6.1	190	1800	340	0.70	14	3210

COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

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. 1992	441	3620	2610	3100	550	656	1100	1270	1300
NOV. 1992	788	3090	2230	4740	450	953	920	1960	1100
DEC. 1992	1057	2580	1860	5320	350	1000	780	2230	970
JAN. 1993	1021	2590	1870	5140	350	967	780	2150	970
FEB. 1993	858	2600	1870	4340	350	817	780	1810	970
MAR. 1993	944	2680	1930	4930	370	937	810	2060	1000
APR. 1993	582.6	2840	2040	3220	400	625	850	1340	1000
MAY 1993	542.7	3070	2210	3240	440	647	920	1340	1100
JUNE 1993	1006.7	1910	1380	3750	240	658	580	1580	740
JULY 1993	74.8	3410	2460	496	510	103	1000	204	1200
AUG. 1993	77.9	3860	2780	584	600	127	1100	238	1300
SEPT 1993	364.1	3890	2800	2750	610	601	1100	1120	1400
TOTAL	7757.8	**	**	41600	**	8090	**	17300	**
WTD.AVG.	21	2750	1990	**	390	**	830	**	1000

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3550	3550	2720	2600	2590	2560	2660	3610	2600	2450	3860	4320
2	3560	3420	2700	2600	2590	2540	2770	e3600	2710	2650	3880	4560
3	3580	3490	2670	2570	2580	2530	2760	3310	2800	2740	3870	4570
4	3590	3570	2710	2580	2580	2540	2900	3150	3080	3030	3800	4330
5	3580	3640	2750	2610	2580	2520	2930	2980	3110	3190	3800	4330
6	3570	3650	2720	2590	2610	2560	2900	3080	3110	3380	3820	4430
7	3580	3620	2670	2590	2600	2570	2790	2750	3200	3410	3780	4330
8	3610	3610	2620	2580	2600	2560	2540	3360	3230	3550	3880	4330
9	3640	3620	2500	e2580	2620	2600	2570	3300	e3300	3660	3830	4320
10	3660	3570	2500	e2590	2620	2550	e2600	2900	2300	3470	3760	4330
11	3660	3530	2500	e2600	2650	2650	e2600	2700	1090	3480	3790	4320
12	3660	3490	2500	e2590	2700	e2700	2610	2770	1470	3470	3690	4310
13	3650	e3540	e2530	e2580	2700	e2750	2600	2700	1580	3700	3730	4290
14	3650	3580	2570	e2580	2650	e2800	2530	2670	1630	3780	3710	4110
15	3600	3590	2580	e2570	2600	2880	2680	2640	1610	3810	3850	4010
16	3560	3590	2560	e2570	2570	e2880	e2800	2620	1610	3810	3850	3920
17	3570	3420	2550	e2560	2570	e2860	2880	2610	1680	3850	3830	3700
18	3630	3340	2540	2560	2580	2860	2880	2700	1560	3650	3880	3520
19	3690	3200	2530	2580	2580	2740	3060	2940	1630	3640	3890	3520
20	3690	3160	2570	2600	2580	2820	3050	2950	1630	3650	3890	3520
21	3680	2910	2560	2590	2590	2700	3100	3000	1700	3740	3930	3490
22	3670	2730	2540	2590	2590	2660	3110	3040	1710	3700	3850	3240
23	3660	2640	2560	2600	2590	2730	3270	2750	1810	3740	3860	3230
24	3670	2420	2560	2580	2570	2710	3260	e2740	1810	3820	3920	3210
25	3680	2420	e2570	2580	2520	2740	3470	e2750	1990	3820	3920	3220
26	e3650	e2550	e2580	2580	2560	2710	3480	e2760	1990	3820	3820	e3350
27	3630	2680	e2580	2580	2560	2630	3620	e2770	2150	3810	3810	3530
28	e3600	2690	2590	2580	2560	2630	3620	e2750	2160	3840	e3850	3550
29	e3600	2730	2590	2600	---	2650	3390	2770	2440	3880	e3900	3630
30	e3570	2750	2510	2590	---	2830	3660	2650	2450	3880	e3950	3780
31	e3580	---	2510	2600	---	2720	---	2620	---	3880	3980	---
MEAN	3620	3220	2590	2590	2600	2680	2970	2900	2170	3560	3840	3910

e Estimated

COLORADO RIVER MAIN STEM

57

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.5	20.0	10.0	7.5	10.0	14.0	17.0	20.5	25.0	27.0	35.0	24.0
2	21.0	20.0	9.5	9.0	9.5	14.0	19.0	---	31.0	28.5	27.5	27.5
3	22.0	17.5	9.5	10.0	13.0	15.0	17.0	21.0	27.0	28.5	27.5	26.0
4	23.0	16.0	9.5	11.0	12.0	14.0	15.5	21.0	27.0	32.0	30.0	26.0
5	24.0	15.0	7.5	10.0	12.0	12.5	14.5	21.0	28.0	31.0	33.5	26.0
6	20.5	16.0	7.5	10.0	12.0	16.0	15.5	20.0	28.0	30.0	27.5	26.0
7	21.5	17.0	9.0	11.0	12.0	17.0	18.0	23.5	28.0	27.5	28.0	28.0
8	18.5	17.0	9.0	11.0	12.0	19.0	20.0	23.0	26.0	32.0	30.0	26.0
9	18.0	18.0	9.0	---	13.0	20.0	22.0	23.0	---	27.0	29.0	26.0
10	19.0	21.0	9.0	---	13.5	17.0	---	25.0	22.0	32.0	29.0	26.0
11	23.0	21.0	9.5	---	13.0	13.0	---	25.0	24.0	33.0	28.0	23.0
12	19.5	17.5	10.0	---	14.0	---	20.0	20.0	28.5	32.0	30.0	27.0
13	19.0	---	---	---	15.0	---	20.0	20.0	28.0	32.0	29.5	27.0
14	23.0	17.5	9.5	---	13.5	---	18.0	21.0	28.0	30.0	30.0	21.0
15	22.0	17.0	11.0	---	13.0	17.0	21.0	26.0	27.0	30.0	30.0	25.0
16	22.0	17.0	11.0	---	11.5	---	---	26.0	25.5	32.0	29.0	21.5
17	23.0	17.5	10.0	---	8.0	---	24.0	27.0	25.0	29.0	29.0	23.0
18	22.0	17.0	11.0	13.0	9.0	16.5	25.0	25.0	27.0	32.0	29.0	27.0
19	19.0	16.0	11.0	11.0	9.0	15.5	18.0	23.0	25.5	31.0	28.5	25.0
20	19.0	18.0	11.0	11.5	10.0	14.0	18.0	23.0	28.0	30.0	29.0	26.0
21	20.0	14.5	11.0	13.0	11.0	15.5	18.0	25.0	28.0	31.0	29.0	27.0
22	20.5	18.5	12.5	10.0	11.0	15.5	18.0	23.0	30.0	32.0	28.0	26.5
23	23.0	18.0	11.0	11.0	12.5	19.0	18.0	26.0	30.0	29.0	27.0	26.0
24	23.0	15.0	10.0	11.0	14.0	21.0	19.5	---	27.0	29.0	27.0	27.0
25	24.0	11.5	---	11.0	16.0	23.0	20.0	---	29.0	31.0	27.5	26.0
26	---	---	---	11.0	14.0	17.5	20.0	---	29.5	29.5	26.5	---
27	19.0	8.0	---	12.0	14.0	23.0	20.0	---	30.0	32.0	26.0	27.0
28	---	7.5	11.0	10.0	12.5	23.0	20.0	---	31.0	32.0	---	27.0
29	---	9.5	12.0	9.5	---	23.0	21.0	28.0	31.0	30.0	---	25.0
30	---	9.0	14.5	7.5	---	20.0	21.0	31.0	32.0	30.0	---	25.0
31	---	---	11.0	10.0	---	18.0	---	29.0	---	35.0	23.0	---
MEAN	21.2	16.0	10.2	10.5	12.1	17.4	19.2	23.8	27.8	30.5	28.7	25.6

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, of which 63.5 mi² is above Lake Winters dam.

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

Water-quality records.--Chemical analyses: October 1957 to September 1991. Specific conductance: October 1967 to September 1991. Water temperatures: October 1967 to September 1991.

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 10 ft³/s, which are fair. The stage-discharge relationship during periods of low flow are affected by wind action and by occasional accumulation of drift on dam. The city of Winters diverts water from New Lake Winters (capacity, 8,374 acre-ft at elevation, 1,790.0 ft) for municipal use. Prior to June 1982, capacity of Old Lake Winters (just upstream from new dam) was 3,060 acre-ft.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.81	3.5	4.1	6.4	9.7	14	16	11	.66	.51	.00	.00
2	.93	2.8	4.4	6.4	9.7	13	13	10	.67	.38	.00	.00
3	1.1	2.8	4.8	7.6	9.7	14	11	8.5	.64	.33	.00	.00
4	1.2	2.2	4.4	8.7	9.7	15	8.5	6.6	.56	.21	.00	.00
5	1.2	1.8	3.6	9.7	8.4	13	9.2	6.0	.45	.13	.00	.00
6	1.1	1.8	4.3	11	8.0	12	7.0	4.4	.43	.07	.00	.00
7	1.1	1.8	4.4	14	8.2	9.6	13	3.6	.43	.02	.00	.00
8	.70	2.3	4.8	10	6.8	5.7	11	3.5	.42	.00	.00	.00
9	.91	2.5	5.3	9.5	7.2	6.3	11	17	.61	.00	.00	.00
10	1.1	2.7	5.6	8.4	11	6.0	7.7	15	238	.00	.00	.00
11	.81	2.9	6.0	10	10	5.4	6.4	7.5	84	.00	.00	.00
12	1.2	2.5	5.4	8.7	12	5.0	5.7	4.0	34	.00	.00	.00
13	1.4	2.3	5.9	9.6	12	5.4	6.2	3.1	20	.00	.00	.00
14	1.4	2.3	11	8.1	11	5.4	11	2.5	11	.00	.00	.00
15	1.4	2.6	12	6.8	12	5.4	6.5	2.1	5.5	.00	.00	.00
16	1.3	2.7	13	6.6	14	6.5	5.9	1.7	3.3	.00	.00	.00
17	1.2	2.7	11	6.6	14	5.8	5.5	1.5	3.0	.00	.00	.00
18	1.1	7.4	9.1	6.6	12	5.6	5.1	1.4	2.7	.00	.00	.00
19	1.1	26	7.8	9.9	11	14	4.9	1.1	2.3	.00	.00	.00
20	1.3	42	6.6	9.9	11	16	3.9	1.1	2.2	.00	.00	.00
21	1.5	21	6.8	13	9.0	15	3.6	1.0	1.9	.00	.00	.00
22	1.4	13	6.6	14	9.7	14	3.3	.92	2.1	.00	.00	.00
23	1.4	11	6.6	11	10	12	3.2	3.2	2.4	.00	.00	.00
24	1.4	6.8	6.6	9.0	12	10	3.2	4.4	2.2	.00	.00	.00
25	1.4	4.9	6.1	8.1	14	9.7	2.9	4.7	1.7	.00	.00	.00
26	1.4	4.8	5.4	7.2	13	7.2	2.7	3.2	1.5	.00	.00	.00
27	1.2	4.4	5.4	7.0	12	6.3	2.6	2.0	1.2	.00	.00	.00
28	1.2	4.4	5.6	9.4	13	40	2.7	1.2	1.0	.00	.00	.00
29	1.4	4.9	6.6	9.7	---	85	5.9	1.2	.83	.00	.00	.00
30	1.6	4.8	5.0	9.7	---	39	8.0	1.4	.66	.00	.00	.00
31	1.8	---	5.2	9.7	---	22	---	.82	---	.00	.00	---
TOTAL	38.06	197.6	199.4	282.3	300.1	443.3	206.6	135.64	426.36	1.65	0.00	0.00
MEAN	1.23	6.59	6.43	9.11	10.7	14.3	6.89	4.38	14.2	.053	.000	.000
MAX	1.8	42	13	14	14	85	16	17	238	.51	.00	.00
MIN	.70	1.8	3.6	6.4	6.8	5.0	2.6	.82	.42	.00	.00	.00
AC-FT	75	392	396	560	595	879	410	269	846	3.3	.00	.00
CFSM	.00	.01	.01	.02	.02	.03	.02	.01	.03	.00	.00	.00
IN.	.00	.02	.02	.02	.02	.04	.02	.01	.04	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1993, BY WATER YEAR (WY)

	63.6	13.5	19.3	12.5	28.0	20.2	47.3	149	94.7	26.8	32.4	71.0
MEAN	63.6	13.5	19.3	12.5	28.0	20.2	47.3	149	94.7	26.8	32.4	71.0
MAX	823	253	576	164	911	268	538	822	700	623	740	1248
(WY)	1982	1975	1992	1992	1992	1992	1954	1935	1982	1932	1978	1935
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1934	1935	1934	1934	1934	1935	1939	1984	1934	1933	1933	1938

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1932 - 1993

ANNUAL TOTAL	47136.68	2231.01	
ANNUAL MEAN	129	6.11	46.4
HIGHEST ANNUAL MEAN			261
LOWEST ANNUAL MEAN			.96
HIGHEST DAILY MEAN	5630	Feb 24	21400
LOWEST DAILY MEAN	.70	Oct 8	.00
ANNUAL SEVEN-DAY MINIMUM	.99	Oct 5	.00
INSTANTANEOUS PEAK FLOW			550
INSTANTANEOUS PEAK STAGE			4.49
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	93500	4430	33580
ANNUAL RUNOFF (CFSM)	.29	.014	.10
ANNUAL RUNOFF (INCHES)	3.90	.18	1.40
10 PERCENT EXCEEDS	225	12	44
50 PERCENT EXCEEDS	29	3.2	1.1
90 PERCENT EXCEEDS	1.6	.00	.00

a/ From floodmark, not affected by backwater from Colorado River.

COLORADO RIVER BASIN

59

08128000 SOUTH CONCHO RIVER AT CHRISTOVAL, TX

LOCATION.--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.--Records good except those for estimated daily discharges, which are poor. Low flow is materially affected by diversions to the 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	2300	79	2.36	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	37	40	37	34	29	25	24	30	21	15	21
2	35	35	39	37	35	30	27	22	29	20	15	21
3	35	35	40	36	35	30	27	22	29	20	15	20
4	35	33	41	35	34	29	29	23	30	20	16	19
5	35	33	41	35	34	28	28	25	28	20	16	17
6	33	33	41	35	35	28	30	25	28	20	15	15
7	32	33	41	35	35	28	31	25	28	19	16	16
8	30	33	41	35	35	29	28	25	28	18	16	16
9	32	34	39	37	35	30	27	23	27	18	17	17
10	34	36	31	36	33	30	26	22	28	17	17	16
11	31	41	30	37	33	34	26	22	26	16	16	17
12	31	41	33	37	33	e30	27	22	26	16	16	17
13	32	39	39	37	33	e30	26	24	26	17	16	21
14	32	39	41	37	33	e30	25	24	26	17	16	21
15	33	40	41	37	33	e30	25	24	26	17	16	19
16	31	42	41	34	33	e30	27	26	25	17	15	19
17	33	44	41	35	33	e30	25	27	25	17	15	20
18	35	45	42	34	33	e30	27	33	25	17	16	20
19	35	47	39	35	34	e30	27	27	25	17	16	19
20	35	45	39	36	33	e30	25	29	24	17	16	18
21	35	45	38	37	30	e30	25	26	24	17	16	18
22	34	44	37	38	30	e30	27	26	24	15	16	18
23	33	43	35	38	30	e30	28	28	23	16	17	18
24	33	43	35	37	30	e28	27	30	22	17	19	17
25	33	40	35	37	31	e28	24	28	22	17	22	18
26	33	39	35	37	28	28	24	29	21	17	21	18
27	31	40	35	37	28	30	25	30	21	17	20	17
28	31	41	35	38	28	28	25	30	21	16	18	16
29	31	41	36	37	---	24	31	32	21	16	19	16
30	32	41	37	35	---	24	25	35	22	16	20	16
31	33	---	37	33	---	26	---	30	---	16	22	---
TOTAL	1023	1182	1175	1121	911	901	799	818	760	541	526	541
MEAN	33.0	39.4	37.9	36.2	32.5	29.1	26.6	26.4	25.3	17.5	17.0	18.0
MAX	35	47	42	38	35	34	31	35	30	21	22	21
MIN	30	33	30	33	28	24	24	22	21	15	15	15
AC-FT	2030	2340	2330	2220	1810	1790	1580	1620	1510	1070	1040	1070

e Estimated

COLORADO RIVER BASIN

08128000 SOUTH CONCHO RIVER AT CHRISTOVAL, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1993, BY WATER YEAR (WY)

MEAN	48.7	21.8	21.4	20.1	20.8	20.5	28.6	43.3	27.9	41.9	20.1	66.6
MAX	851	146	126	100	91.5	88.4	479	1116	189	1445	162	2352
(WY)	1931	1975	1975	1975	1975	1992	1957	1957	1958	1938	1971	1936
MIN	.54	.51	.57	.40	.35	.39	1.09	2.83	1.08	1.08	1.08	.85
(WY)	1955	1955	1955	1955	1955	1955	1955	1954	1954	1952	1952	1954

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1930 - 1993

ANNUAL TOTAL	18324			10298								
ANNUAL MEAN	50.1			28.2						31.9		
HIGHEST ANNUAL MEAN										207		1936
LOWEST ANNUAL MEAN										3.20		1952
HIGHEST DAILY MEAN	97	Mar 4		47	Nov 19					29500	Jul 23	1938
LOWEST DAILY MEAN	30	Oct 8		15	Jul 22					.10	Feb 27	1955
ANNUAL SEVEN-DAY MINIMUM	32	Oct 7		15	Jul 31					.19	Feb 25	1955
INSTANTANEOUS PEAK FLOW				79	May 29					100000	Jul 23	1938
INSTANTANEOUS PEAK STAGE				2.36	May 29					21.95	Jul 23	1938
INSTANTANEOUS LOW FLOW				14	a					.00	*	
ANNUAL RUNOFF (AC-FT)	36350			20430						23100		
10 PERCENT EXCEEDS	82			39						41		
50 PERCENT EXCEEDS	43			29						14		
90 PERCENT EXCEEDS	33			17						3.6		

a Aug. 3, Sept. 5, 6.

* No flow Feb. 28 and Mar. 1, 1955.

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 Tullis 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.

Water-quality records.--Chemical analyses: August 1964 to April 1965.

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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 9	2300	39	7.54	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	21	18	19	18	20	17	11	5.5	4.7	.00	.00
2	8.5	21	18	20	18	20	17	9.8	4.0	1.6	.00	.00
3	8.1	20	18	20	18	20	17	9.4	2.9	.68	.00	.00
4	8.0	19	19	20	18	19	17	9.1	2.0	.24	.00	.00
5	8.2	21	19	20	18	19	17	8.9	1.9	.17	.00	.00
6	8.2	23	18	20	17	19	17	8.2	1.7	.13	.00	.00
7	8.5	24	18	20	18	19	17	8.2	1.3	.08	.00	.00
8	8.2	25	18	21	18	18	17	8.2	1.3	.07	.00	.00
9	8.7	25	20	21	18	18	17	7.7	5.3	.03	.00	.00
10	9.3	25	20	20	18	18	17	7.4	21	.03	.00	.00
11	9.7	25	20	20	18	18	16	6.9	9.9	.03	.00	.00
12	10	26	19	19	18	18	15	6.7	7.6	.03	.00	.00
13	10	26	19	19	18	18	15	7.0	6.1	.03	.00	.05
14	9.4	26	21	20	18	18	15	7.0	4.8	.03	.00	.18
15	9.1	26	20	20	19	18	15	6.5	4.2	.01	.00	.05
16	9.1	26	19	21	19	19	15	6.2	4.6	.01	.00	.03
17	9.3	27	19	20	19	18	15	5.9	3.8	.02	.00	.03
18	10	30	19	20	18	18	15	5.6	3.8	.18	.00	.04
19	12	27	19	20	18	18	14	5.6	3.5	.18	.00	.05
20	11	20	20	21	18	19	13	5.6	2.8	.04	.00	.07
21	12	19	19	21	18	18	13	5.4	2.8	.02	.00	.05
22	12	18	18	18	18	18	12	5.0	2.7	.02	.00	.03
23	14	18	18	18	18	18	12	7.8	2.1	.02	.00	.05
24	14	17	18	17	19	18	12	7.7	1.5	.00	.00	.06
25	14	17	18	17	23	18	12	6.9	1.3	.00	.00	.16
26	14	17	18	16	20	18	11	6.5	1.4	.00	.00	.32
27	14	17	18	17	19	18	11	6.3	1.3	.00	.00	.11
28	15	18	18	18	19	19	10	6.2	.72	.00	.00	.11
29	15	17	18	18	---	18	13	5.9	.74	.00	.00	.14
30	17	17	18	18	---	18	12	6.9	7.4	.00	.00	.15
31	17	---	18	18	---	17	---	7.1	---	.00	.00	---
TOTAL	341.7	658	580	597	516	570	436	222.6	119.96	8.35	0.00	1.68
MEAN	11.0	21.9	18.7	19.3	18.4	18.4	14.5	7.18	4.00	.27	.000	.056
MAX	17	30	21	21	23	20	17	11	21	4.7	.00	.32
MIN	8.0	17	18	16	17	17	10	5.0	.72	.00	.00	.00
AC-FT	678	1310	1150	1180	1020	1130	865	442	238	17	.00	3.3

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	
MEAN	28.2	9.31	8.54	8.63	14.3	12.1	15.8	20.6	20.7	3.47	9.09	59.8																						
MAX	363	107	59.4	44.3	169	86.7	143	134	375	27.2	115	1181																						
(WY)	1975	1975	1975	1992	1992	1987	1992	1965	1986	1992	1974	1974																						
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000																						
(WY)	1962	1962	1962	1962	1962	1962	1961	1961	1962	1961	1961	1962																						

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1961 - 1993

ANNUAL TOTAL	20239.6	4051.29	
ANNUAL MEAN	55.3	11.1	17.6
HIGHEST ANNUAL MEAN			110
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	996	30	12900
LOWEST DAILY MEAN	7.8	.00	.00
ANNUAL SEVEN-DAY MINIMUM	8.0	.00	.00
INSTANTANEOUS PEAK FLOW		39	15500
INSTANTANEOUS PEAK STAGE		7.54	24.98
INSTANTANEOUS LOW FLOW		.00	.00
ANNUAL RUNOFF (AC-FT)	40150	8040	12740
10 PERCENT EXCEEDS	105	20	21
50 PERCENT EXCEEDS	33	13	1.6
90 PERCENT EXCEEDS	9.5	.00	.00

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.

Water-quality records.--Chemical analyses: September 1964 to May 1967.

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.--No estimated daily discharges. 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 31	1000	104	4.67	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	13	14	15	17	20	5.4	15	11	3.5	.10	44
2	4.6	11	15	17	20	20	4.8	16	8.7	1.5	.11	28
3	5.5	7.5	17	18	20	18	5.3	16	7.8	1.8	.14	18
4	6.7	8.2	18	17	19	16	5.0	15	5.3	1.7	.14	15
5	8.8	9.9	17	13	20	12	4.4	11	3.0	1.6	.12	14
6	6.7	12	15	14	21	10	4.8	12	1.6	.83	.09	14
7	6.4	14	14	17	21	13	5.9	13	1.9	.44	.08	12
8	5.5	14	13	18	20	15	5.1	11	1.9	.28	.09	11
9	5.0	15	18	18	21	12	5.7	9.4	2.5	.18	.12	11
10	5.7	15	14	16	20	14	5.5	8.0	16	.13	.16	11
11	7.4	15	14	16	16	13	2.8	8.9	12	.10	.17	10
12	9.2	14	15	16	12	12	6.2	6.2	10	.09	.15	10
13	7.6	13	16	16	12	15	3.1	8.1	8.5	.08	.11	19
14	6.3	14	20	19	12	18	2.6	7.3	8.1	.08	.09	21
15	6.9	17	18	19	15	17	5.6	5.1	8.6	.06	.07	16
16	6.6	16	14	18	11	12	7.0	7.8	9.3	.05	.07	14
17	7.7	11	13	18	12	9.9	7.4	7.4	10	.04	.06	13
18	9.2	11	17	19	14	10	10	4.1	11	.05	.06	12
19	9.8	13	18	19	16	8.2	9.8	3.3	10	.07	.05	12
20	10	15	18	20	13	10	7.6	2.9	9.7	.72	.05	11
21	9.6	16	18	19	12	12	10	1.4	6.7	2.1	.05	10
22	6.8	15	18	19	11	13	7.7	1.1	5.7	1.9	.05	9.2
23	6.6	16	18	18	8.8	12	6.7	13	5.0	.98	.03	9.0
24	6.8	18	18	16	8.2	11	7.3	11	4.3	.88	.03	9.2
25	8.0	16	18	15	12	12	6.0	10	6.7	.60	.05	10
26	8.8	16	16	15	12	12	6.7	9.1	6.4	.55	.06	12
27	6.7	16	16	13	11	12	3.6	8.9	6.6	.43	.06	11
28	6.6	14	16	12	11	11	6.4	9.3	6.0	.24	.06	9.5
29	7.2	14	15	13	---	7.9	16	8.5	5.0	.17	.07	9.0
30	11	14	14	14	---	6.5	15	12	3.5	.14	.09	8.9
31	12	---	12	15	---	5.7	---	11	---	.11	54	---
TOTAL	229.9	413.6	497	512	418.0	390.2	199.4	282.8	212.8	21.40	56.58	413.8
MEAN	7.42	13.8	16.0	16.5	14.9	12.6	6.65	9.12	7.09	.69	1.83	13.8
MAX	12	18	20	20	21	20	16	16	16	3.5	.54	44
MIN	4.2	7.5	12	12	8.2	5.7	2.6	1.1	1.6	.04	.03	8.9
AC-FT	456	820	986	1020	829	774	396	561	422	42	112	821

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
MEAN	15.2	10.7	11.1	11.1	12.1	10.4	13.8	19.6	9.92	6.26	28.7	13.0
MAX	200	57.9	47.4	37.2	50.5	41.5	105	153	48.3	49.9	840	126
(WY)	1975	1975	1975	1987	1987	1987	1977	1975	1961	1990	1971	1974
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1963	1963	1963	1963	1963	1966	1966	1966	1966	1964	1962	1963

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1961 - 1993

ANNUAL TOTAL	7146.7	3647.48	13.5
ANNUAL MEAN	19.5	9.99	86.6
HIGHEST ANNUAL MEAN			.000
LOWEST ANNUAL MEAN			1971
HIGHEST DAILY MEAN	70	Aug 31	11500
LOWEST DAILY MEAN	1.4	Aug 11	.00
ANNUAL SEVEN-DAY MINIMUM	4.4	Aug 8	.00
INSTANTANEOUS PEAK FLOW			30400
INSTANTANEOUS PEAK STAGE			16.57
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	14180	7230	9780
10 PERCENT EXCEEDS	31	18	22
50 PERCENT EXCEEDS	18	10	5.9
90 PERCENT EXCEEDS	6.8	.14	.00

08130500 DOVE CREEK AT KNICKERBOCKER, TX

LOCATION.--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.--No estimated daily discharges. Records good. Flow is partly regulated by storage, by diversions from two small upstream channel dams, and by small upstream diversions (for irrigation). Flow is sustained by springflow from Dove Creek Spring about 9 mi upstream. Several observations of water temperature were made during the year. Satellite telemeter at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 29	0730	56	4.16	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	20	20	17	18	20	16	17	14	9.2	9.0	16
2	16	18	20	17	18	20	16	17	13	9.2	9.9	14
3	16	17	20	17	18	20	17	17	11	8.0	9.7	13
4	14	17	20	17	18	19	17	17	11	8.1	8.9	12
5	14	17	20	17	18	19	17	17	11	8.4	9.3	12
6	15	17	20	17	18	19	17	17	11	9.6	9.4	12
7	15	17	20	17	18	18	17	17	11	9.7	9.4	11
8	13	17	20	17	18	18	17	17	11	9.7	8.8	11
9	12	17	19	17	18	18	17	17	11	9.2	9.0	12
10	12	17	18	17	18	16	17	17	17	8.5	9.7	12
11	12	17	18	17	18	16	17	17	14	8.0	9.1	12
12	13	18	18	17	18	16	17	16	14	8.4	8.7	12
13	13	18	18	17	18	16	16	15	13	8.3	8.3	17
14	13	18	19	17	18	17	16	15	12	8.0	8.4	25
15	13	18	19	17	18	17	16	13	12	7.8	8.6	15
16	13	18	19	17	19	16	16	12	12	7.6	10	14
17	13	19	19	17	19	16	15	12	12	7.9	9.4	14
18	14	21	19	16	19	15	14	12	12	9.0	10	14
19	14	23	19	16	19	15	14	12	12	13	8.6	14
20	14	21	19	17	19	16	13	12	12	10	8.4	13
21	14	20	19	17	19	17	12	12	11	9.4	9.3	13
22	14	20	19	17	19	17	12	13	10	9.1	9.4	13
23	14	20	19	17	19	17	13	15	8.3	8.3	9.1	13
24	13	20	19	17	19	17	13	16	6.6	7.9	12	13
25	14	20	19	17	21	17	12	12	7.2	8.2	12	12
26	14	20	18	17	20	17	12	13	8.2	9.7	10	15
27	14	20	17	18	20	16	12	13	10	10	10	14
28	14	20	17	18	20	17	12	13	9.3	8.8	8.4	14
29	15	20	17	18	---	17	31	13	8.1	8.7	9.9	13
30	16	20	17	18	---	17	18	14	7.9	8.9	9.9	13
31	16	---	17	18	---	16	---	14	---	9.3	25	---
TOTAL	433	565	582	530	522	532	469	454	332.6	275.9	307.6	408
MEAN	14.0	18.8	18.8	17.1	18.6	17.2	15.6	14.6	11.1	8.90	9.92	13.6
MAX	16	23	20	18	21	20	31	17	17	13	25	25
MIN	12	17	17	16	18	15	12	12	6.6	7.6	8.3	11
AC-FT	859	1120	1150	1050	1040	1060	930	901	660	547	610	809

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

MEAN	18.9	16.2	16.0	14.8	14.6	13.1	17.3	24.8	16.3	10.5	21.5	14.9
MAX	126	77.6	61.4	61.2	54.0	47.9	107	164	109	38.3	360	73.8
(WY)	1975	1975	1975	1975	1975	1975	1971	1977	1961	1975	1971	1974
MIN	.23	.91	1.06	1.03	.82	.75	.35	.81	.55	.000	.000	.000
(WY)	1966	1971	1966	1966	1967	1967	1966	1964	1966	1964	1964	1965

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1961 - 1993

ANNUAL TOTAL	8824	5411.1	
ANNUAL MEAN	24.1	14.8	
HIGHEST ANNUAL MEAN			16.6
LOWEST ANNUAL MEAN			62.2
HIGHEST DAILY MEAN			1.56
LOWEST DAILY MEAN			6920
ANNUAL SEVEN-DAY MINIMUM	47	31	Aug 12 1971
INSTANTANEOUS PEAK FLOW	12	6.6	Jul 1 1964
INSTANTANEOUS PEAK STAGE	13	8.0	Jul 1 1964
ANNUAL RUNOFF (AC-FT)	17500	10730	17500
10 PERCENT EXCEEDS	39	19	20.66
50 PERCENT EXCEEDS	21	16	.00
90 PERCENT EXCEEDS	14	9.1	1.1

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.

Water-quality records.--Chemical analyses: October 1969 to September 1984.

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 contents, 155,700 acre-ft Mar. 8-10 (elevation, 1,936.58 ft); minimum, 107,300 acre-ft Aug. 30, 31.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143900	143500	145100	148700	152400	155000	150700	145800	141800	135100	120100	108200
2	143800	143500	145200	148700	152500	155200	150700	145700	141400	134800	119700	108300
3	143800	143500	145200	148700	152600	155300	150600	145600	141100	134100	119500	108300
4	143800	143500	145200	148900	152700	155300	150200	145400	140900	133900	119000	108300
5	143700	143200	145200	148900	152700	155500	150200	145300	140300	133600	118700	108300
6	143500	143200	145300	149000	152700	155500	150200	145700	140100	133200	118100	108300
7	143500	143200	145400	149000	152800	155500	150100	145700	139400	132700	117800	108200
8	143200	143200	145700	149100	152900	155600	149600	145600	139300	131700	117300	108300
9	143200	143200	145600	149300	153000	155700	149600	145500	138900	131300	116700	108200
10	143100	143400	145800	149300	153200	155700	149400	145400	139300	130400	116200	108100
11	143000	143500	145900	149300	153300	155500	149200	145400	139300	129900	115800	108100
12	143000	143600	146000	149300	153300	155300	149300	145200	139200	129200	115400	108100
13	143100	143600	146200	149300	153300	155100	149000	144900	139100	128500	115000	108100
14	142900	143600	146500	150200	153400	155100	149100	144700	139000	128000	114700	108700
15	142800	143700	146600	150300	153700	155100	148900	144500	138800	127300	114200	108700
16	142700	143800	146800	150600	153800	154800	148800	144200	138800	126700	113800	108700
17	142600	143800	146900	150600	153800	154200	148700	143800	138700	126200	113300	108700
18	142600	143900	147000	150600	153800	153400	148400	143500	138800	125500	113000	108700
19	142600	144500	147200	150700	153900	152600	148400	143400	138800	125400	112400	108700
20	142600	144600	147100	151200	153900	151800	148100	143300	138700	125000	111800	108700
21	142600	144600	147300	151200	154000	151200	147500	143100	138600	124800	111300	108700
22	142600	144700	147500	151400	154200	150500	147200	142700	138500	124300	111000	108600
23	142600	144700	147600	151500	154200	150400	147000	142800	138200	123900	110400	108500
24	142600	144800	147600	151600	154200	150400	146600	142700	137700	123500	110000	108300
25	142700	144800	147800	151700	154500	150500	146300	142500	137300	123000	109700	108200
26	142700	144800	147800	151700	154600	150500	146000	142200	136900	122600	109300	108300
27	142600	144900	148000	151700	154600	150600	145700	142000	136500	122200	109200	108200
28	142500	144900	148100	151900	154700	150700	145400	141700	136100	121700	108500	108200
29	142500	145000	148300	152100	---	150800	145500	141500	135900	121300	107900	108100
30	142800	145000	148400	152200	---	150900	145700	142200	135500	120800	107500	107900
31	142800	---	148600	152200	---	150700	---	142000	---	120500	107100	---
MAX	143900	145000	148600	152200	154700	155700	150700	145800	141800	135100	120100	108700
MIN	142500	143200	145100	148700	152400	150400	145400	141500	135500	120500	107100	107900
(↑)	1934.88	1935.18	1935.66	1936.14	1936.46	1935.94	1935.27	1934.77	1933.85	1931.60	1929.37	1929.51
(φ)	-1100	+2200	+3600	+3600	+2500	-4000	-5000	-3700	-6500	-15000	-13400	+800
CAL YR 1992	MAX	155900	MIN	85770	(φ)	+63120						
WTR YR 1993	MAX	155700	MIN	107100	(φ)	-36000						

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

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.
Water-quality records.--Chemical analyses: October 1969 to September 1984.

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, 12,440 acre-ft Aug. 31 at 0900 hours (gage height, 32.23 ft); minimum, 6,470 acre-ft Jan. 23 (gage height, 27.60 ft).

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

27.0	5,870	30.0	9,170	32.0	12,070
28.0	6,870	31.0	10,470	33.0	13,670
29.0	7,970				

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10550	6910	6840	6940	6520	6680	11010	11030	11610	11220	11060	12250
2	10490	6900	6850	6940	6530	6670	11000	10930	11540	11160	11170	12100
3	10440	6850	6850	6940	6620	6670	11000	10970	11460	11090	11190	11960
4	10390	6820	6830	6900	6730	6650	10950	11000	11450	11050	11110	11850
5	10330	6800	6840	6890	6740	6660	10970	11800	11530	10840	11030	11750
6	10270	6800	6850	6890	6760	6650	10970	11720	11610	10920	11060	11650
7	10200	6810	6850	6890	6770	6630	11400	11610	11690	11210	11160	11570
8	10140	6840	6880	6770	6710	6630	11330	11480	11720	11170	11290	11480
9	10080	6830	6880	6600	6760	6630	11270	11290	11830	11160	11330	11400
10	10030	6830	6860	6550	6770	6620	11170	11130	11860	11170	11330	11290
11	9990	6830	6870	6560	6750	6620	11090	11080	11890	11190	11300	11210
12	9940	6810	6880	6550	6630	6660	11010	11170	11910	11210	11270	11130
13	9900	6810	6910	6540	6610	6680	10980	11270	11890	11220	11250	11250
14	9830	6800	6940	6540	6610	6710	10980	11320	11860	11210	11220	11190
15	9600	6800	6950	6530	6640	7080	10980	11320	11780	11240	11190	11140
16	9260	6800	6960	6530	6630	7530	10970	11270	11720	11240	11190	11090
17	8940	6790	6960	6510	6630	8110	10890	11250	11650	11270	11170	11030
18	8640	6860	6960	6510	6630	8880	10840	11190	11570	11240	11170	10980
19	8290	6870	6950	6530	6650	9610	10760	11060	11490	11140	11190	10930
20	7970	6870	6970	6530	6670	10300	10900	11050	11400	11110	11190	10920
21	7710	6880	6970	6520	6650	11130	11030	11050	11270	11110	11190	10930
22	7420	6860	6990	6520	6650	11410	11090	11010	11270	11130	11170	10930
23	7110	6860	6980	6490	6630	11380	11060	11110	11300	11130	11190	10930
24	6950	6860	6970	6480	6650	11370	11030	11140	11330	11160	11240	10930
25	6920	6850	6960	6480	6650	11320	10950	11160	11380	11160	11480	11000
26	6890	6840	6960	6480	6660	11290	10970	11160	11450	11090	11210	11000
27	6870	6850	6960	6490	6660	11250	11050	11160	11480	11090	11410	11030
28	6850	6850	6970	6490	6670	11270	11080	11140	11410	11110	11750	11060
29	6850	6850	6970	6500	---	11220	11170	11430	11210	11140	11890	11080
30	6830	6850	6970	6510	---	11110	11090	11560	11160	11140	12150	11080
31	6870	---	6940	6520	---	11050	---	11590	---	11130	12340	---
MAX	10550	6910	6990	6940	6770	11410	11400	11800	11910	11270	12340	12250
MIN	6830	6790	6830	6480	6520	6620	10760	10930	11160	10840	11030	10920
(↑)	28.00	27.98	28.06	27.65	27.80	31.36	31.39	31.70	31.43	31.41	32.17	31.38
(φ)	-3740	-20	+90	-420	+150	+4380	+40	+500	-430	-30	+1210	-1260
CAL YR 1992	MAX 12310	MIN 6790	(φ) -4520									
WTR YR 1993	MAX 12340	MIN 6480	(φ) +470									

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

COLORADO RIVER BASIN

08133500 NORTH CONCHO RIVER AT STERLING CITY, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 31°49'48", long 100°59'36", Sterling County, Hydrologic Unit 12090104, 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.

DRAINAGE AREA.--588 mi², of which 19.6 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1939 to September 1985 (continuous-record station). Annual maximum, October 1985 to current year.

REVISED RECORDS.--WSP 1512: 1945, 1948. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,242.36 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1939, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Beginning Oct. 1, 1985, only daily discharges of 100 ft³/s or greater are published. There are several small diversions above station for irrigation. One observation of water temperature was made during the water year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft³/s July 6, 1948 (gage height, 23.70 ft); prior to Oct. 1, 1985, no flow at times each year.
Maximum stage since at least 1891, that of July 6, 1948.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 14	0145	23	4.95	No peak greater than base discharge.			

COLORADO RIVER BASIN

67

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). WDR 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since June 1853, that of Sept. 26, 1936.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 15	*	*12.0	*3.57	No peak greater than base discharge during year.			

* Also occurred on Feb. 16-19 and Mar. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	5.5	7.7	9.9	11	11	10	9.4	4.1	.11	.00	.00
2	5.5	5.5	8.1	9.9	11	12	10	8.4	3.8	.10	.00	.00
3	5.5	5.3	8.1	9.9	11	11	10	8.4	3.4	.07	.00	.00
4	5.5	5.3	8.0	9.9	11	11	9.3	8.0	3.1	.07	.01	.00
5	5.5	5.3	8.0	9.9	11	11	9.5	8.0	2.7	.06	.01	.00
6	5.5	5.3	8.0	9.9	11	11	9.9	8.8	3.0	.06	.00	.00
7	5.3	5.5	8.0	9.9	11	11	9.9	8.8	3.0	.04	.00	.00
8	5.0	6.0	8.8	9.9	11	11	9.9	9.2	2.4	.04	.00	.00
9	5.3	6.0	9.0	9.9	11	11	9.8	8.6	2.9	.03	.00	.00
10	5.1	6.7	9.0	9.9	11	11	9.6	7.8	7.0	.02	.00	.00
11	5.1	7.2	9.0	9.9	11	11	9.6	7.1	6.3	.01	.00	.00
12	5.4	6.8	9.0	9.9	11	11	9.6	6.8	5.4	.00	.00	.00
13	5.9	6.7	9.0	10	11	11	9.6	6.8	4.9	.00	.00	.00
14	6.0	6.5	9.3	10	11	11	9.6	6.6	3.8	.01	.00	.00
15	6.0	6.5	9.3	10	11	11	9.6	6.2	3.6	.03	.00	.00
16	6.0	6.5	9.3	10	12	11	9.6	5.9	2.7	.02	.00	.00
17	5.9	7.0	9.3	10	12	11	9.6	5.5	2.6	.00	.00	.00
18	5.5	7.8	9.4	10	12	11	9.6	5.0	3.2	.00	.00	.00
19	5.5	8.6	9.8	10	11	10	9.4	4.5	3.7	.00	.00	.00
20	5.5	8.6	10	10	11	10	9.3	4.7	3.2	.00	.00	.00
21	5.9	8.6	10	11	11	11	9.2	4.4	2.7	.00	.00	.00
22	6.5	8.6	10	11	11	11	9.0	4.6	2.4	.00	.00	.00
23	6.5	8.5	10	11	10	11	9.0	6.6	1.6	.00	.00	.00
24	6.5	8.3	10	11	10	11	8.6	6.7	1.6	.00	.00	.00
25	6.3	7.8	10	11	10	11	8.0	6.4	1.3	.00	.00	.00
26	5.7	7.6	10	11	10	11	8.0	6.2	1.2	.00	.00	.00
27	5.7	7.7	10	11	10	11	8.0	6.2	1.1	.00	.00	.00
28	5.7	7.7	10	11	10	11	8.2	5.5	.71	.00	.00	.00
29	5.7	7.7	10	11	---	11	9.2	5.1	.67	.00	.00	.00
30	5.5	7.7	9.9	11	---	11	9.6	4.2	.41	.00	.00	.00
31	5.4	---	9.9	11	---	10	---	4.2	---	.00	.00	---
TOTAL	175.8	208.8	285.9	319.8	305	339	280.2	204.6	88.49	0.67	0.02	0.00
MEAN	5.67	6.96	9.22	10.3	10.9	10.9	9.34	6.60	2.95	.022	.001	.000
MAX	6.5	8.6	10	11	12	12	10	9.4	7.0	.11	.01	.00
MIN	5.0	5.3	7.7	9.9	10	10	8.0	4.2	.41	.00	.00	.00
AC-FT	349	414	567	634	605	672	556	406	176	1.3	.04	.00

COLORADO RIVER BASIN

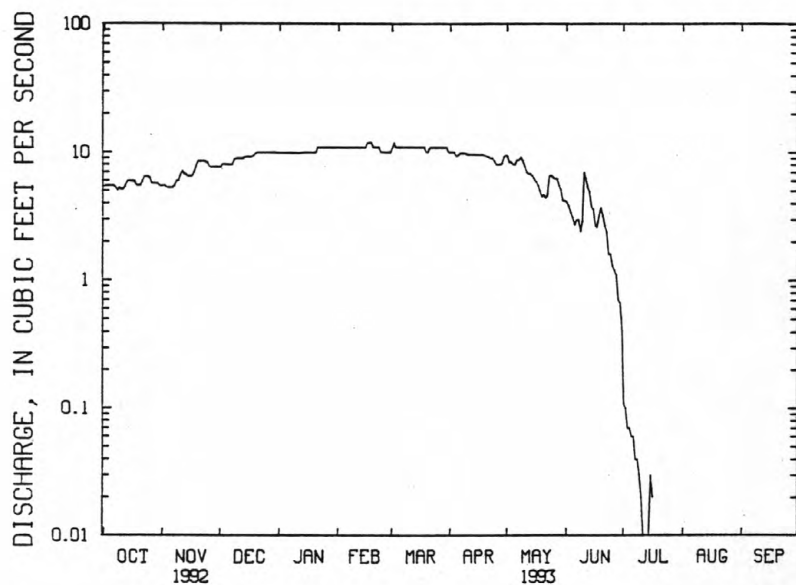
08134000 NORTH CONCHO RIVER NEAR CARLSBAD, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1993, BY WATER YEAR (WY)

MEAN	39.1	4.25	4.33	4.06	6.79	10.8	36.6	85.5	29.2	43.6	16.0	90.2
MAX	1463	65.2	20.1	16.0	85.0	307	631	1355	252	1195	255	4019
(WY)	1958	1935	1931	1937	1935	1926	1925	1925	1937	1948	1953	1936
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1934	1934	1953	1953	1953	1953	1963	1967	1934	1933	1929	1930

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1925 - 1993
ANNUAL TOTAL	7307.0	2208.28	
ANNUAL MEAN	20.0	6.05	31.0
HIGHEST ANNUAL MEAN			336
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	620 May 26	12 Feb 16	62900 Sep 17 1936
LOWEST DAILY MEAN	5.0 Oct 8	.00 Jul 12	.00 Apr 21 1925
ANNUAL SEVEN-DAY MINIMUM	5.2 Oct 6	.00 Jul 17	.00 Aug 7 1927
INSTANTANEOUS PEAK FLOW		12 *	94600 Sep 26 1936
INSTANTANEOUS PEAK STAGE		3.57 Feb 15-19	29.10 Sep 26 1936
INSTANTANEOUS LOW FLOW		.00 many days	.00 at times
ANNUAL RUNOFF (AC-FT)	14490	4380	22420
10 PERCENT EXCEEDS	29	11	12
50 PERCENT EXCEEDS	10	6.7	1.7
90 PERCENT EXCEEDS	5.7	.00	.00

* Also occurred on Feb. 15-19, Mar. 2 1993.



— 08134000 NORTH CONCHO RIVER NR CARLSBAD, TX
MEAN DAILY DISCHARGE (CFs)

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.
Water-quality records.--Chemical analyses: October 1969 to September 1984.

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, 57,610 acre-ft Sept. 13 (elevation, 1,893.74 ft); minimum daily, 31,730 acre-ft Sept. 30 (elevation, 1,884.01 ft).

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

1,883.0	29,550	1,888.0	41,220	1,892.0	52,371
1,885.0	33,940	1,890.0	46,620	1,893.0	55,357
1,887.0	36,820	1,891.0	49,455	1,894.0	58,412

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37430	36400	36090	36500	37120	37850	38070	37920	37310	36360	34370	32520
2	37380	36400	36050	36540	37170	37870	38070	37870	37310	36260	34330	32520
3	37360	36260	36120	36590	37170	37850	38070	37820	37260	36190	34260	32460
4	37290	36210	36090	36590	37170	37820	38020	37800	37140	36120	34210	32410
5	37240	36160	36050	36590	37190	37820	38020	37770	37050	36020	34170	32390
6	37170	36140	36090	36620	37190	37850	38040	37750	36980	35900	34050	32320
7	37120	36120	36070	36690	37240	37850	38070	37770	36930	35810	33980	32280
8	37020	36140	36120	36710	37260	37850	38040	37800	36930	35720	33870	32240
9	37000	36160	36190	36690	37290	37870	38020	37750	36880	35620	33780	32190
10	36900	36140	36120	36660	37360	37850	38020	37650	37050	35530	33710	32130
11	36860	36160	36140	36690	37310	37850	37970	37650	37120	35460	33640	32100
12	36830	36090	36210	36690	37290	37800	37970	37600	37120	35410	33560	32080
13	36830	36070	36240	36690	37290	37800	37970	37550	37070	35340	33460	32080
14	36760	36050	36280	36710	37310	37800	37990	37530	37020	35270	33420	32190
15	36710	36050	36310	36760	37460	37850	37940	37500	36980	35200	33330	32150
16	36640	36070	36260	36760	37380	37820	37900	37480	36980	35130	33260	32130
17	36570	36090	36260	36780	37340	37800	37900	37430	36950	35040	33220	32080
18	36520	36160	36310	36780	37360	37820	37900	37340	36950	35020	33150	32060
19	36520	36260	36310	36830	37430	37850	37870	37260	36930	34970	33060	32020
20	36400	36280	36280	36900	37480	37850	37770	37290	36900	34950	32990	31970
21	36360	36310	36310	36930	37480	37900	37700	37240	36860	34970	32990	31950
22	36330	36260	36330	36950	37460	37920	37720	37220	36860	34970	32860	31910
23	36330	36260	36330	36980	37430	37920	37750	37260	36830	34930	32770	31880
24	36360	36260	36330	36930	37500	37970	37750	37260	36760	34880	32680	31860
25	36360	36160	36380	36950	37720	37970	37630	37240	36660	34810	32640	31880
26	36330	36090	36380	36980	37700	37970	37580	37220	36620	34760	32550	31860
27	36310	36090	36400	37000	37720	37990	37580	37190	36620	34700	32500	31840
28	36310	36120	36400	37020	37800	38040	37550	37170	36570	34600	32440	31800
29	36310	36070	36450	37020	---	38070	37750	37170	36520	34530	32350	31750
30	36310	36070	36500	37020	---	38120	37850	37310	36450	34460	32280	31730
31	36360	---	36470	37070	---	38090	---	37310	---	34420	32440	---
MAX	37430	36400	36500	37070	37800	38120	38070	37920	37310	36360	34370	32520
MIN	36310	36050	36050	36500	37120	37800	37550	37170	36450	34420	32280	31730
(†)	1886.04	1885.92	1886.09	1886.34	1886.64	1886.76	1886.66	1886.44	1886.08	1885.21	1884.33	1884.01
(Φ)	-1100	-290	+400	+600	+730	+290	-240	-540	-860	-2030	-1980	-710
CAL YR 1992	MAX	44140	MIN	31950	(Φ)	+4540						
WTR YR 1993	MAX	57610	MIN	31730	(Φ)	-5730						

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

COLORADO RIVER BASIN

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. There are many diversions upstream from station for irrigation, industrial, and municipal supply. Since December 1962, flow regulated by Twin Buttes Reservoir (station 08131200) on the South Concho River and since February 1952 by O. C. Fisher Lake (station 08134500) on the North Concho River. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 158 ft³/s (114,500 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1916-62).--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, and 1952-53.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	101	5.3	10	19	18	17	37	21	31	8.9	110
2	7.0	28	10	10	18	16	17	36	33	12	27	54
3	11	12	11	10	16	16	6.0	35	11	11	10	34
4	15	12	11	11	9.6	16	.41	34	29	10	2.6	36
5	14	16	11	11	4.0	16	.21	33	31	12	6.0	25
6	13	5.6	11	15	3.8	15	.16	44	27	10	9.3	22
7	9.9	4.6	11	15	3.8	15	.08	36	24	5.3	13	12
8	16	4.9	11	46	3.8	15	.08	34	11	4.5	10	3.6
9	18	4.4	9.8	105	4.1	15	.08	33	47	3.5	12	2.8
10	10	4.5	9.5	82	4.2	15	.08	32	135	3.5	19	2.9
11	16	28	9.5	32	4.1	15	.08	29	15	6.0	12	6.6
12	16	29	9.5	31	3.4	15	.08	27	7.1	26	11	3.7
13	11	27	9.5	31	4.0	15	.07	25	9.2	13	11	138
14	18	10	9.5	31	4.1	15	.14	18	9.7	7.4	15	124
15	77	9.9	9.5	30	24	14	3.7	3.2	6.8	3.0	7.3	9.0
16	159	9.5	9.5	29	34	14	10	2.9	6.8	13	6.7	4.5
17	162	7.0	9.5	28	37	12	9.9	2.5	82	14	5.1	4.2
18	163	3.8	9.5	28	31	10	8.4	2.8	50	22	5.3	5.0
19	184	4.5	9.5	28	27	10	8.4	3.0	13	16	4.1	5.4
20	176	4.5	9.5	28	24	10	8.4	3.0	9.4	14	6.2	5.0
21	156	5.4	9.5	28	23	10	8.4	2.8	16	26	13	3.6
22	151	4.6	9.5	28	18	7.8	8.4	2.3	8.9	7.5	24	3.9
23	165	4.5	9.5	26	14	.50	8.4	23	2.8	3.5	25	3.6
24	132	7.5	9.5	24	14	.32	8.4	88	2.9	3.5	14	3.5
25	14	4.9	9.5	23	14	.25	9.4	24	2.7	2.9	18	16
26	4.5	5.2	9.5	25	14	.29	10	23	10	2.1	13	28
27	3.6	5.4	9.8	24	14	.32	9.5	15	22	8.2	13	12
28	9.0	4.8	9.5	23	14	6.3	9.2	12	21	6.2	12	4.8
29	9.7	6.7	9.5	22	---	19	66	19	13	2.6	13	3.0
30	15	4.9	9.5	20	---	19	40	216	8.2	2.0	14	2.3
31	21	---	9.9	19	---	18	---	44	---	8.0	293	---
TOTAL	1783.6	380.1	300.8	873	403.9	368.78	267.97	939.5	685.5	309.7	653.5	688.4
MEAN	57.5	12.7	9.70	28.2	14.4	11.9	8.93	30.3	22.8	9.99	21.1	22.9
MAX	184	101	11	105	37	19	66	216	135	31	293	138
MIN	3.6	3.8	5.3	10	3.4	.25	.07	2.3	2.7	2.0	2.6	2.3
AC-FT	3540	754	597	1730	801	731	532	1860	1360	614	1300	1370

COLORADO RIVER BASIN

71

08136000 CONCHO RIVER AT SAN ANGELO, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993#, BY WATER YEAR (WY)

MEAN	23.2	22.6	18.9	15.5	19.9	11.8	22.0	47.7	21.9	16.5	14.2	26.6
MAX	210	434	274	195	213	58.6	315	444	88.0	66.4	72.9	183
(WY)	1975	1975	1975	1975	1975	1975	1977	1975	1992	1977	1977	1980
MIN	.12	.11	.095	.055	.062	.050	.067	.083	.090	.069	.15	.86
(WY)	1965	1971	1974	1974	1971	1971	1972	1971	1971	1969	1985	1968

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1963 - 1993#	
ANNUAL TOTAL	14597.51		7654.75		21.7	
ANNUAL MEAN	39.9		21.0		169	
HIGHEST ANNUAL MEAN					2.10	
LOWEST ANNUAL MEAN					3010	
HIGHEST DAILY MEAN	647	Feb 4	293	Aug 31	.00	Oct 31 1974
LOWEST DAILY MEAN	.06	Jul 26	.07	Apr 13	.02	Apr 30 1965
ANNUAL SEVEN-DAY MINIMUM	2.6	Aug 22	.08	Apr 7	.02	Apr 9 1971
INSTANTANEOUS PEAK FLOW			860	Jun 17	11500	Sep 9 1980
INSTANTANEOUS PEAK STAGE			4.10	Jun 17	14.37	Sep 9 1980
INSTANTANEOUS LOW FLOW			.06	Apr 13, 14	.00	*
ANNUAL RUNOFF (AC-FT)	28950		15180		15740	
10 PERCENT EXCEEDS	82		34		39	
50 PERCENT EXCEEDS	19		11		4.8	
90 PERCENT EXCEEDS	5.7		3.1		.10	

Period of regulated streamflow.

* No flow at times in 1965 and 1971.

COLORADO RIVER BASIN

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. 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 affected at times by discharge from the 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 FOR PERIOD PRIOR TO REGULATION.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 210 ft³/s (152,100 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1916-62).--Maximum discharge, 301,000 ft³/s Sept. 17, 1936 (gage height, 43.4 ft, from floodmarks), 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	166	107	115	120	121	67	140	129	38	9.1	280
2	76	190	103	116	117	122	65	97	70	35	7.7	213
3	76	147	103	122	115	115	64	90	47	31	7.7	120
4	76	116	105	120	115	108	64	76	44	38	8.4	81
5	77	100	110	118	111	105	62	66	38	36	14	65
6	82	94	110	115	108	101	60	61	31	33	18	62
7	81	98	110	118	105	98	67	61	42	32	13	53
8	78	94	111	120	101	101	67	64	42	30	10	52
9	77	88	118	121	97	99	60	59	38	27	51	50
10	81	88	117	169	122	102	57	55	77	19	69	43
11	85	91	112	205	117	100	56	54	190	14	24	37
12	88	96	109	174	104	99	57	51	121	14	25	30
13	83	102	115	142	95	99	53	47	71	13	35	33
14	83	105	154	130	86	100	56	45	51	12	30	51
15	85	105	154	127	88	98	55	43	45	13	19	232
16	85	97	135	124	88	96	52	41	43	19	15	92
17	175	96	132	124	93	91	50	37	43	12	14	58
18	218	103	122	117	104	84	52	33	47	8.6	17	46
19	239	167	115	125	110	84	59	31	144	6.0	15	41
20	248	146	115	135	110	103	61	29	84	2.9	13	41
21	266	112	115	135	108	99	52	29	57	2.1	11	40
22	241	101	115	127	105	90	40	30	46	2.4	8.0	37
23	223	98	115	120	104	91	40	48	81	9.5	6.8	36
24	234	98	115	120	101	83	40	55	72	21	5.9	35
25	236	96	115	117	157	72	35	86	53	17	5.8	33
26	160	96	115	115	149	70	30	82	47	9.3	6.0	37
27	106	96	112	115	120	63	29	57	42	9.8	21	41
28	90	96	110	115	112	65	31	51	39	16	19	51
29	88	99	113	115	---	79	43	49	39	16	20	46
30	88	101	115	118	---	76	75	58	41	13	24	40
31	93	---	115	120	---	70	---	159	---	10	38	---
TOTAL	3990	3282	3612	3954	3062	2884	1599	1884	1914	559.6	580.4	2076
MEAN	129	109	117	128	109	93.0	53.3	60.8	63.8	18.1	18.7	69.2
MAX	266	190	154	205	157	122	75	159	190	38	69	280
MIN	72	88	103	115	86	63	29	29	31	2.1	5.8	30
AC-FT	7910	6510	7160	7840	6070	5720	3170	3740	3800	1110	1150	4120

COLORADO RIVER BASIN

73

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993#, BY WATER YEAR (WY)

MEAN	60.3	60.3	57.7	53.7	71.3	46.3	55.7	126	81.5	36.0	45.5	112
MAX	242	615	367	274	740	318	494	823	741	175	287	1546
(WY)	1982	1975	1975	1975	1992	1992	1977	1975	1992	1992	1971	1980
MIN	.000	.000	.000	.000	.63	1.06	.77	.057	.000	.000	.10	.000
(WY)	1966	1966	1966	1966	1967	1967	1967	1984	1967	1966	1965	1965

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1963 - 1993#

ANNUAL TOTAL	95555		29397.0									
ANNUAL MEAN	261		80.5							67.0		
HIGHEST ANNUAL MEAN										261		1992
LOWEST ANNUAL MEAN										14.0		1964
HIGHEST DAILY MEAN	4340	Jun 12	280	Sep 1						23800	Sep 9	1980
LOWEST DAILY MEAN	70	Sep 29	2.1	Jul 21						.00	Nov 5	1963
ANNUAL SEVEN-DAY MINIMUM	72	Sep 26	6.2	Jul 17						.00	Nov 5	1963
INSTANTANEOUS PEAK FLOW			421	Sep 1						46600	Sep 9	1980
INSTANTANEOUS PEAK STAGE b/			13.54	Sep 1						28.25	Sep 9	1980
INSTANTANEOUS LOW FLOW			1.2	*Jul 20-22						.00	at times	
ANNUAL RUNOFF (AC-FT)	189500		58310							48570		
10 PERCENT EXCEEDS	417		128							110		
50 PERCENT EXCEEDS	145		81							29		
90 PERCENT EXCEEDS	93		17							.70		

Period of regulated streamflow.

b/ Maximum stage since at least 1853, that of Sept. 17, 1936.

* Part of each day.

COLORADO RIVER BASIN

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 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1946 to October 1949, October 1967 to September 1990.

WATER TEMPERATURE: April 1946 to October 1949, October 1967 to September 1990.

SUSPENDED SEDIMENT DISCHARGE: February 1978 to September 1981.

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 September 1980.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CACO3 (MG/L)
NOV 05...	1125	96	2320	8.2	13.0	10.7	107	1.4	750	530
JAN 19...	1255	125	2440	8.2	8.0	11.7	105	0.6	790	560
MAR 02...	1150	120	2530	8.2	11.0	11.2	110	1.0	810	590
MAY 06...	1115	61	2690	8.1	22.5	8.2	102	1.5	780	570
JUL 14...	0945	12	2370	7.9	27.5	7.2	98	1.5	740	580
AUG 11...	1610	27	2650	8.3	30.5	8.4	121	3.8	840	710

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 DIS FIX END FIELD CACO3 (MG/L)	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...	170	78	210	3	5.4	220	290	430	0.50	20
JAN 19...	190	77	220	3	4.5	240	310	460	0.50	20
MAR 02...	190	81	230	4	4.9	220	330	490	0.50	17
MAY 06...	170	86	260	4	5.5	210	360	550	0.60	20
JUL 14...	160	82	220	4	5.2	160	350	490	0.50	27
AUG 11...	170	100	240	4	5.0	130	470	480	0.60	28

DATE	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)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
NOV 05...	1330	18.0	--	0.040	--	18.0	--	0.020	--	0.48
JAN 19...	1500	18.0	18.0	--	0.030	18.0	18.0	--	0.020	--
MAR 02...	1560	19.0	19.0	--	0.040	19.0	19.0	--	0.020	--
MAY 06...	1620	11.0	11.0	--	0.040	11.0	11.0	--	0.020	--
JUL 14...	1470	8.84	8.84	--	0.060	8.90	8.90	--	0.040	--
AUG 11...	1590	5.34	5.34	--	0.060	5.40	5.40	--	0.040	--

75

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

COLORADO RIVER BASIN

08136600 O. H. IVIE RESERVOIR NEAR VOSS, TX

LOCATION.--Lat 31°30'00", long 99°40'05", Coleman County, Hydrologic Unit 12090106, on left bank, in outlet structure of Freeze-Nichols Dam on Colorado River, 8 mi northeast of Millersview, 10 mi southwest of Voss, and at mile 615.1.

DRAINAGE AREA.--24,038 mi², of which 11,391 mi² probably is noncontributing.

PERIOD OF RECORD.--September 1990 to current year.

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

REMARKS.--The lake is formed by a concrete dam and spillway with six 50- by 40-foot tainter gates, and a 6,000 ft overflow spillway with a 2,000 ft tapered fuse plug release feature. Total length of the dam is 12,000 ft. The dam was completed and storage began March 15, 1990. Recording equipment was installed May 30, 1990, but water did not reach the sensing point until September 21, 1990 (at an elevation of 1,502.05 ft). Water is utilized for municipal use for several West Texas communities, the city of San Angelo being the largest user. The capacity curve is based on a survey made in 1989 by Freeze and Nichols, Fort Worth, Tex. 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.....	1,584.0	-
Crest of overflow spillway.....	1,563.0	806,800
Top of conservation storage.....	1,551.5	554,300
Crest of spillway (tainter gates sill).....	1,528.0	216,100
Lowest gated outlet (service outlet).....	1,440.0	90

COOPERATION.--The capacity table was furnished by the Colorado River Municipal Water District, and based on a survey made in 1989 by Freeze and Nichols, Consulting Engineers, Fort Worth, Texas.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 557,600 acre-ft Sept. 1, 1992 (elevation, 1,551.67 ft); minimum recorded, 57,780 acre-ft Sept. 21, 1990 (elevation, 1,502.05 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 556,800 acre-ft Feb. 25 at 1100 hours (elevation, 1,551.63 ft); minimum, 522,200 acre-ft Sept. 30 (elevation, 1,549.79 ft).

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

1,549.0	507,700	1,551.0	544,800
1,550.0	526,000	1,552.0	563,900

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	548000	550100	552400	552400	547600	554100	551800	554500	552000	549400	535400	525100
2	547800	549700	552000	552000	547600	554000	551700	554000	552400	549000	534100	525100
3	547800	549200	552000	551600	548400	553600	552000	554100	552400	548200	534100	525700
4	547400	548800	552600	551100	548400	553200	551800	554000	552400	547600	533500	525700
5	547200	548200	551500	550900	549200	552400	551500	554000	551800	547200	533100	525300
6	547100	548000	551500	550900	549200	551800	551100	554000	551300	546700	532600	525300
7	546300	547800	552000	550500	549200	551500	552600	554000	550700	546300	532200	525100
8	546300	547800	552800	550100	549200	551300	552400	554100	550700	545500	531600	524700
9	545900	547600	553200	550100	550700	551300	552400	554300	552000	545000	531300	524600
10	545900	547600	553200	550700	551500	550700	552400	554300	553400	544400	531100	524000
11	545700	549500	553200	551300	551500	550700	552600	554000	553000	544000	530500	523300
12	545700	549500	553600	551300	551500	550900	552200	554000	552800	543400	530100	523300
13	545700	549200	554700	551100	551500	550500	552200	553800	552000	542900	529800	524700
14	545300	549200	555500	551500	551500	550500	552800	553600	551700	542300	529200	524900
15	545500	549200	554700	551800	552400	550300	552400	553600	551700	542100	528600	524700
16	545500	549200	554500	552000	552000	550300	552000	553400	551700	541600	528300	524600
17	545300	549200	554000	552400	551700	550900	552400	553000	551500	541400	527700	524400
18	545300	551300	553600	552400	551700	550900	552400	552600	550900	541400	527100	524200
19	545300	551800	553200	552400	552000	554000	552400	552600	550900	540800	526600	524200
20	545300	551800	552800	552200	552800	553600	552000	552200	550900	540400	526200	524200
21	545300	554000	552800	552000	553200	553000	551700	551500	550900	539500	525700	524200
22	545700	552600	552400	551600	553200	553000	551700	551300	551700	539500	524900	524000
23	546100	552400	552200	551300	553200	552600	551700	551700	551700	539100	524400	523800
24	546500	553200	552200	551100	553400	552200	551700	551800	551100	538900	525700	523500
25	547100	552400	552400	550900	555500	551700	551300	551800	550900	538400	525100	523500
26	547800	552000	552800	550700	554900	551100	550900	551300	551100	537800	524600	523300
27	547800	552000	553000	550500	554300	550300	550700	551300	551100	537300	524400	522900
28	547800	551700	553200	550500	554100	550500	550900	550500	550500	536700	523500	522700
29	547800	552000	553600	549700	---	551700	551800	551700	550300	536500	523500	522400
30	547800	552000	554000	549400	---	552000	552200	552000	549900	536000	524600	522200
31	549200	---	553200	548600	---	551800	---	552000	---	535600	525100	---
MAX	549200	554000	555500	552400	555500	554100	552800	554500	553400	549400	535400	525700
MIN	545300	547600	551500	548600	547600	550300	550700	550500	549900	535600	523500	522200
(↑)	1551.23	1551.38	1551.44	1551.20	1551.49	1551.37	1551.39	1551.38	1551.27	1550.51	1549.95	1549.79
(Φ)	+1200	+2800	+1200	-4600	+5500	-2300	+400	-200	-2100	-14300	-10500	-2900

CAL YR 1992 MAX 556800 MIN 297400 (Φ) +255400
WTR YR 1993 MAX 555500 MIN 522200 (Φ) -25800

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

COLORADO RIVER MAIN STEM

77

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, 10.5 mi downstream from O. H. Ivie Reservoir, 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 operations. Sewage effluent is returned to the river from numerous sewage plants above station. Flow affected by upstream reservoirs (see stations 08126380 and 08136000), and since March 15, 1990, flow completely regulated by O.H. Ivie Reservoir (station 08136600), 10.5 mi upstream. At times flow may be slightly affected 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 above this station.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	23	17	473	346	468	48	23	15	25	24	20
2	17	17	17	473	31	466	36	34	14	24	19	18
3	12	13	17	473	19	464	45	22	13	23	19	16
4	12	12	18	473	19	464	43	41	14	23	21	15
5	12	12	16	473	19	464	44	51	27	23	18	15
6	12	12	16	473	18	464	53	54	16	23	24	15
7	12	12	16	473	17	464	62	51	14	25	72	14
8	11	12	16	473	17	369	47	49	13	24	44	15
9	11	12	18	366	17	36	43	44	26	23	35	23
10	11	13	16	32	22	23	43	42	307	23	28	19
11	11	13	15	23	17	22	43	42	926	24	22	18
12	11	17	15	19	18	22	43	42	541	26	21	17
13	13	16	16	19	18	22	45	42	541	21	21	18
14	13	14	116	19	18	22	54	42	433	13	21	35
15	13	14	478	19	17	22	45	42	41	12	21	21
16	13	14	488	19	17	21	45	41	27	11	21	19
17	13	14	480	19	17	21	46	41	26	11	21	19
18	13	18	478	70	17	21	45	41	27	13	21	18
19	13	33	391	467	17	42	45	41	26	13	21	19
20	13	25	419	468	17	439	45	41	26	12	21	19
21	13	20	468	468	17	464	45	25	26	13	21	19
22	13	18	317	468	17	464	45	14	26	18	22	19
23	13	19	37	468	17	464	45	14	27	18	22	20
24	13	18	34	468	16	464	45	15	25	30	22	19
25	13	19	33	466	154	464	45	15	25	36	26	19
26	12	19	31	459	461	464	45	14	29	40	18	22
27	11	18	31	459	464	464	26	14	27	40	15	21
28	11	18	31	459	469	330	18	14	27	39	15	20
29	11	18	31	459	---	34	28	14	25	38	17	18
30	13	17	126	459	---	25	24	23	25	37	16	17
31	14	---	473	459	---	26	---	17	---	34	27	---
TOTAL	396	500	4675	10416	2313	7999	1286	1005	3335	735	736	567
MEAN	12.8	16.7	151	336	82.6	258	42.9	32.4	111	23.7	23.7	18.9
MAX	23	33	488	473	469	468	62	54	926	40	72	35
MIN	11	12	15	19	16	21	18	14	13	11	15	14
AC-FT	785	992	9270	20660	4590	15870	2550	1990	6610	1460	1460	1120

COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1993, BY WATER YEAR (WY)

MEAN	271	146	126	127	130	165	164	346	362	129	202	331
MAX	1475	1344	562	470	666	732	873	1440	1732	623	1516	2953
(WY)	1987	1975	1975	1975	1975	1987	1977	1987	1982	1987	1978	1980
MIN	12.8	7.61	25.5	16.8	26.2	6.14	.41	.000	.000	.000	2.24	.000
(WY)	1993	1992	1986	1986	1984	1986	1986	1984	1984	1974	1983	1983

SUMMARY STATISTICS

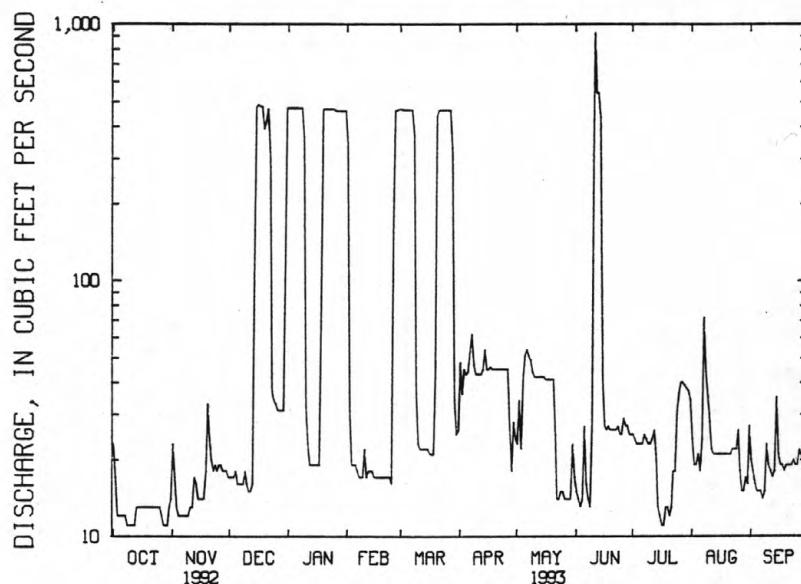
FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1968 - 1993

ANNUAL TOTAL	118279			33963								
ANNUAL MEAN	323			93.0						207		
HIGHEST ANNUAL MEAN										719		1987
LOWEST ANNUAL MEAN										24.6		1984
HIGHEST DAILY MEAN	8150	Jun 13		926	Jun 11					31300	Sep 10	1980
LOWEST DAILY MEAN	11	Oct 8		11	Oct 8					.00	Jun 22	1974
ANNUAL SEVEN-DAY MINIMUM	11	Oct 6		11	Oct 6					.00	Jun 22	1974
INSTANTANEOUS PEAK FLOW				1170	Jun 11					45000	Sep 10	1980
INSTANTANEOUS PEAK STAGE				6.95	Jun 11					28.00	Sep 10	1980
INSTANTANEOUS LOW FLOW				10	Oct 7, 8					.00	*	
ANNUAL RUNOFF (AC-FT)	234600			67370						149800		
10 PERCENT EXCEEDS	807			464						422		
50 PERCENT EXCEEDS	52			22						60		
90 PERCENT EXCEEDS	13			13						9.2		

* No flow at times in 1974, 1980, and 1983-86.



— 08136700 COLORADO RIVER NR STACY, TX
MEAN DAILY DISCHARGE (CFS)

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 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, 1,740 microsiemens Feb. 17, 18, 23, 24; minimum daily, 1310 microsiemens Dec. 18, 19, 21, 22.

WATER TEMPERATURE: Maximum daily, 33.0°C July 30, 31; minimum daily, 8.0°C Jan. 14, 30.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 26...	1235	13	1380	24.0	400	230	96	40	120
FEB 01...	1200	459	1540	10.5	500	320	120	48	130
MAR 29...	1130	29	1340	22.5	420	260	99	42	120
JUN 01...	1220	15	1450	28.0	410	270	91	44	130
JUL 12...	1425	26	1490	32.5	440	300	98	47	140

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 26...	3	6.6	170	200	230	0.40	10	807
FEB 01...	3	7.1	180	210	270	0.30	8.8	902
MAR 29...	3	7.4	160	190	240	0.30	6.2	800
JUN 01...	3	7.1	140	210	250	0.30	10	826
JUL 12...	3	7.6	130	220	250	0.40	11	854

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. 1992	396	1370	827	885	230	246	230	243	450
NOV. 1992	500	1380	834	1130	230	314	230	309	450
DEC. 1992	4675	1370	825	10400	230	2900	230	2860	450
JAN. 1993	10416	1530	923	26000	260	7330	260	7190	490
FEB. 1993	2313	1510	912	5690	260	1600	250	1580	480
MAR. 1993	7999	1400	846	18300	240	5110	230	5020	460
APR. 1993	1286	1410	850	2950	240	824	230	811	460
MAY 1993	1005	1420	856	2320	240	649	240	639	460
JUNE 1993	3335	1410	851	7670	240	2140	230	2110	460
JULY 1993	735	1470	890	1770	250	496	250	488	480
AUG. 1993	736	1490	903	1790	250	505	250	496	480
SEPT 1993	567	1470	892	1370	250	383	250	377	480
TOTAL	33963	**	**	80200	**	22500	**	22100	**
WTD.AVG.	93	1450	875	**	250	**	240	**	470

COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	e1370	1460	e1670	1530	1440	1360	1430	1440	1430	e1460	1490
2	1330	1360	1470	e1680	1510	1430	1370	e1400	1440	1430	1470	1480
3	1340	1350	1490	e1680	1510	1460	1400	1370	1440	1440	1470	1470
4	e1340	1360	1530	1690	1510	1400	e1400	1380	1440	e1450	1470	1470
5	1340	1360	1560	1630	1500	1400	1410	1390	1460	e1450	1500	e1470
6	1340	1360	e1560	1660	1500	1380	1440	1400	e1460	1460	1470	e1480
7	1350	1360	1550	1690	e1500	e1390	1400	1400	1470	1460	1470	1480
8	1350	e1360	1560	1690	1500	1400	1390	1360	1470	1480	e1470	1490
9	1350	1360	1530	1650	1500	1390	1390	e1380	1470	1470	1470	1490
10	1350	1370	1500	e1630	1500	1400	1410	1400	1360	1480	1470	1490
11	e1350	e1380	1480	1620	1500	1410	e1400	1430	1410	e1480	1470	1480
12	e1350	1390	1470	1620	1560	1410	1400	1440	1410	1480	1480	e1480
13	1360	1400	e1470	1620	1600	1440	1410	1440	e1410	1480	1490	1480
14	1360	1410	1420	1630	e1640	e1450	1380	1440	1420	1480	1510	1480
15	1370	e1410	1350	1640	e1670	1450	1370	1430	1420	1480	e1500	1480
16	1370	1410	1330	1650	1700	1460	1370	e1430	1420	1480	1500	1480
17	1380	1400	1320	e1660	1740	1460	1420	1430	1420	1480	1510	1460
18	e1380	1390	1310	e1600	1740	1480	e1400	1430	1410	e1490	1510	1460
19	1390	1360	1310	1490	1730	1430	1390	1430	1410	1490	1520	e1470
20	1390	1360	e1320	1400	1730	1380	1410	1430	e1410	1550	1520	1480
21	1400	1370	1310	1400	e1730	e1380	1420	1430	1420	1500	1520	1480
22	1400	e1370	1310	1390	1730	1390	1440	1450	1420	1500	e1530	1450
23	1400	1380	1340	1390	1740	1390	1430	e1450	1420	1500	1530	1450
24	1400	1370	1350	e1370	1740	1390	1440	1440	1420	1500	1520	1440
25	e1400	1380	e1360	1350	1650	1390	e1440	1440	1420	e1490	1520	1450
26	1400	e1390	1370	1340	1520	1380	1440	1450	1410	1480	1520	e1460
27	1400	1400	e1380	1410	1420	1410	1440	1450	e1410	1470	1520	1480
28	1400	1410	1390	1480	e1430	e1400	1440	1450	1410	1470	1520	1480
29	1400	e1420	1400	1510	---	1390	1420	1450	1410	1470	e1510	1500
30	1400	1430	1480	1450	---	1400	1420	e1430	1420	1470	1510	1500
31	1390	---	1600	e1500	---	1400	---	e1440	---	1460	1470	---
MEAN	1370	1380	1430	1550	1590	1410	1410	1420	1420	1480	1500	1470

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	---	11.0	9.0	10.0	11.0	20.0	23.0	28.0	30.0	---	26.0
2	23.0	19.0	10.0	---	12.0	12.0	19.0	---	29.0	30.0	32.0	28.0
3	22.0	19.0	10.0	---	14.0	12.0	19.0	24.0	29.0	30.0	30.0	27.0
4	---	14.0	10.0	12.0	12.0	12.0	---	23.0	30.0	---	28.0	27.0
5	24.0	16.0	9.0	10.0	12.0	12.0	17.0	24.0	29.0	---	30.0	---
6	23.0	15.0	---	10.0	12.0	13.0	17.0	23.0	---	30.0	30.0	---
7	23.0	14.0	11.0	12.0	---	---	19.0	24.0	28.0	30.0	30.0	28.0
8	22.0	---	11.0	12.0	13.0	14.0	19.0	24.0	29.0	30.0	---	28.0
9	21.0	17.0	11.0	12.0	13.0	15.0	20.0	---	28.0	30.0	30.0	27.0
10	22.0	18.0	12.0	---	14.0	15.0	20.0	24.0	25.0	30.0	31.0	27.0
11	---	---	12.0	9.0	10.0	13.0	---	24.0	19.0	---	31.0	28.0
12	---	18.0	13.0	10.0	13.0	12.0	23.0	23.0	20.0	30.0	31.0	---
13	22.0	17.0	---	9.0	12.0	10.0	24.0	24.0	---	30.0	31.0	27.0
14	23.0	15.0	11.0	8.0	---	---	22.0	26.0	21.0	30.0	31.0	24.0
15	25.0	---	10.0	10.0	---	13.0	19.0	26.0	23.0	31.0	---	24.0
16	23.0	16.0	11.0	9.0	12.0	16.0	19.0	---	25.0	30.0	32.0	24.0
17	20.0	17.0	10.0	---	10.0	15.0	20.0	24.0	26.0	30.0	32.0	26.0
18	---	17.0	11.0	---	9.0	16.0	---	25.0	27.0	---	31.0	26.0
19	21.0	16.0	13.0	10.0	10.0	16.0	24.0	27.0	27.0	31.0	31.0	---
20	22.0	17.0	---	10.0	14.0	16.0	22.0	27.0	---	31.0	31.0	28.0
21	22.0	15.0	11.0	11.0	---	---	22.0	27.0	27.0	31.0	30.0	28.0
22	22.0	---	13.0	10.0	14.0	14.0	22.0	27.0	30.0	31.0	---	28.0
23	23.0	16.0	13.0	12.0	15.0	14.0	22.0	---	30.0	31.0	30.0	28.0
24	23.0	13.0	11.0	---	14.0	15.0	24.0	26.0	30.0	32.0	30.0	28.0
25	---	11.0	---	10.0	15.0	17.0	---	26.0	30.0	---	29.0	27.0
26	25.0	---	11.0	10.0	11.0	15.0	23.0	27.0	28.0	31.0	29.0	---
27	23.0	9.0	---	10.0	12.0	16.0	23.0	28.0	---	30.0	30.0	26.0
28	23.0	9.0	15.0	11.0	---	---	23.0	28.0	29.0	31.0	29.0	25.0
29	23.0	---	15.0	10.0	---	20.0	22.0	28.0	30.0	32.0	---	26.0
30	24.0	10.0	16.0	8.0	---	20.0	23.0	---	30.0	33.0	31.0	25.0
31	23.0	---	12.0	---	---	20.0	---	---	---	33.0	27.0	---
MEAN	22.7	15.1	11.7	10.2	12.3	14.6	21.0	25.3	27.2	30.7	30.3	26.6

COLORADO RIVER MAIN STEM

81

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 old abandoned bridge, 300 ft upstream from 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.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1923 to September 1934 (published as "near Milburn"), June 1939 to September 1993 (discontinued).

REVISED RECORDS.--WDR TX-81-3: Drainage area. WDR TX-88-3: 1985.

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.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supply, and for oil field operation. Since March 15, 1990, 95 percent of the drainage area above this station is regulated by O. H. Ivie Reservoir (station 08136600), 54.4 miles upstream, and by eight other upstream reservoirs, with a total combined (9 reservoirs) capacity of 1,676,000 acre-ft at conservation level. At times, flow may also be affected by discharge from the flood-detention pools of 89 floodwater-retarding structures with a combined detention capacity of 105,100 acre-ft. These flood-detention structures control runoff from 512 mi² area above this station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--39 years (water years 1925-34, 1940-68) prior to completion of Robert Lee Dam, 628 ft³/s (455,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1925-34, 1940-68).--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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	40	17	278	354	383	46	51	16	23	27	40
2	24	33	16	311	298	376	39	278	17	21	27	43
3	24	22	17	314	110	368	47	186	17	19	28	37
4	25	21	17	319	53	365	40	97	15	18	25	27
5	23	18	17	319	37	362	45	58	12	17	21	22
6	19	16	17	319	32	360	48	44	12	17	20	19
7	16	15	17	325	30	360	113	49	11	17	19	17
8	14	14	17	326	30	360	214	48	9.8	17	18	17
9	14	14	20	327	29	314	116	45	20	17	30	16
10	13	15	21	277	53	114	73	41	132	15	41	16
11	13	17	21	103	59	52	58	39	507	15	31	16
12	13	20	22	50	45	35	53	36	691	15	26	17
13	14	19	23	34	38	29	50	35	387	16	23	20
14	14	18	82	30	33	28	50	36	363	17	18	70
15	13	18	66	27	31	28	62	36	305	17	16	46
16	13	18	260	26	30	28	73	36	108	17	17	39
17	14	16	306	26	29	27	61	36	48	15	17	37
18	14	17	303	25	28	28	51	34	33	12	17	29
19	15	52	303	27	28	272	47	33	29	9.4	17	24
20	15	40	269	261	28	655	42	34	28	8.3	17	22
21	12	32	253	332	28	407	41	34	28	8.3	17	22
22	12	26	294	336	26	396	40	34	30	8.3	17	21
23	13	22	242	338	27	382	39	33	43	8.6	17	20
24	13	21	87	335	28	374	48	27	36	8.6	17	20
25	13	20	46	333	51	370	54	21	31	7.5	17	19
26	13	18	36	334	130	366	44	18	93	7.6	19	19
27	13	17	33	338	381	363	40	16	88	12	20	18
28	14	17	33	342	380	363	39	15	41	23	20	17
29	14	17	33	365	---	299	40	14	29	25	20	17
30	18	16	33	361	---	115	39	17	25	26	18	16
31	18	---	33	355	---	64	---	16	---	27	27	---
TOTAL	487	649	2954	7493	2426	8043	1752	1497	3204.8	484.6	664	763
MEAN	15.7	21.6	95.3	242	86.6	259	58.4	48.3	107	15.6	21.4	25.4
MAX	25	52	306	365	381	655	214	278	691	27	41	70
MIN	12	14	16	25	26	27	39	14	9.8	7.5	16	16
AC-FT	966	1290	5860	14860	4810	15950	3480	2970	6360	961	1320	1510

COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1993#, BY WATER YEAR (WY)

MEAN	352	163	214	153	234	210	230	400	525	163	224	469
MAX	1674	1515	1907	522	2453	1069	1549	1693	2388	637	1471	3945
(WY)	1987	1975	1992	1992	1992	1987	1977	1987	1982	1987	1978	1980
MIN	13.6	18.9	24.8	18.8	22.0	6.46	.83	.000	.000	.000	.74	.000
(WY)	1969	1980	1984	1986	1971	1986	1986	1984	1984	1974	1970	1983

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1969 - 1993#	
ANNUAL TOTAL	210483		30417.4			
ANNUAL MEAN	575		83.3			
HIGHEST ANNUAL MEAN					278	
LOWEST ANNUAL MEAN					870	1987
HIGHEST DAILY MEAN	15000	Feb 4	691	Jun 12	33.7	1984
LOWEST DAILY MEAN	12	Oct 21	7.5	Jul 25	.00	Sep 10 1980
ANNUAL SEVEN-DAY MINIMUM	13	Oct 21	8.2	Jul 20	.00	Aug 6 1972
INSTANTANEOUS PEAK FLOW			1300	Mar 19	41700	Apr 16 1974
INSTANTANEOUS PEAK STAGE			6.57	Mar 19	38.04	Sep 10 1980
INSTANTANEOUS LOW FLOW			7.0	Jul 25, 26	.00	Sep 10 1980
ANNUAL RUNOFF (AC-FT)	417500		60330		201100	at times
10 PERCENT EXCEEDS	1470		326		547	
50 PERCENT EXCEEDS	122		28		63	
90 PERCENT EXCEEDS	17		14		10	

Period of regulated streamflow.

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1967 to September 1985. Chemical and biochemical analyses: December 1990 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1991 to current year.

WATER TEMPERATURE: February 1991 to current year.

INSTRUMENTATION.--Since February 1991, specific conductance and water temperature are continuously recorded at this station.

REMARKS.--Estimated mean specific conductance and estimated mean temperature 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, 1980 microsiemens May 18, 1992; minimum, 162 microsiemens Sept. 19, 20, 1991.

WATER TEMPERATURE: Maximum, 36.5°C July 2, 1991; minimum, 5.0°C Jan. 19, 20, 1992.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,860 microsiemens Apr. 21, Aug. 26, 27, 28, 29, 30; minimum, 838 microsiemens Mar. 21.

WATER TEMPERATURE: Maximum recorded, 31.0°C Aug. 22, 24, 25; minimum, 6.5°C Jan. 14.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
NOV 19...	1045	46	1180	8.3	15.5	9.1	97	1.0	320	190	72	33	
JAN 05...	1109	332	1550	8.2	9.0	10.6	96	0.6	440	270	100	46	
MAR 18...	1325	26	1410	8.2	15.0	9.4	99	0.9	410	240	96	41	
MAY 17...	1105	31	1290	8.1	25.0	8.2	105	1.1	340	220	81	33	
JUL 12...	1415	17	1290	8.1	30.5	7.8	111	0.7	350	230	75	38	
AUG 25...	1220	17	1790	8.1	29.0	6.2	85	0.9	480	360	96	58	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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)
NOV 19...	110	3	6.8	120	160	200	0.30	5.9	663	0.050	--	--	0.060
JAN 05...	130	3	6.9	180	220	270	0.40	8.4	902	2.75	2.75	--	--
MAR 18...	130	3	6.7	170	200	240	0.30	4.1	822	0.870	--	--	--
MAY 17...	120	3	7.0	120	140	260	0.30	7.5	719	0.180	--	--	--
JUL 12...	120	3	7.4	120	180	240	0.40	7.9	741	--	--	--	--
AUG 25...	190	4	4.6	110	270	350	0.40	16	1050	--	--	--	--
DATE		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, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	
NOV 19...	--	0.110	--	0.020	--	0.68	--	--	0.70	0.070	--	--	
JAN 05...	0.050	2.80	2.80	--	0.060	--	0.44	0.50	--	--	--	<0.010	
MAR 18...	<0.010	0.870	0.870	--	0.020	--	0.28	0.30	--	--	--	<0.010	
MAY 17...	<0.010	0.180	0.180	--	0.030	--	0.37	0.40	--	--	--	0.030	
JUL 12...	<0.010	--	<0.050	--	0.030	--	0.27	0.30	--	--	--	<0.010	
AUG 25...	<0.010	--	<0.050	--	0.030	--	0.47	0.50	--	--	--	0.020	

COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	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...	--	0.010	--	--	--	--	--	--	--	--	--
JAN 05...	<0.010	--	--	1	170	<0.5	<1.0	<5	<3	<10	5
MAR 18...	0.010	--	0.03	--	--	--	--	--	--	--	--
MAY 17...	<0.010	--	--	--	--	--	--	--	--	--	--
JUL 12...	<0.010	--	--	2	180	<0.5	<1.0	<5	<3	<10	<3
AUG 25...	<0.010	--	--	--	--	--	--	--	--	--	--
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...	--	--	--	--	--	--	--	--	--	--	--
JAN 05...	<10	33	1	0.1	<10	<10	<1	<1.0	1900	<6	5
MAR 18...	--	--	--	--	--	--	--	--	--	--	--
MAY 17...	--	--	--	--	--	--	--	--	--	--	--
JUL 12...	<10	31	4	<0.1	<10	<10	<1	<1.0	1500	<6	4
AUG 25...	--	--	--	--	--	--	--	--	--	--	--
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. 1992	487		1380	810	1060	240	319	200	256	420	
NOV. 1992	649		1270	743	1300	220	383	180	310	380	
DEC. 1992	2954		1360	799	6370	240	1900	190	1530	410	
JAN. 1993	7493		1510	887	17900	270	5510	220	4390	450	
FEB. 1993	2426		1500	881	5770	270	1770	220	1410	450	
MAR. 1993	8043		1330	779	16900	230	5050	190	4060	400	
APR. 1993	1752		1410	828	3920	250	1180	200	948	420	
MAY 1993	1497		1300	762	3080	230	912	180	736	390	
JUNE 1993	3204.8		1280	749	6480	220	1910	180	1540	390	
JULY 1993	484.6		1260	740	968	220	285	180	230	380	
AUG. 1993	664		1760	1040	1860	330	595	260	467	520	
SEPT 1993	763		1520	890	1830	270	564	220	449	450	
TOTAL	30417.4		**	**	67500	**	20400	**	16300	**	
WTD.AVG.	83		1400	822	**	250	**	200	**	420	

COLORADO RIVER MAIN STEM

85

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1360	1310	1330	1320	1280	1310	1400	1360	1380	1420	1300	1380
2	1360	1320	1340	1310	1240	1270	1400	1340	1380	1380	1320	1370
3	1360	1320	1350	1310	1290	1290	1400	1380	1380	1640	1380	1510
4	1360	1340	1350	1330	1290	1310	1420	1380	1390	1680	1620	1650
5	1370	1340	1350	1310	1270	1290	1420	1400	1410	1620	1560	1580
6	1400	1350	1360	1270	1250	1260	1440	1420	1420	1700	1590	1660
7	1400	1380	1380	1270	1230	1250	1440	1420	1430	1700	1670	1690
8	1410	1390	1400	1250	1230	1240	1440	1420	1430	1710	1640	1690
9	1410	1390	1400	1270	1230	1250	1440	1400	1420	1640	1540	1600
10	1410	1380	1390	1310	1250	1280	1460	1420	1440	1670	1610	1650
11	1400	1380	1400	1330	1290	1320	1460	1440	1460	1660	1640	1660
12	1410	1360	1390	1330	1310	1320	1460	1440	1450	1660	1630	1650
13	1410	1380	1400	1340	1300	1310	1440	1360	1430	1650	1630	1630
14	1410	1390	1400	1320	1300	1310	1400	1220	1280	1650	1630	1640
15	1410	1390	1400	1320	1280	1300	1240	1140	1180	1630	1600	1620
16	1420	1380	1400	1300	1280	1300	1680	1120	1350	1640	1610	1620
17	1420	1400	1410	1320	1280	1300	1480	1300	1380	1640	1620	1630
18	1420	1380	1410	1320	1220	1300	1500	1440	1470	1660	1620	1640
19	1430	1390	1410	1220	1120	1180	1420	1340	1370	1640	1620	1630
20	1430	1380	1400	1180	1080	1130	1360	1340	1350	1720	1620	1670
21	1400	1380	1390	1260	1180	1220	1360	1340	1350	1660	1560	1610
22	1400	1380	1390	1280	1240	1260	1360	1340	1340	1660	1560	1620
23	1400	1380	1400	1280	1260	1280	1360	1300	1340	1600	1260	1430
24	1400	1380	1400	1280	1260	1270	1340	1300	1330	1410	1350	1370
25	1400	1380	1400	1280	1260	1270	1360	1320	1340	1470	1410	1450
26	1400	1400	1400	1300	1280	1290	1360	1240	1320	1430	1400	1420
27	1400	1380	1400	1340	1300	1310	1360	1280	1330	1420	1380	1390
28	1420	1380	1400	1340	1320	1330	1360	1340	1340	1440	1380	1420
29	1420	1380	1400	1380	1340	1350	1360	1340	1350	1360	1280	1330
30	1400	1380	1390	1380	1360	1370	1360	1280	1350	1380	1300	1330
31	1400	1380	1390	---	---	---	1380	1360	1360	1440	1380	1410
MONTH	1430	1310	1390	1380	1080	1280	1680	1120	1370	1720	1260	1550
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1540	1440	1490	1710	1540	1660	1300	1240	1260	---	---	e1400
2	1560	1520	1530	1540	1420	1470	1320	1260	1290	---	---	e1200
3	1540	1440	1490	1480	1420	1460	1300	1300	1300	---	---	1200
4	1440	1400	1420	1480	1460	1460	1320	1300	1310	1320	1240	1280
5	1400	1380	1390	1460	1440	1450	1360	1320	1340	1350	1300	1320
6	1380	1340	1360	1480	1440	1460	1360	1320	1350	1350	1310	1330
7	1360	1340	1360	1460	1420	1440	1360	1270	1300	1410	1370	1390
8	1380	1340	1360	1420	1400	1410	1310	1250	1270	1430	1390	1400
9	1380	1360	1370	1420	1400	1400	1580	1310	1500	1390	1340	1370
10	1360	1320	1360	1420	1400	1400	1460	1310	1370	1360	1300	1320
11	1380	1280	1360	1420	1400	1400	1310	1230	1260	1300	1280	1300
12	1360	1270	1320	1410	1390	1400	1270	1230	1250	1300	1280	1290
13	1380	1270	1310	1410	1390	1400	1330	1270	1290	1300	1280	1280
14	1400	1300	1360	1410	1390	1400	1320	1280	1290	1320	1290	1300
15	1400	1320	1380	1410	1390	1400	1320	1280	1300	1330	1310	1320
16	1420	1400	1410	1410	1330	1380	1320	1280	1300	1330	1290	1320
17	1440	1400	1420	1410	1330	1370	1320	1280	1300	1290	1250	1280
18	1460	1420	1440	1430	1350	1400	1420	1300	1340	1280	1250	1270
19	1620	1440	1510	1430	1040	1310	1680	1420	1510	1340	1280	1300
20	1690	1600	1660	1110	996	1060	1840	1660	1750	1390	1330	1350
21	1690	1670	1690	1090	838	954	1860	1840	1840	1420	1350	1380
22	1690	1660	1670	1150	896	976	1840	1740	1790	1420	1380	1400
23	1660	1600	1630	1340	1150	1300	1740	1660	1700	1450	1400	1410
24	1600	1560	1580	1340	1280	1310	1660	1560	1610	1430	1410	1430
25	1560	1480	1520	1340	1320	1340	1590	1530	1550	1460	1400	1420
26	1540	1280	1450	1370	1340	1350	1670	1550	1610	1490	1460	1470
27	1670	1270	1550	1370	1330	1350	1690	1650	1670	1470	1430	1450
28	1690	1500	1600	1370	1310	1350	1670	1610	1640	1480	1450	1470
29	---	---	---	1370	1290	1340	---	---	1590	1530	1460	1490
30	---	---	---	1330	1260	1290	---	---	1550	1470	1420	1460
31	---	---	---	1310	1240	1270	---	---	---	1500	1470	1480
MONTH	1690	1270	1460	1710	838	1350	1860	1230	1450	1530	1240	1300

e Estimated

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	1500	1480	1490	---	---	e1100	---	---	1630	1760	1700	1740
2	1510	1480	1500	---	---	e1100	---	---	1650	1740	1700	1720
3	1530	1490	1510	---	---	e1100	1680	1630	1650	1700	1660	1690
4	1550	1530	1540	---	---	e1150	1700	1650	1670	1680	1640	1650
5	1570	1530	1550	---	---	1140	1700	1670	1690	1660	1620	1640
6	1560	1540	1550	---	---	e1150	1720	1680	1710	1660	1640	1640
7	1560	1540	1550	---	---	e1200	1720	1680	1710	1660	1630	1650
8	1580	1540	1560	---	---	e1200	1740	1670	1720	1670	1650	1660
9	1580	1090	1540	---	---	e1250	1760	1680	1730	1690	1650	1670
10	1300	969	1090	---	---	e1300	1760	1720	1740	1690	1650	1670
11	1550	1060	1370	---	---	e1300	1780	1720	1750	1690	1650	1670
12	1250	1020	1160	---	---	1290	1800	1740	1770	1690	1670	1680
13	1290	1250	1280	---	---	1280	1800	1760	1780	1690	1490	1670
14	1350	1310	1330	1240	1180	1210	1820	1760	1790	1550	1450	1500
15	---	---	e1350	---	---	e1200	1820	1760	1790	1470	1390	1430
16	---	---	e1400	---	---	e1150	1840	1780	1810	1420	1390	1400
17	---	---	e1400	---	---	e1150	1840	1780	1820	1420	1340	1390
18	---	---	e1400	---	---	e1150	1820	1780	1810	1360	1340	1350
19	---	---	e1350	---	---	1150	1820	1800	1810	1380	1340	1350
20	---	---	e1350	1140	1100	1130	1820	1800	1820	1380	1360	1370
21	---	---	e1350	1160	1100	1140	1820	1800	1820	1400	1380	1380
22	---	---	e1400	1160	1120	1150	1820	1800	1820	1400	1380	1380
23	---	---	1380	---	---	1200	1840	1820	1830	1400	1380	1390
24	---	---	e1400	---	---	e1250	1840	1820	1830	1400	1380	1390
25	---	---	e1400	---	---	e1300	1840	1820	1830	1410	1370	1390
26	---	---	e1200	---	---	e1350	1860	1820	1840	1410	1370	1390
27	---	---	e1000	---	---	e1400	1860	1840	1840	1410	1390	1400
28	---	---	e1000	---	---	e1450	1860	1840	1850	1410	1370	1400
29	---	---	e1100	---	---	e1500	1860	1840	1850	1410	1390	1400
30	---	---	e1100	---	---	e1550	1860	1840	1840	1430	1390	1410
31	---	---	---	---	---	e1600	1840	1600	1750	---	---	---
MONTH	1580	969	1350	1240	1100	1240	1860	1600	1770	1760	1340	1520
YEAR	1860	838	1420									

e Estimated

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	23.5	21.0	22.5	21.5	20.0	21.0	10.0	8.0	8.5	12.0	9.5	10.5
2	23.0	20.0	21.5	20.0	18.5	19.0	10.0	8.0	9.0	9.5	9.0	9.5
3	23.5	19.5	21.5	18.5	17.0	18.0	10.0	8.0	9.0	11.0	9.5	10.5
4	23.5	20.0	21.5	17.0	14.5	16.0	10.0	9.0	9.5	11.0	10.0	10.5
5	24.0	20.0	22.0	14.5	13.5	14.0	8.5	7.5	8.0	10.0	9.0	9.0
6	23.0	20.5	21.5	14.0	13.0	13.5	8.5	7.0	7.5	9.0	8.5	9.0
7	22.5	19.5	21.0	14.5	12.0	13.0	9.0	7.5	8.0	10.5	9.0	10.0
8	22.0	18.5	20.0	13.5	13.5	13.5	9.0	8.5	8.5	10.5	10.5	10.5
9	21.0	18.0	19.5	16.0	14.0	15.0	11.0	8.5	9.5	11.5	10.5	11.0
10	22.0	19.0	20.0	17.5	15.5	16.5	11.0	9.5	10.0	10.5	8.0	9.5
11	22.0	18.5	20.0	19.5	17.5	18.5	10.0	9.5	9.5	8.0	7.5	8.0
12	22.0	18.5	20.0	17.5	16.0	17.0	10.5	9.5	10.0	8.5	7.5	8.0
13	22.5	19.0	20.5	16.5	15.0	15.5	11.0	10.5	11.0	8.0	7.0	7.5
14	23.0	19.5	21.0	16.0	14.0	15.0	10.5	9.0	9.5	7.5	6.5	7.0
15	24.5	21.0	22.5	15.5	13.5	14.5	9.0	8.0	8.5	9.5	7.5	8.0
16	23.0	21.0	22.0	15.0	14.0	14.5	8.5	8.0	8.0	9.5	8.5	9.0
17	23.0	19.5	21.0	16.0	14.0	15.0	8.5	7.5	8.0	9.5	8.5	9.0
18	21.5	20.0	21.0	16.0	15.0	15.5	9.0	7.5	8.0	9.0	8.5	9.0
19	22.5	19.0	20.5	16.0	15.5	15.5	11.0	9.0	10.0	8.5	7.5	8.0
20	21.0	20.0	20.5	16.0	15.0	15.5	11.0	9.5	10.0	8.5	7.0	8.0
21	22.5	20.0	21.0	15.5	13.5	15.0	10.5	9.5	10.0	9.5	8.0	8.5
22	22.5	20.0	21.0	13.0	12.0	12.5	12.0	10.5	11.5	10.0	9.0	9.5
23	23.0	20.5	21.5	13.0	11.5	12.0	13.0	12.0	12.5	12.0	10.0	11.0
24	23.0	20.5	21.5	12.5	11.5	12.0	12.0	11.0	11.5	11.5	10.0	11.0
25	23.5	20.5	22.0	11.0	10.0	10.5	11.5	11.0	11.0	10.0	9.5	10.0
26	23.5	20.5	21.5	10.5	9.0	10.0	11.5	10.0	10.5	10.0	9.0	9.5
27	22.5	19.5	21.0	9.5	8.0	9.0	11.0	9.5	10.5	9.5	9.0	9.0
28	22.5	19.5	21.0	9.5	7.5	8.0	12.0	11.0	11.0	9.5	9.0	9.0
29	22.5	20.5	21.5	9.0	7.5	8.0	13.0	12.0	12.5	9.0	8.0	8.5
30	23.0	20.5	21.5	9.5	8.0	8.5	14.5	13.0	14.0	8.5	7.5	8.0
31	23.0	20.5	22.0	---	---	---	14.5	12.0	13.5	8.5	8.0	8.0
MONTH	24.5	18.0	21.0	21.5	7.5	14.0	14.5	7.0	10.0	12.0	6.5	9.0

COLORADO RIVER MAIN STEM

87

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	9.5	8.0	8.5	12.0	11.5	11.5	20.5	18.5	19.5	---	---	---
2	10.5	9.0	10.0	12.5	10.5	11.5	20.5	18.0	19.0	---	---	---
3	11.5	10.5	11.0	12.5	11.5	12.0	19.5	18.0	18.5	---	---	20.5
4	11.5	11.0	11.5	13.0	11.5	12.0	18.5	17.0	17.5	22.5	21.0	21.5
5	11.0	10.5	11.0	13.0	12.0	12.5	18.0	16.0	17.0	22.5	22.0	22.5
6	11.5	9.5	10.5	13.0	11.5	12.5	17.0	16.5	17.0	23.0	21.5	22.0
7	11.5	9.0	10.5	14.0	12.5	13.0	19.0	16.5	17.5	24.0	22.0	23.0
8	12.0	9.5	11.0	15.0	13.0	14.0	19.5	18.0	19.0	25.0	23.0	24.0
9	11.5	10.5	11.0	16.0	14.5	15.0	19.5	17.0	18.5	26.0	23.5	24.5
10	13.0	11.5	12.0	16.0	14.5	15.5	20.5	18.0	19.0	25.0	22.5	24.0
11	13.0	12.0	12.5	15.5	13.5	14.5	22.5	19.0	21.0	24.5	22.5	23.5
12	13.0	11.5	12.0	13.5	10.5	12.0	24.0	21.0	22.5	24.0	22.0	23.0
13	12.5	11.0	12.0	11.5	9.0	10.0	23.5	22.5	23.0	24.5	21.0	23.0
14	12.0	11.0	11.5	11.0	9.0	10.0	23.0	19.5	21.5	26.0	22.0	23.5
15	13.0	11.0	12.0	13.0	10.5	11.5	19.5	18.0	18.5	27.5	23.0	25.0
16	12.0	10.5	11.5	16.0	12.5	14.0	19.5	17.0	18.5	28.0	24.0	26.0
17	11.0	8.5	9.5	16.0	14.5	15.0	21.0	18.5	19.5	---	---	25.5
18	8.5	7.5	8.0	16.0	14.0	15.0	22.5	19.5	21.0	---	---	---
19	10.0	8.0	9.0	15.5	14.5	15.0	25.0	21.0	22.5	---	---	25.5
20	11.5	9.5	10.5	15.0	14.0	14.5	24.0	22.0	23.0	---	---	e26.0
21	13.5	10.5	12.0	15.0	14.0	14.5	22.5	20.5	21.5	---	---	e26.0
22	14.0	11.5	13.0	15.5	15.0	15.5	22.5	20.0	21.0	25.5	24.5	25.0
23	14.0	11.5	13.0	16.0	14.5	15.5	21.5	20.0	21.0	---	---	e24.0
24	13.5	12.5	13.0	17.5	15.5	16.5	24.0	20.5	22.0	---	---	---
25	15.5	13.5	14.5	19.0	17.0	18.0	24.0	22.0	23.0	---	---	---
26	14.5	13.0	14.0	19.0	18.0	18.5	24.0	21.5	23.0	---	---	e26.0
27	13.5	12.5	13.0	18.5	18.0	18.0	23.0	22.0	22.5	---	---	e26.0
28	12.5	11.5	12.0	19.0	18.5	18.5	23.0	21.5	22.0	28.0	24.5	26.0
29	---	---	---	20.5	19.0	19.5	---	---	e22.5	29.0	24.5	26.5
30	---	---	---	21.5	19.5	20.5	---	---	e22.5	30.0	25.5	27.5
31	---	---	---	21.0	19.5	20.5	---	---	---	30.0	25.5	28.0
MONTH	15.5	7.5	11.5	21.5	9.0	14.5	25.0	16.0	20.5	30.0	21.0	24.5

e Estimated

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	29.5	25.5	27.5	---	---	e30.0	---	---	e31.5	28.0	26.0	27.0
2	---	---	---	---	---	e30.5	---	---	31.0	29.0	26.5	27.5
3	---	---	---	---	---	e30.0	---	---	e30.5	28.5	27.0	28.0
4	---	---	---	---	---	---	---	---	e30.0	30.0	26.0	27.5
5	---	---	---	---	---	---	---	---	e30.5	30.0	25.5	27.5
6	---	---	---	---	---	---	---	---	e30.5	29.5	26.0	27.5
7	---	---	---	---	---	---	---	---	e30.5	29.5	25.5	27.5
8	---	---	---	---	---	e30.0	---	---	e30.0	28.5	26.5	27.0
9	---	---	---	---	---	e30.0	---	---	e30.5	29.0	25.0	27.0
10	---	---	---	---	---	e30.5	---	---	e30.5	28.5	25.0	26.5
11	---	---	---	---	---	---	---	---	e30.5	28.0	25.0	26.5
12	---	---	---	---	---	e30.5	---	---	e31.0	28.0	25.0	26.5
13	---	---	---	---	---	e30.0	---	---	---	---	---	e26.0
14	---	---	---	---	---	e30.0	---	---	e31.0	25.5	24.0	24.5
15	---	---	---	---	---	e30.0	---	---	e31.0	24.5	22.0	23.0
16	---	---	---	---	---	e30.5	---	---	e31.0	25.0	22.0	23.5
17	---	---	---	---	---	e31.0	---	---	e30.5	25.5	22.5	24.0
18	---	---	---	---	---	e30.5	---	---	28.0	27.0	23.0	25.0
19	---	---	---	---	---	e31.0	---	---	e29.0	28.5	24.5	26.5
20	---	---	---	---	---	e31.0	---	---	e29.0	29.5	25.5	27.5
21	---	---	---	---	---	e31.0	---	---	e29.0	30.0	26.5	28.0
22	---	---	---	---	---	e31.5	31.0	28.5	28.5	29.0	26.0	28.0
23	---	---	28.5	---	---	31.0	30.5	28.0	29.0	28.0	25.0	26.5
24	30.0	27.5	28.5	---	---	e31.5	31.0	27.5	30.5	---	---	e27.0
25	---	---	29.0	---	---	e31.5	31.0	27.5	29.0	---	---	27.0
26	---	---	---	---	---	e31.0	29.5	27.5	28.5	28.0	25.5	26.5
27	---	---	---	---	---	e31.0	29.5	25.5	27.5	27.0	24.0	25.5
28	---	---	e30.0	---	---	e31.0	29.5	25.5	28.0	26.5	23.0	25.0
29	---	---	e30.5	---	---	30.5	29.0	27.5	28.0	26.0	22.5	24.5
30	---	---	e30.0	---	---	e31.0	---	---	e27.5	---	---	23.0
31	---	---	---	---	---	e31.0	---	---	27.0	---	---	---
MONTH	30.0	25.5	29.0	---	---	30.5	31.0	25.5	29.5	30.0	22.0	26.0
YEAR	31.0	6.5	19.5									

e 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 1906.86 ft); maximum elevation, Mar. 4, 1992 (elevation, 1907.31 ft); minimum since first appreciable storage in June 1951, 1,550 acre-ft Sept. 2, 1984 (elevation, 1878.01 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 7,430 acre-ft Oct. 1 (elevation, 1,898.60 ft); minimum daily, 5,300 acre-ft Sept. 30 (elevation, 1,893.48 ft).

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

1,888.0	3,600	1,896.0	6,280	1,904.0	10,360
1,892.0	4,780	1,900.0	8,110	1,908.0	13,050

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7430	7160	6960	6860	6770	6760	6700	6550	6350	6280	5810	5490
2	7410	7150	6950	6850	6770	6760	6690	6560	6340	6260	5800	5490
3	7400	7120	6940	6850	6770	6760	6680	6560	6330	6240	5790	5480
4	7390	7110	6930	6850	6770	6750	6680	6550	6320	6220	5780	5470
5	7380	7100	6920	6850	6760	6750	6670	6550	6310	6210	5770	5470
6	7370	7090	6920	6850	6760	6740	6660	6540	6300	6190	5760	5450
7	7350	7070	6920	6840	6760	6740	6680	6540	6280	6180	5750	5450
8	7340	7070	6920	6840	6750	6740	6680	6540	6270	6150	5740	5440
9	7320	7070	6920	6840	6760	6730	6660	6540	6330	6140	5720	5430
10	7310	7060	6910	6840	6760	6720	6650	6530	6450	6130	5710	5420
11	7300	7060	6900	6840	6750	6720	6640	6510	6460	6110	5700	5410
12	7290	7060	6900	6840	6750	6700	6640	6510	6450	6090	5680	5400
13	7280	7050	6920	6840	6750	6700	6640	6500	6440	6080	5670	5400
14	7270	7040	6920	6830	6740	6690	6640	6490	6430	6070	5650	5430
15	7260	7030	6920	6830	6740	6690	6620	6480	6420	6050	5640	5420
16	7240	7020	6920	6820	6740	6680	6610	6470	6420	6040	5630	5420
17	7240	7020	6910	6820	6730	6680	6600	6460	6420	6030	5610	5410
18	7220	7060	6910	6820	6720	6670	6600	6450	6410	6020	5600	5400
19	7220	7060	6910	6830	6720	6700	6590	6440	6400	6000	5580	5390
20	7210	7050	6900	6820	6720	6690	6580	6430	6390	5990	5570	5390
21	7200	7050	6900	6820	6710	6700	6570	6420	6390	5980	5560	5380
22	7190	7030	6890	6810	6700	6700	6560	6410	6390	5960	5540	5370
23	7190	7030	6890	6810	6700	6690	6550	6410	6370	5950	5530	5360
24	7180	7030	6880	6800	6710	6690	6550	6400	6370	5930	5510	5350
25	7180	7000	6880	6800	6750	6690	6540	6390	6360	5920	5510	5350
26	7160	6990	6870	6790	6750	6680	6530	6390	6350	5900	5500	5340
27	7150	6980	6870	6790	6740	6680	6520	6380	6340	5880	5490	5330
28	7150	6980	6870	6790	6760	6730	6510	6370	6320	5870	5480	5320
29	7140	6970	6870	6780	---	6730	6540	6380	6310	5860	5470	5310
30	7140	6960	6870	6780	---	6720	6540	6380	6290	5850	5470	5300
31	7170	---	6860	6780	---	6710	---	6370	---	5830	5480	---
MAX	7430	7160	6960	6860	6770	6760	6700	6560	6460	6280	5810	5490
MIN	7140	6960	6860	6780	6700	6670	6510	6370	6270	5830	5470	5300
(+)	1898.04	1897.59	1897.35	1897.17	1897.13	1897.01	1896.61	1896.22	1896.03	1894.88	1893.98	1893.48
(φ)	-270	-210	-100	-80	-20	-50	-170	-170	-80	-460	-350	-180
CAL YR 1992	MAX	12490	MIN	6860	(φ)	-2220						
WTR YR 1993	MAX	7430	MIN	5300	(φ)	-2140						

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

08143600 PECAN BAYOU NEAR MULLIN, TX

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.

REVISED 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 discharges. Records good. Flow affected by Lake Brownwood (capacity, 143,400 acre-ft) 45 miles upstream. In addition, at end of year, flow from 152 mi² (from an intervening drainage area of 641 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	14	17	28	53	113	214	56	16	11	1.3	5.3
2	11	20	16	28	47	126	207	85	16	9.6	1.3	5.8
3	11	18	16	28	44	110	157	116	16	8.1	1.6	6.4
4	11	12	15	30	44	141	84	73	15	7.4	6.0	7.2
5	11	10	15	32	46	258	70	57	14	6.4	10	6.3
6	11	10	13	32	47	255	63	49	13	6.3	9.6	8.0
7	10	9.2	12	32	47	252	113	46	13	6.2	7.9	7.7
8	8.6	8.8	12	32	43	250	143	49	12	6.2	6.1	7.6
9	8.7	8.8	14	32	41	247	109	48	13	6.2	5.3	6.0
10	9.1	10	15	34	61	243	84	47	64	5.8	4.9	4.8
11	8.3	11	18	42	193	242	70	43	39	5.0	3.9	4.2
12	8.7	13	17	40	94	255	64	40	33	3.7	3.3	3.7
13	9.9	14	76	37	67	261	60	38	22	3.3	2.4	4.4
14	11	16	492	35	57	255	89	36	18	3.3	2.2	57
15	12	13	208	34	94	250	145	28	17	3.3	2.4	157
16	12	12	102	33	98	251	110	27	16	3.1	2.7	42
17	12	12	66	29	80	248	80	25	14	3.8	2.5	24
18	11	12	53	28	68	247	66	24	17	4.5	1.7	16
19	11	211	45	28	61	411	60	22	23	4.5	1.1	12
20	11	107	40	34	58	562	55	23	17	4.5	.77	11
21	12	40	39	47	55	220	49	23	16	4.5	.90	10
22	12	26	35	49	54	144	45	24	51	4.5	3.0	9.4
23	11	23	33	43	51	119	43	27	55	4.4	3.6	8.7
24	9.9	22	32	39	48	101	42	28	20	3.9	4.1	7.2
25	9.4	21	30	35	147	91	41	25	14	3.7	4.7	6.4
26	9.4	22	29	32	483	82	38	23	12	3.7	5.0	6.2
27	8.1	21	28	31	163	73	35	21	15	3.5	9.2	6.2
28	8.1	20	28	30	115	70	34	42	21	2.9	8.1	6.1
29	8.4	18	27	31	---	103	49	27	15	2.6	5.9	5.8
30	9.9	17	26	41	---	161	67	18	12	1.9	4.7	6.4
31	9.6	---	26	62	---	226	---	18	---	1.4	3.9	---
TOTAL	318.1	771.8	1595	1088	2459	6367	2486	1208	639	149.2	130.07	468.8
MEAN	10.3	25.7	51.5	35.1	87.8	205	82.9	39.0	21.3	4.81	4.20	15.6
MAX	12	211	492	62	483	562	214	116	64	11	10	157
MIN	8.1	8.8	12	28	41	70	34	18	12	1.4	.77	3.7
AC-FT	631	1530	3160	2160	4880	12630	4930	2400	1270	296	258	930

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1993#, BY WATER YEAR (WY)

MEAN	176	92.8	231	173	255	237	226	247	304	36.6	24.9	87.3
MAX	987	1227	4741	1965	4416	2361	3510	1608	1841	330	195	980
(WY)	1975	1975	1992	1968	1992	1992	1990	1968	1986	1982	1971	1991
MIN	.59	4.79	3.90	4.57	6.55	7.16	3.63	.12	.000	.000	.000	.79
(WY)	1989	1989	1984	1986	1983	1986	1984	1984	1984	1974	1980	1989

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1968 - 1993#

	1992	1993	1968-1993
ANNUAL TOTAL	279395.9	17679.97	
ANNUAL MEAN	763	48.4	
HIGHEST ANNUAL MEAN			174
LOWEST ANNUAL MEAN			1245
HIGHEST DAILY MEAN	16700	562	9.01
LOWEST DAILY MEAN	8.1	.77	37000
ANNUAL SEVEN-DAY MINIMUM	9.0	1.7	.00
INSTANTANEOUS PEAK FLOW		1090	.00
INSTANTANEOUS PEAK STAGE		5.04	38300
INSTANTANEOUS LOW FLOW		.64	42.15
ANNUAL RUNOFF (AC-FT)	554200	35070	.00
10 PERCENT EXCEEDS	1960	117	125800
50 PERCENT EXCEEDS	102	22	255
90 PERCENT EXCEEDS	12	4.5	14
			2.4

Period of regulated streamflow.

* No flow at times in 1974, 1978, 1980-81, 1984-85, and 1989-90.

08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to September 1991. Chemical and biochemical analyses: October 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1991.

WATER TEMPERATURES: October 1967 to September 1991.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,230 microsiemens May 14, 1978; minimum daily, 158 microsiemens Apr. 26, 1990.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
NOV 18...	0950	12	1700	8.1	13.5	7.8	79	1.7	500	230	130	42
JAN 05...	1448	33	1060	8.2	9.0	11.0	100	1.5	370	100	82	41
MAR 18...	0935	248	898	8.2	13.0	11.9	119	1.2	280	130	76	23
MAY 17...	1400	24	1060	8.4	25.0	12.3	158	3.8	360	120	76	42
JUL 12...	1705	4.1	1470	8.2	30.5	8.8	125	1.8	430	210	110	38
AUG 25...	0925	4.9	1890	8.0	26.5	4.0	53	4.7	510	310	120	51

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
NOV 18...	160	3	7.7	270	200	280	0.30	9.4	992	3.37	--	0.130
JAN 05...	73	2	5.2	270	110	120	0.40	--	601	1.07	1.07	--
MAR 18...	70	2	4.7	160	96	140	0.20	7.3	512	0.320	--	--
MAY 17...	82	2	4.7	240	100	150	0.40	9.5	611	--	--	--
JUL 12...	140	3	7.3	220	170	260	0.50	13	875	--	--	--
AUG 25...	210	4	8.2	200	230	370	0.40	12	1120	--	--	--

DATE	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, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)
NOV 18...	--	3.50	--	0.030	--	0.77	--	--	0.80	0.350	--
JAN 05...	0.030	1.10	1.10	--	0.020	--	0.28	0.30	--	--	0.130
MAR 18...	<0.010	0.320	0.320	--	0.030	--	0.17	0.20	--	--	0.070
MAY 17...	<0.010	--	<0.050	--	0.030	--	0.27	0.30	--	--	0.030
JUL 12...	<0.010	--	<0.050	--	0.060	--	0.44	0.50	--	--	0.100
AUG 25...	<0.010	--	<0.050	--	0.020	--	0.48	0.50	--	--	0.060

[illegible]

91

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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 September 1993 (discontinued).
Water-quality records.--Chemical analyses: November 1964 to July 1967.

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.--Records good except those for estimated daily discharges, which are poor. Since about 1890, low flow regulated during irrigation season 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 this station. Several observations of water temperature were made during the year.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 670 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 31	1030	252	5.05	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	59	60	62	67	62	34	e59	49	43	33	133
2	47	58	59	63	67	59	34	e57	47	42	34	77
3	47	54	59	63	67	55	34	e57	44	42	35	60
4	46	54	59	63	65	53	36	e56	42	41	34	54
5	48	56	58	63	68	55	35	e56	43	41	36	51
6	47	57	58	63	68	72	34	e56	43	40	34	48
7	46	58	60	65	65	71	89	e56	43	40	34	47
8	45	57	61	64	64	71	72	e56	43	40	35	46
9	45	59	64	64	64	69	46	e55	43	39	34	45
10	46	59	61	63	77	67	39	e55	98	39	34	45
11	46	60	59	64	70	67	37	e54	74	39	33	44
12	46	59	60	65	63	67	37	54	56	39	33	43
13	46	58	61	64	63	67	37	54	50	39	32	46
14	47	57	71	64	62	67	46	54	49	39	32	66
15	49	57	68	65	64	66	41	53	48	38	32	62
16	50	57	62	65	63	63	39	52	48	37	32	55
17	50	59	61	65	60	58	39	51	51	38	33	52
18	48	63	63	64	59	55	39	51	88	37	33	50
19	49	77	63	64	60	54	38	50	52	37	33	49
20	49	69	63	66	60	55	37	50	48	36	34	48
21	49	63	63	66	60	53	37	50	49	36	33	47
22	49	61	63	65	58	50	37	49	49	36	33	47
23	48	61	62	65	57	32	38	53	53	36	32	47
24	48	66	61	65	57	31	38	55	54	35	31	47
25	48	64	61	64	58	31	38	53	50	34	32	47
26	47	61	62	65	56	30	38	50	50	34	33	49
27	46	61	63	66	56	30	38	49	53	33	34	50
28	47	61	63	67	58	36	39	49	50	33	35	47
29	55	62	64	70	---	43	60	49	46	33	35	46
30	68	62	64	68	---	41	59	51	45	33	34	47
31	56	---	63	68	---	38	---	50	---	33	134	---
TOTAL	1505	1809	1919	2008	1756	1668	1265	1644	1558	1162	1136	1595
MEAN	48.5	60.3	61.9	64.8	62.7	53.8	42.2	53.0	51.9	37.5	36.6	53.2
MAX	68	77	71	70	77	72	89	59	98	43	134	133
MIN	45	54	58	62	56	30	34	49	42	33	31	43
AC-FT	2990	3590	3810	3980	3480	3310	2510	3260	3090	2300	2250	3160

e Estimated

COLORADO RIVER BASIN

93

08144500 SAN SABA RIVER AT MENARD, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 1993, BY WATER YEAR (WY)

MEAN	90.7	36.9	31.9	32.2	38.8	33.5	70.3	79.3	59.0	106	43.1	139
MAX	914	383	152	80.4	261	251	1206	1631	667	5140	869	2870
(WY)	1942	1924	1985	1985	1958	1922	1922	1957	1958	1938	1974	1936
MIN	.000	.000	.000	.035	.82	.99	.89	1.22	.000	.000	.000	.000
(WY)	1957	1957	1955	1957	1955	1956	1955	1964	1953	1952	1952	1954

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1916 - 1993

ANNUAL TOTAL	31771	19025	
ANNUAL MEAN	86.8	52.1	63.4
HIGHEST ANNUAL MEAN			485
LOWEST ANNUAL MEAN			6.12
HIGHEST DAILY MEAN	3060 Jun 7	134 Aug 31	53300 Jul 23 1938
LOWEST DAILY MEAN	45 Oct 8	30 Mar 26	.00 Jul 12 1918
ANNUAL SEVEN-DAY MINIMUM	46 Oct 7	32 Aug 11	.00 Jul 19 1918
INSTANTANEOUS PEAK FLOW		252 Aug 31	130000 Jul 23 1938
INSTANTANEOUS PEAK STAGE		5.05 Aug 31	22.20 Jul 23 1938
INSTANTANEOUS LOW FLOW		26 Jul 27	.00 *
ANNUAL RUNOFF (AC-FT)	63020	37740	45950
10 PERCENT EXCEEDS	97	66	60
50 PERCENT EXCEEDS	63	52	23
90 PERCENT EXCEEDS	48	34	2.0

* No flow at times as result of upstream diversion to Noyes Canal.

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 September 1993 (discontinued).

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,530.98 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 8	0200	334	3.28	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	86	80	85	87	94	74	97	44	43	11	43
2	45	74	80	85	87	94	76	97	43	43	16	117
3	46	71	80	85	87	93	73	100	37	42	15	80
4	47	71	80	90	88	88	74	87	37	38	16	58
5	51	71	80	86	89	83	73	80	37	37	16	45
6	50	71	80	87	92	82	73	78	37	33	16	e43
7	47	71	80	87	92	86	148	76	37	32	15	e40
8	45	71	81	87	88	91	224	76	35	30	16	40
9	40	73	88	87	89	88	157	75	35	27	16	40
10	42	73	85	87	108	87	106	73	62	26	16	40
11	42	73	85	87	103	87	89	71	78	27	18	37
12	42	73	85	85	103	87	84	69	98	27	18	33
13	43	73	93	85	94	87	79	62	75	25	18	38
14	43	73	138	85	89	87	97	62	61	26	18	60
15	44	69	113	85	93	91	96	54	55	25	17	61
16	47	73	107	85	90	88	88	54	50	25	16	65
17	50	76	97	85	89	89	82	55	48	26	15	54
18	52	80	92	85	86	87	78	52	45	24	15	53
19	59	113	92	85	87	90	78	52	70	22	15	52
20	63	97	92	86	89	96	77	52	59	21	14	50
21	63	96	92	87	89	97	73	51	51	20	12	46
22	64	87	92	87	89	96	71	48	59	20	11	41
23	65	87	92	87	85	92	68	48	71	18	11	41
24	62	89	87	87	82	86	67	53	54	17	11	41
25	62	87	84	83	85	72	65	56	55	17	14	42
26	65	87	82	81	82	72	63	54	66	16	14	40
27	65	81	82	77	82	73	63	48	58	16	14	39
28	63	80	83	80	88	73	63	45	54	17	14	42
29	62	80	85	86	---	72	84	43	55	13	16	42
30	72	80	85	87	---	83	90	55	49	11	15	38
31	85	---	85	87	---	82	---	45	---	11	22	---
TOTAL	1672	2386	2757	2648	2512	2673	2633	1968	1615	775	471	1461
MEAN	53.9	79.5	88.9	85.4	89.7	86.2	87.8	63.5	53.8	25.0	15.2	48.7
MAX	85	113	138	90	108	97	224	100	98	43	22	117
MIN	40	69	80	77	82	72	63	43	35	11	11	33
AC-FT	3320	4730	5470	5250	4980	5300	5220	3900	3200	1540	934	2900

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	53.3	47.4	94.9	72.6	81.2	63.5	54.3	69.6	110	91.9	60.0	220			
MAX	118	91.3	516	282	400	160	144	167	511	901	543	1631			
(WY)	1991	1991	1985	1985	1992	1992	1992	1987	1987	1990	1990	1980			
MIN	10.5	23.7	22.6	26.8	34.4	24.1	16.3	6.35	.75	3.96	2.29	.074			
(WY)	1984	1983	1986	1986	1984	1986	1986	1984	1984	1984	1984	1984			

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL	48675	23571	
ANNUAL MEAN	133	64.6	
HIGHEST ANNUAL MEAN			85.8
LOWEST ANNUAL MEAN			256
HIGHEST DAILY MEAN	3100	Jun 7	17.0
LOWEST DAILY MEAN	40	Sep 24	23900
ANNUAL SEVEN-DAY MINIMUM	42	Oct 9	.02
INSTANTANEOUS PEAK FLOW			.02
INSTANTANEOUS PEAK STAGE			66000
INSTANTANEOUS LOW FLOW			25.50
ANNUAL RUNOFF (AC-FT)	96550	46750	.24
10 PERCENT EXCEEDS	182	92	62150
50 PERCENT EXCEEDS	94	72	95
90 PERCENT EXCEEDS	54	18	45
			8.6

COLORADO RIVER BASIN

95

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 September 1993 (discontinued).

Published as "near San Saba" December 1904 to December 1906 and September 1915 to August 1930.

Water-quality records.--Chemical analyses: September 1947 to February 1949, November 1958 to September 1969.

Water Temperature: September 1962 to September 1969.

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 that affect low flows. Flow partly affected by Brady Creek Reservoir, capacity 90,300 acre-ft. Several observations of water temperature were made during the year.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 14	0000	912	5.91	No peak greater than base discharge during year.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	215	175	205	191	234	194	243	142	140	66	82
2	117	212	172	206	189	246	184	428	134	127	61	79
3	116	187	172	207	187	220	180	337	136	114	60	110
4	121	169	169	207	190	207	183	283	125	111	68	210
5	123	167	164	208	202	194	180	258	117	109	65	136
6	123	165	162	203	197	186	177	237	114	104	63	109
7	128	163	165	205	207	180	216	223	112	103	61	98
8	125	165	167	204	195	177	328	216	106	98	59	92
9	122	168	181	207	191	187	430	210	106	93	58	90
10	120	172	185	209	264	184	343	198	161	86	53	88
11	112	176	174	206	283	181	262	188	184	81	54	87
12	115	173	173	206	250	181	222	181	200	79	51	86
13	113	169	181	200	232	180	206	175	200	78	48	88
14	111	167	666	196	219	178	241	169	201	77	48	183
15	114	165	731	196	222	179	303	166	165	76	50	184
16	112	163	497	194	216	183	276	166	149	77	53	119
17	110	162	381	191	208	180	238	158	143	79	50	108
18	116	168	310	191	197	179	218	153	145	77	51	109
19	126	558	277	190	196	227	205	151	143	76	50	106
20	131	468	255	196	196	476	227	146	135	73	51	102
21	137	295	243	194	194	338	201	143	177	69	52	99
22	140	250	237	190	191	285	182	143	183	69	55	98
23	140	219	233	188	187	257	176	149	187	69	56	96
24	145	207	224	183	185	235	175	159	188	68	51	94
25	144	201	218	179	204	223	173	155	169	66	50	92
26	135	191	213	177	207	203	165	148	176	63	52	94
27	137	183	210	175	188	188	159	150	175	63	48	98
28	142	182	209	176	192	186	159	144	177	64	49	92
29	149	177	210	194	---	188	206	138	157	64	58	89
30	248	175	210	198	---	191	251	147	144	66	55	90
31	192	---	206	193	---	192	---	147	---	68	56	---
TOTAL	4082	6232	7770	6074	5780	6645	6660	5909	4651	2587	1702	3208
MEAN	132	208	251	196	206	214	222	191	155	83.5	54.9	107
MAX	248	558	731	209	283	476	430	428	201	140	68	210
MIN	110	162	162	175	185	177	159	138	106	63	48	79
AC-FT	8100	12360	15410	12050	11460	13180	13210	11720	9230	5130	3380	6360

COLORADO RIVER BASIN

08146000 SAN SABA RIVER AT SAN SABA, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 1993⁰, BY WATER YEAR (WY)

MEAN	275	138	140	157	172	150	278	380	251	292	126	327
MAX	2150	791	893	896	1542	635	5157	3031	1873	12050	1768	4164
(WY)	1931	1924	1992	1968	1992	1992	1922	1957	1935	1938	1971	1936
MIN	11.9	11.6	16.1	14.9	21.2	14.8	23.4	10.3	5.31	.32	.25	5.40
(WY)	1957	1957	1957	1957	1957	1955	1986	1984	1984	1964	1954	1954

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1916 - 1993 ⁰	
ANNUAL TOTAL	153256		61300			
ANNUAL MEAN	419		168		224	
HIGHEST ANNUAL MEAN					1318	
LOWEST ANNUAL MEAN					29.2	
HIGHEST DAILY MEAN	7440	Feb 4	731	Dec 15	117000	Jul 23 1938
LOWEST DAILY MEAN	110	Oct 17	48	Aug 13	.00	Jul 6 1918
ANNUAL SEVEN-DAY MINIMUM	112	Oct 11	50	Aug 13	.00	Jul 13 1954
INSTANTANEOUS PEAK FLOW			912	Dec 14	203000	Jul 23 1938
INSTANTANEOUS PEAK STAGE			5.91	Dec 14	39.30	Jul 23 1938
INSTANTANEOUS LOW FLOW			47	Aug 19, 27, 28	.00	*
ANNUAL RUNOFF (AC-FT)	304000		121600		162300	
10 PERCENT EXCEEDS	744		237		293	
50 PERCENT EXCEEDS	246		175		88	
90 PERCENT EXCEEDS	128		67		26	

⁰ See PERIOD OF RECORD paragraph in manuscript.

* No flow at times in 1918, 1930, 1954-56, and 1984.

COLORADO RIVER MAIN STEM

97

08147000 COLORADO RIVER NEAR SAN SABA, TX
(National stream-quality accounting network)

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 operations. Since March 15, 1990, 66 percent of the drainage area above this station has been controlled by O. H. Ivie Reservoir (station 08136600), 140.8 miles upstream, and by an additional twelve reservoirs (8 above and 4 below Ivie Reservoir), for a total combined capacity (13 reservoirs) of 1,897,000 acre-ft at conservation level. Flow is also 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 flood-detention structures control runoff from an 944 mi² area above this station. Gage-height telemeter at station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--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).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1917-19, 1921-22, 1924-68).--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 for several days in 1954, 1963, 1964, and 1984.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	227	222	291	674	934	605	412	205	192	69	59
2	167	237	218	291	654	910	539	923	195	174	68	78
3	167	229	219	553	646	870	503	1160	189	156	64	80
4	168	220	215	622	555	803	466	915	184	139	64	126
5	171	226	211	622	432	808	382	661	175	131	68	159
6	171	210	209	619	373	895	353	512	165	124	66	130
7	173	200	207	616	344	878	418	424	156	119	63	131
8	171	199	213	620	330	870	653	376	153	116	61	121
9	171	204	224	639	314	863	801	364	151	110	67	111
10	167	207	226	637	475	857	749	373	181	105	71	104
11	160	207	226	629	505	739	560	321	348	98	65	100
12	154	204	225	539	641	605	449	298	380	91	61	97
13	156	199	234	403	515	559	391	282	1050	88	57	95
14	152	196	1930	339	438	542	431	270	709	86	53	152
15	151	195	2000	311	426	527	545	259	609	85	54	189
16	152	200	1180	295	486	520	579	254	561	84	65	284
17	148	205	738	284	444	513	479	247	428	83	66	250
18	147	205	798	279	388	508	448	235	294	82	61	199
19	153	1360	753	278	366	909	399	228	249	80	60	178
20	161	1170	703	288	353	2990	400	222	220	78	57	161
21	166	587	678	291	347	2200	369	217	212	75	55	149
22	167	382	590	530	337	1210	324	217	224	74	54	142
23	167	320	636	629	327	1040	304	230	312	72	54	134
24	168	293	634	611	323	932	297	240	376	72	55	128
25	171	275	518	594	537	864	290	242	272	71	49	125
26	168	260	395	585	740	814	279	228	317	69	49	121
27	159	245	340	583	782	766	276	215	244	67	51	119
28	161	237	314	587	708	751	285	207	219	67	49	119
29	170	230	306	628	---	770	374	196	264	67	49	112
30	231	227	302	647	---	776	427	218	227	67	56	112
31	250	---	295	673	---	675	---	222	---	68	56	---
TOTAL	5207	9356	15959	15513	13460	27898	13375	11168	9269	2990	1837	4065
MEAN	168	312	515	500	481	900	446	360	309	96.5	59.3	135
MAX	250	1360	2000	673	782	2990	801	1160	1050	192	71	284
MIN	147	195	207	278	314	508	276	196	151	67	49	59
AC-FT	10330	18560	31650	30770	26700	55340	26530	22150	18390	5930	3640	8060

COLORADO RIVER MAIN STEM

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

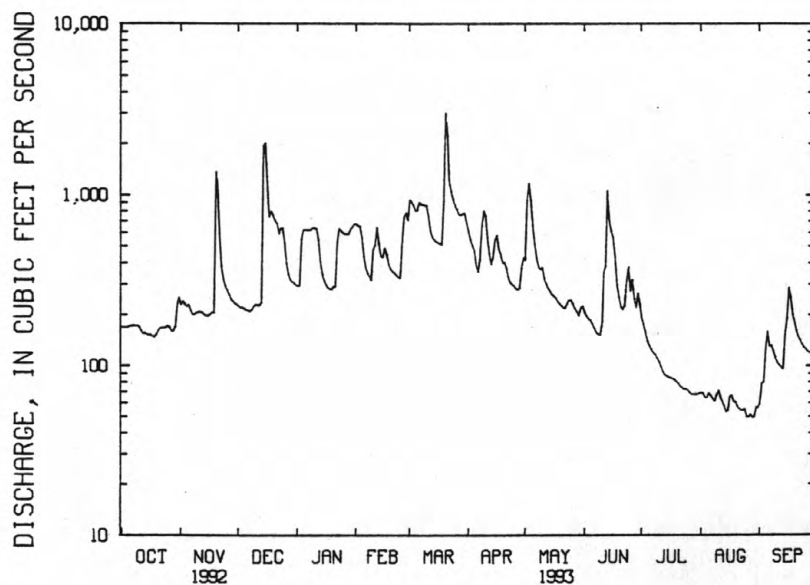
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1993#, BY WATER YEAR (WY)

MEAN	937	451	702	512	805	714	684	908	1216	435	509	953
MAX	3439	3444	9242	2756	10760	5002	4699	2607	4811	1981	3915	5214
(WY)	1972	1975	1992	1992	1992	1992	1990	1975	1986	1971	1971	1980
MIN	34.6	82.2	76.5	93.4	86.2	46.8	33.6	11.2	4.16	10.4	13.0	23.7
(WY)	1984	1980	1984	1986	1984	1986	1986	1984	1984	1984	1980	1983

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1969 - 1993#	
ANNUAL TOTAL	813810		130097			
ANNUAL MEAN	2224		356		734	
HIGHEST ANNUAL MEAN					3078	
LOWEST ANNUAL MEAN					84.1	
HIGHEST DAILY MEAN	34500	Feb 5	2990	Mar 20	45500	Dec 21 1991
LOWEST DAILY MEAN	147	Oct 18	49	Aug 25	.00	Jul 21 1984
ANNUAL SEVEN-DAY MINIMUM	151	Oct 13	51	Aug 23	.01	Jul 20 1984
INSTANTANEOUS PEAK FLOW			4030	Dec 14	47400	Dec 21 1991
INSTANTANEOUS PEAK STAGE			6.83	Dec 14	31.60	Dec 21 1991
INSTANTANEOUS LOW FLOW			48	Aug 25, 26, 28, 29	.00	*
ANNUAL RUNOFF (AC-FT)	1614000		258000		531700	
10 PERCENT EXCEEDS	4870		744		1290	
50 PERCENT EXCEEDS	1010		242		215	
90 PERCENT EXCEEDS	192		69		61	

Period of regulated streamflow.

* No flow July 21-23, 1984.



— 08147000 COLORADO RIVER NR SAN SABA, TX
MEAN DAILY DISCHARGE (CFS)

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 September 1992. Chemical and biochemical analyses: January 1968 to September 1993 (discontinued). Pesticide analyses: January 1968 to April 1982. Sediment analyses: May 1951 to October 1962, October 1977 to September 1993 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1947 to September 1992.

WATER TEMPERATURE: September 1947 to September 1992.

SUSPENDED SEDIMENT DISCHARGE: December 1950 to September 1962.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,120 microsiemens Aug. 16, 1988; minimum daily, 150 microsiemens Sept. 14, 1981, Jan. 1, 1985.

WATER TEMPERATURE: Maximum daily, 37.0°C Aug. 3, 1956; minimum daily, 0.0°C Jan. 29, 1948, Jan. 30, 1951.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORMS, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS TOTAL (MG/L AS CaCO3)
NOV 18...	1345	207	827	8.3	16.0	18	10.1	107	1.1	100	54	290
JAN 06...	0938	628	1070	8.2	9.5	18	10.1	92	1.0	92	100	350
MAR 16...	1320	533	884	8.2	13.5	18	12.7	130	0.7	27	52	310
MAY 17...	1712	247	755	8.3	26.0	23	8.4	109	1.8	84	170	280
AUG 25...	1535	48	634	8.2	28.0	4.1	7.6	102	0.9	180	K18	270

DATE	HARDNESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKALINITY WAT DIS TOT IT 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)
NOV 18...	38	65	31	46	1	3.3	0	308	242	55	89	0.20
JAN 06...	130	81	35	81	2	5.2	0	263	215	120	150	0.30
MAR 16...	100	76	30	60	1	4.0	0	257	210	85	120	0.20
MAY 17...	53	62	31	46	1	3.7	2	277	234	55	78	0.20
AUG 25...	43	50	36	34	0.9	3.0	0	281	230	28	56	0.20

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)
NOV 18...	10	467	454	0.600	--	<0.010	<0.010	0.610	0.610	<0.010	0.010
JAN 06...	8.1	645	615	0.780	0.780	--	0.020	0.800	0.800	--	0.020
MAR 16...	7.5	509	512	0.610	--	--	<0.010	0.610	0.610	--	0.020
MAY 17...	11	442	427	0.310	--	--	<0.010	0.310	0.310	--	0.020
AUG 25...	18	357	365	0.210	--	--	<0.010	0.210	0.210	--	0.030

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SIEVE DIAM. % FINER THAN .062 MM	ALUMINUM, DIS-SOLVED (UG/L AS AL)
NOV 18...	0.39	0.40	0.070	<0.010	<0.010	<0.010	--	90	50	98	<10
JAN 06...	0.48	0.50	0.050	<0.010	<0.010	--	--	67	114	97	<10
MAR 16...	0.38	0.40	0.060	0.010	0.020	--	0.06	42	60	99	--
MAY 17...	0.38	0.40	0.010	<0.010	<0.010	--	--	76	51	99	<10
AUG 25...	0.17	0.20	0.020	0.020	0.010	--	0.03	57	7.4	99	<10

COLORADO RIVER MAIN STEM

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)	STROM- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)
NOV 18...	110	<3	6	14	2	<10	<1	<1	<1.0	570	<6
JAN 06...	140	<3	5	21	1	<10	2	<1	<1.0	1100	<6
MAR 16...	--	--	--	--	--	--	--	--	--	--	--
MAY 17...	110	<3	3	14	3	<10	2	<1	<1.0	620	<6
AUG 25...	99	<3	9	14	3	<10	<1	<1	<1.0	330	10

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 May 1993 (discontinued).

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 1,634.32 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). Prior to June 13, 1990 at datum 2.0 ft higher.

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.--77 years (water years 1916-92), 196 ft³/s (1.44 in/yr), 142,200 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, and reached a stage of 43.3 ft, discharge 319,000 ft³/s.

PEAK DISCHARGES FOR PERIOD OCTOBER 1992 TO MAY 1993.--Peak discharges greater than base discharge of 1,500 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 13	2300	289	1.96	No peak greater than base discharge during period.			
Minimum daily discharge during period, 131 ft ³ /s Apr. 28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	149	182	168	156	152	154	140	168	---	---	---	---
2	147	180	168	156	152	154	138	160	---	---	---	---
3	145	169	168	156	152	152	139	152	---	---	---	---
4	146	164	168	156	150	147	142	149	---	---	---	---
5	149	163	168	154	155	145	141	149	---	---	---	---
6	149	163	168	152	156	145	140	149	---	---	---	---
7	147	163	168	152	152	145	161	149	---	---	---	---
8	149	163	168	152	151	145	180	148	---	---	---	---
9	149	166	173	152	149	144	158	144	---	---	---	---
10	149	168	169	152	156	141	152	137	---	---	---	---
11	149	168	166	152	154	138	148	---	---	---	---	---
12	150	166	167	153	149	138	147	---	---	---	---	---
13	152	166	183	154	149	138	143	---	---	---	---	---
14	152	166	217	154	149	138	170	---	---	---	---	---
15	150	166	187	153	151	139	161	---	---	---	---	---
16	149	166	170	152	150	140	152	---	---	---	---	---
17	149	166	162	152	148	140	149	---	---	---	---	---
18	152	170	161	152	147	140	146	---	---	---	---	---
19	156	202	161	152	147	142	141	---	---	---	---	---
20	156	187	158	152	147	145	139	---	---	---	---	---
21	156	177	154	152	148	144	138	---	---	---	---	---
22	156	173	154	152	147	142	137	---	---	---	---	---
23	156	173	154	151	147	142	136	---	---	---	---	---
24	155	181	154	149	147	142	136	---	---	---	---	---
25	156	177	154	149	147	142	136	---	---	---	---	---
26	152	171	154	149	146	140	136	---	---	---	---	---
27	152	170	154	149	145	138	132	---	---	---	---	---
28	152	169	154	149	150	148	131	---	---	---	---	---
29	149	168	154	152	---	146	161	---	---	---	---	---
30	151	168	155	152	---	146	172	---	---	---	---	---
31	154	---	156	152	---	143	---	---	---	---	---	---
TOTAL	4683	5131	5115	4720	4193	4443	4402	---	---	---	---	---
MEAN	151	171	165	152	150	143	147	---	---	---	---	---
MAX	156	202	217	156	156	154	180	---	---	---	---	---
MIN	145	163	154	149	145	138	131	---	---	---	---	---
AC-FT	9290	10180	10150	9360	8320	8810	8730	---	---	---	---	---
CFSM	.08	.09	.09	.08	.08	.08	.08	---	---	---	---	---
IN.	.09	.10	.10	.09	.08	.09	.09	---	---	---	---	---

CAL YR 1992 TOTAL 95750 MEAN 262 MAX 1700 MIN 145 AC-FT 189900 CFSM .14 IN. 1.93

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 May 1993 (discontinued).

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.--24 years (water years 1969-92), 335 ft³/s (1.40 in/yr), 242,400 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. Discharges for other floods are 258,000 ft³/s, 1952; 218,000 ft³/s, 1889.

PEAK DISCHARGES FOR PERIOD OCTOBER 1992 TO MAY 1993.--Peak discharges greater than base discharge of 3,000 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 15	1200	496	2.16	No peaks greater than base discharge during period.			

Minimum daily discharge for period, 170 ft³/s April 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	187	189	231	284	228	235	232	310	---	---	---	---
2	185	198	231	272	228	232	217	323	---	---	---	---
3	187	199	228	271	228	231	211	267	---	---	---	---
4	186	201	228	271	225	231	213	239	---	---	---	---
5	188	186	222	262	221	231	214	239	---	---	---	---
6	185	187	221	260	242	223	215	264	---	---	---	---
7	183	193	221	260	255	218	306	234	---	---	---	---
8	177	195	221	260	256	218	303	222	---	---	---	---
9	177	195	226	260	253	213	296	213	---	---	---	---
10	182	195	234	259	253	211	255	---	---	---	---	---
11	183	195	235	260	253	208	232	---	---	---	---	---
12	181	204	235	260	253	214	223	---	---	---	---	---
13	182	199	235	257	253	212	219	---	---	---	---	---
14	182	198	353	253	251	218	266	---	---	---	---	---
15	182	198	475	253	249	218	274	---	---	---	---	---
16	183	198	452	253	249	220	254	---	---	---	---	---
17	183	198	396	253	247	216	234	---	---	---	---	---
18	182	198	331	253	246	210	220	---	---	---	---	---
19	186	198	316	253	246	223	213	---	---	---	---	---
20	186	201	316	256	246	238	211	---	---	---	---	---
21	188	201	316	256	244	235	195	---	---	---	---	---
22	189	218	316	255	242	235	189	---	---	---	---	---
23	190	231	316	253	242	228	186	---	---	---	---	---
24	192	231	316	253	240	222	186	---	---	---	---	---
25	193	236	316	230	238	220	183	---	---	---	---	---
26	195	243	312	224	235	216	173	---	---	---	---	---
27	195	235	312	218	235	205	170	---	---	---	---	---
28	195	229	312	218	235	247	172	---	---	---	---	---
29	193	228	312	222	---	257	237	---	---	---	---	---
30	191	231	312	235	---	299	272	---	---	---	---	---
31	189	---	312	229	---	258	---	---	---	---	---	---
TOTAL	5777	6208	9059	7803	6793	7042	6771	---	---	---	---	---
MEAN	186	207	292	252	243	227	226	---	---	---	---	---
MAX	195	243	475	284	256	299	306	---	---	---	---	---
MIN	177	186	221	218	221	205	170	---	---	---	---	---
AC-FT	11460	12310	17970	15480	13470	13970	13430	---	---	---	---	---
CFSM	.06	.06	.09	.08	.07	.07	.07	---	---	---	---	---
IN.	.07	.07	.10	.09	.08	.08	.08	---	---	---	---	---

CAL YR 1992 TOTAL 183923 MEAN 503 MAX 5840 MIN 177 AC-FT 364800 CFSM .16 IN. 2.11

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. WDR 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.--No estimated daily discharges. Records good. There is no known regulation or diversion above station. Several observations of water temperature were made during the year.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0930	1,650	4.48	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	4.7	8.8	14	14	18	12	24	5.4	1.8	.02	.00
2	2.4	5.4	8.8	15	14	15	11	23	4.1	1.5	.02	.01
3	2.4	5.0	8.6	15	14	11	10	19	3.2	1.3	.02	.45
4	2.3	3.4	8.4	14	14	11	12	14	2.8	1.1	.02	.11
5	2.3	3.3	8.4	14	22	10	11	13	2.6	.84	.02	3.5
6	2.3	3.3	8.4	14	23	9.6	11	17	2.4	.72	.01	2.3
7	2.4	3.4	8.4	13	19	9.6	129	14	2.2	.58	.01	1.6
8	2.3	3.4	8.4	13	18	9.6	39	13	2.1	.43	.01	1.2
9	2.3	4.3	9.5	13	16	9.2	20	12	2.1	.39	.01	1.0
10	2.3	4.4	9.8	13	20	8.8	15	10	2.4	.39	.00	.84
11	2.3	4.3	8.5	13	19	8.7	12	9.6	3.9	.34	.00	.74
12	2.3	4.6	8.0	14	17	8.8	11	9.2	7.1	.31	.00	.62
13	2.2	4.4	8.1	14	16	9.2	10	8.8	4.6	.30	.00	.85
14	2.1	4.0	23	12	16	9.2	30	8.4	3.5	.23	.00	7.3
15	2.1	4.0	57	12	16	9.2	27	8.0	3.3	.19	.00	7.1
16	2.3	4.0	43	12	16	9.2	17	7.0	3.1	.17	.00	6.1
17	2.3	4.0	32	12	14	9.5	14	6.3	2.7	.14	.00	4.0
18	2.4	4.3	26	12	14	9.6	12	5.6	2.6	.11	.00	2.8
19	2.6	515	23	13	14	11	11	5.5	2.7	.10	.00	2.1
20	2.7	58	21	27	13	12	10	5.8	2.9	.09	.00	1.5
21	2.8	24	19	24	13	11	9.6	5.3	4.9	.08	.00	1.4
22	2.8	16	18	19	12	10	9.2	4.6	6.3	.07	.00	1.3
23	2.8	13	17	17	11	10	9.2	8.7	4.5	.06	.00	1.1
24	2.8	12	16	15	11	10	9.5	13	3.3	.04	.00	.96
25	2.8	13	15	14	11	11	9.3	8.5	2.8	.03	.00	.88
26	2.3	10	15	14	11	11	8.8	6.3	3.3	.03	.00	.82
27	2.4	9.5	15	14	10	9.5	8.4	5.4	4.2	.03	.00	.79
28	2.3	9.2	14	14	13	29	8.4	4.8	3.6	.03	.00	.86
29	2.5	9.2	14	16	---	19	16	5.4	2.8	.03	.00	.88
30	3.0	8.8	14	17	---	21	20	16	2.2	.03	.00	.88
31	4.4	---	13	15	---	16	---	7.5	---	.03	.00	---
TOTAL	77.6	771.9	507.1	458	421	365.7	532.4	318.7	103.6	11.49	0.14	53.99
MEAN	2.50	25.7	16.4	14.8	15.0	11.8	17.7	10.3	3.45	.37	.005	1.80
MAX	4.4	515	57	27	23	29	129	24	7.1	1.8	.02	7.3
MIN	2.1	3.3	8.0	12	10	8.7	8.4	4.6	2.1	.03	.00	.00
AC-FT	154	1530	1010	908	835	725	1060	632	205	23	.3	107
CFSM	.01	.12	.08	.07	.07	.05	.08	.05	.02	.00	.00	.01
IN.	.01	.13	.09	.08	.07	.06	.09	.06	.02	.00	.00	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1993, BY WATER YEAR (WY)

	MEAN	25.1	8.11	15.3	14.3	20.6	17.4	19.4	30.4	25.6	3.64	24.2	12.3
MAX	292	32.2	220	183	285	105	132	197	327	23.0	443	167	
(WY)	1970	1970	1992	1968	1992	1970	1977	1975	1987	1987	1978	1964	
MIN	.37	.91	1.44	1.84	1.41	1.29	.49	1.56	.21	.003	.000	.021	
(WY)	1983	1980	1983	1971	1984	1967	1984	1964	1971	1964	1985	1977	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1964 - 1993

ANNUAL TOTAL	18025.3	3621.62	
ANNUAL MEAN	49.2	9.92	
HIGHEST ANNUAL MEAN			18.0
LOWEST ANNUAL MEAN			65.5
HIGHEST DAILY MEAN	3260 Feb 4	515 Nov 19	12800 Aug 3 1978
LOWEST DAILY MEAN	2.1 Oct 14	.00 Aug 10	.00 Jul 2 1964
ANNUAL SEVEN-DAY MINIMUM	2.2 Oct 9	.00 Aug 10	.00 Jul 2 1964
INSTANTANEOUS PEAK FLOW		1650 Nov 19	66900 Aug 3 1978
INSTANTANEOUS PEAK STAGE		4.48 Nov 19	24.00 Aug 3 1978
INSTANTANEOUS LOW FLOW		.00 many days	.00 *
ANNUAL RUNOFF (AC-FT)	35750	7180	13070
ANNUAL RUNOFF (CFSM)	.23	.046	.084
ANNUAL RUNOFF (INCHES)	3.12	.63	1.14
10 PERCENT EXCEEDS	71	17	22
50 PERCENT EXCEEDS	19	7.5	3.0
90 PERCENT EXCEEDS	2.8	.03	.20

* No flow at times most years.

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.--Records good, except those for estimated daily discharges, which are poor. Part of low flow of the Llano River disappears into various formations, many of which are faulted, between this station and station near Junction. Gage-height and rain-gage telemeter at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1000	7,160	7.25	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	231	268	311	330	521	403	550	199	141	66	84
2	179	233	262	314	323	523	340	585	175	127	68	95
3	179	245	265	314	322	434	310	520	155	117	69	512
4	179	231	266	320	427	383	320	400	137	107	69	397
5	179	220	262	316	832	348	315	369	123	98	69	277
6	179	208	260	314	749	329	304	421	113	93	62	217
7	183	205	260	311	539	319	826	384	107	e94	62	178
8	184	211	263	312	467	307	908	333	101	e94	62	151
9	179	224	289	316	434	306	551	301	96	e90	62	132
10	179	234	290	311	804	299	464	259	152	e90	59	119
11	179	245	278	314	617	292	399	232	181	e86	59	112
12	181	246	272	323	497	305	355	215	261	e86	59	107
13	184	241	271	318	446	303	330	205	306	e86	59	122
14	184	233	411	310	420	294	468	196	230	e86	55	127
15	185	230	1390	305	419	298	537	192	187	77	55	263
16	184	229	841	304	431	297	436	182	171	77	59	320
17	184	225	561	302	400	296	375	173	159	73	55	256
18	184	228	454	302	372	296	336	166	233	73	55	209
19	184	3030	405	349	363	327	305	159	193	73	46	173
20	184	1020	378	539	358	445	275	159	173	73	46	150
21	203	527	357	382	360	405	256	155	207	73	43	135
22	208	406	347	348	348	374	240	155	230	69	43	126
23	205	347	339	334	335	352	230	159	175	66	52	119
24	203	354	327	317	333	335	227	209	161	66	53	117
25	198	334	318	306	334	327	228	249	153	66	55	115
26	191	305	311	304	327	416	220	197	762	62	57	117
27	186	293	308	296	318	338	208	172	381	62	59	112
28	184	282	303	303	350	523	205	74	252	62	61	109
29	206	275	310	342	---	664	411	161	185	66	69	111
30	244	270	314	356	---	522	504	180	157	62	72	116
31	217	---	311	340	---	500	---	213	---	66	69	---
TOTAL	5877	11562	11491	10133	12255	11678	11286	7925	6115	2561	1829	5178
MEAN	190	385	371	327	438	377	376	256	204	82.6	59.0	173
MAX	244	3030	1390	539	832	664	908	585	762	141	72	512
MIN	179	205	260	296	318	292	205	74	96	62	43	84
AC-FT	11660	22930	22790	20100	24310	23160	22390	15720	12130	5080	3630	10270
CFSM	.05	.09	.09	.08	.10	.09	.09	.06	.05	.02	.01	.04
IN.	.05	.10	.10	.09	.11	.10	.10	.07	.05	.02	.02	.05

e Estimated

COLORADO RIVER BASIN

105

08151500 LLANO RIVER AT LLANO, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

MEAN	517	229	299	294	368	280	389	544	533	234	321	464
MAX	3700	1005	3179	2483	3754	1539	3115	3350	3231	1796	3605	3891
(WY)	1974	1975	1992	1968	1992	1970	1977	1957	1961	1988	1974	1952
MIN	18.0	20.7	27.5	31.7	37.7	23.7	20.9	41.0	7.93	.000	.087	.56
(WY)	1952	1957	1955	1957	1954	1954	1955	1984	1953	1956	1952	1954

SUMMARY STATISTICS

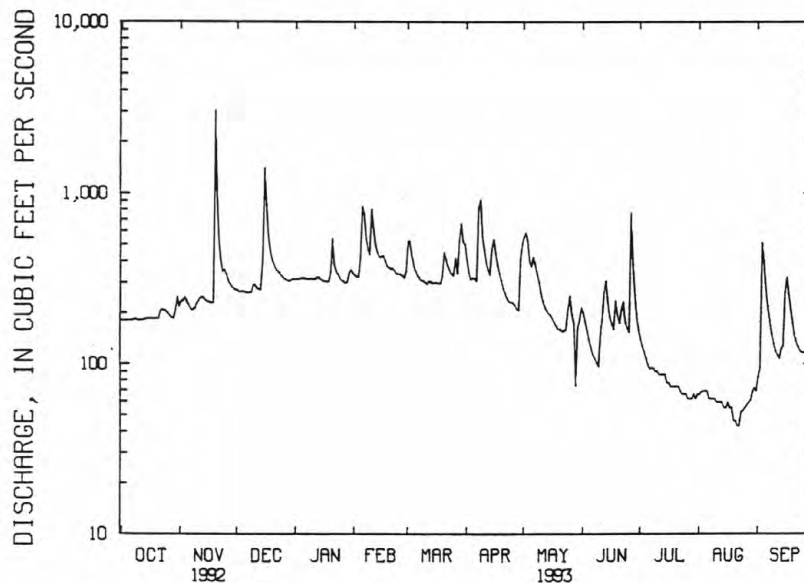
FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1940 - 1993

ANNUAL TOTAL	318213			97890								
ANNUAL MEAN	869			268						372		
HIGHEST ANNUAL MEAN										1097		1992
LOWEST ANNUAL MEAN										50.0		1954
HIGHEST DAILY MEAN	41400	Feb 4		3030	Nov 19					71200	Sep 8	1980
LOWEST DAILY MEAN	179	Sep 30		43	Aug 21					.00	Aug 5	1952
ANNUAL SEVEN-DAY MINIMUM	179	Sep 30		48	Aug 18					.00	Aug 27	1952
INSTANTANEOUS PEAK FLOW				7160	Nov 19					232000	Sep 10	1952
INSTANTANEOUS PEAK STAGE				7.25	Nov 19					32.60	Sep 10	1952
INSTANTANEOUS LOW FLOW				30	Aug 21					.00	*	
ANNUAL RUNOFF (AC-FT)	631200			194200						269700		
ANNUAL RUNOFF (CFSM)	.21			.064						.089		
ANNUAL RUNOFF (INCHES)	2.82			.87						1.21		
10 PERCENT EXCEEDS	1380			435						543		
50 PERCENT EXCEEDS	461			241						155		
90 PERCENT EXCEEDS	203			69						39		

* No flow at times in 1952-56, 1964, and 1984.



08151500 LLANO RIVER AT LLANO, TX
MEAN DAILY DISCHARGE (CFS)

08152000 SANDY CREEK NEAR KINGSLAND, TX

LOCATION.--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 March 1993 (discontinued).

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.--No estimated daily discharges. Records good. Some diversions above station for irrigation (amount unknown). Several observations of water temperature were made during the year. Gage-height telemeter at station.

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.

PEAK DISCHARGES FOR PERIOD OCTOBER 1992 TO MARCH 1993.--Peak discharges greater than base discharge of 2,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1430	2,030	7.65	No peak greater than base discharge for period.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	20	35	30	28	47	---	---	---	---	---	---
2	5.8	15	36	29	26	50	---	---	---	---	---	---
3	5.5	10	35	30	27	42	---	---	---	---	---	---
4	5.5	9.3	35	30	31	33	---	---	---	---	---	---
5	5.5	7.8	35	29	38	30	---	---	---	---	---	---
6	5.5	7.3	34	27	51	28	---	---	---	---	---	---
7	5.6	7.3	35	27	42	28	---	---	---	---	---	---
8	6.8	7.3	35	27	36	27	---	---	---	---	---	---
9	6.3	7.5	41	28	33	27	---	---	---	---	---	---
10	5.8	7.8	40	25	51	25	---	---	---	---	---	---
11	5.5	8.4	37	26	75	25	---	---	---	---	---	---
12	5.2	9.9	36	27	53	26	---	---	---	---	---	---
13	4.5	7.9	35	26	48	26	---	---	---	---	---	---
14	4.0	6.8	48	21	45	26	---	---	---	---	---	---
15	3.8	6.6	164	20	46	26	---	---	---	---	---	---
16	3.4	6.5	133	20	45	26	---	---	---	---	---	---
17	4.0	6.5	56	20	42	23	---	---	---	---	---	---
18	4.2	6.8	52	20	39	24	---	---	---	---	---	---
19	5.5	614	48	37	35	28	---	---	---	---	---	---
20	5.5	219	44	42	32	32	---	---	---	---	---	---
21	5.5	69	41	40	32	32	---	---	---	---	---	---
22	5.5	52	41	31	29	28	---	---	---	---	---	---
23	5.5	45	38	28	27	20	---	---	---	---	---	---
24	6.1	44	36	22	26	17	---	---	---	---	---	---
25	6.3	41	36	21	26	17	---	---	---	---	---	---
26	6.3	40	34	22	25	22	---	---	---	---	---	---
27	6.2	40	33	21	24	25	---	---	---	---	---	---
28	5.9	38	33	22	31	23	---	---	---	---	---	---
29	5.9	36	31	32	---	24	---	---	---	---	---	---
30	5.5	36	31	33	---	28	---	---	---	---	---	---
31	5.7	---	31	32	---	28	---	---	---	---	---	---
TOTAL	167.9	1432.7	1399	845	1043	863	---	---	---	---	---	---
MEAN	5.42	47.8	45.1	27.3	37.2	27.8	---	---	---	---	---	---
MAX	6.8	614	164	42	75	50	---	---	---	---	---	---
MIN	3.4	6.5	31	20	24	17	---	---	---	---	---	---
AC-FT	333	2840	2770	1680	2070	1710	---	---	---	---	---	---
CFSM	.02	.14	.13	.08	.11	.08	---	---	---	---	---	---
IN.	.02	.15	.15	.09	.11	.09	---	---	---	---	---	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1993, BY WATER YEAR (WY)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	65.8	32.1	80.5	57.0	91.8	72.6	61.8	130	128	25.3	25.3	30.4															
MAX	306	195	1074	511	936	425	528	510	862	258	358	188															
(WY)	1972	1975	1992	1968	1992	1992	1977	1975	1987	1976	1974	1976															
MIN	.045	.045	1.10	1.06	4.19	1.86	1.41	.71	.055	.10	.000	.000															
(WY)	1990	1989	1990	1990	1967	1967	1984	1984	1971	1980	1989	1989															

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

WATER YEARS 1967 - 1993

ANNUAL TOTAL	67978.6	
ANNUAL MEAN	186	67.3
HIGHEST ANNUAL MEAN		279
LOWEST ANNUAL MEAN		3.62
HIGHEST DAILY MEAN	8960	Feb 4
LOWEST DAILY MEAN	3.4	Sep 2
ANNUAL SEVEN-DAY MINIMUM	4.2	Oct 12
INSTANTANEOUS PEAK FLOW		14200
INSTANTANEOUS PEAK STAGE		.00
INSTANTANEOUS LOW FLOW		.00
ANNUAL RUNOFF (AC-FT)	134800	39500
ANNUAL RUNOFF (CFSM)	.54	17.63
ANNUAL RUNOFF (INCHES)	7.31	.00
10 PERCENT EXCEEDS	464	.19
50 PERCENT EXCEEDS	47	2.64
90 PERCENT EXCEEDS	6.0	95
		11
		.15

COLORADO RIVER BASIN

107

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 Museback Creek, 3.8 mi south of Fredericksburg, and 88.7 mi upstream from mouth.

DRAINAGE AREA.--369 mi².

PERIOD OF RECORD.--July 1979 to May 1993 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,564.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion above station. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--13 years (water years 1980-92), 62.8 ft³/s, (45,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,900 ft³/s Dec. 20, 1991 (gage height, 32.09 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.

PEAK DISCHARGES FOR PERIOD OCTOBER 1992 TO MAY 1993.--Peak discharges greater than base discharge of 1,500 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1800	403	6.48	No peak greater than base discharge during period.			

Minimum daily discharge for period, 16 ft³/s Oct. 1-5, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	25	30	38	34	57	43	58	---	---	---	---
2	16	28	30	35	34	56	39	58	---	---	---	---
3	16	26	29	33	36	48	37	56	---	---	---	---
4	16	21	29	32	40	43	52	---	---	---	---	---
5	16	19	29	32	44	40	53	---	---	---	---	---
6	17	19	29	32	47	38	43	---	---	---	---	---
7	17	20	30	34	42	39	44	---	---	---	---	---
8	17	20	29	36	40	39	66	---	---	---	---	---
9	17	24	31	36	40	40	51	---	---	---	---	---
10	18	26	33	34	70	39	44	---	---	---	---	---
11	17	26	31	34	71	37	41	---	---	---	---	---
12	17	30	29	35	52	38	39	---	---	---	---	---
13	17	29	29	34	47	40	39	---	---	---	---	---
14	16	25	39	33	47	40	176	---	---	---	---	---
15	17	23	126	33	50	39	134	---	---	---	---	---
16	18	24	110	32	49	40	76	---	---	---	---	---
17	18	24	70	32	46	40	63	---	---	---	---	---
18	18	25	57	32	43	39	58	---	---	---	---	---
19	18	189	53	34	42	57	53	---	---	---	---	---
20	19	180	48	195	42	68	50	---	---	---	---	---
21	19	77	43	67	44	48	46	---	---	---	---	---
22	19	53	42	50	42	44	45	---	---	---	---	---
23	20	43	40	45	40	44	44	---	---	---	---	---
24	19	39	39	41	40	43	44	---	---	---	---	---
25	19	38	37	37	40	40	43	---	---	---	---	---
26	19	35	35	36	39	40	40	---	---	---	---	---
27	18	32	34	36	37	36	39	---	---	---	---	---
28	18	31	34	36	39	36	38	---	---	---	---	---
29	18	30	36	37	---	39	50	---	---	---	---	---
30	18	30	37	38	---	50	64	---	---	---	---	---
31	19	---	37	36	---	51	---	---	---	---	---	---
TOTAL	547	1211	1305	1295	1237	1348	1654	---	---	---	---	---
MEAN	17.6	40.4	42.1	41.8	44.2	43.5	55.1	---	---	---	---	---
MAX	20	189	126	195	71	68	176	---	---	---	---	---
MIN	16	19	29	32	34	36	37	---	---	---	---	---
AC-FT	1080	2400	2590	2570	2450	2670	3280	---	---	---	---	---

CAL YR 1992 TOTAL 60736 MEAN 166 MAX 4510 MIN 16 AC-FT 120500

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. Two observations of water temperature was made during the year. Gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869, reached a stage of 33 ft from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 7	1000	5,040	12.34	Sept. 13	1200	19,000	14.99

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	47	76	72	99	125	114	206	148	120	10	4.3
2	54	61	80	72	96	138	103	174	137	118	10	10
3	57	55	75	80	96	123	89	182	128	110	10	14
4	63	42	68	75	98	123	83	167	116	111	7.7	12
5	62	51	72	74	127	118	92	170	106	95	6.7	6.7
6	58	51	72	80	134	115	100	626	98	75	5.8	5.0
7	47	51	72	85	132	111	1380	289	97	43	5.0	5.0
8	51	51	73	88	121	106	298	203	92	41	5.0	5.8
9	57	71	82	89	110	106	198	176	82	40	5.0	18
10	57	76	94	79	136	106	158	182	102	38	5.0	31
11	60	57	96	80	175	102	142	156	145	38	5.0	27
12	60	55	80	78	158	92	135	135	146	34	5.0	24
13	60	62	48	80	138	90	126	127	131	27	5.0	3640
14	58	72	51	80	128	98	523	126	123	26	5.0	3110
15	57	63	160	80	128	100	495	126	106	23	5.0	539
16	60	58	205	80	124	105	298	126	102	23	5.0	191
17	64	54	164	80	118	101	224	119	99	24	4.3	121
18	64	50	127	80	106	96	195	112	100	24	5.0	78
19	61	113	111	113	110	131	172	112	121	24	6.7	55
20	55	287	90	134	110	175	165	128	152	24	5.8	40
21	54	212	88	216	100	160	155	128	177	24	5.0	30
22	54	126	84	150	96	138	152	122	177	24	4.3	28
23	57	118	84	125	95	131	144	143	167	24	3.7	27
24	57	89	84	101	88	124	144	172	146	24	3.7	25
25	57	74	83	102	83	112	137	169	137	23	3.2	22
26	56	71	80	96	88	125	139	152	151	16	3.2	18
27	53	75	80	96	88	96	136	140	144	11	3.2	20
28	52	75	80	96	91	96	139	134	171	7.8	2.8	24
29	54	83	72	97	---	93	174	131	141	8.8	2.4	19
30	51	72	72	100	---	108	216	153	130	10	2.4	18
31	51	---	71	106	---	128	---	174	---	10	2.8	---
TOTAL	1755	2422	2774	2964	3173	3572	6626	5260	3872	1240.6	158.7	8167.8
MEAN	56.6	80.7	89.5	95.6	113	115	221	170	129	40.0	5.12	272
MAX	64	287	205	216	175	175	1380	626	177	120	10	3640
MIN	47	42	48	72	83	90	83	112	82	7.8	2.4	4.3
AC-FT	3480	4800	5500	5880	6290	7090	13140	10430	7680	2460	315	16200

COLORADO RIVER BASIN

109

08153500 PEDERNALES RIVER NEAR JOHNSON CITY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

MEAN	235	87.4	178	130	211	162	234	322	312	101	119	215
MAX	2041	600	3161	1177	2794	1289	2368	1673	2905	872	1953	6332
(WY)	1960	1975	1992	1968	1992	1992	1977	1975	1987	1987	1978	1952
MIN	.44	2.51	2.44	1.68	4.83	2.07	.060	2.05	.52	.001	.000	.000
(WY)	1952	1952	1955	1957	1957	1956	1956	1956	1971	1971	1954	1984

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR			FOR 1993 WATER YEAR			WATER YEARS 1940 - 1993		
ANNUAL TOTAL	213996			41985.1					
ANNUAL MEAN	585			115			192		
HIGHEST ANNUAL MEAN							840		
LOWEST ANNUAL MEAN							4.12		
HIGHEST DAILY MEAN	36200	Feb 4		3640	Sep 13		129000	Sep 11	1952
LOWEST DAILY MEAN	42	Nov 4		2.4	Aug 29		.00	Aug 8	1951
ANNUAL SEVEN-DAY MINIMUM	51	Oct 30		2.9	Aug 25		.00	Aug 8	1951
INSTANTANEOUS PEAK FLOW				19000	Sep 13	a/	441000	Sep 11	1952
INSTANTANEOUS PEAK STAGE				14.99	Sep 13	b/	42.50	Sep 11	1952
INSTANTANEOUS LOW FLOW				2.0	Aug 29		.00		*
ANNUAL RUNOFF (AC-FT)	424500			83280			138900		
10 PERCENT EXCEEDS	1010			168			279		
50 PERCENT EXCEEDS	224			88			50		
90 PERCENT EXCEEDS	57			10			4.8		

a/ From rating curve extended above 116,000 ft³/s on basis of slope-area measurement of 441,000 ft³/s.

b/ Maximum stage since at least 1859.

* No flow at times in 1951-52, 1954, 1956-57, 1963-64, 1967-68, 1971, and 1984-85.

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.--No estimated daily discharge. Records good. No known regulation or diversions above this station. Gage-height rainfall telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0915	482	4.70	June 26	0445	2,800	6.79

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	22	8.1	10	17	38	14	17	7.8	31	2.0	.50
2	1.8	8.6	8.2	10	17	34	14	50	7.0	26	2.0	.34
3	1.5	6.1	7.9	10	32	26	13	28	5.3	21	1.8	.53
4	1.5	5.4	6.6	11	31	23	22	20	4.9	20	1.7	.35
5	1.6	4.9	5.8	10	32	22	15	48	4.3	17	1.6	.28
6	1.6	5.2	6.3	9.2	31	20	14	59	4.0	15	1.4	.29
7	4.0	5.3	6.3	9.7	28	19	58	42	3.5	14	1.1	.28
8	5.8	5.3	6.5	11	26	18	43	38	3.5	13	.79	.20
9	2.9	5.3	15	17	37	17	32	44	3.5	12	.69	.16
10	2.5	5.0	9.7	15	62	16	27	37	3.5	11	.69	.16
11	2.2	4.7	9.3	14	44	16	23	28	3.5	11	.63	.16
12	2.2	5.9	8.7	14	37	15	22	25	3.8	9.7	.52	.19
13	1.9	5.6	7.8	12	34	15	22	21	4.1	9.0	.57	.20
14	1.8	5.1	56	11	32	14	45	20	24	8.4	.52	.53
15	1.9	4.7	123	11	33	14	29	18	22	7.0	.44	.74
16	1.9	4.7	50	12	34	14	23	15	13	6.1	.58	1.4
17	1.9	4.7	32	11	27	12	20	15	14	5.8	.33	1.2
18	2.0	4.7	25	11	25	11	19	14	13	5.5	.29	.87
19	2.1	179	22	58	24	37	17	12	9.2	4.7	.30	.85
20	2.1	97	19	60	23	44	16	11	65	4.4	.29	.70
21	2.1	41	17	43	21	27	15	9.4	43	3.9	.48	.69
22	2.1	27	15	35	20	23	14	9.2	30	3.3	.36	.68
23	2.2	22	14	32	19	22	13	16	22	3.3	.30	.61
24	2.4	19	13	28	19	20	12	15	18	3.0	.19	.59
25	2.2	16	12	26	18	24	11	10	16	3.1	.22	.45
26	1.9	13	11	24	17	21	9.6	9.4	526	3.0	.29	.42
27	1.9	12	11	21	17	18	9.4	9.0	113	2.8	.29	.61
28	1.9	11	11	18	18	17	9.4	8.3	72	2.7	.30	.59
29	2.8	9.7	11	19	---	16	44	8.2	50	2.4	.28	.52
30	14	8.6	11	19	---	18	22	15	39	2.3	.27	.50
31	4.9	---	10	18	---	16	---	9.7	---	2.1	.43	---
TOTAL	83.6	568.5	569.2	609.9	775	647	647.4	681.2	1147.9	283.5	21.65	15.59
MEAN	2.70	18.9	18.4	19.7	27.7	20.9	21.6	22.0	38.3	9.15	.70	.52
MAX	14	179	123	60	62	44	58	59	526	31	2.0	1.4
MIN	1.5	4.7	5.8	9.2	17	11	9.4	8.2	3.5	2.1	.19	.16
AC-FT	166	1130	1130	1210	1540	1280	1280	1350	2280	562	43	31
CFSM	.12	.85	.82	.88	1.24	.94	.97	.99	1.72	.41	.03	.02
IN.	.14	.95	.95	1.02	1.29	1.08	1.08	1.14	1.91	.47	.04	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1979	10.4	69.7	1985	.27	1979
1980	9.69	43.2	1986	.60	1980
1981	18.4	130	1987	.64	1981
1982	13.3	55.9	1988	1.08	1982
1983	20.6	114	1989	2.67	1983
1984	16.2	64.7	1990	3.95	1984
1985	9.69	21.6	1991	1.28	1985
1986	29.1	58.9	1992	.33	1986
1987	29.1	141	1993	.64	1987
1988	3.87	16.7	1988	.25	1988
1989	3.00	26.3	1989	.16	1989
1990	3.26	15.3	1990	.053	1990
1991			1991		1991
1992			1992		1992
1993			1993		1993

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL	11826.72	6050.44	
ANNUAL MEAN	32.3	16.6	13.8
HIGHEST ANNUAL MEAN			40.6
LOWEST ANNUAL MEAN			1.86
HIGHEST DAILY MEAN	552	526	1170
LOWEST DAILY MEAN	.78	.16	.00
ANNUAL SEVEN-DAY MINIMUM	.85	.19	.00
INSTANTANEOUS PEAK FLOW		2800	13700
INSTANTANEOUS PEAK STAGE		6.79	11.96
INSTANTANEOUS LOW FLOW		.06	
ANNUAL RUNOFF (AC-FT)	23460	12000	10030
ANNUAL RUNOFF (CFSM)	1.45	.74	.62
ANNUAL RUNOFF (INCHES)	19.73	10.09	8.43
10 PERCENT EXCEEDS	77	34	24
50 PERCENT EXCEEDS	11	11	4.1
90 PERCENT EXCEEDS	1.9	.55	.34

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, January to September 1993. Radiochemical analyses: January to April 1980.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
NOV													
19...	0707	98	317	--	--	45	190	--	--	3.9	--	44000	
19...	0807	276	216	--	--	--	--	--	--	5.4	--	25000	
19...	0937	489	381	--	--	--	--	--	--	3.3	--	32000	
19...	1215	400	277	--	--	40	69	--	--	1.2	--	24000	
20...	1022	63	494	7.8	17.0	23	6.5	--	--	0.2	--	4800	
DEC													
15...	0330	148	459	--	--	18	23	--	--	2.7	--	K1200	
15...	0430	169	458	--	--	20	26	--	--	2.2	--	3200	
15...	0530	198	456	--	--	25	21	--	--	2.3	--	3000	
15...	0952	198	452	--	10.5	20	9.7	--	--	1.0	--	K1300	
15...	1354	132	479	--	12.0	20	6.3	--	--	0.6	--	K600	
JAN													
14...	0947	11	600	7.5	9.0	5	0.80	11.3	99	0.2	15	47	
MAR													
17...	1124	13	580	8.0	15.0	5	1.0	10.8	108	0.3	13	49	
MAY													
04...	1247	21	580	8.1	20.5	5	0.70	9.2	105	0.4	13	55	
JUL													
14...	1035	7.8	542	7.8	26.0	6	0.20	7.5	94	0.4	<10	220	
SEP													
07...	1227	0.18	650	7.8	28.0	9	0.30	9.5	124	0.6	--	580	
DATE		STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS FIX END FIELD CaCO3 (MG/L)	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...		62000	--	--	--	--	--	--	--	--	--	--	--
19...		90000	--	--	--	--	--	--	--	--	--	--	--
19...		52000	--	--	--	--	--	--	--	--	--	--	--
19...		80000	--	--	--	--	--	--	--	--	--	--	--
20...		7200	220	46	65	13	20	0.6	2.2	170	39	32	0.20
DEC													
15...		4500	--	--	--	--	--	--	--	--	--	--	--
15...		8000	--	--	--	--	--	--	--	--	--	--	--
15...		6900	--	--	--	--	--	--	--	--	--	--	--
15...		9200	--	--	--	--	--	--	--	--	--	--	--
15...		2100	--	--	--	--	--	--	--	--	--	--	--
JAN													
14...		65	280	61	81	19	24	0.6	1.2	220	52	42	0.20
MAR													
17...		K16	260	42	71	19	20	0.5	1.1	220	45	35	<0.10
MAY													
04...		140	--	--	--	--	--	--	--	230	--	--	--
JUL													
14...		390	--	--	--	--	--	--	--	220	--	--	--
SEP													
07...		120	--	--	--	--	--	--	--	200	--	--	--
DATE		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)	RESIDUE FIXED NOW FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (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)
NOV													
19...		--	--	638	118	520	0.150	0.090	--	0.240	--	0.040	--
19...		--	--	--	--	--	0.310	0.070	--	0.380	--	0.040	--
19...		--	--	--	--	--	0.250	0.080	--	0.330	--	0.020	--
19...		--	--	130	39	91	0.460	0.100	--	0.560	--	0.040	--
20...		8.2	283	21	21	0	0.710	0.050	--	0.760	--	<0.010	--
DEC													
15...		--	--	77	25	52	0.470	0.050	--	0.520	--	0.030	--
15...		--	--	453	81	372	0.490	0.060	--	0.550	--	0.020	--
15...		--	--	53	28	25	0.510	0.060	--	0.570	--	0.030	--
15...		--	--	16	7	9	0.560	0.030	--	0.590	--	0.010	--
15...		--	--	14	6	8	0.660	0.050	--	0.710	--	0.020	--
JAN													
14...		5.7	360	3	<1	--	0.340	--	<0.010	0.340	0.340	--	<0.010
MAR													
17...		4.5	326	9	9	0	0.110	--	<0.010	0.110	0.110	--	0.020
MAY													
04...		--	--	<1	15	--	0.550	--	<0.010	0.550	0.550	--	0.020
JUL													
14...		--	--	3	<1	--	0.130	--	<0.010	0.130	0.130	--	<0.010
SEP													
07...		--	--	3	1	2	--	--	<0.010	--	<0.050	--	0.030

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
	NOV	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...
NOV	19...	2.3	--	2.3	0.310	--	--	0.020	--	26	--	--
19...	19...	2.1	--	2.1	0.280	--	--	0.040	--	--	--	--
19...	19...	1.9	--	1.9	0.250	--	--	0.060	--	--	--	--
19...	19...	0.76	--	0.80	0.140	--	--	0.070	--	9.2	--	--
20...	19...	0.60	--	0.60	0.040	--	--	<0.010	--	7.9	--	<1
DEC	15...	0.47	--	0.50	0.070	--	--	0.030	--	5.8	--	--
15...	15...	0.48	--	0.50	0.080	--	--	0.030	--	5.2	--	--
15...	15...	0.37	--	0.40	0.060	--	--	0.030	--	5.0	--	--
15...	15...	0.29	--	0.30	0.040	--	--	0.020	--	4.4	--	--
15...	15...	0.18	--	0.20	0.020	--	--	<0.010	--	3.9	--	--
JAN	14...	--	<0.20	--	--	0.010	<0.010	--	--	2.0	0.500	0.100
MAR	17...	--	<0.20	--	--	<0.010	<0.010	--	--	1.4	0.200	<0.100
MAY	04...	--	<0.20	--	--	0.440	0.030	--	0.09	2.8	--	--
JUL	14...	--	<0.20	--	--	0.020	<0.010	--	--	2.1	--	--
SEP	07...	--	<0.20	--	--	0.050	0.020	--	0.06	2.5	--	--
DATE	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)	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)
NOV	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...
NOV	19...	--	--	--	--	--	--	--	--	--	--	--
19...	19...	--	--	--	--	--	--	--	--	--	--	--
19...	19...	--	--	--	--	--	--	--	--	--	--	--
20...	43	<0.5	1.0	<5	<3	<10	10	30	5	2	<0.1	<10
DEC	15...	--	--	--	--	--	--	--	--	--	--	--
15...	15...	--	--	--	--	--	--	--	--	--	--	--
15...	15...	--	--	--	--	--	--	--	--	--	--	--
15...	15...	--	--	--	--	--	--	--	--	--	--	--
JAN	14...	50	<0.5	<1.0	<5	<3	<10	<3	<10	6	<1	<0.1
MAR	17...	50	<0.5	<1.0	<5	<3	<10	<3	10	6	1	0.1
MAY	04...	--	--	--	--	--	--	--	--	--	--	--
JUL	14...	--	--	--	--	--	--	--	--	--	--	--
SEP	07...	--	--	--	--	--	--	--	--	--	--	--
DATE	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)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L)	CHLORO- BENZENE TOTAL (UG/L)	CHLORO- DI- BROMO- ETHANE TOTAL (UG/L)	CHLORO- ETHANE TOTAL (UG/L)
NOV	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...	19...
NOV	19...	--	--	--	--	--	--	--	--	--	--	--
19...	19...	--	--	--	--	--	--	--	--	--	--	--
19...	19...	--	--	--	--	--	--	--	--	--	--	--
20...	<10	<1	<1.0	710	<6	8	--	--	--	--	--	--
DEC	15...	--	--	--	--	--	--	--	--	--	--	--
15...	15...	--	--	--	--	--	--	--	--	--	--	--
15...	15...	--	--	--	--	--	--	--	--	--	--	--
15...	15...	--	--	--	--	--	--	--	--	--	--	--
JAN	14...	<10	<1	<1.0	1100	<6	<3	<0.2	<0.2	<0.2	<0.2	<0.2
MAR	17...	<10	<1	<1.0	1100	<6	6	--	--	--	--	--
MAY	04...	--	--	--	--	--	--	--	--	--	--	--
JUL	14...	--	--	--	--	--	--	--	--	--	--	--
SEP	07...	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible][illegible][illegible]

COLORADO RIVER BASIN

115

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 August 1990.
Chemical and Biochemical analyses: October 1990 to current year.

301739097471601 - LAKE AUSTIN SITE AR

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUN							
26...	1125	1.00	498	8.0	24.5	7.7	93
26...	1127	10.0	498	8.0	24.0	7.6	91
26...	1129	24.0	511	7.8	19.0	6.3	69
27...	0814	1.00	498	8.0	25.0	7.8	96
27...	0816	10.0	500	7.8	24.0	7.4	89
27...	0818	24.0	512	7.6	18.5	6.0	65

301739097471201 - LAKE AUSTIN SITE AC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRAN- SPAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
JUN											
26...	1133	1.00	497	8.0	24.5	1.20	1.6	7.7	93	1.2	19
26...	1135	10.0	500	8.0	24.0	--	--	7.6	91	--	--
26...	1137	20.0	511	7.8	18.5	--	--	6.4	69	--	--
26...	1139	30.0	512	7.7	18.0	--	--	5.9	63	--	--
26...	1141	40.0	512	7.7	18.0	--	--	5.7	61	--	--
26...	1143	51.0	513	7.6	18.0	--	8.7	5.1	54	0.8	--
27...	0824	1.00	497	8.1	25.5	1.60	1.2	8.2	102	1.2	21
27...	0826	10.0	498	8.0	24.5	--	--	7.8	95	--	--
27...	0828	20.0	510	7.7	19.5	--	--	6.4	71	--	--
27...	0830	30.0	512	7.7	18.0	--	--	5.9	63	--	--
27...	0832	40.0	513	7.7	18.0	--	--	5.7	61	--	--
27...	0834	50.0	513	7.6	18.0	--	9.2	5.0	54	1.1	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C SUS- PENDED (MG/L)	NITRO- GEN, NITRATE 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 DIS- SOLVED (MG/L AS N)
JUN										
26...	440	460	150	303	6	0.140	<0.010	0.140	0.140	0.020
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	160	324	9	0.180	<0.010	0.180	0.180	0.080
27...	K68	K64	150	311	12	0.090	<0.010	0.090	0.090	0.020
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	150	310	19	0.180	<0.010	0.180	0.180	0.080

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 - LAKE AUSTIN SITE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JUN										
26...	--	<0.20	<0.010	0.010	<0.010	3.0	3.00	0.200	2	<1
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	0.12	0.20	<0.010	0.010	<0.010	3.3	--	--	1	<1
27...	0.28	0.30	<0.010	0.020	<0.010	3.0	3.00	0.200	2	<1
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
27...	0.22	0.30	<0.010	0.020	<0.010	3.2	--	--	1	<1

301739097470901 - LAKE AUSTIN SITE AL

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUN							
26...	1200	1.00	496	8.0	24.5	7.5	91
26...	1202	10.0	500	8.0	24.0	7.6	91
26...	1204	19.0	513	7.8	20.5	6.7	75
27...	0843	1.00	496	8.1	25.5	8.2	102
27...	0845	10.0	497	8.0	24.5	7.9	96
27...	0847	22.0	513	7.7	19.5	6.1	67

302043097472401 - LAKE AUSTIN SITE BC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
JUN											
26...	1050	1.00	476	8.0	26.0	0.30	14	7.2	90	1.8	26
26...	1052	10.0	387	7.9	23.0	--	--	7.0	83	--	--
26...	1054	20.0	504	7.8	19.0	--	--	6.3	69	--	--
26...	1056	29.0	511	7.7	18.5	--	6.5	5.6	60	1.0	--
27...	0857	1.00	488	8.0	26.5	1.00	2.7	7.6	96	1.4	19
27...	0859	10.0	473	8.0	25.0	--	--	7.3	90	--	--
27...	0901	20.0	505	7.8	19.5	--	--	6.7	74	--	--
27...	0903	29.0	510	7.6	18.5	--	0.80	4.9	53	1.0	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE 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 DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)
JUN											
26...	2000	K4000	150	292	21	0.120	<0.010	0.120	0.120	0.030	0.27
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	160	316	17	0.200	<0.010	0.200	0.200	0.050	0.25
27...	180	450	150	303	17	0.086	<0.010	0.086	0.086	0.020	0.28
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	150	291	17	0.190	<0.010	0.190	0.190	0.070	0.13

COLORADO RIVER BASIN

117

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 - LAKE AUSTIN SITE BC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JUN										
26...	0.30	0.020	0.010	0.010	0.03	4.2	3.40	0.300	3	<1
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	0.30	<0.010	0.010	<0.010	--	3.0	--	--	2	<1
27...	0.30	<0.010	0.020	<0.010	--	3.6	5.40	0.400	2	<1
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
27...	0.20	<0.010	<0.010	<0.010	--	3.3	--	--	1	<1

302044097472301 - LAKE AUSTIN SITE BL

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUN							
26...	1106	1.00	475	8.0	25.5	7.0	87
26...	1108	10.0	452	7.9	24.0	6.8	82
26...	1110	20.0	506	7.8	19.0	6.1	66
27...	0913	1.00	489	8.0	26.5	7.4	93
27...	0915	10.0	467	8.0	25.0	7.3	90
27...	0917	19.0	441	7.7	21.0	5.8	66

301926097502201 - LAKE AUSTIN SITE CC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
JUN											
26...	0948	1.00	495	8.0	26.5	1.90	0.80	7.5	94	1.1	24
26...	0950	10.0	496	8.0	26.0	--	--	7.4	92	--	--
26...	0952	22.0	506	7.6	19.5	--	1.2	6.7	74	1.0	--
27...	0930	1.00	496	8.0	26.5	2.00	1.0	7.6	96	1.1	25
27...	0932	10.0	501	8.0	25.0	--	--	7.8	96	--	--
27...	0934	22.0	505	7.7	19.5	--	0.60	6.4	71	1.0	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE TOTAL AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE 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 DIS- SOLVED (MG/L AS N)
JUN										
26...	78	90	150	313	7	0.070	<0.010	0.070	0.070	0.020
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	150	308	7	0.180	<0.010	0.180	0.180	0.050
27...	K26	K24	150	312	10	0.064	<0.010	0.064	0.064	0.020
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	150	308	13	0.180	<0.010	0.180	0.180	0.060

COLORADO RIVER BASIN

08154900 LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 - LAKE AUSTIN SITE CC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JUN										
26...	--	<0.20	<0.010	0.010	<0.010	3.1	2.10	0.200	1	<1
26...	--	--	--	--	--	--	--	--	--	--
26...	--	<0.20	<0.010	0.020	<0.010	2.8	--	--	1	<1
27...	0.28	0.30	<0.010	0.010	<0.010	3.3	2.20	0.200	2	<1
27...	--	--	--	--	--	--	--	--	--	--
27...	0.14	0.20	<0.010	0.020	<0.010	2.8	--	--	1	<1

302021097540001 - LAKE AUSTIN SITE DC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
JUN											
26...	1015	1.00	496	8.1	26.5	2.30	0.30	7.7	97	1.0	22
26...	1017	10.0	500	8.0	23.5	--	--	8.2	98	--	--
26...	1019	17.0	504	8.0	21.0	--	0.40	8.4	95	0.7	--
27...	0955	1.00	494	8.1	26.5	2.00	0.80	7.8	98	1.1	21
27...	0957	10.0	497	8.0	23.0	--	--	8.4	99	--	--
27...	0959	17.0	503	7.9	22.0	--	0.70	8.0	93	1.0	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE 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 DIS- SOLVED (MG/L AS N)
JUN										
26...	K2	K6	150	309	6	0.110	<0.010	0.110	0.110	0.020
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	150	314	8	0.140	<0.010	0.140	0.140	0.030
27...	K28	K10	150	301	19	0.076	<0.010	0.076	0.076	0.020
27...	--	--	--	--	--	--	--	--	--	--
27...	--	--	150	288	8	0.130	<0.010	0.130	0.130	0.050

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
JUN										
26...	--	<0.20	<0.010	0.010	<0.010	3.3	2.20	0.200	2	<1
26...	--	--	--	--	--	--	--	--	--	--
26...	--	<0.20	<0.010	0.020	<0.010	3.0	--	--	2	<1
27...	--	<0.20	<0.010	0.010	<0.010	3.2	2.20	0.100	2	<1
27...	--	--	--	--	--	--	--	--	--	--
27...	0.15	0.20	<0.010	0.010	<0.010	2.8	--	--	3	<1

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX

LOCATION.--Lat 30°17'46", long 97°55'31", Travis County, Hydrologic Unit 12090205, at upstream side of bridge on State Highway 71, 0.1 mi downstream from Little Barton Creek, and 5.8 mi northwest of Oak Hill.

DRAINAGE AREA.--89.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1975 to February 1978 (operated as a flood-hydrograph partial-record station only), February 1978 to September 1982, January 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 737.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair above 15 ft³/s and poor below. No known regulation or diversions above station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	0145	410	4.57	No peak greater than base discharge during year.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	.32	3.7	21	68	96	38	40	17	16	.34	.08
2	.48	.27	3.7	21	63	97	36	42	16	18	.29	.08
3	.49	.22	3.7	22	65	77	36	38	16	19	.23	.08
4	.40	.15	3.8	23	67	69	38	31	14	21	.19	.08
5	.34	.15	3.7	23	79	64	36	40	12	18	.16	.08
6	.29	.14	4.0	22	92	60	35	85	13	17	.15	.08
7	.29	.13	4.2	22	83	59	97	59	15	14	.14	.07
8	.28	.13	4.2	24	79	57	97	53	15	13	.14	.06
9	.28	.14	5.8	25	105	56	67	49	13	11	.14	.06
10	.27	.16	5.3	23	276	53	62	49	15	10	.14	.06
11	.27	.17	5.2	23	185	49	61	44	24	11	.13	.06
12	.24	.25	5.1	24	158	53	62	39	22	10	.13	.03
13	.22	.22	4.8	23	145	54	61	35	23	7.9	.12	.05
14	.20	.21	16	23	138	49	72	33	39	6.8	.12	.10
15	.20	.18	154	23	138	47	74	30	41	6.8	.12	.07
16	.19	.18	86	23	131	47	60	32	27	6.3	.10	.04
17	.18	.18	56	23	115	42	59	30	20	6.0	.09	.02
18	.18	.17	47	23	111	41	58	27	18	5.2	.09	.01
19	.18	70	43	145	110	44	55	25	19	4.7	.09	.00
20	.17	36	40	186	105	54	51	22	26	4.6	.09	.00
21	.15	13	37	126	101	45	47	20	49	3.8	.07	.00
22	.15	7.4	36	105	90	43	43	18	64	3.1	.08	.00
23	.15	5.5	36	96	86	43	43	33	46	2.4	.08	.00
24	.15	4.6	33	85	81	40	43	39	42	1.8	.08	.00
25	.15	4.2	32	78	77	40	40	27	36	1.4	.08	.00
26	.13	3.8	30	77	72	50	35	21	42	1.1	.08	.00
27	.12	3.8	29	77	67	44	33	18	38	.83	.08	.00
28	.13	3.8	29	74	69	42	33	17	27	.64	.08	.00
29	.16	3.8	29	76	---	41	55	19	18	.57	.09	.00
30	.76	3.5	27	79	---	45	50	19	18	.47	.08	.00
31	.24	---	23	72	---	45	---	19	---	.39	.07	---
TOTAL	7.91	162.77	840.2	1687	2956	1646	1577	1053	785	242.80	3.87	1.11
MEAN	.26	5.43	27.1	54.4	106	53.1	52.6	34.0	26.2	7.83	.12	.037
MAX	.76	70	154	186	276	97	97	85	64	21	.34	.10
MIN	.12	.13	3.7	21	63	40	33	17	12	.39	.07	.00
AC-FT	16	323	1670	3350	5860	3260	3130	2090	1560	482	7.7	2.2
CFSM	.00	.06	.30	.61	1.18	.59	.59	.38	.29	.09	.00	.00
IN.	.00	.07	.35	.70	1.23	.68	.65	.44	.33	.10	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1993, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	13.8	6.88	75.2	57.9	88.7	75.1	49.4	88.6	99.5	10.4	3.76	3.48				
MAX	57.6	19.6	520	293	465	338	196	226	613	46.8	15.2	24.2				
(WY)	1982	1982	1992	1992	1992	1992	1979	1992	1981	1981	1991	1991				
MIN	.000	.059	.039	.046	.072	.17	1.07	.15	2.92	.000	.086	.004				
(WY)	1991	1990	1990	1990	1990	1978	1978	1978	1978	1978	1990	1990				

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1978 - 1993

ANNUAL TOTAL	51048.13	10962.66	53.9
ANNUAL MEAN	139	30.0	182
HIGHEST ANNUAL MEAN			5.19
LOWEST ANNUAL MEAN			4960
HIGHEST DAILY MEAN	2820	Mar 4	Dec 21 1991
LOWEST DAILY MEAN	.12	Oct 27	Feb 7 1978
ANNUAL SEVEN-DAY MINIMUM	.14	Oct 22	Feb 7 1978
INSTANTANEOUS PEAK FLOW			14900
INSTANTANEOUS PEAK STAGE			18.10
ANNUAL RUNOFF (AC-FT)	101300	21740	39070
ANNUAL RUNOFF (CFSM)	1.55	.33	.60
ANNUAL RUNOFF (INCHES)	21.17	4.55	8.17
10 PERCENT EXCEEDS	357	77	98
50 PERCENT EXCEEDS	36	19	6.2
90 PERCENT EXCEEDS	.27	.08	.05

COLORADO RIVER BASIN

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1978 to September 1982, February 1989 to current year.
Pesticide analyses: April 1978 to September 1982, January to September 1993. Radiochemical analyses: October 1979 to September 1980.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
JAN 25...	1001	77	502	8.0	9.5	5	0.40	10.5	93	0.1	35	50	
FEB 08...	1700	81	470	7.9	13.0	5	0.60	10.3	100	0.4	K1	K8	
09...	2305	195	388	--	--	25	39	--	--	1.7	4000	6200	
10...	0005	256	436	--	--	15	19	--	--	2.8	3900	3900	
10...	0105	323	445	--	--	15	19	--	--	1.3	5300	6900	
10...	0205	361	448	7.8	14.0	25	35	--	--	1.0	K3600	K6000	
10...	0640	270	441	7.8	13.0	20	23	--	--	0.8	2900	5500	
10...	1305	231	440	8.1	15.0	25	13	--	--	0.7	2600	2400	
MAR 16...	0849	47	480	7.7	14.0	5	0.50	9.5	95	0.1	20	20	
APR 05...	1250	36	450	8.1	18.0	5	0.40	9.8	106	0.2	K12	23	
MAY 17...	0948	22	472	7.7	24.5	5	0.40	7.6	94	0.2	45	250	
JUN 16...	0935	13	433	7.5	24.5	7	0.50	6.8	84	1.2	30	200	
JUL 15...	1312	1.2	424	7.8	30.5	4	0.10	7.8	107	0.5	K7	20	
AUG 19...	1448	0.05	410	8.2	31.0	6	0.20	8.1	112	0.4	K5	1700	
SEP 08...	0949	0.06	430	7.6	23.0	3	0.20	5.4	65	0.4	K14	2000	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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)
JAN 25...		260	42	75	18	8.8	0.2	0.80	220	27	14	0.20	7.5
FEB 08...		250	41	74	16	9.6	0.3	0.70	210	30	16	0.20	7.8
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	230	--	--	--	--
10...	--	--	--	--	--	--	--	--	200	--	--	--	--
10...	--	--	--	--	--	--	--	--	200	--	--	--	--
MAR 16...		240	29	67	18	9.9	0.3	0.80	210	32	17	0.20	7.2
APR 05...	--	--	--	--	--	--	--	--	200	--	--	--	--
MAY 17...	--	--	--	--	--	--	--	--	190	--	--	--	--
JUN 16...	--	--	--	--	--	--	--	--	180	--	--	--	--
JUL 15...	--	--	--	--	--	--	--	--	170	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	160	--	--	--	--
SEP 08...	--	--	--	--	--	--	--	--	170	--	--	--	--

08155200 BARTON CREEK AT STATE HIGHWAY 71 NEAR OAK HILL, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOL- TILE, SUS- PENDED (MG/L)	RESIDUE FIXED NON FILTER- ABLE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (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 DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
JAN 25...	284	15	15	0	0.032	0.032	0.020	0.052	0.052	<0.010	--	<0.20
FEB 08...	281	5	<1	--	0.050	0.050	0.020	0.070	0.070	0.020	--	<0.20
09...	--	23	<1	--	0.080	0.080	0.020	0.100	0.100	0.020	0.28	0.30
10...	--	36	<1	--	0.068	0.068	0.020	0.088	0.088	0.020	--	<0.20
10...	--	35	7	28	0.060	0.060	0.030	0.090	0.090	0.020	0.18	0.20
10...	--	95	20	75	0.071	0.071	0.020	0.091	0.091	0.020	0.68	0.70
10...	--	59	12	47	0.090	0.090	0.030	0.120	0.120	0.020	0.28	0.30
10...	--	25	6	19	0.090	0.090	0.040	0.130	0.130	0.020	--	<0.20
MAR 16...	280	<1	<1	--	--	--	<0.010	--	<0.050	0.020	--	<0.20
APR 05...	--	2	1	1	--	--	<0.010	--	<0.050	0.020	--	<0.20
MAY 17...	--	<1	44	--	--	--	<0.010	--	<0.050	0.010	--	<0.20
JUN 16...	--	6	9	0	--	--	<0.010	--	<0.050	0.030	--	<0.20
JUL 15...	--	1	5	0	--	--	<0.010	--	<0.050	0.010	--	<0.20
AUG 19...	--	<1	<1	--	--	--	<0.010	--	<0.050	0.030	--	<0.20
SEP 08...	--	3	2	1	--	--	<0.010	--	<0.050	0.020	--	<0.20

DATE	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)
JAN 25...	<0.010	<0.010	<0.010	--	1.7	0.200	<0.100	1	28	<0.5	<1	<1.0
FEB 08...	<0.010	<0.010	<0.010	--	1.5	<0.100	<0.100	<1	26	<0.5	<1	<1.0
09...	0.070	0.310	0.050	0.15	4.6	--	--	--	--	--	<1	--
10...	0.020	0.020	0.020	0.06	3.1	--	--	--	--	--	<1	--
10...	0.030	0.090	0.020	0.06	3.1	--	--	--	--	--	<1	--
10...	0.040	0.040	0.020	0.06	4.4	--	--	--	--	--	<1	--
10...	0.020	0.220	0.020	0.06	3.6	--	--	--	--	--	<1	--
10...	<0.010	0.010	0.020	0.06	3.1	--	--	--	--	--	<1	--
MAR 16...	<0.010	<0.010	<0.010	--	1.2	<0.100	<0.100	<1	26	<0.5	<1	<1.0
APR 05...	<0.010	<0.010	<0.010	--	1.4	--	--	--	--	--	<1	--
MAY 17...	<0.010	0.010	0.010	0.03	1.5	--	--	--	--	--	<1	--
JUN 16...	0.020	0.040	0.010	0.03	1.2	--	--	--	--	--	<1	--
JUL 15...	<0.010	0.110	0.010	0.03	1.5	--	--	--	--	--	<1	--
AUG 19...	0.010	0.020	<0.010	--	1.5	--	--	--	--	--	<1	--
SEP 08...	<0.010	0.100	<0.010	--	1.2	--	--	--	--	--	<1	--

DATE	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, TOTAL RECOV- ERABLE (UG/L AS PB)	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)
JAN 25...	<5	<3	<10	<3	<1	<10	4	1	<0.1	<10	<10
FEB 08...	<5	<3	<10	<3	<1	<10	<4	<1	<0.1	<10	<10
09...	--	--	--	--	3	--	--	--	--	--	--
10...	--	--	--	--	1	--	--	--	--	--	--
10...	--	--	--	--	2	--	--	--	--	--	--
10...	--	--	--	--	18	--	--	--	--	--	--
10...	--	--	--	--	3	--	--	--	--	--	--
10...	--	--	--	--	3	--	--	--	--	--	--
MAR 16...	<5	<3	<10	<3	3	<10	<4	1	1.1	<10	<10
APR 05...	--	--	--	--	<1	--	--	--	--	--	--
MAY 17...	--	--	--	--	<1	--	--	--	--	--	--
JUN 16...	--	--	--	--	<1	--	--	--	--	--	--
JUL 15...	--	--	--	--	<1	--	--	--	--	--	--
AUG 19...	--	--	--	--	<1	--	--	--	--	--	--
SEP 08...	--	--	--	--	<1	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible][illegible][illegible]

COLORADO RIVER BASIN

125

08155220 BARTON CREEK AT BARTON CREEK BLVD., AUSTIN, TX

WATER-QUALITY RECORDS

LOCATION.--Lat 300°16'26", long 970°50'40", Travis County, Hydrologic Unit 12090205, 0.9 mi west of intersection of Ranch Road 2244 and Barton Creek Boulevard, and 7.0 mi northwest of State Capitol Building Austin.

DRAINAGE AREA.--102 mi².

PERIOD OF RECORDS.--Chemical and biochemical analyses: April 1990 to September 1991, July to September 1993.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)
JUL 15...	0915	5.9	409	7.6	27.5	3	0.20	6.2	80
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)	ALKA- LINEITY WAT DIS FIX END FIELD CACO3 (MG/L)	RESIDUE TOTAL AT 105 DEG. C. SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
JUL 15...		0.6	23	980	160	2	<1	<0.010	<0.050
DATE		NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)
JUL 15...		<0.010	<0.20	0.020	0.010	<0.010	1.4	<1	<1

COLORADO RIVER BASIN

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX

LOCATION.--Lat 30°16'26", long 97°50'40", Travis County, Hydrologic Unit 12090205, 1.4 mi southwest of intersection of Lost Creek Boulevard and Loop 360, and 6.2 mi west of State Capitol Building in Austin.

DRAINAGE AREA.--107 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1979 to September 1980 (periodic gage heights and discharge measurements only). December 1988 to current year.

GAGE.--Water-stage recorder. Datum of gage is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No known regulation or diversions. One recording rain gage in the watershed above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s Dec. 21, 1991 (gage height, 12.90 ft); no flow for several days in August and September 1993.

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 slope-area measurement of peak flow at a site about 2.1 mi downstream.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	0615	662	4.23	No peak greater than base discharge during year.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.81	2.3	5.4	35	110	101	51	51	21	20	.60	.10
2	.74	1.2	5.2	34	107	120	48	58	19	18	.54	.01
3	.72	.95	5.0	34	108	94	48	53	15	16	.50	.03
4	.68	.82	4.9	35	113	86	51	45	13	15	.45	.08
5	.63	.74	4.6	34	121	82	49	57	12	14	.43	.07
6	.54	.72	4.8	33	144	79	46	123	11	13	.40	.10
7	.43	.72	5.1	32	137	77	79	99	11	12	.39	.14
8	.43	.72	5.2	33	132	75	142	78	10	11	.49	.15
9	.48	.72	8.1	37	138	72	86	73	9.9	10	.45	.15
10	.43	.76	7.1	35	473	68	77	70	9.9	9.4	.41	.13
11	.40	.79	6.5	34	317	64	75	62	11	8.9	.36	.11
12	.34	1.1	6.1	34	235	66	75	56	12	8.0	.35	.12
13	.33	.92	6.0	34	206	71	74	52	12	7.3	.32	.16
14	.30	.82	16	34	183	60	82	48	12	6.6	.29	.13
15	.33	.81	195	34	175	59	91	46	18	6.0	.28	.11
16	.34	.77	143	34	160	60	77	43	13	5.6	.24	.10
17	.34	.77	87	34	144	58	72	41	11	5.0	.23	.11
18	.32	.77	63	34	134	54	70	38	10	4.6	.22	.11
19	.35	52	56	148	127	52	68	35	9.8	4.3	.19	.08
20	.40	115	51	262	125	54	60	32	12	3.7	.13	.04
21	.40	40	48	180	120	65	55	31	20	3.2	.06	.02
22	.40	23	46	148	109	59	52	28	28	2.7	.02	.00
23	.45	14	45	139	98	59	52	37	23	2.3	.01	.00
24	.43	11	42	123	96	56	50	42	18	1.8	.00	.00
25	.41	8.5	40	128	95	58	49	34	17	1.5	.00	.00
26	.37	7.1	39	123	88	62	45	30	35	1.4	.00	.01
27	.37	6.2	37	114	82	61	43	26	38	1.3	.00	.00
28	.32	6.0	37	114	82	55	43	25	32	1.2	.00	.00
29	.42	5.8	37	114	---	54	78	25	26	1.1	.00	.00
30	2.8	5.8	37	120	---	54	71	24	22	.96	.00	.00
31	.93	---	36	114	---	58	---	23	---	.77	.09	---
TOTAL	16.64	310.80	1129.0	2441	4159	2093	1959	1485	511.6	216.63	7.45	2.06
MEAN	.54	10.4	36.4	78.7	149	67.5	65.3	47.9	17.1	6.99	.24	.069
MAX	2.8	115	195	262	473	120	142	123	38	20	.60	.16
MIN	.30	.72	4.6	32	82	52	43	23	9.8	.77	.00	.00
AC-FT	33	616	2240	4840	8250	4150	3890	2950	1010	430	15	4.1
CFSM	.01	.10	.34	.74	1.39	.63	.61	.45	.16	.07	.00	.00
IN.	.01	.11	.39	.85	1.45	.73	.68	.52	.18	.08	.00	.00

COLORADO RIVER BASIN

127

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

MEAN	2.88	5.24	166	102	174	105	59.8	137	70.6	9.65	6.14	5.63
MAX	9.85	10.4	627	307	581	381	108	264	249	23.0	23.2	25.6
(WY)	1992	1993	1992	1992	1992	1992	1991	1992	1992	1992	1991	1991
MIN	.15	.23	.22	.40	.97	7.23	13.3	47.9	6.27	3.36	.24	.069
(WY)	1990	1990	1990	1990	1989	1989	1989	1993	1990	1990	1993	1993

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1989 - 1993
ANNUAL TOTAL	59191.47	14331.18	
ANNUAL MEAN	162	39.3	77.7
HIGHEST ANNUAL MEAN			212 1992
LOWEST ANNUAL MEAN			8.88 1990
HIGHEST DAILY MEAN	2910 Mar 4	473 Feb 10	7000 Dec 21 1991
LOWEST DAILY MEAN	.30 Oct 14	.00 Aug 24	.00 Aug 24 1993
ANNUAL SEVEN-DAY MINIMUM	.33 Oct 12	.00 Aug 24	.00 Aug 24 1993
INSTANTANEOUS PEAK FLOW		473 Feb 10	16400 Dec 21 1991
INSTANTANEOUS PEAK STAGE		4.23 Feb 10	12.90 Dec 21 1991
INSTANTANEOUS LOW FLOW		.00 Aug 24	.00 Aug 24 1993
ANNUAL RUNOFF (AC-FT)	117400	28430	56310 *
ANNUAL RUNOFF (CFSM)	1.51	.37	.73
ANNUAL RUNOFF (INCHES)	20.58	4.98	9.87
10 PERCENT EXCEEDS	443	113	146
50 PERCENT EXCEEDS	46	19	9.0
90 PERCENT EXCEEDS	.77	.13	.25

* No flow Aug. 24-30, Sept. 22-25, 27-30, 1993.

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: December 1988 to current year. Pesticide analyses January to September 1993.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAI, 0.7 UM-WF (COLS./100 ML)	STREP-TOCOCCI FECAI, KF AGAR (COLS. PER 100 ML)	
NOV													
19...	2005	117	384	--	--	15	17	--	--	2.2	8000	12000	
19...	2105	224	376	--	--	15	27	--	--	1.0	K6000	9200	
19...	2305	298	358	--	--	20	24	--	--	1.2	24000	38000	
20...	0105	309	344	--	--	15	28	--	--	1.5	11000	11000	
20...	1200	105	358	7.5	17.0	15	5.5	--	--	0.7	13000	20000	
JAN													
25...	1150	140	512	8.0	10.0	5	0.60	10.8	96	0.2	33	25	
FEB													
09...	2150	194	487	7.8	14.0	5	1.7	--	--	0.5	140	1100	
10...	0347	404	478	7.9	13.0	15	4.8	--	--	0.4	K1200	2300	
10...	0550	714	467	7.7	13.0	15	16	--	--	0.9	K300	K800	
10...	1415	548	462	8.0	15.0	10	20	--	--	0.8	K1200	K1300	
11...	0921	373	468	7.8	12.5	15	4.8	--	--	0.7	1200	580	
MAR													
16...	0953	48	475	8.1	13.5	7	0.70	9.7	95	0.2	21	20	
MAY													
17...	1056	38	470	7.8	25.0	5	0.90	7.3	90	0.3	30	43	
JUL													
15...	1011	4.6	429	7.7	28.0	4	0.30	6.2	81	0.8	K260	320	
SEP													
08...	0847	0.26	585	7.5	23.5	13	0.30	7.1	86	1.0	110	480	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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)
NOV													
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	160	22	46	11	9.7	0.3	1.7	140	25	15	0.10	6.6	
JAN													
25...	260	44	74	18	10	0.3	0.90	220	31	16	0.20	7.5	
FEB													
09...	--	--	--	--	--	--	--	200	--	--	--	--	--
10...	--	--	--	--	--	--	--	210	--	--	--	--	--
10...	--	--	--	--	--	--	--	200	--	--	--	--	--
10...	--	--	--	--	--	--	--	210	--	--	--	--	--
11...	--	--	--	--	--	--	--	210	--	--	--	--	--
MAR													
16...	230	27	64	18	10	0.3	0.90	210	33	18	0.10	7.3	
MAY													
17...	--	--	--	--	--	--	--	190	--	--	--	--	--
JUL													
15...	--	--	--	--	--	--	--	160	--	--	--	--	--
SEP													
08...	--	--	--	--	--	--	--	230	--	--	--	--	--
DATE		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)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE 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)
NOV													
19...	--	40	13	27	0.080	--	0.030	--	0.110	--	0.030	--	--
19...	--	62	18	44	0.080	--	0.030	--	0.110	--	0.040	--	--
19...	--	61	14	47	0.100	--	0.040	--	0.140	--	0.030	--	--
20...	--	63	24	39	0.110	--	0.040	--	0.150	--	0.030	--	--
20...	199	2	1	1	0.090	0.090	0.020	0.020	0.110	0.110	0.020	<0.010	
JAN													
25...	287	7	7	0	0.044	0.044	--	0.010	0.054	0.054	--	<0.010	
FEB													
09...	--	8	1	7	0.110	0.110	--	0.020	0.130	0.130	--	0.030	
10...	--	15	7	8	0.090	0.090	--	0.030	0.120	0.120	--	0.020	
10...	--	28	<1	--	0.090	0.090	--	0.020	0.110	0.110	--	0.010	
10...	--	52	<1	--	0.073	0.073	--	0.020	0.093	0.093	--	0.020	
11...	--	8	<1	--	0.100	0.100	--	0.020	0.120	0.120	--	0.010	
MAR													
16...	276	4	4	0	--	--	--	<0.010	--	<0.050	--	0.010	
MAY													
17...	--	<1	47	--	--	--	--	<0.010	--	<0.050	--	0.020	
JUL													
15...	--	1	<1	--	--	--	--	<0.010	--	<0.050	--	0.020	
SEP													
08...	--	3	<1	--	--	--	--	<0.010	--	<0.050	--	0.030	

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

08155240 BARTON CREEK AT LOST CREEK BOULEVARD, AUSTIN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible][illegible][illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible][illegible][illegible]

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 (operated as a flood-hydrograph partial-record station 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.--No estimated daily discharges. Records fair except those below 3.0 ft³/s, which are poor. There are no known regulation or diversions. One recording rain gage in the basin above station. Gage-height and rain gage telemeter at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	0800	556	5.08	No peak greater than base discharge during year.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	2.8	52	66	25	33	4.0	2.4	.00	.00
2	.00	.00	.00	2.5	49	90	23	39	2.2	.46	.00	.00
3	.00	.00	.00	2.6	49	68	22	32	.58	.00	.00	.00
4	.00	.00	.00	2.5	55	56	26	25	.02	.00	.00	.00
5	.00	.00	.00	3.0	61	51	25	43	.00	.00	.00	.00
6	.00	.00	.00	3.1	86	48	22	86	.00	.00	.00	.00
7	.00	.00	.00	2.9	80	47	45	68	.00	.00	.00	.00
8	.00	.00	.00	2.9	76	43	112	55	.00	.00	.00	.00
9	.00	.00	.00	4.0	83	40	61	57	.00	.00	.00	.00
10	.00	.00	.00	3.4	349	37	50	52	.00	.00	.00	.00
11	.00	.00	.00	3.3	238	35	46	46	.00	.00	.00	.00
12	.00	.00	.00	3.3	182	36	43	41	.00	.00	.00	.00
13	.00	.00	.00	3.3	160	41	43	37	.00	.00	.00	.00
14	.00	.00	.05	3.3	146	37	58	34	.00	.00	.00	.00
15	.00	.00	131	3.3	138	35	65	32	.00	.00	.00	.00
16	.00	.00	124	3.3	130	34	51	29	.00	.00	.00	.00
17	.00	.00	51	3.3	113	31	46	25	.00	.00	.00	.00
18	.00	.00	33	3.3	103	28	44	22	.00	.00	.00	.00
19	.00	6.2	25	84	98	32	41	19	.00	.00	.00	.00
20	.00	97	20	234	94	46	38	16	.00	.00	.00	.00
21	.00	4.4	17	139	86	38	35	14	.00	.00	.00	.00
22	.00	.15	14	103	76	32	33	12	.46	.00	.00	.00
23	.00	.00	11	91	69	31	31	23	1.6	.00	.00	.00
24	.00	.00	9.0	79	68	29	30	31	.66	.00	.00	.00
25	.00	.00	8.1	70	64	32	27	23	.00	.00	.00	.00
26	.00	.00	7.3	66	58	33	24	15	20	.00	.00	.00
27	.00	.00	6.8	61	53	34	21	11	24	.00	.00	.00
28	.00	.00	6.3	58	54	28	20	9.1	13	.00	.00	.00
29	.00	.00	5.6	58	---	27	55	7.8	7.1	.00	.00	.00
30	.00	.00	4.9	61	---	26	46	6.5	4.8	.00	.00	.00
31	.00	---	4.2	57	---	29	---	5.3	---	.00	.00	---
TOTAL	0.00	107.75	478.25	1217.1	2870	1240	1208	948.7	78.42	2.86	0.00	0.00
MEAN	.000	3.59	15.4	39.3	102	40.0	40.3	30.6	2.61	.092	.000	.000
MAX	.00	97	131	234	349	90	112	86	24	2.4	.00	.00
MIN	.00	.00	.00	2.5	49	26	20	5.3	.00	.00	.00	.00
AC-FT	.00	214	949	2410	5690	2460	2400	1880	156	5.7	.00	.00
CFSM	.00	.03	.13	.34	.88	.34	.35	.26	.02	.00	.00	.00
IN.	.00	.03	.15	.39	.92	.40	.39	.30	.03	.00	.00	.00

COLORADO RIVER BASIN

133

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1993, BY WATER YEAR (WY)

MEAN	18.9	10.1	94.0	46.1	77.1	59.2	49.9	88.2	158	8.57	.97	.69
MAX	134	77.3	865	281	609	342	319	321	1142	73.1	13.9	7.57
(WY)	1985	1986	1992	1992	1992	1992	1977	1992	1987	1981	1991	1983
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1978	1978	1978	1978	1978	1978	1978	1978	1978	1977	1977	1977

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1977 - 1993	
ANNUAL TOTAL	57397.76		8151.08			
ANNUAL MEAN	157		22.3		50.5	
HIGHEST ANNUAL MEAN					229	
LOWEST ANNUAL MEAN					.000	
HIGHEST DAILY MEAN	3850	Feb 4	349	Feb 10	10800	Dec 21 1991
LOWEST DAILY MEAN	.00	Aug 2	.00	Oct 1	.00	Apr 11 1977
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 12	.00	Oct 1	.00	Jun 10 1977
INSTANTANEOUS PEAK FLOW			556	Feb 10	18100	May 25 1981
INSTANTANEOUS PEAK STAGE			5.08	Feb 10	15.03	May 25 1981
INSTANTANEOUS LOW FLOW			.00	Oct 1	.00	at times
ANNUAL RUNOFF (AC-FT)	113800		16170		36580	
ANNUAL RUNOFF (CFSM)	1.35		.19		.44	
ANNUAL RUNOFF (INCHES)	18.41		2.61		5.91	
10 PERCENT EXCEEDS	351		65		103	
50 PERCENT EXCEEDS	24		.46		.00	
90 PERCENT EXCEEDS	.00		.00		.00	

COLORADO RIVER BASIN

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, 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)
NOV												
19...	2255	148	131	--	--	--	--	--	--	9.0	K40000	16000
19...	2355	291	165	--	--	--	--	--	--	4.2	19000	22000
20...	0155	300	369	--	--	--	--	--	--	3.0	K6400	9200
20...	0355	226	358	--	--	--	--	--	--	1.8	11000	13000
20...	1126	81	323	7.6	17.0	20	11	--	--	0.8	8400	11000
JAN												
19...	1615	67	420	--	10.0	10	10	--	--	3.7	1100	1200
19...	1715	88	391	--	10.0	10	7.8	--	--	3.4	600	1000
19...	1815	123	313	--	10.0	15	12	--	--	2.2	3000	3100
19...	1915	182	379	--	10.0	10	16	--	--	3.1	760	2500
19...	2114	281	413	7.9	10.0	10	15	--	--	1.0	1100	2800
20...	0949	239	417	7.7	4.0	10	10	--	--	1.0	3100	5400
25...	1311	70	495	8.1	10.0	5	0.50	10.9	97	0.1	26	25
MAR												
16...	1232	35	460	8.2	15.0	5	0.60	10.2	103	0.3	K6	K7
MAY												
17...	1357	25	E446	8.0	26.5	5	0.50	8.4	--	0.6	20	45

DATE	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	150	21	42	10	9.6	0.3	2.2	120	22	15	0.10
JAN											
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	170	--	--	--
20...	--	--	--	--	--	--	--	180	--	--	--
25...	250	46	72	18	11	0.3	1.0	210	31	17	0.20
MAR											
16...	230	31	62	18	11	0.3	0.90	200	33	17	<0.10
MAY											
17...	--	--	--	--	--	--	--	180	--	--	--

DATE	SILICA, DIS-SOLVED (MG/L AS SI02)	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)	RESIDUE FIXED NON FILTER-ABLE (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)
NOV											
19...	--	--	--	--	--	0.410	--	0.050	--	0.460	--
19...	--	--	--	--	--	0.240	--	0.040	--	0.280	--
20...	--	--	--	--	--	0.240	--	0.040	--	0.280	--
20...	--	--	--	--	--	0.190	--	0.030	--	0.220	--
20...	6.5	183	10	4	6	0.150	0.160	0.030	0.030	0.190	0.190
JAN											
19...	--	--	19	16	3	0.110	0.110	--	0.010	0.120	0.120
19...	--	--	9	9	0	0.090	0.090	--	0.020	0.110	0.110
19...	--	--	17	6	11	0.130	0.130	--	0.020	0.150	0.150
19...	--	--	26	3	23	0.160	0.160	--	0.020	0.180	0.180
19...	--	--	24	16	8	0.160	0.160	--	0.010	0.170	0.170
20...	--	--	11	8	3	0.100	0.100	--	0.010	0.110	0.110
25...	7.2	283	13	13	0	0.049	0.049	--	0.020	0.069	0.069
MAR											
16...	7.3	268	1	1	0	--	--	--	<0.010	--	<0.050
MAY											
17...	--	--	<1	49	--	--	--	--	<0.010	--	<0.050

135

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUORM (UG/L)
NOV											
19...	0.040	--	0.86	0.90	0.170	--	--	0.060	--	10	--
19...	0.040	--	0.46	0.50	0.110	--	--	0.050	--	--	--
20...	0.030	--	0.37	0.40	0.060	--	--	0.030	--	5.1	--
20...	0.030	--	0.37	0.40	0.070	--	--	0.030	--	4.0	--
20...	0.030	0.010	0.27	0.30	0.040	0.020	0.010	0.010	0.03	3.9	1.80
JAN											
19...	--	0.020	--	<0.20	0.040	0.090	0.020	--	0.06	8.4	--
19...	--	0.020	--	<0.20	0.050	0.060	0.030	--	0.09	3.0	--
19...	--	0.030	--	<0.20	0.050	0.060	0.030	--	0.09	4.2	--
19...	--	0.030	0.17	0.20	0.050	0.210	0.030	--	0.09	3.9	--
19...	--	0.020	--	<0.20	0.020	0.090	0.010	--	0.03	3.3	--
20...	--	0.010	--	<0.20	<0.010	0.040	<0.010	--	--	2.6	--
25...	--	<0.010	--	<0.20	<0.010	<0.010	<0.010	--	--	2.1	0.300
MAR											
16...	--	<0.010	--	<0.20	<0.010	<0.010	<0.010	--	--	1.1	<0.100
MAY											
17...	--	0.010	--	<0.20	<0.010	0.080	<0.010	--	--	1.6	--

DATE	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	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, TOTAL RECOV- ERABLE (UG/L AS PB)
NOV											
19...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.200	<1	20	<0.5	--	1.0	<5	<3	<10	11	1
JAN											
19...	--	--	--	--	--	--	--	--	--	--	6
19...	--	--	--	--	--	--	--	--	--	--	3
19...	--	--	--	--	--	--	--	--	--	--	2
19...	--	--	--	--	--	--	--	--	--	--	2
19...	--	--	--	--	--	--	--	--	--	--	<1
20...	--	--	--	--	--	--	--	--	--	--	<1
25...	<0.100	<1	25	<0.5	--	2.0	<5	<3	<10	<3	<1
MAR											
16...	<0.100	<1	24	<0.5	<1	1.0	<5	<3	<10	<3	<1
MAY											
17...	--	--	--	--	<1	--	--	--	--	--	<1

[illegible]

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.--Records poor. Only springflow from the Edwards and associated limestones in the Balcones Fault Zone is published for this station.

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 (1917-18).--Maximum daily spring discharge, 24 ft³/s Apr. 20, 21, 1918; minimum daily, 12 ft³/s Feb. 25, 1918.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e120	e107	e98	96	101	e107	e107	e108	e107	e99	90	e78
2	e120	e106	98	96	101	e107	e107	108	e106	98	e89	e76
3	120	e106	98	96	101	e107	107	e108	e106	98	88	74
4	120	e105	98	95	102	107	108	e108	e106	98	88	75
5	e119	105	98	95	102	106	e108	108	105	98	e88	75
6	e118	105	98	95	102	106	e108	e108	104	e98	87	74
7	117	104	97	95	103	106	e108	e108	e104	97	87	74
8	e118	104	97	95	103	e106	e108	108	e103	e97	87	73
9	e118	e103	97	95	103	105	e108	108	103	e96	e86	e73
10	119	102	97	95	e104	106	108	e108	e103	96	86	e72
11	119	103	96	95	106	e106	108	e108	e102	96	86	72
12	e119	102	96	95	106	106	e108	108	102	e96	e86	72
13	e118	102	96	94	106	106	e108	e108	102	e95	85	e72
14	118	102	95	94	106	106	108	e108	e101	95	85	e71
15	e117	102	97	94	107	e106	e108	108	e101	e95	84	71
16	e116	101	100	94	107	e106	e108	108	e101	e94	e84	e71
17	e116	101	e100	94	107	106	108	e108	e100	94	83	70
18	116	101	100	94	107	e106	108	e107	e100	94	83	70
19	e116	102	100	e96	107	e106	e108	107	100	94	e83	70
20	e115	105	100	e98	107	e106	e107	e107	101	e94	80	e70
21	115	105	100	100	108	107	107	e108	e102	93	82	68
22	114	104	99	100	108	e107	e107	108	e101	e93	81	69
23	114	103	99	100	108	107	e108	e108	e100	92	e81	e69
24	114	e103	99	100	108	107	108	e108	e100	92	80	68
25	114	e102	99	e100	107	107	108	e108	e99	92	80	68
26	e114	102	98	100	e107	e106	e108	108	e98	92	e80	68
27	e113	101	98	100	e107	106	e107	e108	e100	e92	77	e68
28	113	101	e98	100	e107	106	107	e107	e100	91	78	66
29	112	100	e97	101	---	107	e107	107	e99	e91	78	67
30	110	e99	96	101	---	107	e108	107	99	90	e78	e67
31	107	---	96	101	---	107	---	107	---	90	76	---
TOTAL	3599	3088	3035	3004	2948	3297	3231	3341	3055	2930	2586	2131
MEAN	116	103	97.9	96.9	105	106	108	108	102	94.5	83.4	71.0
MAX	120	107	100	101	108	107	108	108	107	99	90	78
MIN	107	99	95	94	101	105	107	107	98	90	76	66
AC-FT	7140	6130	6020	5960	5850	6540	6410	6630	6060	5810	5130	4230

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1993, BY WATER YEAR (WY)

	54.2	53.2	54.8	59.1	63.2	63.8	65.1	69.9	72.7	67.9	62.6	56.9
MEAN	54.2	53.2	54.8	59.1	63.2	63.8	65.1	69.9	72.7	67.9	62.6	56.9
MAX	116	103	97.9	96.9	120	106	108	108	106	103	126	123
(WY)	1993	1993	1993	1993	1992	1993	1993	1993	1987	1987	1992	1992
MIN	18.5	20.6	18.2	15.8	16.8	21.6	27.9	28.6	27.5	21.3	22.4	22.0
(WY)	1990	1990	1990	1990	1990	1990	1990	1984	1984	1978	1978	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1978 - 1993

ANNUAL TOTAL	38691	36245	
ANNUAL MEAN	106	99.3	63.4
HIGHEST ANNUAL MEAN			99.3
LOWEST ANNUAL MEAN			26.8
HIGHEST DAILY MEAN	130	Feb 4	130
LOWEST DAILY MEAN	75	Jan 16	14
ANNUAL SEVEN-DAY MINIMUM	75	Jan 16	15
INSTANTANEOUS PEAK FLOW			130
INSTANTANEOUS LOW FLOW			14
ANNUAL RUNOFF (AC-FT)	76740	71890	45920
10 PERCENT EXCEEDS	127	108	101
50 PERCENT EXCEEDS	104	102	61
90 PERCENT EXCEEDS	82	80	26

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)
JAN 14...	1330	94	605	7.1	20.0	5	0.70	6.8	76	0.1	K2	K7
21...	1015	100	568	7.0	13.5	5	1.9	9.4	91	0.5	K1600	K3400
FEB 11...	1112	106	588	7.2	18.5	5	1.6	--	--	0.3	K160	500
MAR 18...	1009	106	590	7.2	19.5	5	1.0	7.1	78	0.1	K2	K3
MAY 04...	1118	108	600	7.1	21.0	10	0.90	6.4	73	0.2	K5	22
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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...		290	31	85	19	14	0.4	1.2	260	29	24	0.20
21...		290	43	85	18	13	0.3	1.3	240	29	22	0.20
FEB 11...		270	27	81	17	13	0.3	1.1	250	33	24	0.20
MAR 18...		280	25	81	19	14	0.4	1.0	260	31	25	0.20
MAY 04...		290	35	85	19	13	0.3	1.1	260	29	24	0.20
DATE		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, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	
JAN 14...		10	345	3	<1	1.20	--	<0.010	1.20	1.20	<0.010	<0.20
21...		10	330	<1	<1	1.10	--	<0.010	1.10	1.10	0.010	<0.20
FEB 11...		9.6	331	5	<1	0.970	0.970	0.020	0.990	0.990	<0.010	<0.20
MAR 18...		10	336	<1	<1	0.089	--	<0.010	0.089	0.089	0.020	<0.20
MAY 04...		10	340	<1	32	1.10	--	<0.010	1.10	1.10	<0.010	<0.20
DATE		PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
JAN 14...		0.010	0.010	<0.010	--	0.6	<1	54	<0.5	<1	<1.0	<5
21...		<0.010	<0.010	0.010	0.03	1.2	<1	49	<0.5	<1	<1.0	<5
FEB 11...		0.010	<0.010	<0.010	--	1.3	<1	42	<0.5	<1	1.0	<5
MAR 18...		0.010	<0.010	<0.010	--	1.9	<1	46	<0.5	<1	1.0	<5
MAY 04...		<0.010	0.030	<0.010	--	0.8	<1	45	<0.5	<1	<1.0	<5
DATE		COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	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)
JAN 14...		<3	<10	<3	<1	<10	10	<1	<0.1	<10	<10	<1
21...		<3	<10	<3	<1	<10	7	<1	<0.1	<10	<10	<1
FEB 11...		<3	<10	<3	<1	<10	8	<1	<0.1	<10	<10	<1
MAR 18...		<3	<10	<3	<1	<10	8	<1	<0.1	20	<10	<1
MAY 04...		<3	<10	<3	<1	<10	9	<1	0.2	<10	<10	<1

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	BENZENE TOTAL (UG/L)	BROMO- FORM TOTAL (UG/L)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L)	CHLORO- BENZENE TOTAL (UG/L)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L)	CHLORO- ETHANE TOTAL (UG/L)
JAN 14...	2.0	810	<6	<10	8	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
21...	<1.0	680	<6	10	6	--	--	--	--	--	--
FEB 11...	<1.0	600	<6	<10	<3	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
MAR 18...	<1.0	700	<6	<10	<3	--	--	--	--	--	--
MAY 04...	<1.0	720	<6	<10	4	--	--	--	--	--	--

[illegible][illegible][illegible][illegible]

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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.--November 1974 to March 1975, periodic discharge measurement, periodic QW sample collection and associated peak discharges along with annual maximum. April 1975 to September 1984, operated as a flood-hydrograph partial-record site. October 1984 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).

REMARKS.--No estimated daily discharges. Records fair. There is no known regulation or diversion. The station is equipped with an automatic water-quality sampler.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0945	2,060	10.18	June 26	0600	2,860	10.59
Nov. 20	0045	1,150	6.79				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	46	.00	7.4	.02	12	.10	.81	.09	.00	.00	.99
2	.00	2.3	.00	2.6	.00	4.1	.00	52	.00	.00	.00	.00
3	.00	.01	.00	2.6	15	1.5	.27	4.4	.00	.00	.00	.00
4	.00	.00	.00	7.5	6.7	.37	21	1.9	.00	.00	.00	.00
5	.00	.00	.00	.64	23	.00	2.7	74	.00	.00	.00	.00
6	.00	.00	.00	.00	5.5	.00	.91	19	.00	.00	.00	.00
7	7.0	.00	.00	.90	3.1	.00	64	6.2	.00	.00	.00	.00
8	11	.00	.00	1.3	2.5	.00	7.7	4.0	.00	.00	.00	.00
9	.02	.00	25	38	43	.00	3.0	52	.00	.00	.00	.00
10	.00	.00	.88	3.5	28	.00	1.7	22	.00	.00	.00	.00
11	.00	.00	.01	2.2	6.4	.00	.73	8.2	.00	.00	.00	.00
12	.00	4.9	.00	.42	4.3	9.0	.01	5.9	.00	.00	.00	.00
13	.00	.53	.00	.00	3.4	2.1	.00	4.8	.00	.00	.00	.00
14	.00	.00	62	.00	3.2	.33	24	4.5	27	.00	.00	.00
15	.00	.00	143	.00	14	.51	4.5	3.7	5.3	.00	.00	.00
16	.00	.00	5.7	.00	11	1.3	1.6	3.0	6.1	.00	.00	.00
17	.00	.00	2.0	.00	2.9	.60	.35	1.9	16	.00	.00	.00
18	.00	.00	.83	.00	1.7	.00	.01	1.0	9.0	.00	.00	.00
19	.00	249	.31	76	1.2	69	.00	.45	1.4	.00	.00	.00
20	.00	108	1.3	23	.89	22	.00	.08	57	.00	.00	.00
21	.00	6.6	3.0	7.0	.53	7.2	.00	.00	9.7	.00	.00	.00
22	.00	1.8	1.3	4.8	.05	5.0	.00	.00	3.8	.00	.00	.00
23	.00	.18	1.0	3.7	.00	7.8	.00	56	.20	.00	.00	.00
24	.00	.50	.74	2.4	.00	4.2	.00	6.7	.00	.00	.00	.00
25	.00	.22	.42	1.0	.00	41	.00	.83	.00	.00	.00	.00
26	.00	.00	.20	.43	.00	17	.00	.00	309	.00	.00	.00
27	.00	.00	.20	.00	.00	4.8	.00	.00	.48	.00	.00	.00
28	.00	.00	.27	2.0	18	3.0	.00	.00	.00	.00	.00	.00
29	.00	.00	.20	14	---	2.3	81	.00	.00	.00	.00	.00
30	44	.00	.14	3.3	---	6.1	3.7	1.7	.00	.00	.00	.00
31	.36	---	3.4	1.1	---	2.2	---	4.4	---	.00	.00	---
TOTAL	62.38	420.04	251.90	205.79	194.39	223.41	217.28	339.47	445.07	0.00	0.00	0.99
MEAN	2.01	14.0	8.13	6.64	6.94	7.21	7.24	11.0	14.8	.000	.000	.033
MAX	44	249	143	76	43	69	81	74	309	.00	.00	.99
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	124	833	500	408	386	443	431	673	883	.00	.00	2.0
CFSM	.16	1.14	.66	.54	.56	.59	.59	.89	1.21	.00	.00	.00
IN.	.19	1.27	.76	.62	.59	.68	.66	1.03	1.35	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1993, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	10.6	6.82	13.7	6.56	7.44	5.14	5.64	17.1	12.3
MAX	42.6	14.9	70.8	22.6	29.2	13.0	16.0	30.4	46.1
(WY)	1985	1986	1992	1991	1992	1992	1991	1987	1987
MIN	.34	.000	.45	.13	.084	.66	1.48	4.58	3.82
(WY)	1988	1989	1989	1988	1988	1986	1987	1988	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1985 - 1993

ANNUAL TOTAL	4028.67	2360.72	8.01
ANNUAL MEAN	11.0	6.47	15.7
HIGHEST ANNUAL MEAN			3.26
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	249	309	948
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		2860	16000
INSTANTANEOUS PEAK STAGE		10.59	23.11
ANNUAL RUNOFF (AC-FT)	7990	4680	5810
ANNUAL RUNOFF (CFSM)	.89	.53	.65
ANNUAL RUNOFF (INCHES)	12.18	7.14	8.85
10 PERCENT EXCEEDS	31	11	14
50 PERCENT EXCEEDS	.30	.00	.10
90 PERCENT EXCEEDS	.00	.00	.00

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- Chemical and biochemical analyses: February 1943, January 1975 to current year. Pesticide analyses: January 1975 to September 1985. Water temperature: January 1975 to current year. Radiochemical analyses: April 1980. Pesticide analyses: January to September 1993.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
DEC													
14...	0307	153	474	--	--	35	98	--	--	7.4	--	K3600	
14...	0322	335	366	--	--	40	200	--	--	8.6	--	K4800	
14...	0352	282	256	--	--	50	160	--	--	12	--	22000	
14...	0422	185	257	--	--	50	490	--	--	12	--	24000	
14...	0916	46	187	--	12.0	55	37	--	--	3.5	--	8400	
JAN	10...	1358	6.2	433	8.1	10.5	20	5.1	10.2	92	0.6	<10	3400
APR	05...	1020	6.7	505	7.6	15.0	13	1.7	9.5	95	0.6	<10	6000
DATE	TIME	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
DEC													
14...	K2800	--	--	--	--	--	--	--	--	--	--	--	--
14...	K4000	--	--	--	--	--	--	--	--	--	--	--	--
14...	72000	--	--	--	--	--	--	--	--	--	--	--	--
14...	110000	--	--	--	--	--	--	--	--	--	--	--	--
14...	31000	--	--	--	--	--	--	--	--	--	--	--	--
JAN	10...	1200	170	72	63	4.1	15	0.5	2.5	100	66	24	0.20
APR	05...	3100	220	73	79	5.2	23	0.7	3.1	150	67	38	0.20
DATE	TIME	SILICA, DIS-SOLVED (MG/L AS S102)	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)	RESIDUE FIXED NON FILTER-ABLE (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)
DEC													
14...	--	--	--	280	80	200	0.440	0.440	0.030	0.040	0.480	0.480	0.160
14...	--	--	--	545	88	457	0.290	0.300	0.040	0.030	0.330	0.330	0.170
14...	--	--	--	438	97	341	0.380	0.420	0.060	0.040	0.460	0.460	0.020
14...	--	--	--	1090	196	894	0.280	0.240	0.020	0.030	0.270	0.270	0.020
14...	--	--	--	76	17	59	0.280	0.250	0.030	0.030	0.280	0.280	0.050
JAN	10...	5.1	244	<1	<1	--	0.430	0.430	--	0.010	0.440	0.440	--
APR	05...	2.9	307	2	2	0	0.140	--	--	<0.010	0.140	0.140	--
DATE	TIME	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
DEC													
14...	0.140	1.5	1.7	0.430	0.200	0.050	0.070	0.15	15	--	--	--	--
14...	0.140	1.0	1.2	0.350	0.230	0.040	0.060	0.12	12	--	--	--	--
14...	0.030	0.78	0.80	0.610	0.550	0.080	0.090	0.25	16	--	--	--	--
14...	0.040	0.28	0.30	0.750	0.660	0.070	0.090	0.21	13	--	--	--	--
14...	0.040	0.25	0.30	0.080	0.100	0.050	0.070	0.15	5.0	--	--	--	--
JAN	10...	<0.010	--	<0.20	0.030	0.020	0.020	--	0.06	2.9	1.80	0.200	<1
APR	05...	0.030	--	<0.20	0.010	<0.010	<0.010	--	--	3.6	0.700	0.200	1
DATE	TIME	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, TOTAL RECOV-ERABLE (UG/L AS PB)	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)
DEC													
14...	--	--	--	--	--	--	--	--	33	--	--	--	--
14...	--	--	--	--	--	--	--	--	19	--	--	--	--
14...	--	--	--	--	--	--	--	--	29	--	--	--	--
14...	--	--	--	--	--	--	--	--	26	--	--	--	--
14...	--	--	--	--	--	--	--	--	6	--	--	--	--
JAN	10...	34	<0.5	<1.0	<5	<3	<10	14	<1	<10	12	2	<0.1
APR	05...	48	<0.5	<1.0	<5	<3	<10	8	<1	<10	17	10	<0.1

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

143

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 Building in Austin.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: February 1975 to August 1990. Chemical and Biochemical analyses: October 1990 to current year. Trace metal and Pesticide analyses of bedsediments at selected sites February 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
APR							
29...	1010	1.00	507	7.8	19.0	10.1	110
29...	1012	10.0	512	7.8	19.0	10.0	109
29...	1014	22.0	517	7.7	18.5	9.7	105
30...	0745	1.00	505	7.9	19.5	10.1	112
30...	0747	10.0	505	7.9	19.0	10.1	110
30...	0749	20.0	518	7.7	18.5	9.4	102
30...	0751	25.0	520	7.5	18.0	8.5	91
MAY							
01...	0730	1.00	502	8.0	20.0	9.7	109
01...	0732	10.0	511	7.7	19.0	8.9	98
01...	0734	22.0	519	7.6	18.5	8.6	94

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM
APR											
29...	0.30	0.010	0.020	0.010	0.03	3.1	1.90	0.100	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	0.40	0.020	0.010	<0.010	--	3.2	--	--	--	--	--
30...	0.30	0.020	0.010	<0.010	--	3.2	2.80	0.200	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	0.40	0.030	0.020	<0.010	--	3.4	--	--	--	--	--
MAY											
01...	0.30	0.030	<0.010	<0.010	--	3.7	2.60	0.200	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	0.40	0.050	<0.010	<0.010	--	3.7	--	--	--	--	--
JUN											
15...	--	--	--	--	--	--	--	--	99	98	97

DATE	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	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, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)
APR											
29...	--	--	--	--	--	2	--	--	<1	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	1	--	--	<1	--	--
29...	--	--	--	--	--	2	--	--	<1	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	1	--	--	<1	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	--	--	--	--	--	2	--	--	<1	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	1	--	--	<1	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
JUN											
15...	94	86	6	2	8	--	20	5100	--	50	560

DATE	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
APR										
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY										
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN										
15...	0.06	3700	70	28	<1.0	<0.1	38	23	32	3.0

COLORADO RIVER BASIN

145

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 - TOWN LAKE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDO-SULFAN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE, TOTAL IN BOT-TOM MATERIAL (UG/KG)	LINDANE, TOTAL IN BOT-TOM MATERIAL (UG/KG)	METH-OXY-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	MIREX, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PER-THANE, TOTAL IN BOT-TOM MATERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
APR										
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY										
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN										
15...	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.00	<10

301503097424701 - TOWN LAKE AL

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM-PLING DEPTH (FEET)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)
APR							
29...	1035	1.00	500	7.9	19.0	9.9	108
29...	1037	10.0	510	7.8	19.0	9.9	108
29...	1039	18.0	511	7.7	19.0	9.6	105
30...	0820	1.00	507	7.9	19.5	9.8	108
30...	0822	10.0	509	7.8	19.0	9.4	103
30...	0824	16.0	515	7.7	19.0	8.9	97
MAY							
01...	0805	1.00	498	8.0	20.0	9.3	104
01...	0807	10.0	431	7.5	19.0	6.8	75
01...	0809	17.0	492	7.5	19.0	7.2	79

301500097440801 - TOWN LAKE BR

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM-PLING DEPTH (FEET)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)
APR							
29...	1055	1.00	441	7.7	19.0	8.7	95
29...	1057	14.0	431	7.7	18.5	8.7	94
30...	0840	1.00	411	7.5	19.0	7.4	81
30...	0842	14.0	430	7.5	18.5	7.1	77
MAY							
01...	0835	1.00	461	7.6	20.0	7.8	87
01...	0837	12.0	486	7.4	19.5	6.8	75

COLORADO RIVER BASIN
08157900 TOWN LAKE AT AUSTIN, TX--Continued

301504097440901 - TOWN LAKE BC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM
APR										
29...	1045	1.00	431	7.7	18.5	8.7	94	--	--	--
29...	1047	10.0	430	7.7	18.5	8.8	95	--	--	--
29...	1049	20.0	425	7.7	18.5	8.8	95	--	--	--
29...	1051	29.0	427	7.7	18.5	8.8	95	--	--	--
30...	0830	1.00	410	7.5	18.5	7.3	79	--	--	--
30...	0832	10.0	415	7.5	18.5	7.4	80	--	--	--
30...	0834	20.0	435	7.5	18.5	7.3	79	--	--	--
30...	0836	28.0	442	7.5	18.5	7.3	79	--	--	--
MAY										
01...	0825	1.00	457	7.6	20.0	7.6	85	--	--	--
01...	0827	10.0	494	7.4	19.5	7.2	80	--	--	--
01...	0829	20.0	487	7.4	18.5	6.2	67	--	--	--
01...	0831	29.0	487	7.4	19.0	6.1	67	--	--	--
JUN										
15...	0915	28.0	--	--	--	--	--	78	71	57
DATE	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)
APR										
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY										
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN										
15...	55	53	7	2	10	20	4600	80	720	0.08
DATE	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
APR										
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY										
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN										
15...	2700	120	22	<1.0	<0.1	27	11	17	3.8	1.7

147

301504097440901 - TOWN LAKE BC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	ENDO-SULFAN, TOTAL IN BOT-TOM MAT-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MAT-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MAT-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOT-TOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MAT-TERIAL (UG/KG)	METH-OXY-CHLOR, TOT. IN BOT-TOM MATL. (UG/KG)	MIREX, TOTAL IN BOT-TOM MAT-TERIAL (UG/KG)	PER-THANE IN BOT-TOM MAT-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MAT-TERIAL (UG/KG)
APR									
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
MAY									
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--
JUN									
15...	<0.1	<0.1	<0.1	0.1	<0.1	<3.0	<0.1	<1.00	<10

301544097445201 - TOWN LAKE CR

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATURATION)
APR							
29...	1125	1.00	494	7.6	18.5	8.5	92
29...	1127	13.0	476	7.5	18.5	8.0	86
30...	0915	1.00	499	7.4	19.0	7.5	82
30...	0917	12.0	498	7.4	18.5	7.2	78
MAY							
01...	0900	1.00	497	7.5	20.0	7.7	86
01...	0902	12.0	507	7.4	19.0	7.0	77

301546097445101 - TOWN LAKE CC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCHI, KF AGAR (COLS. PER 100 ML)	ALKA-LINITY, WAT DIS FIX END CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (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 DIS-SOLVED (MG/L AS N)
APR 29...	39000	K110000	110	148	83	0.390	0.390	0.010	0.400	0.400	0.110
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	170	290	23	0.380	--	<0.010	0.380	0.380	0.040
30...	3200	2800	180	298	12	0.460	--	<0.010	0.460	0.460	0.040
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	170	295	14	0.350	--	<0.010	0.350	0.350	0.070
MAY 01...	K1600	K320	170	297	3	0.460	--	<0.010	0.460	0.460	0.030
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	170	289	<1	0.360	--	<0.010	0.360	0.360	0.080
JUN 15...	--	--	--	--	--	--	--	--	--	--	--
DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM
APR 29...	0.49	0.60	0.100	0.070	0.050	0.15	6.9	3.70	0.500	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	0.26	0.30	0.030	0.020	0.010	0.03	3.5	--	--	--	--
30...	0.26	0.30	0.030	0.020	<0.010	--	2.7	0.600	<0.100	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	0.33	0.40	0.020	0.020	0.010	0.03	3.0	--	--	--	--
MAY 01...	0.17	0.20	0.030	0.020	<0.010	--	3.2	2.20	0.100	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	0.22	0.30	0.020	0.020	0.010	0.03	3.1	--	--	--	--
JUN 15...	--	--	--	--	--	--	--	--	--	73	62
DATE	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD)	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, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS PB)
APR 29...	--	--	--	--	--	--	1	--	--	<1	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	<1	--	--	<1	--
30...	--	--	--	--	--	--	1	--	--	2	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	1	--	--	<1	--
MAY 01...	--	--	--	--	--	--	1	--	--	<1	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	1	--	--	<1	--
JUN 15...	52	45	39	8	2	8	--	20	5400	--	70
DATE	MANGA-NESE, RECOV. FM BOT-TOM MA-TERIAL (UG/G)	MERCURY RECOV. FM BOT-TOM MA-TERIAL (UG/G AS HG)	ALUM-INUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G)	ZINC, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS ZN)	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	PCN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
APR 29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
JUN 15...	410	0.05	3000	130	22	<1.0	<0.1	32	9.5	23	5.9

COLORADO RIVER BASIN

149

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 - TOWN LAKE CC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDO-SULFAM, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOT-TOM MATERIAL (UG/KG)	LINDANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	METH-OXY-CHLOR, TOT. IN BOT-TOM MATERIAL (UG/KG)	MIREX, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PER-THANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
APR 29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN 15...	2.4	<0.1	<0.1	0.1	0.2	<0.1	<3.0	<0.1	<1.00	<10

301550097450001 - MOUTH OF SHOAL CREEK AT TOWN LAKE

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM-PLING DEPTH (FEET)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	ARSENIC TOTAL IN BOT-TOM MATERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT-TOM MATERIAL (UG/G AS CD)	CHROMIUM, RECOV. FM BOT-TOM MATERIAL (UG/G)	COPPER, RECOV. FM BOT-TOM MATERIAL (UG/G AS CU)	IRON, RECOV. FM BOT-TOM MATERIAL (UG/G AS FE)
JUN 15...	1020	4.00	100	99	96	86	75	7	2	<1	2	31
DATE		LEAD, RECOV. FM BOT-TOM MATERIAL (UG/G AS PB)	MANGANESE, RECOV. FM BOT-TOM MATERIAL (UG/G)	MERCURY, RECOV. FM BOT-TOM MATERIAL (UG/G AS HG)	ALUMINUM, RECOV. FM BOT-TOM MATERIAL (UG/G)	ZINC, RECOV. FM BOT-TOM MATERIAL (UG/G AS ZN)	PCB, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PCN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	CHLORDANE, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
JUN 15...		10	210	0.09	<10	20	31	<1.0	<0.1	74	14	29
DATE		DDT, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DI-ELDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDO-SULFAM, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOT-TOM MATERIAL (UG/KG)	LINDANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	METH-OXY-CHLOR, TOT. IN BOT-TOM MATERIAL (UG/KG)	MIREX, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PER-THANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
JUN 15...		3.3	2.5	<0.1	<0.1	0.2	0.1	<0.1	<3.0	<0.1	<1.00	<10

301556097452301 - TOWN LAKE DR

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM-PLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)
APR 29...	1150	1.00	518	7.4	19.0	7.8	85
29...	1152	13.0	517	7.7	18.0	8.8	94
30...	0935	1.00	522	7.3	19.5	6.9	76
30...	0937	13.0	496	7.6	18.5	8.1	88
MAY 01...	0920	1.00	550	7.2	21.0	6.6	76
01...	0922	13.0	550	7.2	20.5	6.0	68

COLORADO RIVER BASIN

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301558097452201 - TOWN LAKE DC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
APR											
29...	1135	1.00	496	7.4	19.5	0.70	8.1	8.3	91	1.4	22
29...	1137	10.0	495	7.8	18.0	--	--	9.2	98	--	--
29...	1139	19.0	505	7.8	18.0	--	4.5	9.1	97	1.0	--
30...	0920	1.00	513	7.3	19.5	1.70	2.7	7.6	84	0.4	<10
30...	0922	10.0	493	7.7	18.0	--	--	8.6	92	--	--
30...	0924	19.0	492	7.7	18.0	--	4.3	8.3	89	0.8	--
MAY											
01...	0910	1.00	550	7.2	20.0	2.90	1.0	6.4	72	0.4	11
01...	0912	10.0	511	7.6	18.5	--	--	8.3	90	--	--
01...	0914	19.0	512	7.6	18.5	--	2.5	8.4	91	0.8	--
JUN											
15...	1050	18.0	--	--	--	--	--	--	--	--	--
DATE	COLI- FORM, FECAL, 0.7 UM-WF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LINITY MAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED TOTAL (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, ORGANIC TOTAL (MG/L AS N)
APR											
29...	18000	29000	190	303	16	0.490	<0.010	0.490	0.490	0.040	0.26
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	160	285	11	0.250	<0.010	0.250	0.250	0.040	0.26
30...	2000	1700	200	300	12	0.570	<0.010	0.570	0.570	0.020	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	160	283	8	0.260	<0.010	0.260	0.260	0.060	0.24
MAY											
01...	460	K720	220	320	1	0.760	<0.010	0.760	0.760	0.020	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	160	301	1	0.280	<0.010	0.280	0.280	0.040	--
JUN											
15...	--	--	--	--	--	--	--	--	--	--	--
DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM
APR											
29...	0.30	0.030	0.020	0.010	0.03	3.2	0.500	<0.100	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	0.30	0.010	0.010	<0.010	--	3.2	--	--	--	--	--
30...	<0.20	0.010	0.010	<0.010	--	1.9	0.400	<0.100	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	0.30	0.020	0.020	<0.010	--	3.3	--	--	--	--	--
MAY											
01...	<0.20	<0.010	<0.010	<0.010	--	1.5	0.700	<0.100	--	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	<0.20	0.020	<0.010	<0.010	--	3.1	--	--	--	--	--
JUN											
15...	--	--	--	--	--	--	--	--	83	79	71
DATE	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	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, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)
APR											
29...	--	--	--	--	--	<1	--	--	<1	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	1	--	--	<1	--	--
30...	--	--	--	--	--	1	--	--	1	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	1	--	--	<1	--	--
MAY											
01...	--	--	--	--	--	1	--	--	<1	--	--
01...	--	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	2	--	--	<1	--	--
JUN											
15...	62	52	7	2	2	--	3	650	--	20	270

COLORADO RIVER BASIN

151

08157900 TOWN LAKE AT AUSTIN, TX--Continued

301558097452201 - TOWN LAKE DC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
APR 29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN 15...	0.03	90	20	12	<1.0	<0.1	19	8.1	11	1.3

DATE	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOT- TOM MA- TERIAL (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOT. IN BOT- TOM MA- TERIAL (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PER- THANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
APR 29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
JUN 15...	0.9	<0.1	<0.1	<0.1	0.1	<0.1	<3.0	<0.1	<1.00	<10

301650097453501 - TOWN LAKE AT MOPAC BRIDGE

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	BED MAT. SIEVE DIAM. % FINER 1.00 MM	BED MAT. SIEVE DIAM. % FINER .500 MM	BED MAT. SIEVE DIAM. % FINER .250 MM	BED MAT. SIEVE DIAM. % FINER .125 MM	BED MAT. SIEVE DIAM. % FINER .062 MM	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)
JUN 15...	1130	18.0	75	71	57	44	37	5	2	20	10	6200

DATE	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
JUN 15...	100	350	0.05	4700	80	31	<1.0	<0.1	140	69	100

DATE	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOT- TOM MA- TERIAL (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOT. IN BOT- TOM MA- TERIAL (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PER- THANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
JUN 15...	9.9	4.3	<0.1	<0.1	<0.1	0.3	<0.1	<3.0	<0.1	<1.00	<10

COLORADO RIVER BASIN
08157900 TOWN LAKE AT AUSTIN, TX--Continued

301712097470701 - TOWN LAKE EC
WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
APR											
29...	1210	1.00	515	7.9	17.0	--	3.4	10.3	108	0.4	19
29...	1212	15.0	515	7.9	17.0	--	3.0	10.3	108	0.3	--
30...	0955	1.00	510	7.9	18.0	2.10	2.5	10.1	108	0.8	17
30...	0957	15.0	507	8.0	18.0	--	2.6	10.1	108	0.6	--
MAY											
01...	0945	1.00	521	7.6	19.5	2.80	1.9	9.2	102	0.8	<10
01...	0947	16.0	512	7.6	18.5	--	2.8	8.4	91	0.8	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	ALKA- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	SOLIDS, RESIDUE AT 180 DEG. C SUS- PENDE (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE 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 DIS- SOLVED (MG/L AS N)
APR										
29...	K45	K300	160	291	10	0.190	<0.010	0.190	0.190	0.010
29...	--	--	160	295	7	0.190	<0.010	0.190	0.190	0.010
30...	K100	170	160	290	9	0.210	<0.010	0.210	0.210	0.010
30...	--	--	160	303	7	0.190	<0.010	0.190	0.190	0.010
MAY										
01...	32	67	170	310	<1	0.350	<0.010	0.350	0.350	0.020
01...	--	--	160	298	1	0.250	<0.010	0.250	0.250	0.060

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHOPHOS- PHATE DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
APR										
29...	0.29	0.30	0.010	0.020	<0.010	3.0	0.800	<0.100	1	<1
29...	0.29	0.30	<0.010	0.020	<0.010	3.0	--	--	<1	<1
30...	0.19	0.20	<0.010	<0.010	<0.010	3.1	2.80	0.100	1	<1
30...	0.29	0.30	<0.010	0.010	<0.010	3.1	--	--	1	<1
MAY										
01...	--	<0.20	0.010	<0.010	<0.010	3.0	1.70	0.100	1	<1
01...	0.14	0.20	0.010	<0.010	<0.010	3.5	--	--	1	<1

301601097454001 - TOWN LAKE FC
WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
APR							
29...	1200	1.50	543	7.2	20.5	8.0	90
30...	0945	1.50	532	7.2	20.5	8.0	90
MAY							
01...	0930	1.50	551	7.3	21.5	5.8	67

COLORADO RIVER MAIN STEM

153

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.--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 FOR PERIOD PRIOR TO REGULATION.--38 years (water years 1899-1936) prior to regulation by Lake Travis, 2,711 ft³/s (1,964,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1899-1936).--Maximum discharge, 481,000 ft³/s June 15, 1935 (gage height, 50 ft, present site and datum, from floodmark).

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	964	425	66	162	215	695	4870	335	887	1480	1670	1090
2	837	110	125	182	260	2150	4130	548	889	2380	692	991
3	679	113	74	168	308	1190	3420	502	981	2360	709	1050
4	637	109	145	786	216	1070	3470	471	763	2360	1500	1020
5	707	121	197	2260	451	995	e2250	604	757	1690	2150	995
6	1340	127	176	2400	291	175	e3410	1380	742	1970	2720	1010
7	854	36	226	2330	888	168	3930	2220	846	1430	2420	750
8	703	127	172	2290	353	785	3360	3430	804	1370	1810	1270
9	561	66	314	2510	554	4090	2580	3850	1050	1290	1800	1380
10	530	108	126	2290	825	4190	2320	3480	1380	1390	1690	924
11	87	132	138	860	1300	4000	515	3410	1430	1350	1640	1250
12	115	145	131	102	1410	5720	178	1080	1570	1580	1640	1200
13	66	90	133	84	1650	5410	118	3410	1530	1820	1610	1210
14	118	87	433	92	1860	3760	968	2910	1580	1680	1600	1190
15	123	93	2170	1870	1070	4050	614	3070	1540	1940	1480	487
16	131	93	267	4510	1110	3550	1940	3200	1820	2160	1630	822
17	137	93	1100	4510	793	539	4870	2040	1680	2270	1620	1430
18	147	92	1430	2990	703	393	4870	1930	1730	2190	1680	1060
19	242	1400	2490	2540	876	982	4170	3570	1590	2160	1590	1050
20	118	927	2690	2060	937	1840	2480	2890	1570	1820	1720	1140
21	882	145	3420	1660	1640	2300	2330	334	944	1890	1480	1170
22	802	128	1460	980	978	3640	2370	363	935	2780	1500	1230
23	876	133	833	211	99	4040	3170	805	468	2670	1200	1260
24	117	134	2460	152	344	4570	2930	1530	125	1410	1490	1110
25	125	83	2430	180	308	4400	3250	1540	542	1730	1560	1060
26	193	133	2440	171	160	4780	2270	1560	2030	1770	1520	1020
27	258	79	2450	443	210	1120	816	662	940	2010	1520	1010
28	80	129	1080	284	284	357	616	453	959	1910	1990	1000
29	152	77	144	327	---	3120	935	723	926	1890	1530	798
30	348	136	145	252	---	4580	191	798	910	1840	964	1140
31	135	---	135	258	---	4780	---	831	---	2270	986	---
TOTAL	13064	5671	29600	39914	20093	83439	73341	53929	33918	58860	49111	32117
MEAN	421	189	955	1288	718	2692	2445	1740	1131	1899	1584	1071
MAX	1340	1400	3420	4510	1860	5720	4870	3850	2030	2780	2720	1430
MIN	66	36	66	84	99	168	118	334	125	1290	692	487
AC-FT	25910	11250	58710	79170	39850	165500	145500	107000	67280	116700	97410	63700

e Estimated

COLORADO RIVER MAIN STEM

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1993#, BY WATER YEAR (WY)

MEAN	1576	1263	1325	1443	1664	1674	2046	3115	3525	2950	1965	1496
MAX	14810	8801	11660	15080	25890	13640	10420	27270	19600	36110	5862	4606
(WY)	1937	1975	1992	1992	1992	1992	1941	1957	1987	1938	1938	1974
MIN	132	38.7	43.9	46.2	49.7	55.0	389	969	1131	1102	505	285
(WY)	1965	1990	1964	1967	1964	1964	1962	1937	1993	1937	1937	1937

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1937 - 1993#
ANNUAL TOTAL	2395925	493057	
ANNUAL MEAN	6546	1351	2005
HIGHEST ANNUAL MEAN			7464
LOWEST ANNUAL MEAN			729
HIGHEST DAILY MEAN	30400	Feb 7	5720
LOWEST DAILY MEAN	36	Nov 7	36
ANNUAL SEVEN-DAY MINIMUM	98	Nov 27	98
INSTANTANEOUS PEAK FLOW		8540	Mar 24
INSTANTANEOUS PEAK STAGE		10.06	Mar 24
INSTANTANEOUS LOW FLOW		13	Nov 11
ANNUAL RUNOFF (AC-FT)	4752000	978000	1453000
10 PERCENT EXCEEDS	26700	3180	3640
50 PERCENT EXCEEDS	2430	1050	1480
90 PERCENT EXCEEDS	133	127	134

Period of regulated streamflow.

a/ From floodmark.

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 September 1993 (discontinued). Sediment analyses: March 1974 to September 1993 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to September 1991.

WATER TEMPERATURE: October 1947 to September 1991.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 930 microsiemens Aug. 16, 1990; minimum daily, 243 microsiemens Dec. 2, 1953.

WATER TEMPERATURE: Maximum daily, 33.0°C July 25, 1979; minimum daily, 4.5°C Dec. 22, 24, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECA, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECA, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	
DEC 08...	0835	74	539	7.8	15.5	0.70	8.3	83	0.4	30	160	250	
FEB 09...	1015	150	542	7.6	14.5	0.60	10.4	103	0.9	44	100	240	
MAY 18...	0826	112	562	7.3	23.0	1.9	7.4	88	0.5	K63	29	240	
AUG 19...	0955	1700	545	8.0	26.0	0.70	8.3	104	1.0	43	51	210	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	ALKA-LINITY WAT DIS FIX END FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
DEC 08...	26	72	17	21	0.6	2.1	0	274	225	220	32	34	
FEB 09...	33	67	18	19	0.5	2.0	0	255	209	210	38	36	
MAY 18...	56	64	20	27	0.8	3.2	0	228	185	180	40	51	
AUG 19...	41	52	20	29	0.9	3.1	0	210	172	M170	36	47	
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE 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, 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)
DEC 08...	0.20	8.3	324	326	0.790	0.780	0.020	0.020	0.800	0.800	0.040	0.030	
FEB 09...	0.20	7.7	315	316	0.510	0.510	--	0.020	0.530	0.530	--	0.020	
MAY 18...	0.20	8.4	319	332	1.19	1.19	--	0.010	1.20	1.20	--	0.020	
AUG 19...	0.20	9.8	296	302	0.200	--	--	<0.010	0.200	0.200	--	0.040	
DATE		NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	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)	
DEC 08...	--	<0.20	0.010	<0.010	0.010	0.010	0.010	0.03	15	3.0	36	10	
FEB 09...	--	<0.20	<0.010	<0.010	<0.010	--	--	8	3.2	61	<10		
MAY 18...	0.18	0.20	0.030	0.020	0.020	--	0.06	3	0.91	96	<10		
AUG 19...	0.26	0.30	<0.010	<0.010	<0.010	--	--	5	23	74	<10		
DATE		BARIUM, DIS-SOLVED (UG/L AS Ba)	COBALT, DIS-SOLVED (UG/L AS Co)	IRON, DIS-SOLVED (UG/L AS Fe)	LITHIUM, DIS-SOLVED (UG/L AS Li)	MANGA-NESE, DIS-SOLVED (UG/L AS Mn)	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)	
DEC 08...	65	<3	3	8	11	<10	<1	<1	<1.0	590	<6		
FEB 09...	57	<3	7	7	13	<10	<1	<1	<1.0	480	<6		
MAY 18...	84	<3	4	11	33	<10	<1	<1	<1.0	490	<6		
AUG 19...	72	<3	6	6	5	<10	<1	<1	<1.0	450	<6		

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 good. No known regulation or diversion. An automatic water-quality sampler installed Feb. 22, 1989. Gage-height and rainfall telemeter at station.

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. Maximum stage since at least 1891, that of May 25, 1981.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1145	1,680	11.83	June 26	0530	2,690	14.42

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	95	8.2	20	22	41	17	22	22	9.1	.85	60
2	1.1	10	8.2	18	21	26	17	110	20	8.6	1.4	1.8
3	1.1	5.0	8.2	22	59	23	18	27	18	7.6	2.1	1.3
4	1.1	3.8	8.2	30	37	21	42	21	18	7.1	2.1	2.2
5	1.1	4.1	7.7	22	58	20	20	123	18	5.8	2.1	.85
6	1.1	4.5	7.6	18	34	19	17	59	17	5.5	2.1	.85
7	18	4.5	7.6	22	27	19	95	32	17	5.3	2.1	1.0
8	20	4.5	7.6	21	26	19	32	26	16	4.8	2.1	.85
9	3.5	4.5	43	128	70	17	24	234	16	4.2	2.3	2.2
10	2.6	4.5	11	46	86	16	21	70	29	4.1	2.6	.96
11	1.7	4.5	11	43	41	17	18	39	21	4.1	2.6	.68
12	1.3	18	9.3	35	35	26	17	34	19	3.4	2.6	.62
13	1.1	5.7	8.6	31	32	17	16	30	21	3.3	2.5	1.4
14	1.3	4.4	68	28	29	16	44	27	21	3.1	2.1	1.4
15	2.0	3.8	267	27	42	21	20	26	22	2.9	1.9	1.7
16	2.1	3.7	45	26	46	18	16	25	17	2.9	2.1	.85
17	2.1	3.7	37	24	27	15	14	25	20	2.0	2.0	.85
18	2.1	4.1	31	23	26	15	13	23	28	1.8	1.4	.85
19	2.1	411	29	160	26	129	12	22	19	1.8	1.4	.85
20	2.1	128	30	87	26	41	11	22	91	1.7	1.4	1.3
21	2.3	28	29	46	24	26	9.5	21	75	1.9	1.4	.85
22	2.6	19	24	38	23	25	9.1	21	43	1.8	1.4	1.4
23	2.6	15	25	35	23	24	8.6	92	28	1.6	1.4	.94
24	2.6	15	22	29	23	22	7.4	32	26	1.3	1.4	1.4
25	2.6	12	21	26	21	58	8.3	25	24	2.3	1.6	1.3
26	2.6	10	21	26	20	27	7.8	23	600	2.7	1.8	10
27	2.6	9.6	20	23	19	23	6.8	23	30	1.7	2.3	4.8
28	2.6	8.9	20	26	48	21	6.8	23	19	1.0	1.3	1.9
29	2.7	8.9	20	54	---	20	119	22	15	.85	1.1	.91
30	117	8.5	20	27	---	22	29	39	11	.85	1.3	2.8
31	15	---	28	22	---	19	---	38	---	.85	1.8	---
TOTAL	224.0	862.2	903.2	1183	971	823	696.3	1356	1341	105.95	56.55	108.81
MEAN	7.23	28.7	29.1	38.2	34.7	26.5	23.2	43.7	44.7	3.42	1.82	3.63
MAX	117	411	267	160	86	129	119	234	600	9.1	2.6	60
MIN	1.1	3.7	7.6	18	19	15	6.8	21	11	.85	.85	.62
AC-FT	444	1710	1790	2350	1930	1630	1380	2690	2660	210	112	216
CFSM	.14	.56	.57	.74	.68	.52	.45	.85	.87	.07	.04	.07
IN.	.16	.63	.65	.86	.70	.60	.50	.98	.97	.08	.04	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1993, BY WATER YEAR (WY)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	19.0	21.5	31.3	32.1	34.0	28.6	24.9	61.3	44.9	14.0	8.83	12.2																
MAX	175	161	367	237	203	121	90.0	170	435	113	50.4	51.7																
(WY)	1974	1975	1992	1968	1992	1992	1977	1981	1981	1987	1991	1973																
MIN	1.37	1.03	1.22	1.07	1.88	1.06	1.79	.58	.23	.052	.32	1.42																
(WY)	1979	1967	1967	1967	1967	1967	1971	1971	1967	1971	1977	1972																

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1966 - 1993
ANNUAL TOTAL	24038.4	8631.01	
ANNUAL MEAN	65.7	23.6	27.2
HIGHEST ANNUAL MEAN			94.6
LOWEST ANNUAL MEAN			1.91
HIGHEST DAILY MEAN	1350	Feb 4	4330
LOWEST DAILY MEAN	1.1	Aug 10	.00
ANNUAL SEVEN-DAY MINIMUM	1.2	Sep 30	.00
INSTANTANEOUS PEAK FLOW			2690
INSTANTANEOUS PEAK STAGE			14.42
INSTANTANEOUS LOW FLOW			.62
ANNUAL RUNOFF (AC-FT)	47680	17120	19730
ANNUAL RUNOFF (CFSM)	1.28	.46	.53
ANNUAL RUNOFF (INCHES)	17.43	6.26	7.21
10 PERCENT EXCEEDS	120	43	44
50 PERCENT EXCEEDS	23	17	7.4
90 PERCENT EXCEEDS	2.6	1.4	1.0

* No flow at times in 1967, 1971, and 1982-84.

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

COLORADO RIVER BASIN

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L)	RESIDUE FIXED NON FILTER- ABLE (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)
DEC											
15...	--	--	--	--	886	132	754	0.860	--	0.100	--
15...	--	--	--	--	1900	484	1420	0.650	--	0.090	--
15...	--	--	--	--	1950	488	1460	0.620	--	0.100	--
15...	--	--	--	--	350	96	254	0.290	--	0.100	--
15...	--	--	--	--	278	77	201	0.450	--	0.070	--
JAN											
09...	--	--	--	--	1740	142	1600	0.420	0.420	--	0.040
09...	--	--	--	--	1440	138	1300	0.590	0.590	--	0.030
09...	--	--	--	--	1790	166	1620	0.430	0.430	--	0.030
09...	--	--	--	--	1000	97	903	0.490	0.490	--	0.040
09...	--	--	--	--	283	35	248	0.470	0.470	--	0.030
10...	--	--	--	--	8	8	0	0.640	0.640	--	0.030
14...	41	0.30	6.4	393	6	<1	--	1.10	--	--	<0.010
FEB											
09...	--	--	--	--	552	62	490	0.550	0.550	--	0.030
09...	--	--	--	--	729	67	662	0.600	0.600	--	0.040
09...	--	--	--	--	635	50	585	0.600	0.600	--	0.040
09...	--	--	--	--	785	78	707	0.700	0.700	--	0.040
09...	--	--	--	--	90	19	71	0.610	0.610	--	0.040
MAR											
17...	46	0.30	3.3	359	18	8	10	0.720	0.720	--	0.020
MAY											
04...	--	--	--	--	1	16	0	0.500	--	--	<0.010
JUL											
14...	--	--	--	--	4	<1	--	0.220	--	--	<0.010
SEP											
07...	--	--	--	--	3	1	2	0.098	--	--	<0.010
DATE	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, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)
DEC											
15...	0.960	--	0.110	--	1.3	--	--	1.4	0.610	--	--
15...	0.740	--	0.100	--	0.40	--	--	0.50	0.170	--	--
15...	0.720	--	0.110	--	0.69	--	--	0.80	0.360	--	--
15...	0.390	--	0.120	--	0.28	--	--	0.40	0.210	--	--
15...	0.520	--	0.060	--	0.34	--	--	0.40	0.150	--	--
JAN											
09...	0.460	0.460	--	0.070	--	0.13	0.20	--	--	0.090	0.030
09...	0.620	0.620	--	0.070	--	0.13	0.20	--	--	0.310	0.040
09...	0.460	0.460	--	0.070	--	0.13	0.20	--	--	0.530	0.070
09...	0.530	0.530	--	0.060	--	0.24	0.30	--	--	0.500	0.080
09...	0.500	0.500	--	0.050	--	0.15	0.20	--	--	0.410	0.070
10...	0.670	0.670	--	0.040	--	--	<0.20	--	--	0.060	0.030
14...	1.10	1.10	--	0.020	--	--	<0.20	--	--	0.030	0.020
FEB											
09...	0.580	0.580	--	0.140	--	0.36	0.50	--	--	0.080	0.040
09...	0.640	0.640	--	0.160	--	0.24	0.40	--	--	0.400	0.060
09...	0.640	0.640	--	0.180	--	0.22	0.40	--	--	0.370	0.060
09...	0.740	0.740	--	0.100	--	0.20	0.30	--	--	0.390	0.040
09...	0.650	0.650	--	0.090	--	0.21	0.30	--	--	0.170	0.040
MAR											
17...	0.740	0.740	--	0.020	--	--	<0.20	--	--	0.010	<0.010
MAY											
04...	0.500	0.500	--	0.030	--	0.17	0.20	--	--	0.060	0.030
JUL											
14...	0.220	0.220	--	0.020	--	0.28	0.30	--	--	0.040	<0.010
SEP											
07...	0.098	0.098	--	0.040	--	0.26	0.30	--	--	0.140	0.030

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
DEC											
15...	0.040	--	18	--	--	--	--	--	--	--	--
15...	0.060	--	12	--	--	--	--	--	--	--	--
15...	0.070	--	16	--	--	--	--	--	--	--	--
15...	0.160	--	7.2	--	--	--	--	--	--	--	--
15...	0.120	--	6.7	--	--	--	--	--	--	--	--
JAN											
09...	--	0.09	47	--	--	--	--	--	--	--	--
09...	--	0.12	29	--	--	--	--	--	--	--	--
09...	--	0.21	10	--	--	--	--	--	--	--	--
09...	--	0.25	20	--	--	--	--	--	--	--	--
09...	--	0.21	9.1	--	--	--	--	--	--	--	--
10...	--	0.09	4.0	--	--	--	--	--	--	--	--
14...	--	0.06	2.2	1	71	<0.5	<1.0	<5	<3	<10	<3
FEB											
09...	--	0.12	16	--	--	--	--	--	--	--	--
09...	--	0.18	23	--	--	--	--	--	--	--	--
09...	--	0.18	22	--	--	--	--	--	--	--	--
09...	--	0.12	15	--	--	--	--	--	--	--	--
09...	--	0.12	12	--	--	--	--	--	--	--	--
MAR											
17...	--	--	3.6	<1	64	0.6	<1.0	<5	<3	<10	5
MAY											
04...	--	0.09	3.7	--	--	--	--	--	--	--	--
JUL											
14...	--	--	2.2	--	--	--	--	--	--	--	--
SEP											
07...	--	0.09	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)
DEC											
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
JAN											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
14...	<10	15	4	<0.1	<10	<10	<1	<1.0	660	<6	<3
FEB											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
MAR											
17...	<10	19	6	1.0	<10	<10	<1	<1.0	720	<6	3
MAY											
04...	--	--	--	--	--	--	--	--	--	--	--
JUL											
14...	--	--	--	--	--	--	--	--	--	--	--
SEP											
07...	--	--	--	--	--	--	--	--	--	--	--

08158650 COLORADO RIVER BELOW AUSTIN, TX

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 1992 TO SEPTEMBER 1993

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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)	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)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	
DEC 08...	1110	597	7.5	15.5	9.1	91	0.3	--	--	230	43	64	
FEB 09...	1145	600	7.7	15.0	10.1	102	0.8	--	--	250	68	72	
MAR 18...	0846	610	7.7	15.5	9.1	92	0.3	K9	26	230	54	59	
MAY 18...	1053	553	7.4	22.5	9.4	111	0.2	K17	K8	--	--	--	
JUL 26...	0917	535	7.7	25.0	7.5	92	0.8	24	180	200	37	47	
SEP 07...	0935	547	7.6	26.0	7.4	92	0.2	480	500	210	43	52	
DATE		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 DIS FIX END FIELD CACO3 (MG/L)	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)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
DEC 08...	17	32	0.9	4.0	190	41	48	0.40	10	329	4.25	0.050	
FEB 09...	17	32	0.9	3.2	180	51	50	0.30	7.6	342	--	--	
MAR 18...	19	35	1	4.7	170	50	60	0.20	9.2	355	3.10	--	
MAY 18...	--	--	--	--	160	--	--	--	--	--	1.00	--	
JUL 26...	19	29	0.9	3.7	160	36	49	0.30	8.8	292	0.730	--	
SEP 07...	20	30	0.9	4.5	170	40	49	0.30	10	311	0.780	--	
DATE		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, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)
DEC 08...	--	4.30	--	0.060	--	0.44	--	--	0.50	0.700	--	--	
FEB 09...	--	--	--	--	--	0.40	--	--	0.40	0.430	--	--	
MAR 18...	<0.010	3.10	3.10	--	0.080	--	0.32	0.40	--	--	0.320	0.300	
MAY 18...	<0.010	1.00	1.00	--	0.040	--	0.16	0.20	--	--	0.150	0.140	
JUL 26...	<0.010	0.730	0.730	--	0.040	--	--	<0.20	--	--	0.110	0.090	
SEP 07...	<0.010	0.780	0.780	--	0.050	--	0.25	0.30	--	--	0.140	0.110	
DATE		PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)	
DEC 08...	0.670	--	--	--	--	--	--	--	--	--	--	--	
FEB 09...	--	--	--	--	--	--	--	--	--	--	--	--	
MAR 18...	--	0.92	3.3	1	79	--	<1.0	<1	--	1	3		
MAY 18...	--	0.43	3.2	--	--	--	--	--	--	--	--		
JUL 26...	--	0.28	3.2	<1	70	<0.5	<1.0	<5	<3	<10	<3		
SEP 07...	--	0.34	2.9	--	--	--	--	--	--	--	--		

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

08158700 ONION CREEK NEAR DRIFTWOOD, TX

LOCATION (REVISED).---Lat 30°04'58", Long 98°00'27", Hays County, Hydrologic Unit 12090205, on left bank, 160 ft left of the upstream side of bridge at 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.---Data logger water-stage and rainfall recorder and data collection platform (DCP). Datum of gage is 878.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.---No estimated daily discharges. Records fair above 10 ft³/s, and poor below. Gage-height and rainfall satellite telemeter (DCP) at station.

PEAK DISCHARGES FOR CURRENT YEAR.---Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	0115	475	5.14	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	5.4	9.0	33	80	111	53	35	19	39	1.2	.38
2	1.7	2.5	8.8	32	77	108	51	34	18	33	.72	.40
3	1.6	2.0	8.8	32	78	93	52	31	17	30	.54	.38
4	1.5	1.4	8.6	33	79	85	55	28	16	28	.41	.37
5	1.1	1.8	8.5	32	95	81	51	52	15	26	.33	.41
6	1.0	3.0	8.8	29	108	78	50	73	14	24	.24	.48
7	1.3	3.0	8.5	29	101	76	87	52	14	22	.31	.56
8	1.2	3.8	8.5	30	98	72	95	44	13	21	.50	.75
9	1.7	3.9	9.5	32	104	70	63	42	13	20	.54	1.2
10	2.4	4.0	8.4	31	304	69	55	45	13	19	.31	1.2
11	1.7	3.9	8.5	31	217	66	53	39	16	18	.30	1.1
12	1.9	3.5	9.0	32	189	74	54	35	15	17	.24	1.3
13	2.1	3.3	9.5	33	178	69	53	33	18	16	.24	1.5
14	2.4	3.2	14	33	168	65	61	32	17	15	.19	1.7
15	3.3	2.9	176	33	166	66	58	30	16	13	.18	1.2
16	3.1	4.2	107	33	154	67	51	28	14	13	.15	.88
17	1.5	2.9	70	32	138	61	48	26	13	12	.13	.80
18	2.0	2.7	58	32	129	59	47	25	14	11	.13	.80
19	2.3	121	56	181	126	62	45	24	15	10	.13	.76
20	3.0	80	49	231	124	67	43	23	19	10	.14	.66
21	3.1	30	47	161	117	61	39	22	25	9.5	.13	.66
22	2.4	18	44	134	107	62	38	21	31	8.8	.15	.66
23	2.1	14	43	122	102	64	38	30	25	8.4	.19	.66
24	2.0	13	41	105	100	60	38	32	23	7.9	.21	.44
25	1.7	11	39	96	98	60	35	26	22	7.4	.19	.36
26	1.8	11	38	92	90	60	33	24	46	7.0	.24	.36
27	1.9	10	37	88	85	56	31	22	136	6.4	.24	.36
28	2.1	9.7	36	84	89	56	31	22	65	5.4	.24	.36
29	2.6	9.5	36	89	---	55	40	23	48	4.4	.30	.30
30	3.4	9.5	35	90	---	61	41	23	45	2.9	.36	.30
31	3.0	---	34	83	---	58	---	22	---	1.5	.41	---
TOTAL	64.6	394.1	1074.4	2128	3501	2152	1489	998	775	466.6	9.59	21.29
MEAN	2.08	13.1	34.7	68.6	125	69.4	49.6	32.2	25.8	15.1	.31	.71
MAX	3.4	121	176	231	304	111	95	73	136	39	1.2	1.7
MIN	1.0	1.4	8.4	29	77	55	31	21	13	1.5	.13	.30
AC-FT	128	782	2130	4220	6940	4270	2950	1980	1540	926	19	42
CFSM	.02	.11	.28	.55	1.01	.56	.40	.26	.21	.12	.00	.01
IN.	.02	.12	.32	.64	1.05	.65	.45	.30	.23	.14	.00	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	21.3	19.4	85.4	62.5	83.4	78.7	45.1	75.6	145	26.2	6.27	6.49			
MAX	109	85.9	548	316	506	356	170	202	792	97.5	22.0	34.6			
(WY)	1987	1986	1992	1992	1992	1992	1991	1992	1987	1987	1987	1991			
MIN	.22	.10	.10	.43	.87	2.29	3.12	2.67	2.98	.96	.10	.048			
(WY)	1990	1989	1989	1990	1990	1989	1984	1984	1988	1984	1984	1984			

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL	55236.4	13073.58	
ANNUAL MEAN	151	35.8	
HIGHEST ANNUAL MEAN			54.4
LOWEST ANNUAL MEAN			196
HIGHEST DAILY MEAN	2540	Mar 4	4.05
LOWEST DAILY MEAN	1.0	Oct 6	5060
ANNUAL SEVEN-DAY MINIMUM	1.3	Oct 2	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			8990
INSTANTANEOUS LOW FLOW			16.38
ANNUAL RUNOFF (AC-FT)	109600	25930	.00
ANNUAL RUNOFF (CFSM)	1.22	.29	39410
ANNUAL RUNOFF (INCHES)	16.57	3.92	.44
10 PERCENT EXCEEDS	351	92	5.96
50 PERCENT EXCEEDS	47	22	127
90 PERCENT EXCEEDS	3.0	.41	11
			.54

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, 5 DAY (MG/L)	COLI-FORM, FECCAL, 0.7 UM-WF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
JAN												
13...	0949	32	467	7.9	11.5	5	1.0	10.4	97	0	36	260
19...	1422	319	449	7.6	7.5	5	1.7	--	--	0.8	740	1000
19...	1500	327	446	7.7	7.0	5	3.0	--	--	0.7	K1300	920
19...	1553	321	437	7.8	7.0	5	2.5	--	--	0.7	K1800	1300
19...	1637	308	425	7.8	7.0	5	2.4	--	--	0.7	K1700	1700
20...	0850	258	386	7.7	4.5	15	13	--	--	0.8	4300	7400

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	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 DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
JAN												
13...	240	27	73	14	7.2	0.2	1.0	210	29	12	0.20	7.6
19...	--	--	--	--	--	--	--	210	--	--	--	--
19...	240	36	73	15	6.9	0.2	1.0	210	29	12	0.20	7.6
19...	--	--	--	--	--	--	--	210	--	--	--	--
19...	--	--	--	--	--	--	--	200	--	--	--	--
20...	--	--	--	--	--	--	--	180	--	--	--	--

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLATILE, SUS- PENDED (MG/L)	RESIDUE FIXED NON FILTER- ABLE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)
JAN												
13...	273	4	<1	--	0.130	--	<0.010	0.130	0.130	<0.010	--	<0.20
19...	--	<1	<1	--	0.140	--	<0.010	0.140	0.140	<0.010	--	<0.20
19...	270	<1	<1	--	0.120	0.120	0.020	0.140	0.140	0.010	--	<0.20
19...	--	3	3	0	0.090	0.090	0.020	0.110	0.110	0.020	--	<0.20
19...	--	1	1	0	0.072	0.072	0.020	0.092	0.092	0.020	0.18	0.20
20...	--	3	3	0	0.150	0.150	0.020	0.170	0.170	0.020	--	<0.20

[illegible][illegible]

COLORADO RIVER BASIN

08158800 ONION CREEK AT BUDA, TX

LOCATION.--Lat 30°05'09", long 97°50'52", Hays County, Hydrologic Unit 12090205, on left downstream side of bridge on Farm Road 967, 0.4 mi northwest of Buda.

DRAINAGE AREA.--166 mi².

PERIOD OF RECORD.--November 1961 to September 1973, January 1970 to July 1979, (periodic discharge measurements only), July 1979 to September 1983, and January 1992 to current year.

Water quality records.--Chemical, biochemical, and pesticide analyses: January 1978, to September 1983.

Radiochemical analyses: October 1979 to September 1980.

GAGE.--Data collection platform (DCP) with data logger. Datum of gage is 657.39 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good, except those for estimated daily and peak discharges, which are poor. No known regulation or diversion in the vicinity of the gage. Recording rain gage at station. Several observations of water temperature were made during the year. Rain gage and gage-height telemeters at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 28, 1929, reached a stage of about 36.2 ft, present datum (discharge, 53,200 ft³/s), from slope-area indirect measurement of peak flow. This is probably the highest flood since that date.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	1330	409	5.10	No peak above base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	e.00	e.00	e.00	.16	.47	.26	.32	.29	.05	.00	.00
2	.00	e.00	e.00	e.00	.13	.42	.25	.30	.24	.01	.00	.00
3	.00	e.00	e.00	e.00	.22	.55	.26	.27	.19	.00	.00	.00
4	.00	e.00	e.00	e.00	.34	.38	.28	.22	.15	.00	.00	.00
5	.00	e.00	e.00	e.00	.33	.31	.28	.42	.11	.00	.00	.00
6	.00	e.00	e.00	e.00	.31	.27	.28	.70	.08	.00	.00	.00
7	.00	e.00	e.00	e.00	.26	.27	.37	.46	.06	.00	.00	.00
8	.00	e.00	e.00	e.00	.23	.27	1.5	.40	.04	.00	.00	.00
9	.00	e.00	e.00	e.00	.23	.26	.92	.43	.02	.00	.00	.00
10	.00	e.00	e.00	e.00	94	.25	.45	.58	.01	.00	.00	.00
11	.00	e.00	e.00	e.00	113	.23	.37	.44	.01	.00	.00	.00
12	.00	e.00	e.00	e.00	71	.47	.35	.38	.01	.00	.00	.00
13	.00	e.00	e.00	e.00	57	.43	.32	.36	.01	.00	.00	.00
14	.00	e.00	e.00	e.00	49	.37	.32	.34	.01	.00	.00	.00
15	.00	e.00	.09	e.00	43	.36	.31	.32	.01	.00	.00	.00
16	.00	e.00	21	e.00	37	.36	.28	.28	.01	.00	.00	.00
17	.00	e.00	.82	e.00	24	.36	.27	.25	.01	.00	.00	.00
18	.00	e.00	.22	e.00	22	.35	.25	.22	.01	.00	.00	.00
19	.00	e.00	e.12	.09	21	.33	.24	.20	.01	.00	.00	.00
20	.00	e.00	e.05	133	21	.40	.21	.18	.01	.00	.00	.00
21	.00	e.00	e.02	44	15	.37	.18	.15	.03	.00	.00	.00
22	.00	e.00	e.02	13	7.8	.34	.17	.13	.03	.00	.00	.00
23	.00	e.00	e.02	2.9	4.5	.34	.17	.54	.01	.00	.00	.00
24	e.00	e.00	e.01	1.1	2.6	.34	.16	.63	.01	.00	.00	.00
25	e.00	e.00	e.01	.38	1.6	.34	.17	.44	.01	.00	.00	.00
26	e.00	e.00	e.01	.24	1.1	.34	.14	.40	.05	.00	.00	.00
27	e.00	e.00	e.00	.17	.47	.33	.12	.37	2.7	.00	.00	.00
28	e.00	e.00	e.00	.11	.40	.31	.11	.37	6.6	.00	.00	.00
29	e.00	e.00	e.00	.23	---	.31	.30	.36	.44	.00	.00	.00
30	e.00	e.00	e.00	.26	---	.30	.40	.34	.15	.00	.00	.00
31	e.00	---	e.00	.21	---	.29	---	.33	---	.00	.00	---
TOTAL	0.00	0.00	22.39	195.69	587.68	10.72	9.69	11.13	11.32	0.06	0.00	0.00
MEAN	.000	.000	.72	6.31	21.0	.35	.32	.36	.38	.002	.000	.000
MAX	.00	.00	21	133	113	.55	1.5	.70	6.6	.05	.00	.00
MIN	.00	.00	.00	.00	.13	.23	.11	.13	.01	.00	.00	.00
AC-FT	.00	.00	44	388	1170	21	19	22	22	.1	.00	.00
CFSM	.00	.00	.00	.04	.13	.00	.00	.00	.00	.00	.00	.00
IN.	.00	.00	.01	.04	.13	.00	.00	.00	.00	.00	.00	.00

e Estimated

COLORADO RIVER BASIN

165

08158800 ONION CREEK AT BUDA, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1993, BY WATER YEAR (WY)

MEAN	10.2	.032	.27	49.5	93.3	82.6	13.1	82.0	221	7.32	.000	.022
MAX	47.4	.13	.72	289	525	359	64.0	220	1019	41.3	.000	.13
(WY)	1982	1980	1993	1992	1992	1992	1992	1992	1981	1981	1980	1983
MIN	.000	.000	.000	.000	.000	.35	.066	.36	.070	.000	.000	.000
(WY)	1983	1982	1982	1983	1983	1993	1982	1993	1980	1980	1980	1980

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1980 - 1993
ANNUAL TOTAL	53196.45	848.68	
ANNUAL MEAN	145	2.33	26.1
HIGHEST ANNUAL MEAN			97.2 1981
LOWEST ANNUAL MEAN			2.33 1993
HIGHEST DAILY MEAN	3230 Mar 4	133 Jan 20	5400 Jun 13 1981
LOWEST DAILY MEAN	.00 Jul 30	.00 Oct 1	.00 Oct 1 1979
ANNUAL SEVEN-DAY MINIMUM	.00 Jul 30	.00 Oct 1	.00 Oct 1 1979
INSTANTANEOUS PEAK FLOW		409 Feb 10	17400 Jun 13 1981
INSTANTANEOUS PEAK STAGE		5.10 Feb 10	17.59 Jun 13 1981
INSTANTANEOUS LOW FLOW		.00 Oct 1	.00 at times
ANNUAL RUNOFF (AC-FT)	105500	1680	18910
ANNUAL RUNOFF (CFSM)	.88	.014	.16
ANNUAL RUNOFF (INCHES)	11.92	.19	2.14
10 PERCENT EXCEEDS	410	.46	79
50 PERCENT EXCEEDS	.90	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

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. One rain gage in the watershed.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1939 (corrected) reached a stage of 16.2 ft (discharge unknown) and is the highest since at least 1924, from information by local resident. A flood in 1915 was purported to be 2 ft higher than the 1939 flood, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	0530	104	3.63	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.06	.33	1.8	6.3	9.4	7.0	3.8	2.6	4.8	.31	.01
2	.01	.06	.22	1.7	6.1	8.7	7.0	3.6	2.4	4.5	.18	.00
3	.01	.05	.23	1.5	6.1	7.6	7.0	3.4	2.3	4.2	.19	.00
4	.02	.04	.27	1.5	6.3	7.0	7.5	3.2	2.1	4.0	.08	.00
5	.01	.05	.24	1.6	7.5	6.9	6.9	8.8	2.2	3.7	.07	.00
6	.01	.05	.30	1.5	7.6	6.7	6.6	10	2.1	3.4	.06	.00
7	.00	.04	.27	1.8	7.7	6.5	12	6.7	2.0	3.2	.06	.00
8	.00	.05	.28	1.7	7.7	6.1	9.1	6.1	2.0	3.1	.05	.00
9	.00	.05	.58	2.1	10	5.9	7.3	6.7	1.9	2.9	.05	.00
10	.00	.05	.20	2.2	18	5.9	6.9	7.7	1.4	2.7	.04	.00
11	.00	.06	.09	2.2	15	5.6	6.7	6.1	1.6	2.5	.04	.00
12	.00	.06	.30	2.3	14	7.3	6.4	5.9	1.6	2.4	.04	.00
13	.00	.05	.35	2.2	14	5.9	6.4	5.9	1.8	2.1	.04	.00
14	.00	.05	1.8	2.2	13	5.9	7.0	5.6	2.5	1.9	.04	.00
15	.00	.05	7.6	2.3	13	5.9	6.7	5.6	2.0	1.7	.04	.00
16	.01	.06	4.3	2.5	12	6.1	6.1	5.1	1.6	1.9	.04	.00
17	.01	.07	3.6	2.6	12	5.6	5.9	4.9	1.5	1.5	.04	.00
18	.01	.07	3.1	2.5	11	5.4	5.9	4.6	1.6	1.4	.04	.00
19	.01	1.9	3.0	7.5	11	6.4	5.3	4.2	1.8	1.3	.03	.00
20	.01	1.6	2.7	9.0	11	7.4	5.1	4.0	2.4	1.2	.02	.00
21	.01	.66	2.6	8.9	10	6.7	4.9	4.0	2.8	1.2	.02	.00
22	.01	.44	2.6	8.9	9.4	6.9	4.9	3.8	1.9	1.1	.02	.00
23	.01	.41	2.4	8.6	8.9	7.6	4.9	5.2	1.8	1.0	.01	.00
24	.01	.55	2.2	7.5	8.9	7.2	4.9	4.2	1.9	.88	.01	.00
25	.01	.50	2.2	7.1	8.7	7.9	4.4	4.0	1.8	.73	.00	.00
26	.00	.43	2.2	7.0	7.6	8.4	3.8	3.8	22	.69	.00	.00
27	.00	.29	2.0	6.7	7.0	8.1	3.4	3.6	8.0	.65	.00	.00
28	.00	.26	2.0	6.7	8.0	8.1	3.4	3.6	6.2	.64	.00	.00
29	.00	.28	2.0	7.0	---	8.1	5.3	3.4	5.5	.64	.00	.00
30	.01	.28	2.0	6.5	---	8.4	4.0	4.0	5.1	.54	.00	.00
31	.02	---	1.8	6.3	---	7.3	---	3.2	---	.40	.00	---
TOTAL	0.21	8.57	53.76	133.9	277.8	216.9	182.7	154.7	96.4	62.87	1.52	0.01
MEAN	.007	.29	1.73	4.32	9.92	7.00	6.09	4.99	3.21	2.03	.049	.000
MAX	.02	1.9	7.6	9.0	18	9.4	12	10	22	4.8	.31	.01
MIN	.00	.04	.09	1.5	6.1	5.4	3.4	3.2	1.4	.40	.00	.00
AC-FT	.4	17	107	266	551	430	362	307	191	125	3.0	.02
CFSM	.00	.02	.14	.35	.81	.57	.50	.41	.26	.17	.00	.00
IN.	.00	.03	.16	.41	.85	.66	.56	.47	.29	.19	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	2.87	2.19	11.3	6.95	9.51	8.38	5.66	9.31	20.0	2.37	.84	.71			
MAX	22.5	11.6	91.8	33.3	49.4	32.3	26.2	23.7	144	7.31	3.59	2.71			
(WY)	1987	1987	1992	1992	1992	1992	1991	1992	1981	1981	1979	1991			
MIN	.000	.000	.000	.000	.017	.42	.60	.15	.001	.000	.000	.000			
(WY)	1989	1989	1989	1989	1990	1982	1984	1984	1984	1984	1984	1984			

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL	5284.56	1189.34	6.63
ANNUAL MEAN	14.4	3.26	22.3
HIGHEST ANNUAL MEAN			.51
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	240	22	1000
LOWEST DAILY MEAN	.00 Oct 7	.00 Jun 26	.00 Dec 20 1991
ANNUAL SEVEN-DAY MINIMUM	.00 Oct 7	.00 Oct 7	.00 Aug 28 1980
INSTANTANEOUS PEAK FLOW		104	10200
INSTANTANEOUS PEAK STAGE		3.63 Jun 26	14.23 Dec 20 1991
INSTANTANEOUS LOW FLOW		.00 Oct 7	0.00 at times
ANNUAL RUNOFF (AC-FT)	10480	2360	4800
ANNUAL RUNOFF (CFSM)	1.18	.27	.54
ANNUAL RUNOFF (INCHES)	16.11	3.63	7.38
10 PERCENT EXCEEDS	36	7.8	13
50 PERCENT EXCEEDS	3.9	2.0	1.5
90 PERCENT EXCEEDS	.02	.00	.00

COLORADO RIVER BASIN

167

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, January to September 1993. Radiochemical analyses: January 1980.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 13...	1044	2.4	534	8.1	10.5	5	1.0	11.2	102	0	29	K12
MAR 16...	1125	5.6	525	8.0	15.5	5	0.80	10.0	104	0.3	240	K11
MAY 17...	1255	4.4	521	7.8	26.0	5	0.60	8.2	105	0.6	<10	29
JUL 15...	1115	2.6	512	7.6	27.5	7	0.30	7.4	96	0.6	11	K7
DATE		STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 13...		30	270	35	81	16	13	0.3	0.80	230	38	27
MAR 16...		K15	270	38	81	16	12	0.3	0.70	230	40	18
MAY 17...		120	--	--	--	--	--	--	--	220	--	--
JUL 15...		1000	--	--	--	--	--	--	--	200	--	--
DATE		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-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE 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 DIS-SOLVED (MG/L AS N)
JAN 13...		0.20	7.7	324	9	<1	--	0.093	<0.010	0.093	0.093	0.020
MAR 16...		0.10	7.2	314	<1	<1	--	0.270	<0.010	0.270	0.270	0.010
MAY 17...		--	--	--	<1	40	--	--	<0.010	--	<0.050	0.020
JUL 15...		--	--	--	13	4	9	--	<0.010	--	<0.050	<0.010
DATE		NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)
JAN 13...		0.18	0.20	0.030	0.010	0.03	1.4	1	31	<0.5	<1	<1.0
MAR 16...		--	<0.20	<0.010	<0.010	--	2.0	<1	28	0.8	<1	<1.0
MAY 17...		--	<0.20	0.030	<0.010	--	2.1	--	--	--	<1	--
JUL 15...		--	<0.20	0.080	<0.010	--	2.0	--	--	--	<1	--
DATE		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, TOTAL RECOV-ERABLE (UG/L AS PB)	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)
JAN 13...		<5	<3	<10	<3	<1	<10	<4	3	<0.1	<10	<10
MAR 16...		<5	<3	<10	<3	<1	<10	<4	4	0.1	<10	<10
MAY 17...		--	--	--	--	<1	--	--	--	--	--	--
JUL 15...		--	--	--	--	<1	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[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 good. No known regulation or diversion. Recording rain gage is located in the watershed above this station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 9	2245	80	4.71	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.48	8.7	7.1	4.3	2.0	1.5	2.7	.01	.00
2	.00	.00	.00	.48	8.7	6.3	4.0	2.3	1.3	2.6	.00	.00
3	.00	.00	.00	.47	8.7	5.3	4.0	2.0	1.2	2.3	.00	.00
4	.00	.00	.00	.60	8.7	4.7	4.6	1.5	1.1	2.2	.00	.00
5	.00	.00	.00	.65	16	4.3	4.0	4.4	1.0	1.9	.00	.00
6	.00	.00	.00	.69	16	4.3	4.0	16	.98	1.5	.00	.00
7	.00	.00	.00	.84	15	4.3	9.7	7.8	.91	1.4	.00	.00
8	.00	.00	.00	.91	15	4.3	5.6	7.2	.91	1.1	.00	.00
9	.00	.00	.00	1.3	22	4.3	3.6	7.0	.89	.86	.00	.00
10	.00	.00	.00	1.4	32	4.3	3.3	7.4	1.2	.75	.00	.00
11	.00	.00	.00	1.4	18	4.0	3.0	6.4	1.0	.75	.00	.00
12	.00	.00	.00	2.1	14	4.2	2.8	5.5	1.0	.73	.00	.00
13	.00	.00	.00	2.4	13	4.2	2.7	5.1	1.0	.60	.00	.00
14	.00	.00	.03	2.4	11	4.0	3.2	4.4	1.5	.60	.00	.00
15	.00	.00	.17	2.5	12	4.1	2.8	4.1	2.4	.58	.00	.00
16	.00	.00	.08	2.6	11	4.3	2.6	3.3	1.4	.54	.00	.00
17	.00	.00	.18	2.6	8.4	4.0	2.6	3.0	1.2	.52	.00	.00
18	.00	.00	.25	2.6	7.6	4.0	2.6	2.8	1.1	.48	.00	.00
19	.00	.06	.29	13	7.6	5.0	2.4	2.8	1.4	.46	.00	.00
20	.00	.02	.34	21	7.6	5.9	2.0	2.4	1.6	.43	.00	.00
21	.00	.00	.36	18	6.9	5.1	1.8	2.4	2.0	.40	.00	.00
22	.00	.00	.36	15	6.0	5.1	1.8	2.2	1.8	.35	.00	.00
23	.00	.00	.37	14	4.5	4.8	1.8	5.0	1.7	.29	.00	.00
24	.00	.00	.43	11	5.5	4.7	1.7	3.7	1.4	.24	.00	.00
25	.00	.00	.43	10	5.3	4.8	1.5	2.8	1.4	.19	.00	.00
26	.00	.00	.43	9.4	3.9	5.1	1.3	2.6	21	.13	.00	.00
27	.00	.00	.43	8.7	4.3	5.1	1.2	2.3	6.9	.09	.00	.00
28	.00	.00	.46	8.1	5.2	5.1	1.3	2.2	4.7	.07	.00	.00
29	.00	.00	.48	9.1	---	4.8	3.7	2.2	3.8	.05	.00	.00
30	.00	.00	.48	9.2	---	4.7	2.5	2.3	3.2	.03	.00	.00
31	.00	---	.49	8.7	---	4.3	---	2.1	---	.01	.00	---
TOTAL	0.00	0.08	6.06	181.62	302.6	146.5	92.4	127.2	72.49	24.85	0.01	0.00
MEAN	.000	.003	.20	5.86	10.8	4.73	3.08	4.10	2.42	.80	.000	.000
MAX	.00	.06	.49	21	32	7.1	9.7	16	21	2.7	.01	.00
MIN	.00	.00	.00	.47	3.9	4.0	1.2	1.5	.89	.01	.00	.00
AC-FT	.00	.2	12	360	600	291	183	252	144	49	.02	.00
CFSM	.00	.00	.02	.71	1.31	.57	.37	.50	.29	.10	.00	.00
IN.	.00	.00	.03	.82	1.37	.66	.42	.57	.33	.11	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1993, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	3.36	2.52	10.2	6.06	7.05	6.09	4.38	10.5	15.2	1.06	.41	.56				
MAX	35.5	18.5	75.0	24.4	40.6	20.3	27.1	31.0	101	5.31	2.28	4.33				
(WY)	1987	1986	1992	1992	1992	1992	1992	1992	1981	1979	1983	1991				
MIN	.000	.000	.000	.000	.001	.000	.020	.021	.006	.000	.000	.000				
(WY)	1983	1989	1989	1990	1990	1989	1978	1984	1984	1980	1980	1984				

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1978 - 1993

ANNUAL TOTAL	4137.60	953.81	5.85
ANNUAL MEAN	11.3	2.61	17.9
HIGHEST ANNUAL MEAN			.26
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	223 Feb 4	32 Feb 10	901 Jun 11 1981
LOWEST DAILY MEAN	.00 Aug 22	.00 Oct 1	.00 Jan 26 1978
ANNUAL SEVEN-DAY MINIMUM	.00 Aug 22	.00 Oct 1	.00 Jan 26 1978
INSTANTANEOUS PEAK FLOW		80 Feb 9	6330 Dec 20 1991
INSTANTANEOUS PEAK STAGE		4.75 Jun 26	10.79 Jun 11 1981
INSTANTANEOUS LOW FLOW		.00 Oct 1	.00 at times
ANNUAL RUNOFF (AC-FT)	8210	1890	4240
ANNUAL RUNOFF (CFSM)	1.37	.32	.71
ANNUAL RUNOFF (INCHES)	18.68	4.31	9.65
10 PERCENT EXCEEDS	26	7.6	11
50 PERCENT EXCEEDS	2.0	.86	.48
90 PERCENT EXCEEDS	.00	.00	.00

COLORADO RIVER BASIN

171

08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1983 to current year. Pesticide analyses: June 1983 to September 1986.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, (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)
JAN 13...	1125	2.4	704	8.1	12.0	5	0.60	9.2	87	0.2	K7	K3
APR 05...	1130	2.8	676	7.9	17.0	10	0.30	9.9	105	0.5	K5	K2
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN 13...		340	69	100	23	24	0.6	0.70	280	79	39	0.20
APR 05...		330	87	93	24	26	0.6	0.60	240	82	40	0.20
DATE		SILICA, DIS-SOLVED (MG/L AS SI02)	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)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE 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 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)
JAN 13...		7.4	440	10	2	8	0.110	<0.010	0.110	0.110	<0.010	<0.20
APR 05...		6.7	419	<1	<1	--	--	<0.010	--	<0.050	0.020	<0.20
DATE		PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 13...		<0.010	<0.010	1.3	1	38	<0.5	<1.0	<5	<3	<10	<3
APR 05...		<0.010	<0.010	1.6	<1	39	<0.5	<1.0	<5	<3	<10	<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)
JAN 13...		<10	4	7	<0.1	<10	<10	<1	<1.0	240	<6	5
APR 05...		<10	<4	5	<0.1	<10	<10	<1	<1.0	240	<6	8

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 March 9, 1993, (discontinued).

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 benchmark).

REMARKS.--No estimated daily discharges. Records fair. Station is equipped with an automatic water-quality sampler. Recording rain gage in the watershed above this station (discontinued Sept. 30, 1989).

PEAK DISCHARGES FOR PERIOD OCTOBER 1992 TO MARCH 1993.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	2315	123	3.10	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.6	.00	.01	2.6	2.1	---	---	---	---	---	---
2	.00	.00	.00	.00	2.6	1.6	---	---	---	---	---	---
3	.00	.00	.00	.00	3.0	1.3	---	---	---	---	---	---
4	.00	.00	.00	.17	2.5	1.2	---	---	---	---	---	---
5	.00	.00	.00	.00	5.5	1.0	---	---	---	---	---	---
6	.00	.00	.00	.05	4.1	.97	---	---	---	---	---	---
7	.00	.00	.00	.14	3.9	.97	---	---	---	---	---	---
8	.00	.00	.00	.07	3.6	.99	---	---	---	---	---	---
9	.00	.00	.24	.89	9.8	---	---	---	---	---	---	---
10	.00	.00	.00	.29	13	---	---	---	---	---	---	---
11	.00	.00	.00	.28	8.2	---	---	---	---	---	---	---
12	.00	.00	.00	.28	6.0	---	---	---	---	---	---	---
13	.00	.00	.00	.35	5.6	---	---	---	---	---	---	---
14	.00	.00	2.2	.31	5.1	---	---	---	---	---	---	---
15	.00	.00	15	.31	5.2	---	---	---	---	---	---	---
16	.00	.00	.72	.31	4.2	---	---	---	---	---	---	---
17	.00	.00	.26	.31	3.9	---	---	---	---	---	---	---
18	.00	.00	.07	.31	3.7	---	---	---	---	---	---	---
19	.00	23	.01	16	3.5	---	---	---	---	---	---	---
20	.00	6.0	.06	12	3.5	---	---	---	---	---	---	---
21	.00	.00	.01	6.5	3.2	---	---	---	---	---	---	---
22	.00	.00	.00	4.7	2.7	---	---	---	---	---	---	---
23	.00	.00	.04	4.0	2.6	---	---	---	---	---	---	---
24	.00	.00	.00	3.1	2.7	---	---	---	---	---	---	---
25	.00	.00	.00	2.9	2.5	---	---	---	---	---	---	---
26	.00	.00	.00	2.8	1.8	---	---	---	---	---	---	---
27	.00	.00	.00	2.7	1.7	---	---	---	---	---	---	---
28	.00	.00	.00	2.8	2.8	---	---	---	---	---	---	---
29	.02	.00	.00	3.4	---	---	---	---	---	---	---	---
30	.01	.00	.00	2.6	---	---	---	---	---	---	---	---
31	.00	---	.01	2.6	---	---	---	---	---	---	---	---
TOTAL	0.03	30.60	18.62	70.18	119.5	---	---	---	---	---	---	---
MEAN	.001	1.02	.60	2.26	4.27	---	---	---	---	---	---	---
MAX	.02	23	15	16	13	---	---	---	---	---	---	---
MIN	.00	.00	.00	.00	1.7	---	---	---	---	---	---	---
AC-FT	.06	61	37	139	237	---	---	---	---	---	---	---
CFSM	.00	.16	.10	.36	.68	---	---	---	---	---	---	---
IN.	.00	.18	.11	.41	.71	---	---	---	---	---	---	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	3.16	3.25	6.90	3.93	4.93	4.34	4.04	12.0	12.9	1.05	.52	1.03			
MAX	21.9	32.4	57.2	15.5	26.6	13.8	20.1	29.0	88.7	4.83	3.89	5.76			
(WY)	1987	1986	1991	1992	1992	1979	1992	1992	1981	1981	1991	1983			
MIN	.000	.000	.000	.000	.000	.17	.15	.017	.19	.000	.000	.000			
(WY)	1979	1980	1990	1990	1982	1982	1988	1984	1990	1980	1980	1984			

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL	2905.29	
ANNUAL MEAN	7.94	4.91
HIGHEST ANNUAL MEAN		12.8
LOWEST ANNUAL MEAN		.34
HIGHEST DAILY MEAN	328	977
LOWEST DAILY MEAN	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00
INSTANTANEOUS PEAK FLOW		4750
INSTANTANEOUS PEAK STAGE		9.97
ANNUAL RUNOFF (AC-FT)	5760	3560
ANNUAL RUNOFF (CFSM)	1.26	.78
ANNUAL RUNOFF (INCHES)	17.16	10.59
10 PERCENT EXCEEDS	16	8.5
50 PERCENT EXCEEDS	.67	.22
90 PERCENT EXCEEDS	.00	.00

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
JAN													
10...	1225	4.4	700	8.1	11.0	5	0.70	12.0	111	0.6	<10	160	
19...	0510	65	262	--	--	15	59	--	--	15	260	K1600	
19...	0540	84	232	--	--	20	66	--	--	8.8	65	8000	
19...	0555	71	224	--	--	20	42	--	--	5.8	39	10000	
19...	0614	65	227	7.4	--	20	29	--	--	2.8	30	K6400	
19...	0633	51	235	7.5	--	25	24	--	--	3.7	27	11000	
19...	0753	26	298	7.7	--	25	21	--	--	1.9	17	K6800	
MAR													
17...	1018	1.2	690	7.8	16.0	3	0.80	7.6	78	--	<10	48	
DATE		STREP-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN													
10...	K28	340	99	94	26	15	0.4	1.5	240	110	21	0.20	
19...	20000	--	--	--	--	--	--	--	--	--	--	--	--
19...	37000	--	--	--	--	--	--	--	--	--	--	--	--
19...	35000	--	--	--	--	--	--	--	--	--	--	--	--
19...	38000	--	--	--	--	--	--	--	80	--	--	--	--
19...	34000	--	--	--	--	--	--	--	89	--	--	--	--
19...	30000	--	--	--	--	--	--	--	120	--	--	--	--
MAR													
17...	95	340	46	93	25	15	0.4	1.1	290	63	22	0.10	
DATE		SILICA, DIS-SOLVED (MG/L AS SI02)	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)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (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 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)
JAN													
10...	4.8	419	<1	<1	--	--	--	--	0.020	--	<0.050	<0.010	<0.20
19...	--	--	194	60	134	0.140	0.140	0.020	0.160	0.160	0.020	0.020	<0.20
19...	--	--	180	47	133	0.130	0.130	0.020	0.150	0.150	0.020	0.020	<0.20
19...	--	--	111	19	92	0.150	0.150	0.020	0.170	0.170	0.020	0.020	<0.20
19...	--	--	55	41	14	0.170	--	<0.010	0.170	0.170	0.020	0.020	<0.20
19...	--	--	59	36	23	0.150	0.150	0.020	0.170	0.170	0.020	0.020	<0.20
19...	--	--	39	5	34	0.150	0.150	0.020	0.170	0.170	0.030	0.030	<0.20
MAR													
17...	4.8	403	<1	<1	--	1.10	--	<0.010	1.10	1.10	0.010	0.010	<0.20
DATE		PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
JAN													
10...	0.150	0.010	0.03	2.1	<1	45	<0.5	<1.0	<5	<3	<10	<3	
19...	0.190	0.100	0.31	25	--	--	--	--	--	--	--	--	--
19...	0.120	0.040	0.12	16	--	--	--	--	--	--	--	--	--
19...	0.200	0.050	0.15	8.7	--	--	--	--	--	--	--	--	--
19...	0.210	0.040	0.12	6.8	--	--	--	--	--	--	--	--	--
19...	0.160	0.040	0.12	4.8	--	--	--	--	--	--	--	--	--
19...	0.210	0.040	0.12	4.1	--	--	--	--	--	--	--	--	--
MAR													
17...	<0.010	<0.010	--	0.6	<1	42	<0.5	<1.0	<5	<3	<10	<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)	
JAN													
10...	<10	5	4	<0.1	<10	<10	<1	<1.0	430	<6	5		
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
MAR													
17...	<10	5	11	1.5	<10	<10	<1	<1.0	360	<6	<3		

COLORADO RIVER BASIN

08159000 ONION CREEK AT U.S. HIGHWAY 183, 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.

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. In 1924-30 station was published as "near Del Valle".

Water-quality records.--Chemical and biochemical analyses: October 1976 to September 1988. Pesticide analyses: October 1976 to September 1986. Sediment analyses: October 1976 to September 1982. Radiochemical analyses: January 1980.

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.--Record good. Flow is slightly regulated by several small ponds on main channel and tributaries above station. One recording rain gage in the watershed. Several observations of water temperature were made during the year.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	0100	651	7.91	No peak above base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	57	3.3	8.8	26	61	10	12	8.4	3.4	.00	.00
2	1.2	14	3.3	8.3	23	40	9.5	37	6.6	3.2	.00	.00
3	1.1	3.4	3.2	8.3	82	31	9.5	17	6.0	3.3	.00	.00
4	1.0	1.7	3.2	9.1	78	27	19	7.8	5.7	2.9	.00	.00
5	.97	1.4	3.2	10	77	24	13	75	5.3	2.3	.00	.00
6	.91	1.0	3.6	9.4	60	23	9.9	140	5.0	1.9	.00	.00
7	.79	.95	3.6	9.1	43	19	48	43	4.7	1.7	.00	.00
8	.75	1.0	3.8	9.1	37	14	35	27	4.4	1.2	.00	.00
9	.81	1.2	26	36	56	14	19	88	4.1	1.1	.00	.00
10	.94	1.2	10	31	283	14	14	188	5.4	.83	.00	.00
11	.91	1.2	5.2	e16	196	15	12	46	6.4	.64	.00	.00
12	.80	3.4	4.7	13	123	23	11	28	5.9	.58	.00	.00
13	.65	3.0	4.5	11	98	28	10	20	4.9	.47	.00	.00
14	.60	2.1	41	10	84	21	17	15	4.4	.33	.00	.00
15	.85	1.8	204	9.6	77	18	18	13	3.8	.06	.00	.00
16	.48	1.7	53	8.9	82	20	9.9	11	3.5	.00	.00	.00
17	.37	1.3	23	9.0	61	17	8.7	9.4	3.1	.00	.00	.00
18	.52	1.2	13	9.3	50	15	8.2	8.6	2.9	.00	.00	.00
19	.58	87	10	247	47	20	7.9	7.9	3.2	.00	.00	.00
20	.58	117	9.1	251	47	101	7.8	7.2	8.9	.00	.00	.00
21	.58	24	9.1	124	47	35	7.4	6.6	39	.00	.00	.00
22	.55	9.2	8.3	70	39	27	6.8	6.4	19	.00	.00	.00
23	.63	4.8	7.8	49	33	25	6.8	52	9.7	.00	.00	.00
24	.70	4.7	7.1	36	30	21	6.8	37	10	.00	.00	.00
25	.58	4.5	6.6	28	30	19	6.8	24	6.4	.00	.00	.00
26	.58	3.7	6.2	25	27	31	6.4	17	113	.00	.00	.00
27	.51	3.3	6.4	23	23	20	5.9	13	31	.00	.00	.00
28	.41	3.0	6.2	21	31	16	5.9	11	17	.00	.00	.00
29	.41	3.0	6.6	45	---	15	68	9.5	7.1	.00	.00	.00
30	36	3.2	9.1	50	---	14	24	10	4.5	.00	.00	.00
31	6.2	---	8.5	31	---	12	---	17	---	.00	.00	---
TOTAL	63.06	365.95	512.6	1225.9	1890	780	442.2	1004.4	359.3	23.91	0.00	0.00
MEAN	2.03	12.2	16.5	39.5	67.5	25.2	14.7	32.4	12.0	.77	.000	.000
MAX	36	117	204	251	283	101	68	188	113	3.4	.00	.00
MIN	.37	.95	3.2	8.3	23	12	5.9	6.4	2.9	.00	.00	.00
AC-FT	125	726	1020	2430	3750	1550	877	1990	713	47	.00	.00
CFSM	.01	.04	.05	.12	.21	.08	.05	.10	.04	.00	.00	.00
IN.	.01	.04	.06	.14	.22	.09	.05	.12	.04	.00	.00	.00

e Estimated

COLORADO RIVER BASIN

175

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1993, BY WATER YEAR (WY)

MEAN	43.4	29.2	110	61.6	91.7	91.1	123	207	237	36.5	8.15	9.52
MAX	282	231	1526	487	908	576	847	1767	2305	133	47.6	48.0
(WY)	1926	1986	1992	1992	1992	1992	1926	1929	1981	1981	1983	1986
MIN	.000	.56	.000	.002	1.65	1.83	2.15	1.40	.010	.000	.000	.000
(WY)	1929	1990	1990	1990	1925	1925	1925	1984	1925	1925	1925	1988

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1925 - 1993
ANNUAL TOTAL	92004.31	6667.32	
ANNUAL MEAN	251	18.3	86.1
HIGHEST ANNUAL MEAN			379
LOWEST ANNUAL MEAN			1.49
HIGHEST DAILY MEAN	5210 Mar 4	283 Feb 10	30500 May 28 1929
LOWEST DAILY MEAN	.37 Oct 17	.00 Jul 16	.00 Jun 3 1925
ANNUAL SEVEN-DAY MINIMUM	.52 Oct 16	.00 Jul 16	.00 Jun 3 1925
INSTANTANEOUS PEAK FLOW		651 May 10	76000 May 28 1929
INSTANTANEOUS PEAK STAGE		7.91 May 10	a/ 30.50 Dec 21 1991
INSTANTANEOUS LOW FLOW		.00 July 15	.00 at times
ANNUAL RUNOFF (AC-FT)	182500	13220	62380
ANNUAL RUNOFF (CFSM)	.78	.057	.27
ANNUAL RUNOFF (INCHES)	10.66	.77	3.64
10 PERCENT EXCEEDS	581	47	139
50 PERCENT EXCEEDS	55	6.4	6.8
90 PERCENT EXCEEDS	1.2	.00	.00

a/ A stage of 30.50 ft also occurred on May 28, 1929.

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX

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, 0.3 mi upstream from Gills Branch, 1.2 mi downstream from Piney Creek, and at mile 236.6.

DRAINAGE AREA.--39,979 mi², approximately, of which 11,403 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1960 to current year. October 1973 to September 1975, daily discharges estimated by hydrographic comparison with streamflow stations 08158000 and 08159500.

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

GAGE.--Water-stage recorder. Datum of gage is 307.38 ft above National Geodetic Vertical Datum of 1929. Prior to May 10, 1960, nonrecording gage at a site 400 ft upstream from present site and at same datum. May 10, 1960, to Sept. 30, 1973, and Oct. 1, 1975, to Oct. 28, 1986, at a site 400 ft upstream from present site and at same datum.

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 OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 60.3 ft July 7, or 8, 1869. Flood of June 16, 1935, reached a stage of 57.0 ft, and flood of Dec. 4, 1913, reached a stage of 53.3 ft, from information by local resident.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,600 ft³/s Oct. 29, 1960, (gage-height, 34.45 ft), maximum gage-height 37.48 ft Dec. 22, 1991; minimum daily, 75 ft³/s April 1, 1964.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	982	448	332	404	582	572	4840	892	1180	1100	2440	1130
2	1070	700	313	413	524	1100	4770	872	1160	1690	1940	1330
3	984	475	317	406	468	2240	4260	1530	1160	2460	1110	1160
4	887	356	304	406	1050	1320	4400	1030	1210	2550	1000	1190
5	825	342	295	959	873	1230	3600	1280	1110	2580	1720	1180
6	699	333	333	2390	1230	1130	3710	2880	1020	1940	2400	1160
7	1190	338	397	2590	844	515	3740	2610	1010	2110	2870	1180
8	988	335	399	2430	933	474	4460	2680	1040	1750	2530	1010
9	901	302	413	2470	848	1020	3900	3720	1070	1640	2060	1420
10	788	324	486	3300	996	3770	3060	7840	1340	1540	2010	1540
11	790	318	414	2640	2190	3860	2910	4890	1710	1600	1900	986
12	418	342	346	1250	1790	4070	1110	3640	1700	1550	1850	1350
13	332	353	344	596	1670	5550	718	2020	1920	1750	1830	1300
14	329	330	390	452	1920	5150	653	3680	1830	1950	1790	1350
15	309	308	1910	417	2050	4140	1160	3310	1880	1830	1790	1300
16	332	304	4190	2050	1560	4260	1170	3420	1840	2080	1710	798
17	341	309	1020	4220	1360	3760	2500	3500	2070	2290	1850	933
18	335	303	1260	4320	1120	1410	4710	2420	2000	2400	1770	1350
19	343	528	1450	3110	979	822	4870	2500	2020	2320	1850	1160
20	340	2520	2430	6350	1080	2560	3940	3690	1950	2240	1760	1190
21	389	1550	3000	3580	1150	2600	2890	3100	2170	2010	1890	1220
22	702	614	2900	2330	1740	2900	2750	1060	1670	2040	1710	1290
23	922	473	1620	1410	1230	3820	2750	843	1530	2710	1720	1360
24	947	417	1080	682	565	4250	3290	1390	1060	2740	1390	1420
25	554	389	2490	564	477	4420	3280	1940	631	1710	1690	1290
26	374	362	2490	510	626	4990	3430	1830	937	1910	1750	1290
27	355	348	2480	477	490	4850	2780	1810	2610	1930	1720	1190
28	423	334	2450	555	429	1850	1360	1320	1380	2170	1730	1210
29	336	330	1310	662	---	1070	1230	1180	1260	2120	2110	1190
30	354	320	559	1210	---	3310	1860	1090	1190	2140	1690	1040
31	609	---	465	717	---	4530	---	1160	---	2130	1250	---
TOTAL	19148	14705	38187	53870	30774	87703	90101	75127	44658	62980	56830	36517
MEAN	618	490	1232	1738	1099	2829	3003	2423	1489	2032	1833	1217
MAX	1190	2520	4190	6350	2190	5550	4870	7840	2610	2740	2870	1540
MIN	309	302	295	404	429	474	653	843	631	1100	1000	798
AC-FT	37980	29170	75740	106900	61040	174000	178700	149000	88580	124900	112700	72430

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1993, BY WATER YEAR (WY)

MEAN	1423	1338	1588	1885	2320	2173	2542	3530	4382	2411	1956	1788
MAX	6380	11330	14770	17490	29140	16910	11080	10420	23620	5506	3705	4930
(WY)	1974	1975	1992	1992	1992	1992	1977	1975	1987	1961	1961	1974
MIN	291	94.6	111	109	138	131	565	1471	1489	1302	1182	1048
(WY)	1965	1964	1964	1964	1964	1964	1962	1962	1993	1967	1964	1971

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1960 - 1993
ANNUAL TOTAL	2900520	610600	
ANNUAL MEAN	7925	1673	2276
HIGHEST ANNUAL MEAN			9073
LOWEST ANNUAL MEAN			828
HIGHEST DAILY MEAN	45000	7840	65800
LOWEST DAILY MEAN	295	295	75
ANNUAL SEVEN-DAY MINIMUM	316	316	84
INSTANTANEOUS PEAK FLOW		10400	79600
INSTANTANEOUS PEAK STAGE		10.85	37.48
INSTANTANEOUS LOW FLOW		285	75
ANNUAL RUNOFF (AC-FT)	5753000	1211000	1649000
10 PERCENT EXCEEDS	29000	3590	4260
50 PERCENT EXCEEDS	3280	1330	1630
90 PERCENT EXCEEDS	355	355	230

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.--Since 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 and probe fouling. 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, 994 microsiemens Nov. 5, 1990; minimum, 124 microsiemens Jan. 9, 1991.

pH: Maximum, 9.2 units Feb. 13, 14, 1988, Mar. 13, 1989; minimum, 7.1 units May 8, 1990.

WATER TEMPERATURE: Maximum, 33.5°C Aug. 12, 1987; minimum, 0.0°C Dec. 23, 24, 1989.

DISSOLVED OXYGEN: Maximum, 19.5 mg/L Feb. 23, 1989; minimum, 3.8 mg/L May 18, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 758 microsiemens Oct. 20, 21; minimum, 352 microsiemens Dec. 16.

pH: Maximum, 8.9 units on Mar. 9; minimum, 7.4 units May 7.

WATER TEMPERATURE: Maximum, 32.0°C Aug. 4; minimum, 9.0°C Nov. 28, Dec. 7.

DISSOLVED OXYGEN: Maximum, 18.9 mg/L Feb. 26; minimum, 5.9 mg/L Jun. 27.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)
NOV 13...	0900	471	706	8.2	16.0	9.1	92	2.3	260	89
JAN 29...	1030	770	675	8.2	12.0	11.4	106	0.7	240	59
MAR 25...	0915	4160	509	8.2	17.0	9.4	98	0.9	200	58
MAY 19...	0830	964	549	8.0	23.0	8.0	94	0.8	210	47
JUL 12...	0820	1660	546	8.1	28.5	7.0	91	1.0	220	55
SEP 08...	0930	680	560	8.1	26.5	7.9	99	0.6	220	54
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 DIS FIX END FIELD CAC03 (MG/L)	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)
NOV 13...	71	20	43	1	5.7	170	58	68	0.50	9.6
JAN 29...	66	18	40	1	4.5	180	57	58	0.40	9.5
MAR 25...	50	18	28	0.9	3.7	140	38	55	0.20	9.1
MAY 19...	54	19	30	0.9	3.8	170	42	50	0.30	8.6
JUL 12...	54	20	31	0.9	4.2	160	38	52	0.30	9.0
SEP 08...	55	21	35	1	3.7	170	40	54	0.30	10
DATE	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)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	
NOV 13...	378	6.17	--	0.030	--	6.20	--	0.070	--	
JAN 29...	380	3.97	3.97	--	0.030	4.00	4.00	--	0.040	
MAR 25...	290	0.680	0.680	--	0.010	0.690	0.690	--	0.030	
MAY 19...	312	1.00	--	--	<0.010	1.00	1.00	--	0.050	
JUL 12...	312	1.30	--	--	<0.010	1.30	1.30	--	0.060	
SEP 08...	327	1.29	1.29	--	0.010	1.30	1.30	--	0.060	

08159200 COLORADO RIVER AT BASTROP, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN. ORGANIC TOTAL (MG/L AS N)	NITRO- GEN. ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
NOV 13...	0.53	--	--	0.60	0.840	--	--	0.870	--
JAN 29...	--	0.26	0.30	--	--	0.440	0.430	--	1.3
MAR 25...	--	0.27	0.30	--	--	0.090	0.080	--	0.25
MAY 19...	--	0.15	0.20	--	--	0.160	0.150	--	0.46
JUL 12...	--	0.54	0.60	--	--	0.200	0.180	--	0.55
SEP 08...	--	1.1	1.2	--	--	0.230	0.210	--	0.64
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. 1992	19148	629	346	17900	66	3400	55	2850	220
NOV. 1992	14705	589	323	12800	59	2330	50	1990	210
DEC. 1992	38187	521	285	29400	46	4790	42	4280	200
JAN. 1993	53870	523	286	41600	47	6800	42	6080	200
FEB. 1993	30774	561	307	25500	53	4380	46	3830	210
MAR. 1993	87703	531	290	68700	47	11200	42	10000	200
APR. 1993	90101	514	281	68300	45	10900	40	9840	200
MAY 1993	75127	511	279	56600	44	8990	40	8140	190
JUNE 1993	44658	530	290	34900	47	5710	42	5100	200
JULY 1993	62980	525	287	48700	46	7890	42	7080	200
AUG. 1993	56830	547	299	45900	50	7700	44	6810	200
SEPT 1993	36517	557	305	30100	52	5110	46	4490	210
TOTAL	610600	**	**	480000	**	79200	**	70500	**
WTD.AVG.	1673	533	291	**	48	**	43	**	200

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	582	566	573	676	652	663	672	660	666	604	578	590
2	585	574	579	664	608	647	682	670	677	640	604	622
3	591	576	582	608	580	588	684	676	680	662	640	651
4	588	576	580	618	596	612	676	666	670	668	660	664
5	611	588	602	616	580	602	668	664	666	672	642	664
6	624	610	616	580	568	571	670	664	666	642	542	570
7	624	591	618	604	572	584	690	670	679	562	534	544
8	591	566	571	646	604	627	692	688	690	536	532	533
9	588	569	577	674	646	658	688	664	673	532	526	531
10	598	588	593	698	674	686	664	634	648	546	486	525
11	618	590	606	704	698	703	634	626	630	514	488	505
12	628	618	621	704	682	690	628	620	625	532	504	518
13	644	628	636	692	682	688	642	624	631	552	532	541
14	656	644	651	700	690	697	644	594	623	582	552	568
15	682	656	668	700	696	698	626	474	579	612	582	596
16	718	682	697	698	692	695	492	352	397	668	540	625
17	734	718	724	696	694	695	428	402	417	542	522	533
18	748	734	741	702	692	698	510	428	460	526	522	524
19	756	748	751	692	576	653	528	506	517	522	508	515
20	758	748	755	666	416	556	528	498	505	532	370	440
21	758	752	756	502	416	461	510	500	505	434	360	392
22	754	732	747	476	442	454	500	490	493	498	434	464
23	732	618	679	468	442	452	504	496	499	510	498	504
24	618	596	603	500	468	485	538	504	514	532	510	521
25	608	596	600	536	500	518	568	520	537	566	532	548
26	620	608	615	576	536	557	528	522	525	610	566	587
27	626	620	622	612	576	596	526	522	524	636	610	624
28	648	626	636	638	612	627	524	522	523	644	634	639
29	678	648	663	656	638	646	534	522	527	680	634	662
30	684	668	677	662	654	658	554	534	544	674	580	610
31	682	676	680	---	---	---	578	554	568	597	588	592
MONTH	758	566	646	704	416	615	692	352	576	680	360	561

COLORADO RIVER MAIN STEM

179

08159200 COLORADO RIVER AT BASTROP, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	611	594	605	632	618	624	510	506	508	554	516	529
2	622	607	611	668	624	645	508	504	505	574	520	544
3	633	622	629	642	556	580	508	502	505	638	574	600
4	645	581	619	564	556	561	506	440	478	594	504	546
5	586	567	579	582	560	572	506	478	496	554	398	495
6	567	532	549	584	566	572	524	502	510	534	396	471
7	567	532	549	586	574	581	518	500	507	538	468	517
8	576	566	569	590	578	584	518	482	498	514	496	505
9	592	576	587	666	590	611	512	486	498	526	510	522
10	583	561	572	666	534	568	520	500	509	530	372	436
11	578	472	530	534	524	531	532	514	520	480	376	431
12	522	470	494	526	518	524	530	516	521	512	480	502
13	542	522	531	520	514	516	556	530	543	532	510	517
14	558	534	546	526	514	518	578	548	567	560	530	538
15	568	556	562	526	512	520	624	578	600	536	526	532
16	578	554	562	522	520	521	624	548	588	538	530	534
17	566	532	553	532	522	526	564	518	549	536	522	532
18	566	548	554	560	532	545	518	500	504	540	528	534
19	574	560	570	570	544	562	500	496	498	---	---	e543
20	590	572	580	608	540	571	500	494	497	---	---	e513
21	574	566	570	554	512	523	514	498	505	516	510	513
22	570	554	565	530	512	521	518	502	509	540	516	527
23	554	536	541	522	514	519	544	506	524	544	528	539
24	560	542	551	520	518	519	546	526	535	602	544	574
25	572	560	567	518	504	511	546	526	533	598	496	538
26	608	570	589	524	490	501	540	522	529	526	510	518
27	644	608	629	504	496	499	544	522	532	528	516	524
28	658	632	647	520	502	509	544	528	535	532	468	519
29	---	---	---	556	520	533	570	540	553	574	464	538
30	---	---	---	596	518	548	574	554	566	564	528	552
31	---	---	---	530	510	515	---	---	---	584	564	576
MONTH	658	470	572	668	490	546	624	440	524	638	372	524

e Estimated

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	572	556	561	---	---	e530	544	536	540	586	552	568
2	562	548	555	---	---	e543	550	536	541	620	556	570
3	556	552	554	---	---	e543	556	550	553	558	538	549
4	556	548	552	---	---	e520	580	550	563	598	554	568
5	560	556	557	---	---	e522	586	552	575	588	556	566
6	564	560	561	---	---	e525	552	540	547	600	554	566
7	572	564	570	---	---	e539	540	530	535	578	548	567
8	572	566	570	---	---	e535	530	528	529	568	556	562
9	568	564	566	---	---	e542	538	526	533	570	560	564
10	566	542	559	---	---	e550	540	536	538	562	552	554
11	560	538	550	---	---	e550	550	528	539	564	554	559
12	542	536	540	584	530	542	560	540	545	584	558	570
13	540	530	537	532	526	529	564	532	547	558	544	551
14	538	528	535	526	522	523	564	538	547	546	538	542
15	536	530	535	530	524	527	554	530	546	548	538	542
16	540	530	534	530	506	518	562	546	551	556	538	546
17	538	520	532	506	502	504	558	540	550	572	554	561
18	530	514	525	504	502	502	552	540	546	582	562	572
19	530	510	521	504	500	501	552	536	546	562	550	553
20	526	498	512	506	500	501	554	542	547	566	552	558
21	532	500	516	516	502	507	560	534	547	562	552	557
22	524	484	506	520	506	511	558	544	549	556	550	552
23	508	458	485	526	502	511	562	546	553	556	548	552
24	546	496	523	516	496	506	566	548	554	562	550	553
25	574	546	557	528	494	505	578	550	559	556	548	551
26	602	540	565	---	---	e517	556	548	551	556	542	549
27	626	400	490	---	---	e542	592	542	555	550	538	545
28	500	452	477	540	536	539	578	534	550	558	538	548
29	498	462	478	540	534	537	590	544	556	554	546	550
30	526	474	500	542	538	540	564	540	549	562	550	556
31	---	---	---	544	538	541	566	538	556	---	---	---
MONTH	626	400	534	584	494	526	592	526	548	620	538	557
YEAR	758	352	561									

e Estimated

COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.1	8.2	8.1	8.2	8.4	7.9	8.2	8.0	8.0	8.0
2	8.2	8.1	8.1	8.2	8.1	8.2	8.4	8.2	8.3	8.0	8.0	8.0
3	8.2	8.0	8.1	8.1	8.0	8.1	8.5	8.2	8.3	8.0	7.9	8.0
4	8.2	8.0	8.1	8.2	8.1	8.2	8.4	8.2	8.3	8.0	7.8	7.9
5	8.2	8.1	8.1	8.2	8.1	8.2	8.4	8.2	8.3	8.0	7.9	7.9
6	8.2	8.1	8.1	8.2	8.1	8.2	8.4	8.2	8.3	8.0	7.9	8.0
7	8.2	8.1	8.2	8.2	8.1	8.2	8.3	8.2	8.3	8.1	8.0	8.0
8	8.3	8.1	8.2	8.2	8.1	8.2	8.2	8.1	8.2	8.3	8.0	8.2
9	8.2	8.1	8.2	8.2	8.1	8.2	8.2	8.1	8.2	8.3	8.2	8.2
10	8.1	7.9	8.1	8.2	8.2	8.2	8.2	8.0	8.1	8.3	8.2	8.2
11	8.1	7.8	8.0	8.2	8.1	8.2	8.1	7.8	8.0	8.3	8.2	8.2
12	8.1	7.9	8.0	8.3	8.2	8.2	8.0	7.7	7.8	8.3	8.3	8.3
13	8.1	7.9	8.0	8.3	8.2	8.3	7.7	7.5	7.6	8.3	8.2	8.2
14	8.1	7.9	8.0	8.4	8.2	8.3	7.7	7.6	7.7	8.3	8.2	8.2
15	8.1	7.9	8.0	8.4	8.2	8.3	8.0	7.7	7.8	8.3	8.2	8.2
16	8.0	7.9	8.0	8.5	8.3	8.4	8.0	8.0	8.0	8.3	8.2	8.2
17	8.1	7.9	8.0	8.6	8.3	8.4	8.0	7.8	7.9	8.4	8.3	8.3
18	8.1	7.9	8.0	8.6	8.4	8.5	8.0	7.8	7.9	8.5	8.3	8.4
19	8.2	7.9	8.0	8.5	8.1	8.3	8.1	7.9	8.0	8.5	8.4	8.4
20	8.2	7.9	8.1	8.3	8.1	8.2	8.2	8.1	8.2	8.5	8.3	8.3
21	8.2	8.0	8.1	8.3	8.2	8.2	8.2	8.1	8.1	8.3	8.3	8.3
22	8.1	7.9	8.0	8.2	8.2	8.2	8.1	8.1	8.1	8.4	8.3	8.3
23	8.4	7.8	8.2	8.2	8.1	8.2	8.1	8.0	8.1	8.4	8.3	8.3
24	8.4	8.3	8.3	8.2	8.1	8.1	8.0	8.0	8.0	8.3	8.3	8.3
25	8.4	8.3	8.3	8.1	8.1	8.1	8.1	8.0	8.1	8.4	8.2	8.3
26	8.4	8.3	8.3	8.2	8.1	8.1	8.0	8.0	8.0	8.4	8.3	8.3
27	8.4	8.3	8.3	8.2	8.1	8.1	8.0	8.0	8.0	8.3	8.3	8.3
28	8.3	8.1	8.2	8.1	8.1	8.1	8.1	8.0	8.0	8.3	8.2	8.3
29	8.3	8.1	8.2	8.1	8.0	8.1	8.0	7.9	8.0	8.3	8.1	8.2
30	8.2	8.1	8.2	8.0	8.0	8.0	7.9	7.9	7.9	8.1	8.1	8.1
31	8.2	8.1	8.2	---	---	---	8.0	7.9	7.9	8.1	8.1	8.1
MONTH	8.4	7.8	8.1	8.6	8.0	8.2	8.5	7.5	8.1	8.5	7.8	8.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.1	8.1	8.1	8.3	8.2	8.2	8.3	8.2	8.2	7.8	7.6	7.7
2	8.2	8.1	8.1	8.7	8.1	8.3	8.3	8.2	8.3	7.9	7.5	7.7
3	8.1	8.1	8.1	8.2	7.9	8.1	8.4	8.2	8.3	7.8	7.7	7.8
4	8.1	8.1	8.1	8.4	8.1	8.2	8.3	8.1	8.2	7.8	7.7	7.8
5	8.1	8.0	8.1	8.5	8.2	8.3	8.3	8.2	8.3	7.8	7.6	7.6
6	8.1	8.0	8.1	8.7	8.2	8.4	8.3	8.2	8.3	7.6	7.5	7.6
7	8.1	8.1	8.1	8.7	8.2	8.5	8.3	8.2	8.2	7.6	7.4	7.5
8	8.2	8.1	8.2	8.8	8.3	8.6	8.2	8.1	8.2	7.6	7.5	7.6
9	8.2	8.1	8.1	8.9	8.2	8.6	8.3	8.1	8.2	7.9	7.6	7.7
10	8.3	8.0	8.1	8.2	8.0	8.2	8.3	8.2	8.3	7.8	7.6	7.7
11	8.2	8.0	8.1	8.3	8.2	8.3	8.3	8.3	8.3	7.7	7.6	7.7
12	8.1	8.0	8.1	8.4	8.3	8.4	8.3	8.0	8.1	7.8	7.7	7.7
13	8.2	8.1	8.1	8.4	8.4	8.4	8.1	8.0	8.1	7.8	7.5	7.7
14	8.2	8.1	8.2	8.5	8.4	8.4	8.1	8.0	8.0	8.1	7.8	8.0
15	8.2	8.2	8.2	8.5	8.4	8.4	8.3	8.0	8.1	8.0	8.0	8.0
16	8.2	8.1	8.2	8.4	8.3	8.4	8.3	8.1	8.2	8.2	8.0	8.1
17	8.3	8.1	8.2	8.3	8.3	8.3	8.3	8.0	8.1	8.3	8.1	8.2
18	8.3	8.2	8.2	8.3	8.1	8.2	8.3	8.2	8.2	8.2	8.1	8.2
19	8.3	8.2	8.3	8.2	8.1	8.1	8.3	8.2	8.3	---	---	---
20	8.3	8.2	8.2	8.1	8.0	8.0	8.4	8.2	8.3	---	---	---
21	8.3	8.2	8.2	8.1	8.0	8.0	8.3	8.2	8.3	8.4	8.3	8.4
22	8.3	8.2	8.3	8.2	8.0	8.1	8.4	8.1	8.3	8.4	8.3	8.4
23	8.4	8.2	8.3	8.2	8.2	8.2	8.3	8.1	8.2	8.4	8.2	8.3
24	8.3	8.1	8.2	8.3	8.2	8.3	8.1	8.0	8.1	8.3	8.2	8.2
25	8.2	8.0	8.1	8.2	8.1	8.2	8.0	7.9	8.0	8.2	8.1	8.1
26	8.4	8.0	8.2	8.1	8.0	8.1	8.1	7.9	8.0	8.2	8.0	8.1
27	8.4	8.1	8.3	8.1	8.0	8.1	8.1	8.0	8.1	8.1	7.9	8.0
28	8.4	8.2	8.3	8.1	7.9	8.0	8.1	7.9	8.0	8.2	8.0	8.1
29	---	---	---	8.0	7.8	7.9	8.0	7.9	7.9	8.1	7.9	8.0
30	---	---	---	8.1	7.9	8.0	7.9	7.8	7.9	8.2	7.9	8.1
31	---	---	---	8.2	8.0	8.1	---	---	---	8.3	8.2	8.2
MONTH	8.4	8.0	8.2	8.9	7.8	8.2	8.4	7.8	8.2	8.4	7.4	7.9

COLORADO RIVER MAIN STEM

181

08159200 COLORADO RIVER AT BASTROP, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.3	8.2	8.2	8.3	8.2	8.2	8.2	8.1	8.1	8.1	8.1	8.1
2	8.4	8.2	8.3	8.3	8.2	8.3	8.2	8.1	8.1	8.1	8.1	8.1
3	8.5	8.3	8.4	8.3	8.2	8.3	8.2	8.1	8.1	8.1	7.9	8.0
4	8.5	8.4	8.4	8.3	8.2	8.3	8.3	8.1	8.2	8.1	8.0	8.0
5	8.5	8.4	8.4	8.3	8.3	8.3	8.3	8.1	8.2	8.1	8.0	8.1
6	8.5	8.3	8.4	8.4	8.2	8.4	8.2	8.2	8.2	8.1	8.0	8.1
7	8.5	8.2	8.4	8.4	8.3	8.4	8.2	8.1	8.2	8.1	8.0	8.1
8	8.4	8.2	8.3	8.4	8.3	8.4	8.2	8.1	8.2	8.2	8.1	8.2
9	8.4	8.2	8.3	8.5	8.4	8.4	8.5	8.2	8.3	8.2	8.2	8.2
10	8.3	8.2	8.2	8.5	8.3	8.4	8.4	8.4	8.4	8.2	8.1	8.2
11	8.3	8.1	8.2	8.5	8.3	8.4	8.4	8.4	8.4	8.2	8.1	8.1
12	8.3	8.1	8.2	8.5	8.2	8.3	8.4	8.4	8.4	8.1	8.1	8.1
13	8.2	8.1	8.2	8.3	8.1	8.3	8.4	8.3	8.4	8.2	8.1	8.1
14	8.1	7.8	8.0	---	---	---	8.4	8.3	8.3	8.2	8.0	8.1
15	7.9	7.8	7.8	---	---	---	8.3	8.3	8.3	8.2	8.1	8.2
16	8.0	7.8	7.9	---	---	---	8.3	8.3	8.3	8.2	8.1	8.2
17	8.0	7.9	7.9	8.2	8.1	8.2	8.3	8.3	8.3	8.3	8.1	8.2
18	8.0	7.9	7.9	8.2	8.1	8.2	8.4	8.3	8.3	8.3	8.2	8.2
19	8.0	7.9	7.9	8.2	8.2	8.2	8.4	8.3	8.3	8.3	8.2	8.2
20	7.9	7.9	7.9	8.2	8.1	8.2	8.3	8.3	8.3	8.3	8.2	8.2
21	8.0	7.9	7.9	8.2	8.1	8.2	8.3	8.3	8.3	8.3	8.2	8.2
22	8.0	7.9	7.9	8.2	8.2	8.2	8.3	8.2	8.3	8.3	8.2	8.2
23	7.9	7.8	7.9	8.2	8.1	8.2	8.3	8.2	8.3	8.3	8.2	8.2
24	8.1	7.8	8.0	8.1	8.0	8.1	8.3	8.2	8.3	8.3	8.2	8.2
25	8.1	8.0	8.0	8.2	8.1	8.1	8.3	8.2	8.3	8.3	8.2	8.2
26	8.1	7.9	8.0	---	---	---	8.3	8.2	8.3	8.2	8.1	8.2
27	8.1	7.9	8.0	---	---	---	8.3	8.2	8.3	8.2	8.1	8.2
28	8.1	7.9	8.0	8.3	8.2	8.2	8.3	8.2	8.3	8.3	8.1	8.2
29	8.1	8.0	8.1	8.2	8.1	8.2	8.3	8.1	8.2	8.3	8.2	8.2
30	8.2	8.1	8.2	8.2	8.1	8.1	8.2	8.1	8.2	8.4	8.2	8.3
31	---	---	---	8.2	8.1	8.2	8.1	8.1	8.1	---	---	---
MONTH	8.5	7.8	8.1	8.5	8.0	8.3	8.5	8.1	8.3	8.4	7.9	8.2
YEAR	8.9	7.4	8.2									

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	23.5	21.0	22.0	25.0	23.5	24.0	13.5	11.5	12.5	16.5	12.0	14.0
2	22.5	20.0	21.5	23.5	21.0	22.0	13.5	11.5	12.5	12.0	11.5	12.0
3	23.5	20.5	22.0	21.5	20.0	21.0	13.0	11.5	12.5	14.0	12.0	13.0
4	25.0	21.5	23.0	20.0	16.0	17.5	13.5	12.5	13.0	14.5	13.5	14.0
5	25.0	22.5	23.5	16.0	14.5	15.0	12.5	10.0	11.0	13.5	12.5	13.0
6	24.5	22.5	23.5	15.5	14.0	14.5	10.5	9.5	10.0	13.0	12.5	13.0
7	25.0	23.0	24.0	15.0	13.0	14.0	11.0	9.0	10.0	13.5	13.0	13.0
8	24.5	22.0	23.0	16.0	14.0	15.0	11.5	10.5	11.0	14.0	13.5	13.5
9	22.5	20.5	22.0	18.0	16.0	17.0	13.5	11.5	12.5	15.0	14.0	14.5
10	24.5	22.0	23.0	19.0	18.0	18.5	13.5	11.5	12.5	14.5	12.0	13.5
11	24.5	22.5	23.5	20.0	19.0	19.5	13.5	12.0	12.5	12.0	11.0	11.5
12	24.5	21.5	23.0	20.0	18.0	19.0	14.5	12.5	13.5	12.5	11.0	11.5
13	25.0	20.5	23.0	18.0	16.0	17.0	16.0	14.5	15.5	12.0	11.0	11.5
14	25.0	22.0	23.5	17.0	15.0	16.0	16.0	13.0	14.5	11.5	11.0	11.0
15	25.5	23.5	24.5	16.0	14.0	15.5	13.0	11.0	12.0	12.5	11.0	11.5
16	25.5	24.0	24.5	17.0	15.0	16.0	12.0	11.0	11.5	12.5	11.5	12.0
17	24.0	22.0	23.0	18.0	16.0	17.0	12.5	11.0	11.5	13.0	12.0	12.5
18	23.0	22.0	22.5	19.0	17.5	18.0	12.5	10.5	11.5	13.5	12.5	13.0
19	23.0	20.0	21.5	18.5	18.0	18.5	14.0	12.5	13.5	13.0	11.0	12.0
20	23.0	21.0	22.0	19.0	17.5	18.0	14.0	12.5	13.5	11.0	10.0	10.0
21	24.0	20.5	22.5	18.5	17.0	18.0	12.5	12.0	12.0	12.5	10.0	11.0
22	23.5	22.0	23.0	17.0	15.0	16.0	13.5	12.0	13.0	13.5	12.0	13.0
23	24.0	22.0	23.0	15.5	14.5	15.0	14.5	13.5	14.0	15.0	13.5	14.0
24	24.5	22.0	23.0	16.5	15.0	16.0	14.5	13.5	14.0	14.5	12.5	13.5
25	24.5	22.5	23.5	15.0	13.5	14.5	14.0	13.5	14.0	12.5	11.0	11.5
26	25.0	22.5	24.0	13.5	11.0	12.5	13.5	13.5	13.5	11.5	9.5	10.5
27	25.0	22.5	23.5	11.5	10.0	11.0	13.5	13.0	13.5	11.5	9.5	10.5
28	24.0	22.0	23.0	11.5	9.0	10.5	15.0	13.5	14.0	12.0	10.5	11.0
29	24.5	23.0	23.5	12.0	9.5	11.0	17.0	15.0	16.0	12.0	11.5	12.0
30	24.5	23.0	24.0	12.5	11.0	12.0	18.5	17.0	17.5	11.5	10.5	11.0
31	25.5	23.5	24.5	---	---	---	19.0	16.5	18.5	12.5	10.0	11.5
MONTH	25.5	20.0	23.0	25.0	9.0	16.5	19.0	9.0	13.0	16.5	9.5	12.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	13.5	11.0	12.0	14.0	13.5	13.5	19.0	18.0	18.5	23.5	21.0	21.5
2	13.5	12.5	13.0	15.5	13.5	14.5	18.5	17.0	18.0	24.0	21.5	22.5
3	14.0	13.5	14.0	16.5	14.5	15.5	17.0	16.5	17.0	24.5	21.5	23.0
4	14.0	13.5	14.0	17.0	15.0	16.0	16.5	16.0	16.0	24.5	22.5	23.5
5	13.5	12.5	13.5	17.0	15.0	16.0	17.0	15.5	16.0	24.0	20.5	22.0
6	12.5	11.5	12.0	17.0	14.5	16.0	17.0	16.0	16.5	22.0	20.5	21.0
7	13.5	11.0	12.0	18.0	15.0	16.5	17.0	16.5	16.5	24.0	22.0	23.0
8	14.5	11.5	13.0	18.5	15.5	17.0	16.5	16.0	16.5	24.0	23.5	23.5
9	14.5	13.0	14.0	20.0	17.0	18.5	17.5	16.0	17.0	23.5	23.0	23.5
10	16.0	14.5	15.0	19.0	17.0	18.0	19.0	16.5	17.5	23.0	21.5	22.0
11	15.5	14.5	15.0	17.0	15.0	16.5	20.5	18.0	19.0	23.0	21.5	22.0
12	15.5	14.0	14.5	15.0	12.5	14.0	22.0	19.5	20.5	23.5	22.0	22.5
13	15.0	14.0	14.5	13.0	12.0	12.5	22.5	21.0	22.0	24.5	21.5	23.0
14	15.0	14.5	14.5	12.5	11.5	12.0	23.5	21.0	22.0	23.5	22.0	23.0
15	16.5	14.5	15.5	13.0	12.0	12.5	21.0	18.5	20.0	24.0	21.5	22.5
16	16.0	14.5	15.5	14.5	13.0	13.5	21.0	19.0	20.0	24.0	22.5	23.5
17	14.5	13.0	13.5	15.5	14.5	15.0	20.5	19.5	20.0	24.5	22.5	23.5
18	13.0	11.5	12.0	16.0	14.5	15.0	20.5	19.0	19.5	24.5	22.5	23.5
19	12.0	11.5	12.0	17.0	15.5	16.0	21.5	20.0	20.5	---	---	---
20	14.0	12.0	13.0	16.5	16.0	16.5	21.0	20.0	21.0	---	---	---
21	17.5	14.0	15.5	17.0	16.0	16.5	20.5	18.5	19.5	24.5	22.5	23.5
22	17.0	16.0	16.5	17.5	17.0	17.0	20.0	18.0	19.0	25.0	23.5	24.0
23	16.0	14.5	15.5	17.5	16.0	17.0	21.0	18.5	20.0	24.5	22.0	23.5
24	16.5	15.0	15.5	17.5	16.5	17.0	21.0	20.0	20.5	23.5	21.5	22.5
25	18.0	16.5	17.0	19.0	17.0	18.0	22.0	20.0	21.0	23.5	22.0	23.0
26	17.0	15.0	16.0	18.5	17.5	18.0	22.0	20.0	21.0	25.0	23.0	24.0
27	15.5	14.0	14.5	18.0	17.0	17.5	21.5	19.5	20.5	25.0	23.5	24.0
28	14.0	13.5	13.5	20.0	17.5	18.5	21.5	20.0	21.0	24.5	23.5	24.0
29	---	---	---	22.5	19.5	20.5	21.5	21.0	21.5	26.5	23.5	24.5
30	---	---	---	22.0	21.0	21.5	22.0	20.5	21.0	27.5	25.5	26.5
31	---	---	---	21.0	18.5	19.5	---	---	---	29.0	26.0	27.5
MONTH	18.0	11.0	14.0	22.5	11.5	16.5	23.5	15.5	19.5	29.0	20.5	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	29.0	26.0	27.5	31.5	29.0	30.0	31.0	29.0	30.0	30.5	28.0	29.5
2	29.5	26.5	28.0	31.0	29.0	30.0	30.5	28.5	29.5	30.5	29.0	29.5
3	30.0	27.0	28.5	30.0	29.0	29.5	31.5	29.0	30.0	29.5	28.5	29.0
4	30.0	27.5	28.5	29.0	28.0	28.5	32.0	29.0	30.5	30.0	27.5	28.5
5	30.5	28.0	29.0	29.0	27.5	28.0	31.5	29.5	30.5	29.0	26.5	28.0
6	31.0	28.5	29.5	29.5	27.5	28.5	31.0	29.5	30.0	28.5	27.0	27.5
7	30.0	28.5	29.5	30.0	28.0	29.0	29.5	28.5	29.0	28.5	26.5	27.5
8	29.5	28.0	29.0	30.0	28.0	29.0	29.5	27.5	28.5	29.0	26.5	27.5
9	29.5	27.5	28.5	30.0	28.0	29.0	30.5	28.0	29.5	29.5	27.0	28.0
10	29.0	27.5	28.0	30.5	28.0	29.5	31.0	29.0	30.0	30.0	28.0	28.5
11	28.5	27.0	28.0	30.5	28.5	29.5	31.0	28.0	30.0	30.0	28.0	29.0
12	28.5	27.0	28.0	30.5	28.5	29.5	30.5	28.0	29.5	29.0	28.0	28.5
13	28.0	27.0	27.5	30.5	28.5	29.5	31.0	28.0	29.5	28.5	27.5	28.0
14	28.5	26.5	27.5	30.0	28.0	29.0	31.0	27.5	29.5	28.0	26.0	27.0
15	29.0	27.5	28.0	30.5	28.0	29.0	31.0	28.5	29.5	26.0	24.0	25.0
16	30.0	27.5	28.5	30.0	28.5	29.5	31.0	28.0	30.0	26.0	23.0	24.5
17	29.5	27.5	28.5	30.0	28.5	29.0	31.0	28.5	30.0	26.5	24.0	25.0
18	28.0	27.0	27.5	29.5	28.0	29.0	31.0	27.0	29.5	26.5	24.5	25.5
19	27.0	26.0	26.5	29.5	28.0	28.5	31.0	29.0	30.0	28.0	26.0	26.5
20	26.0	25.5	25.5	29.5	28.0	28.5	31.0	28.5	29.5	29.5	27.0	28.0
21	26.5	25.0	25.5	30.0	28.0	29.0	30.0	28.5	29.5	30.0	28.0	28.5
22	27.5	25.5	26.5	30.0	28.0	29.0	30.0	27.0	29.0	30.0	28.0	29.0
23	28.5	26.5	27.5	29.0	28.0	28.5	30.0	28.5	29.0	30.0	28.5	29.0
24	30.0	27.5	29.0	28.5	27.0	28.0	30.5	28.0	29.0	30.0	28.5	29.0
25	31.0	28.5	29.5	29.5	27.0	28.0	30.5	28.5	29.5	30.0	28.5	29.0
26	30.0	27.0	29.0	---	---	---	30.5	27.0	29.5	29.0	27.5	28.5
27	29.5	27.0	28.0	---	---	---	29.5	28.0	29.0	27.5	25.5	26.5
28	30.0	27.0	28.5	30.0	28.0	29.0	29.5	28.0	28.5	26.0	24.0	25.0
29	31.0	28.5	29.5	30.5	28.5	29.5	30.0	27.0	29.0	26.0	23.5	24.5
30	31.0	29.0	30.0	31.0	29.0	29.5	29.5	28.0	28.5	26.5	24.0	25.0
31	---	---	---	31.0	29.0	30.0	30.5	28.0	29.0	---	---	---
MONTH	31.0	25.0	28.0	31.5	27.0	29.0	32.0	27.0	29.5	30.5	23.0	27.5
YEAR	32.0	9.0	21.0									

COLORADO RIVER MAIN STEM

183

08159200 COLORADO RIVER AT BASTROP, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.4	9.1	9.7	9.2	7.2	8.3	11.5	9.7	10.5	9.9	9.1	9.6
2	10.4	8.8	9.5	10.0	7.7	8.5	11.9	9.7	10.7	10.5	9.9	10.1
3	10.4	8.7	9.4	9.2	6.2	7.9	11.7	9.8	10.7	10.6	9.9	10.2
4	10.5	8.3	9.3	9.8	8.4	9.0	11.2	9.5	10.3	10.4	9.5	9.9
5	10.4	8.2	9.2	10.6	9.2	9.8	11.3	9.6	10.4	10.7	9.7	10.0
6	10.4	8.0	9.1	11.0	9.6	10.3	12.7	9.9	11.2	10.1	9.6	9.9
7	9.4	7.7	8.5	11.3	10.0	10.7	13.4	10.9	12.0	10.0	9.9	9.9
8	9.7	7.6	8.5	10.9	10.0	10.5	13.0	11.1	11.9	9.9	9.6	9.7
9	9.6	7.6	8.5	10.6	9.5	10.1	13.5	10.5	11.9	9.7	9.6	9.6
10	9.7	7.5	8.5	10.0	9.0	9.6	13.4	10.4	11.9	9.9	9.6	9.7
11	10.1	7.3	8.6	9.5	8.6	9.1	14.1	10.5	12.1	10.3	9.8	10.1
12	10.4	7.5	8.9	10.4	8.4	9.4	13.8	10.5	12.0	10.4	10.1	10.3
13	10.9	7.6	9.1	11.0	9.1	10.1	---	---	---	10.6	10.0	10.3
14	11.1	7.7	9.3	11.3	9.4	10.5	---	---	---	10.6	10.2	10.4
15	11.2	7.7	9.3	11.6	9.8	10.8	---	---	---	10.9	10.3	10.5
16	9.7	7.5	8.4	11.9	10.0	11.1	---	---	---	10.6	10.1	10.3
17	10.4	7.0	8.5	11.8	9.7	10.9	---	---	---	10.7	10.4	10.6
18	10.2	7.7	8.8	11.1	8.8	9.9	---	---	---	10.7	10.6	10.7
19	11.7	8.1	9.7	8.9	7.5	8.4	---	---	---	11.0	10.5	10.8
20	11.8	8.3	10.0	8.4	7.6	8.0	---	---	---	11.1	10.9	11.0
21	11.9	8.3	10.1	7.9	7.7	7.9	---	---	---	11.1	10.6	10.9
22	10.2	8.3	9.1	8.7	7.9	8.3	11.5	11.1	11.3	11.9	10.6	10.7
23	9.7	7.7	8.6	9.1	8.4	8.7	11.1	10.2	10.7	10.7	10.1	10.4
24	9.6	7.8	8.6	9.4	8.5	8.9	10.4	10.1	10.3	10.8	10.1	10.5
25	10.2	7.8	8.8	9.8	8.7	9.2	10.7	10.2	10.5	11.1	10.3	10.8
26	10.2	7.6	8.8	10.2	9.1	9.7	10.7	10.5	10.6	11.6	11.0	11.3
27	10.7	7.6	8.9	10.9	9.7	10.3	10.8	10.6	10.7	12.0	11.2	11.6
28	10.0	7.8	8.8	11.1	10.0	10.5	10.7	10.3	10.5	11.9	11.2	11.5
29	---	---	---	11.3	10.1	10.7	10.3	9.5	10.0	11.4	11.1	11.3
30	---	---	---	11.3	10.0	10.6	9.5	9.1	9.3	11.3	11.1	11.2
31	9.3	7.6	8.4	---	---	---	9.2	8.7	9.0	11.8	10.7	11.3
MONTH	11.9	7.0	9.0	11.9	6.2	9.6	14.1	8.7	10.8	12.0	9.1	10.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.1	11.2	11.7	12.8	10.2	11.4	9.5	9.2	9.4	9.1	7.5	8.2
2	11.8	11.3	11.5	15.8	9.4	11.8	9.8	9.3	9.6	9.6	7.6	8.5
3	11.5	11.0	11.3	10.1	8.3	9.3	9.8	9.5	9.7	8.6	7.4	7.6
4	11.1	10.7	10.9	12.7	8.8	10.5	9.6	9.2	9.4	8.1	7.6	7.9
5	10.9	10.8	10.8	13.8	9.2	11.2	9.9	9.4	9.8	8.1	7.6	7.8
6	11.5	10.8	11.2	15.1	9.5	11.9	---	---	---	8.1	7.2	7.5
7	12.1	11.0	11.7	16.8	9.5	13.0	---	---	---	7.2	6.5	6.9
8	12.8	11.6	12.2	18.1	9.7	14.1	---	---	---	7.2	6.6	7.0
9	12.2	11.1	11.7	18.8	9.1	13.6	9.9	9.2	9.5	7.8	7.2	7.6
10	12.8	11.3	11.9	9.1	7.6	8.4	9.7	9.3	9.5	7.8	6.4	6.9
11	11.6	10.2	10.5	9.1	8.6	8.9	9.3	9.1	9.2	7.7	6.7	7.2
12	10.7	10.3	10.5	9.7	9.1	9.3	9.3	8.6	9.0	8.0	7.7	7.9
13	11.1	10.7	10.9	10.3	9.7	10.0	9.1	8.3	8.7	7.8	7.6	7.7
14	11.0	10.8	10.9	10.7	10.3	10.6	9.2	8.0	8.6	---	---	---
15	11.1	10.6	10.9	10.6	10.3	10.5	10.0	8.3	9.1	---	---	---
16	11.3	10.3	10.7	10.4	10.1	10.3	11.1	8.7	9.7	8.5	8.3	8.4
17	11.5	10.5	11.2	10.2	9.9	10.1	10.2	8.6	9.3	8.6	8.3	8.4
18	12.5	11.2	11.8	9.9	9.3	9.6	9.4	8.7	9.2	8.5	8.0	8.3
19	12.7	11.6	12.0	9.4	9.0	9.2	9.3	9.0	9.2	---	---	---
20	12.8	11.5	11.9	9.0	8.5	8.7	9.3	8.9	9.0	---	---	---
21	13.6	11.1	12.1	8.9	8.6	8.7	9.6	8.9	9.2	9.2	8.8	9.0
22	13.0	11.3	12.1	9.2	8.7	8.9	9.8	9.2	9.5	8.9	8.2	8.5
23	15.6	11.1	13.1	9.9	9.2	9.7	9.8	9.0	9.4	8.2	7.9	8.0
24	14.8	11.4	13.1	10.0	9.8	9.9	9.3	8.9	9.1	8.4	7.8	8.1
25	15.9	10.3	12.8	9.9	9.2	9.5	9.1	8.8	9.0	8.2	7.7	8.0
26	18.9	10.5	14.4	9.3	9.0	9.2	9.3	8.9	9.1	8.8	8.0	8.4
27	16.7	11.9	14.5	---	---	---	9.4	9.0	9.2	8.8	8.0	8.4
28	14.9	11.7	13.1	9.3	8.0	8.8	9.5	8.8	9.1	8.4	7.6	8.0
29	---	---	---	8.2	7.8	8.0	9.0	8.4	8.7	8.6	7.6	8.0
30	---	---	---	8.7	7.7	8.2	9.0	8.3	8.6	8.9	7.5	8.1
31	---	---	---	9.4	8.4	9.1	---	---	---	9.4	7.9	8.5
MONTH	18.9	10.2	11.8	18.8	7.6	10.1	11.1	8.0	9.2	9.6	6.4	8.0

[illegible]

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 1988 to current year.

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). Several observations of water temperature were made during the year. Gage-height telemeter located at station.

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 site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1250	615	417	804	1320	861	4670	2180	1620	1520	2150	1420
2	1180	615	402	735	1030	1740	4920	1490	1560	1420	2360	1270
3	1170	632	402	700	927	1870	4860	1470	1520	1730	1920	1420
4	1180	659	387	685	887	2520	4600	1820	1500	2600	1300	1260
5	1030	487	385	683	1470	1720	5340	3060	1510	2630	1180	1240
6	987	434	379	1020	1400	1560	3950	17800	1430	2650	1680	1240
7	796	416	384	2500	1680	1460	4420	9070	1310	2140	2320	1230
8	1240	418	461	2790	1330	878	7050	4040	1280	2220	2760	1240
9	1170	423	529	3030	1280	742	5190	3510	1290	1900	2520	1150
10	1080	397	525	4310	2090	943	4290	4710	1330	1770	2170	1410
11	964	380	539	3650	3080	3510	3430	10000	1550	1700	2110	1580
12	914	393	587	3010	2910	3950	3190	5600	1870	1700	2000	1100
13	672	393	486	1750	2290	4530	1720	4040	2010	1690	1960	1410
14	507	402	478	1080	2080	5900	1310	2840	2190	1860	1940	1400
15	462	416	1340	875	2250	4950	1410	3910	2130	2020	1900	1440
16	438	383	3610	762	2440	4920	1490	3660	2170	1930	1890	1410
17	432	370	3920	2160	2010	4930	1600	3760	2150	2120	1790	1090
18	442	360	1560	4080	1740	3830	2900	3740	2360	2320	1880	1030
19	426	459	1600	4240	1470	1900	4760	2740	2440	2430	1860	1350
20	425	1390	1980	5570	1290	3800	4890	2970	4070	2390	1890	1280
21	424	3150	2690	7360	1380	4570	3920	3790	3260	2290	1810	1310
22	431	1810	3250	4000	1410	3340	3110	3160	3530	2140	1850	1360
23	565	937	2970	3070	1860	4930	3000	1740	3000	2180	1700	1380
24	911	723	1940	2070	1570	6000	3000	1800	2310	2790	1720	1420
25	977	605	1480	1260	1080	4670	3460	2150	1660	2780	1510	1460
26	787	536	2600	1040	1210	4710	3490	2360	1250	1920	1690	1370
27	516	505	2670	932	1140	5370	3570	2250	1420	2050	1740	1390
28	444	469	2730	857	881	4870	3050	2460	2620	2090	1710	1250
29	457	446	2740	1100	---	2230	1960	3380	1730	2240	1740	1250
30	484	430	1750	1460	---	1620	1890	2310	1610	2210	2100	1230
31	433	---	984	1920	---	3480	---	1680	---	2170	1780	---
TOTAL	23194	19653	46175	69503	45505	102304	106440	119490	59680	65600	58930	39390
MEAN	748	655	1490	2242	1625	3300	3548	3855	1989	2116	1901	1313
MAX	1250	3150	3920	7360	3080	6000	7050	17800	4070	2790	2760	1580
MIN	424	360	379	683	881	742	1310	1470	1250	1420	1180	1030
AC-FT	46010	38980	91590	137900	90260	202900	211100	237000	118400	130100	116900	78130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	836	382	3751	5278	7250
MAX	1023	655	16350	18640	31160
(WY)	1989	1993	1992	1992	1992
MIN	725	244	248	247	356
(WY)	1991	1989	1990	1990	1990

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1989 - 1993#
ANNUAL TOTAL	3172002	755864	
ANNUAL MEAN	8667	2071	
HIGHEST ANNUAL MEAN			9913
LOWEST ANNUAL MEAN			1157
HIGHEST DAILY MEAN	59100	Feb 5	17800
LOWEST DAILY MEAN	360	Nov 18	360
ANNUAL SEVEN-DAY MINIMUM	388	Nov 12	388
INSTANTANEOUS PEAK FLOW			21100
INSTANTANEOUS PEAK STAGE			20.61
INSTANTANEOUS LOW FLOW			359
ANNUAL RUNOFF (AC-FT)	6292000	1499000	2372000
10 PERCENT EXCEEDS	28700	4020	5740
50 PERCENT EXCEEDS	3650	1720	1560
90 PERCENT EXCEEDS	475	474	281

Period of regulated streamflow.

COLORADO RIVER BASIN

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 fair. There are no known diversions above station. Several observations of water temperature were made during the year.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	2045	2,040	19.35	June 21	2330	1,560	18.08
May 30	1630	1,250	17.21	June 22	1130	1,080	16.70
June 19	2330	3,690	23.44	June 25	1830	1,080	16.70
June 20	0800	1,240	17.18				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.0	2.8	2.5	2.8	4.5	2.1	6.4	6.4	10	2.5	.99
2	1.5	1.1	2.7	2.5	2.6	4.7	2.0	37	3.8	9.2	2.4	.63
3	1.4	.92	2.6	3.0	3.7	3.3	2.3	6.0	2.9	8.5	2.2	.55
4	1.3	1.2	2.6	3.6	3.5	2.7	5.8	3.1	2.4	7.7	1.8	.82
5	1.2	.88	2.6	3.5	9.9	2.4	2.8	347	2.1	7.1	1.6	.84
6	1.1	.88	3.0	2.8	6.4	2.3	2.4	139	2.1	6.5	1.9	.73
7	.94	.96	3.1	22	3.7	2.3	68	14	2.0	5.8	1.5	.62
8	.98	1.1	3.0	8.2	3.0	2.3	14	8.1	1.9	5.4	1.7	.55
9	.91	1.2	4.1	50	2.7	2.1	4.9	5.8	1.7	5.0	1.6	1.9
10	.96	1.3	2.9	14	19	2.1	3.3	5.1	1.9	4.8	1.6	1.3
11	1.0	1.5	2.6	5.9	6.1	2.1	2.8	4.0	2.9	4.5	1.2	4.9
12	.80	1.7	2.5	4.9	3.5	4.9	2.6	3.3	12	4.3	1.2	1.4
13	.82	1.5	2.9	3.8	2.8	3.1	2.3	3.0	127	4.1	1.3	1.4
14	.80	1.4	69	3.3	2.7	2.4	39	2.7	25	3.9	.99	1.3
15	.74	1.4	155	3.2	4.0	3.1	8.3	3.5	44	3.7	.93	1.1
16	1.0	1.4	11	3.1	8.6	5.8	3.7	3.7	15	3.8	1.1	.94
17	1.7	1.5	5.3	3.0	3.2	3.2	2.8	2.4	11	3.7	.88	.93
18	1.6	1.5	4.0	3.0	2.6	2.8	2.5	2.3	13	3.4	.82	.93
19	1.8	7.8	3.8	107	2.4	34	2.3	2.3	516	3.2	.77	1.0
20	1.7	1.4	3.6	41	2.4	34	2.0	2.1	733	3.1	.88	1.4
21	1.8	26	3.4	7.5	2.4	6.2	1.8	2.0	184	3.1	.72	1.5
22	1.8	7.0	3.2	4.5	2.4	6.5	1.7	2.0	406	2.9	.89	1.3
23	1.5	3.5	3.1	3.5	2.2	14	1.7	12	67	2.8	.87	1.5
24	1.6	3.1	2.8	3.3	2.2	4.7	1.7	7.6	32	2.9	.72	1.2
25	1.3	2.8	2.6	2.7	55	3.8	1.9	4.1	147	3.0	.60	1.1
26	1.3	2.6	2.5	2.4	8.9	3.1	1.8	3.1	65	2.4	.75	1.3
27	1.2	2.8	2.4	2.2	4.1	2.6	1.6	2.8	24	2.4	.58	1.4
28	.97	3.2	2.5	2.3	3.4	2.6	1.9	2.6	23	3.0	.83	1.1
29	.92	3.3	3.1	17	---	2.5	13	2.4	16	2.8	.86	1.3
30	1.3	3.2	3.1	4.9	---	2.4	3.8	116	12	2.2	.64	1.1
31	1.0	---	2.9	3.3	---	2.2	---	20	---	2.3	.83	---
TOTAL	38.64	89.14	320.7	343.9	176.2	174.7	206.8	775.4	2502.1	137.5	37.16	37.03
MEAN	1.25	2.97	10.3	11.1	6.29	5.64	6.89	25.0	83.4	4.44	1.20	1.23
MAX	1.8	26	155	107	55	34	68	347	733	10	2.5	4.9
MIN	.74	.88	2.4	2.2	2.2	2.1	1.6	2.0	1.7	2.2	.58	.55
AC-FT	.77	.177	.636	.682	.349	.347	.410	.1540	.4960	.273	.74	.73
CFSM	.07	.17	.60	.64	.36	.33	.40	1.45	4.82	.26	.07	.07
IN.	.08	.19	.69	.74	.38	.38	.44	1.67	5.38	.30	.08	.08

COLORADO RIVER BASIN

187

08160800 REDGATE CREEK NEAR COLUMBUS, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993, BY WATER YEAR (WY)

MEAN	4.54	2.47	4.98	7.08	7.96	6.37	7.93	13.8	11.0	1.12	1.38	3.57
MAX	49.0	17.8	25.4	31.9	67.5	38.1	39.9	55.5	83.4	4.44	17.4	38.5
(WY)	1971	1986	1992	1974	1992	1973	1991	1979	1993	1993	1974	1974
MIN	.000	.070	.25	.24	.21	.19	.24	.33	.065	.007	.000	.040
(WY)	1964	1967	1967	1967	1967	1967	1971	1971	1990	1971	1970	1963

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1963 - 1993
ANNUAL TOTAL	7196.99	4839.27	
ANNUAL MEAN	19.7	13.3	6.00
HIGHEST ANNUAL MEAN			20.7
LOWEST ANNUAL MEAN			.82
HIGHEST DAILY MEAN	726 Jun 2	733 Jun 20	1180 Jun 13 1973
LOWEST DAILY MEAN	.71 Sep 20	.55 Sep 3	.00 May 26 1963
ANNUAL SEVEN-DAY MINIMUM	.84 Sep 17	.68 Sep 2	.00 Jun 4 1963
INSTANTANEOUS PEAK FLOW		3690 Jun 19	5360 May 22 1979
INSTANTANEOUS PEAK STAGE		23.44 Jun 19	27.19 May 22 1979
INSTANTANEOUS LOW FLOW		.10 Nov 21	
ANNUAL RUNOFF (AC-FT)	14280	9600	4340
ANNUAL RUNOFF (CFSM)	1.14	.77	.35
ANNUAL RUNOFF (INCHES)	15.48	10.41	4.71
10 PERCENT EXCEEDS	38	14	5.4
50 PERCENT EXCEEDS	3.8	2.7	.84
90 PERCENT EXCEEDS	.98	.95	.09

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.

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 145.52 ft above National Geodetic Vertical Datum of 1929. Prior to May 1, 1919, various nonrecording gages at sites in the immediate vicinity at datum 7.00 ft higher. May 1, 1919, to Nov. 23, 1930, water-stage recorder at site about 300 ft downstream at datum 7.00 ft higher. 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 10.00 ft higher; Nov. 15, 1939 to Dec. 31, 1988, water stage recorder at present site and at datum 10.00 ft higher.

REMARKS.--Records good, except those for estimated daily discharges, which are fair. At times, low-flow releases from Lake Travis, 251 mi upstream, are made for the generation of electric power and (or) to fulfill downstream water contracts. During the current year, the Lower Colorado River Authority also reported that 8,070 acre-ft was diverted from the river upstream to Cedar Creek Reservoir. Cedar Creek Reservoir is located 10 mi north of the Colorado River and 3.5 mi west of Fayetteville. Flow is also affected at times by discharge from the flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 25,570 acre-ft. These structures control runoff from an 73.1 mi² area in the Cummins Creek watershed. There are many other diversions above this station for irrigation and for municipal supply. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--20 years (water years 1917-36) 3,809 ft³/s (2,760,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1917-36).--Maximum discharge, 190,000 ft³/s June 18, 1935 (gage height, 48.5 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, 51.6 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1310	547	508	1030	2010	1080	3790	2040	1830	2000	e1900	1590
2	1220	716	491	878	1410	1130	4600	2540	1470	1850	e1950	1350
3	1160	708	478	808	1180	1910	4790	1900	1320	1740	e2000	1250
4	1200	694	476	782	1100	2060	4850	1660	1250	2160	e1750	1350
5	1140	724	457	859	1120	2430	4800	2340	1200	2440	e1300	1240
6	1050	571	457	819	1780	1690	4820	17400	1190	2460	e1200	1230
7	1010	518	455	1430	1550	1540	5180	17400	1120	2400	e1600	1220
8	902	494	454	2990	1770	1390	10000	7270	1070	2030	e2000	1210
9	1230	491	524	3640	1370	1010	6780	4320	1020	2170	e2200	1250
10	1170	497	574	7410	1680	865	5000	3990	1090	1910	2050	1150
11	1080	483	565	4980	3710	1410	4070	6600	1250	1810	1900	1370
12	983	471	569	3860	3820	3690	3380	8530	2030	1750	1830	1430
13	946	471	634	3030	2970	4570	3000	4880	3210	1760	1760	1160
14	748	460	1020	1750	2430	5120	2080	3430	5130	1730	1730	1380
15	603	466	4740	1200	2200	5790	1770	3030	2470	1900	1710	1380
16	593	479	3790	1020	2570	4500	1600	3610	2190	1980	1680	1410
17	591	457	4950	911	2740	5200	1640	3390	1970	1920	1670	1390
18	560	445	3430	2780	2140	4570	1610	3450	2050	2060	1610	1110
19	553	536	1670	5450	1780	3270	3380	3250	2690	2160	1670	1100
20	544	1030	1630	9930	1520	4650	4610	2260	23500	2210	1650	1340
21	538	2070	2210	8120	1380	6010	4520	3010	16000	2180	1680	1280
22	534	3620	2750	6890	1410	4780	3490	3380	17600	2090	1630	1300
23	539	1710	3390	3980	1440	7210	2950	2520	7740	1980	1640	1320
24	665	1070	2820	3200	1860	7430	2860	2090	4810	2030	1580	1340
25	972	861	1760	2020	1850	5530	2970	1950	3760	2410	1570	1370
26	1030	725	1660	1390	2790	4800	3230	2040	5540	2300	1440	1400
27	856	639	2590	1170	1950	4940	3360	2040	2540	1820	1540	1350
28	633	588	2670	1090	1340	5320	3210	2300	2520	1890	1590	1340
29	554	551	2730	1470	---	4200	2870	2820	2620	1880	1570	1250
30	567	528	2600	1900	---	2120	1990	3890	2160	2010	1650	1250
31	579	---	1550	1960	---	2050	---	2660	---	1900	1750	---
TOTAL	26060	23620	54602	88747	54870	112265	113200	131990	124340	62930	52800	39110
MEAN	841	787	1761	2863	1960	3621	3773	4258	4145	2030	1703	1304
MAX	1310	3620	4950	9930	3820	7430	10000	17400	23500	2460	2200	1590
MIN	534	445	454	782	1100	865	1600	1660	1020	1730	1200	1100
AC-FT	51690	46850	108300	176000	108800	222700	224500	261800	246600	124800	104700	77570

e Estimated

COLORADO RIVER MAIN STEM

189

08161000 COLORADO RIVER AT COLUMBUS, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1993#, BY WATER YEAR (WY)

MEAN	2519	2204	2185	2470	2899	2466	3282	4571	5100	3341	2169	2194
MAX	25310	13360	16450	19800	33800	20220	14440	27680	28660	25710	10030	8859
(WY)	1937	1975	1992	1992	1992	1992	1977	1957	1987	1938	1938	1961
MIN	352	204	162	182	203	275	543	1257	1627	1191	756	498
(WY)	1957	1964	1964	1964	1967	1952	1951	1937	1942	1937	1937	1937

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1937 - 1993#	
ANNUAL TOTAL	3513632		884534			
ANNUAL MEAN	9600		2423		2948	
HIGHEST ANNUAL MEAN					10810	
LOWEST ANNUAL MEAN					914	
HIGHEST DAILY MEAN	59400	Feb 6	23500	Jun 20	161000	Jul 29 1938
LOWEST DAILY MEAN	445	Nov 18	445	Nov 18	110	Nov 5 1978
ANNUAL SEVEN-DAY MINIMUM	464	Nov 12	464	Nov 12	119	Jan 5 1964
INSTANTANEOUS PEAK FLOW			27700	Jun 20	175000	Jul 29 1938
INSTANTANEOUS PEAK STAGE			28.30	Jun 20	41.28	Jul 29 1938
INSTANTANEOUS LOW FLOW					100	Mar 18 1964
ANNUAL RUNOFF (AC-FT)	6969000		1754000		2136000	
10 PERCENT EXCEEDS	29600		4800		5540	
50 PERCENT EXCEEDS	4180		1760		1750	
90 PERCENT EXCEEDS	573		573		411	

Period of regulated streamflow.

COLORADO RIVER MAIN STEM

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 Company 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. WDR TX-88-3: 1985.

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, 1956, nonrecording gage 100 ft upstream at datum 13.00 ft higher. June 1, 1966, 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 power plant, and for oil field operations. For statement regarding upstream regulation, see station 08161000. Gage-height telemeter at station.

AVERAGE DISCHARGE PRIOR TO REGULATION.--5 years (water years 1920-25) 3,680 ft³/s (2,666,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS, 1920-25).--Maximum discharge observed, 39,600 ft³/s Oct. 15, 1919; no flow Aug. 6, 1925 (result of pumping).

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, furnish by National Weather Service (discharge, 159,000 ft³/s), from rating curve defined by current-meter measurements below 145,000 ft³/s. Flood of July 30, 1938, reached a stage of 50.4 ft, present datum, observed by Geological Survey engineers (discharge, 145,000 ft³/s).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	914	691	675	1970	2190	1950	2170	2390	3900	2600	1550	1750
2	843	637	644	1430	2240	1710	3460	2350	2470	2090	1500	1530
3	666	613	596	1200	1780	1430	4360	2750	1630	1690	1530	1230
4	647	733	549	1070	1440	1970	5300	2370	1190	1400	1590	995
5	588	689	541	996	1340	2240	5660	2050	886	1560	1330	940
6	638	794	530	978	1280	2580	5160	8240	794	1990	1080	893
7	527	737	536	1190	1700	2110	5300	21400	679	2010	840	843
8	474	658	559	1740	1810	1850	8290	17100	597	1970	997	770
9	372	628	595	3070	1900	1750	10800	7840	516	1580	1460	671
10	402	628	588	4490	3250	1300	7110	5470	540	1630	1830	689
11	612	638	609	6910	2870	1040	5280	4670	1190	1530	1760	729
12	754	637	635	5010	3980	1250	4330	6980	4050	1200	1570	765
13	721	607	635	3980	3940	3510	3630	7960	5280	1090	1480	996
14	660	582	705	3260	3230	4360	3280	4910	6320	1050	1380	902
15	594	580	1390	2350	2740	4870	2590	3590	6630	1010	1340	930
16	463	577	4250	1760	2650	5500	2570	2790	3740	1070	1300	937
17	512	582	3960	1470	2740	4500	2150	3130	2860	1250	1290	944
18	628	590	4440	1290	2950	4980	1890	2960	2870	1250	1280	959
19	630	724	3600	2160	2480	4520	1860	3030	4060	1430	1240	885
20	609	1480	2230	5560	2210	3990	2680	2870	12400	1640	1230	727
21	599	1210	1960	8990	1950	5020	4060	2120	29700	1860	1140	827
22	591	1920	2170	7810	1710	6020	4130	2280	26300	1910	1110	945
23	585	3260	2700	6400	1680	5470	3340	3050	26600	1810	1120	946
24	576	2190	3130	4160	1680	7830	2810	3930	14500	1630	1130	940
25	584	1500	2860	3400	2160	7570	2680	3200	7790	1460	1070	941
26	780	1110	2190	2570	2330	5590	2720	2700	7530	1820	1060	954
27	973	926	1740	1930	3030	4850	2940	2570	7170	1840	1040	998
28	991	813	2500	1610	2450	4890	2990	2540	4310	1360	1380	961
29	756	750	2610	1570	---	5170	3020	2800	3480	1320	1680	911
30	644	709	2610	1640	---	4250	2890	3160	3360	1320	1660	825
31	600	---	2560	2160	---	2650	---	4870	---	1500	1650	---
TOTAL	19933	28193	55297	94124	65710	116720	119450	148070	193342	48870	41617	28333
MEAN	643	940	1784	3036	2347	3765	3982	4776	6445	1576	1342	944
MAX	991	3260	4440	8990	3980	7830	10800	21400	29700	2600	1830	1750
MIN	372	577	530	978	1280	1040	1860	2050	516	1010	840	671
AC-FT	39540	55920	109700	186700	130300	231500	236900	293700	383500	96930	82550	56200

COLORADO RIVER MAIN STEM

191

08162000 COLORADO RIVER AT WHARTON, TX--Continued
(National stream-quality accounting and radiochemical network)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1993#, BY WATER YEAR (WY)

MEAN	2081	2401	2324	2617	3125	2619	3122	4324	4689	2422	1400	1948
MAX	12350	13870	15060	21810	35520	21550	13730	27300	30910	12490	3916	9394
(WY)	1958	1975	1992	1992	1992	1992	1977	1957	1987	1940	1945	1961
MIN	296	220	253	224	268	328	566	825	838	706	406	436
(WY)	1957	1957	1990	1964	1967	1952	1951	1962	1948	1967	1964	1954

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1939 - 1993#

ANNUAL TOTAL	3667624	959659	
ANNUAL MEAN	10020	2629	
HIGHEST ANNUAL MEAN			2750
LOWEST ANNUAL MEAN			11120
HIGHEST DAILY MEAN	55100	Feb 8	90600
LOWEST DAILY MEAN	372	Oct 9	42
ANNUAL SEVEN-DAY MINIMUM	516	Oct 5	110
INSTANTANEOUS PEAK FLOW			100000
INSTANTANEOUS PEAK STAGE			48.99
ANNUAL RUNOFF (AC-FT)	7275000	1903000	1992000
10 PERCENT EXCEEDS	31000	5210	5470
50 PERCENT EXCEEDS	3590	1710	1350
90 PERCENT EXCEEDS	633	628	460

Period of regulated streamflow.

COLORADO RIVER MAIN STEM

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 September 1992 (discontinued).

WATER TEMPERATURE: October 1945 to September 1948, March 1950 to September 1992 (discontinued).

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, 932 microsiemens Sept. 7, Nov. 16, 1990; 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, 853 microsiemens Oct. 8; minimum daily, 214 microsiemens Dec. 24.

WATER TEMPERATURE: Maximum daily, 30.0°C June 30, several days in July and Aug.; minimum daily, 9.0°C Jan. 16, 19-21.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)
JAN 27...	1135	1930	436	7.9	10.5	39	10.0	89	0.8	520	600
MAR 30...	1142	4340	500	8.0	22.0	61	8.2	95	0.5	270	92
JUN 09...	1037	527	625	8.2	26.0	8.0	7.4	92	1.4	44	84
AUG 16...	1055	1300	593	8.2	29.0	18	7.3	95	1.4	84	88
SEP 08...	0910	805	638	8.0	27.0	6.2	6.9	87	2.8	56	84

DATE	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
JAN 27...	160	38	47	11	23	0.8	4.4	0	152	124	34
MAR 30...	190	45	49	16	27	0.9	4.1	0	175	143	40
JUN 09...	250	45	72	17	34	0.9	4.4	1	249	207	44
AUG 16...	240	46	63	19	32	0.9	4.2	0	232	190	37
SEP 08...	240	27	63	19	33	0.9	3.8	0	254	208	39

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, 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 DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
JAN 27...	43	0.20	10	256	253	0.950	0.950	0.010	0.960	0.960
MAR 30...	45	0.30	10	293	281	0.760	--	<0.010	0.760	0.760
JUN 09...	55	0.20	11	364	366	0.990	0.990	0.010	1.00	1.00
AUG 16...	60	0.30	12	346	346	0.740	--	<0.010	0.740	0.740
SEP 08...	55	0.30	13	373	355	0.830	--	<0.010	0.830	0.830

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

COLORADO RIVER MAIN STEM

08162500 COLORADO RIVER NEAR BAY CITY, TX

LOCATION.--Lat 28°58'26", long 96°00'44", Matagorda County, Hydrologic Unit 12090302, on left 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. WDR TX-88-3: 1985.

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. On February 19, 1992, gage was temporarily moved 6,200 ft upstream at same datum. Gage re-established on left bank 6,300 ft downstream on May 12, 1993.

REMARKS.--Records fair. There are diversions above station for irrigation and for municipal supply. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08161000. Gage-height telemeter at station.

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. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	914	1300	e979	2720	2730	3000	2510	6220	5650	2670	935	1470
2	1260	1560	e967	2140	2670	5140	2900	8720	3320	2110	909	1530
3	1110	1380	e963	1760	2540	3250	4640	6240	2210	1690	883	1330
4	866	1290	e967	1580	2120	2320	6500	4120	1540	1310	939	972
5	774	1360	e948	1510	1940	2630	7970	2940	e983	1030	825	712
6	712	1320	e935	1470	2010	2800	6960	9870	e570	1330	667	664
7	750	1420	e927	1890	2020	2830	6570	26200	e345	1620	371	605
8	691	1290	e971	3890	2360	2320	11000	26200	e210	1570	215	550
9	676	1200	e983	3650	2250	2160	15800	14300	e82	1430	436	441
10	646	1740	e981	7120	8820	1980	11600	10100	39	1060	954	349
11	645	5370	e1000	9310	10500	1710	7750	8230	209	1200	1290	392
12	795	2750	e1060	7880	5800	1670	5970	5510	2080	1050	1150	409
13	1090	1960	e1070	5610	5380	3080	4620	8960	4630	440	1010	555
14	1080	1510	e1060	4450	4640	4990	4040	6180	5880	175	1010	822
15	955	1650	e1560	3470	3570	5490	3380	4340	7390	214	889	647
16	939	3410	4270	2510	3470	7230	3100	3010	4760	262	835	764
17	1100	e1960	6600	2080	3720	6480	2800	2960	3120	402	815	727
18	1130	e898	4920	1840	3600	5780	2400	3010	2530	525	825	773
19	1110	e1020	5800	1700	3310	6020	2280	2900	3430	615	837	786
20	1050	6780	3580	4100	2780	6990	2200	3030	9040	871	793	638
21	1010	5600	2670	11500	2470	6490	4200	2240	29200	1080	717	528
22	986	3110	2530	10700	2230	8180	5060	1940	36500	1210	615	708
23	968	3470	2860	9760	2100	8750	4590	2660	33300	1280	616	790
24	1140	3100	3210	6310	2070	10100	3420	5180	23500	1190	592	827
25	1170	2010	3570	4420	2110	e10000	3030	4630	11000	1030	619	837
26	1230	1530	3040	3610	3150	e8000	2930	3490	7170	999	552	822
27	1520	e1270	2290	2640	3310	e6000	3200	3010	9640	1340	561	836
28	1560	e1120	2330	2200	3330	e5600	3340	2910	5790	1120	617	892
29	1520	e1040	2870	2730	---	e5400	3560	3090	3620	697	1160	845
30	1330	e1000	2910	3160	---	5940	3500	3760	3320	685	1470	775
31	1220	---	2900	2640	---	3830	---	5020	---	712	1460	---
TOTAL	31947	64418	71721	130350	97000	156160	151820	200970	221058	32917	25567	22996
MEAN	1031	2147	2314	4205	3464	5037	5061	6483	7369	1062	825	767
MAX	1560	6780	6600	11500	10500	10100	15800	26200	36500	2670	1470	1530
MIN	645	898	927	1470	1940	1670	2200	1940	39	175	215	349
AC-FT	63370	127800	142300	258500	192400	309700	301100	398600	438500	65290	50710	45610

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1993, BY WATER YEAR (WY)

MEAN	2137	2280	2293	2702	3472	2593	2824	4246	4592	1560	838	1793
MAX	12820	13470	16200	25780	42200	25780	13410	27750	30360	7675	2876	11160
(WY)	1958	1975	1992	1992	1992	1992	1977	1957	1987	1961	1961	1961
MIN	254	226	292	249	246	257	125	227	155	1.00	114	93.9
(WY)	1990	1957	1990	1957	1967	1967	1964	1964	1971	1967	1964	1966

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1949 - 1993

ANNUAL TOTAL	4845000		1206924				
ANNUAL MEAN	13240		3307			2601	
HIGHEST ANNUAL MEAN						14270	1992
LOWEST ANNUAL MEAN						375	1964
HIGHEST DAILY MEAN	62000	Feb 9	36500	Jun 22		68400	Jun 27 1960
LOWEST DAILY MEAN	496	Sep 3	39	Jun 10		.00	Jun 1 1951
ANNUAL SEVEN-DAY MINIMUM	560	Aug 30	348	Jun 5		.44	Oct 4 1969
INSTANTANEOUS PEAK FLOW			38500	Jun 22		84100	Jun 26 1960
INSTANTANEOUS PEAK STAGE			30.28	Jun 22		46.40	Jun 26 1960
ANNUAL RUNOFF (AC-FT)	9610000		2394000			1885000	
10 PERCENT EXCEEDS	37800		7040			5660	
50 PERCENT EXCEEDS	3840		2080			905	
90 PERCENT EXCEEDS	877		666			235	

TRES PALACIOS RIVER MAIN STEM

195

08162600 TRES PALACIOS RIVER NEAR MIDFIELD, TX

LOCATION.--Lat 28°55'40", long 96°10'15", Matagorda County, Hydrologic Unit 12100401, at left downstream end of bridge on Farm Road 456, 1.0 mi downstream from Juanita Creek, and 2.4 mi southeast of Midfield.

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. June 17, 1970, to Apr. 28, 1988, at same site and datum. Apr. 29, 1988, to Sept. 4, 1991, at right downstream end of bridge at same datum.

REMARKS.--No estimated daily discharges. Records good. There are ten known diversions above station, but amounts are unknown. An undetermined amount of water from irrigated ricefields enters the river upstream at various points above station. Extensive channel cleaning upstream and downstream from the gage was begun during the 1983 water year and completed during the 1984 water year.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 17	0400	2,290	20.23	Feb. 10	1800	6,140	27.65
Oct. 17	1300	1,690	17.71	May 2	1900	1,700	17.75
Nov. 11	0800	3,920	24.84	May 6	1900	1,790	18.12
Nov. 20	1400	5,490	27.15	May 10	1200	1,920	18.62
Dec. 15	2000	1,620	17.38	June 20	2400	2,480	20.87
Jan. 8	0200	1,830	18.29	June 22	1900	4,410	25.78
Jan. 10	0600	1,740	17.92				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	134	20	15	118	200	18	1040	208	40	27	42
2	11	412	18	14	66	780	16	1440	82	34	28	39
3	11	183	17	14	42	458	16	959	42	29	24	28
4	11	71	17	14	31	178	272	323	29	26	23	21
5	11	37	16	14	28	82	420	136	23	27	24	22
6	12	25	15	14	128	46	143	1070	20	26	23	24
7	11	18	15	678	141	30	66	946	18	26	21	20
8	11	15	15	1350	74	24	566	314	17	25	26	17
9	12	14	16	660	58	20	425	140	18	25	24	16
10	11	440	19	1430	4320	19	159	1460	19	24	23	16
11	20	3360	24	507	3480	18	72	748	20	25	25	17
12	17	1490	23	222	824	183	38	232	23	24	24	17
13	12	834	18	120	319	567	25	97	43	25	25	16
14	11	396	55	72	169	217	21	50	191	22	25	16
15	9.7	206	1130	45	101	111	19	32	185	20	26	14
16	308	105	999	31	77	484	19	23	82	20	25	14
17	1700	55	368	25	154	232	17	19	47	22	21	15
18	456	43	166	22	92	100	15	96	38	22	24	16
19	166	202	91	20	55	51	15	85	82	23	21	16
20	78	4620	57	38	36	657	15	86	1440	23	23	14
21	41	2640	41	114	29	444	15	44	1880	25	22	13
22	27	1070	32	106	25	176	16	28	3490	27	22	12
23	21	498	27	52	22	701	16	193	2970	25	25	12
24	18	245	24	33	20	545	15	1350	1030	25	24	12
25	15	135	22	25	20	219	13	586	412	23	21	11
26	13	73	21	22	57	106	14	228	229	23	20	11
27	12	45	18	19	87	58	14	104	236	24	20	11
28	11	32	17	18	49	36	13	57	170	24	23	10
29	11	25	17	764	---	27	17	147	90	26	29	11
30	11	22	17	751	---	23	70	350	52	25	32	10
31	12	---	17	261	---	20	---	363	---	26	38	---
TOTAL	3082.7	17445	3352	7470	10622	6812	2560	12746	13186	781	758	513
MEAN	99.4	581	108	241	379	220	85.3	411	440	25.2	24.5	17.1
MAX	1700	4620	1130	1430	4320	780	566	1460	3490	40	38	42
MIN	9.7	14	15	14	20	18	13	19	17	20	20	10
AC-FT	6110	34600	6650	14820	21070	13510	5080	25280	26150	1550	1500	1020

TRES PALACIOS RIVER MAIN STEM

08162600 TRES PALACIOS RIVER NEAR MIDFIELD, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1993, BY WATER YEAR (WY)

MEAN	217	141	125	149	174	89.1	138	248	170	127	50.0	226
MAX	1375	581	568	542	978	585	642	1080	681	623	163	1308
(WY)	1985	1993	1992	1991	1992	1985	1991	1982	1973	1981	1974	1979
MIN	10.2	9.53	5.87	4.83	6.66	8.09	10.4	19.7	10.4	21.7	16.9	14.5
(WY)	1992	1991	1991	1971	1976	1981	1989	1978	1990	1986	1976	1990

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1971 - 1993	
ANNUAL TOTAL	123833.7		79327.7			
ANNUAL MEAN	338		217			
HIGHEST ANNUAL MEAN					154	
LOWEST ANNUAL MEAN					325	
HIGHEST DAILY MEAN					42.2	
LOWEST DAILY MEAN						
ANNUAL SEVEN-DAY MINIMUM	8410		4620		12200	
INSTANTANEOUS PEAK FLOW	9.7		9.7		1.0	
INSTANTANEOUS PEAK STAGE	11		11		1.1	
ANNUAL RUNOFF (AC-FT)	245600		157300		17000	
10 PERCENT EXCEEDS	913		566		32.43	
50 PERCENT EXCEEDS	31		26		111800	
90 PERCENT EXCEEDS	15		14		24	
					8.7	

LAVACA RIVER MAIN STEM

197

08163500 LAVACA RIVER AT HALLETTSVILLE, TX

LOCATION (REVISED).--Lat 29°26'35", long 96°56'41", Lavaca County, Hydrologic Unit 12100101, at downstream side of bridge on U.S. Highway 77 in Hallettsville and 0.7 mi downstream from Campbell Branch. Prior to Apr. 8, 1993, at site on left bank 75 ft downstream.

DRAINAGE AREA.--108 mi².

PERIOD OF RECORD.--July 1939 to April 1993 (discontinued).

REVISED RECORDS.--WSP 1312: 1942(M), 1944(M). WSP 1732: 1952(M). WSP 2123: Drainage area.

GAGE.--Non-recording gage. 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, and Apr. 20, 1960, to June 2, 1961, movable nonrecording gage at same site. June 3, 1961, to Apr. 7, 1993, water-stage recorder at site 75 ft downstream. All gages at same datum.

REMARKS.--No estimated daily discharges. Records good except those for discharges below 1.0 ft³/s, which are poor. There are no diversions above station. The Lavaca County Flood Control District No. 3 began channel rectification 1.6 mi downstream from gage in August 1983. This rectification project reached the gage on Jan. 26, 1984, and was completed in June 1984. The channel was previously rectified in 1959-60.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage from about 1870 to 1940, 32.8 ft July 16, 1936, from information by local resident. Maximum stage since at least 1840, that of Aug. 31, 1981.

PEAK DISCHARGES FOR PERIOD OCTOBER 1992 TO APRIL 1993.--Peak discharges greater than base discharge of 2,300 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 20	0330	2,510	14.43	May 24	--	9,680	a/19.85
Apr. 7	1530	2,890	15.01				

a/ From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.95	4.3	3.0	5.1	18	15	16	---	---	---	---	---
2	.95	2.9	3.0	4.9	15	19	15	---	---	---	---	---
3	.95	2.8	3.2	4.9	15	17	17	---	---	---	---	---
4	.95	2.2	3.1	7.1	14	13	48	---	---	---	---	---
5	.95	2.1	2.9	5.4	39	11	24	---	---	---	---	---
6	.95	2.2	3.0	5.0	55	10	18	---	---	---	---	---
7	.95	2.4	2.9	113	27	9.4	842	---	---	---	---	---
8	1.0	2.5	3.0	54	19	9.0	---	---	---	---	---	---
9	.95	2.7	4.5	29	18	8.8	---	---	---	---	---	---
10	.95	7.9	4.0	84	355	8.8	---	---	---	---	---	---
11	.95	4.4	3.8	16	241	9.5	---	---	---	---	---	---
12	.95	9.6	3.8	7.7	68	326	---	---	---	---	---	---
13	.95	4.3	3.8	5.1	40	275	---	---	---	---	---	---
14	.95	4.2	229	4.1	28	63	---	---	---	---	---	---
15	.95	4.2	577	3.8	26	53	---	---	---	---	---	---
16	1.9	4.2	131	3.4	22	120	---	---	---	---	---	---
17	1.7	4.2	36	3.4	16	55	---	---	---	---	---	---
18	2.4	5.6	18	3.2	14	27	---	---	---	---	---	---
19	2.1	165	12	258	13	43	---	---	---	---	---	---
20	1.8	162	9.4	1150	12	346	---	---	---	---	---	---
21	1.7	105	7.9	118	12	99	---	---	---	---	---	---
22	1.7	54	7.1	47	11	52	---	---	---	---	---	---
23	1.6	12	6.7	28	10	718	---	---	---	---	---	---
24	1.6	6.9	6.1	36	9.3	144	---	---	---	---	---	---
25	1.5	4.8	5.7	23	13	70	---	---	---	---	---	---
26	1.4	3.8	5.5	15	57	46	---	---	---	---	---	---
27	1.4	3.4	5.3	13	24	35	---	---	---	---	---	---
28	1.4	3.2	5.3	13	15	28	---	---	---	---	---	---
29	1.4	3.1	5.3	71	---	25	---	---	---	---	---	---
30	2.2	3.0	5.3	60	---	22	---	---	---	---	---	---
31	2.0	---	5.3	25	---	18	---	---	---	---	---	---
TOTAL	42.10	598.9	1121.9	2216.1	1206.3	2695.5	---	---	---	---	---	---
MEAN	1.36	20.0	36.2	71.5	43.1	87.0	---	---	---	---	---	---
MAX	2.4	165	577	1150	355	718	---	---	---	---	---	---
MIN	.95	2.1	2.9	3.2	9.3	8.8	---	---	---	---	---	---
AC-FT	84	1190	2230	4400	2390	5350	---	---	---	---	---	---
CFSM	.01	.18	.34	.66	.40	.81	---	---	---	---	---	---
IN.	.01	.21	.39	.76	.42	.93	---	---	---	---	---	---

LAVACA RIVER MAIN STEM

08163500 LAVACA RIVER AT HALLETTSVILLE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1992, BY WATER YEAR (WY)

MEAN	43.7	36.6	37.5	32.3	50.7	30.3	72.8	99.0	105	15.3	43.9	43.7
MAX	493	472	395	176	403	157	405	493	1174	177	1815	427
(WY)	1961	1966	1977	1979	1992	1944	1973	1972	1940	1942	1981	1961
MIN	.090	.21	.42	.82	1.67	.65	.60	.84	.35	.31	.11	.047
(WY)	1957	1957	1991	1990	1954	1956	1956	1956	1990	1954	1990	1956

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

WATER YEARS 1940 - 1992

ANNUAL TOTAL	53884.10		
ANNUAL MEAN	147	50.8	
HIGHEST ANNUAL MEAN		205	1981
LOWEST ANNUAL MEAN		1.97	1956
HIGHEST DAILY MEAN	8620	Jun 2	55400 Aug 31 1981
LOWEST DAILY MEAN	.95 Oct 1	.00	* 1956
ANNUAL SEVEN-DAY MINIMUM	.95 Oct 1	.00	Sep 5 1956
INSTANTANEOUS PEAK FLOW		99500	Aug 31 1981
INSTANTANEOUS PEAK STAGE		41.10	Aug 31 1981
ANNUAL RUNOFF (AC-FT)	106900	36780	
ANNUAL RUNOFF (CFSM)	1.36	.47	
ANNUAL RUNOFF (INCHES)	18.56	6.39	
10 PERCENT EXCEEDS	262	33	
50 PERCENT EXCEEDS	8.6	4.8	
90 PERCENT EXCEEDS	1.7	.60	

* No flow at times.

LAVACA RIVER MAIN STEM

199

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. WDR 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 good except those for estimated daily discharges, which are fair. Small diversions above station for irrigation.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 24	0800	5,600	19.93	June 21	1600	16,600	25.37
Apr. 9	0900	5,490	19.81	June 24	1300	15,900	25.16
May 7	1300	10,800	23.32	June 27	1700	16,200	25.23
May 26	0600	13,000	24.20				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	37	39	e55	102	95	139	551	569	642	74	58
2	26	40	37	e55	78	94	125	389	318	481	72	54
3	27	37	34	e50	70	91	116	354	237	377	69	47
4	27	39	40	e50	70	85	226	209	200	308	70	43
5	26	39	49	e50	99	76	260	880	174	270	71	45
6	25	40	49	59	236	69	188	8960	156	239	68	44
7	26	40	49	436	273	64	701	10300	142	218	64	35
8	24	40	49	1330	170	60	3880	5750	130	201	59	32
9	23	40	106	917	139	57	4980	904	119	186	57	30
10	26	50	117	1140	2370	56	993	955	114	171	54	31
11	25	51	117	553	2520	55	381	1260	158	160	54	31
12	25	52	117	266	1330	405	250	793	1140	163	56	31
13	26	55	117	182	458	1540	202	305	1850	149	58	31
14	26	54	120	139	246	1080	179	228	2150	140	53	30
15	24	51	342	115	190	587	207	188	988	132	50	30
16	32	52	1590	101	199	2910	166	162	749	126	49	29
17	58	51	e3500	91	617	1500	138	143	330	119	48	29
18	37	51	e1000	86	242	639	125	180	346	114	46	28
19	34	92	e300	80	156	313	117	250	1830	108	44	28
20	35	864	e200	128	130	419	111	172	7140	104	44	28
21	36	667	e130	1260	117	976	106	137	15400	103	42	28
22	38	296	106	594	107	492	99	117	13900	99	41	28
23	39	197	e95	165	97	2840	96	382	13700	95	41	28
24	39	130	e85	119	90	4560	93	4860	15500	92	41	27
25	37	90	e80	96	92	1230	92	10400	11000	90	40	24
26	35	72	e75	90	94	590	89	12400	4230	88	39	25
27	34	59	e70	85	85	315	85	4370	12500	84	39	25
28	33	52	e60	75	103	230	81	1140	11000	82	76	25
29	33	46	e60	75	---	193	100	1160	2250	80	83	24
30	33	42	e60	71	---	171	229	1110	918	79	70	24
31	33	---	e55	120	---	154	---	841	---	75	68	---
TOTAL	970	3426	8848	8633	10480	21946	14554	69850	119238	5375	1740	972
MEAN	31.3	114	285	278	374	708	485	2253	3975	173	56.1	32.4
MAX	58	864	3500	1330	2520	4560	4980	12400	15500	642	83	58
MIN	23	37	34	50	70	55	81	117	114	75	39	24
AC-FT	1920	6800	17550	17120	20790	43530	28870	138500	236500	10660	3450	1930
CFSM	.04	.14	.35	.34	.46	.87	.59	2.76	4.86	.21	.07	.04
IN.	.04	.16	.40	.39	.48	1.00	.66	3.18	5.43	.24	.08	.04

e Estimated

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1993, BY WATER YEAR (WY)

	269	293	252	281	407	231	449	668	639	226	84.0	328
MEAN	269	293	252	281	407	231	449	668	639	226	84.0	328
MAX	3631	3431	2400	1564	5214	1341	2766	3239	5005	3999	713	2842
(WY)	1961	1941	1977	1979	1992	1941	1992	1982	1973	1940	1946	1978
MIN	.58	.003	.19	.055	13.5	6.58	4.43	8.16	.72	2.14	.16	.13
(WY)	1991	1957	1991	1957	1954	1956	1956	1956	1990	1954	1990	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1938 - 1993

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1938 - 1993
ANNUAL TOTAL	450209	266032	
ANNUAL MEAN	1230	729	
HIGHEST ANNUAL MEAN			343
LOWEST ANNUAL MEAN			1385
HIGHEST DAILY MEAN			6.12
LOWEST DAILY MEAN	19000	Feb 12	53000
ANNUAL SEVEN-DAY MINIMUM	20	Sep 14	.00
INSTANTANEOUS PEAK FLOW	25	Sep 10	.00
INSTANTANEOUS PEAK STAGE			73000
ANNUAL RUNOFF (AC-FT)	893000	527700	248500
ANNUAL RUNOFF (CFSM)	1.51	.89	.42
ANNUAL RUNOFF (INCHES)	20.50	12.11	5.70
10 PERCENT EXCEEDS	3080	1190	407
50 PERCENT EXCEEDS	180	97	53
90 PERCENT EXCEEDS	32	31	8.7

* No flow at times.

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 August 1993 (discontinued). Pesticide analyses: January 1968 to August 1981. Sediment analyses: November 1977 to August 1993 (discontinued).

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, May 20, 1980.

WATER TEMPERATURE: Maximum daily, 33.0°C July 16, 1978; minimum daily, 5.0°C Jan. 22, 1978.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	
OCT 15...	1030	53	779	8.0	23.0	3.1	6.6	77	1.7	180	440	300	
DEC 29...	1320	87	701	8.1	20.0	--	8.2	90	1.2	--	--	250	
MAR 10...	1120	68	755	8.2	20.5	5.4	8.5	94	1.3	170	180	270	
MAY 04...	1505	175	389	8.0	23.0	50	7.7	90	3.6	420	800	130	
JUL 13...	1417	254	740	8.0	26.5	--	7.8	97	1.2	--	--	330	
AUG 19...	1215	31	730	8.2	27.0	0.90	7.3	92	1.0	190	290	300	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CaCO3	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
OCT 15...	3	110	6.3	50	1	3.0	0	364	298	300	19	68	
DEC 29...	0	90	5.1	39	1	4.5	--	--	--	250	25	57	
MAR 10...	0	100	5.7	49	1	3.3	0	336	276	280	25	71	
MAY 04...	0	46	3.5	25	1	3.4	0	163	134	130	12	32	
JUL 13...	0	120	6.1	36	0.9	2.3	--	--	--	340	20	46	
AUG 19...	0	110	6.6	41	1	2.1	0	376	308	310	17	54	
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
OCT 15...	0.40	17	458	454	--	--	<0.010	<0.010	<0.050	<0.050	0.030	0.010	
DEC 29...	0.30	20	--	389	0.130	--	--	<0.010	0.130	0.130	--	<0.010	
MAR 10...	0.30	16	446	437	--	--	--	0.020	--	<0.050	--	0.020	
MAY 04...	0.20	14	257	218	0.230	0.230	--	0.010	0.240	0.240	--	0.040	
JUL 13...	0.30	27	--	467	0.210	--	--	<0.010	0.210	0.210	--	0.030	
AUG 19...	0.30	25	421	442	0.073	--	--	<0.010	0.073	0.073	--	0.020	
DATE		NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 15...	0.27	--	--	0.30	0.090	0.060	0.060	0.060	0.18	49	7.0	43	
DEC 29...	--	--	--	<0.20	--	0.140	0.140	--	0.43	--	--	--	
MAR 10...	0.18	--	--	0.20	0.090	0.070	0.070	--	0.21	41	7.5	75	
MAY 04...	1.1	--	--	1.1	0.180	0.110	0.080	--	0.25	100	47	97	
JUL 13...	--	0.87	0.90	--	--	0.100	0.070	--	0.21	--	--	--	
AUG 19...	--	--	--	<0.20	0.060	0.050	0.050	--	0.15	35	2.9	53	

LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
OCT 15...	<10	330	<3	7	13	35	<10	2	<1	<1.0	370	<6
DEC 29...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 10...	<10	340	<3	5	8	25	<10	1	<1	<1.0	370	<6
MAY 04...	60	170	<3	62	5	6	10	2	<1	<1.0	170	<6
JUL 13...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	<10	330	<3	8	7	23	<10	<1	<1	<1.0	370	<6

LAVACA RIVER BASIN

203

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. Two measurements of water temperature were made during the year.

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 Company.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 20	1700	4,300	22.30	May 24	0400	3,280	20.95
Mar. 24	0300	4,840	22.87	June 20	2400	6,090	24.02
Apr. 7	2400	5,330	23.34	June 22	2200	8,260	25.58
May 7	0200	6,010	23.95				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	9.2	19	25	61	91	80	85	85	90	19	9.4
2	5.1	8.5	18	24	56	88	75	245	64	81	18	8.4
3	5.1	8.7	18	25	56	78	78	168	57	75	17	7.3
4	5.0	7.6	18	29	55	67	701	97	53	68	17	6.5
5	4.8	8.1	17	52	72	60	270	315	50	64	16	5.8
6	4.8	6.4	17	33	95	56	122	4030	47	60	15	5.2
7	4.8	6.9	18	278	70	54	1470	3640	44	58	15	4.8
8	4.7	7.4	18	223	58	51	4280	276	43	53	14	4.1
9	4.6	7.5	20	344	53	50	485	200	42	51	13	7.4
10	4.6	8.6	20	1130	389	48	186	594	41	48	13	15
11	4.6	11	19	160	385	47	147	114	51	46	13	8.8
12	4.4	11	18	82	112	188	128	87	60	44	13	7.1
13	4.3	9.9	18	60	72	347	117	76	116	42	12	6.8
14	4.1	8.2	402	50	61	94	128	69	561	39	11	7.4
15	4.1	8.2	1590	45	57	71	117	63	113	37	10	6.8
16	5.0	8.1	567	41	80	144	98	60	73	36	9.8	6.4
17	11	7.9	109	39	75	120	93	56	63	36	9.2	5.9
18	15	8.8	66	38	53	71	90	54	194	34	8.7	5.9
19	8.9	111	52	221	48	69	87	53	215	32	8.2	6.1
20	7.3	405	44	3320	48	1130	84	49	4400	32	7.5	5.9
21	6.9	150	41	1050	47	335	79	47	4930	30	7.1	6.0
22	6.7	309	39	178	43	171	76	45	4190	29	6.5	6.2
23	8.2	50	36	117	41	2800	74	590	5740	27	6.1	5.6
24	6.2	31	33	93	40	2650	74	2860	1730	26	5.8	4.6
25	5.5	24	31	73	256	234	73	483	275	26	5.5	4.1
26	5.3	21	30	66	1560	160	70	140	353	24	5.2	3.6
27	6.4	20	29	61	194	129	66	106	245	23	6.0	12
28	5.1	19	29	59	103	112	66	148	157	22	9.5	6.9
29	5.1	19	29	191	---	102	79	124	122	21	17	4.9
30	5.7	18	29	117	---	96	114	127	102	21	12	4.1
31	7.8	---	27	73	---	88	---	141	---	19	11	---
TOTAL	186.4	1329.0	3421	8297	4240	9801	9607	15142	24216	1294	351.1	199.0
MEAN	6.01	44.3	110	268	151	316	320	488	807	41.7	11.3	6.63
MAX	15	405	1590	3320	1560	2800	4280	4030	5740	90	19	15
MIN	4.1	6.4	17	24	40	47	66	45	41	19	5.2	3.6
AC-FT	370	2640	6790	16460	8410	19440	19060	30030	48030	2570	696	395
CFSM	.02	.13	.33	.81	.46	.95	.96	1.47	2.43	.13	.03	.02
IN.	.02	.15	.38	.93	.48	1.10	1.08	1.70	2.71	.14	.04	.02

LAVACA RIVER BASIN

08164300 NAVIDAD RIVER NEAR HALLETTSVILLE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1993, BY WATER YEAR (WY)

MEAN	60.8	113	130	143	178	116	215	340	270	26.8	30.2	176
MAX	476	932	943	691	1251	611	1158	1502	1792	91.6	332	1975
(WY)	1974	1966	1977	1968	1992	1992	1973	1972	1973	1973	1971	1974
MIN	.000	.035	.97	6.38	13.5	9.87	12.4	6.19	.68	.16	.014	.014
(WY)	1991	1991	1991	1990	1967	1991	1971	1963	1990	1990	1990	1990

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1962 - 1993

ANNUAL TOTAL	163355.3	78083.5	
ANNUAL MEAN	446	214	
HIGHEST ANNUAL MEAN			149
LOWEST ANNUAL MEAN			508
HIGHEST DAILY MEAN	15800	May 17	11.5
LOWEST DAILY MEAN	4.1	Oct 14	30500
ANNUAL SEVEN-DAY MINIMUM	4.4	Oct 9	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			53500
INSTANTANEOUS LOW FLOW			36.05
ANNUAL RUNOFF (AC-FT)	324000	154900	.00
ANNUAL RUNOFF (CFSM)	1.34	.64	108000
ANNUAL RUNOFF (INCHES)	18.30	8.75	.45
10 PERCENT EXCEEDS	1160	277	6.10
50 PERCENT EXCEEDS	41	47	135
90 PERCENT EXCEEDS	7.8	5.9	23
			2.3

* No flow for many days in 1984 and 1990.

LAVACA RIVER BASIN

205

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 10 ft³/s and those for estimated daily discharges, which are poor. Much of the low flow during the irrigation season (April to September) is drainage from rice fields irrigated by water originally diverted from the Colorado River. No known diversions above station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	2400	1,800	11.92	May 10	2000	2,630	13.73
Dec. 16	1700	1,780	11.86	May 24	1800	3,590	15.29
Jan. 10	1900	1,570	11.34	May 30	0500	1,720	11.72
Feb. 11	0800	2,910	14.21	June 14	1400	3,160	14.62
Apr. 8	2100	3,960	15.86	June 21	1200	8,310	19.73
May 7	0700	5,960	18.05	June 23	1700	7,990	19.51

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	22	11	3.6	63	49	e7.0	215	937	203	.00	e90
2	96	31	7.5	3.2	41	182	e5.0	307	666	124	.00	78
3	102	28	6.0	3.2	34	176	e4.0	480	280	90	.00	59
4	87	23	4.8	2.7	26	80	e300	259	108	72	.00	53
5	77	22	4.1	2.5	72	38	778	252	49	63	.00	56
6	71	19	3.5	2.4	236	23	267	4120	27	59	.00	43
7	71	13	2.7	151	189	17	537	5150	19	50	.00	31
8	67	7.9	1.9	1020	98	13	3340	2880	13	49	.00	22
9	66	6.7	3.2	1170	74	e10	2610	1940	e13	45	.00	21
10	65	8.7	3.7	1180	1680	e7.0	1570	2150	e12	49	.00	26
11	75	17	3.9	975	2720	7.4	850	2010	e100	45	.00	26
12	77	28	3.1	855	1790	e250	353	1090	e1500	44	.00	26
13	71	33	2.3	378	891	e600	169	526	e2500	68	.00	42
14	89	34	12	128	403	e250	107	250	3060	76	.00	53
15	96	29	492	71	161	e150	445	122	2250	e45	.00	36
16	93	24	1520	48	520	e300	263	49	1660	e40	.00	30
17	139	19	1230	38	538	e300	114	20	1050	e43	.00	23
18	126	16	637	30	231	e150	62	13	1080	e46	.00	19
19	85	136	238	35	84	e80	27	29	1070	e50	.00	15
20	61	1300	103	128	48	e300	18	25	4350	e100	.00	17
21	51	1710	65	450	32	e1000	15	11	7660	e260	.00	18
22	49	1590	48	117	24	e350	6.5	4.3	5820	260	.00	28
23	40	1020	37	66	17	900	.73	233	7250	230	.00	37
24	32	604	28	45	11	880	.53	3020	5450	134	.00	44
25	24	343	19	32	49	435	.15	2710	3080	e80	.00	36
26	17	151	11	43	237	e150	1.5	1860	2310	e50	.00	28
27	14	77	7.3	26	238	e60	1.0	1110	1670	e10	.00	25
28	10	43	6.1	21	73	e40	11	902	983	e4.0	e10	23
29	7.3	26	5.1	41	---	e25	26	819	638	e2.0	e70	21
30	6.6	16	5.0	195	---	e15	70	1630	367	e.60	e100	21
31	15	---	4.3	127	---	e8.0	---	1450	---	e.20	e120	---
TOTAL	1962.9	7397.3	4525.5	7387.6	10580	6845.4	11958.41	35636.3	55972	2391.80	300.00	1047
MEAN	63.3	247	146	238	378	221	399	1150	1866	77.2	9.68	34.9
MAX	139	1710	1520	1180	2720	1000	3340	5150	7660	260	120	90
MIN	6.6	6.7	1.9	2.4	11	7.0	.15	4.3	12	.20	.00	15
AC-FT	3890	14670	8980	14650	20990	13580	23720	70680	111000	4740	595	2080
CFSM	.22	.85	.51	.82	1.31	.76	1.38	3.98	6.46	.27	.03	.12
IN.	.25	.95	.58	.95	1.36	.88	1.54	4.59	7.20	.31	.04	.13

e Estimated

LAVACA RIVER BASIN

08164450 SANDY CREEK NEAR LOUISE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1993, BY WATER YEAR (WY)

MEAN	114	164	128	302	326	108	202	335	381	136	23.1	256
MAX	375	964	746	956	2331	399	1041	1150	1866	475	66.0	1364
(WY)	1985	1986	1992	1992	1992	1985	1992	1993	1993	1983	1981	1978
MIN	19.4	3.93	.008	1.36	.28	1.53	3.14	2.48	.030	58.8	3.21	11.8
(WY)	1980	1992	1991	1982	1988	1981	1980	1978	1990	1986	1991	1988

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1978 - 1993

ANNUAL TOTAL	211683.7		146004.21									
ANNUAL MEAN	578		400							205		
HIGHEST ANNUAL MEAN										606		1992
LOWEST ANNUAL MEAN										51.2		1990
HIGHEST DAILY MEAN	9840	Feb 12	7660	Jun 21						11400	Sep 14	1978
LOWEST DAILY MEAN	1.9	Jun 27	.00	Aug 1						.00	*	
ANNUAL SEVEN-DAY MINIMUM	2.5	Jun 22	.00	Aug 1						.00	Mar 10	1980
INSTANTANEOUS PEAK FLOW										14000	Sep 14	1978
INSTANTANEOUS PEAK STAGE										23.03	Sep 14	1978
INSTANTANEOUS LOW FLOW										.00	*	
ANNUAL RUNOFF (AC-FT)	419900		289600							148400		
ANNUAL RUNOFF (CFSM)	2.00		1.38							.71		
ANNUAL RUNOFF (INCHES)	27.25		18.79							9.63		
10 PERCENT EXCEEDS	1770		1170							440		
50 PERCENT EXCEEDS	85		49							18		
90 PERCENT EXCEEDS	6.6		2.2							.06		

* No flow at times.

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
NOV 06...	1035	17	602	8.0	11.0	10.2	92	2.2	180	33	46	16
DEC 30...	1125	9.1	254	7.7	21.0	8.2	92	1.5	70	1	19	5.5
MAR 04...	1525	90	122	7.5	19.0	9.2	99	3.2	42	4	12	3.0
APR 28...	1405	40	288	7.7	23.0	8.0	93	3.7	100	22	31	6.3
JUL 13...	1242	0.80	331	7.9	28.5	8.0	103	1.6	110	11	32	7.1
AUG 19...	1040	40	700	8.0	27.5	6.8	86	2.0	230	52	60	19

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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)
NOV 06...	43	1	8.2	150	15	84	0.30	31	332	--	--	0.020
DEC 30...	16	0.8	7.3	69	9.6	28	0.20	14	142	0.091	--	--
MAR 04...	8.3	0.6	3.7	38	7.0	11	0.10	8.0	77	0.090	0.090	--
APR 28...	19	0.8	4.0	81	12	34	0.20	16	173	0.360	0.360	--
JUL 13...	20	0.8	1.8	98	16	33	0.20	14	184	0.150	--	--
AUG 19...	53	2	7.7	180	26	110	0.30	23	406	0.260	0.260	--

DATE	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, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)
NOV 06...	--	<0.050	--	0.060	--	0.84	--	--	0.90	0.090	--
DEC 30...	<0.010	0.091	0.091	--	0.030	--	0.47	0.50	--	--	0.050
MAR 04...	0.020	0.110	0.110	--	0.040	--	1.7	1.7	--	--	0.060
APR 28...	0.030	0.390	0.390	--	0.080	--	0.72	0.80	--	--	0.100
JUL 13...	<0.010	0.150	0.150	--	0.020	--	0.38	0.40	--	--	0.040
AUG 19...	0.020	0.280	0.280	--	0.050	--	0.95	1.0	--	--	0.050

[illegible]

LAVACA RIVER BASIN

08164450 SANDY CREEK NEAR LOUISE, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1400	1,520	14.11	June 13	1800	2,110	15.23
Feb. 11	1500	2,270	a/15.48	June 21	1300	2,750	16.14
Apr. 9	0400	1,570	14.23	June 26	1300	1,520	14.12
May 7	0700	4,540	18.01				

a/ From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	2.3	11	4.4	48	57	6.3	263	924	140	38	109
2	34	4.9	7.6	3.7	26	133	5.2	501	301	103	32	65
3	58	29	6.3	3.4	16	223	4.7	733	127	91	32	38
4	39	17	5.4	3.1	12	95	238	242	73	81	34	29
5	24	9.7	4.8	2.8	29	41	355	177	42	72	28	36
6	16	5.6	4.2	2.9	224	22	128	2520	29	54	20	26
7	15	3.9	3.4	141	139	13	225	4040	23	35	21	18
8	23	2.7	3.0	890	68	8.9	1270	2260	20	33	38	13
9	28	2.0	6.5	804	42	6.5	1420	1300	21	25	39	15
10	28	1.7	28	765	1200	5.0	643	1010	16	20	38	17
11	29	2.7	22	385	2070	4.9	222	994	358	13	45	10
12	27	7.0	12	227	1390	213	103	376	1300	13	37	9.0
13	26	24	7.1	144	517	448	56	152	1890	18	32	10
14	24	24	17	76	191	229	32	92	1800	18	35	11
15	21	17	631	41	109	100	23	61	1320	15	39	8.8
16	21	12	1150	27	371	242	27	40	1060	15	42	7.3
17	45	8.7	789	19	578	238	27	32	849	20	34	7.2
18	70	7.4	325	14	151	98	17	66	350	27	31	7.3
19	62	50	143	11	67	44	14	130	467	28	32	9.6
20	40	856	80	17	38	345	12	113	2180	30	31	7.7
21	31	1450	57	23	26	493	12	75	2680	54	34	6.3
22	24	1260	44	28	17	195	11	39	2410	81	28	9.4
23	16	1030	33	21	13	360	9.1	138	2510	73	32	11
24	10	451	74	15	9.8	280	8.1	849	2080	64	27	12
25	7.1	205	60	11	68	143	8.2	1080	1350	50	14	9.6
26	5.3	128	25	8.1	742	76	13	774	1350	39	8.7	10
27	4.2	70	15	7.3	325	40	16	535	1250	26	9.6	10
28	3.9	43	10	9.6	102	24	14	753	976	27	27	8.7
29	3.4	24	8.1	41	---	15	20	625	710	27	114	6.3
30	2.2	16	6.8	166	---	11	95	722	259	22	148	4.3
31	1.7	---	5.6	98	---	8.1	---	1080	---	21	147	---
TOTAL	772.8	5764.6	3594.8	4009.3	8588.8	4211.4	5034.6	21772	28725	1335	1267.3	541.5
MEAN	24.9	192	116	129	307	136	168	702	957	43.1	40.9	18.0
MAX	70	1450	1150	890	2070	493	1420	4040	2680	140	148	109
MIN	1.7	1.7	3.0	2.8	9.8	4.9	4.7	32	16	13	8.7	4.3
AC-FT	1530	11430	7130	7950	17040	8350	9990	43180	56980	2650	2510	1070
CFSM	.14	1.08	.65	.73	1.72	.76	.94	3.95	5.38	.24	.23	.10
IN.	.16	1.20	.75	.84	1.79	.88	1.05	4.55	6.00	.28	.26	.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1993, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	135	131	103	215	199	73.4	149	240	219	119	39.5	199				
MAX	555	399	587	881	1243	356	552	702	957	412	76.9	1063				
(WY)	1984	1986	1992	1980	1992	1985	1991	1993	1993	1983	1983	1979				
MIN	14.2	7.29	.17	.72	.87	.81	12.3	11.2	5.56	38.1	24.2	5.33				
(WY)	1988	1981	1991	1982	1986	1986	1983	1978	1990	1986	1982	1988				

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1978 - 1993

ANNUAL TOTAL	103525.1	85617.1	
ANNUAL MEAN	283	235	
HIGHEST ANNUAL MEAN			151
LOWEST ANNUAL MEAN			309
HIGHEST DAILY MEAN	7250	4040	11100
LOWEST DAILY MEAN	1.7	1.7	45.2
ANNUAL SEVEN-DAY MINIMUM	2.9	3.2	.01
INSTANTANEOUS PEAK FLOW		4540	13400
INSTANTANEOUS PEAK STAGE		18.01	24.49
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	205300	169800	109500
ANNUAL RUNOFF (CFSM)	1.59	1.32	.85
ANNUAL RUNOFF (INCHES)	21.64	17.89	11.54
10 PERCENT EXCEEDS	867	822	301
50 PERCENT EXCEEDS	47	32	22
90 PERCENT EXCEEDS	6.5	6.5	1.4

* No flow occurred on Dec. 19, 24, 25, 1990.

08164503 WEST MUSTANG CREEK NEAR GANADO, 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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
NOV 06...	0930	7.0	450	7.8	12.0	8.9	82	2.9	120	34	36	7.7	
DEC 30...	0940	6.3	316	7.6	20.0	6.4	70	1.9	100	17	31	5.6	
MAR 04...	1355	89	137	8.0	15.5	9.2	92	2.8	46	0	14	2.7	
APR 28...	1305	12	470	7.8	21.5	7.2	81	4.6	150	31	48	7.6	
JUL 13...	1017	22	420	7.7	26.5	6.2	77	1.6	130	27	38	7.3	
AUG 19...	0940	36	849	8.1	27.0	6.0	75	1.3	280	98	87	16	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END CAC03 (MG/L)	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)	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)
NOV 06...	32	1		9.1	88	15	68	0.30	23	244	0.290	--	0.070
DEC 30...	22	1		6.3	84	16	37	0.20	21	191	0.150	0.150	--
MAR 04...	9.7	0.6		3.7	46	8.0	10	0.10	11	88	0.190	0.190	--
APR 28...	31	1		5.6	120	17	67	0.30	22	282	2.40	--	--
JUL 13...	28	1		2.7	98	17	56	0.30	16	229	0.960	0.960	--
AUG 19...	74	2		3.4	180	19	150	0.30	25	487	0.190	--	--
DATE		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, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	
NOV 06...	--		0.360	--	0.080	--	0.82	--	--	0.90	0.480	--	
DEC 30...	0.010		0.160	0.160	--	0.040	--	0.46	0.50	--	--	0.110	
MAR 04...	0.020		0.210	0.210	--	0.050	--	1.2	1.2	--	--	0.080	
APR 28...	<0.010		2.40	2.40	--	0.020	--	0.18	0.20	--	--	0.250	
JUL 13...	0.030		0.990	0.990	--	0.060	--	0.54	0.60	--	--	0.090	
AUG 19...	<0.010		0.190	0.190	--	0.030	--	0.37	0.40	--	--	0.070	
DATE		PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	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 06...	--		0.460	--	--	--	--	--	--	--	--	--	
DEC 30...	0.120		--	0.37	3	100	<0.5	<1.0	<5	<3	<10	180	
MAR 04...	0.080		--	0.25	--	--	--	--	--	--	--	--	
APR 28...	0.250		--	0.77	--	--	--	--	--	--	--	--	
JUL 13...	0.060		--	0.18	2	150	<0.5	<1.0	<5	<3	<10	75	
AUG 19...	0.060		--	0.18	--	--	--	--	--	--	--	--	

211

08164503 WEST MUSTANG CREEK NEAR GANADO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX

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 1988 to current year.

285331096343501 - LAKE TEXANA SITE AC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	RESER- VOIR STORAGE (AC-FT)	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS TOTAL (MG/L AS CAC03)	
FEB													
02...	0810	160000	1.00	220	8.0	14.0	0.20	200	49	9.8	94	74	
02...	0812	--	10.0	219	7.9	12.5	--	--	--	9.5	88	--	
02...	0814	--	20.0	220	7.9	12.5	--	--	--	9.7	90	--	
02...	0816	--	30.0	219	7.8	12.5	--	--	--	9.4	87	--	
02...	0818	--	40.0	219	7.8	12.5	--	--	--	9.5	88	--	
02...	0820	--	50.0	219	7.8	12.5	--	--	--	9.5	88	--	
02...	0822	--	62.0	218	7.8	12.5	--	130	48	9.5	88	74	
APR													
02...	0750	159000	1.00	159	7.5	19.5	0.30	250	100	7.6	82	54	
02...	0752	--	10.0	160	7.5	19.5	--	--	--	7.7	83	--	
02...	0754	--	20.0	160	7.5	19.5	--	--	--	7.7	83	--	
02...	0756	--	30.0	160	7.5	19.5	--	--	--	7.7	83	--	
02...	0758	--	40.0	163	7.4	18.0	--	--	--	7.2	75	--	
02...	0800	--	50.0	165	7.3	17.0	--	--	--	6.6	68	--	
02...	0802	--	60.0	165	7.3	17.0	--	--	--	6.8	70	--	
02...	0804	--	63.0	166	7.3	16.0	--	250	110	6.2	62	58	
JUL													
08...	0750	154000	1.00	104	7.2	29.0	0.40	130	21	5.9	76	42	
08...	0752	--	10.0	105	7.2	29.0	--	--	--	5.8	75	--	
08...	0754	--	20.0	104	7.2	28.5	--	--	--	5.7	73	--	
08...	0756	--	30.0	104	7.0	28.5	--	--	--	5.1	66	--	
08...	0758	--	40.0	103	6.7	27.5	--	--	--	2.0	25	--	
08...	0800	--	50.0	94	6.5	26.5	--	--	--	0	0	--	
08...	0802	--	60.0	97	6.5	26.0	--	--	--	0	0	--	
08...	0804	--	68.0	107	6.6	25.5	--	180	31	0	0	38	
DATE		HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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)
FEB													
02...	8	24	3.3	14	0.7	4.3	66	7.7	21	0.20	12	128	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	7	24	3.4	14	0.7	4.2	67	7.8	22	0.20	13	131	
APR													
02...	1	18	2.3	9.6	0.6	3.3	53	5.7	12	0.20	0.27	85	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	--	--	--	--	--	--	--	--	--	--	--	--	
02...	3	19	2.5	9.6	0.5	3.6	55	5.7	13	0.20	10	99	
JUL													
08...	5	14	1.8	4.1	0.3	3.0	38	1.9	5.0	<0.10	12	66	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
08...	3	12	1.9	5.3	0.4	2.7	34	1.9	6.1	<0.10	11	65	

LAVACA RIVER BASIN

213

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L)	OIL AND GREASE, TOTAL RECOV- METRIC (MG/L)	RESIDUE FIXED NON FILTER- ABLE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (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 DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)
FEB												
02...	25	17	--	8	0.370	0.370	0.030	0.400	0.400	0.030	0.37	0.40
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	31	21	--	10	0.410	--	<0.010	0.410	0.410	0.010	0.29	0.30
APR												
02...	21	<1	<1	--	0.410	--	<0.010	0.410	0.410	0.010	0.39	0.40
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	<1	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	28	6	--	22	0.420	--	<0.010	0.420	0.420	0.010	0.39	0.40
JUL												
08...	10	11	--	0	0.220	--	<0.010	0.220	0.220	0.030	0.47	0.50
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	0.230	--	<0.010	0.230	0.230	<0.010	--	0.50
08...	--	--	--	--	0.250	--	<0.010	0.250	0.250	0.060	0.44	0.50
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	38	6	--	32	--	--	<0.010	--	<0.050	0.410	0.49	0.90

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	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)	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)
FEB												
02...	0.090	0.090	0.28	6.00	0.400	2	85	<0.5	<1.0	<5	<3	<10
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.070	0.070	0.21	--	--	2	84	<0.5	<1.0	<5	<3	<10
APR												
02...	0.070	0.070	0.21	1.80	0.100	2	2	<0.5	<1.0	<5	<3	<10
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.080	0.090	0.28	--	--	1	69	<0.5	<1.0	<5	<3	<10
JUL												
08...	0.090	0.080	0.25	1.50	0.100	3	59	<0.5	<1.0	<5	<3	<10
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	0.090	0.090	0.28	--	--	--	--	--	--	--	--	--
08...	0.120	0.100	0.31	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	0.380	0.360	1.1	--	--	10	60	<0.5	<1.0	<5	5	<10

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285331096343501 - LAKE TEXANA SITE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)
FEB												
02...	17	<10	<4	<1	<0.1	<10	<10	<1	<1.0	90	<6	6
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	23	<10	<4	<1	<0.1	<10	<10	<1	<1.0	90	6	10
APR												
02...	<3	<10	<4	<1	0.1	<10	<10	<1	<1.0	2	<6	<3
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	75	<10	<4	22	<0.1	<10	<10	<1	<1.0	67	<6	<3
JUL												
08...	82	<10	<4	2	0.1	<10	<10	<1	<1.0	45	<6	<3
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	120	--	--	10	--	--	--	--	--	--	--	--
08...	240	--	--	120	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	1400	<10	<4	400	<0.1	<10	<10	<1	<1.0	47	<6	12

285326096342101 - LAKE TEXANA SITE AL

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
02...	0845	1.00	220	8.0	13.5	9.8	93
02...	0847	10.0	219	7.9	12.5	9.5	88
02...	0849	20.0	219	7.9	12.5	9.5	88
02...	0851	33.0	219	7.8	12.5	9.4	87
APR							
02...	0840	1.00	160	7.5	19.5	7.7	83
02...	0842	10.0	159	7.5	19.5	7.6	82
02...	0844	20.0	159	7.5	19.5	7.7	83
02...	0846	30.0	160	7.5	19.5	7.6	82
JUL							
08...	0830	1.00	105	7.2	28.5	5.9	76
08...	0832	10.0	105	7.2	28.5	5.9	76
08...	0834	20.0	105	7.2	28.5	5.7	73
08...	0840	32.0	107	7.0	28.5	4.6	59

285534096322301 - LAKE TEXANA SITE BC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
02...	0900	1.00	216	7.8	13.0	9.5	89
02...	0902	10.0	207	7.7	12.5	9.2	85
02...	0904	20.0	208	7.8	12.5	9.2	85
02...	0906	30.0	208	7.8	12.5	9.2	85
02...	0908	40.0	204	7.7	12.5	9.1	85
APR							
02...	0905	1.00	155	7.3	19.0	7.1	76
02...	0907	10.0	155	7.3	19.0	7.0	75
02...	0909	20.0	155	7.3	19.0	7.0	75
02...	0911	30.0	163	7.2	18.0	6.5	68
02...	0913	40.0	163	7.2	18.0	6.5	68
JUL							
08...	0845	1.00	109	7.3	29.0	6.1	79
08...	0847	10.0	109	7.3	29.0	6.0	78
08...	0849	20.0	110	7.3	29.0	6.0	78
08...	0851	30.0	110	7.2	29.0	6.0	78
08...	0853	40.0	112	7.2	29.0	6.0	78

LAVACA RIVER BASIN

215

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285816096320201 - LAKE TEXANA SITE CC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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)	HARD- NESS NONCARB DISSOLV FLO. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
FEB												
02...	0925	1.00	179	7.7	13.5	0.20	9.2	87	63	6	21	2.6
02...	0927	10.0	175	7.6	12.5	--	8.8	82	--	--	--	--
02...	0929	20.0	181	7.5	12.0	--	8.5	78	--	--	--	--
02...	0931	30.0	179	7.5	12.0	--	8.4	77	--	--	--	--
02...	0933	38.0	180	7.6	12.0	--	8.3	76	65	3	22	2.5
APR												
02...	0925	1.00	151	7.2	19.5	0.20	6.2	67	56	0	19	2.0
02...	0927	10.0	190	7.2	19.5	--	6.2	67	--	--	--	--
02...	0929	20.0	161	7.1	18.5	--	5.6	59	--	--	--	--
02...	0931	30.0	162	7.2	18.0	--	5.9	62	--	--	--	--
02...	0933	38.0	162	7.2	18.0	--	5.8	61	54	0	18	2.3
JUL												
08...	0905	1.00	113	7.3	29.0	0.30	5.9	76	46	4	15	2.1
08...	0907	10.0	113	7.3	29.0	--	5.9	76	--	--	--	--
08...	0909	20.0	114	7.3	29.0	--	5.9	76	--	--	--	--
08...	0911	30.0	114	7.3	29.0	--	5.9	76	--	--	--	--
08...	0913	35.0	114	7.3	28.5	--	5.9	76	46	3	15	2.0
FEB												
02...	12	0.7	4.3	57	6.8	15	0.10	11	109	0.350	0.350	0.020
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	10	0.5	4.3	62	6.4	13	0.10	10	107	0.290	0.290	0.010
APR												
02...	8.1	0.5	3.5	67	4.9	9.8	0.20	9.6	99	0.320	--	<0.010
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	9.4	0.6	3.3	55	5.6	12	0.20	10	96	0.410	--	<0.010
JUL												
08...	5.4	0.3	2.8	43	2.2	6.1	<0.10	13	74	0.280	--	<0.010
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	0.290	--	<0.010
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	4.3	0.3	2.8	43	2.0	5.6	<0.10	13	72	0.270	--	<0.010
FEB												
02...	0.370	0.370	0.050	0.35	0.40	0.090	0.080	0.25	3.90	0.200	98	5
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.300	0.300	0.090	0.31	0.40	0.090	0.080	0.25	--	--	54	5
APR												
02...	0.320	0.320	0.020	0.48	0.50	0.070	0.050	0.15	2.00	0.200	43	6
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--
02...	0.410	0.410	0.020	0.48	0.50	0.110	0.070	0.21	--	--	54	15
JUL												
08...	0.280	0.280	0.040	0.46	0.50	0.110	0.090	0.28	<0.100	<0.100	39	<1
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	0.290	0.290	0.040	0.36	0.40	0.110	0.100	0.31	--	--	60	<10
08...	--	--	--	--	--	--	--	--	--	--	--	--
08...	0.270	0.270	0.040	0.66	0.70	0.120	0.090	0.28	--	--	91	6

LAVACA RIVER BASIN

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

285816096320201 - LAKE TEXANA SITE CC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	DI- AZINON, TOTAL (UG/L)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L)	DI- SYSTON TOTAL (UG/L)	ETHION, TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PHORATE TOTAL (UG/L)	DEF TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L)
FEB											
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
APR											
02...	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--
02...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
02...	--	--	--	--	--	--	--	--	--	--	--
02...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
JUL											
08...	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
08...	--	--	--	--	--	--	--	--	--	--	--
08...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

290042096331401 - LAKE TEXANA SITE DC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)
FEB											
02...	1010	1.00	201	7.8	13.0	0.20	9.0	85	78	0	27
02...	1012	10.0	269	7.6	12.0	--	7.5	69	--	--	--
02...	1014	23.0	282	7.6	12.0	--	7.2	66	110	33	40
APR											
02...	1030	1.00	198	7.3	20.5	0.20	5.5	60	77	0	27
02...	1032	10.0	173	7.2	20.0	--	5.1	56	--	--	--
02...	1034	20.0	153	6.9	19.0	--	3.4	36	54	0	18
JUL											
08...	1000	1.00	290	7.6	29.0	0.30	5.5	71	120	4	41
08...	1002	10.0	270	7.6	29.0	--	5.5	71	--	--	--
08...	1004	22.0	255	7.5	29.0	--	5.2	67	100	5	36

DATE	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 DIS FIX END FIELD CACO3 (MG/L)	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)	OIL AND GREASE, TOTAL RECOV. GRAVI- METRIC (MG/L)
FEB											
02...	2.5	10	0.5	4.8	78	6.5	13	0.10	10	122	--
02...	--	--	--	--	--	--	--	--	--	--	--
02...	3.1	15	0.6	5.0	80	9.2	E28	0.10	12	--	--
APR											
02...	2.4	9.2	0.5	3.8	82	5.4	11	0.20	12	122	<1
02...	--	--	--	--	--	--	--	--	--	--	<1
02...	2.1	8.3	0.5	3.4	53	5.2	11	0.20	10	92	--
JUL											
08...	3.5	14	0.6	2.7	110	5.4	15	0.20	17	168	--
08...	--	--	--	--	--	--	--	--	--	--	--
08...	3.3	12	0.5	2.7	98	4.6	14	0.20	17	150	--

08164525 LAKE TEXANA NEAR EDNA, TX--Continued

290042096331401 - LAKE TEXANA SITE DC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (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 DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)
FEB										
02...	0.260	0.260	0.010	0.270	0.270	0.090	0.31	0.40	0.080	0.070
02...	--	--	--	--	--	--	--	--	--	--
02...	0.220	0.220	0.010	0.230	0.230	0.150	0.35	0.50	0.080	0.060
APR										
02...	0.190	0.190	0.020	0.210	0.210	0.090	0.61	0.70	0.070	0.050
02...	--	--	--	--	--	--	--	--	--	--
02...	0.400	--	<0.010	0.400	0.400	0.050	0.45	0.50	0.070	0.070
JUL										
08...	0.140	0.140	0.050	0.190	0.190	0.050	0.45	0.50	0.050	0.040
08...	0.170	0.170	0.070	0.240	0.240	0.050	0.35	0.40	0.060	0.050
08...	0.170	0.170	0.070	0.240	0.240	0.050	0.45	0.50	0.060	0.050

DATE	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	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)	DI- AZINON, TOTAL (UG/L)	CHLOR- PYRIFOS TOTAL RECOVER (UG/L)	DI- SYSTON TOTAL (UG/L)	ETHION, TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
FEB										
02...	0.21	11.0	7.60	38	3	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	0.18	--	--	50	12	--	--	--	--	--
APR										
02...	0.15	6.20	0.600	64	14	--	--	--	--	--
02...	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
02...	0.21	--	--	52	31	<0.01	<0.01	<0.01	<0.01	<0.01
JUL										
08...	0.12	9.60	0.600	11	2	--	--	--	--	--
08...	0.15	--	--	40	<10	<0.01	<0.01	<0.01	<0.01	<0.01
08...	0.15	--	--	61	10	<0.01	<0.01	<0.01	<0.01	<0.01

DATE	METHYL PARA- THION, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PHORATE TOTAL (UG/L)	DEF TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	FONOFOS (DY- FONATE) WATER WHOLE TOT. REC (UG/L)	SILVEX, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
FEB										
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
APR										
02...	--	--	--	--	--	--	--	--	--	--
02...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
02...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--	--
JUL										
08...	--	--	--	--	--	--	--	--	--	--
08...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
08...	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--	--

285940096312101 - LAKE TEXANA SITE EC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OIL AND GREASE, TOTAL RECOV. GRAVI- METRIC (MG/L)
FEB								
02...	0945	1.00	153	7.5	14.0	8.8	84	--
02...	0947	10.0	117	7.4	12.5	8.6	80	--
02...	0949	20.0	116	7.3	12.0	8.5	78	--
02...	0951	30.0	116	7.3	12.0	7.9	73	--
APR								
02...	0959	1.00	126	7.0	20.0	5.2	57	<1
02...	1001	10.0	129	6.9	19.5	4.9	53	--
02...	1003	15.0	136	6.9	19.5	4.1	44	<1
02...	1005	20.0	138	6.8	19.0	3.5	37	--
02...	1007	29.0	115	6.7	18.5	0.6	6	--
JUL								
08...	0940	1.00	99	7.0	29.5	5.4	71	--
08...	0942	10.0	97	7.0	29.0	5.2	67	--
08...	0944	20.0	99	7.0	29.0	5.1	66	--
08...	0946	27.0	97	7.0	29.0	5.1	66	--

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.

PERIOD OF RECORD.--June 1970 to current year.

Water-quality records.--Chemical and biochemical analyses: April 1965 to August 1988. Pesticide analyses: July 1970 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 29.16 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. No known diversion above station. An undetermined amount of return water from irrigation enters the stream above this station. Recording rain gage discontinued Oct. 14, 1987.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 16	1500	4,240	18.97	June 14	0900	2,600	16.62
May 6	1300	6,420	23.57	June 20	1700	7,040	21.73
May 24	1600	1,620	14.60	June 23	1300	2,590	16.59
June 12	1100	2,380	16.21	June 27	0700	5,940	20.75

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.9	2.9	1.2	3.8	5.8	14	121	176	71	2.6	1.6
2	1.0	1.5	2.4	1.2	3.4	5.7	11	99	69	49	2.4	1.5
3	.98	1.3	2.2	1.2	4.3	5.4	9.2	127	39	36	2.6	1.6
4	.90	1.0	2.1	1.6	6.0	4.7	68	64	24	28	2.2	1.6
5	.84	1.0	1.8	1.7	8.7	4.1	31	564	16	22	2.1	1.5
6	.84	1.0	1.7	1.6	17	3.9	17	5680	12	17	1.8	1.5
7	.79	1.1	1.7	.76	35	3.8	133	2160	8.4	14	2.4	1.4
8	.82	1.0	1.5	265	27	3.8	342	293	6.3	12	2.6	1.3
9	.84	1.1	2.3	209	33	3.7	131	142	4.9	9.6	2.2	1.3
10	.84	2.4	2.5	227	937	3.6	66	140	7.2	8.1	2.1	1.3
11	.89	2.7	2.3	99	524	3.5	39	90	124	7.2	1.8	1.3
12	.82	3.3	2.2	60	162	96	26	61	1720	6.5	1.4	1.3
13	.70	2.4	2.2	40	86	307	19	40	698	5.8	1.3	1.3
14	.83	2.5	3.0	28	56	104	14	27	1940	5.1	1.2	1.4
15	.87	2.6	24	21	41	133	13	18	433	4.5	1.2	1.5
16	1.9	2.5	39	16	45	3050	14	13	174	4.5	1.2	1.5
17	1.5	2.4	29	13	42	920	9.5	9.6	98	3.7	1.2	1.5
18	.98	2.2	18	11	31	180	7.7	46	88	3.2	1.2	1.5
19	.92	15	12	8.6	23	101	6.5	139	631	4.2	1.2	1.5
20	.92	89	8.9	12	18	70	5.4	70	5430	2.7	1.2	4.3
21	.92	57	7.2	20	15	52	4.4	35	4430	2.8	1.3	2.3
22	1.0	45	5.7	17	12	41	3.7	20	1630	2.3	1.3	1.4
23	1.2	31	4.6	11	9.9	342	3.4	124	2090	2.2	1.3	1.3
24	1.2	23	3.4	8.2	8.1	346	3.2	1260	658	2.3	1.3	1.3
25	1.2	16	2.9	6.5	8.0	126	3.2	610	206	2.4	1.4	1.2
26	.98	11	2.2	5.2	6.6	79	3.1	142	955	2.3	1.3	1.2
27	.92	7.2	2.1	4.4	5.9	51	3.0	239	4630	2.2	2.3	1.2
28	.92	5.3	2.0	4.0	6.4	37	2.8	282	877	2.2	3.0	1.2
29	.95	4.1	1.9	4.8	---	28	3.4	148	199	2.3	2.2	1.1
30	1.0	3.5	1.7	5.2	---	23	18	78	110	2.3	1.9	1.0
31	1.1	---	1.5	4.4	---	18	---	128	---	2.6	1.8	---
TOTAL	30.67	341.0	196.9	1184.8	2175.1	6152.0	1024.5	12969.6	27483.8	340.0	55.0	44.9
MEAN	.99	11.4	6.35	38.2	77.7	198	34.1	418	916	11.0	1.77	1.50
MAX	1.9	89	39	265	937	3050	342	5680	5430	71	3.0	4.3
MIN	.70	1.0	1.5	1.2	3.4	3.5	2.8	9.6	4.9	2.2	1.2	1.0
AC-FT	61	676	391	2350	4310	12200	2030	25730	54510	674	109	89
CFSM	.01	.12	.07	.42	.85	2.16	.37	4.56	9.99	.12	.02	.02
IN.	.01	.14	.08	.48	.88	2.50	.42	5.26	11.15	.14	.02	.02

GARCITAS CREEK MAIN STEM

219

08164600 GARCITAS CREEK NEAR INEZ, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1993, BY WATER YEAR (WY)

MEAN	33.9	31.5	46.2	46.8	71.0	26.2	80.4	129	151	26.8	5.02	71.1
MAX	166	291	263	255	730	203	658	503	916	218	39.1	789
(WY)	1974	1983	1977	1992	1992	1985	1991	1979	1993	1983	1972	1978
MIN	.000	.000	.006	.022	.14	.66	.51	.16	.000	.51	.056	.000
(WY)	1990	1990	1990	1990	1990	1989	1989	1971	1990	1989	1988	1988

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1971 - 1993

ANNUAL TOTAL	56634.07	51998.27	
ANNUAL MEAN	155	142	59.5
HIGHEST ANNUAL MEAN			175
LOWEST ANNUAL MEAN			2.65
HIGHEST DAILY MEAN	4460	5680	10500
LOWEST DAILY MEAN	.70	.70	.00
ANNUAL SEVEN-DAY MINIMUM	.81	.81	.00
INSTANTANEOUS PEAK FLOW		7040	19700
INSTANTANEOUS PEAK STAGE		23.57	29.00
ANNUAL RUNOFF (AC-FT)	112300	103100	43130
ANNUAL RUNOFF (CFSM)	1.69	1.55	.65
ANNUAL RUNOFF (INCHES)	22.97	21.09	8.82
10 PERCENT EXCEEDS	244	175	57
50 PERCENT EXCEEDS	7.9	4.9	3.4
90 PERCENT EXCEEDS	1.1	1.2	.33

* No flow at times.

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.

Water-quality records.--Chemical, biochemical, and pesticide analyses: October 1968 to September 1979.

GAGE.--Water-stage recorder. Datum of gage is 5.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	0900	5,510	24.03	May 6	0700	8,500	29.56
Mar. 12	1700	1,810	19.08	June 20	1200	6,600	28.15
Mar. 16	0100	1,580	18.57	June 26	2300	1,750	21.15

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.41	1.4	2.0	.82	1.4	1.5	.37	256	75	26	1.5	.94
2	.40	.94	1.3	.72	1.3	2.2	.34	83	37	17	1.3	1.1
3	.39	.48	1.2	.79	1.4	1.3	.37	41	19	11	1.0	.85
4	.39	.41	1.2	.90	1.8	1.0	.82	20	11	8.3	1.0	.82
5	.38	.40	.86	.78	7.5	.99	10	574	7.4	6.9	.90	.78
6	.40	.40	.79	.64	12	.93	8.9	5790	5.3	5.9	.92	.70
7	.42	.40	.79	486	17	.93	19	642	3.8	5.2	.84	.64
8	.42	.41	.85	536	11	.93	98	138	3.5	4.7	.78	.66
9	.46	.46	3.3	179	25	.96	63	69	3.2	4.4	.74	.60
10	.57	5.7	2.9	282	3380	1.1	26	42	6.3	4.0	.78	.59
11	.61	42	2.3	73	578	1.2	10	27	102	3.6	.74	.60
12	.63	61	2.5	36	106	864	4.9	17	144	3.4	.77	.71
13	.69	49	3.7	22	45	544	2.2	12	166	3.2	.72	.89
14	.79	21	7.7	14	25	76	1.4	7.7	434	2.8	.76	1.1
15	.86	8.6	186	9.5	15	225	1.1	5.5	119	2.6	.78	.74
16	59	3.8	204	6.6	9.8	781	.56	4.2	54	2.5	.78	.59
17	184	2.9	53	4.4	5.6	111	.45	3.3	30	2.2	.71	.55
18	41	1.8	25	3.2	3.1	46	.37	21	82	2.1	.62	.55
19	15	112	15	2.4	2.3	24	.37	94	584	3.5	.74	.67
20	6.1	894	11	4.7	2.2	15	.33	40	5340	3.0	.64	.62
21	2.7	138	7.8	3.9	1.7	9.7	.32	17	1670	2.3	.58	.59
22	.92	80	5.3	10	1.1	6.0	.26	9.0	1110	2.2	.60	.44
23	.59	37	3.5	9.5	.90	4.9	.26	178	710	2.2	.59	.30
24	.44	21	2.3	6.2	.88	4.2	.28	833	150	2.2	.63	.83
25	.42	11	1.7	3.7	1.0	3.7	.38	569	67	2.2	.66	.53
26	.41	6.1	1.3	2.4	.99	1.8	.37	106	519	1.9	.66	.46
27	.40	3.7	.99	1.9	.87	1.5	.29	57	915	2.0	1.4	1.2
28	.41	2.5	.97	1.7	.88	.83	.34	307	168	1.5	1.5	.45
29	.53	1.9	1.2	2.2	---	.70	.49	178	72	1.5	2.0	.14
30	.66	2.5	1.1	1.7	---	.53	60	98	41	2.5	2.0	.12
31	.82	---	1.1	1.4	---	.44	---	85	---	1.9	1.3	---
TOTAL	321.22	1510.80	552.65	1708.05	4258.72	2733.34	311.47	10323.7	12648.5	144.7	28.94	19.76
MEAN	10.4	50.4	17.8	55.1	152	88.2	10.4	333	422	4.67	.93	.66
MAX	184	894	204	536	3380	864	98	5790	5340	26	2.0	1.2
MIN	.38	.40	.79	.64	.87	.44	.26	3.3	3.2	1.5	.58	.12
AC-FT	637	3000	1100	3390	8450	5420	618	20480	25090	287	57	39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1993, BY WATER YEAR (WY)

	MEAN	66.2	63.7	50.0	50.4	67.7	28.9	65.3	110	106	76.3	14.7	124
MAX	239	465	389	262	455	323	541	354	510	559	107	913	
(WY)	1982	1982	1992	1991	1992	1985	1991	1972	1973	1990	1972	1978	
MIN	.004	.021	.015	.052	.49	.086	.019	.43	.000	.031	.012	.013	
(WY)	1990	1989	1990	1990	1976	1989	1989	1988	1989	1989	1988	1988	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1971 - 1993

ANNUAL TOTAL	43240.67	34561.85	68.4	
ANNUAL MEAN	118	94.7	154	
HIGHEST ANNUAL MEAN			1.20	1992
LOWEST ANNUAL MEAN				1989
HIGHEST DAILY MEAN	4760	Feb 4	11400	Nov 1 1981
LOWEST DAILY MEAN	.00	Sep 2	.00	*
ANNUAL SEVEN-DAY MINIMUM	.09	Sep 1	.00	Jul 27 1982
INSTANTANEOUS PEAK FLOW			18300	Oct 31 1981
INSTANTANEOUS PEAK STAGE			30.80	Oct 31 1981
ANNUAL RUNOFF (AC-FT)	85770	68550	49550	
10 PERCENT EXCEEDS	185	138	51	
50 PERCENT EXCEEDS	3.7	2.2	1.9	
90 PERCENT EXCEEDS	.41	.44	.12	

* No flow at times.

GUADALUPE RIVER BASIN

221

08165300 NORTH FORK GUADALUPE RIVER NEAR HUNT, TX

LOCATION.--Lat 30°03'50", long 99°23'12", Kerr County, Hydrologic Unit 12100201, on right bank, 1,000 ft upstream from Ranch Road 1340, 1.9 mi downstream from Bear Creek, 3.1 mi west of Hunt, and 3.5 mi upstream from Honey Creek. Prior to June 7, 1989, at site 0.58 mi upstream at same datum.

DRAINAGE AREA.--169.0 mi².

PERIOD OF RECORD.--August 1967 to current year. Low-flow records not equivalent prior to June 7, 1989, because of undetermined channel flow loss between sites.

REVISED RECORDS.--WDR TX-74-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 1,800.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those above 200 ft³/s, which are fair, and those for estimated daily discharges, which are poor. Several observations of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred July 1, 1932 (gage height, 37.3 ft, at site 0.58 mi upstream), 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0245	1,110	5.45	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e34	34	40	44	36	35	25	33	40	26	19	18
2	e34	34	39	44	36	34	26	33	35	26	18	18
3	e34	34	39	44	35	32	26	31	34	25	18	19
4	e34	34	40	44	35	32	26	30	34	24	19	21
5	e34	34	38	44	36	31	26	31	33	24	19	21
6	e34	34	38	44	36	29	26	31	30	24	19	21
7	34	34	38	44	35	29	26	31	29	23	19	20
8	34	34	38	44	34	29	26	31	29	23	19	19
9	32	34	40	43	34	29	25	33	29	23	19	19
10	34	35	39	40	40	29	25	34	36	23	19	19
11	34	34	40	39	36	28	27	33	36	23	19	19
12	34	34	40	39	35	28	27	32	33	23	19	20
13	34	33	42	39	35	27	28	32	31	23	19	21
14	34	34	58	39	35	28	42	32	31	23	19	36
15	34	34	60	39	35	28	36	32	29	23	19	28
16	34	34	54	39	35	30	34	32	29	23	20	27
17	34	34	52	39	33	30	30	32	28	23	19	26
18	34	34	50	39	32	30	28	32	27	23	19	25
19	34	218	50	56	31	30	28	34	27	23	19	24
20	34	79	48	47	31	34	29	33	28	23	19	24
21	34	61	46	43	31	32	29	33	28	23	19	24
22	34	64	46	42	32	29	29	33	28	23	19	23
23	34	65	45	39	32	31	30	40	28	23	19	21
24	34	55	43	38	32	32	31	39	27	23	19	22
25	34	46	43	37	31	31	30	35	27	22	19	22
26	34	45	43	36	31	29	28	34	26	22	19	22
27	34	44	43	36	31	28	27	34	26	21	19	23
28	34	43	43	36	32	29	28	33	26	19	19	22
29	34	43	44	36	---	27	30	32	26	19	19	21
30	34	42	44	36	---	28	33	44	26	19	19	21
31	34	---	44	36	---	26	---	38	---	19	19	---
TOTAL	1052	1417	1367	1265	947	924	861	1037	896	704	588	666
MEAN	33.9	47.2	44.1	40.8	33.8	29.8	28.7	33.5	29.9	22.7	19.0	22.2
MAX	34	218	60	56	40	35	42	44	40	26	20	36
MIN	32	33	38	36	31	26	25	30	26	19	18	18
AC-FT	2090	2810	2710	2510	1880	1830	1710	2060	1780	1400	1170	1320
CFSM	.20	.28	.26	.24	.20	.18	.17	.20	.18	.14	.11	.13
IN.	.23	.31	.30	.28	.21	.20	.19	.23	.20	.16	.13	.15

e Estimated

GUADALUPE RIVER BASIN

08165300 NORTH FORK GUADALUPE RIVER NEAR HUNT, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1993, BY WATER YEAR (WY)

MEAN	68.5	31.4	45.6	32.5	30.5	29.6	43.2	42.0	43.9	42.9	58.8	43.1
MAX	529	54.4	296	113	108	144	351	149	278	465	452	198
(WY)	1986	1975	1985	1968	1992	1992	1977	1990	1981	1987	1978	1986
MIN	12.5	14.8	16.2	15.2	13.3	13.6	13.6	11.8	10.7	11.0	10.6	10.8
(WY)	1984	1984	1990	1990	1984	1971	1971	1971	1971	1971	1984	1984

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1968 - 1993

ANNUAL TOTAL	22688			11724								
ANNUAL MEAN	62.0			32.1						42.8		
HIGHEST ANNUAL MEAN										103		1987
LOWEST ANNUAL MEAN										13.4		1984
HIGHEST DAILY MEAN	1090	Mar 4		218	Nov 19					14900	Oct 19	1985
LOWEST DAILY MEAN	32	Oct 9		18	Aug 2					6.6	May 30	1969
ANNUAL SEVEN-DAY MINIMUM	34	Oct 3		19	Jul 28					8.3	Jun 7	1971
INSTANTANEOUS PEAK FLOW				1110	Nov 19					57000	Oct 19	1985
INSTANTANEOUS PEAK STAGE				5.45	Nov 19					29.81	Oct 19	1985
INSTANTANEOUS LOW FLOW				15	Aug 2					.47*	May 10	1988
ANNUAL RUNOFF (AC-FT)	45000			23250						30990		
ANNUAL RUNOFF (CFSM)	.37			.19						.25		
ANNUAL RUNOFF (INCHES)	5.02			2.60						3.46		
10 PERCENT EXCEEDS	94			43						49		
50 PERCENT EXCEEDS	48			32						24		
90 PERCENT EXCEEDS	34			19						14		

* Result of dam upstream.

GUADALUPE RIVER MAIN STEM

223

08165500 GUADALUPE RIVER AT HUNT, TX

LOCATION.--Lat 30°04'11", long 99°19'17", Kerr County, Hydrologic Unit 12100201, on left bank, 56 ft upstream and 252 ft to left of left 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.
Water-quality records.--Chemical analyses: March 1965 to April 1966.

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.--No estimated daily discharges. Records good except those above 300 ft³/s, which are fair. There are numerous diversions for irrigation above station, but amounts are unknown. Several observations of water temperature were made during the year. Gage-height telemeter at station.

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).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0440	2,210	10.60	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	67	83	86	74	89	67	52	42	44	37	30
2	58	63	83	83	74	83	65	57	37	42	36	30
3	58	59	83	81	75	80	62	76	37	41	36	30
4	56	57	83	80	78	78	64	70	37	40	36	35
5	56	55	83	80	85	77	63	60	45	39	36	36
6	55	55	83	80	79	73	65	60	36	37	36	34
7	53	55	83	77	77	79	70	55	34	38	36	33
8	55	55	82	77	77	71	64	52	35	38	36	33
9	54	55	86	76	79	69	51	69	37	37	35	33
10	53	58	85	74	89	69	55	55	54	37	32	39
11	53	60	83	74	81	69	67	34	51	37	33	37
12	53	62	81	74	77	70	61	48	48	37	33	36
13	53	60	82	74	77	70	60	50	43	36	32	44
14	53	53	125	70	79	69	117	51	44	37	32	100
15	53	55	149	69	83	69	91	50	40	37	33	61
16	53	55	131	67	82	72	75	42	38	37	33	52
17	51	55	115	67	79	77	70	43	46	37	33	48
18	51	57	108	67	77	74	70	49	45	40	35	45
19	51	617	108	92	77	73	69	51	48	41	34	41
20	51	219	106	106	77	80	69	50	48	47	34	41
21	51	146	100	88	77	78	66	48	55	51	32	39
22	51	118	99	82	77	77	64	46	43	54	32	37
23	51	106	96	80	75	86	56	57	40	51	32	37
24	51	105	91	78	74	79	70	58	39	51	31	36
25	51	95	89	77	78	66	64	56	46	51	31	36
26	51	86	89	77	77	64	71	46	59	51	31	36
27	51	86	89	77	75	64	59	39	58	51	30	36
28	51	86	86	77	79	70	58	38	45	41	30	36
29	51	84	86	77	---	66	69	38	45	37	30	35
30	54	83	86	77	---	72	58	56	45	37	30	35
31	55	---	86	74	---	70	---	50	---	37	30	---
TOTAL	1648	2867	2919	2418	2188	2283	2010	1606	1320	1291	1027	1201
MEAN	53.2	95.6	94.2	78.0	78.1	73.6	67.0	51.8	44.0	41.6	33.1	40.0
MAX	60	617	149	106	89	89	117	76	59	54	37	100
MIN	51	53	81	67	74	64	51	34	34	36	30	30
AC-FT	3270	5690	5790	4800	4340	4530	3990	3190	2620	2560	2040	2380
CFSM	.18	.33	.33	.27	.27	.26	.23	.18	.15	.14	.12	.14
IN.	.21	.37	.38	.31	.28	.29	.26	.21	.17	.17	.13	.16

GUADALUPE RIVER MAIN STEM

08165500 GUADALUPE RIVER AT HUNT, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1993, BY WATER YEAR (WY)

MEAN	105	61.3	75.9	62.7	61.8	62.4	80.2	85.5	80.7	86.9	120	75.7
MAX	677	114	322	151	213	257	570	268	551	956	992	312
(WY)	1986	1975	1985	1968	1992	1992	1977	1977	1987	1987	1978	1980
MIN	33.4	34.0	35.3	31.1	30.4	28.8	28.6	21.1	17.0	14.9	14.6	17.1
(WY)	1966	1966	1966	1966	1966	1966	1984	1984	1984	1984	1984	1984

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1966 - 1993

ANNUAL TOTAL	46020		22778									
ANNUAL MEAN	126		62.4							80.0		
HIGHEST ANNUAL MEAN										223		1987
LOWEST ANNUAL MEAN										27.6		1984
HIGHEST DAILY MEAN	1500	Mar 4		617	Nov 19					22200	Jul 17	1987
LOWEST DAILY MEAN	51	Oct 17		30	Aug 27					8.2	Jul 17	1984
ANNUAL SEVEN-DAY MINIMUM	51	Oct 17		30	Aug 27					9.4	Jul 12	1984
INSTANTANEOUS PEAK FLOW				2210	Nov 19					108000	Jul 17	1987
INSTANTANEOUS PEAK STAGE				10.60	Nov 19					28.38	Jul 17	1987
INSTANTANEOUS LOW FLOW				30	Aug 26-Sept 3					6.9	*Jun 17	1948
ANNUAL RUNOFF (AC-FT)	91280			45180						57990		
ANNUAL RUNOFF (CFSM)		.44			.22					.28		
ANNUAL RUNOFF (INCHES)		5.94			2.94					3.78		
10 PERCENT EXCEEDS		192			86					101		
50 PERCENT EXCEEDS		112			57					48		
90 PERCENT EXCEEDS		56			36					28		

* See PERIOD OF RECORD paragraph in manuscript.

GUADALUPE RIVER BASIN

225

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 September 1993 (discontinued).
Water-quality records.--Chemical analyses: June 1952 to July 1966.

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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0830	202	1.43	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	44	39	42	40	40	40	33	27	22	19	23
2	37	39	38	42	40	40	38	39	26	22	19	21
3	33	35	37	42	40	39	35	33	24	22	19	20
4	33	32	37	42	40	39	50	31	26	21	19	21
5	35	31	37	40	39	39	42	31	24	22	18	17
6	34	31	37	40	39	40	35	31	25	22	17	17
7	34	31	37	40	43	40	51	31	26	21	18	17
8	33	31	37	40	42	39	40	33	26	19	19	16
9	33	34	37	40	40	36	33	33	26	22	19	21
10	34	35	37	37	46	35	37	29	37	21	19	20
11	33	35	37	37	39	35	35	28	32	21	18	17
12	33	33	37	37	39	35	36	27	27	20	16	18
13	33	33	37	36	37	34	38	26	26	21	17	26
14	33	33	53	35	39	35	84	23	25	19	19	80
15	35	33	65	35	40	37	53	24	24	19	19	32
16	35	33	57	35	40	37	51	24	26	19	19	26
17	35	33	49	35	40	40	42	25	27	19	18	24
18	35	34	47	35	40	39	38	32	31	19	18	22
19	35	129	47	78	39	53	40	29	24	19	17	22
20	35	81	45	61	39	72	38	28	26	19	19	24
21	36	58	45	46	40	51	39	26	32	17	19	22
22	37	45	44	42	40	52	34	27	27	17	19	21
23	37	45	44	42	40	47	34	34	26	19	19	21
24	37	45	43	38	39	43	33	32	26	19	20	21
25	37	43	42	37	38	41	32	27	26	19	20	21
26	35	41	42	37	40	39	29	26	27	19	19	19
27	35	40	42	36	40	42	28	26	28	18	20	18
28	35	40	42	35	40	44	29	26	24	18	20	18
29	35	40	42	35	---	43	39	26	24	19	20	18
30	35	39	42	35	---	39	39	33	22	19	19	17
31	35	---	42	39	---	48	---	28	---	18	20	---
TOTAL	1080	1256	1317	1251	1118	1293	1192	901	797	611	581	680
MEAN	34.8	41.9	42.5	40.4	39.9	41.7	39.7	29.1	26.6	19.7	18.7	22.7
MAX	38	129	65	78	46	72	84	39	37	22	20	80
MIN	33	31	37	35	37	34	28	23	22	17	16	16
AC-FT	2140	2490	2610	2480	2220	2560	2360	1790	1580	1210	1150	1350
CFSM	.31	.37	.37	.35	.35	.37	.35	.25	.23	.17	.16	.20
IN.	.35	.41	.43	.41	.36	.42	.39	.29	.26	.20	.19	.22

GUADALUPE RIVER BASIN

08166000 JOHNSON CREEK NEAR INGRAM, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1993, BY WATER YEAR (WY)

MEAN	34.2	19.0	22.2	20.6	20.8	19.5	24.0	25.3	26.7	18.4	36.2	20.7
MAX	361	51.4	178	97.8	114	108	195	101	165	188	726	71.0
(WY)	1986	1975	1985	1968	1992	1992	1977	1977	1987	1987	1978	1974
MIN	4.80	5.17	5.44	5.31	6.05	5.27	4.20	5.54	2.84	1.16	1.13	3.02
(WY)	1952	1957	1955	1956	1952	1956	1954	1953	1956	1954	1954	1954

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1942 - 1993

ANNUAL TOTAL	23291						12077					
ANNUAL MEAN	63.6						33.1			23.5		
HIGHEST ANNUAL MEAN										79.0		1978
LOWEST ANNUAL MEAN										4.78		1954
HIGHEST DAILY MEAN	395	Feb 4					129	Nov 19		17200	Aug 3	1978
LOWEST DAILY MEAN	31	Nov 5					16	Aug 12		.40	Jul 26	1956
ANNUAL SEVEN-DAY MINIMUM	32	Nov 3					18	Sep 5		.59	Jul 23	1956
INSTANTANEOUS PEAK FLOW							202	Nov 19		95900	Oct 4	1959
INSTANTANEOUS PEAK STAGE							1.43	Nov 19		a/24.25	Oct 4	1959
INSTANTANEOUS LOW FLOW							14	Aug. 8, 12		.40	Jul 26	1956
ANNUAL RUNOFF (AC-FT)	46200						23950			17060		
ANNUAL RUNOFF (CFSM)	.56						.29			.21		
ANNUAL RUNOFF (INCHES)	7.60						3.94			2.81		
10 PERCENT EXCEEDS	100						43			37		
50 PERCENT EXCEEDS	53						34			14		
90 PERCENT EXCEEDS	35						19			5.7		

a/ From floodmark.

GUADALUPE RIVER MAIN STEM

227

08166200 GUADALUPE RIVER AT KERRVILLE, TX

LOCATION.--Lat 30°03'11", long 99°09'47", Kerr County, Hydrologic Unit 12100201, on left bank 300 ft below left end of Kerrville Dam, 1.0 mi upstream from mouth of Town Creek, and 1.4 mi upstream from State Highway 16 on Guadalupe Street at Guadalupe Park in Kerrville, Texas.

DRAINAGE AREA.--510 mi².

PERIOD OF RECORD.--July 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,601.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1989, at site 300 ft upstream, and on opposite bank at datum 1.0 ft lower.

REMARKS.--Records good except those for estimated daily discharges above 100 ft³/s, which are poor. Numerous diversions for irrigation above station, amounts unknown. Several observations of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum estimated discharge, 196,000 ft³/s July 2, 1932 (estimated gage height, 39 ft).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1000	1,880	3.94	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	131	141	148	132	156	133	140	103	66	44	66
2	106	121	134	145	132	152	123	134	95	62	47	62
3	103	109	132	140	136	140	117	131	88	66	44	72
4	103	105	132	142	141	139	129	147	88	62	50	72
5	102	105	132	143	146	132	128	134	90	59	47	66
6	102	105	132	137	148	131	122	134	87	56	47	66
7	102	105	132	136	142	128	140	131	80	56	47	66
8	102	106	132	136	136	130	129	128	80	56	50	62
9	102	118	134	134	137	133	115	124	81	56	50	62
10	103	120	137	139	157	128	109	129	110	56	47	59
11	102	120	136	144	155	132	113	106	118	56	44	56
12	102	118	136	134	147	132	120	95	108	56	42	e410
13	102	115	139	128	140	132	120	105	101	59	44	e370
14	102	111	179	128	136	132	252	105	94	59	47	e250
15	105	109	272	132	147	132	196	112	95	56	47	e130
16	108	109	225	134	148	132	161	100	92	56	50	e110
17	103	110	196	132	140	132	150	100	91	59	53	e95
18	105	114	181	132	132	133	144	119	96	59	56	e94
19	105	748	174	149	132	136	135	115	95	62	59	e83
20	107	386	165	221	132	160	129	109	92	62	62	e76
21	107	244	159	166	132	144	131	106	102	56	62	e76
22	104	193	162	152	131	136	127	128	100	56	62	e72
23	106	172	160	150	129	136	125	129	90	56	62	e72
24	110	164	153	148	124	142	124	127	85	53	62	e69
25	108	152	150	147	129	135	120	114	88	50	62	e69
26	107	149	148	145	130	128	120	111	94	50	62	e72
27	105	144	150	144	132	124	120	105	95	47	62	e66
28	102	144	148	144	138	126	120	100	86	50	59	e66
29	103	142	148	144	---	132	153	97	79	44	62	e66
30	107	140	148	144	---	145	150	111	76	44	62	e66
31	108	---	148	138	---	138	---	120	---	44	66	---
TOTAL	3237	4809	4815	4456	3861	4208	4055	3646	2779	1729	1660	3021
MEAN	104	160	155	144	138	136	135	118	92.6	55.8	53.5	101
MAX	110	748	272	221	157	160	252	147	118	66	66	410
MIN	102	105	132	128	124	124	109	95	76	44	42	56
AC-FT	6420	9540	9550	8840	7660	8350	8040	7230	5510	3430	3290	5990
CFSM	.20	.31	.30	.28	.27	.27	.27	.23	.18	.11	.10	.20
IN.	.24	.35	.35	.33	.28	.31	.30	.27	.20	.13	.12	.22

e Estimated

GUADALUPE RIVER MAIN STEM

08166200 GUADALUPE RIVER AT KERRVILLE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)

MEAN	122	118	187	144	178	177	136	189	247	362	136	115
MAX	252	180	572	282	555	547	329	304	1088	1572	281	222
(WY)	1987	1987	1992	1992	1992	1992	1992	1990	1987	1987	1987	1987
MIN	64.8	77.7	64.1	59.1	71.1	72.4	66.6	69.8	53.2	37.3	36.4	38.5
(WY)	1990	1990	1990	1990	1990	1991	1991	1991	1989	1989	1991	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1987 - 1993

ANNUAL TOTAL	94186						42276					
ANNUAL MEAN	257						116			176		
HIGHEST ANNUAL MEAN										399		1987
LOWEST ANNUAL MEAN										74.1		1991
HIGHEST DAILY MEAN	2790	Mar 4					748	Nov 19		36100	Jul 17	1987
LOWEST DAILY MEAN	102	Sep 28					42	Aug 12		29	Aug 7	1991
ANNUAL SEVEN-DAY MINIMUM	102	Oct 5					45	Jul 28		31	Aug 10	1991
INSTANTANEOUS PEAK FLOW							1880	Nov 19		141000	Jul 17	1987
INSTANTANEOUS PEAK STAGE							3.94	Nov 19		37.72	Jul 17	1987
INSTANTANEOUS LOW FLOW							42	Aug 12		87.3	May 2	1989
ANNUAL RUNOFF (AC-FT)	186800						83850			127700		
ANNUAL RUNOFF (CFSM)		.50					.23			.35		
ANNUAL RUNOFF (INCHES)		6.87					3.08			4.69		
10 PERCENT EXCEEDS	433						150			274		
50 PERCENT EXCEEDS	213						118			103		
90 PERCENT EXCEEDS	106						56			52		

a Result of dam repairs upstream.

GUADALUPE RIVER MAIN STEM

229

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 including those of estimated daily discharges. There are many small diversions above station for irrigation. Satellite telemeter at station.

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. Maximum stage since at least 1848, that of Aug. 2, 1978.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0900	1,880	6.91	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	184	216	219	228	223	296	245	242	184	140	78	e55
2	182	215	218	226	221	283	234	237	173	136	75	e53
3	181	201	214	226	220	264	229	227	163	132	74	e54
4	180	187	213	226	235	250	228	215	156	127	71	e54
5	180	181	213	226	258	246	228	235	154	122	71	e54
6	181	181	211	223	262	240	224	233	153	121	70	e57
7	182	182	209	223	252	239	228	223	152	118	70	e57
8	181	183	209	223	241	236	246	219	151	115	69	e56
9	179	213	218	225	235	236	232	205	149	113	67	e56
10	181	219	218	221	289	236	222	204	153	110	66	e55
11	182	208	213	219	287	231	214	202	173	109	66	e54
12	179	204	209	219	272	250	213	187	173	107	63	e56
13	179	198	209	217	260	254	216	177	173	106	62	e70
14	177	195	239	213	254	240	356	177	165	106	62	e100
15	177	189	383	213	255	239	380	177	161	102	61	128
16	180	186	365	213	260	240	298	177	160	98	61	132
17	182	186	315	213	253	239	266	173	158	98	60	110
18	180	186	284	213	244	238	250	173	163	97	60	103
19	180	987	277	225	240	239	237	199	162	96	59	97
20	180	690	265	282	240	256	232	183	161	95	59	93
21	180	432	254	275	240	267	222	176	169	94	58	89
22	180	333	250	248	239	259	217	176	172	90	58	87
23	180	282	244	234	237	254	215	231	168	89	57	85
24	181	267	238	231	233	249	213	225	159	88	57	84
25	181	251	232	223	232	251	210	212	157	87	56	82
26	179	238	229	223	232	242	210	191	152	85	55	81
27	178	229	226	223	231	229	209	186	152	84	e55	81
28	176	227	228	222	235	228	205	174	152	82	e54	78
29	175	224	228	224	---	232	236	169	150	81	e54	77
30	177	221	228	225	---	269	266	178	145	80	e55	75
31	180	---	228	225	---	259	---	187	---	79	e64	---
TOTAL	5574	7911	7486	7027	6880	7691	7181	6170	4813	3187	1947	2313
MEAN	180	264	241	227	246	248	239	199	160	103	62.8	77.1
MAX	184	987	383	282	289	296	380	242	184	140	78	132
MIN	175	181	209	213	220	228	205	169	145	79	54	53
AC-FT	11060	15690	14850	13940	13650	15260	14240	12240	9550	6320	3860	4590

e Estimated

GUADALUPE RIVER MAIN STEM

08167000 GUADALUPE RIVER AT COMFORT, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

MEAN	272	151	206	177	219	206	235	295	260	163	233	155
MAX	2417	518	2700	987	1728	1559	1598	1122	2820	1974	4782	575
(WY)	1986	1975	1992	1992	1992	1992	1977	1975	1987	1987	1978	1978
MIN	.000	3.63	10.5	16.8	24.4	16.6	13.2	14.9	.097	.000	.000	.000
(WY)	1957	1957	1957	1957	1957	1956	1955	1956	1956	1956	1954	1954

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1940 - 1993

ANNUAL TOTAL	253932		68180			
ANNUAL MEAN	694		187			
HIGHEST ANNUAL MEAN					214	
LOWEST ANNUAL MEAN					894	1992
HIGHEST DAILY MEAN					14.5	1956
LOWEST DAILY MEAN	7320	Mar 4	987	Nov 19	74200	Aug 2 1978
ANNUAL SEVEN-DAY MINIMUM	175	Oct 29	53	Sep 2	.00	*
INSTANTANEOUS PEAK FLOW	178	Oct 25	55	Sep 1	.00	Aug 31 1952
INSTANTANEOUS PEAK STAGE			1880	Nov 19	240000	Aug 2 1978
ANNUAL RUNOFF (AC-FT)	503700		6.91	Nov 19	a/40.90	Aug 2 1978
10 PERCENT EXCEEDS	1330		135200		155300	
50 PERCENT EXCEEDS	553		254		365	
90 PERCENT EXCEEDS	185		202		107	
			70		24	

* No flow at times in 1952-57 and 1963-64.

a/ At site and datum then in use.

LOCATION.--Lat 29°51'37", 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.

WATER-DISCHARGE RECORDS

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.

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.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	1300	2,840	7.09	No peak greater than base discharge.			

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	249	324	349	451	509	440	430	302	290	124	90
2	230	259	316	351	444	589	419	400	294	274	119	83
3	230	268	310	351	444	544	408	390	277	263	117	83
4	230	236	308	350	446	506	404	371	260	255	113	86
5	227	219	305	345	465	482	397	384	246	249	112	85
6	224	213	304	339	490	468	395	470	239	241	110	92
7	225	210	299	339	482	465	414	423	239	233	110	92
8	219	213	295	343	465	452	544	395	237	228	106	89
9	216	227	300	343	459	442	458	377	235	222	105	86
10	219	277	302	333	568	442	429	352	248	218	101	86
11	217	270	300	331	620	428	407	343	282	210	99	87
12	214	253	293	331	574	438	395	331	291	205	100	88
13	210	243	293	326	547	458	397	306	314	200	98	109
14	211	237	308	320	524	445	412	291	305	194	96	287
15	212	229	577	319	525	431	573	290	288	196	91	440
16	213	223	672	319	515	432	568	282	262	191	90	312
17	213	220	576	315	504	423	494	276	255	183	88	221
18	212	219	506	315	485	413	462	267	248	180	86	177
19	213	1070	480	1140	476	412	438	268	264	178	84	160
20	215	1920	442	739	478	420	418	289	270	175	83	146
21	216	892	424	642	476	429	397	273	295	173	80	136
22	216	615	411	589	464	441	377	265	313	170	79	127
23	214	505	402	545	452	435	373	324	316	167	79	123
24	213	443	387	511	445	420	368	408	302	157	78	120
25	213	404	377	490	472	481	365	366	290	153	78	115
26	211	377	367	481	445	575	350	340	396	150	77	113
27	207	356	360	472	432	452	343	310	422	145	77	109
28	205	345	357	467	437	423	345	299	373	147	76	110
29	205	340	357	465	---	421	369	303	343	140	77	108
30	206	329	357	459	---	428	419	290	311	137	75	104
31	212	---	353	457	---	479	---	296	---	131	75	---
TOTAL	6700	11861	11662	13476	13585	14183	12578	10409	8717	6055	2883	4064
MEAN	216	395	376	435	485	458	419	336	291	195	93.0	135
MAX	232	1920	672	1140	620	589	573	470	422	290	124	440
MIN	205	210	293	315	432	412	343	265	235	131	75	83
AC-FT	13290	23530	23130	26730	26950	28130	24950	20650	17290	12010	5720	8060

[illegible]

ANNUAL TOTAL	530973		116173				
ANNUAL MEAN	1451		318			348	
HIGHEST ANNUAL MEAN						1819	1992
LOWEST ANNUAL MEAN						13.3	1956
HIGHEST DAILY MEAN	24400	Feb 4	1920	Nov 20	76500		Aug 3 1978
LOWEST DAILY MEAN	205	Oct 28	75	Aug 30	.00		*
ANNUAL SEVEN-DAY MINIMUM	208	Oct 25	76	Aug 25	.00		Aug 31 1951
INSTANTANEOUS PEAK FLOW			2840	Jan 19	160000		Aug 3 1978
INSTANTANEOUS PEAK STAGE			7.09	Jan 19	45.25		Aug 3 1978
ANNUAL RUNOFF (AC-FT)	1053000		230400		252400		
10 PERCENT EXCEEDS	2750		482		640		
50 PERCENT EXCEEDS	891		305		148		
90 PERCENT EXCEEDS	230		106		32		

* No flow at times in 1951-52, 1954-56, and 1963-64.

GUADALUPE RIVER MAIN STEM

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to September 1982, October 1989 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CaCO3)
NOV 04...	1445	243	470	8.4	16.0	5	1.7	8.2	85	1.9	220
DEC 17...	1300	594	493	8.5	13.0	5	3.5	10.1	98	1.2	220
FEB 09...	1450	410	499	8.4	13.0	5	1.6	9.0	87	0.5	230
MAY 10...	1230	375	483	8.3	23.0	10	13	8.9	106	1.1	230
JUN 11...	1240	258	475	6.4	26.0	5	16	7.4	92	0.7	230
AUG 03...	1300	121	451	7.8	28.0	8	3.2	7.6	98	0.6	230

DATE	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS-FIX END CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV 04...	0	58	19	12	0.3	2.0	220	17	16	0.20
DEC 17...	5	63	16	9.9	0.3	1.5	220	17	15	0.20
FEB 09...	13	64	18	11	0.3	1.3	220	19	17	0.20
MAY 10...	45	63	18	10	0.3	1.5	190	20	17	0.20
JUN 11...	26	60	19	12	0.3	1.5	200	19	18	0.30
AUG 03...	25	61	19	12	0.3	1.6	210	20	19	0.30

DATE	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)	RESIDUE FIXED NON FILTER-ABLE (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)
NOV 04...	11	270	17	16	1	--	--	--	--	--
DEC 17...	9.9	264	10	8	2	0.840	--	0.010	--	0.850
FEB 09...	10	277	11	7	4	0.770	0.770	--	0.050	0.820
MAY 10...	10	254	31	14	17	0.450	--	--	<0.010	0.450
JUN 11...	15	268	22	6	16	0.400	--	--	<0.010	0.400
AUG 03...	17	275	11	7	4	0.240	--	--	<0.010	0.240

DATE	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 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)
NOV 04...	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	0.020	--	--	--	<0.20	0.030	--	--	0.020
FEB 09...	0.820	--	0.020	--	<0.20	--	--	<0.010	<0.010	--
MAY 10...	0.450	--	0.020	--	<0.20	--	--	<0.010	<0.010	--
JUN 11...	0.400	--	0.040	--	<0.20	--	--	<0.010	<0.010	--
AUG 03...	0.240	--	0.020	0.28	0.30	--	--	<0.010	<0.010	--

GUADALUPE RIVER MAIN STEM

233

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	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 04...	2.3	--	--	--	--	--	--	--	--	--
DEC 17...	2.1	<1	33	<0.5	<1.0	<5	<3	<10	6	<10
FEB 09...	1.5	--	--	--	--	--	--	--	--	--
MAY 10...	2.2	<1	38	<0.5	1.0	<5	<3	<10	4	<10
JUN 11...	2.2	--	--	--	--	--	--	--	--	--
AUG 03...	2.2	1	40	<0.5	<1.0	<5	<3	<10	87	<10
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 04...	--	--	--	--	--	--	--	--	--	--
DEC 17...	4	2	0.2	<10	<10	<1	<1.0	400	<6	10
FEB 09...	--	--	--	--	--	--	--	--	--	--
MAY 10...	4	2	<0.1	<10	<10	<1	<1.0	490	<6	<3
JUN 11...	--	--	--	--	--	--	--	--	--	--
AUG 03...	5	8	<0.1	<10	<10	<1	<1.0	530	<6	3

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.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by 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, 384,600 acre-ft Dec. 20 (elevation, 909.31 ft); minimum daily, 367,400 acre-ft Sept. 30 (elevation, 907.20 ft).

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

901.0	319,600	918.0	460,800	931.0	592,700
906.0	357,800	922.0	498,800	934.0	626,600
910.0	390,300	925.0	528,800	936.0	650,100
914.0	424,600	928.0	560,100	938.0	674,100

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	373900	372400	380600	380800	379100	382600	380000	380500	381400	383700	378100	370700
2	373700	372100	380400	380400	379300	382700	379900	380600	381400	383300	377800	370400
3	373600	372000	380400	380100	379700	382700	380000	380500	381400	382700	377700	370300
4	373500	371800	380100	379700	379900	382700	380000	380400	381300	382200	377500	370300
5	373400	371600	380200	379300	380200	382600	379900	382400	381300	381800	377200	370000
6	373300	371300	380100	379000	380300	382500	379500	383200	381100	381600	377000	369800
7	373200	371200	379900	378400	380400	382200	380600	383500	381100	381400	375900	369600
8	373000	371100	379800	378100	380400	382100	380800	383300	381100	381300	376500	369500
9	372900	371200	380100	378000	380700	381900	380800	383300	380900	381200	376300	369400
10	372900	371300	379900	377700	381800	381600	380700	382700	381200	381100	376000	369100
11	372700	371600	379900	377600	382200	381500	380700	382200	381600	381000	375900	368900
12	372600	371700	379800	377500	382600	381800	380700	381800	382400	380900	375500	369500
13	372400	371600	379800	377500	382800	381300	380800	381200	382600	380800	375300	369200
14	372400	371600	381300	377200	383200	380900	381100	380800	382900	380800	375100	368800
15	372400	371400	382300	377200	383500	380800	381200	380300	382800	380800	374900	369100
16	372400	371400	383300	377200	383500	380600	381300	379800	382400	380700	374600	369200
17	372200	371400	383900	377200	383300	380400	381300	379400	382400	380600	374200	369200
18	372100	371500	384100	377100	383000	380000	381500	379400	382400	380400	374000	369300
19	372000	375600	384500	379400	382800	379900	381500	379100	382200	380400	373700	369300
20	371900	379200	384600	380100	382800	379700	381500	379000	382500	380300	373500	369200
21	371800	380800	384400	380400	382600	379500	381300	378800	382700	380200	373300	369100
22	371700	381500	384100	380400	382300	379500	381000	378800	382700	380100	372900	369000
23	371700	381900	383900	380700	382100	379400	380800	380500	382600	379900	372500	368800
24	371700	382200	383500	380400	381800	379200	380800	380800	382700	379800	372300	368600
25	371600	382000	383200	380200	382500	379400	380600	380800	382700	379500	372000	368500
26	371500	381800	382900	379900	382200	379900	380400	380900	383500	379500	371700	368400
27	371400	381500	382400	379900	381900	379800	380200	380900	383600	379200	371600	368200
28	371300	381200	382100	379600	382300	379900	380000	381100	383600	379100	371600	367800
29	371300	381000	381800	379700	---	380000	380600	381100	383700	378600	371200	367600
30	371400	380700	381500	379500	---	380000	380500	381400	384000	378500	370900	367400
31	372000	---	381300	379200	---	380100	---	381400	---	378200	370700	---
MAX	373900	382200	384600	380800	383500	382700	381500	383500	384000	383700	378100	370700
MIN	371300	371100	379800	377100	379100	379200	379500	378800	380900	378200	370700	367400
(↑)	907.78	908.84	908.92	908.66	909.04	908.77	908.82	908.93	909.24	908.54	907.62	907.20
(φ)	-2200	+8700	+600	-2100	+3100	-2200	+400	+900	+2600	-5800	-7500	-3300
CAL YR 1992	MAX	665700	MIN	371100	(φ)	-192900						
WTR YR 1993	MAX	384600	MIN	367400	(φ)	-6800						

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

GUADALUPE RIVER MAIN STEM

235

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1969 to September 1982. February 1990 to current year.

REVISED RECORDS.--Due to a computation error discovered after publication of Phytoplankton analyses for the period October 1991 to September 1992, revised data for these analyses are included in this report.

295148098115201 - CANYON LAKE SITE AR

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
20...	0920	1.00	385	8.3	12.5	8.9	85
20...	0922	10.0	385	8.3	12.5	8.9	85
20...	0924	20.0	386	8.3	12.5	8.9	85
20...	0926	30.0	386	8.3	12.5	8.9	85
20...	0928	40.0	385	8.3	12.5	8.9	85
20...	0930	50.0	386	8.3	12.5	8.9	85
20...	0932	60.0	386	8.2	12.5	8.9	85
20...	0934	70.0	387	8.2	12.5	8.9	85
APR							
15...	0830	1.00	391	8.2	17.5	8.8	95
15...	0832	10.0	391	8.2	17.5	8.8	95
15...	0834	20.0	392	8.2	17.5	8.8	95
15...	0836	30.0	391	8.2	17.5	8.8	95
15...	0838	40.0	391	8.2	17.5	8.8	95
15...	0840	50.0	392	8.2	17.5	8.8	95
15...	0842	60.0	392	8.1	17.0	8.7	93
15...	0844	70.0	399	8.0	14.5	8.3	84
AUG							
10...	0830	1.00	338	8.2	28.5	7.1	94
10...	0832	10.0	338	8.2	28.5	7.3	97
10...	0834	20.0	340	8.2	28.0	7.2	94
10...	0836	30.0	352	7.9	27.0	5.1	66
10...	0838	40.0	352	7.5	24.5	5.0	61
10...	0840	50.0	387	7.5	21.0	2.2	25
10...	0842	60.0	393	7.5	20.5	2.1	24
10...	0844	70.0	396	7.6	20.0	2.2	25

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08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	RESER- VOIR STORAGE (AC-FT)	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN										
20...	0955	380000	1.00	385	8.2	12.5	2.00	8.8	84	K2
20...	0957	--	10.0	386	8.2	12.5	--	8.9	85	--
20...	0959	--	20.0	386	8.2	12.5	--	8.9	85	--
20...	1001	--	30.0	386	8.2	12.5	--	8.9	85	--
20...	1003	--	40.0	386	8.2	12.5	--	8.9	85	--
20...	1005	--	50.0	385	8.2	12.5	--	8.8	84	--
20...	1007	--	60.0	386	8.2	12.5	--	8.9	85	--
20...	1009	--	70.0	385	8.2	12.5	--	8.8	84	--
20...	1011	--	80.0	385	8.2	12.5	--	8.8	84	--
20...	1013	--	90.0	385	8.2	12.5	--	8.8	84	--
20...	1015	--	100	385	8.2	12.5	--	8.8	84	--
20...	1017	--	110	385	8.2	12.5	--	8.7	83	--
20...	1019	--	120	386	8.2	12.5	--	8.2	79	--
20...	1021	--	130	386	8.1	12.5	--	8.0	77	--
20...	1023	--	140	387	8.1	12.5	--	7.9	76	--
20...	1025	--	149	387	8.1	12.5	--	7.7	74	--
APR										
15...	0855	381000	1.00	390	8.2	17.5	3.20	8.7	94	K1
15...	0857	--	10.0	390	8.2	17.5	--	8.8	95	--
15...	0859	--	20.0	390	8.2	17.5	--	8.7	94	--
15...	0901	--	30.0	390	8.2	17.5	--	8.8	95	--
15...	0903	--	40.0	390	8.2	17.5	--	8.7	94	--
15...	0905	--	50.0	391	8.2	17.5	--	8.7	94	--
15...	0907	--	60.0	391	8.2	17.0	--	8.7	93	--
15...	0909	--	70.0	398	8.1	14.0	--	8.3	83	--
15...	0911	--	80.0	397	8.1	13.5	--	8.4	83	--
15...	0913	--	90.0	397	8.1	13.5	--	8.3	82	--
15...	0915	--	100	398	8.1	13.5	--	8.2	81	--
15...	0917	--	110	397	8.1	13.5	--	8.2	81	--
15...	0919	--	120	397	8.1	13.5	--	8.2	81	--
15...	0921	--	130	398	8.0	13.5	--	7.2	71	--
15...	0923	--	140	398	8.0	13.5	--	7.4	73	--
15...	0925	--	150	398	7.9	13.0	--	5.8	57	--
AUG										
10...	0900	376000	1.00	338	8.2	29.0	4.00	7.2	96	K3
10...	0902	--	10.0	338	8.2	28.0	--	7.1	93	--
10...	0904	--	20.0	339	8.2	28.0	--	7.0	92	--
10...	0906	--	30.0	341	8.2	28.0	--	6.7	88	--
10...	0908	--	40.0	351	7.9	27.0	--	5.3	68	--
10...	0910	--	50.0	379	7.5	24.0	--	1.3	16	--
10...	0912	--	60.0	394	7.5	21.0	--	1.9	22	--
10...	0914	--	70.0	397	7.6	19.5	--	2.4	27	--
10...	0916	--	80.0	402	7.6	18.5	--	2.8	31	--
10...	0918	--	90.0	403	7.6	17.5	--	2.9	31	--
10...	0920	--	100	404	7.6	17.0	--	2.7	29	--
10...	0922	--	110	405	7.6	17.0	--	1.6	17	--
10...	0924	--	120	405	7.5	17.0	--	1.2	13	--
10...	0926	--	130	410	7.5	16.0	--	0	0	--
10...	0928	--	144	408	7.6	16.0	--	0.1	1	--

GUADALUPE RIVER MAIN STEM

237

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	STREP- TOCOCI FECAL KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)
JAN									
20...	<1	200	28	51	17	11	0.3	1.6	170
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	190	25	50	17	11	0.3	1.8	170
APR									
15...	<1	200	24	54	16	10	0.3	1.6	180
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	210	28	56	16	11	0.3	1.7	180
AUG									
10...	K10	160	23	35	17	10	0.3	1.5	130
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	200	22	53	17	9.8	0.3	1.5	180

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
JAN									
20...	20	15	0.20	11	230	0.340	--	<0.010	0.340
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	20	16	0.20	11	231	0.330	0.330	0.020	0.350
APR									
15...	18	17	0.30	11	236	0.370	--	<0.010	0.370
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	0.370	--	<0.010	0.370
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	18	15	0.20	11	237	0.400	--	<0.010	0.400
AUG									
10...	19	15	0.20	10	188	0.064	--	<0.010	0.064
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	0.130	--	<0.010	0.130
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	0.370	--	<0.010	0.370
10...	--	--	--	--	--	--	--	--	--
10...	17	15	0.20	13	236	0.200	0.200	0.010	0.210

GUADALUPE RIVER MAIN STEM

239

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 - CANYON LAKE SITE AC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN									
20...	0.340	<0.010	--	<0.20	<0.010	<0.010	--	6	<1
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--
20...	0.350	0.030	--	<0.20	<0.010	<0.010	--	24	27
APR									
15...	0.370	<0.010	--	<0.20	<0.010	<0.010	--	10	<1
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	0.370	<0.010	--	<0.20	<0.010	<0.010	--	<10	<10
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
15...	0.400	<0.010	--	<0.20	<0.010	<0.010	--	9	1
AUG									
10...	0.064	0.030	0.17	0.20	0.010	0.010	0.03	<3	<1
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	0.130	0.030	--	<0.20	0.010	<0.010	--	<10	<10
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	0.370	0.020	0.48	0.50	0.030	<0.010	--	<10	20
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	0.210	0.070	0.23	0.30	0.020	<0.010	--	24	160

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295241098132101 - CANYON LAKE SITE BC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
20...	1055	1.00	385	8.2	13.0	8.9	86
20...	1057	10.0	385	8.2	12.5	8.9	85
20...	1059	20.0	385	8.2	12.5	8.9	85
20...	1101	30.0	384	8.2	12.5	8.8	84
20...	1103	40.0	385	8.2	12.5	8.8	84
20...	1105	50.0	385	8.2	12.5	8.8	84
20...	1107	60.0	384	8.2	12.5	8.9	85
20...	1109	70.0	384	8.2	12.5	8.8	84
20...	1111	80.0	385	8.1	12.5	8.9	85
20...	1113	90.0	385	8.1	12.5	8.8	84
20...	1115	100	385	8.1	12.5	8.7	83
20...	1117	110	386	8.2	12.5	8.7	83
20...	1119	120	386	8.1	12.5	8.6	83
20...	1121	134	386	8.2	12.5	8.4	81
APR							
15...	1010	1.00	392	8.2	17.5	8.7	94
15...	1012	10.0	392	8.2	17.5	8.7	94
15...	1014	20.0	392	8.2	17.5	8.7	94
15...	1016	30.0	391	8.2	17.0	8.6	92
15...	1018	40.0	392	8.2	17.0	8.6	92
15...	1020	50.0	392	8.2	17.0	8.6	92
15...	1022	60.0	395	8.1	16.0	8.4	88
15...	1024	70.0	399	8.1	14.0	7.8	78
15...	1026	80.0	399	8.1	14.0	7.7	77
15...	1028	90.0	398	8.0	13.5	7.5	74
15...	1030	100	399	8.0	13.5	7.4	73
15...	1032	110	399	8.0	13.5	7.5	74
15...	1034	120	399	8.0	13.5	7.3	72
15...	1036	135	399	8.0	13.5	7.1	70
AUG							
10...	1010	1.00	337	8.2	29.0	6.9	92
10...	1012	10.0	338	8.2	28.5	7.1	94
10...	1014	20.0	338	8.2	28.5	7.1	94
10...	1016	30.0	338	8.2	28.0	7.0	92
10...	1018	40.0	355	7.8	27.0	4.2	54
10...	1020	50.0	385	7.5	24.0	0.8	10
10...	1022	60.0	400	7.5	19.5	0.1	1
10...	1024	70.0	402	7.5	19.0	0	0
10...	1026	80.0	407	7.5	17.5	0	0
10...	1028	90.0	410	7.5	17.5	0.1	1
10...	1030	100	410	7.5	17.0	0.1	1
10...	1032	110	410	7.5	17.0	0.1	1
10...	1034	120	413	7.5	16.5	0	0
10...	1036	125	413	7.5	16.5	0.1	1

295240098152001 - CANYON LAKE SITE CC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
20...	1300	1.00	385	8.2	13.5	9.1	90
20...	1302	10.0	384	8.2	13.0	9.3	91
20...	1304	20.0	385	8.2	13.0	9.0	88
20...	1306	30.0	385	8.2	13.0	9.0	88
20...	1308	40.0	384	8.2	13.0	8.9	87
20...	1310	50.0	385	8.2	12.5	8.9	86
20...	1312	60.0	385	8.2	12.5	8.8	85
20...	1314	70.0	386	8.2	12.5	8.5	82
20...	1316	78.0	386	8.2	12.5	8.6	83
APR							
15...	1100	1.00	391	8.2	17.5	8.7	94
15...	1102	10.0	391	8.2	17.5	8.6	93
15...	1104	20.0	390	8.2	17.5	8.7	94
15...	1106	30.0	391	8.2	17.5	8.6	93
15...	1108	40.0	393	8.1	17.0	8.3	89
15...	1110	50.0	399	8.0	15.5	7.2	74
15...	1112	63.0	401	8.0	14.5	6.7	68
AUG							
10...	1305	1.00	335	8.2	30.0	7.1	96
10...	1307	10.0	334	8.2	29.5	7.5	101
10...	1309	20.0	335	8.2	29.0	7.2	96
10...	1311	30.0	346	7.9	28.5	4.7	62
10...	1313	40.0	354	7.7	27.5	2.9	38
10...	1315	50.0	384	7.4	24.5	0	0
10...	1317	60.0	403	7.4	20.5	0	0
10...	1319	70.0	407	7.4	19.0	0	0
10...	1321	78.0	406	7.4	19.5	0	0

GUADALUPE RIVER MAIN STEM

241

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098143101 - CANYON LAKE SITE DC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TRANSPARANCY (SECCHI DISK) (M)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	COLIFORM, FECA, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECA, KF AGAR (COLS. PER 100 ML)	HARDNESS TOTAL (MG/L AS CaCO3)	HARDNESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)
JAN												
20...	1220	1.00	387	8.2	13.5	1.70	9.0	89	K3	K1	200	26
20...	1222	10.0	386	8.1	13.0	--	9.0	88	--	--	--	--
20...	1224	20.0	387	8.1	13.0	--	8.9	87	--	--	--	--
20...	1226	30.0	386	8.1	13.0	--	8.9	87	--	--	--	--
20...	1228	40.0	386	8.1	13.0	--	8.9	87	--	--	--	--
20...	1230	50.0	386	8.1	13.0	--	8.8	86	--	--	--	--
20...	1232	60.0	411	7.9	12.5	--	8.1	78	--	--	--	--
20...	1234	70.0	410	8.0	12.5	--	8.0	77	--	--	--	--
20...	1236	80.0	409	8.0	12.5	--	8.0	77	--	--	--	--
20...	1238	89.0	414	7.9	13.0	--	7.8	76	--	--	210	25
APR												
15...	1130	1.00	394	8.2	17.5	1.50	8.4	91	<2	<2	210	31
15...	1132	10.0	395	8.2	17.5	--	8.4	91	--	--	--	--
15...	1134	20.0	394	8.2	17.5	--	8.5	92	--	--	--	--
15...	1136	30.0	393	8.2	17.0	--	8.4	90	--	--	--	--
15...	1138	40.0	398	8.1	15.0	--	7.9	81	--	--	--	--
15...	1140	50.0	400	8.0	14.5	--	7.6	77	--	--	--	--
15...	1142	60.0	400	8.0	14.5	--	7.5	76	--	--	--	--
15...	1144	70.0	399	8.0	14.5	--	7.5	76	--	--	--	--
15...	1146	80.0	400	8.0	14.5	--	7.3	74	--	--	--	--
15...	1148	90.0	400	8.0	14.5	--	7.2	73	--	--	210	26
AUG												
10...	1135	1.00	333	8.2	30.5	--	6.7	92	K1	K6	150	24
10...	1137	10.0	334	8.2	29.5	--	6.8	92	--	--	--	--
10...	1139	20.0	333	8.2	29.0	--	6.6	88	--	--	--	--
10...	1141	30.0	346	7.9	28.0	--	5.3	70	--	--	--	--
10...	1143	40.0	360	7.6	26.5	--	2.7	34	--	--	--	--
10...	1145	50.0	398	7.4	23.0	--	0	0	--	--	--	--
10...	1147	60.0	415	7.3	20.5	--	0	0	--	--	--	--
10...	1149	70.0	418	7.3	19.5	--	0	0	--	--	--	--
10...	1151	80.0	417	7.4	18.0	--	0	0	--	--	--	--
10...	1153	88.0	418	7.3	18.0	--	0	0	--	--	210	16

DATE	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 DIS FIX END CAC03 (MG/L)	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)
JAN												
20...	51	17	11	0.3	0.60	170	20	16	0.30	11	231	0.330
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	56	17	11	0.3	1.7	180	20	15	0.20	10	244	0.430
APR												
15...	56	16	10	0.3	1.7	170	18	16	0.30	11	236	0.370
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	57	16	11	0.3	1.6	180	18	17	0.20	11	243	0.460
AUG												
10...	34	17	11	0.4	1.5	130	18	16	0.20	10	186	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	0.089
10...	--	--	--	--	--	--	--	--	--	--	--	0.200
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	56	17	9.9	0.3	1.6	190	14	16	0.20	14	246	--

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098143101 - CANYON LAKE SITE DC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, NITRATE DIS- SOLVED (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 DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN												
20...	0.330	0.020	0.350	0.350	<0.010	--	<0.20	<0.010	<0.010	--	4	<1
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	0.430	0.020	0.450	0.450	0.040	--	<0.20	<0.010	<0.010	--	6	3
APR												
15...	--	<0.010	0.370	0.370	<0.010	--	<0.20	<0.010	<0.010	--	3	<1
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	<0.010	0.460	0.460	<0.010	--	<0.20	<0.010	<0.010	--	41	2
AUG												
10...	--	<0.010	--	<0.050	0.020	0.18	0.20	0.030	0.010	0.03	<3	<1
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	<0.010	0.089	0.089	0.030	0.27	0.30	0.010	<0.010	--	<10	<10
10...	--	<0.010	0.200	0.200	0.020	--	<0.20	0.020	<0.010	--	<10	<10
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	<0.010	--	<0.050	0.290	0.21	0.50	0.020	<0.010	--	160	260

295329098151001 - CANYON LAKE SITE EC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
20...	1145	1.00	386	8.2	13.0	9.1	89
20...	1147	10.0	386	8.2	13.0	9.1	89
20...	1149	20.0	386	8.2	13.0	9.0	88
20...	1151	30.0	386	8.2	13.0	8.9	87
20...	1153	40.0	388	8.2	13.0	8.9	87
20...	1155	50.0	404	8.0	12.5	8.4	81
20...	1157	60.0	409	8.0	12.5	8.3	80
20...	1159	70.0	420	8.0	12.5	8.0	77
20...	1201	80.0	436	7.9	12.5	7.8	75
20...	1203	90.0	441	7.9	12.5	7.7	74
20...	1205	100	443	7.9	12.5	7.6	73
APR							
15...	1230	1.00	405	8.2	18.0	8.8	96
15...	1232	10.0	404	8.3	18.0	8.8	96
15...	1234	20.0	404	8.3	18.0	8.8	96
15...	1236	30.0	400	8.3	17.5	8.8	95
15...	1238	40.0	397	8.2	16.0	8.5	89
15...	1240	50.0	399	8.0	14.5	7.9	80
15...	1242	60.0	399	8.0	14.0	7.9	79
15...	1244	70.0	399	8.0	14.0	7.7	77
15...	1246	80.0	399	8.0	14.0	7.5	75
15...	1248	94.0	400	8.0	14.0	7.2	72
AUG							
10...	1055	1.00	334	8.2	30.0	6.9	94
10...	1057	10.0	334	8.2	29.5	7.1	96
10...	1059	20.0	334	8.2	29.0	7.0	93
10...	1101	30.0	358	7.7	28.0	3.0	39
10...	1103	40.0	362	7.6	26.0	2.4	30
10...	1105	50.0	397	7.4	22.5	0	0
10...	1107	60.0	419	7.3	20.5	0	0
10...	1109	70.0	417	7.3	19.5	0	0
10...	1111	80.0	422	7.3	18.5	0	0
10...	1113	90.0	421	7.4	17.5	0	0
10...	1115	98.0	420	7.4	17.5	0	0

GUADALUPE RIVER MAIN STEM

243

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 - CANYON LAKE SITE FC

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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)	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 DISSOLV FLD. AS CAC03 (MG/L)
JAN												
20...	1330	1.00	416	8.0	13.5	1.20	8.8	87	K1	<1	210	23
20...	1332	10.0	412	8.0	13.0	--	8.8	86	--	--	--	--
20...	1334	20.0	413	8.1	12.5	--	8.8	85	--	--	--	--
20...	1336	30.0	412	8.1	12.5	--	8.9	86	--	--	--	--
20...	1338	40.0	417	8.1	12.5	--	8.8	85	--	--	--	--
20...	1340	50.0	468	7.9	12.0	--	7.8	74	--	--	--	--
20...	1342	62.0	472	7.9	12.0	--	7.5	72	--	--	240	26
APR												
15...	1310	1.00	435	8.3	19.5	1.10	8.5	96	K2	<2	230	29
15...	1312	10.0	434	8.2	19.0	--	8.3	92	--	--	--	--
15...	1314	20.0	418	8.1	18.0	--	7.6	83	--	--	--	--
15...	1316	30.0	415	8.0	15.0	--	6.8	70	--	--	--	--
15...	1318	40.0	410	8.0	14.5	--	6.4	65	--	--	--	--
15...	1320	50.0	411	8.0	14.5	--	6.2	63	--	--	--	--
15...	1322	64.0	414	7.9	15.0	--	5.6	57	--	--	220	29
AUG												
10...	1225	1.00	343	8.2	31.0	1.20	6.8	94	K4	K9	170	29
10...	1227	10.0	340	8.2	30.0	--	6.7	91	--	--	--	--
10...	1229	20.0	356	7.9	29.5	--	4.6	62	--	--	--	--
10...	1231	30.0	373	7.5	29.0	--	1.2	16	--	--	--	--
10...	1233	40.0	398	7.3	26.5	--	0	0	--	--	--	--
10...	1235	50.0	465	7.1	24.0	--	0	0	--	--	--	--
10...	1237	62.0	496	7.0	21.5	--	0	0	--	--	260	14

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 DIS FIX END FIELD CAC03 (MG/L)	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)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
JAN												
20...	57	17	10	0.3	1.6	190	20	15	0.20	10	246	0.460
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	66	19	12	0.3	1.4	220	21	16	0.20	10	279	0.760
APR												
15...	64	17	11	0.3	1.5	200	18	15	0.20	11	260	0.420
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--	--
15...	61	16	10	0.3	1.6	190	18	17	0.20	11	250	0.450
AUG												
10...	37	18	11	0.4	1.5	140	18	16	0.20	11	195	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--
10...	78	15	8.4	0.2	1.2	240	12	14	0.20	14	290	--

GUADALUPE RIVER MAIN STEM

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 - CANYON LAKE SITE FC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, NITRATE DIS- SOLVED (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 DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN											
20...	0.460	0.020	0.480	0.480	0.020	--	<0.20	<0.010	<0.010	<3	<1
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
20...	0.760	0.020	0.780	0.780	0.060	--	<0.20	<0.010	<0.010	9	3
APR											
15...	--	<0.010	0.420	0.420	<0.010	--	<0.20	<0.010	<0.010	7	1
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
15...	--	<0.010	0.450	0.450	<0.010	--	<0.20	<0.010	<0.010	12	4
AUG											
10...	--	<0.010	--	<0.050	0.020	--	<0.20	0.010	<0.010	<3	<1
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	<0.010	--	<0.050	0.040	0.26	0.30	0.020	<0.010	<10	<10
10...	--	<0.010	--	<0.050	0.060	0.24	0.30	0.010	<0.010	<10	20
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
10...	--	<0.010	--	<0.050	0.450	0.15	0.60	0.020	<0.010	380	320

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake Site AC (295206098115501)

Phytoplankton Analyses October 1992 to September 1993

Date	1-20-93
Time	0955

TOTAL CELLS/mL	4,583
NUMBER OF SPECIES	2
DEPTH COLLECTED (ft.)	3.4

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA	
Order Pennales	
<i>Fragilaria crotonensis</i>	119
CYANOPHYTA	
<i>Aphanocapsa delicatissima</i>	4,464

Canyon Lake Site FC (295349098173701)

Phytoplankton Analyses October 1992 to September 1993

Date	1-20-93
Time	1330

TOTAL CELLS/mL	3,929
NUMBER OF SPECIES	5
DEPTH COLLECTED (ft.)	1.1

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA	
Order Centrales	
<i>Cyclotella ocellata</i>	149
Order Pennales	
<i>Fragilaria crotonensis</i>	89
CHRYSOPHYTA	
<i>Dinobryon sertularia</i>	60
CYANOPHYTA	
<i>Aphanocapsa delicatissima</i>	3,571
EUGLENOPHYTA	
<i>Trachelomonas</i> spp.	60

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake Site AC (295206098115501)

Phytoplankton Analyses October 1992 to September 1993

Date	4-15-93
Time	0855

TOTAL CELLS/mL	9,931
NUMBER OF SPECIES	8
DEPTH COLLECTED (ft.)	5.2

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA	
Order Pennales	
<i>Fragilaria crotonensis</i>	20
<i>Navicula</i> sp.	10
CHLOROPHYTA	
<i>Gloeocystis major</i>	30
CHRYSOPHYTA	
<i>Dinobryon sociale</i>	119
CYANOPHYTA	
<i>Aphanocapsa delicatissima</i>	3,869
<i>Chroococcus limneticus</i>	5,347
EUGLENOPHYTA	
<i>Trachelomonas</i> sp.	119
CRYPTOPHYTA	
<i>Cryptomonas erosa</i>	417

Canyon Lake Site FC (295349098173701)

Phytoplankton Analyses October 1992 to September 1993

Date	4-15-93
Time	1310

TOTAL CELLS/mL	6,995
NUMBER OF SPECIES	10
DEPTH COLLECTED (ft.)	1.8

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA	
Order Centrales	
<i>Cyclotella ocellata</i>	30
Order Pennales	
<i>Fragilaria crotonensis</i>	487
<i>Navicula</i> sp.	10
<i>Synedra ulna</i>	10
CHLOROPHYTA	
<i>Ankistrodesmus falcatus</i>	60
CHRYSTOPHYTA	
<i>Dinobryon sociale</i>	238
CYANOPHYTA	
<i>Aphanocapsa delicatissima</i>	5,684
EUGLENOPHYTA	
<i>Phacus</i> sp.	30
<i>Trachelomonas</i> sp.	119
CRYPTOPHYTA	
<i>Cryptomonas erosa</i>	327

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake Site AC (295206098115501)

Phytoplankton Analyses October 1992 to September 1993

Date	8-10-93
Time	0900

TOTAL CELLS/mL	39,406
NUMBER OF SPECIES	14
DEPTH COLLECTED (m)	6.6

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA	
Order Centrales	
<i>Cyclotella ocellata</i>	60
Order Pennales	
<i>Fragilaria crotonensis</i>	241
<i>Navicula</i> sp.	27
CHLOROPHYTA	
<i>Ankistrodesmus falcatus</i>	536
<i>Chlamydomonas</i> sp.	268
<i>Cosmarium</i> sp.	179
<i>Scenedesmus opoliensis</i>	60
<i>Staurastrum</i> sp.	60
CHRYSOPHYTA	
<i>Dinobryon sociale</i>	60
CYANOPHYTA	
<i>Aphanocapsa delicatissima</i>	34,522
<i>Aphanothece microspora</i>	1,488
<i>Chroococcus limneticus</i>	1,726
EUGLENOPHYTA	
<i>Trachelomonas</i> sp.	30
PYRRHOPHYTA	
<i>Peridinium pusillum</i>	149

Canyon Lake Site FC (295349098173701)

Phytoplankton Analyses October 1992 to September 1993

Date	8-10-93
Time	1225

TOTAL CELLS/mL	13,511
NUMBER OF SPECIES	15
DEPTH COLLECTED (ft.)	2.0

Organisms	Cells/mL
BACILLARIOPHYTA	
Order Centrales	
<i>Cyclotella ocellata</i>	7
<i>Stephanodiscus astraea</i>	82
Order Pennales	
<i>Cocconeis placentula</i>	23
<i>Fragilaria crotonensis</i>	770
<i>Navicula</i> sp.	70
CHLOROPHYTA	
<i>Ankistrodesmus falcatus</i>	238
<i>Chlamydomonas</i> sp.	179
<i>Cosmarium</i> sp.	89
<i>Scenedesmus opoliensis</i>	30
<i>Scenedesmus quadricauda</i>	30
<i>Staurastrum</i> sp.	30
CYANOPHYTA	
<i>Aphanocapsa delicatissima</i>	10,118
<i>Chroococcus limneticus</i>	1,101
<i>Merismopedia tenuissima</i>	595
PYRRHOPHYTA	
<i>Peridinium pusillum</i>	149

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake Site AC (295206098115501)

Phytoplankton Analyses October 1991 to September 1992

Date	5-13-92
Time	1330

TOTAL CELLS/mL	6,637
NUMBER OF SPECIES	13
DEPTH COLLECTED (ft.)	5.2

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Stephanodiscus</i> sp.	30
Order Pennales	
<i>Denticula elegans</i>	2
<i>Fragilaria crotonensis</i>	53
<i>Navicula radiosa</i>	2
<i>Pinnularia</i> sp.	2
CHLOROPHYTA (Green algae)	
<i>Chlamydomonas</i> sp.	60
<i>Oocytis</i> sp.	30
<i>Pediastrum</i> sp.	149
CHRYSTOPHYTA	
<i>Dinobryon sociale</i>	30
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	5506
<i>Aphanocapsa elachista</i>	446
EUGLENOPHYTA (Euglenoids)	
<i>Euglena</i> sp.	119
CRYPTOPHYTA (Cryptomonads)	
<i>Cryptomonas erosa</i>	208

Canyon Lake Site FC (295349098173701)

Phytoplankton Analyses October 1991 to September 1992

Date	5-13-92
Time	0940

TOTAL CELLS/mL	20,238
NUMBER OF SPECIES	17
DEPTH COLLECTED (ft.)	1.4

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Stephanodiscus</i> sp.	29
<i>Melosira</i> sp.	1
Order Pennales	
<i>Achnanthes</i> sp.	12
<i>Denticula elegans</i>	12
<i>Fragilaria crotonensis</i>	167
<i>Fragilaria vaucherie</i>	95
<i>Navicula elegans</i>	6
<i>Navicula</i> sp.	6
CHLOROPHYTA (Green algae)	
<i>Pediastrum duplex</i>	30
<i>Scenedesmus quadricauda</i>	30
CHRYSTOPHYTA	
<i>Dinobryon sociale</i>	208
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	11,011
<i>Aphanocapsa elachista</i>	357
<i>Microcystis aeruginosa</i>	7,916
EUGLENOPHYTA (Euglenoids)	
<i>Euglena</i> sp.	179
<i>Trachelomonas</i> sp.	30
CRYPTOPHYTA (Cryptomonads)	
<i>Cryptomonas erosa</i>	149

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX—Continued

Canyon Lake Site AC (295206098115501)

Phytoplankton Analyses October 1991 to September 1992

Date	8-6-92
Time	1300

TOTAL CELLS/mL	10,210
NUMBER OF SPECIES	14
DEPTH COLLECTED (ft.)	4.6

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Cyclotella ocellata</i>	30
Order Pennales	
<i>Fragilaria capucina</i>	138
<i>Fragilaria crotonensis</i>	874
<i>Fragilaria vaucherie</i>	107
<i>Navicula</i> spp.	568
<i>Navicula cryptocephala</i>	307
CHLOROPHYTA (Green algae)	
<i>Ankistrodesmus falcatus</i>	298
<i>Scenedesmus dimorphus</i>	30
CHRYSTOPHYTA (Golden-brown algae)	
<i>Dinobryon sociale</i>	1,250
CYANOPHYTA (Blue-green algae)	
<i>Aphanocapsa delicatissima</i>	6,250
<i>Chroococcus limneticus</i>	230
EUGLENOPHYTA (Euglenoids)	
<i>Trachelomonas</i> sp.	60
PYRRHOPHYTA (Dinoflagellates)	
<i>Glenodinium</i> sp.	30
CRYPTOPHYTA (Cryptomonads)	
<i>Cryptomonas erosa</i>	30
<i>Cryptomonas ovata</i>	208

Canyon Lake Site FC (295349098173701)

Phytoplankton Analyses October 1991 to September 1992

Date	8-7-92
Time	1250

TOTAL CELLS/mL	18,155
NUMBER OF SPECIES	24
DEPTH COLLECTED (ft.)	2.1

<u>Organisms</u>	<u>Cells/mL</u>
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<i>Cyclotella ocellata</i>	30
Order Pennales	
<i>Achnanthes</i> sp.	237
<i>Cymbella cymbiformis</i>	36
<i>Fragilaria capucina</i>	368
<i>Fragilaria crotonensis</i>	889
<i>Fragilaria vaucherie</i>	261
<i>Navicula</i> spp.	202
<i>Navicula cryptocephala</i>	818
<i>Nitzschia palea</i>	12
<i>Synedra ulna</i>	36
Unknown Pennate	178
CHLOROPHYTA (Green algae)	
<i>Ankistrodesmus falcatus</i>	5,654
<i>Chlamydomonas</i> spp.	179
<i>Scenedesmus quadricauda</i>	60
CHRYSOPHYTA (Golden-brown algae)	
<i>Dinobryon sociale</i>	357
<i>Mallomonas</i> sp.	30
CYANOPHYTA (Blue-green algae)	
<i>Aphanizomenon flos-aquae</i>	1,190
<i>Aphanocapsa delicatissima</i>	6,547
<i>Chroococcus limneticus</i>	238
<i>Merismopedia chondroidea</i>	238
EUGLENOPHYTA (Euglenoids)	
<i>Euglena</i> sp.	89
<i>Trachelomonas</i> spp.	357
PYRRHOPHYTA (Dinoflagellates)	
<i>Peridinium</i> sp.	89
CRYPTOPHYTA (Cryptomonads)	
<i>Cryptomonas ovata</i>	60

08167800 GUADALUPE RIVER AT SATTTLER, 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.

WATER-DISCHARGE RECORDS

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. Since July 21, 1962, flow completely regulated by Canyon Lake (station 08167700) 1.8 mi upstream. Small diversions above station for irrigation. Satellite telemeter at station. Water-quality samples are collected 1.4 mi upstream from gage.

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1961-62).--Maximum discharge, 20,800 ft³/s Oct. 29, 1960 (gage height, 12.20 ft); no flow July 31 to Aug. 6, 1962 (result of closure of Canyon Dam).

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	260	218	403	581	446	581	428	459	300	357	134	95
2	207	215	322	581	365	581	465	459	278	459	121	96
3	215	217	322	581	365	581	465	412	254	456	119	103
4	218	217	322	581	371	581	465	448	253	450	118	110
5	218	215	322	575	403	581	465	383	247	432	121	112
6	131	215	322	574	423	583	465	133	247	298	130	110
7	205	215	318	574	428	581	465	391	230	212	130	111
8	210	216	318	549	434	583	465	581	192	208	130	112
9	212	221	322	512	433	581	465	581	192	189	132	114
10	209	221	322	439	426	581	465	581	192	171	134	117
11	205	221	322	395	430	581	465	581	192	171	123	122
12	204	221	322	394	437	581	465	578	196	152	117	126
13	203	203	322	355	437	581	448	574	200	134	117	128
14	203	231	324	334	437	581	463	548	201	134	130	127
15	203	243	322	346	502	581	459	518	288	134	131	126
16	203	225	322	354	565	581	459	518	374	134	132	127
17	208	199	322	360	578	581	459	476	376	136	131	129
18	209	201	391	362	566	581	459	434	380	136	130	132
19	209	207	437	365	578	577	459	386	380	136	130	138
20	209	203	447	436	581	574	459	313	383	136	130	142
21	209	204	509	535	581	576	459	308	385	135	130	143
22	209	206	561	555	581	579	459	300	385	132	130	143
23	209	221	561	555	581	592	456	311	385	130	130	143
24	212	346	561	555	581	524	454	309	388	129	125	143
25	212	424	561	555	581	465	455	305	368	128	109	143
26	212	426	564	558	581	459	459	304	374	128	104	143
27	212	426	568	557	581	459	459	304	374	126	104	143
28	212	426	568	549	581	459	459	304	374	126	104	139
29	213	426	574	549	---	459	462	304	219	343	105	128
30	215	435	577	549	---	459	459	304	126	133	101	128
31	215	---	581	549	---	432	---	301	---	134	96	---
TOTAL	6471	7864	13009	15314	13853	17076	13789	12708	8733	6279	3778	3773
MEAN	209	262	420	494	495	551	460	410	291	203	122	126
MAX	260	435	581	581	581	592	465	581	388	459	134	143
MIN	131	199	318	334	365	432	428	133	126	126	96	95
AC-FT	12840	15600	25800	30380	27480	33870	27350	25210	17320	12450	7490	7480

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993#, BY WATER YEAR (WY)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	339	349	299	471	435	502	522	528	668	565	512	323																			
MAX	1317	1177	1138	4437	2089	3949	3705	2318	2783	4883	3854	1306																			
(WY)	1967	1974	1987	1992	1992	1992	1992	1992	1992	1987	1978	1987																			
MIN	43.1	66.2	41.4	60.4	13.4	71.7	45.6	47.1	36.1	22.1	10.1	10.5																			
(WY)	1964	1976	1966	1964	1965	1988	1971	1971	1963	1963	1963	1963																			

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1963 - 1993#
ANNUAL TOTAL	671439	122647	
ANNUAL MEAN	1835	336	
HIGHEST ANNUAL MEAN			1900
LOWEST ANNUAL MEAN			69.4
HIGHEST DAILY MEAN	5490	Mar 11	5680
LOWEST DAILY MEAN	100	Mar 7	.80
ANNUAL SEVEN-DAY MINIMUM	197	Oct 6	1.2
INSTANTANEOUS PEAK FLOW			594
INSTANTANEOUS PEAK STAGE			5.70
INSTANTANEOUS LOW FLOW			8.31
ANNUAL RUNOFF (AC-FT)	1332000	243300	.00
10 PERCENT EXCEEDS	5280	581	800
50 PERCENT EXCEEDS	695	322	230
90 PERCENT EXCEEDS	206	128	64

Period of regulated streamflow.

* No flow part of Jan. 29, 30, and Feb. 1, 1965, due to construction of present control.

GUADALUPE RIVER MAIN STEM

08167800 GUADALUPE RIVER AT SATTLER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: September 1962 to August 1982. January 1990 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1984 to September 1987.

INSTRUMENTATION.--From June 1984 to September 1987, water temperature was continuously recorded at this station.

REMARKS.--Samples for chemical and biochemical analyses are collected approximately 1.4 miles upstream from the stream gaging location.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 25.5°C on several days during September 1987; minimum, 9.5°C Mar. 8-10, 1985.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)
JAN 20...	1430	506	385	8.0	13.0	15	4.4	9.0	88	0.5	190	22
APR 15...	1455	448	397	7.8	13.5	10	2.6	8.8	87	0.8	200	18
AUG 10...	0940	139	442	8.0	15.5	3	2.4	6.0	62	0.8	210	28

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 DIS FIX END FIELD CAC03 (MG/L)	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)
JAN 20...	49	17	9.8	0.3	0.90	170	21	15	0.20	11	229
APR 15...	50	17	10	0.3	1.7	180	18	18	0.20	10	233
AUG 10...	55	17	10	0.3	1.5	180	18	16	0.30	12	240

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	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, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)
JAN 20...	<1	<1	--	0.340	0.340	0.030	0.370	0.370	0.010	--	<0.20
APR 15...	6	2	4	0.400	--	<0.010	0.400	0.400	<0.010	--	<0.20
AUG 10...	3	0	3	0.320	--	<0.010	0.320	0.320	0.040	0.26	0.30

DATE	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 20...	<0.010	<0.010	2.2	1	33	<0.5	<1.0	<5	<3	<10	<3
APR 15...	<0.010	<0.010	2.4	2	48	<0.5	<1.0	<5	<3	<10	<3
AUG 10...	0.010	<0.010	1.8	1	34	<0.5	<1.0	<5	<3	<10	80

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)
JAN 20...	<10	5	<1	<0.1	<10	<10	<1	<1.0	410	<6	<3
APR 15...	<10	4	<1	<0.1	<10	<10	<1	<1.0	400	<6	<3
AUG 10...	10	6	68	<0.1	<10	<10	<1	<1.0	420	<6	4

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, of which 1,432 mi² is above Canyon Dam.

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 largely regulated by Canyon Lake (station 08167700) 21.9 mi upstream. Satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft³/s (269,500 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1929-62).--Maximum discharge, 101,000 ft³/s June 15, 1935 (gage height, 32.95 ft). Maximum discharge since closure of Canyon Dam on July 21, 1962, 92,600 ft³/s May 12, 1972 (gage height, 31.65 ft); no flow July 8, 9, and 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	385	329	528	741	670	782	523	602	452	384	202	161
2	297	304	424	740	517	775	575	599	439	600	198	163
3	304	299	419	742	521	772	576	549	393	594	186	166
4	309	303	418	741	520	772	584	557	387	590	189	177
5	307	299	419	740	551	768	576	2650	382	575	190	176
6	288	307	415	742	584	767	576	706	371	497	191	174
7	238	301	413	742	585	754	591	579	371	341	195	173
8	304	302	411	733	589	730	585	830	319	333	198	176
9	307	308	419	668	593	729	580	803	312	323	197	183
10	304	304	411	630	609	731	576	782	312	294	196	182
11	291	300	416	535	596	729	576	763	307	289	195	184
12	288	304	416	532	604	750	575	749	311	285	186	187
13	288	289	419	516	602	733	563	739	339	248	184	187
14	288	296	432	474	602	732	569	714	322	246	184	189
15	288	323	506	488	652	737	568	659	352	246	194	187
16	290	317	492	495	738	739	566	653	505	246	196	187
17	293	283	468	503	760	733	568	629	511	246	194	187
18	299	285	481	503	752	743	568	571	512	245	193	187
19	298	339	568	515	761	744	565	549	510	241	191	189
20	294	372	570	536	764	744	562	449	531	242	192	187
21	294	327	597	683	760	744	557	441	591	241	191	187
22	294	312	740	716	758	762	558	427	579	240	190	187
23	292	309	740	722	758	761	559	497	566	238	191	185
24	291	386	740	721	757	727	564	498	561	234	188	183
25	290	523	740	721	768	616	576	473	551	230	178	183
26	288	525	740	721	758	610	579	458	565	230	168	184
27	288	524	740	721	754	610	593	453	575	226	168	185
28	288	520	740	721	770	610	598	455	568	224	170	182
29	293	519	740	730	---	601	629	462	501	364	169	173
30	303	521	740	718	---	580	602	462	291	272	170	168
31	291	---	744	719	---	576	---	462	---	202	163	---
TOTAL	9172	10630	17046	20209	18653	22161	17237	20220	13286	9766	5797	5419
MEAN	296	354	550	652	666	715	575	652	443	315	187	181
MAX	385	525	744	742	770	782	629	2650	591	600	202	189
MIN	238	283	411	474	517	576	523	427	291	202	163	161
AC-FT	18190	21080	33810	40080	37000	43960	34190	40110	26350	19370	11500	10750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993#, BY WATER YEAR (WY)

	MEAN	411	422	385	559	536	598	609	661	791	649	581	388
MAX	1409	1307	1302	4704	2379	4254	3826	2450	2948	5136	3866	1484	
(WY)	1987	1974	1987	1992	1992	1992	1992	1992	1992	1992	1978	1987	
MIN	39.0	85.4	67.9	71.2	105	93.8	57.5	59.3	47.4	24.8	23.2	16.0	
(WY)	1964	1964	1964	1964	1963	1963	1971	1971	1984	1984	1963	1963	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1963 - 1993#

ANNUAL TOTAL	729762	169596	
ANNUAL MEAN	1994	465	
HIGHEST ANNUAL MEAN			549
LOWEST ANNUAL MEAN			2057
HIGHEST DAILY MEAN	5900	Mar 11	84.9
LOWEST DAILY MEAN	238	Oct 7	13300
ANNUAL SEVEN-DAY MINIMUM	289	Oct 6	2.6
INSTANTANEOUS PEAK FLOW			2.7
INSTANTANEOUS PEAK STAGE			92600
ANNUAL RUNOFF (AC-FT)	1447000	336400	31.65
10 PERCENT EXCEEDS	5440	741	980
50 PERCENT EXCEEDS	808	474	309
90 PERCENT EXCEEDS	304	187	90

Period of regulated streamflow.

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 September 1932 (discharge measurements and fragmentary daily discharge record), October 1932 to current year.

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. No flow from Comal Springs from June 13 to Nov. 3, 1956. 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. Satellite telemeter at station.

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).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 10	0730	1,310	6.13	May 5	2000	6,650	13.48

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	414	436	419	431	416	422	412	393	420	415	382	342
2	414	409	420	423	416	421	411	396	418	414	379	342
3	414	407	419	422	417	414	411	392	418	418	372	344
4	412	407	418	422	417	420	507	392	413	418	370	342
5	407	407	418	410	417	405	425	1940	415	419	373	344
6	412	407	421	419	416	410	416	1720	414	408	367	341
7	411	406	420	420	415	411	430	754	412	409	373	338
8	410	410	420	420	415	411	423	663	407	410	372	338
9	409	408	422	419	422	409	417	525	408	405	369	339
10	411	410	419	418	726	408	410	466	409	407	361	339
11	409	410	420	418	439	408	411	434	406	410	363	339
12	409	414	418	417	423	433	409	425	407	406	364	340
13	410	410	420	417	420	415	399	425	408	400	358	341
14	408	410	421	417	418	411	414	428	414	402	362	340
15	410	410	466	417	426	411	407	421	407	401	361	340
16	408	411	428	417	418	411	405	423	409	396	357	341
17	407	411	423	417	420	411	400	421	409	403	355	341
18	408	413	422	416	418	411	402	424	406	400	355	341
19	411	497	421	424	412	411	401	414	409	396	355	343
20	406	504	421	424	424	415	394	411	487	392	350	339
21	408	420	420	422	418	415	401	420	515	394	353	338
22	410	421	421	418	407	417	398	412	433	392	353	341
23	408	419	421	418	409	415	397	467	423	389	347	338
24	408	417	420	416	410	415	395	458	436	394	346	338
25	407	418	422	416	422	415	397	429	465	391	344	338
26	406	417	421	417	415	414	394	422	545	386	345	339
27	404	418	421	416	412	414	392	417	457	382	346	339
28	405	419	422	416	423	414	392	425	428	382	343	338
29	407	418	421	419	---	414	410	444	417	382	344	338
30	407	418	421	416	---	413	395	447	417	376	341	338
31	405	---	431	415	---	413	---	438	---	381	341	---
TOTAL	12675	12582	13097	12977	12011	12827	12275	16646	12832	12378	11101	10199
MEAN	409	419	422	419	429	414	409	537	428	399	358	340
MAX	414	504	466	431	726	433	507	1940	545	419	382	344
MIN	404	406	418	410	407	405	392	392	406	376	341	338
AC-FT	25140	24960	25980	25740	23820	25440	24350	33020	25450	24550	22020	20230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1993, BY WATER YEAR (WY)

	283	290	301	306	308	303	308	327	303	276	258	279
MEAN	283	290	301	306	308	303	308	327	303	276	258	279
MAX	490	486	437	499	527	536	531	939	520	466	466	663
(WY)	1974	1975	1992	1968	1992	1992	1977	1972	1987	1992	1992	1952
MIN	12.5	23.7	40.9	51.5	52.5	70.6	45.2	31.7	11.5	12.0	15.4	15.0
(WY)	1957	1957	1957	1957	1957	1956	1956	1956	1956	1956	1956	1956

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1933 - 1993

ANNUAL TOTAL	169619	151600	295
ANNUAL MEAN	463	415	431
HIGHEST ANNUAL MEAN			50.9
LOWEST ANNUAL MEAN			1992
HIGHEST DAILY MEAN	1830	1940	14400
LOWEST DAILY MEAN	349	338	5.5
ANNUAL SEVEN-DAY MINIMUM	362	338	8.5
INSTANTANEOUS PEAK FLOW		6650	60800
INSTANTANEOUS PEAK STAGE		13.48	36.55
ANNUAL RUNOFF (AC-FT)	336400	300700	213600
10 PERCENT EXCEEDS	495	425	396
50 PERCENT EXCEEDS	452	411	305
90 PERCENT EXCEEDS	407	346	166

08169580 GUADALUPE RIVER BELOW NEW BRAUNFELS, TX

WATER-QUALITY RECORDS

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 June 1992.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (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 NONCARBONATE DISSOLVED (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)
NOV 04...	1315	526	8.1	19.0	7.4	81	0.9	250	26	75
DEC 17...	1130	527	8.5	16.0	8.1	83	1.0	230	8	67
FEB 09...	1400	503	8.2	17.5	9.0	96	1.6	220	10	62
MAY 10...	1105	484	7.9	19.0	8.4	92	0.7	220	33	65
JUN 11...	1115	525	8.1	25.0	6.6	81	1.1	250	25	74
AUG 03...	1100	517	7.7	26.0	8.3	104	2.2	280	42	84

DATE	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 WATER DIS-SOLVED (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)
NOV 04...	16	14	0.4	1.7	230	22	18	0.20	12
DEC 17...	15	12	0.3	1.5	220	24	18	0.20	11
FEB 09...	16	13	0.4	1.6	210	24	17	0.20	10
MAY 10...	15	11	0.3	1.6	190	22	15	0.20	11
JUN 11...	16	15	0.4	0.60	230	25	20	0.20	11
AUG 03...	16	14	0.4	2.2	230	25	17	0.20	11

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)
NOV 04...	295	1.28	--	0.020	--	1.30	--	0.090	--
DEC 17...	281	1.18	--	0.020	--	1.20	--	0.040	--
FEB 09...	275	1.07	1.07	--	0.030	1.10	1.10	--	0.090
MAY 10...	259	0.880	--	--	<0.010	0.880	0.880	--	0.030
JUN 11...	303	1.18	1.18	--	0.020	1.20	1.20	--	0.060
AUG 03...	317	1.49	1.49	--	0.010	1.50	1.50	--	0.130

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO TOTAL (MG/L AS P)	PHOSPHATE, ORTHO DIS-SOLVED (MG/L AS PO4)
NOV 04...	0.31	--	--	0.40	0.040	--	--	0.030	--
DEC 17...	--	--	--	<0.20	0.020	--	--	0.040	--
FEB 09...	--	0.51	0.60	--	--	0.020	0.020	--	0.06
MAY 10...	--	--	<0.20	--	--	0.030	0.030	--	0.09
JUN 11...	--	--	<0.20	--	--	0.020	0.030	--	0.09
AUG 03...	--	0.77	0.90	--	--	0.050	0.030	--	0.09

08170000 SAN MARCOS RIVER SPRINGFLOW AT SAN MARCOS, TX

LOCATION.--Lat 29°50'35", long 97°58'55", Hays County, Hydrologic Unit 12100203, at ground-water well No. LR-67-09-110, 1250 ft southwest of the intersection of FM 2439 and McCarty Lane, and 3.7 mi south of San Marcos.

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

PERIOD OF RECORD.--May 1956 to current year. June 1915 to January 1916, March 1916 to September 1921, and May to September 1956, published as San Marcos River at San Marcos; records include some surface runoff. Periodic measurements of springflow were made at this location outside period of record since Nov. 14, 1894, and are published as miscellaneous measurements. October 1956 to September 1988, at site 0.7 mi downstream from bridge on Interstate Highway 35 and 2.1 mi upstream from Blanco River.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 678.50 ft, which is mean land surface, above National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 0.5 mi upstream from Interstate Highway 35, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder about 0.7 mi downstream from Interstate Highway 35; datum relations unknown. May 1956 to September 1988, water-stage recorder 0.7 mi downstream from Interstate Highway 35 and 2.1 mi upstream from Blanco River, datum 536.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Springflow is computed from water-level data from well No. LR-67-09-110 and measurements of springflow. Entire flow of river is from San Marcos Springs, located about 1.1 mi upstream from Interstate Highway 35, except during periods of local runoff. San Marcos Springs emerge from the Edwards and associated limestones in the Balcones Fault Zone.

REVISIONS.--Revised figures of daily discharge for water year 1991, superseding those published in the WDR Texas, volume 3, for 1991 are given below:

WATER YEAR 1991

September	2.....e186	September	11.....e179	September	21.....e172	
	3.....e185		12.....e179		22.....e171	
	4.....e184		13.....e178		23.....e170	
	5.....e184		14.....e177		24.....e169	
			15.....e176		25.....e169	
	6.....e183		16.....e176		26.....e168	
	7.....e182		17.....e175		27.....e167	
	8.....e182		18.....e174		28.....e166	
	9.....e181		19.....e173		29.....e165	
	10.....e180		20.....e172		30.....e164	
		TOTAL	MEAN	MAX	MIN	AC-FT
September.....	5274		176	187	164	10460
WTR YR 1991.....	64634		177	225	114	128200

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	231	214	204	196	194	199	190	225	225	208	187
2	254	230	214	204	195	194	199	190	225	225	207	187
3	253	229	213	204	194	195	199	191	225	225	207	186
4	252	228	212	203	194	194	199	191	224	225	206	186
5	251	226	212	203	194	195	199	192	224	225	205	185
6	250	225	211	203	194	195	199	212	223	225	204	185
7	249	224	210	203	195	195	200	e215	223	225	204	185
8	248	224	210	203	195	196	199	e217	222	224	203	185
9	247	223	209	202	195	196	199	e220	222	224	202	184
10	247	223	209	201	195	195	199	e222	221	223	201	184
11	245	223	209	201	195	196	198	e222	220	223	200	184
12	245	222	209	201	195	195	198	e224	220	222	200	184
13	244	221	209	200	195	196	198	e225	220	222	199	184
14	243	221	208	200	195	196	197	e226	220	221	198	184
15	242	221	208	199	195	196	196	e226	219	221	197	183
16	241	220	208	199	194	196	196	e226	218	220	196	183
17	240	220	208	199	194	196	195	e226	217	220	196	183
18	239	219	208	199	194	196	195	e226	217	219	195	183
19	238	219	208	198	194	196	195	e226	216	219	195	176
20	237	219	208	198	195	197	194	e226	216	218	194	166
21	236	219	208	198	195	197	193	e226	217	217	193	165
22	236	219	208	198	194	197	193	e226	217	216	193	165
23	235	219	207	198	194	198	193	e226	217	215	192	165
24	234	218	207	197	194	199	192	e226	217	214	191	164
25	234	217	207	197	194	199	192	e226	217	214	191	164
26	234	217	206	197	194	199	191	227	220	213	190	164
27	233	216	206	196	194	199	191	227	223	212	190	164
28	233	216	206	196	194	199	190	226	225	211	189	163
29	232	215	206	196	---	199	190	226	225	210	189	163
30	232	215	206	196	---	199	190	226	225	209	188	163
31	231	---	205	195	---	199	---	226	---	209	188	---
TOTAL	7490	6639	6469	6188	5446	6093	5868	6781	6620	6791	6111	5304
MEAN	242	221	209	200	194	197	196	219	221	219	197	177
MAX	255	231	214	204	196	199	200	227	225	225	208	187
MIN	231	215	205	195	194	194	190	190	216	209	188	163
AC-FT	14860	13170	12830	12270	10800	12090	11640	13450	13130	13470	12120	10520

e Estimated

GUADALUPE RIVER BASIN

261

08170000 SAN MARCOS RIVER SPRINGFLOW AT SAN MARCOS, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY)

MEAN	154	157	163	166	171	173	173	185	195	183	167	157
MAX	262	281	282	382	418	445	427	407	415	381	315	269
(WY)	1974	1977	1977	1992	1992	1992	1992	1992	1992	1992	1992	1987
MIN	64.6	70.3	72.0	74.3	72.4	89.3	98.1	99.3	95.3	84.2	74.6	72.2
(WY)	1957	1957	1957	1957	1957	1964	1964	1984	1967	1967	1984	1984

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1957 - 1993

ANNUAL TOTAL	125839		75800									
ANNUAL MEAN	344		208							170		
HIGHEST ANNUAL MEAN										331		1992
LOWEST ANNUAL MEAN										92.0		1964
HIGHEST DAILY MEAN	451	Mar 12	255	Oct 1	451	Mar 12	1992					
LOWEST DAILY MEAN	205	Dec 31	163	Sep 28	59	a/Oct 3	1956					
ANNUAL SEVEN-DAY MINIMUM	206	Dec 25	164	Sep 24	60	a/Oct 1	1956					
INSTANTANEOUS PEAK FLOW			255	Oct 1	451	b/Mar 12	1992					
INSTANTANEOUS PEAK STAGE			80.45	Oct 1	83.92	b/Mar 12	1992					
ANNUAL RUNOFF (AC-FT)	249600		150300		123400							
10 PERCENT EXCEEDS	433		227		244							
50 PERCENT EXCEEDS	381		205		162							
90 PERCENT EXCEEDS	217		190		104							

a/ See PERIOD OF RECORD paragraph in manuscript.

b/ Also occurred on Mar. 13-15, 1992.

GUADALUPE RIVER BASIN

08171000 BLANCO RIVER AT WIMBERLEY, TX

LOCATION.--Lat 29°59'39", long 98°05'19", Hays County, Hydrologic Unit 12100203, on left bank at downstream side of highway, near left end of bridge on Ranch Road 12, 0.3 mi 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.--No estimated daily discharges. Records good. There are many small diversions above station. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 reached a stage of 25 ft, from information by local residents. Maximum stage since at least 1869, that of May 28, 1929.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 27	0400	1,660	6.36	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	67	73	116	210	255	175	159	124	167	65	51
2	76	58	73	115	206	297	162	149	121	156	65	51
3	77	60	71	118	203	277	160	140	120	146	66	60
4	75	57	70	117	200	251	164	139	116	140	64	52
5	74	54	65	114	210	238	161	161	111	133	63	49
6	74	56	66	114	222	227	156	192	108	130	63	49
7	73	55	68	114	224	224	176	191	106	126	63	49
8	73	56	67	115	216	218	386	169	105	121	62	48
9	67	59	72	118	212	216	243	155	100	118	63	51
10	69	58	69	112	293	211	207	160	99	115	62	49
11	65	58	71	112	332	205	196	145	98	114	61	48
12	62	61	71	113	294	214	189	139	101	112	60	47
13	60	55	72	110	277	217	187	133	106	104	60	49
14	59	57	89	109	275	210	192	132	102	90	60	54
15	59	59	305	108	277	203	213	126	102	90	59	101
16	59	60	351	109	273	207	199	123	99	90	63	81
17	58	58	231	109	256	201	181	120	101	87	63	66
18	58	58	191	109	246	192	173	121	100	87	61	62
19	58	267	178	465	243	187	168	119	99	85	59	60
20	58	436	155	488	248	185	163	117	111	82	57	55
21	56	192	149	337	243	182	153	115	131	77	54	53
22	56	126	145	298	230	187	149	115	129	78	53	50
23	56	106	138	281	219	189	156	156	121	76	53	51
24	57	96	131	260	215	185	154	172	118	75	53	49
25	57	85	130	239	254	180	146	161	112	73	51	48
26	56	82	127	235	224	174	140	146	265	73	51	47
27	57	76	127	231	208	192	134	138	781	70	51	46
28	56	75	125	228	218	178	134	142	269	65	51	45
29	56	75	124	228	---	173	148	136	214	64	51	45
30	56	74	124	222	---	172	148	132	186	64	49	45
31	56	---	121	213	---	178	---	127	---	65	48	---
TOTAL	1949	2736	3849	5757	6728	6425	5313	4430	4455	3073	1804	1611
MEAN	62.9	91.2	124	186	240	207	177	143	148	99.1	58.2	53.7
MAX	77	436	351	488	332	297	386	192	781	167	66	101
MIN	56	54	65	108	200	172	134	115	98	64	48	45
AC-FT	3870	5430	7630	11420	13340	12740	10540	8790	8840	6100	3580	3200

GUADALUPE RIVER BASIN

263

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1993, BY WATER YEAR (WY)

MEAN	102	83.3	120	125	167	151	177	223	210	102	49.5	91.9
MAX	872	509	1364	1134	1401	977	953	1470	1950	935	201	1413
(WY)	1974	1947	1992	1968	1992	1992	1957	1929	1987	1973	1973	1952
MIN	6.24	7.41	7.87	6.66	8.13	5.93	5.19	12.5	3.44	1.70	2.89	6.93
(WY)	1941	1956	1956	1956	1956	1956	1956	1956	1956	1956	1956	1928

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR			FOR 1993 WATER YEAR			WATER YEARS 1925 - 1993		
ANNUAL TOTAL	169808			48130			133		
ANNUAL MEAN	464			132			566		
HIGHEST ANNUAL MEAN							6.45		
LOWEST ANNUAL MEAN							1992		
HIGHEST DAILY MEAN	9660			781			36900		
LOWEST DAILY MEAN	54			45			.70		
ANNUAL SEVEN-DAY MINIMUM	56			46			.79		
INSTANTANEOUS PEAK FLOW				1660			113000		
INSTANTANEOUS PEAK STAGE				6.36			a/33.30		
INSTANTANEOUS LOW FLOW							.60		
ANNUAL RUNOFF (AC-FT)	336800			95470			96200		
10 PERCENT EXCEEDS	986			231			277		
50 PERCENT EXCEEDS	235			115			52		
90 PERCENT EXCEEDS	62			55			12		

a/ Maximum stage since at least 1869.

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to December 1973. Chemical, biochemical, and pesticide analyses: January 1974 to September 1979, February 1988 to September 1993 (discontinued). Sediment analyses: November 1965 to April 1966.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
JAN 29...	1130	185	444	7.6	14.5	5	1.4	9.8	98	0.8	54	
AUG 30...	1050	30	430	7.9	27.5	3	0.40	--	--	2.8	56	
DATE		STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
JAN 29...	100	230	10	69	14	6.5	0.2	1.0	220	19	12	
AUG 30...	K22	220	26	59	17	7.4	0.2	1.2	190	31	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-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
JAN 29...	0.20	7.5	263	7	2	5	0.320	0.320	0.020	0.340	0.340	
AUG 30...	0.20	11	255	<1	<1	--	0.340	--	<0.010	0.340	0.340	
DATE		NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 29...	0.010	<0.20	0.030	<0.010	1.1	<1	25	<0.5	<1.0	<5	<3	
AUG 30...	0.040	<0.20	<0.010	<0.010	1.4	<1	30	<0.5	2.0	<5	<3	
DATE		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)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)
JAN 29...	<10	<3	<10	<4	1	0.1	<10	<10	<1	<1.0	290	
AUG 30...	<10	<3	<10	5	1	<0.1	<10	<10	<1	<1.0	570	
DATE		VANA-DIUM, DIS-SOLVED (UG/L AS V)	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)	DI-ELDRIN TOTAL (UG/L)
JAN 29...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010
AUG 30...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010

GUADALUPE RIVER BASIN

265

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 29...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
AUG 30...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 29...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
AUG 30...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

GUADALUPE RIVER BASIN

08171300 BLANCO RIVER NEAR KYLE, TX

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

DRAINAGE AREA.--412 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 620.12 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for estimated daily discharges, which are fair. 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. Recording rain gage at this station.

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).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 20	unknown	916	a/7.98	No peak greater than base discharge.			
a/ From floodmark.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	e54	e66	e106	194	247	177	152	122	152	48	28
2	56	e49	e65	e106	190	270	161	149	117	140	47	27
3	56	e50	e64	e108	194	273	155	134	112	131	45	29
4	56	e48	e61	e107	188	239	167	130	106	124	45	29
5	55	e46	e59	e105	197	225	157	171	101	120	43	28
6	53	e47	e60	e104	201	217	156	239	95	112	43	27
7	54	e46	e61	e104	210	212	172	200	90	106	42	27
8	56	e48	e60	e106	199	206	318	185	89	100	42	27
9	55	e50	e63	e106	200	200	261	168	87	94	42	26
10	55	e49	e61	e102	248	196	211	173	88	90	41	27
11	55	e50	e62	e102	316	193	196	155	87	87	40	26
12	54	e51	e62	e102	282	209	185	148	86	84	40	26
13	54	e48	e62	e101	261	206	178	139	90	81	40	28
14	51	e49	e75	e99	257	202	186	133	90	79	39	29
15	50	e50	e260	e99	259	196	190	128	93	75	37	37
16	51	e51	e300	e99	256	196	203	124	84	73	37	71
17	e50	e49	e200	e100	242	192	177	119	83	71	37	47
18	e50	e49	e160	e100	229	181	170	125	88	68	36	39
19	e50	e200	e150	e400	226	177	166	122	82	67	35	35
20	e50	e310	e135	e420	228	183	163	116	96	65	33	32
21	e48	e155	e132	300	227	173	156	112	127	63	32	30
22	e48	e100	e130	289	218	178	149	108	131	60	31	28
23	e48	e85	e123	266	207	189	145	145	120	58	31	26
24	e49	e80	e120	247	199	179	154	181	114	58	30	25
25	e49	e72	e118	230	234	173	142	157	110	56	30	24
26	e48	e71	e117	221	217	169	137	148	141	55	29	25
27	e49	e68	e117	217	198	175	131	135	375	54	29	25
28	e48	e68	e112	214	200	173	130	130	282	53	29	24
29	e48	e68	e112	219	---	167	148	140	198	53	28	24
30	e48	e66	e110	209	---	169	144	133	169	52	28	23
31	e48	---	e108	200	---	163	---	126	---	49	28	---
TOTAL	1597	2227	3385	5288	6277	6128	5185	4525	3653	2530	1137	899
MEAN	51.5	74.2	109	171	224	198	173	146	122	81.6	36.7	30.0
MAX	56	310	300	420	316	273	318	239	375	152	48	71
MIN	48	46	59	99	188	163	130	108	82	49	28	23
AC-FT	3170	4420	6710	10490	12450	12150	10280	8980	7250	5020	2260	1780
CFSM	.13	.18	.27	.41	.54	.48	.42	.35	.30	.20	.09	.07
IN.	.14	.20	.31	.48	.57	.55	.47	.41	.33	.23	.10	.08

e Estimated

GUADALUPE RIVER BASIN

267

08171300 BLANCO RIVER NEAR KYLE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1993, BY WATER YEAR (WY)

MEAN	133	106	163	164	217	177	187	257	300	112	46.3	59.6
MAX	1078	387	1775	1319	1511	1078	906	1148	2091	828	196	348
(WY)	1974	1958	1992	1968	1992	1992	1977	1958	1987	1973	1973	1986
MIN	.000	.000	.000	.000	.000	10.0	9.16	1.96	.13	.000	.000	.000
(WY)	1964	1964	1964	1957	1990	1967	1964	1964	1971	1967	1963	1963

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1957 - 1993	
ANNUAL TOTAL	177894		42831		160	
ANNUAL MEAN	486		117		625	
HIGHEST ANNUAL MEAN					4.65	
LOWEST ANNUAL MEAN					19000	
HIGHEST DAILY MEAN	10300	Feb 4	420	Jan 20	.00	Dec 21 1991
LOWEST DAILY MEAN	46	Nov 5	23	Sep 30	.00	Oct 1 1956
ANNUAL SEVEN-DAY MINIMUM	48	Nov 2	24	Sep 24	.00	Oct 1 1956
INSTANTANEOUS PEAK FLOW			916	Jan 20	98000	May 2 1958
INSTANTANEOUS PEAK STAGE			a/7.98	Jan 20	36.30	May 2 1958
ANNUAL RUNOFF (AC-FT)	352900		84960		115700	
ANNUAL RUNOFF (CFSM)	1.18		.28		.39	
ANNUAL RUNOFF (INCHES)	16.06		3.87		5.27	
10 PERCENT EXCEEDS	1050		217		334	
50 PERCENT EXCEEDS	233		104		55	
90 PERCENT EXCEEDS	54		33		4.6	

a/ From floodmark.

08172000 SAN MARCOS RIVER AT LULING, TX

LOCATION.--Lat 29°39'58", long 97°39'02", Caldwell County line, Hydrologic Unit 12100203, at downstream side of bridge on State Highway 80, 0.9 mi south of U.S. Post Office at Luling, and 9.5 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, and data collection platform (DCP). Datum of gage is 322.05 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 21, 1988, at site 390 ft downstream at same datum.

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 (DCP and LARC) at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 6	1300	4,820	20.45	No other peaks greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	293	278	275	321	429	708	444	420	396	418	230	182
2	290	284	269	320	425	730	446	420	362	391	229	179
3	286	262	264	321	439	646	441	419	344	366	220	180
4	290	248	265	326	451	612	455	404	334	349	217	180
5	281	245	257	324	446	561	444	1010	328	342	220	180
6	278	249	258	319	456	535	435	3760	326	332	218	175
7	274	250	261	324	455	519	436	1090	321	323	216	176
8	273	252	256	323	463	508	454	781	311	316	215	177
9	271	256	263	328	460	505	549	670	307	310	217	180
10	274	257	266	326	1610	495	546	1480	311	295	214	178
11	270	253	256	320	1010	488	491	765	305	295	212	178
12	263	251	250	320	688	592	470	547	304	285	209	177
13	262	246	255	318	636	605	460	454	329	276	206	184
14	265	244	263	320	609	517	454	410	311	270	204	182
15	267	243	358	320	597	503	455	383	307	270	204	179
16	269	242	490	321	582	502	456	373	303	266	201	177
17	267	244	589	321	567	497	474	355	293	259	200	187
18	267	243	483	323	553	485	456	347	293	250	197	205
19	266	335	426	328	536	475	446	343	299	253	193	202
20	265	688	397	493	532	482	438	339	304	253	192	197
21	260	630	378	732	535	483	431	333	519	245	191	191
22	262	465	367	588	528	467	417	326	741	250	192	184
23	260	371	362	533	516	869	408	362	490	245	191	182
24	255	336	348	498	507	639	404	575	397	246	191	181
25	253	318	338	475	680	545	408	493	368	245	188	177
26	260	297	332	458	661	506	400	423	547	245	190	176
27	253	283	330	446	547	478	390	395	817	241	185	175
28	249	281	330	444	513	468	385	383	951	238	188	173
29	247	278	331	455	---	467	404	524	611	237	188	168
30	259	275	331	464	---	461	446	424	472	235	190	171
31	261	---	331	439	---	456	---	430	---	230	184	---
TOTAL	8290	9104	10179	12148	16431	16804	13343	19438	12301	8776	6292	5433
MEAN	267	303	328	392	587	542	445	627	410	283	203	181
MAX	293	688	589	732	1610	869	549	3760	951	418	230	205
MIN	247	242	250	318	425	456	385	326	293	230	184	168
AC-FT	16440	18060	20190	24100	32590	33330	26470	38560	24400	17410	12480	10780

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

	MEAN	326	322	380	380	463	395	475	566	609	297	205	287
MAX	1941	1404	3520	2286	3358	2438	1853	2054	4850	1203	515	1577	
(WY)	1974	1975	1992	1968	1992	1992	1977	1975	1987	1973	1992	1952	
MIN	59.7	63.1	82.1	77.5	81.0	73.8	78.5	89.3	58.5	58.9	63.7	64.4	
(WY)	1956	1956	1955	1957	1952	1956	1956	1984	1956	1956	1984	1984	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1940 - 1993

ANNUAL TOTAL	449680	138539	
ANNUAL MEAN	1229	380	
HIGHEST ANNUAL MEAN			391
LOWEST ANNUAL MEAN			1482
HIGHEST DAILY MEAN	11800	Feb 5	3760
LOWEST DAILY MEAN	242	Nov 16	168
ANNUAL SEVEN-DAY MINIMUM	245	Nov 12	174
INSTANTANEOUS PEAK FLOW			4820
INSTANTANEOUS PEAK STAGE			20.45
ANNUAL RUNOFF (AC-FT)	891900	274800	283400
10 PERCENT EXCEEDS	2470	556	694
50 PERCENT EXCEEDS	765	324	206
90 PERCENT EXCEEDS	263	191	90

08172400 PLUM CREEK AT LOCKHART, TX

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

DRAINAGE AREA.--112 mi².

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

REVISED RECORDS.--WSP 2123: Drainage area.

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

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

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 10	0430	3,860	15.65	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	2.7	20	496	13	6.5	24	9.2	.00	.00
2	.00	.00	.00	8.3	15	244	16	5.8	19	5.9	.00	.00
3	.00	.00	.00	8.4	72	124	15	4.5	17	3.5	.00	.00
4	.00	.00	.00	8.7	61	72	41	3.2	15	1.7	.00	.00
5	.00	.00	.00	8.1	43	41	21	96	13	.70	.00	.00
6	.00	.00	.00	5.3	46	25	22	415	10	.29	.00	.00
7	.00	.00	.00	4.1	24	19	20	152	8.6	.21	.00	.00
8	.00	.00	.00	2.4	15	15	20	93	7.8	.05	.00	.00
9	.00	.00	.00	.73	11	13	18	345	5.7	.00	.00	.00
10	.00	.00	.00	.13	252	12	16	1590	3.7	.00	.00	.00
11	.00	.00	.00	.06	128	10	14	309	3.2	.00	.00	.00
12	.00	.00	.00	.01	62	23	12	230	1.9	.00	.00	.00
13	.00	.00	.00	.00	35	29	9.4	167	1.6	.00	.00	.00
14	.00	.00	.00	.00	23	24	15	97	1.4	.00	.00	.00
15	.00	.00	10	.00	17	22	12	55	1.3	.00	.00	.00
16	.00	.00	.30	.00	13	19	6.7	39	1.1	.00	.00	.00
17	.00	.00	1.4	.00	9.4	15	4.9	29	.73	.00	.00	.00
18	.00	.00	1.3	.00	6.6	12	3.4	24	.46	.00	.00	.00
19	.00	.04	.52	18	5.7	11	2.3	22	.28	.00	.00	.00
20	.00	2.3	.15	89	5.0	46	2.5	20	1.1	.00	.00	.00
21	.00	.00	.12	26	4.0	37	2.2	18	15	.00	.00	.00
22	.00	.00	.07	15	4.5	62	1.7	16	45	.00	.00	.00
23	.00	.00	.03	8.9	8.7	124	1.6	24	31	.00	.00	.00
24	.00	.00	.00	3.9	8.4	55	1.5	76	30	.00	.00	.00
25	.00	.00	.00	1.5	212	36	1.3	35	19	.00	.00	.00
26	.00	.00	.00	.45	118	25	1.2	28	84	.00	.00	.00
27	.00	.00	.00	.11	51	19	.90	29	81	.00	.00	.00
28	.00	.00	.00	.04	75	15	.82	83	32	.00	.00	.00
29	.00	.00	.00	112	---	13	1.7	31	20	.00	.00	.00
30	.00	.00	.00	84	---	12	4.9	45	14	.00	.00	.00
31	.00	---	.00	33	---	11	---	32	---	.00	.00	---
TOTAL	0.00	2.34	13.89	440.83	1345.3	1681	302.02	4120.0	507.87	21.55	0.00	0.00
MEAN	.000	.078	.45	14.2	48.0	54.2	10.1	133	16.9	.70	.000	.000
MAX	.00	2.3	10	112	252	496	41	1590	84	9.2	.00	.00
MIN	.00	.00	.00	.00	4.0	10	.82	3.2	.28	.00	.00	.00
AC-FT	.00	4.6	28	874	2670	3330	599	8170	1010	43	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1993, BY WATER YEAR (WY)

	MEAN	47.3	47.6	56.8	50.7	73.0	35.5	46.8	115	106	12.8	4.82	11.1
MAX	595	590	605	416	815	332	343	595	905	151	118	142	
(WY)	1961	1986	1992	1968	1992	1992	1976	1975	1981	1985	1974	1974	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
(WY)	1964	1964	1964	1964	1989	1964	1967	1971	1963	1963	1962	1963	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1960 - 1993

ANNUAL TOTAL	68394.93	8434.80	
ANNUAL MEAN	187	23.1	50.4
HIGHEST ANNUAL MEAN			238
LOWEST ANNUAL MEAN			.10
HIGHEST DAILY MEAN	4360	1590	10100
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		3860	27700
INSTANTANEOUS PEAK STAGE		15.65	20.89
ANNUAL RUNOFF (AC-FT)	135700	16730	36530
10 PERCENT EXCEEDS	437	45	63
50 PERCENT EXCEEDS	2.6	.21	.81
90 PERCENT EXCEEDS	.00	.00	.00

GUADALUPE RIVER BASIN

271

08173000 PLUM CREEK NEAR LULING, TX

LOCATION.--Lat 29°41'58", long 97°36'12", Caldwell County, Hydrologic Unit 12100203, on left bank at downstream side 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 September 1993 (discontinued).

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. Prior to Nov. 29, 1988, at same datum, 15 ft upstream and 48 ft to the right of present gage.

REMARKS.--Records good including those of estimated daily discharges. Low flow is slightly regulated by oil field operations above station. At end of year, flow from 119 mi² above this station was partly controlled by 27 flood-water-retarding structures with a combined detention capacity of 41,040 acre-ft. No known diversions above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1913 reached about same stage as that of July 1, 1936, from information by local residents. Maximum stage since at least 1868, that of July 1, 1936.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 23	1700	5,760	20.84	May 11	0500	4,070	19.56
May 6	0700	6,450	21.26				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	9.5	12	14	62	e500	65	26	111	45	7.5	5.0
2	6.8	28	12	14	48	e900	62	25	75	37	7.2	4.8
3	6.9	12	11	24	79	e400	63	25	59	32	7.1	4.7
4	7.1	8.4	11	28	240	e180	251	21	50	28	7.1	4.9
5	7.1	7.5	11	28	143	e120	200	1030	42	25	7.0	5.4
6	6.9	8.3	11	26	131	e70	94	5940	37	23	6.8	5.0
7	6.8	8.9	11	31	96	e60	80	1680	31	21	6.5	4.8
8	11	9.1	12	32	62	e50	81	428	25	20	6.3	4.7
9	14	9.1	12	38	50	e40	67	286	23	19	6.3	5.0
10	8.5	10	17	44	944	e38	58	1730	24	18	6.3	4.6
11	8.0	12	13	29	926	e32	50	2640	35	16	6.3	4.6
12	7.7	12	12	26	235	e30	44	569	26	16	6.0	7.4
13	7.1	12	11	22	134	e70	37	347	22	15	6.0	5.1
14	7.1	12	13	16	98	e90	33	216	22	14	5.9	4.8
15	7.2	11	203	15	77	e80	42	138	20	14	5.7	4.8
16	7.8	10	240	15	64	e65	34	104	18	13	5.7	5.0
17	12	10	55	14	52	e55	27	83	16	13	5.7	5.0
18	12	10	31	14	42	47	24	70	15	13	5.4	5.0
19	9.1	89	28	15	40	42	22	61	15	13	5.0	5.0
20	8.8	669	22	292	35	85	20	54	18	12	5.0	4.9
21	8.5	153	19	269	33	112	17	50	51	11	5.0	5.0
22	8.0	46	18	104	29	91	17	43	359	10	4.8	4.8
23	8.1	35	19	64	28	3790	17	53	314	10	4.8	4.6
24	8.1	26	24	50	30	973	16	179	409	10	4.9	4.6
25	7.9	14	22	38	378	353	16	120	139	9.7	5.0	4.6
26	7.4	11	20	32	691	231	17	68	407	9.1	4.8	4.3
27	6.7	11	20	27	e130	153	15	70	313	8.8	4.7	4.2
28	6.6	10	20	25	e140	119	15	449	145	8.8	4.5	4.7
29	7.1	12	20	30	---	98	19	1060	85	8.5	4.7	4.6
30	8.2	12	17	197	---	84	33	309	59	8.1	5.0	4.5
31	9.8	---	15	104	---	75	---	231	---	7.5	4.9	---
TOTAL	255.3	1287.8	962	1677	5017	9033	1536	18105	2965	508.5	177.9	146.4
MEAN	8.24	42.9	31.0	54.1	179	291	51.2	584	98.8	16.4	5.74	4.88
MAX	14	669	240	292	944	3790	251	5940	409	45	7.5	7.4
MIN	6.6	7.5	11	14	28	30	15	21	15	7.5	4.5	4.2
AC-FT	506	2550	1910	3330	9950	17920	3050	35910	5880	1010	353	290

e Estimated

GUADALUPE RIVER BASIN

08173000 PLUM CREEK NEAR LULING, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1993, BY WATER YEAR (WY)

MEAN	85.8	88.4	107	117	148	87.6	165	201	187	72.8	23.8	51.2
MAX	1280	1040	1969	987	2083	828	1110	1922	2389	1962	538	485
(WY)	1961	1986	1992	1991	1992	1992	1976	1975	1987	1936	1947	1957
MIN	.000	.000	.60	.80	3.61	1.04	2.55	2.21	.29	.000	.000	.000
(WY)	1957	1957	1955	1957	1951	1956	1972	1964	1956	1956	1956	1956

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1931 - 1993

ANNUAL TOTAL	152787.9		41670.9			
ANNUAL MEAN	417		114			
HIGHEST ANNUAL MEAN						111
LOWEST ANNUAL MEAN						578
HIGHEST DAILY MEAN	10300	Feb 4	5940	May 6		7.27
LOWEST DAILY MEAN	6.2	Sep 4	4.2	Sep 27		43800
ANNUAL SEVEN-DAY MINIMUM	6.9	Oct 1	4.5	Sep 24		.00
INSTANTANEOUS PEAK FLOW			6450	May 6		.00
INSTANTANEOUS PEAK STAGE			21.26	May 6		78500
ANNUAL RUNOFF (AC-FT)	303100		82650			30.70
10 PERCENT EXCEEDS	855		222			80290
50 PERCENT EXCEEDS	37		20			121
90 PERCENT EXCEEDS	8.2		5.0			9.3
						1.6

GUADALUPE RIVER BASIN

273

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, non-recording gage at present site and datum.

REMARKS.--Records good except those below 20 ft³/s and those for estimated daily discharges, which are fair. No known diversion above station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	0100	3,770	21.03	June 23	1600	4,720	22.05
May 8	0700	4,040	21.44	June 27	2000	25,100	27.36
May 25	0400	16,100	25.86				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	7.8	18	13	15	22	24	17	207	958	7.7	2.6
2	4.2	8.9	16	13	15	22	21	20	151	224	7.1	2.6
3	4.0	8.9	15	12	15	22	20	22	87	150	6.8	2.6
4	4.0	8.9	14	12	15	23	24	22	61	113	6.8	2.6
5	4.0	8.8	13	11	69	23	20	225	49	88	6.4	2.6
6	4.0	8.1	12	11	280	22	19	1040	41	73	5.8	2.6
7	3.8	7.2	12	17	400	20	19	2750	36	63	5.7	2.2
8	3.8	6.6	12	20	270	19	24	3890	32	55	5.1	1.9
9	3.8	6.5	12	21	160	18	49	2810	28	48	5.0	1.5
10	3.8	6.9	12	22	456	18	55	1490	26	e43	5.0	1.5
11	4.0	7.6	12	e24	836	17	37	472	88	e38	3.5	1.5
12	4.0	8.2	12	e21	1050	272	26	188	213	e32	3.7	e1.5
13	4.0	8.5	12	e19	512	743	21	58	254	28	4.7	e1.5
14	4.0	8.9	12	e18	169	731	18	26	489	28	4.4	e1.5
15	4.0	9.0	32	e17	96	641	15	e18	680	25	3.8	e1.5
16	4.0	9.0	104	e16	246	420	15	e15	689	24	3.7	e1.5
17	3.8	8.6	135	e16	185	586	14	e13	435	22	3.3	e1.7
18	4.2	8.5	98	e15	125	599	13	e11	239	21	3.2	e1.7
19	6.9	47	56	e20	82	324	13	80	320	19	2.9	e1.7
20	8.0	550	36	e40	56	152	13	100	703	17	2.6	e1.7
21	7.6	2500	27	e80	44	98	12	55	1570	16	e2.6	e1.9
22	6.5	3440	22	e100	35	69	11	19	3200	16	e2.6	e1.9
23	6.1	2020	19	e70	30	148	11	804	4500	15	e2.6	e1.9
24	5.4	349	17	e30	27	340	9.9	6570	4050	14	e2.6	e1.9
25	5.4	88	16	e25	24	189	9.9	13000	2910	13	e2.6	e1.9
26	5.4	51	15	24	23	102	9.9	5880	3530	12	e2.3	e1.9
27	5.4	35	14	21	22	64	9.9	3100	15000	12	e2.3	e1.9
28	5.4	28	14	18	22	47	9.9	1370	15800	11	e2.3	e2.4
29	5.6	23	14	18	---	37	12	342	5620	9.7	e2.6	e2.3
30	5.8	20	13	17	---	32	14	257	2770	8.9	e2.6	2.3
31	6.0	---	13	16	---	27	---	217	---	8.4	2.5	---
TOTAL	151.2	9297.9	829	777	5279	5847	569.5	44881	63778	2205.0	124.8	58.8
MEAN	4.88	310	26.7	25.1	189	189	19.0	1448	2126	71.1	4.03	1.96
MAX	8.0	3440	135	100	1050	743	55	13000	15800	958	7.7	2.6
MIN	3.8	6.5	12	11	15	17	9.9	11	26	8.4	2.3	1.5
AC-FT	300	18440	1640	1540	10470	11600	1130	89020	126500	4370	248	117
CFSM	.01	.56	.05	.05	.34	.34	.03	2.64	3.87	.13	.01	.00
IN.	.01	.63	.06	.05	.36	.40	.04	3.04	4.32	.15	.01	.00

e Estimated

GUADALUPE RIVER BASIN

08175000 SANDIES CREEK NEAR WESTHOFF, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1993, BY WATER YEAR (WY)

MEAN	113	70.8	64.9	130	157	64.9	162	276	304	30.7	22.9	213
MAX	1719	470	969	778	1485	418	1361	2062	2820	139	248	4060
(WY)	1961	1961	1977	1974	1992	1969	1977	1972	1987	1961	1933	1967
MIN	.26	1.19	1.85	4.08	4.05	2.66	3.26	.88	.32	.23	.071	.26
(WY)	1964	1932	1989	1967	1967	1967	1963	1963	1934	1964	1962	1959

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1930 - 1993	
ANNUAL TOTAL	199473.8		133798.2			
ANNUAL MEAN	545		367			
HIGHEST ANNUAL MEAN					136	
LOWEST ANNUAL MEAN					532	1992
HIGHEST DAILY MEAN	31100	May 18	15800	Jun 28	8.71	1988
LOWEST DAILY MEAN	3.8	Oct 7	1.5	Sep 9	67900	Sep 22 1967
ANNUAL SEVEN-DAY MINIMUM	3.9	Oct 4	1.5	Sep 9	.00	*
INSTANTANEOUS PEAK FLOW			25100	Jun 27	.00	Aug 18 1959
INSTANTANEOUS PEAK STAGE			27.36	Jun 27	a/79700	Sep 22 1967
ANNUAL RUNOFF (AC-FT)	395700		265400		32.34	Sep 22 1967
ANNUAL RUNOFF (CFSM)	.99		.67		98620	
ANNUAL RUNOFF (INCHES)	13.52		9.07		.25	
10 PERCENT EXCEEDS	1590		527		3.37	
50 PERCENT EXCEEDS	37		18		121	
90 PERCENT EXCEEDS	5.4		2.6		9.0	
					1.3	

* No flow at times.

a/ From rating curve extended above 21,000 ft³/s on basis of slope-area measurement of 92,700 ft³/s.

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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.--WDR 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.--No estimated daily discharges. 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 FOR PERIOD PRIOR TO REGULATION.--20 years (water years 1904-6, 1917, 1918, 1921-35) prior to regulation by Canyon Lake, 1,303 ft³/s (944,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1904-6, 1917-18, 1921-35).--Maximum discharge, 101,000 ft³/s May 30, 1929 (gage height, 35.2 ft), from rating curve extended above 44,700 ft³/s; minimum daily, 165 ft³/s Nov. 4, 1917. The maximum stage since at least 1900 occurred on Mar. 1, 1903, at 43.0 ft (at different site and datum), but discharge was not determined. Other floods occurred on Oct. 20, 1919, 32.2 ft (site and datum then in use) and May 30, 1929, 35.2 ft (site and datum then in use), 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	1300	1450	1640	2010	2340	1670	1710	2790	5030	1080	743
2	1500	1290	1430	1680	1830	2130	1660	1710	2290	2280	902	751
3	1390	1430	1410	1680	1820	2980	1630	1500	1970	1860	903	747
4	1270	1320	1380	1680	1690	2880	1580	1600	1780	1860	990	738
5	1190	1250	1310	1600	1740	2370	1680	2000	1660	1840	868	679
6	1250	1220	1310	1710	2140	2180	1940	6120	1580	1780	874	665
7	1270	1250	1280	1710	2230	2050	1940	10600	1510	1720	883	669
8	1210	1290	1300	1680	2110	1920	1810	13500	1470	1710	882	824
9	1240	1260	1310	1730	1950	1940	1980	15600	1470	1600	794	814
10	1210	1290	1360	1660	2240	1900	2140	11200	1410	1360	949	801
11	1290	1320	1380	1740	3910	1850	1990	6320	1390	1350	944	643
12	1220	1270	1360	1830	5980	2160	1800	6350	1600	1290	953	735
13	1280	1300	1350	1540	5010	3080	1720	4630	1650	1240	765	772
14	1120	1270	1370	1450	2720	3530	1650	2910	2010	1260	931	856
15	1340	1260	1420	1430	2180	3280	1640	2440	2380	1260	773	820
16	1200	1280	1560	1420	2020	3280	1590	2220	2220	1140	770	814
17	1170	1260	1930	1380	2030	4550	1600	2040	2000	1160	800	711
18	1270	1300	2170	1380	1870	3980	1650	1940	1850	1140	965	699
19	1240	1350	1860	1360	1940	2900	1560	1870	1900	1060	700	753
20	1240	1860	1670	1820	1910	2190	1560	1740	3860	1120	1000	794
21	1240	3470	1600	2390	1880	2100	1490	1740	5010	1140	774	832
22	1200	5120	1630	2520	1870	2330	1490	1620	4600	1130	745	679
23	1230	5000	1660	2430	1830	2500	1480	2600	7440	1040	724	627
24	1300	3150	1690	2100	1850	3590	1380	12800	8430	929	800	758
25	1190	1320	1660	1960	1860	6020	1470	15000	7510	1180	877	726
26	1160	946	1690	1930	1890	4600	1490	17400	8160	937	755	717
27	1240	1300	1660	1690	2800	2590	1440	10400	10900	989	743	754
28	1170	1490	1710	1750	3090	2140	1470	5280	17000	1010	780	746
29	1210	1400	1700	1800	---	2020	1460	2950	20600	932	700	971
30	1180	1350	1690	1820	---	1830	1530	2910	11200	979	765	686
31	1260	---	1660	1900	---	1690	---	3460	---	979	838	---
TOTAL	38490	50916	47960	54410	66400	84900	49490	174160	139640	44305	26227	22524
MEAN	1242	1697	1547	1755	2371	2739	1650	5618	4655	1429	846	751
MAX	1500	5120	2170	2520	5980	6020	2140	17400	20600	5030	1080	971
MIN	1120	946	1280	1360	1690	1690	1380	1500	1390	929	700	627
AC-FT	76340	101000	95130	107900	131700	168400	98160	345400	277000	87880	52020	44680

GUADALUPE RIVER MAIN STEM

277

08175800 GUADALUPE RIVER AT CUERO, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1993#, BY WATER YEAR (WY)

MEAN	1460	1632	1826	2060	2403	1894	2383	3398	3538	1543	1239	1852
MAX	9585	5023	10500	10830	16740	10370	11100	12270	21470	6342	4149	11210
(WY)	1974	1977	1992	1992	1992	1992	1977	1972	1987	1987	1987	1981
MIN	242	411	432	397	403	504	381	309	242	95.7	112	124
(WY)	1990	1990	1990	1990	1990	1967	1971	1984	1984	1984	1984	1984

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1965 - 1993#	
ANNUAL TOTAL	2279286		799422		2097	
ANNUAL MEAN	6228		2190		6885	
HIGHEST ANNUAL MEAN					435	
LOWEST ANNUAL MEAN					112000	
HIGHEST DAILY MEAN	44400	Feb 7	20600	Jun 29	28	Sep 1 1981
LOWEST DAILY MEAN	946	Nov 26	627	Sep 23	45	Jul 22 1984
ANNUAL SEVEN-DAY MINIMUM	1200	Oct 25	713	Sep 1	132000	Jul 18 1984
INSTANTANEOUS PEAK FLOW			22200	Jun 29	41.83	Sep 1 1981
INSTANTANEOUS PEAK STAGE			25.37	Jun 29		
ANNUAL RUNOFF (AC-FT)	4521000		1586000		1519000	
10 PERCENT EXCEEDS	13000		3490		3760	
50 PERCENT EXCEEDS	3170		1590		1130	
90 PERCENT EXCEEDS	1280		800		490	

Period of regulated streamflow.

GUADALUPE RIVER MAIN STEM

08176500 GUADALUPE RIVER AT VICTORIA, TX
(National stream-quality accounting network)

LOCATION.--Lat 28°47'34", long 97°00'46", Victoria County, Hydrologic Unit 12100204, on left bank near left downstream corner of downstream bridge of two bridges on U.S. Highway 59 in Victoria, 1,200 ft upstream from Southern Pacific Railroad Co. bridge, 15 mi upstream from Coeto Creek, and at mile 50.7.

DRAINAGE AREA.--5,198 mi², of which 1,432 mi² is above Canyon Dam.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1934 to current year. Gage-height records collected in this vicinity since 1904 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 29.15 ft above National Geodetic Vertical Datum of 1929. Nov. 1, 1934, to July 27, 1992, at site just upstream from pier of upstream bridge at same datum.

REMARKS.--No estimated daily discharges. Records fair to May 5 and good thereafter. Since July 21, 1962, flow partially regulated by Canyon Lake (station 08167700) 252.3 mi upstream. There are many diversions above station. Records provided by the city of Victoria show that during the current year about 7,810 acre-ft of sewage effluent was released into the river below this station. For statement regarding regulation by Soil Conservation Service flood-water-retarding structures, see station 08175000. A satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--27 years (water years 1936-62) prior to regulation by Canyon Lake, 1,626 ft³/s (1,178,000 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1936-62).--Maximum discharge, 179,000 ft³/s July 3, 1936 (gage height, 31.22 ft); minimum daily, 14 ft³/s Aug. 20, 1956. Maximum stage since at least 1833, that of July 3, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1929, reached a stage of 30.2 ft, present site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1450	1390	1540	1730	2020	3030	1830	1880	3690	12000	1080	850
2	1390	1390	1580	1750	2060	2350	1840	1930	2850	5160	1140	780
3	1540	1390	1550	1780	1910	2440	1790	1850	2280	2670	997	785
4	1470	1440	1560	1790	1910	3230	1840	1650	1960	2270	1070	773
5	1350	1350	1500	1760	1840	2870	1760	2390	1800	2160	1010	762
6	1360	1310	1460	1740	1980	2390	1850	10600	1660	2070	981	710
7	1370	1310	1460	2130	2330	2300	2190	8780	1560	1970	984	697
8	1370	1310	1450	2090	2300	2090	2240	10100	1490	1920	1030	695
9	1320	1340	1460	2020	2220	2010	2010	12000	1450	1860	959	830
10	1380	1360	1470	2050	2680	2030	2240	13300	1480	1680	904	801
11	1340	1360	1490	1870	3210	1970	2230	9570	1440	1540	1030	789
12	1380	1400	1480	1920	4790	2360	2030	6620	1890	1490	987	668
13	1360	1340	1460	1890	6280	3060	1860	6190	2400	1460	992	741
14	1310	1350	1490	1640	4470	3670	1810	4260	2210	1360	861	762
15	1370	1340	1600	1600	2790	4090	1720	3010	2320	1430	962	859
16	1390	1330	1650	1570	2310	5720	1760	2570	2330	1370	841	797
17	1360	1340	1710	1550	2190	4630	1700	2280	2130	1270	841	775
18	1310	1330	2160	1520	2090	4820	1730	2310	1940	1300	887	719
19	1360	1430	2150	1540	2030	4080	1750	2500	2420	1260	968	725
20	1340	1680	1880	1560	2050	2900	1680	1950	10800	1220	801	770
21	1340	2440	1750	2190	2020	2340	1670	1800	10600	1250	985	811
22	1340	4040	1710	2490	1980	2320	1600	1740	7420	1260	827	830
23	1320	5370	1740	2700	1940	3080	1610	2050	8530	1220	803	705
24	1330	4750	1760	2430	1950	3050	1560	7890	8610	1160	771	666
25	1360	2740	1780	2160	1940	4780	1540	12300	8330	1110	837	771
26	1320	1340	1750	2070	1980	6050	1580	13700	10800	1190	905	744
27	1330	1320	1780	1940	2130	4250	1610	14600	15400	1060	827	741
28	1350	1550	1760	1810	3180	2780	1580	9480	12300	1130	820	771
29	1320	1610	1790	1870	---	2320	1630	5160	15100	1120	813	821
30	1320	1530	1790	1890	---	2120	1750	3120	17000	1030	763	892
31	1310	---	1780	1910	---	1960	---	3790	---	1100	810	---
TOTAL	42160	54180	51490	58960	70580	97090	53990	181370	164190	60090	28486	23040
MEAN	1360	1806	1661	1902	2521	3132	1800	5851	5473	1938	919	768
MAX	1540	5370	2160	2700	6280	6050	2240	14600	17000	12000	1140	892
MIN	1310	1310	1450	1520	1840	1960	1540	1650	1440	1030	763	666
AC-FT	83620	107500	102100	116900	140000	192600	107100	359700	325700	119200	56500	45700

GUADALUPE RIVER MAIN STEM

279

08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993#, BY WATER YEAR (WY)

MEAN	1504	1628	1824	2051	2390	1950	2388	3337	3573	1598	1206	1874
MAX	10550	5101	9753	10650	17250	10600	10320	12230	23750	6759	4473	11340
(WY)	1974	1977	1992	1992	1992	1992	1977	1972	1987	1987	1987	1981
MIN	213	398	452	420	421	512	430	367	280	111	105	125
(WY)	1964	1990	1990	1990	1990	1967	1971	1971	1967	1984	1984	1984

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1963 - 1993#
ANNUAL TOTAL	2350940		885626		
ANNUAL MEAN	6423		2426		2105
HIGHEST ANNUAL MEAN					6993
LOWEST ANNUAL MEAN					479
HIGHEST DAILY MEAN	45100	Feb 8	17000	Jun 30	86900
LOWEST DAILY MEAN	1310	Oct 14	666	Sep 24	42
ANNUAL SEVEN-DAY MINIMUM	1330	Oct 25	741	Sep 6	77
INSTANTANEOUS PEAK FLOW			17700	Jun 30	105000
INSTANTANEOUS PEAK STAGE			27.87	Jun 30	31.10
INSTANTANEOUS LOW FLOW			604	Sep 24	42
ANNUAL RUNOFF (AC-FT)	4663000		1757000		1525000
10 PERCENT EXCEEDS	14200		4530		4020
50 PERCENT EXCEEDS	3810		1720		1120
90 PERCENT EXCEEDS	1370		834		473

Period of regulated streamflow.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)
OCT 15...	1230	1440	564	7.9	23.5	15	6.8	80	1.6	88	80	240
MAR 09...	1440	2020	513	8.2	17.5	29	8.7	91	1.4	K36	K24	220
MAY 03...	1710	1820	539	8.1	24.0	23	8.1	97	1.4	120	120	220
AUG 20...	1340	1030	548	8.2	31.0	0.40	8.1	109	1.7	K40	K87	230

DATE	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT (MG/L AS CAC03)	ALKA-LINITY WAT DIS FIX END FIELD (MG/L AS CAC03)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 15...	25	67	17	25	0.7	1.9	0	260	213	210	29	32
MAR 09...	29	64	14	22	0.6	2.8	0	230	188	190	30	30
MAY 03...	15	65	15	23	0.7	2.1	0	255	209	210	30	30
AUG 20...	19	64	16	29	0.8	2.2	0	253	207	210	27	38

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
OCT 15...	0.30	9.6	303	315	1.09	--	0.010	<0.010	1.10	1.10	0.030	<0.010
MAR 09...	0.20	12	304	293	0.980	0.980	--	0.020	1.00	1.00	--	0.020
MAY 03...	0.30	8.6	312	304	1.00	--	--	<0.010	1.00	1.00	--	0.030
AUG 20...	0.20	14	315	318	0.580	--	--	<0.010	0.580	0.580	--	0.010

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (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)
OCT 15...	0.17	0.20	0.040	<0.010	<0.010	0.010	--	108	421	84	<10
MAR 09...	0.28	0.30	0.100	0.050	0.050	--	0.15	69	376	96	<10
MAY 03...	0.37	0.40	0.090	0.060	0.030	--	0.09	84	413	89	<10
AUG 20...	0.49	0.50	0.070	0.020	<0.010	--	--	59	164	88	<10

GUADALUPE RIVER MAIN STEM

281

08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
OCT 15...	66	<3	4	11	3	<10	1	<1	<1.0	520	<6
MAR 09...	63	<3	5	8	2	<10	1	<1	<1.0	450	<6
MAY 03...	59	<3	7	9	4	<10	1	<1	<1.0	460	<6
AUG 20...	81	<3	6	10	5	10	<1	<1	<1.0	490	<6

GUADALUPE RIVER BASIN

08176550 FIFTEENMILE CREEK NEAR WESER, TX
(Flood-hydrograph partial-record station)

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.--167 mi².

PERIOD OF RECORD.--October 1984 to September 1989 (continuous-record station), October 1989 to current year.

GAGE.--Water-stage recorder. Datum of gage is 158.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known diversions above station. Guadalupe-Blanco River Authority gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years (water years 1985-89), 18.7 ft³/s (13,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,560 ft³/s April 17, 1992 (gage height, 17.41 ft), from rating curve extended above 1,480 ft³/s; minimum daily, no flow for several days in 1989.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	2200	5,660	16.79	No other peak greater than base discharge.			

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 Coletto 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 diversions above station. Wireless telemeter at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 6	0300	12,100	18.67	June 20	2200	4,090	13.31

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	5.3	6.4	7.4	8.2	10	16	47	49	98	12	6.1
2	3.7	5.5	6.4	7.4	8.2	10	15	42	42	82	12	6.0
3	3.7	6.1	6.2	7.4	9.2	11	14	40	38	70	11	5.5
4	3.5	6.8	6.2	7.4	9.9	11	14	25	34	63	11	5.3
5	3.7	5.9	6.4	7.4	10	11	13	1600	30	56	11	5.3
6	3.7	5.5	6.6	7.1	11	11	12	7100	e28	51	11	5.3
7	3.7	5.5	6.6	19	13	11	13	764	e27	46	10	5.1
8	3.8	5.6	6.6	13	13	10	22	236	e26	42	9.9	4.9
9	3.9	5.7	6.6	11	17	10	29	143	e25	40	9.6	4.7
10	3.9	6.3	6.6	10	129	10	21	107	26	37	9.3	4.7
11	3.8	6.8	6.6	9.2	80	10	17	89	30	34	9.3	5.9
12	3.9	7.2	6.6	8.8	37	26	14	75	27	31	8.8	7.1
13	3.9	6.7	6.6	8.3	23	105	13	64	e26	29	8.7	5.5
14	3.9	6.4	7.5	8.2	17	113	12	55	e25	27	8.7	5.1
15	3.9	6.5	12	8.2	15	237	11	48	e25	26	8.4	5.0
16	4.3	6.6	10	8.2	13	245	11	43	e24	25	8.1	4.5
17	5.0	6.4	9.3	8.2	14	70	10	39	e250	23	7.7	4.0
18	5.0	6.4	9.0	8.2	15	41	9.9	56	170	21	7.3	4.0
19	5.2	8.8	8.4	8.2	14	29	9.6	47	148	20	6.8	4.0
20	5.3	9.4	8.1	8.2	13	24	9.3	51	2860	19	6.6	4.1
21	5.3	12	7.7	8.2	13	20	8.9	39	2590	18	6.6	4.3
22	5.1	11	7.6	8.2	12	18	8.4	35	1370	17	6.6	4.2
23	5.1	8.6	7.7	8.2	11	261	8.2	265	533	17	6.4	4.0
24	4.9	7.7	7.7	8.1	11	115	8.2	754	444	16	6.4	3.7
25	5.0	6.9	7.4	7.9	11	55	8.3	228	196	15	6.0	3.7
26	5.1	6.4	7.4	7.7	11	33	8.3	113	1980	14	5.9	3.5
27	4.9	6.2	7.4	7.6	10	25	7.9	118	1510	14	7.2	3.5
28	4.9	6.2	7.4	7.8	10	21	7.9	102	567	13	7.8	3.5
29	4.9	6.2	7.4	8.3	---	19	9.2	66	206	13	7.4	3.5
30	4.9	6.3	7.4	8.4	---	18	30	66	126	13	7.4	3.5
31	4.9	---	7.4	8.3	---	17	---	60	---	12	6.8	---
TOTAL	136.5	206.9	231.2	269.5	558.5	1607	391.1	12517	13432	1002	261.7	139.5
MEAN	4.40	6.90	7.46	8.69	19.9	51.8	13.0	404	448	32.3	8.44	4.65
MAX	5.3	12	12	19	129	261	30	7100	2860	98	12	7.1
MIN	3.5	5.3	6.2	7.1	8.2	10	7.9	25	24	12	5.9	3.5
AC-FT	271	410	459	535	1110	3190	776	24830	26640	1990	519	277

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	39.4	50.4	51.4	68.5	89.8	53.2	119	143	170	34.0	28.8	28.5			
MAX	269	357	301	400	486	153	765	608	765	114	309	183			
(WY)	1982	1983	1987	1979	1992	1984	1992	1979	1987	1990	1981	1981			
MIN	.046	.049	.94	2.62	4.78	4.12	3.82	4.30	.73	.14	.007	.000			
(WY)	1989	1990	1990	1990	1990	1991	1989	1989	1990	1989	1989	1989			

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1979 - 1993

ANNUAL TOTAL	54430.4	30752.9	
ANNUAL MEAN	149	84.3	
HIGHEST ANNUAL MEAN			72.7
LOWEST ANNUAL MEAN			172
HIGHEST DAILY MEAN	7640	7100	2.47
LOWEST DAILY MEAN	3.5	3.5	9320
ANNUAL SEVEN-DAY MINIMUM	3.7	3.6	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			.00
ANNUAL RUNOFF (AC-FT)	108000	61000	22.86
10 PERCENT EXCEEDS	154	81	65
50 PERCENT EXCEEDS	26	9.9	13
90 PERCENT EXCEEDS	5.1	4.9	1.5

* No flow Aug. 20 to Oct. 7, 1989.

GUADALUPE RIVER BASIN

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 Coletto 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 Coletto 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.--No flow for year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY 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
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	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
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	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1992 TOTAL 136.62 MEAN .37 MAX 33 MIN .00 AC-FT 271
WTR YR 1993 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 AC-FT .00

GUADALUPE RIVER BASIN

285

08177300 PERDIDO CREEK AT FARM ROAD 622 NEAR FANNIN, TX
(Flood-Hydrograph Partial-Record Station)

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 September 1991 (as a continuous-record station); October 1991 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.--13 years (water years 1979-91), 5.05 ft³/s (2.45 in/yr), 3,660 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, 15.05 ft from floodmark, Apr. 17, 1992; no flow for many days in 1986, 1988, 1990, and 1991.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 9	2300	789	7.43	May 23	1530	5,390	11.42
Mar. 12	0900	834	7.51	June 20	0400	4,090	10.66
Mar. 15	1630	461	6.73	June 20	1030	2,920	9.83
Mar. 22	1730	489	6.80	June 21	1530	1,100	7.93
May 5	2030	3,760	10.44	June 26	1130	539	6.92

GUADALUPE RIVER BASIN

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: May 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, 42.0°C Aug. 10, 11, 1987, Apr. 26, 28, 1991; minimum, 4.5°C Dec. 26, 1983.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 41.0°C July 30, Aug. 1, 9, 10; minimum, 19.0°C Feb. 3.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	33.5	28.5	32.0	34.5	33.5	34.0	25.0	23.5	24.5	27.5	24.0	25.5
2	34.0	30.0	32.5	33.5	30.0	32.5	24.5	22.5	24.0	25.5	24.5	24.5
3	34.0	31.0	33.0	33.5	31.0	32.5	24.5	23.0	24.0	26.0	22.0	24.5
4	34.0	30.0	33.0	32.0	28.0	29.5	25.0	23.5	24.5	26.0	23.0	25.0
5	34.5	31.5	33.5	29.0	27.0	28.5	24.5	23.0	23.5	25.5	21.5	24.0
6	34.0	26.0	33.0	28.5	27.0	27.5	23.0	22.5	22.5	24.5	23.5	24.0
7	34.5	25.5	31.0	27.0	26.5	26.5	23.0	22.0	22.5	24.0	21.0	23.0
8	34.0	30.0	32.0	27.5	25.0	26.5	23.5	22.5	23.0	25.0	21.5	23.5
9	32.5	27.5	31.0	28.5	26.5	28.0	24.5	23.5	24.0	25.5	21.0	24.0
10	33.5	30.5	32.5	29.0	28.5	28.5	24.5	23.5	24.0	25.0	20.5	23.0
11	34.0	32.5	33.5	29.5	29.0	29.0	24.5	23.5	24.0	23.5	22.5	23.0
12	34.0	32.0	33.5	29.5	27.0	28.5	25.0	22.0	24.0	23.5	22.5	23.0
13	34.0	31.0	33.0	28.5	27.5	28.0	26.0	22.5	24.5	23.5	22.5	23.0
14	34.0	31.0	33.0	28.0	26.5	27.5	26.0	23.0	25.0	22.5	22.5	22.5
15	34.0	32.5	34.0	28.0	26.0	27.5	24.5	22.0	24.0	22.5	22.5	22.5
16	34.5	33.5	34.0	28.5	26.5	28.0	24.0	23.5	24.0	23.5	21.0	22.5
17	34.0	31.5	33.0	29.0	26.0	28.0	24.0	22.5	23.5	24.5	20.5	23.5
18	34.0	31.0	33.0	29.0	27.0	28.5	24.5	24.0	24.0	25.5	22.0	24.0
19	33.5	29.5	32.5	29.5	28.0	29.0	25.5	23.5	24.5	25.0	24.0	24.5
20	33.5	29.5	31.5	29.5	27.0	28.5	26.0	24.5	25.0	24.0	21.0	22.5
21	34.0	31.0	32.5	29.0	28.0	28.5	24.5	24.0	24.5	24.5	21.5	23.5
22	33.5	30.0	32.5	28.0	27.0	27.5	25.5	23.0	24.5	25.0	19.5	23.0
23	33.5	29.5	32.5	27.5	27.0	27.0	26.5	23.5	25.5	24.0	20.5	22.5
24	34.0	30.0	32.5	27.5	26.5	27.5	26.5	24.0	25.5	24.5	21.5	24.0
25	34.0	29.0	32.0	27.5	26.0	26.5	26.0	23.5	25.0	24.5	23.0	23.5
26	34.0	30.0	33.0	26.0	24.0	25.0	26.0	22.0	24.5	23.0	22.5	23.0
27	33.5	31.0	33.0	24.5	24.0	24.0	25.0	23.0	24.5	23.0	22.5	22.5
28	34.0	32.0	33.5	24.5	23.5	24.0	26.0	25.0	25.5	23.5	21.5	23.0
29	34.5	33.0	34.0	24.5	23.5	24.0	27.0	25.0	26.5	24.0	20.0	22.5
30	34.5	33.5	34.0	24.5	22.0	24.0	28.0	25.5	27.0	23.5	20.5	22.5
31	34.5	34.0	34.5	---	---	---	28.5	25.5	27.5	23.5	21.0	22.5
MONTH	34.5	25.5	33.0	34.5	22.0	28.0	28.5	22.0	24.5	27.5	19.5	23.5

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	23.5	20.5	22.5	26.0	23.5	25.5	34.0	30.5	32.0	31.0	28.5	30.0
2	24.0	19.5	22.5	26.5	23.0	25.5	32.0	30.0	31.5	32.0	27.0	30.0
3	24.5	19.0	22.0	27.0	23.5	26.0	31.0	22.0	23.0	33.0	23.5	29.5
4	24.5	23.5	24.0	27.5	24.0	26.5	22.5	21.5	22.0	31.0	26.5	29.0
5	24.0	20.0	23.0	27.5	25.0	26.5	22.0	21.0	21.5	31.0	27.0	29.5
6	23.5	22.5	23.0	27.0	26.0	26.5	22.5	21.5	22.0	30.5	24.0	28.0
7	24.0	23.0	23.5	27.0	25.5	26.0	22.0	22.0	22.0	32.5	29.0	31.0
8	25.0	23.5	24.0	28.0	25.5	27.0	22.5	21.0	22.0	32.0	29.0	31.0
9	24.5	24.0	24.0	28.5	25.0	27.0	23.0	21.5	22.0	32.5	28.5	31.0
10	24.5	19.5	23.0	28.5	24.5	27.0	23.0	21.5	22.5	32.0	26.5	30.0
11	25.0	20.5	24.0	34.5	27.0	30.5	24.0	22.0	23.0	33.0	26.5	30.0
12	25.0	20.5	24.0	34.0	25.0	29.5	24.0	23.0	23.5	32.5	24.5	29.5
13	25.0	21.0	24.0	28.0	26.0	27.0	24.0	23.5	23.5	33.5	25.5	30.5
14	25.5	21.5	24.5	29.0	28.0	28.5	24.0	22.0	23.5	34.5	29.0	32.0
15	27.5	22.0	25.5	29.0	27.0	28.5	23.0	21.5	22.0	35.5	28.5	32.5
16	27.5	26.0	26.5	30.0	26.0	28.5	23.0	21.5	22.0	35.0	28.5	32.0
17	26.0	25.0	25.0	31.5	27.5	30.0	23.0	21.5	22.0	35.5	29.0	33.0
18	25.0	24.0	24.0	31.5	28.5	30.5	24.0	22.0	23.0	34.0	29.0	32.0
19	24.0	23.5	24.0	31.5	28.5	30.5	24.0	22.5	23.0	34.0	28.5	32.0
20	25.0	24.0	24.5	32.0	28.5	31.0	24.0	22.5	23.5	35.5	28.5	32.5
21	26.5	21.0	24.5	32.0	28.0	31.0	23.5	22.0	22.5	35.5	29.5	33.0
22	26.5	23.5	25.5	32.0	28.0	31.0	23.0	22.0	22.5	35.0	30.0	33.0
23	27.0	26.0	26.5	31.5	30.5	31.0	23.0	22.0	22.5	33.5	26.5	30.5
24	27.0	26.5	26.5	32.0	29.0	31.0	23.0	22.0	23.0	31.5	24.0	28.0
25	28.0	27.0	27.5	32.5	31.0	32.0	25.0	22.0	23.5	32.5	27.0	30.5
26	27.5	27.0	27.0	32.5	30.5	32.0	25.0	24.0	24.5	34.5	27.5	31.5
27	27.0	25.5	26.0	32.5	31.5	32.0	24.5	23.5	24.0	35.0	30.5	32.5
28	25.5	25.5	25.5	32.5	31.0	32.0	24.0	23.5	24.0	34.5	31.5	33.0
29	---	---	---	33.0	31.5	32.5	23.5	23.0	23.5	35.0	32.5	33.5
30	---	---	---	33.0	32.0	32.5	28.5	22.5	24.0	36.0	31.5	34.0
31	---	---	---	32.5	30.5	32.0	---	---	---	37.0	32.5	34.5
MONTH	28.0	19.0	24.5	34.5	23.0	29.0	34.0	21.0	23.5	37.0	23.5	31.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	37.5	32.5	35.0	39.5	35.0	37.5	41.0	37.5	39.0	38.5	35.0	36.5
2	37.0	31.5	35.0	39.5	35.5	37.5	40.5	37.5	39.0	39.0	35.0	36.5
3	36.5	31.5	34.5	39.5	35.0	37.5	40.5	36.5	38.5	39.0	35.0	36.5
4	37.0	33.0	35.0	39.0	35.0	37.5	40.5	36.0	38.5	38.0	35.0	36.0
5	37.5	34.0	36.0	39.0	35.0	37.5	40.0	36.5	38.5	39.0	34.5	36.5
6	38.0	34.5	36.5	39.0	35.5	37.5	40.0	36.5	38.5	38.0	35.0	36.5
7	37.5	35.0	36.5	39.0	36.0	37.5	40.5	37.0	38.5	39.0	35.0	37.5
8	37.0	34.5	36.0	39.0	36.0	37.5	40.5	36.0	38.5	39.5	38.5	39.0
9	37.5	34.5	36.0	39.0	35.5	37.5	41.0	37.0	39.0	39.0	38.0	38.5
10	36.0	34.0	35.0	39.5	35.5	37.5	41.0	38.0	39.5	39.5	38.5	39.0
11	35.0	31.5	33.5	39.5	36.0	37.5	40.0	38.0	39.0	39.0	38.0	39.0
12	36.0	30.0	33.0	39.5	36.0	38.0	40.0	37.0	38.5	38.5	38.0	38.5
13	35.5	30.0	33.0	39.5	36.5	38.0	40.0	36.5	38.5	38.5	37.5	38.0
14	36.5	32.0	34.5	39.5	36.0	38.0	40.0	36.5	38.5	38.5	35.5	37.5
15	38.0	33.0	36.0	39.5	35.0	37.5	40.5	36.5	38.5	36.5	33.5	35.0
16	38.5	32.5	36.5	39.5	36.0	38.0	40.0	36.5	38.0	38.0	31.0	35.0
17	38.0	34.0	36.5	39.5	37.0	38.0	40.0	36.5	38.0	38.5	33.0	36.0
18	38.5	34.0	36.5	39.5	35.0	37.5	40.5	36.0	38.0	39.0	34.0	36.5
19	36.5	26.0	33.0	39.5	36.0	38.0	40.0	36.0	38.0	39.0	36.0	37.5
20	34.0	25.5	31.0	40.0	37.0	38.5	40.0	36.5	38.0	39.0	34.5	37.0
21	35.0	33.0	34.0	40.0	37.0	38.5	39.5	36.0	37.5	39.5	36.0	37.5
22	36.5	33.0	35.0	40.0	37.0	38.0	39.5	36.0	37.5	40.0	36.0	38.0
23	38.0	34.0	36.0	39.5	36.5	38.0	39.0	36.0	37.5	40.0	36.0	38.0
24	38.5	35.0	36.5	39.5	37.0	38.0	39.0	35.5	37.0	40.0	36.0	37.5
25	38.5	34.5	37.0	39.5	36.5	38.0	39.5	35.0	37.5	39.5	36.0	37.5
26	38.5	34.5	36.0	39.5	35.5	38.0	39.0	36.0	37.5	39.5	35.5	37.0
27	38.5	35.5	37.0	40.0	35.5	38.0	37.5	36.0	36.5	36.5	29.5	34.5
28	39.5	36.5	38.0	40.0	36.0	38.5	38.5	35.5	36.5	37.5	28.0	33.0
29	40.0	36.5	38.0	40.5	36.5	39.0	38.5	35.5	36.5	37.5	27.5	33.5
30	39.5	36.0	38.0	41.0	37.5	39.0	38.0	35.0	36.5	37.0	35.0	35.0
31	---	---	---	40.5	38.0	39.5	39.0	35.0	37.0	---	---	---
MONTH	40.0	25.5	35.5	41.0	35.0	38.0	41.0	35.0	38.0	40.0	27.5	37.0
YEAR	41.0	19.0	30.5									

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 combined contents 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 (feet)	Contents (acre-feet)	Gage height (feet)	Contents (acre-feet)	Gage height (feet)	Contents (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, 40,550 acre-ft May 5, 1993; minimum since reservoir was first filled in May 1980, 29,580 acre-ft Oct. 25, 27, 28, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 40,550 acre-ft May 5; minimum, 31,180 acre-ft Nov. 8, 9.

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33000	31670	31900	32070	34010	36550	36600	36250	37230	37370	36500	34060
2	32940	31600	31810	32040	34010	36620	36510	36450	37250	37460	36440	33970
3	32910	31600	31820	32040	34220	36550	36580	36480	37290	37210	36350	33880
4	32820	31410	31810	32060	34250	36480	36590	36490	37320	37160	36250	33910
5	32760	31360	31760	32000	34320	36430	35860	40550	37290	37390	36190	33850
6	32690	31260	31720	31970	34350	36420	35490	37700	37260	37300	36080	33740
7	32620	31200	31670	33000	34340	36380	35430	37240	37260	37370	36010	33700
8	32520	31180	31670	33180	34350	36330	35490	37190	37220	37390	35940	33630
9	32480	31180	31690	33860	35490	36320	35490	37070	37180	37450	35870	33520
10	32430	31410	31660	33920	37160	36340	35490	37270	37270	37460	35800	33490
11	32370	31440	31610	33870	37170	36750	35490	37430	37090	37450	35710	33720
12	32300	31550	31570	33920	36890	37070	35530	37290	37240	37430	35630	33630
13	32240	31450	31610	33850	36940	36960	35570	37340	37180	37450	35350	33510
14	32140	31410	31720	33820	36990	36910	35650	37380	37200	37380	35470	33450
15	32150	31410	32080	33820	36760	37360	35570	37410	37340	37400	35350	33280
16	32320	31380	32110	33820	36660	36880	35530	37450	37430	37380	35250	33170
17	32270	31380	32090	33820	36640	36710	35520	37440	37180	37300	35180	33170
18	32210	31360	32080	33840	36570	36780	35490	37160	37110	37320	35090	33080
19	32150	32200	32110	33840	36540	36920	35490	37270	38190	37300	34990	33050
20	32110	32210	32100	34050	36610	36650	35480	37390	37740	37300	34870	33030
21	32080	32270	32100	34070	36640	36630	35430	37420	37920	37120	34750	32980
22	31990	32250	32100	34100	36680	37330	35350	37390	37320	37110	34650	32900
23	31930	32240	32150	34100	36670	36990	35320	37930	37310	37030	34580	32870
24	31910	32180	32200	34060	36650	36940	35310	37120	37200	37000	34490	32830
25	31860	32120	32200	34000	36680	36970	35340	37070	37010	36920	34460	32740
26	31800	32030	32140	33980	36550	36990	35250	37070	37690	36890	34380	32660
27	31750	31980	32130	33960	36500	36570	35240	37110	37320	36790	34320	32530
28	31680	31940	32140	34030	36500	36630	35210	37310	37130	36750	34320	32410
29	31660	31910	32170	34050	---	36650	35470	37070	37240	36730	34230	32350
30	31620	31900	32170	34010	---	36720	35910	37480	37190	36660	34180	32240
31	31560	---	32150	34010	---	36700	---	37140	---	36590	34090	---
MAX	33000	32270	32200	34100	37170	37360	36600	40550	38190	37460	36500	34060
MIN	31560	31180	31570	31970	34010	36320	35210	36250	37010	36590	34090	32240
(φ)	-1570	+340	+250	+1860	+2490	+200	-790	+1230	+50	-600	-2500	-1850

CAL YR 1992 MAX 40140 MIN 31180 (φ) -4860
WTR YR 1993 MAX 40550 MIN 31180 (φ) -890

(φ) 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 Coletto 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, 30.0°C Sept. 13-15; minimum, 13.5°C Jan. 18, 19.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	26.5	25.5	26.0	25.0	25.0	25.0	---	---	---	17.0	16.5	17.0
2	25.5	25.5	25.5	25.0	25.0	25.0	---	---	---	17.0	17.0	17.0
3	25.5	25.0	25.5	25.0	21.5	24.5	---	---	---	17.0	17.0	17.0
4	25.0	25.0	25.0	---	---	---	---	---	---	17.0	17.0	17.0
5	25.0	24.5	24.5	---	---	---	---	---	---	17.5	17.0	17.5
6	24.5	24.5	24.5	---	---	---	---	---	---	17.0	17.0	17.0
7	24.5	24.5	24.5	---	---	---	---	---	---	17.0	16.5	17.0
8	25.0	24.5	24.5	---	---	---	---	---	---	17.0	16.5	16.5
9	24.5	24.5	24.5	---	---	---	15.0	14.5	14.5	17.0	16.0	16.5
10	24.5	24.0	24.0	---	---	---	14.5	14.0	14.0	16.5	16.0	16.0
11	24.0	24.0	24.0	---	---	---	14.5	14.0	14.0	16.5	16.0	16.5
12	24.0	24.0	24.0	---	---	---	14.5	14.0	14.5	16.0	15.5	15.5
13	24.0	24.0	24.0	---	---	---	15.0	14.5	14.5	15.5	15.5	15.5
14	24.0	24.0	24.0	---	---	---	16.0	15.0	15.0	15.5	15.5	15.5
15	24.0	24.0	24.0	---	---	---	16.0	15.5	16.0	15.5	15.0	15.5
16	24.5	24.0	24.0	---	---	---	16.0	16.0	16.0	15.0	15.0	15.0
17	24.5	24.0	24.5	---	---	---	16.0	16.0	16.0	15.0	14.0	14.5
18	24.5	24.5	24.5	---	---	---	16.0	16.0	16.0	14.0	13.5	14.0
19	24.5	24.5	24.5	---	---	---	16.0	16.0	16.0	14.0	13.5	13.5
20	24.5	24.5	24.5	---	---	---	16.0	16.0	16.0	14.0	14.0	14.0
21	24.5	24.5	24.5	---	---	---	16.5	16.0	16.5	14.0	14.0	14.0
22	24.5	24.5	24.5	---	---	---	16.5	16.0	16.0	14.0	14.0	14.0
23	24.5	24.5	24.5	---	---	---	16.5	16.0	16.0	14.5	14.0	14.5
24	24.5	24.5	24.5	---	---	---	16.5	16.0	16.0	15.5	14.5	15.0
25	24.5	24.5	24.5	---	---	---	16.5	16.0	16.0	16.0	15.5	15.5
26	24.5	24.5	24.5	---	---	---	16.5	16.0	16.5	16.0	15.5	16.0
27	24.5	24.5	24.5	---	---	---	16.5	16.5	16.5	15.5	15.0	15.0
28	24.5	24.5	24.5	---	---	---	16.5	16.5	16.5	15.0	15.0	15.0
29	24.5	24.5	24.5	---	---	---	16.5	16.5	16.5	15.0	15.0	15.0
30	25.0	24.5	24.5	---	---	---	16.5	16.5	16.5	15.5	15.0	15.0
31	25.0	24.5	25.0	---	---	---	16.5	16.5	16.5	15.5	15.0	15.5
MONTH	26.5	24.0	24.5	25.0	21.5	24.5	16.5	14.0	16.0	17.5	13.5	15.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	15.0	15.0	15.0	16.5	16.0	16.0	16.0	16.0	16.0	21.5	21.5	21.5
2	15.0	14.5	14.5	16.5	16.5	16.5	16.5	16.0	16.0	21.5	21.5	21.5
3	14.5	14.0	14.0	16.5	16.5	16.5	16.5	16.0	16.5	21.5	21.5	21.5
4	14.5	14.0	14.5	16.5	16.5	16.5	16.5	16.5	16.5	21.5	21.5	21.5
5	14.5	14.5	14.5	16.5	16.5	16.5	17.0	16.5	16.5	24.0	21.5	21.5
6	14.5	14.5	14.5	17.0	16.5	16.5	17.0	16.5	17.0	24.0	21.0	22.5
7	14.5	14.5	14.5	17.0	16.5	17.0	17.5	17.0	17.0	21.5	21.0	21.0
8	14.5	14.5	14.5	17.0	17.0	17.0	17.0	17.0	17.0	21.5	21.0	21.5
9	15.0	14.5	14.5	17.0	17.0	17.0	17.5	17.0	17.5	21.5	21.5	21.5
10	15.0	14.5	14.5	17.0	17.0	17.0	17.5	17.5	17.5	22.0	21.5	21.5
11	15.0	14.5	14.5	17.0	17.0	17.0	17.5	17.5	17.5	22.0	21.5	21.5
12	15.0	14.5	14.5	19.5	17.0	18.5	18.0	17.5	18.0	22.0	21.5	22.0
13	15.0	15.0	15.0	18.5	17.0	17.5	18.0	18.0	18.0	22.0	21.5	22.0
14	15.0	15.0	15.0	17.0	16.5	17.0	18.5	18.0	18.5	22.0	21.5	22.0
15	15.5	15.0	15.0	16.5	15.5	16.0	19.5	18.5	19.0	22.0	21.5	22.0
16	16.0	15.5	15.5	16.0	15.0	15.5	19.5	19.5	19.5	22.0	21.5	22.0
17	16.0	16.0	16.0	15.0	15.0	15.0	19.5	19.5	19.5	22.0	21.5	22.0
18	16.5	16.0	16.0	15.0	15.0	15.0	20.0	19.5	20.0	24.5	21.5	22.5
19	16.5	16.5	16.5	15.0	15.0	15.0	20.0	20.0	20.0	22.5	22.5	22.5
20	16.5	16.0	16.0	15.5	15.0	15.0	20.5	20.0	20.5	22.5	22.0	22.5
21	16.0	15.5	16.0	15.5	15.0	15.5	21.0	20.5	20.5	22.5	22.0	22.5
22	16.0	15.5	15.5	15.5	15.5	15.5	21.0	21.0	21.0	22.5	22.0	22.5
23	16.0	15.5	15.5	15.5	15.5	15.5	21.0	21.0	21.0	25.5	22.5	23.0
24	16.0	15.5	15.5	15.5	15.5	15.5	21.0	21.0	21.0	25.0	23.0	24.0
25	16.0	16.0	16.0	15.5	15.5	15.5	21.0	21.0	21.0	23.0	22.0	22.5
26	16.0	16.0	16.0	16.0	15.5	15.5	21.0	21.0	21.0	22.0	21.5	21.5
27	16.0	16.0	16.0	16.0	15.5	16.0	21.0	21.0	21.0	21.5	21.0	21.5
28	16.5	16.0	16.0	16.0	16.0	16.0	21.0	21.0	21.0	21.0	21.0	21.0
29	---	---	---	16.0	16.0	16.0	21.0	21.0	21.0	21.5	21.0	21.0
30	---	---	---	16.0	16.0	16.0	21.5	21.0	21.0	21.5	21.0	21.5
31	---	---	---	16.0	16.0	16.0	---	---	---	21.5	21.5	21.5
MONTH	16.5	14.0	15.0	19.5	15.0	16.0	21.5	16.0	19.0	25.5	21.0	22.0

GUADALUPE RIVER BASIN

291

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 poor. Since Feb. 21, 1980, flow almost completely regulated by Coleta Creek Reservoir, 1.6 mi upstream. Water is diverted from the Guadalupe River basin to the Coleta Creek basin upstream from Coleta Creek Reservoir beginning Mar. 6, 1980 (see station 08176990). There are no other large diversions above station. Two observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--16 years (water years 1940-54, 1979) prior to regulation by Coleta Creek Reservoir, 92.7 ft³/s (67,160 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1940-54, 1979-80).--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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	4.6	4.4	5.6	5.5	8.2	3.5	7.7	19	17	5.8	7.7
2	4.3	e4.9	4.4	5.7	5.7	7.8	3.4	1.2	7.9	13	5.8	7.9
3	e4.5	4.6	4.6	5.3	6.4	6.3	3.3	1.1	5.8	191	5.7	7.9
4	4.5	e4.6	4.8	4.8	6.6	6.4	2.9	1.1	4.8	21	5.8	8.0
5	e4.5	e4.6	5.3	4.9	6.4	6.7	201	2720	4.1	11	5.8	8.2
6	4.6	e4.8	5.3	4.8	6.4	6.6	164	14500	3.8	9.2	5.7	8.4
7	4.5	e4.8	5.1	12	6.5	6.5	121	1960	3.7	8.6	5.7	8.6
8	4.3	e4.8	5.5	12	6.7	6.6	13	465	3.7	8.1	5.7	8.5
9	e4.2	e4.8	5.2	6.7	8.0	6.7	2.8	321	3.6	7.7	5.7	8.7
10	e4.1	e5.0	5.4	6.8	696	6.5	2.4	55	593	7.3	5.7	8.6
11	e4.0	6.8	5.5	5.6	240	6.9	2.0	42	1270	7.2	5.8	8.9
12	4.0	5.2	5.4	4.8	201	2320	1.8	120	1930	7.0	5.9	9.2
13	4.2	4.6	5.3	4.9	19	365	1.7	20	1150	7.0	5.9	9.1
14	3.6	e4.5	5.5	4.6	9.9	219	1.8	9.3	581	7.0	6.0	12
15	3.4	e4.3	6.4	4.4	143	1370	1.8	5.5	34	10	6.0	9.3
16	3.6	4.2	6.0	4.2	25	1370	1.7	3.6	14	7.4	8.4	8.7
17	4.8	4.5	5.4	4.2	8.4	253	1.6	2.5	177	6.3	6.3	8.0
18	4.0	e4.5	5.3	3.8	7.2	49	1.5	1160	346	6.0	6.5	7.2
19	3.6	5.1	5.3	4.1	6.7	13	1.5	198	1770	7.0	6.6	6.7
20	3.5	9.6	5.1	4.9	6.1	193	1.3	9.3	13900	6.1	6.9	6.2
21	3.4	6.2	5.2	4.6	5.5	12	1.3	5.8	7090	5.9	6.9	5.7
22	3.6	5.0	4.9	4.2	5.6	14	1.3	5.5	4230	5.9	7.0	5.2
23	e4.0	4.7	4.9	4.1	5.5	565	1.2	3510	1340	5.8	7.1	4.8
24	e4.0	4.5	5.6	4.1	5.7	247	1.2	2580	635	5.7	7.1	4.9
25	e4.1	4.3	5.5	4.3	5.6	70	1.0	430	404	5.8	7.1	5.0
26	e4.1	4.4	5.5	4.3	5.8	12	.95	164	3130	5.9	7.3	5.2
27	4.3	4.7	5.6	4.5	6.1	199	1.0	170	2710	5.9	7.4	5.4
28	4.3	4.7	5.4	5.1	6.5	17	.95	120	959	5.6	7.3	5.7
29	4.0	4.6	5.2	5.5	---	5.4	1.1	225	265	5.6	7.5	5.7
30	e4.2	4.5	5.1	5.4	---	4.2	33	29	189	7.3	7.5	5.5
31	e4.3	---	5.0	5.4	---	3.8	---	296	---	6.1	7.7	---
TOTAL	126.7	148.4	163.1	165.6	1466.8	7326.6	577.00	29137.6	42773.4	430.4	201.6	220.9
MEAN	4.09	4.95	5.26	5.34	52.4	236	19.2	940	1426	13.9	6.50	7.36
MAX	4.8	9.6	6.4	12	696	2320	201	14500	13900	191	8.4	12
MIN	3.4	4.2	4.4	3.8	5.5	3.8	.95	1.1	3.6	5.6	5.7	4.8
AC-FT	251	294	324	328	2910	14530	1140	57790	84840	854	400	438

e Estimated

GUADALUPE RIVER BASIN

08177500 COLETO CREEK NEAR VICTORIA, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1993#, BY WATER YEAR (WY)

MEAN	78.6	64.2	63.0	44.3	154	81.9	166	179	306	80.3	12.1	22.8
MAX	579	338	434	347	961	292	956	940	1426	397	89.3	245
(WY)	1982	1983	1992	1992	1992	1985	1992	1993	1993	1990	1981	1981
MIN	1.65	2.14	2.37	2.34	2.46	2.67	3.75	2.88	1.82	1.97	1.06	1.56
(WY)	1990	1991	1990	1990	1990	1991	1989	1990	1990	1989	1989	1989

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1981 - 1993#	
ANNUAL TOTAL	84805.7		82738.10			
ANNUAL MEAN	232		227		104	
HIGHEST ANNUAL MEAN					268	
LOWEST ANNUAL MEAN					2.58	
HIGHEST DAILY MEAN	9780	Apr 18	14500	May 6	15800	Oct 31 1981
LOWEST DAILY MEAN	3.4	Oct 15	.95	Apr 26	.00	*
ANNUAL SEVEN-DAY MINIMUM	3.7	Oct 18	1.1	Apr 23	.93	Aug 22 1989
INSTANTANEOUS PEAK FLOW			25900	May 5	41700	Apr 17 1992
INSTANTANEOUS PEAK STAGE			23.27	May 5	28.00	Apr 5 1991
ANNUAL RUNOFF (AC-FT)	168200		164100		75030	
10 PERCENT EXCEEDS	180		231		40	
50 PERCENT EXCEEDS	5.4		5.8		5.1	
90 PERCENT EXCEEDS	4.3		3.6		2.2	

Period of regulated streamflow.

* No flow May 6-7, 1981.

GUADALUPE RIVER BASIN

293

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 one additional recording rain gage 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, 19,700 ft³/s Apr. 5, 1991 (gage height, 14.38 ft, from floodmark); 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 29	2130	1,110	5.29	May 22	0530	2,123	6.26
Nov. 19	0200	1,190	5.38	May 30	0530	3,550	7.41
Feb. 10	0400	737	4.75	June 12	1530	1,530	5.73
Apr. 7	1115	966	5.10	June 26	0515	2,430	6.54
May 5	1700	13,860	12.30				

GUADALUPE RIVER BASIN
08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

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 1992 TO SEPTEMBER 1993

[illegible]

[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. WDR 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.--Records fair. Flood flow 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. No flow at times due to regulation.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1819, equaled or exceeded that of Sept. 10, 1921.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	270	185	186	165	198	147	107	165	155	e44	24
2	161	161	185	184	165	171	147	120	161	155	e42	25
3	161	134	183	217	223	152	150	122	156	154	e37	24
4	159	153	182	191	189	165	293	126	149	151	e36	28
5	157	153	180	183	e350	163	129	1550	140	150	e34	30
6	156	155	181	181	e220	165	141	1840	137	143	e32	29
7	155	155	182	192	e200	165	260	1370	133	142	e30	27
8	149	160	180	140	e190	163	135	323	128	138	e28	31
9	149	176	185	174	e270	163	142	151	123	133	e28	27
10	151	165	180	178	e450	161	143	171	190	132	e26	32
11	148	162	175	178	e200	160	143	168	125	130	e24	33
12	147	176	173	178	e180	314	143	168	423	126	e23	42
13	147	150	176	175	e182	162	143	168	379	122	e23	49
14	147	154	199	172	e184	161	141	162	151	118	e23	44
15	147	155	500	172	e185	165	137	159	134	113	e23	43
16	147	158	189	172	e184	166	134	159	137	108	e23	43
17	147	159	185	172	e184	140	132	152	136	e100	e27	42
18	147	164	182	172	e182	155	132	169	154	e96	e32	41
19	147	802	184	294	e180	155	131	145	140	e92	e25	40
20	147	361	186	180	e175	165	129	140	245	e88	e23	36
21	146	185	188	154	e168	158	128	135	e480	e84	e22	33
22	145	165	185	214	165	157	128	337	e165	e77	e22	33
23	145	182	185	171	162	159	128	943	e129	e74	e22	31
24	145	185	182	172	159	156	126	427	e184	e70	e22	28
25	145	186	182	169	241	155	121	135	e299	e66	19	27
26	143	185	182	168	144	164	118	156	e600	e63	18	27
27	143	185	182	168	159	153	115	157	e350	e60	19	29
28	141	185	182	132	216	158	115	234	224	e57	22	32
29	212	185	182	167	---	158	190	231	148	e53	22	33
30	208	185	182	167	---	229	137	719	155	e50	22	32
31	149	---	219	165	---	137	---	155	---	e47	22	---
TOTAL	4754	5951	6023	5538	5672	5193	4358	11099	6240	3247	815	995
MEAN	153	198	194	179	203	168	145	358	208	105	26.3	33.2
MAX	212	802	500	294	450	314	293	1840	600	155	44	49
MIN	141	134	173	132	144	137	115	107	123	47	18	24
AC-FT	9430	11800	11950	10980	11250	10300	8640	22010	12380	6440	1620	1970
CFSM	3.67	4.75	4.65	4.27	4.85	4.01	3.48	8.57	4.98	2.51	.63	.79
IN.	4.23	5.30	5.36	4.93	5.05	4.62	3.88	9.88	5.55	2.89	.73	.89

e Estimated

GUADALUPE RIVER BASIN

297

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 1993, BY WATER YEAR (WY)

MEAN	57.8	55.8	57.0	58.1	59.9	55.7	60.4	75.7	66.5	46.9	40.2	56.4
MAX	295	233	208	258	252	272	251	358	350	206	215	278
(WY)	1920	1920	1920	1920	1992	1992	1977	1993	1992	1992	1992	1973
MIN	7.49	9.52	8.28	7.63	8.06	7.07	6.93	12.2	7.67	7.29	8.28	8.65
(WY)	1956	1919	1956	1956	1984	1956	1956	1967	1956	1984	1957	1955

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1916 - 1993	
ANNUAL TOTAL	83078		59885			
ANNUAL MEAN	227		164		57.9	
HIGHEST ANNUAL MEAN					200	
LOWEST ANNUAL MEAN					9.23	
HIGHEST DAILY MEAN	1510	May 27	1840	May 6	3190	Sep 10 1921
LOWEST DAILY MEAN	55	Jan 19	18	Aug 26	.06	May 23 1971
ANNUAL SEVEN-DAY MINIMUM	92	Jan 3	21	Aug 21	4.1	Feb 10 1957
INSTANTANEOUS PEAK FLOW			4480	May 5	a/15300	Sep 10 1921
INSTANTANEOUS PEAK STAGE			14.27	May 5	b/20.14	Sep 10 1921
ANNUAL RUNOFF (AC-FT)	164800		118800		41960	
ANNUAL RUNOFF (CFSM)	5.43		3.93		1.39	
ANNUAL RUNOFF (INCHES)	73.94		53.29		18.83	
10 PERCENT EXCEEDS	314		215		130	
50 PERCENT EXCEEDS	182		155		27	
90 PERCENT EXCEEDS	145		31		11	

a/ At former site and datum, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow.
b/ Maximum stage since at least 1819.

08178050 SAN ANTONIO RIVER AT MITCHELL ST., SAN ANTONIO, TX

LOCATION.--Lat 29°23'34", long 98°29'40", Bexar County, Hydrologic Unit 12100301, on left bank 15 ft upstream from Mitchell Street Bridge in San Antonio, 0.2 mi upstream from San Pedro Creek, and 228.7 mi upstream from mouth.

DRAINAGE AREA.--Not determined. Flow of river comes from intermittent spring flow and from artesian wells; drainage area of streams not applicable.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to September 1993. Ground-water discharge into river is discussed by Petit and George, Texas Board of Water Engineers Bull. 5608, vol. 1 (1956, p. 45).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 585.07 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Flood flow is regulated by Olmos flood-control reservoir (capacity, 14,240 acre-ft), about 10.6 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. No flow at times due to regulation.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1819, equaled or exceeded that of Sept. 10, 1921.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e169	e279	e187	e191	e174	e211	e152	e112	e168	e160	e50	27
2	e166	e169	e188	e188	e173	e176	e150	e123	e165	e162	e47	27
3	e165	e137	e187	e223	e230	e155	e153	e125	e161	e164	e43	27
4	e162	e156	e185	e197	e191	e169	e305	e129	e154	e165	e41	29
5	e161	e158	e184	e186	e370	e166	e132	e1620	e144	e164	40	32
6	e160	e156	e186	e186	e225	e169	e145	e1900	e141	e163	36	31
7	e159	e159	e185	e196	e206	e168	e270	e1400	e136	e160	36	28
8	e154	e164	e184	e143	e194	e167	e139	e330	e132	e155	36	33
9	e153	e180	e191	e180	e275	e166	e146	e156	e127	150	34	32
10	e155	e168	e185	e185	e470	e165	e148	e176	e210	144	34	30
11	e152	e165	e179	e186	e205	e163	e147	e175	e130	142	32	33
12	e151	e182	e177	e183	e186	e320	e146	e174	e440	135	31	41
13	e149	e154	e179	e183	e189	e167	e146	e173	e390	130	29	52
14	e148	e159	e207	e178	e188	e165	e144	e166	e158	123	29	46
15	e150	e161	e512	e176	e188	e168	e141	e163	e140	122	30	49
16	e149	e160	e243	e175	e187	e169	e138	e162	e141	112	27	44
17	e153	e162	e215	e174	e188	e145	e136	e157	e140	109	32	42
18	e152	e168	e212	e175	e188	e159	e135	e178	e158	105	21	39
19	e153	e815	e210	e301	e184	e158	e134	e150	e144	101	24	36
20	e154	e369	e212	e187	e180	e169	e132	e144	e265	96	20	33
21	e150	e190	e220	e159	e178	e163	e131	e138	e520	92	23	31
22	e149	e169	e211	e220	e168	e161	e131	e343	176	87	22	31
23	e149	e188	e207	e184	e166	e162	e131	e970	109	84	21	28
24	e148	e187	205	e175	e167	e160	e130	e435	170	81	21	27
25	e148	e189	211	e175	e250	e159	e126	e139	345	e76	20	28
26	e146	e190	214	e176	e147	e169	e122	e159	935	e72	20	28
27	e145	e191	200	e175	e165	e156	e119	e161	490	e68	20	31
28	e144	e190	200	e135	e220	e164	e118	e240	158	e64	21	32
29	e217	e189	195	e178	---	e161	e195	e256	134	e61	26	34
30	e211	e188	184	e177	---	e240	e141	e740	150	e57	26	31
31	e154	---	e230	e175	---	e143	---	e159	---	e53	25	---
TOTAL	4876	6092	6485	5722	5852	5333	4483	11453	6831	3557	917	1012
MEAN	157	203	209	185	209	172	149	369	228	115	29.6	33.7
MAX	157	203	209	185	209	172	149	369	228	115	29.6	33.7
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	157	203	209	185	209	172	149	369	228	115	29.6	33.7
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
AC-FT	9670	12080	12860	11350	11610	10580	8890	22720	13550	7060	1820	2010

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MEAN	157	203	209	185	209	172	149	369	228	115	29.6	33.7
MAX	157	203	209	185	209	172	149	369	228	115	29.6	33.7
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	157	203	209	185	209	172	149	369	228	115	29.6	33.7
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 WATER YEAR

ANNUAL TOTAL	62613
ANNUAL MEAN	172
HIGHEST DAILY MEAN	1900 May 6
LOWEST DAILY MEAN	20 Aug 20
ANNUAL SEVEN-DAY MINIMUM	21 Aug 22
INSTANTANEOUS PEAK FLOW	4830 May 5
INSTANTANEOUS PEAK STAGE	7.73 May 5
ANNUAL RUNOFF (AC-FT)	124200
10 PERCENT EXCEEDS	220
50 PERCENT EXCEEDS	160
90 PERCENT EXCEEDS	32

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: December 1991 to current year.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: December 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

08178050 SAN ANTONIO RIVER AT MITCHELL ST., SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

GUADALUPE RIVER BASIN

301

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'19", long 98°27'00", Bexar County, Hydrologic Unit 12100301, on right bank between westbound bridges on Interstate Highway 410 in San Antonio, 4.5 mi upstream from Salado Creek, and 222.3 mi upstream from mouth.

DRAINAGE AREA.--125 mi². Flow of river comes from intermittent springflow and from artesian wells; drainage area of streams not applicable.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Discharges estimated prior to installation of water-stage recorder on Dec. 20, 1986. Datum of gage is 488.11 ft above National Geodetic Vertical Datum of 1929. Dec. 20, 1986, to Aug. 15, 1989, at site 0.2 mi downstream at Camino Coahuilteca crossing at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	239	433	268	321	224	346	176	164	278	233	70	25
2	239	193	266	266	224	246	168	156	266	227	66	28
3	238	163	264	285	367	204	172	157	256	224	62	30
4	233	183	265	307	307	213	414	152	243	221	57	30
5	225	186	276	263	567	208	163	5930	233	221	55	32
6	222	186	279	263	286	210	169	1530	225	217	52	34
7	222	181	263	318	273	208	357	1170	216	209	50	31
8	220	198	269	257	247	203	194	431	201	207	48	35
9	220	250	298	211	374	202	183	201	190	201	45	56
10	220	217	276	250	1550	200	187	221	390	198	e40	42
11	216	202	254	256	264	204	184	217	215	194	e37	39
12	218	279	257	252	224	600	189	222	1060	186	e34	41
13	215	194	260	251	238	241	194	239	908	180	e34	123
14	e213	192	324	253	237	232	192	234	272	172	e34	66
15	e211	224	879	253	237	237	184	221	202	168	e34	60
16	e209	281	300	247	235	240	181	213	199	158	35	54
17	e207	281	275	240	234	198	176	205	208	153	44	54
18	e205	281	277	246	233	218	179	270	270	148	e54	50
19	e203	1290	236	507	231	215	172	209	203	144	e48	48
20	e201	721	247	327	231	218	170	192	510	135	e35	44
21	199	298	260	220	227	211	166	171	747	124	e31	40
22	e197	241	258	235	225	215	165	593	389	115	e28	41
23	195	262	262	274	219	214	164	2090	198	109	e26	40
24	e193	270	256	237	219	206	159	622	265	103	e25	36
25	e191	270	264	254	350	204	154	263	457	101	e25	34
26	e189	270	261	230	204	218	146	286	952	95	25	34
27	e187	270	283	231	216	200	142	285	529	90	25	36
28	e186	268	308	202	353	424	139	357	259	85	25	37
29	e185	270	278	229	---	202	335	417	224	81	24	39
30	437	270	257	228	---	441	264	1010	237	73	25	31
31	176	---	273	227	---	175	---	303	---	71	25	---
TOTAL	6711	8824	8993	8140	8796	7553	5838	18731	10802	4843	1218	1290
MEAN	216	294	290	263	314	244	195	604	360	156	39.3	43.0
MAX	437	1290	879	507	1550	600	414	5930	1060	233	70	123
MIN	176	163	236	202	204	175	139	152	190	71	24	25
AC-FT	13310	17500	17840	16150	17450	14980	11580	37150	21430	9610	2420	2560

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993
MEAN	107	112	207	150	203	170	162
MAX	232	294	479	263	483	420	345
(WY)	1987	1993	1992	1993	1992	1992	1992
MIN	23.2	21.7	19.6	25.1	30.4	35.7	60.0
(WY)	1989	1992	1991	1990	1989	1989	1990

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1987 - 1993

	1992 CALENDAR YEAR	1993 WATER YEAR	WATER YEARS 1987 - 1993
ANNUAL TOTAL	137478	91739	178
ANNUAL MEAN	376	251	353
HIGHEST ANNUAL MEAN			37.2
LOWEST ANNUAL MEAN			1989
HIGHEST DAILY MEAN	7240	May 27	12100
LOWEST DAILY MEAN	28	Jan 20	6.3
ANNUAL SEVEN-DAY MINIMUM	67	Jan 3	8.5
INSTANTANEOUS PEAK FLOW			a/64300
INSTANTANEOUS PEAK STAGE			b/32.20
ANNUAL RUNOFF (AC-FT)	272700	182000	128800
10 PERCENT EXCEEDS	519	348	293
50 PERCENT EXCEEDS	252	216	71
90 PERCENT EXCEEDS	180	40	17

a/ From rating curve extended above 8,400 ft³/s.

b/ From floodmark.

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: March 1987 to current year. Pesticide analyses: December 1992 to September 1993.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1986 to August 1988, March 1993 to September 1993.

pH: December 1986 to August 1988, March 1993 to September 1993.

WATER TEMPERATURE: December 1986 to August 1988, March 1993 to September 1993.

DISSOLVED OXYGEN: December 1986 to August 1988, March 1993 to September 1993.

INSTRUMENTATION.--From December 1986 to August 1988, and from March 1993 to present, a four-parameter water-quality monitor continuously records specific conductance, pH, water temperature, and dissolved oxygen.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments or probe fouling. These days were deleted from the record. 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, 1987, Jan. 9, 1988.

DISSOLVED OXYGEN: Maximum, 16.2 mg/L May 3, 1993; minimum, 0.5 mg/L May 21, July 21, 1988.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CACO3 (MG/L)
OCT 20...	1040	118	539	8.4	22.0	8.4	98	0.6	240	19
DEC 22...	0845	107	540	8.0	19.5	8.0	88	1.7	260	42
FEB 09...	0955	136	523	8.2	19.0	9.5	105	1.2	230	19
APR 13...	1020	188	529	8.0	22.5	9.8	117	1.4	240	35
JUN 09...	1328	215	556	8.1	27.0	9.5	123	1.9	240	40
AUG 02...	1130	57	539	7.9	30.0	7.8	104	0.7	240	18

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 DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 20...	71	16	17	0.5	1.5	220	29	27	0.20
DEC 22...	76	16	16	0.4	1.9	210	31	26	0.20
FEB 09...	69	15	17	0.5	1.7	220	30	27	0.20
APR 13...	70	16	18	0.5	1.6	210	30	27	0.20
JUN 09...	71	16	23	0.6	2.0	200	38	33	0.20
AUG 02...	67	17	26	0.7	1.9	220	42	38	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, 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 20...	14	310	1.99	--	0.010	--	2.00	--	0.030
DEC 22...	12	307	2.08	--	0.020	--	2.10	--	<0.010
FEB 09...	11	308	1.85	1.85	--	0.050	1.90	1.90	--
APR 13...	9.0	303	1.78	1.78	--	0.020	1.80	1.80	--
JUN 09...	11	325	1.98	1.98	--	0.020	2.00	2.00	--
AUG 02...	13	344	1.68	1.68	--	0.020	1.70	1.70	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
OCT 20...	--	--	--	<0.20	0.020	--	--	0.010	--
DEC 22...	--	--	--	<0.20	<0.010	--	--	0.020	--
FEB 09...	0.020	--	<0.20	--	--	0.020	0.020	--	0.06
APR 13...	0.010	--	<0.20	--	--	<0.010	<0.010	--	--
JUN 09...	0.030	--	<0.20	--	--	0.020	<0.010	--	--
AUG 02...	0.050	0.45	0.50	--	--	<0.010	0.010	--	0.03

[illegible]

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	603	486	525	---	---	450
2	---	---	---	---	---	---	562	481	523	---	---	485
3	---	---	---	---	---	---	549	488	512	---	---	498
4	---	---	---	---	---	---	540	237	347	---	---	502
5	---	---	---	---	---	---	493	344	437	---	---	302
6	---	---	---	---	---	---	493	449	470	---	---	275
7	---	---	---	---	---	---	501	364	457	---	---	350
8	---	---	---	---	---	---	471	295	389	---	---	400
9	---	---	---	---	---	---	518	415	484	---	---	450
10	---	---	---	---	---	---	527	369	481	---	---	478
11	---	---	---	---	---	---	537	464	498	---	---	489
12	---	---	---	---	---	---	552	454	502	---	---	538
13	---	---	---	---	---	---	574	464	503	---	---	526
14	---	---	---	---	---	---	576	359	509	---	---	523
15	---	---	---	---	---	---	552	435	487	---	---	528
16	---	---	---	---	---	---	542	410	473	---	---	548
17	---	---	---	---	---	---	532	410	478	---	---	553
18	---	---	---	---	---	---	559	447	501	---	---	552
19	---	---	---	---	---	---	---	---	500	---	---	548
20	---	---	---	---	---	---	---	---	500	---	---	552
21	---	---	---	---	---	---	---	---	500	---	---	475
22	---	---	---	---	---	---	---	---	525	---	---	372
23	---	---	---	---	---	---	---	---	525	---	---	278
24	---	---	---	---	---	---	---	---	525	---	---	323
25	---	---	---	---	---	---	---	---	550	---	---	427
26	---	---	---	---	---	---	---	---	550	---	---	478
27	---	---	---	626	567	596	---	---	550	---	---	500
28	---	---	---	604	267	507	---	---	550	---	---	475
29	---	---	---	589	511	557	---	---	350	---	---	426
30	---	---	---	586	283	335	---	---	325	---	---	303
31	---	---	---	618	430	518	---	---	---	---	---	349
MONTH	---	---	---	626	267	503	603	237	484	---	---	450
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	503	554	499	529	---	---	550	631	586	612
2	---	---	507	539	487	516	---	---	549	622	574	601
3	---	---	468	579	495	540	---	---	546	639	575	612
4	---	---	524	562	514	539	---	---	551	643	610	626
5	---	---	521	578	518	550	---	---	544	632	578	604
6	---	---	527	583	540	564	---	---	553	616	585	602
7	---	---	548	601	555	583	---	---	552	619	587	607
8	---	---	550	607	532	573	---	---	554	615	561	591
9	---	---	553	580	535	558	599	563	567	812	603	659
10	---	---	326	584	540	566	602	564	582	945	597	686
11	---	---	348	581	541	563	596	553	577	622	586	605
12	---	---	247	579	544	561	607	560	584	613	580	597
13	---	---	252	584	543	565	610	575	594	602	524	554
14	---	---	350	619	537	564	610	562	588	606	569	591
15	---	---	447	579	537	557	607	558	582	604	567	583
16	---	---	525	585	542	566	625	561	588	598	565	580
17	571	538	554	580	542	562	638	577	604	588	542	565
18	568	467	538	580	538	561	616	566	591	582	541	561
19	561	508	534	580	532	560	667	602	637	584	541	566
20	634	230	489	571	532	558	653	587	619	577	544	562
21	355	227	299	574	538	558	631	584	608	587	546	566
22	511	335	423	579	538	562	636	587	608	605	555	577
23	585	381	526	575	539	560	643	607	627	606	570	589
24	582	541	562	582	539	562	662	593	631	604	563	585
25	573	372	476	574	536	557	646	583	622	604	566	589
26	875	388	574	589	531	559	888	629	690	614	578	595
27	632	481	546	571	530	555	677	623	651	618	586	601
28	676	574	637	700	535	578	673	635	652	608	565	584
29	597	569	583	---	---	549	659	605	636	592	565	580
30	594	520	564	---	---	553	654	607	630	590	549	572
31	---	---	---	---	---	549	642	589	618	---	---	---
MONTH	875	227	483	700	487	557	888	553	596	945	524	593
YEAR	945	227	527									

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	8.1	7.9	8.0	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	8.3	8.2	8.2	---	---	---	---	---	---
28	---	---	---	8.2	8.1	8.2	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	8.3	8.1	8.2	8.1	7.9	8.0	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	8.1	7.9	8.0	---	---	---	8.2	8.0	8.1
2	---	---	---	8.1	7.9	8.0	---	---	---	8.3	8.0	8.1
3	---	---	---	8.1	7.9	8.0	8.0	7.9	8.0	8.3	8.0	8.1
4	---	---	---	8.1	7.9	8.0	---	---	---	8.3	8.0	8.1
5	---	---	---	8.1	7.9	8.0	---	---	---	8.3	8.1	8.2
6	---	---	---	8.0	7.9	7.9	---	---	---	8.3	8.1	8.1
7	---	---	---	8.0	7.9	7.9	---	---	---	8.3	8.1	8.2
8	---	---	---	8.0	7.7	7.9	---	---	---	8.3	8.1	8.2
9	---	---	---	7.9	7.7	7.8	8.1	7.9	8.0	8.3	7.9	8.2
10	---	---	---	7.9	7.7	7.8	8.1	7.9	8.0	8.1	7.9	8.0
11	---	---	---	7.9	7.7	7.8	8.1	7.9	8.0	8.2	7.9	8.0
12	---	---	---	7.9	7.7	7.8	8.2	7.9	8.0	8.2	8.0	8.1
13	---	---	---	7.9	7.8	7.8	8.1	8.0	8.0	8.0	7.9	7.9
14	---	---	---	7.9	7.8	7.8	8.2	8.0	8.1	8.2	7.9	8.0
15	---	---	---	7.9	7.8	7.8	8.2	8.0	8.1	8.2	8.0	8.1
16	---	---	---	7.9	7.8	7.8	8.2	8.0	8.1	8.2	8.0	8.1
17	8.2	8.0	8.1	7.9	7.8	7.8	8.2	8.0	8.1	8.2	7.9	8.1
18	8.3	7.9	8.1	7.9	7.8	7.8	8.2	8.0	8.1	8.1	7.9	8.0
19	8.2	7.9	8.0	7.9	7.8	7.8	8.4	8.0	8.2	8.1	7.9	8.0
20	8.3	7.9	8.1	7.9	7.8	7.8	8.2	7.9	8.0	8.1	7.9	8.0
21	8.0	7.9	7.9	7.9	7.8	7.8	8.1	7.9	8.0	8.1	7.9	8.0
22	8.2	7.9	8.0	7.9	7.8	7.8	8.1	7.9	8.0	8.1	7.9	8.0
23	8.2	7.9	8.1	8.0	7.8	7.9	8.2	7.9	8.1	8.1	7.8	7.9
24	8.2	8.0	8.1	8.0	7.8	7.9	8.2	7.9	8.1	8.1	7.9	8.0
25	8.0	7.8	7.9	8.0	7.8	7.9	8.2	7.9	8.1	8.1	7.9	8.0
26	7.9	7.8	7.9	8.0	7.8	7.9	8.2	8.0	8.1	8.1	7.9	8.0
27	8.0	7.9	7.9	8.0	7.8	7.9	8.2	8.0	8.1	8.2	7.9	8.0
28	8.2	8.0	8.1	8.0	7.8	7.9	8.2	8.0	8.1	8.1	7.9	8.0
29	8.2	8.1	8.1	---	---	---	8.2	8.0	8.1	8.1	7.9	8.0
30	8.1	7.9	8.0	---	---	---	8.2	8.0	8.1	8.2	8.0	8.1
31	---	---	---	---	---	---	8.2	8.0	8.1	---	---	---
MONTH	8.3	7.8	8.0	8.1	7.7	7.9	8.4	7.9	8.1	8.3	7.8	8.1
YEAR	8.4	7.7	8.0									

GUADALUPE RIVER BASIN

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
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	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	23.5	20.0	22.0	24.5	20.5	22.0
2	---	---	---	---	---	---	22.0	19.5	21.0	24.5	21.5	23.5
3	---	---	---	---	---	---	21.0	19.5	20.0	25.0	20.5	23.0
4	---	---	---	---	---	---	21.5	19.5	20.5	24.0	21.5	22.5
5	---	---	---	---	---	---	22.0	18.0	20.0	22.5	17.5	20.0
6	---	---	---	---	---	---	21.5	19.5	20.5	20.0	18.0	19.0
7	---	---	---	---	---	---	22.0	20.0	20.5	20.0	18.5	19.5
8	---	---	---	---	---	---	22.5	18.5	20.0	26.0	20.0	22.0
9	---	---	---	---	---	---	23.5	18.5	21.0	27.5	21.0	23.5
10	---	---	---	---	---	---	23.5	19.0	21.5	24.0	17.0	20.0
11	---	---	---	---	---	---	25.0	20.5	23.0	27.5	16.0	21.0
12	---	---	---	---	---	---	24.5	22.0	23.0	25.0	17.5	22.0
13	---	---	---	---	---	---	23.5	22.0	22.5	25.5	21.0	23.5
14	---	---	---	---	---	---	24.5	21.5	23.0	26.5	22.0	24.5
15	---	---	---	---	---	---	23.0	18.0	20.5	27.0	22.5	25.0
16	---	---	---	---	---	---	22.0	19.0	21.0	27.5	23.5	25.5
17	---	---	---	---	---	---	22.5	19.5	21.0	27.5	23.5	25.5
18	---	---	---	---	---	---	24.5	20.5	22.5	29.5	24.5	27.0
19	---	---	---	---	---	---	---	---	---	30.0	27.0	28.5
20	---	---	---	---	---	---	24.0	22.5	23.0	30.0	27.0	28.5
21	---	---	---	---	---	---	25.0	21.0	23.5	30.0	27.0	29.0
22	---	---	---	---	---	---	24.0	20.0	21.5	29.0	26.0	28.0
23	---	---	---	---	---	---	23.0	19.0	21.0	---	---	---
24	---	---	---	---	---	---	23.5	20.5	22.0	---	---	---
25	---	---	---	---	---	---	25.5	22.0	23.5	---	---	---
26	---	---	---	---	---	---	24.5	21.0	23.0	26.5	24.0	25.5
27	---	---	---	25.0	23.5	24.0	24.0	21.5	22.0	28.0	25.0	26.5
28	---	---	---	24.5	21.0	23.0	22.0	21.0	21.5	27.0	25.0	26.0
29	---	---	---	25.0	22.0	23.5	22.0	20.0	21.0	---	---	---
30	---	---	---	24.0	20.5	22.5	21.5	20.0	20.5	---	---	---
31	---	---	---	23.0	19.5	21.5	---	---	---	---	---	---
MONTH	---	---	---	25.0	19.5	23.0	25.5	18.0	21.5	30.0	16.0	24.0

GUADALUPE RIVER BASIN

307

08178565 SAN ANTONIO RIVER AT LOOP 410 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	29.0	25.5	27.5	---	---	---	31.5	27.5	29.0
2	---	---	---	29.0	25.5	27.0	---	---	---	32.0	27.5	29.0
3	---	---	---	29.0	25.5	27.0	31.5	29.0	29.5	30.0	27.5	29.0
4	---	---	---	28.5	25.5	27.0	32.0	28.0	29.5	31.0	27.0	28.5
5	---	---	---	28.0	25.5	27.0	31.5	28.5	29.5	31.0	26.0	28.5
6	---	---	---	29.0	25.5	27.0	32.0	28.0	29.5	30.0	27.0	28.0
7	---	---	---	28.5	25.5	27.5	32.0	28.0	29.5	31.0	26.0	28.0
8	---	---	---	28.5	25.5	27.0	32.0	28.0	29.5	31.0	26.0	28.0
9	---	---	---	29.0	25.5	27.5	32.5	28.5	30.0	31.0	27.0	28.5
10	---	---	---	28.5	25.5	27.0	33.0	28.5	30.5	31.5	26.5	28.5
11	---	---	---	29.0	25.5	27.5	32.5	29.0	30.5	31.0	27.0	28.5
12	27.5	24.0	26.0	29.0	26.0	27.5	32.5	28.0	30.0	29.0	27.0	27.5
13	27.0	24.5	25.5	29.0	25.5	27.5	32.0	28.5	30.0	27.5	26.5	27.0
14	26.5	25.0	26.0	29.0	25.5	27.5	32.5	28.5	30.0	28.5	25.5	27.0
15	28.5	25.0	26.5	29.0	26.0	27.5	32.5	28.5	30.0	27.0	23.5	25.0
16	29.0	25.5	27.5	29.5	26.0	27.5	32.0	28.0	29.5	27.0	22.5	24.5
17	29.0	26.0	27.5	29.5	26.0	28.0	31.5	28.0	29.5	28.5	24.0	26.0
18	28.5	26.0	27.5	29.5	26.5	28.0	32.0	28.0	29.5	29.0	26.0	27.0
19	28.0	25.5	27.0	29.5	26.5	28.0	32.5	27.5	29.5	30.5	26.5	28.0
20	28.0	25.5	26.5	30.0	27.0	28.5	32.5	27.5	29.5	30.5	27.0	28.5
21	28.0	26.0	27.0	30.0	27.0	28.5	32.0	27.5	29.5	30.5	27.5	29.0
22	28.5	26.0	27.0	30.0	27.0	28.5	31.5	27.5	29.0	30.5	27.5	29.0
23	29.0	26.0	28.0	30.0	26.5	28.5	31.0	27.5	29.0	30.5	27.5	28.5
24	28.5	26.0	27.5	30.5	27.0	28.5	31.5	27.0	29.0	30.5	27.0	28.5
25	28.0	26.0	27.0	30.0	27.0	28.5	31.5	27.0	29.0	31.0	26.5	28.5
26	27.0	24.0	25.0	30.0	27.0	28.5	31.0	27.5	29.0	28.0	26.0	27.5
27	28.0	24.0	25.5	30.5	27.5	29.0	30.0	27.5	28.5	27.0	23.0	25.0
28	29.0	25.5	27.5	31.0	28.0	29.5	30.5	27.0	28.5	26.5	21.5	23.5
29	29.5	26.0	28.0	29.5	24.5	26.5	31.5	27.0	28.5	26.5	21.5	23.5
30	29.5	26.0	27.5	---	---	---	31.5	27.0	28.5	27.5	22.0	24.5
31	---	---	---	---	---	---	31.5	27.5	29.0	---	---	---
MONTH	29.5	24.0	27.0	31.0	24.5	28.0	33.0	27.0	29.5	32.0	21.5	27.5
YEAR	33.0	16.0	26.0									

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	9.0	6.9	7.8	9.9	5.8	7.3
2	---	---	---	---	---	---	10.5	7.0	8.5	13.0	5.4	8.4
3	---	---	---	---	---	---	11.1	8.7	9.9	16.2	5.9	9.7
4	---	---	---	---	---	---	11.4	8.1	10.0	12.1	5.8	7.8
5	---	---	---	---	---	---	13.2	7.4	10.6	9.8	6.0	7.5
6	---	---	---	---	---	---	11.9	9.0	10.0	10.3	8.6	9.4
7	---	---	---	---	---	---	16.1	10.2	12.4	10.1	7.9	9.2
8	---	---	---	---	---	---	15.1	7.4	12.1	8.1	6.7	7.4
9	---	---	---	---	---	---	13.0	8.7	10.5	7.7	6.0	6.7
10	---	---	---	---	---	---	16.1	8.7	11.4	7.5	6.3	6.9
11	---	---	---	---	---	---	14.6	8.5	11.3	8.3	6.4	7.2
12	---	---	---	---	---	---	15.1	8.8	11.0	12.0	5.7	7.4
13	---	---	---	---	---	---	12.1	7.2	9.2	10.1	6.2	8.1
14	---	---	---	---	---	---	12.2	7.1	8.8	10.6	6.0	7.9
15	---	---	---	---	---	---	12.3	7.2	9.5	10.4	5.9	7.7
16	---	---	---	---	---	---	15.0	7.0	10.2	9.5	5.7	7.2
17	---	---	---	---	---	---	12.6	7.1	9.6	8.3	5.4	6.6
18	---	---	---	---	---	---	12.0	6.3	8.8	8.3	5.4	6.4
19	---	---	---	---	---	---	---	---	---	9.5	5.4	7.2
20	---	---	---	---	---	---	---	---	---	8.9	4.9	6.7
21	---	---	---	---	---	---	---	---	---	8.5	5.0	6.5
22	---	---	---	---	---	---	9.4	6.1	7.8	8.1	4.7	6.1
23	---	---	---	---	---	---	10.9	5.6	7.6	---	---	---
24	---	---	---	---	---	---	12.2	5.6	7.7	---	---	---
25	---	---	---	---	---	---	13.0	5.6	8.4	---	---	---
26	---	---	---	---	---	---	12.8	5.8	8.6	---	---	---
27	---	---	---	8.7	6.9	7.8	12.2	6.0	8.1	---	---	---
28	---	---	---	9.8	7.8	8.5	11.4	6.4	8.1	---	---	---
29	---	---	---	9.3	7.6	8.3	7.3	6.0	6.6	---	---	---
30	---	---	---	8.7	6.8	7.5	8.2	6.0	6.6	---	---	---
31	---	---	---	8.5	6.8	7.5	---	---	---	---	---	---
MONTH	---	---	---	9.8	6.8	7.9	16.1	5.6	9.3	16.2	4.7	7.5

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

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

DRAINAGE AREA.--137 mi².

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records good including estimated daily discharge. There are some diversions for irrigation upstream from gage. 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 two additional recording rain gages in the watershed.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.51	17	6.2	6.3	7.6	28	25	17	11	14	4.0	.20
2	.51	12	6.2	5.7	6.6	34	25	9.8	5.9	11	2.8	.07
3	.51	6.7	7.7	6.0	8.8	28	26	3.3	5.3	7.9	.16	.00
4	.42	5.4	11	7.0	6.5	20	36	3.2	5.3	7.5	.09	.00
5	.83	2.0	6.0	5.8	11	17	13	8680	5.0	7.4	.06	.00
6	4.2	.97	4.9	5.7	6.2	5.6	13	e8090	2.9	7.5	.05	.00
7	4.6	.93	4.9	7.1	5.7	2.6	32	416	2.9	6.7	.01	.00
8	4.1	2.4	4.9	5.9	5.4	1.7	18	110	2.9	1.2	.00	.01
9	5.7	8.6	4.9	7.4	21	11	13	31	2.6	.74	.02	.00
10	5.7	7.2	5.6	7.6	276	30	2.1	17	7.6	.57	.02	.00
11	4.7	7.0	5.6	6.6	24	13	1.3	16	8.0	1.0	.00	.00
12	1.7	10	2.2	5.4	17	47	1.3	14	12	.47	.00	.00
13	3.2	6.6	1.8	5.3	5.9	17	1.1	15	41	.32	.00	.87
14	3.6	5.3	4.5	5.3	16	16	7.2	14	9.3	.26	.00	9.0
15	3.6	4.9	62	5.3	17	13	8.5	13	8.1	.18	.00	8.9
16	3.6	4.9	16	5.3	16	7.8	6.7	11	8.3	.18	.00	.45
17	3.6	4.9	8.6	5.3	15	6.4	1.7	7.0	9.0	.16	.00	.04
18	3.6	5.0	8.1	5.1	7.4	18	.20	9.7	8.7	.14	.00	.00
19	3.6	110	8.1	14	2.9	17	1.5	7.6	8.1	.13	.00	.00
20	3.6	80	7.8	10	11	21	9.2	6.2	13	.13	.00	.72
21	3.6	10	8.2	4.8	12	5.4	9.7	5.6	51	.12	.00	5.7
22	3.6	7.1	7.6	4.4	14	3.0	9.8	15	20	.11	.00	7.1
23	3.6	6.8	7.6	2.4	22	1.9	9.4	124	8.0	.11	.99	9.0
24	3.6	6.3	7.6	.31	22	2.3	5.0	80	15	.10	.07	9.1
25	3.6	6.2	7.6	.15	30	2.2	.36	20	44	.09	.00	8.6
26	3.6	6.2	6.9	.85	10	3.1	.13	14	133	.09	.00	7.6
27	3.6	6.2	5.0	6.6	8.6	2.8	.09	13	32	.09	.00	4.1
28	3.4	6.2	1.4	6.6	22	2.4	.86	37	17	2.7	.72	.84
29	.84	6.2	7.8	8.4	---	5.1	20	20	15	3.5	.25	.13
30	11	6.2	7.7	8.0	---	27	23	21	15	3.6	.02	.02
31	6.6	---	6.1	7.6	---	26	---	15	---	4.4	.00	---
TOTAL	108.92	369.20	260.5	182.21	627.6	435.3	320.14	17855.4	526.9	82.39	9.26	72.45
MEAN	3.51	12.3	8.40	5.88	22.4	14.0	10.7	576	17.6	2.66	.30	2.41
MAX	11	110	62	14	276	47	36	8680	133	14	4.0	9.1
MIN	.42	.93	1.4	.15	2.9	1.7	.09	3.2	2.6	.09	.00	.00
AC-FT	216	732	517	361	1240	863	635	35420	1050	163	18	144

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

	6.55	6.20	9.34	8.73	6.03	5.39	10.5	43.1	22.1	9.66	2.90	12.8
MEAN	6.55	6.20	9.34	8.73	6.03	5.39	10.5	43.1	22.1	9.66	2.90	12.8
MAX	36.5	74.7	155	173	71.0	93.7	116	576	151	153	36.6	187
(WY)	1974	1978	1992	1968	1992	1992	1991	1993	1987	1973	1974	1973
MIN	.001	.008	.000	.061	.031	.000	.000	.000	.006	.000	.000	.027
(WY)	1992	1992	1962	1962	1989	1962	1984	1961	1984	1984	1986	1961

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1961 - 1993

ANNUAL TOTAL	10661.21	20850.27	12.0
ANNUAL MEAN	29.1	57.1	57.1
HIGHEST ANNUAL MEAN			.27
LOWEST ANNUAL MEAN			1993
HIGHEST DAILY MEAN	1800	8680	8680
LOWEST DAILY MEAN	.15	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.26	.00	.00
INSTANTANEOUS PEAK FLOW		28100	28100
INSTANTANEOUS PEAK STAGE		15.91	15.91
ANNUAL RUNOFF (AC-FT)	21150	41360	8680
10 PERCENT EXCEEDS	64	21	8.1
50 PERCENT EXCEEDS	8.1	5.9	.87
90 PERCENT EXCEEDS	3.3	.06	.00

GUADALUPE RIVER BASIN

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

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, 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 28...	1340	3.6	628	7.8	23.0	--	--	9.8	117	1.1	140	680	
NOV 19...	1730	217	147	7.8	18.5	120	43	9.2	101	4.1	--	--	
APR 02...	1215	5.7	594	7.9	20.0	13	22	8.5	95	2.4	--	--	
07...	1400	89	570	7.8	19.0	15	26	6.7	75	3.1	2200	3700	
JUL 29...	1300	4.0	762	7.8	29.5	9	2.5	7.2	96	2.0	--	--	
SEP 14...	1200	9.2	705	8.0	27.0	11	15	7.4	95	3.3	--	--	
DATE		HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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 28...	270	55	90	10	20	0.5	10	210	47	24	0.30	14	
NOV 19...	60	3	22	1.3	3.1	0.2	5.2	57	8.7	4.0	0.10	5.5	
APR 02...	270	25	91	9.5	21	0.6	9.8	240	54	25	0.40	13	
07...	260	38	91	8.9	20	0.5	10	230	54	20	0.40	12	
JUL 29...	310	53	110	9.7	36	0.9	14	260	91	41	0.40	14	
SEP 14...	280	64	93	11	28	0.7	10	210	86	31	0.50	15	
DATE		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)	RESIDUE FIXED NON FILTER-ABLE (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 28...	342	--	--	--	1.40	--	<0.010	--	1.40	--	0.040		
NOV 19...	84	105	22	83	0.270	--	0.030	--	0.300	--	0.030		
APR 02...	373	28	11	17	1.08	1.08	--	0.016	1.10	1.10	--		
07...	352	43	43	0	--	--	--	--	--	--	--		
JUL 29...	478	27	12	15	0.957	0.957	--	0.023	0.980	0.980	--		
SEP 14...	406	23	15	8	0.606	0.606	--	0.021	0.627	0.627	--		
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-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	
OCT 28...	--	--	<0.20	0.020	--	<0.010	--	2.5	--	--	--		
NOV 19...	--	0.57	0.60	0.280	--	0.190	--	6.8	--	--	--		
APR 02...	0.042	0.26	0.30	0.057	0.003	--	0.01	4.1	<0.010	320	1		
07...	--	0.40	0.40	0.050	--	--	--	4.3	--	--	--		
JUL 29...	0.147	0.65	0.80	0.054	<0.001	--	--	4.5	<0.010	240	2		
SEP 14...	0.017	0.58	0.60	0.091	0.002	--	0.01	6.1	<0.010	280	2		

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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.--No estimated daily discharges. Records good. Several small diversions above station. A recording rain gage is located in watershed above station. Most of low flow comes from artesian wells and springs within the city of San Antonio. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter at station.

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. Maximum stage since at least 1941, that of Sept. 27, 1973.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	68	37	48	39	96	25	42	61	49	13	10
2	11	70	36	43	38	67	25	27	50	46	12	11
3	11	35	35	41	39	50	25	21	43	41	11	9.0
4	11	27	36	42	66	45	180	17	39	37	10	8.7
5	11	26	40	46	121	40	58	1620	38	36	8.3	8.8
6	11	29	40	41	77	38	34	4480	37	35	7.3	7.9
7	12	24	39	47	44	34	62	806	34	33	6.5	8.0
8	13	25	38	51	40	30	131	240	35	31	6.0	7.9
9	14	36	37	42	44	30	47	100	30	27	5.7	8.2
10	16	44	37	42	916	30	39	62	99	25	5.5	8.9
11	17	36	38	41	153	38	33	52	57	25	5.1	9.4
12	16	43	38	41	68	247	32	49	97	24	4.7	13
13	13	44	36	39	56	86	30	46	389	23	4.5	14
14	12	32	40	38	45	37	29	44	66	22	4.4	12
15	13	30	408	40	46	34	30	43	39	21	5.8	10
16	14	29	136	38	47	35	31	42	31	20	8.0	12
17	14	28	54	38	46	32	30	41	36	19	8.4	14
18	15	28	45	38	45	29	29	37	30	19	7.7	10
19	15	444	44	110	40	28	26	51	38	19	7.1	8.5
20	15	689	42	147	36	28	23	42	74	17	7.6	8.9
21	17	95	43	57	37	28	24	36	383	17	7.7	8.6
22	14	47	44	43	35	25	25	40	82	16	7.7	8.1
23	14	41	42	41	35	23	25	846	41	15	8.0	8.9
24	15	39	41	38	36	22	25	681	33	14	8.6	15
25	16	38	39	36	65	22	24	97	447	14	8.9	15
26	16	40	39	36	91	21	20	66	1090	14	8.4	15
27	16	38	39	36	38	22	17	53	242	13	9.0	14
28	17	37	39	37	37	36	18	60	53	13	9.1	12
29	17	37	36	44	---	24	27	157	62	12	10	10
30	107	37	38	42	---	36	67	444	55	13	9.5	6.9
31	39	---	39	39	---	33	---	101	---	13	8.9	---
TOTAL	555	2236	1695	1462	2380	1346	1191	10443	3811	723	244.4	313.7
MEAN	17.9	74.5	54.7	47.2	85.0	43.4	39.7	337	127	23.3	7.88	10.5
MAX	107	689	408	147	916	247	180	4480	1090	49	13	15
MIN	11	24	35	36	35	21	17	17	30	12	4.4	6.9
AC-FT	1100	4440	3360	2900	4720	2670	2360	20710	7560	1430	485	622

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

	37.7	40.9	44.9	45.6	44.7	34.3	44.3	84.6	70.3	37.8	26.6	44.6
MEAN	37.7	40.9	44.9	45.6	44.7	34.3	44.3	84.6	70.3	37.8	26.6	44.6
MAX	137	146	376	379	285	206	188	358	349	234	176	400
(WY)	1974	1978	1992	1968	1992	1992	1977	1972	1987	1973	1974	1973
MIN	8.52	6.35	9.53	9.50	9.85	10.6	7.80	5.08	1.64	2.07	1.87	5.65
(WY)	1992	1992	1964	1967	1967	1971	1984	1967	1967	1984	1963	1963

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1961 - 1993

ANNUAL TOTAL	46817		26400.1									
ANNUAL MEAN	128		72.3									
HIGHEST ANNUAL MEAN										46.3		
LOWEST ANNUAL MEAN										149		1992
HIGHEST DAILY MEAN	2510	Mar 4	4480	May 6						8080	Sep 27	1973
LOWEST DAILY MEAN	11	Oct 2	4.4	Aug 14						.00	Aug 13	1967
ANNUAL SEVEN-DAY MINIMUM	11	Oct 1	5.1	Aug 9						.20	Aug 10	1967
INSTANTANEOUS PEAK FLOW			10200	May 6						13100	Sep 27	1973
INSTANTANEOUS PEAK STAGE			27.04	May 6						a/28.83	Sep 27	1973
ANNUAL RUNOFF (AC-FT)	92860		52360							33570		
10 PERCENT EXCEEDS	245		79							59		
50 PERCENT EXCEEDS	45		36							21		
90 PERCENT EXCEEDS	16		9.0							8.3		

a/ Maximum stage since at least 1941.

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 or probe fouling and these days were deleted from the record. 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, 1210 microsiemens June 6, 1992; minimum, 39 microsiemens Nov. 9, 1990.

pH: Maximum, 8.7 units on Dec. 29, 1991; minimum, 7.3 units on several days during 1988, 1990, and 1992.

WATER TEMPERATURE: Maximum, 31.0°C July 17-20, 1988, July 30, 1993; minimum, 0.0°C Dec. 24, 1989.

DISSOLVED OXYGEN: Maximum, 16.7 mg/L Jan. 27, 1988; minimum, 0.8 mg/L Oct. 28, 1991.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1200 microsiemens Aug. 14; minimum, 149 microsiemens May 5.

pH: Maximum, 8.3 units on several days; minimum, 7.5 units on Jun. 21, 22, 27.

WATER TEMPERATURE: Maximum, 31.0°C on Jul. 30; minimum, 9.5°C Dec. 16.

DISSOLVED OXYGEN: Maximum, 11.2 mg/L Mar. 7, 12; minimum, 4.6 mg/L Aug. 17, 18, 24.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, 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)	
OCT 28...	1205	2.8	943	7.8	20.5	--	--	6.5	74	0.7	K64	140	
JAN 11...	1420	29	886	8.2	11.5	10	3.4	10.2	95	0.9	120	160	
MAR 02...	1310	62	681	8.0	16.0	10	12	9.8	116	1.9	680	200	
APR 01...	1100	25	884	7.9	18.5	10	23	7.8	85	2.5	--	--	
14...	1100	26	820	7.8	21.0	25	16	7.4	87	8.0	K360	530	
JUN 14...	1355	64	439	7.9	24.0	35	25	6.8	82	2.2	1000	1100	
JUL 29...	0800	12	1040	7.8	28.0	6	3.1	5.6	73	1.7	--	--	
AUG 05...	1110	15	1190	7.8	28.5	11	3.2	6.4	84	0.8	260	410	
SEP 13...	1130	15	1040	8.0	25.5	11	6.3	6.1	77	4.0	--	--	
DATE		HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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)
OCT 28...	340	60	110	15	65	2	4.4	280	77	75	0.20	18	
JAN 11...	340	52	110	15	51	1	4.6	290	93	65	0.30	13	
MAR 02...	260	57	86	12	36	1	4.4	210	61	43	0.20	12	
APR 01...	320	32	100	17	57	1	4.1	290	83	68	0.30	13	
14...	300	38	96	14	55	1	4.9	260	77	71	0.30	15	
JUN 14...	160	32	55	6.5	26	0.9	4.7	130	41	31	0.30	10	
JUL 29...	350	38	110	18	84	2	3.9	310	99	98	0.30	18	
AUG 05...	390	110	120	23	110	2	4.2	290	150	150	0.30	17	
SEP 13...	340	55	110	16	84	2	3.5	290	87	100	0.30	21	

GUADALUPE RIVER BASIN

315

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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)	RESIDUE FIXED NON FILTER- ABLE (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)
OCT 28...	531	--	--	--	1.90	--	<0.010	--	1.90	--	0.010	--
JAN 11...	532	2	2	0	1.68	1.68	--	0.020	1.70	1.70	--	0.090
MAR 02...	379	22	<1	--	--	--	--	--	--	--	--	--
APR 01...	520	67	14	53	1.09	1.09	--	0.014	1.10	1.10	--	0.050
JUN 14...	496	31	<1	--	1.27	1.27	--	0.030	1.30	1.30	--	0.060
JUL 14...	257	33	8	25	0.620	--	--	<0.010	0.620	0.620	--	0.070
AUG 29...	623	30	14	16	1.09	1.09	--	0.005	1.10	1.10	--	0.101
SEP 05...	753	13	4	9	1.30	--	--	<0.010	1.30	1.30	--	0.040
SEP 13...	594	18	15	3	0.201	0.201	--	0.006	0.207	0.207	--	0.022
DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE TOTAL (MG/L AS CN)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)
OCT 28...	0.19	--	--	0.20	0.020	--	--	0.020	--	3.0	--	--
JAN 11...	--	0.71	0.80	--	--	0.030	0.020	--	0.06	2.6	--	--
MAR 02...	--	--	--	--	--	--	--	--	--	4.4	--	--
APR 01...	0.25	--	--	0.30	0.076	--	0.034	--	0.10	4.0	<0.010	510
JUN 14...	--	0.24	0.30	--	--	0.050	0.050	--	0.15	4.4	--	--
JUL 14...	--	0.23	0.30	--	--	0.060	0.050	--	0.15	6.8	--	--
AUG 29...	0.30	--	--	0.40	0.038	--	0.016	--	0.05	2.7	<0.010	220
SEP 05...	--	0.16	0.20	--	--	<0.010	0.020	--	0.06	2.8	--	--
SEP 13...	0.28	--	--	0.30	0.042	--	0.015	--	0.05	3.8	<0.010	190
DATE	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	--	1	--	--	85	--	<0.5	--	<1.0	--	--	<5
MAR 02...	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	1	--	11	<100	--	80	--	<1	--	2	<1	--
JUN 14...	--	2	--	--	130	--	<0.5	--	<1.0	--	--	<5
JUL 14...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	2	--	5	<100	--	80	--	<1	--	3	2	--
SEP 05...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	2	--	3	<100	--	110	--	<1	--	2	<1	--

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	CHROMIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	--	<3	--	<10	--	--	<3	--	<10	--	47
MAR 02...	--	--	--	--	--	--	--	--	--	--	--
APR 01...	5	--	<1	--	8	540	--	<1	--	20	--
14...	--	<3	--	<10	--	--	7	--	<10	--	49
JUN 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	20	--	1	--	10	260	--	<1	--	40	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	9	--	<1	--	20	210	--	<1	--	40	--
DATE	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	21	--	0.2	--	<10	--	<10	--	<1	--	<1.0
MAR 02...	--	--	--	--	--	--	--	--	--	--	--
APR 01...	--	<0.10	--	0.02	--	2	--	<1	--	<1	--
14...	29	--	<0.1	--	<10	--	<10	--	<1	--	<1.0
JUN 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	--	<0.10	--	<0.01	--	2	--	<1	--	<1	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	--	<0.10	--	<0.01	--	2	--	<1	--	<1	--
DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	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)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	880	<6	--	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
MAR 02...	--	--	--	--	--	--	--	--	--	--	--
APR 01...	--	--	10	--	--	--	--	--	--	--	--
14...	800	<6	--	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010
JUN 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	--	--	<10	--	--	--	--	--	--	--	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	--	--	<10	--	--	--	--	--	--	--	--

GUADALUPE RIVER BASIN

317

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	DI-SY- STON TOTAL (UG/L)	ENDO- SULFAM, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	0.02	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01
MAR 02...	--	--	--	--	--	--	--	--	--	--	--
APR 01...	--	--	--	--	--	--	--	--	--	--	--
14...	0.14	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01
JUN 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	--	--	--	--	--	--	--	--	--	--	--
DATE	METHYL PARA- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
MAR 02...	--	--	--	--	--	--	--	--	--	--	--
APR 01...	--	--	--	--	--	--	--	--	--	--	--
14...	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
JUN 14...	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	--	--	--	--	--	--	--	--	--	--	--
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. 1992	555	871	490	734	81	122	72	108	320		
NOV. 1992	2236	541	310	1870	40	240	44	268	210		
DEC. 1992	1695	699	397	1820	58	266	58	264	260		
JAN. 1993	1462	823	464	1830	74	292	68	269	300		
FEB. 1993	2380	593	339	2180	45	291	49	313	230		
MAR. 1993	1346	727	412	1500	61	220	60	218	270		
APR. 1993	1191	692	393	1270	56	181	57	183	260		
MAY 1993	10443	343	200	5630	20	550	28	785	140		
JUNE 1993	3811	435	251	2580	29	297	36	365	170		
JULY 1993	723	957	535	1040	95	185	80	156	340		
AUG. 1993	244.4	1000	557	368	100	67	84	55	350		
SEPT 1993	313.7	947	530	449	93	79	79	67	340		
TOTAL	26400.1	**	**	21300	**	2790	**	3050	**		
WTD.AVG.	72	522	298	**	39	**	43	**	200		

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	916	877	892	706	525	636	862	847	854	891	838	873
2	923	886	909	574	435	487	872	855	862	864	838	856
3	923	894	909	664	503	587	877	857	870	916	857	888
4	921	886	904	669	608	642	884	864	876	908	867	877
5	913	899	906	684	615	647	867	842	851	867	821	844
6	974	947	910	684	642	665	850	842	846	835	769	795
7	965	938	952	752	659	709	864	842	856	870	795	821
8	955	930	945	801	750	774	869	855	860	870	790	814
9	950	928	937	857	801	832	882	862	869	847	795	820
10	947	923	937	845	664	779	872	857	864	867	820	839
11	928	913	920	845	786	833	869	855	864	915	845	886
12	926	904	914	847	794	830	874	852	865	890	876	883
13	926	906	917	801	777	790	879	864	870	894	879	887
14	952	916	935	818	777	796	1070	833	887	915	890	906
15	955	935	944	857	781	823	857	247	477	929	818	913
16	947	935	941	886	840	859	418	254	338	938	915	928
17	943	928	937	908	862	892	564	418	496	942	924	934
18	947	930	940	921	872	896	635	564	604	948	927	939
19	947	935	941	894	190	615	681	632	657	944	490	823
20	947	935	940	313	217	244	735	679	712	693	441	565
21	945	901	929	493	313	412	779	735	758	587	520	560
22	940	906	930	579	493	543	830	779	804	708	587	637
23	945	930	939	640	574	611	860	830	848	801	708	763
24	947	930	939	674	620	647	864	855	862	850	801	829
25	945	930	939	691	650	673	874	862	868	879	847	869
26	947	933	940	750	691	716	879	864	873	918	874	901
27	952	935	945	786	750	771	884	872	877	957	916	942
28	950	938	943	821	786	808	889	874	883	965	945	954
29	945	928	941	833	811	823	901	886	895	957	926	945
30	928	510	728	852	828	843	921	884	903	960	928	944
31	650	540	634	---	---	---	896	886	893	943	913	928
MONTH	974	510	914	921	190	706	1070	247	801	965	441	850

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	938	911	925	620	530	578	884	786	838	686	632	662
2	950	935	945	664	571	623	894	811	855	686	645	661
3	1030	940	954	650	576	612	906	808	870	698	652	687
4	943	842	889	701	598	656	877	469	603	711	694	698
5	877	615	725	728	696	719	471	400	431	725	149	408
6	657	554	609	799	701	753	584	447	521	276	161	220
7	772	657	717	872	786	834	647	486	588	317	254	275
8	794	769	784	923	860	886	559	410	474	437	317	381
9	791	716	765	943	889	914	527	415	463	557	437	500
10	742	193	382	928	864	905	581	440	531	650	557	606
11	447	237	350	960	886	914	681	537	618	733	650	689
12	589	447	527	950	383	672	730	589	672	803	718	767
13	706	589	642	476	342	403	811	611	714	940	777	830
14	801	706	765	593	464	532	918	708	818	904	786	831
15	855	799	822	637	559	604	913	855	866	882	786	848
16	864	850	859	708	623	655	872	852	864	882	821	851
17	894	821	858	811	662	734	877	862	869	879	838	855
18	833	821	827	857	755	808	899	867	882	891	847	864
19	842	806	826	869	794	842	911	884	902	930	799	860
20	840	821	834	926	818	870	935	901	921	894	830	853
21	840	821	830	930	811	881	950	926	937	904	850	858
22	852	828	843	923	838	901	928	901	913	928	637	851
23	862	845	853	947	894	925	930	894	916	811	193	441
24	860	825	849	972	896	934	918	894	904	405	195	268
25	852	750	827	1080	904	970	916	894	907	481	337	435
26	750	640	672	977	891	950	918	842	874	581	481	535
27	718	659	688	991	874	948	879	852	869	681	581	643
28	686	601	645	960	454	813	894	877	887	904	674	722
29	---	---	---	962	803	918	904	845	889	757	513	647
30	---	---	---	977	559	843	845	559	704	632	244	392
31	---	---	---	894	733	838	---	---	---	603	396	486
MONTH	1030	193	758	1080	342	788	950	400	770	940	149	633

GUADALUPE RIVER BASIN

319

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	557	457	509	855	816	840	1010	983	998	1020	1000	1010
2	735	557	629	904	845	873	1010	992	1000	1030	1010	1020
3	826	569	753	918	889	907	1020	998	1010	1030	994	1000
4	876	814	845	928	911	921	1020	995	1010	1160	1000	1060
5	905	871	885	933	913	927	1100	965	1030	1080	1000	1020
6	931	881	909	940	923	931	1070	955	999	1010	991	1000
7	948	892	918	947	930	937	984	967	976	1010	984	1000
8	978	883	933	950	933	938	989	952	970	1010	997	1000
9	1010	929	970	972	938	951	987	957	973	1020	992	1000
10	1000	590	832	979	967	970	979	955	964	1010	986	998
11	805	666	748	989	969	978	972	945	959	1010	983	994
12	884	545	774	987	967	975	979	962	971	1010	982	999
13	545	340	395	1140	972	1000	1170	960	994	1000	966	981
14	592	366	481	1010	991	1000	1200	982	1020	972	945	957
15	629	530	588	1020	989	1000	987	965	976	978	952	962
16	676	596	641	1030	989	1010	996	967	982	982	951	966
17	696	635	670	1020	984	1000	1050	969	993	965	911	934
18	852	691	713	1020	960	999	1050	1000	1020	927	904	916
19	706	618	663	1020	943	993	1020	999	1010	942	920	927
20	730	420	619	1010	972	1000	1050	1010	1030	1070	942	996
21	557	188	311	1060	996	1020	1020	994	1000	1100	927	996
22	513	274	379	1030	1010	1020	1010	987	997	991	928	943
23	615	498	566	1030	969	1020	1010	989	997	937	916	925
24	730	615	679	1030	969	1010	1010	991	1000	932	889	916
25	642	254	427	1020	996	1010	1010	989	997	889	852	862
26	256	164	212	1010	984	998	1010	987	996	866	829	848
27	496	208	363	1020	982	1000	1020	999	1010	859	824	839
28	669	496	595	1010	991	1000	1020	1000	1010	835	822	827
29	759	662	716	1020	994	1010	1030	996	1010	846	824	836
30	821	759	794	1010	990	1000	1030	998	1010	901	840	869
31	---	---	---	1000	983	993	1030	1010	1020	---	---	---
MONTH	1010	164	651	1140	816	975	1200	945	998	1160	822	953
YEAR	1200	149	817									

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.0	8.0	8.0	7.9	7.6	7.7	7.9	7.7	7.8	8.3	8.0	8.0
2	8.0	7.9	7.9	7.8	7.7	7.7	7.8	7.6	7.7	8.1	8.0	8.1
3	8.0	7.9	7.9	7.8	7.7	7.8	7.8	7.6	7.7	8.2	8.0	8.1
4	8.0	7.9	8.0	7.9	7.7	7.8	7.9	7.7	7.7	8.2	8.0	8.1
5	8.1	7.9	8.0	8.0	7.7	7.9	7.9	7.6	7.8	8.1	7.9	8.0
6	8.2	8.0	8.1	8.0	7.8	8.0	7.8	7.6	7.8	8.1	8.1	8.1
7	8.2	8.1	8.1	8.0	7.9	8.0	7.8	7.6	7.7	8.1	8.0	8.1
8	8.1	8.0	8.1	8.0	7.9	8.0	7.8	7.6	7.7	8.1	8.0	8.1
9	8.1	8.1	8.1	7.9	7.9	7.9	7.9	7.6	7.8	8.1	8.0	8.0
10	8.1	8.0	8.1	8.0	7.9	7.9	7.7	7.6	7.7	8.2	8.1	8.1
11	8.1	8.0	8.0	7.9	7.9	7.9	7.7	7.6	7.7	8.2	8.1	8.2
12	8.1	8.0	8.0	8.0	7.9	7.9	7.8	7.7	7.8	8.2	8.1	8.2
13	8.0	7.9	7.9	8.0	7.9	7.9	7.9	7.6	7.9	8.2	8.2	8.2
14	7.9	7.9	7.9	8.0	7.9	7.9	7.8	7.6	7.8	8.2	8.2	8.2
15	8.0	8.0	8.0	8.0	8.0	8.0	7.8	7.8	7.9	8.2	8.1	8.1
16	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.7	7.8	8.2	8.0	8.1
17	8.0	8.0	8.0	8.0	8.0	8.0	---	---	---	8.1	8.0	8.0
18	8.0	8.0	8.0	8.0	7.9	8.0	---	---	---	8.0	8.0	8.0
19	8.0	8.0	8.0	8.3	7.9	8.0	---	---	---	8.1	8.0	8.0
20	8.0	8.0	8.0	8.3	8.1	8.2	---	---	---	8.0	7.8	7.9
21	8.0	8.0	8.0	8.2	8.1	8.1	---	---	---	7.8	7.7	7.7
22	8.0	8.0	8.0	8.1	8.0	8.1	8.0	7.9	8.0	7.9	7.6	7.8
23	8.0	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9
24	8.0	8.0	8.0	8.0	8.0	8.0	8.2	7.7	7.9	8.0	7.9	7.9
25	8.0	8.0	8.0	8.0	7.9	8.0	8.2	8.0	8.1	7.9	7.8	7.9
26	8.0	8.0	8.0	7.9	7.8	7.9	8.2	7.8	7.9	8.0	7.7	7.9
27	8.0	8.0	8.0	7.9	7.7	7.8	8.2	7.8	7.9	7.9	7.8	7.9
28	8.0	7.9	8.0	7.8	7.7	7.8	8.2	8.2	8.2	8.0	7.9	7.9
29	8.0	7.9	7.9	7.9	7.7	7.8	8.2	8.0	8.1	8.0	7.8	7.9
30	8.1	7.6	7.9	7.8	7.8	7.8	8.2	8.1	8.2	7.9	7.8	7.8
31	7.8	7.7	7.7	---	---	---	8.2	8.1	8.1	7.9	7.8	7.9
MONTH	8.2	7.6	8.0	8.3	7.6	7.9	8.2	7.6	7.9	8.3	7.6	8.0

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.9	7.8	7.8	7.9	7.8	7.8	7.9	7.8	7.9	8.1	8.0	8.0
2	8.0	7.8	7.9	7.9	7.8	7.9	8.0	7.9	7.9	8.1	8.0	8.0
3	8.0	7.8	7.9	7.9	7.8	7.8	8.0	7.9	7.9	8.0	8.0	8.0
4	8.0	7.8	7.9	7.9	7.8	7.8	7.9	7.7	7.8	8.0	7.9	8.0
5	7.9	7.8	7.8	8.0	7.9	7.9	7.8	7.6	7.7	8.0	7.9	8.0
6	8.0	7.8	7.8	8.0	7.9	7.9	7.7	7.6	7.6	8.1	7.9	8.0
7	8.0	7.7	7.9	8.1	7.9	8.0	7.8	7.6	7.7	7.9	7.9	7.9
8	7.9	7.7	7.8	8.1	7.9	8.0	7.9	7.6	7.8	7.9	7.9	7.9
9	7.9	7.7	7.8	8.1	8.0	8.0	7.7	7.7	7.7	7.9	7.9	7.9
10	---	---	---	8.1	7.9	8.0	7.8	7.7	7.7	8.0	7.9	8.0
11	7.9	7.7	7.8	8.1	8.0	8.0	7.8	7.7	7.7	8.1	8.0	8.0
12	7.9	7.8	7.8	8.0	7.8	7.9	7.8	7.7	7.7	8.1	8.1	8.1
13	8.0	7.9	7.9	7.8	7.7	7.7	7.8	7.8	7.8	8.2	8.1	8.2
14	8.0	7.9	7.9	7.8	7.7	7.7	7.9	7.7	7.8	8.2	8.2	8.2
15	8.0	7.9	8.0	7.8	7.7	7.7	7.9	7.8	7.8	8.2	8.2	8.2
16	8.0	8.0	8.0	7.9	7.8	7.8	7.9	7.9	7.9	8.2	8.2	8.2
17	8.1	8.0	8.0	7.9	7.8	7.9	7.9	7.9	7.9	8.3	8.2	8.2
18	8.1	8.1	8.1	7.9	7.8	7.9	8.0	7.9	7.9	8.2	8.2	8.2
19	8.1	8.0	8.1	8.0	7.9	7.9	8.0	7.8	7.9	8.3	8.2	8.2
20	8.1	8.0	8.1	8.0	7.9	7.9	8.0	7.8	7.9	8.2	8.2	8.2
21	8.1	8.0	8.1	8.0	7.9	8.0	7.9	7.8	7.9	8.2	8.2	8.2
22	8.1	8.0	8.1	8.0	7.9	7.9	7.9	7.8	7.8	8.2	8.1	8.2
23	8.1	8.0	8.1	8.1	7.9	8.0	7.9	7.8	7.8	8.1	7.9	8.0
24	8.1	8.0	8.1	8.1	8.0	8.1	7.9	7.8	7.8	8.0	7.8	7.8
25	8.2	8.0	8.0	8.1	8.0	8.0	7.9	7.8	7.8	7.9	7.8	7.8
26	8.1	7.9	8.0	8.1	8.0	8.1	7.9	7.8	7.8	8.0	7.9	7.9
27	8.0	7.9	8.0	8.1	8.0	8.0	8.0	7.9	7.9	8.0	7.9	8.0
28	8.0	7.9	7.9	8.1	7.8	8.0	8.0	7.9	8.0	8.1	8.0	8.0
29	---	---	---	8.0	7.9	7.9	8.0	7.8	8.0	8.1	8.0	8.0
30	---	---	---	8.0	7.8	7.9	8.0	7.7	7.9	8.0	7.8	7.9
31	---	---	---	7.9	7.9	7.9	---	---	---	7.9	7.8	7.8
MONTH	8.2	7.7	7.9	8.1	7.7	7.9	8.0	7.6	7.8	8.3	7.8	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.9	7.8	7.9	7.9	7.8	7.8	---	---	---	8.0	8.0	8.0
2	8.0	7.9	7.9	7.9	7.6	7.8	---	---	---	8.0	8.0	8.0
3	8.0	7.7	7.8	7.8	7.7	7.7	---	---	---	8.0	8.0	8.0
4	7.8	7.7	7.7	7.8	7.7	7.7	---	---	---	8.0	7.9	7.9
5	7.8	7.8	7.8	7.7	7.7	7.7	---	---	---	7.9	7.8	7.8
6	7.9	7.8	7.8	7.8	7.7	7.8	---	---	---	7.8	7.8	7.8
7	7.9	7.8	7.9	7.9	7.8	7.8	---	---	---	7.8	7.7	7.7
8	8.0	7.9	7.9	7.8	7.8	7.8	---	---	---	7.9	7.7	7.8
9	8.0	7.9	7.9	7.8	7.7	7.8	---	---	---	8.0	7.9	8.0
10	7.9	7.7	7.8	7.9	7.7	7.8	---	---	---	8.1	8.0	8.0
11	7.8	7.6	7.7	7.9	7.7	7.7	7.8	7.8	7.8	8.1	8.0	8.1
12	7.9	7.7	7.8	7.8	7.7	7.8	7.8	7.8	7.8	8.1	8.1	8.1
13	---	---	---	7.9	7.7	7.8	7.9	7.8	7.8	8.2	8.1	8.1
14	---	---	---	7.8	7.8	7.8	7.9	7.9	7.9	8.2	8.2	8.2
15	7.8	7.6	7.7	7.8	7.8	7.8	7.9	7.9	7.9	8.2	8.2	8.2
16	7.8	7.6	7.7	7.9	7.8	7.9	7.9	7.8	7.9	8.3	8.2	8.3
17	7.8	7.7	7.7	7.9	7.9	7.9	7.9	7.8	7.9	8.3	8.3	8.3
18	7.8	7.7	7.8	7.9	7.8	7.8	7.9	7.8	7.9	8.3	8.2	8.2
19	7.8	7.7	7.8	7.9	7.8	7.9	7.9	7.8	7.8	8.2	8.1	8.1
20	7.8	7.7	7.8	7.9	7.9	7.9	8.0	7.8	7.9	8.1	8.0	8.1
21	7.8	7.5	7.7	7.9	7.8	7.9	7.9	7.9	7.9	8.1	8.0	8.1
22	7.6	7.5	7.5	8.0	7.7	7.9	7.9	7.9	7.9	8.0	7.9	8.0
23	7.8	7.6	7.7	8.0	8.0	8.0	7.9	7.9	7.9	8.0	7.9	7.9
24	7.8	7.7	7.7	8.0	7.9	8.0	7.9	7.9	7.9	8.1	7.9	8.0
25	7.9	7.6	7.7	7.9	7.8	7.8	7.9	7.8	7.9	8.1	8.0	8.1
26	7.7	7.6	7.7	8.0	7.9	7.9	7.9	7.8	7.8	8.2	8.0	8.1
27	7.7	7.5	7.6	---	---	---	7.9	7.8	7.9	8.2	8.1	8.2
28	7.7	7.6	7.6	---	---	---	7.9	7.9	7.9	8.1	8.0	8.1
29	7.8	7.7	7.7	---	---	---	7.9	7.9	7.9	8.1	8.0	8.0
30	7.8	7.8	7.8	---	---	---	8.0	7.9	7.9	8.0	8.0	8.0
31	---	---	---	---	---	---	8.0	8.0	8.0	---	---	---
MONTH	8.0	7.5	7.8	8.0	7.6	7.8	8.0	7.8	7.9	8.3	7.7	8.0
YEAR	8.3	7.5	7.9									

GUADALUPE RIVER BASIN

321

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	21.5	19.0	20.0	23.5	21.5	22.5	14.0	12.5	13.0	18.5	15.0	16.0
2	20.0	18.5	19.5	21.5	20.0	20.5	13.5	13.0	13.0	15.0	14.0	14.5
3	20.5	19.0	20.0	20.5	19.5	20.0	13.5	12.5	13.0	15.5	14.5	15.0
4	20.5	19.0	20.0	20.0	16.5	18.0	14.5	13.5	14.5	16.0	15.5	16.0
5	20.5	19.5	20.0	16.5	14.5	15.0	14.0	11.5	12.5	15.5	14.0	14.5
6	21.0	20.0	20.5	15.0	14.5	14.5	12.0	11.5	11.5	14.5	13.0	13.5
7	22.0	20.5	21.0	15.0	14.0	14.5	12.5	11.0	12.0	14.0	13.5	13.5
8	22.0	19.5	20.0	16.5	15.0	15.5	13.5	12.5	13.0	14.5	13.5	14.0
9	19.5	18.0	18.5	18.0	16.5	17.5	14.0	13.0	13.5	16.5	14.5	15.5
10	22.5	19.5	20.5	20.0	18.0	18.5	14.0	13.0	13.5	16.0	12.5	14.0
11	22.5	21.0	21.5	20.0	19.0	19.5	14.0	12.5	13.0	12.5	12.0	12.0
12	21.5	20.0	21.0	20.0	18.0	19.0	15.0	13.0	13.5	14.0	12.0	13.0
13	21.5	20.0	20.5	18.0	16.5	17.0	16.5	15.0	15.5	14.0	12.5	13.0
14	22.0	20.5	21.0	16.5	15.5	15.5	16.5	14.0	15.5	12.5	12.0	12.5
15	23.0	22.0	22.0	16.0	14.5	15.0	14.0	10.0	12.0	14.5	12.5	13.0
16	23.5	23.0	23.0	17.5	16.0	16.5	11.0	9.5	10.5	14.0	12.5	13.0
17	23.5	22.0	22.5	18.0	17.0	17.5	11.5	10.0	11.0	15.0	13.5	14.0
18	22.0	21.5	21.5	19.0	17.5	18.0	12.0	10.5	11.0	16.0	15.0	15.5
19	21.5	20.0	21.0	19.5	18.0	19.0	14.5	12.0	13.5	16.0	11.0	14.0
20	22.0	20.5	21.0	18.5	17.5	18.0	14.5	13.0	14.0	15.0	12.0	13.5
21	22.5	21.5	22.0	17.5	17.0	17.5	13.5	12.5	13.0	14.0	12.0	13.0
22	22.5	22.0	22.0	17.0	15.0	16.0	15.5	13.5	14.5	15.0	13.0	14.0
23	22.5	22.0	22.0	16.0	14.5	15.0	17.0	15.5	16.0	16.5	14.5	15.5
24	22.5	21.0	21.5	17.0	16.0	16.5	17.0	15.0	16.0	16.5	14.0	15.0
25	21.5	20.0	21.0	16.0	14.0	14.5	15.5	15.0	15.0	14.0	12.5	13.0
26	21.5	20.0	20.5	14.0	12.5	13.0	15.5	14.5	15.0	12.5	11.5	12.0
27	21.5	20.5	21.0	12.5	11.0	11.5	15.5	14.5	15.0	13.0	11.5	12.5
28	22.0	20.5	21.0	11.5	10.5	11.0	16.5	15.5	16.0	14.0	12.5	13.0
29	22.5	22.0	22.0	12.5	10.5	11.5	18.5	16.5	17.0	14.5	13.5	14.0
30	23.0	21.5	22.5	13.0	12.5	13.0	19.5	18.5	19.0	13.5	12.5	13.0
31	23.5	22.5	23.0	---	---	---	20.0	18.5	19.5	14.0	12.5	13.0
MONTH	23.5	18.0	21.0	23.5	10.5	16.5	20.0	9.5	14.0	18.5	11.0	14.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.5	13.5	13.5	15.5	14.5	15.0	21.0	19.0	20.0	22.5	20.5	21.0
2	15.0	14.5	14.5	16.5	14.5	15.5	20.5	19.0	19.5	22.5	21.5	22.0
3	15.5	15.0	15.0	17.0	15.0	16.0	20.0	19.0	19.5	22.0	20.0	21.0
4	16.0	15.5	15.5	17.0	14.5	16.0	20.0	19.0	19.5	22.0	21.0	21.5
5	15.5	14.0	14.5	16.5	15.5	16.0	19.5	18.0	18.5	22.5	18.5	20.5
6	14.5	12.5	13.5	17.0	14.5	15.5	19.0	18.0	18.5	19.5	18.5	19.0
7	14.0	12.5	13.5	17.5	15.5	16.5	20.0	19.0	19.0	21.0	19.5	20.5
8	14.5	13.0	14.0	18.0	15.5	17.0	19.5	18.5	19.0	22.0	20.5	21.0
9	15.0	14.0	14.5	19.0	16.5	17.5	19.5	17.5	18.5	22.5	22.0	22.5
10	16.0	15.0	15.5	20.0	17.5	18.5	20.0	17.5	18.5	22.5	21.5	22.0
11	16.5	14.5	15.5	20.0	17.0	18.0	22.0	19.5	20.0	23.0	20.5	21.5
12	16.0	14.0	15.0	17.0	12.0	14.0	22.0	21.0	21.5	22.5	21.0	22.0
13	17.0	14.5	15.5	12.5	10.5	11.5	22.0	21.0	21.5	23.0	21.0	22.0
14	17.0	16.0	16.5	12.5	10.0	11.5	22.5	21.5	22.0	23.0	21.5	22.0
15	19.0	16.5	17.5	13.5	12.5	13.0	22.0	19.0	20.0	24.0	21.5	22.5
16	18.5	16.5	17.5	17.0	13.5	15.0	20.0	18.0	19.0	24.5	22.5	23.5
17	16.5	14.5	15.0	18.0	16.5	17.0	20.5	18.5	19.5	25.0	23.5	24.0
18	15.0	13.5	14.0	18.5	16.5	17.5	21.5	19.0	20.0	24.5	24.0	24.0
19	14.0	13.0	13.5	18.5	18.0	18.0	23.0	20.5	21.5	24.5	23.0	24.0
20	15.5	14.0	14.5	19.5	18.0	19.0	23.0	21.5	22.0	24.5	22.5	23.5
21	17.5	15.5	16.5	19.0	18.5	18.5	21.5	19.5	20.5	24.5	23.0	23.5
22	17.0	15.5	16.5	19.5	18.5	19.0	20.5	18.0	19.5	24.5	23.0	23.5
23	17.0	15.0	16.0	20.0	18.5	19.0	21.5	19.0	20.0	24.0	20.5	22.0
24	18.0	16.5	17.0	20.5	19.0	19.5	22.5	20.5	21.0	21.0	20.0	20.5
25	19.5	18.0	18.5	22.0	20.0	21.0	23.5	21.5	22.5	22.0	20.5	21.5
26	18.0	17.0	17.5	22.0	20.0	21.0	23.5	21.5	22.5	23.0	21.5	22.0
27	17.5	15.5	16.0	21.5	20.0	20.5	22.5	21.0	21.5	23.5	22.0	22.5
28	15.5	14.0	15.0	21.5	20.0	20.5	22.0	21.5	21.5	24.5	23.0	23.5
29	---	---	---	22.0	20.5	21.0	22.0	21.0	21.5	24.5	23.5	24.0
30	---	---	---	22.5	19.5	21.5	21.0	20.5	21.0	24.5	22.5	23.5
31	---	---	---	21.5	20.0	21.0	---	---	---	25.0	23.5	24.0
MONTH	19.5	12.5	15.5	22.5	10.0	17.5	23.5	17.5	20.5	25.0	18.5	22.5

GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	25.5	23.5	24.5	27.5	26.5	27.0	30.5	28.0	29.5	27.0	26.5	26.5
2	26.0	24.0	25.0	27.5	26.5	27.0	30.5	28.5	29.5	27.0	26.0	26.5
3	27.0	25.0	26.0	28.0	26.5	27.0	30.5	28.5	29.5	27.0	26.5	26.5
4	26.5	25.5	26.0	27.5	26.5	27.0	30.0	28.0	29.0	26.5	26.0	26.0
5	27.0	25.5	26.5	27.5	26.5	27.0	29.5	28.5	29.0	26.0	25.0	25.5
6	27.5	26.0	27.0	28.0	26.5	27.0	29.5	28.5	29.0	25.5	25.0	25.0
7	27.5	26.5	27.0	28.0	26.5	27.0	29.5	29.0	29.0	25.5	24.5	25.0
8	27.0	26.5	26.5	28.0	26.5	27.0	29.5	29.0	29.0	25.5	24.5	25.0
9	28.0	26.0	27.0	28.0	26.5	27.0	29.5	29.0	29.0	25.5	24.5	25.0
10	27.5	23.0	25.0	28.0	26.5	27.0	29.0	28.5	29.0	26.0	25.0	25.5
11	24.5	23.0	23.5	28.0	26.5	27.0	29.0	28.5	28.5	25.5	25.0	25.0
12	24.5	23.0	23.5	28.0	26.5	27.0	28.5	28.0	28.5	25.5	25.0	25.0
13	25.0	23.0	24.5	28.0	26.5	27.0	28.5	28.5	28.5	25.5	25.0	25.5
14	25.5	24.0	25.0	28.0	26.5	27.0	29.0	28.5	28.5	25.5	24.0	25.0
15	25.5	24.5	25.0	28.0	26.5	27.0	29.0	28.5	28.5	24.0	22.0	23.0
16	26.0	24.5	25.0	28.0	26.5	27.0	29.0	28.5	28.5	22.0	20.5	21.0
17	26.5	25.0	26.0	28.0	26.5	27.5	28.5	28.0	28.5	22.0	21.0	21.5
18	27.0	25.5	26.0	28.0	27.0	27.5	29.0	28.0	28.5	23.0	22.0	23.0
19	26.0	25.5	26.0	28.0	26.5	27.5	28.5	28.0	28.0	24.5	23.0	24.0
20	27.0	25.0	25.5	28.0	25.5	27.0	29.0	27.5	28.0	24.5	24.0	24.5
21	26.5	25.5	26.0	---	---	---	27.5	27.0	27.5	25.0	24.0	24.5
22	26.5	25.5	26.0	---	---	---	29.0	26.5	27.5	25.0	24.5	25.0
23	27.5	26.0	26.5	29.0	26.5	27.5	29.0	28.0	28.5	25.5	24.5	25.0
24	28.0	26.5	27.0	29.0	27.5	28.5	29.5	28.5	29.0	26.0	25.0	25.5
25	27.5	26.5	27.0	29.0	28.0	28.5	29.0	28.5	29.0	26.0	25.0	25.5
26	26.5	24.0	25.0	29.0	27.5	28.5	29.0	28.0	28.5	26.0	24.5	25.0
27	25.5	24.5	25.0	29.5	27.0	28.0	28.5	28.0	28.0	24.5	22.5	23.5
28	26.5	25.5	26.0	30.0	26.0	27.5	28.0	27.5	27.5	22.5	21.0	21.5
29	27.0	26.0	26.5	29.0	26.5	28.0	28.0	27.5	27.5	21.0	20.0	20.5
30	27.5	26.0	26.5	31.0	25.0	28.5	28.5	27.0	27.5	21.5	20.5	21.0
31	---	---	---	30.5	25.0	29.0	27.5	26.5	27.0	---	---	---
MONTH	28.0	23.0	25.5	31.0	25.0	27.5	30.5	26.5	28.5	27.0	20.0	24.5
YEAR	31.0	9.5	20.5									

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.7	6.9	7.3	6.4	5.0	5.8	9.3	9.0	9.2	9.0	7.8	8.4
2	8.0	7.2	7.6	6.4	5.9	6.2	9.4	8.9	9.1	9.1	8.5	8.8
3	8.3	7.3	7.8	6.1	5.8	5.9	9.2	8.8	9.0	9.1	8.5	8.7
4	8.8	7.7	8.2	6.9	5.8	6.2	8.8	8.4	8.6	9.2	8.3	8.8
5	9.0	8.1	8.5	7.9	6.9	7.3	8.9	8.4	8.6	10.2	8.8	9.4
6	8.9	7.9	8.3	7.8	7.4	7.6	9.5	8.8	9.1	9.9	9.2	9.5
7	8.6	7.7	8.2	8.0	7.5	7.8	9.6	8.9	9.2	9.6	9.0	9.3
8	8.7	7.4	8.1	8.0	7.3	7.6	9.1	8.5	8.8	9.3	8.9	9.1
9	9.2	8.0	8.6	7.6	6.8	7.2	9.2	8.2	8.7	9.3	8.5	8.9
10	8.8	7.6	8.1	7.6	6.8	7.3	9.4	8.2	8.7	9.8	8.7	9.3
11	8.4	7.1	7.7	7.1	6.8	6.9	9.9	8.2	8.9	10.0	9.4	9.7
12	8.5	7.2	7.8	7.8	6.4	7.1	9.5	8.2	8.7	10.4	9.4	9.8
13	8.7	7.2	7.9	8.0	7.7	7.8	9.3	8.1	8.6	10.2	9.3	9.7
14	8.2	7.2	7.7	8.2	7.4	7.8	9.7	8.9	9.2	10.2	9.5	9.8
15	7.8	6.9	7.3	8.3	7.6	8.0	10.2	7.9	9.0	10.4	8.8	9.6
16	7.6	6.6	7.0	8.1	7.5	7.7	10.3	9.8	10.1	10.4	9.3	9.8
17	7.6	6.5	7.0	7.7	7.0	7.4	9.9	9.6	9.8	9.9	9.2	9.5
18	7.3	6.8	7.1	7.5	6.8	7.1	9.8	9.4	9.6	9.5	8.9	9.1
19	7.9	7.0	7.4	8.5	6.6	7.2	9.4	8.9	9.1	10.0	8.7	9.2
20	7.8	6.9	7.2	8.9	7.6	8.1	9.0	8.7	8.9	9.7	9.2	9.4
21	7.5	6.7	7.0	9.0	8.5	8.7	9.3	9.0	9.1	9.3	9.1	9.3
22	7.4	6.7	7.0	8.9	8.5	8.8	9.0	8.7	8.8	9.6	8.0	9.1
23	7.5	6.6	7.0	9.1	8.7	8.9	8.8	8.5	8.6	9.1	8.7	8.8
24	7.7	6.8	7.1	8.7	8.2	8.4	9.0	8.4	8.7	9.5	8.6	9.1
25	7.7	6.8	7.1	8.8	8.2	8.5	8.9	8.5	8.7	9.9	9.2	9.5
26	7.6	6.7	7.0	9.2	8.8	9.0	9.3	8.4	8.8	10.4	9.5	9.9
27	7.5	6.6	7.0	9.5	9.2	9.4	9.1	8.5	8.8	10.6	9.5	10.0
28	7.4	6.5	6.9	9.6	9.3	9.5	8.6	8.2	8.4	9.9	9.3	9.5
29	6.9	6.2	6.5	9.6	9.3	9.5	8.8	7.9	8.4	9.4	8.9	9.1
30	6.6	5.5	6.1	9.3	9.1	9.2	8.7	7.7	8.2	10.5	9.1	9.7
31	5.7	5.2	5.5	---	---	---	8.5	7.5	7.9	10.7	9.3	9.9
MONTH	9.2	5.2	7.4	9.6	5.0	7.8	10.3	7.5	8.9	10.7	7.8	9.3

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.4	8.9	9.6	---	---	---	9.0	7.6	8.1	7.3	7.1	7.2
2	9.6	8.8	9.2	9.9	9.0	9.6	9.2	7.6	8.3	7.1	6.6	6.7
3	9.7	8.9	9.2	9.7	8.7	9.2	8.8	7.8	8.1	7.0	6.4	6.7
4	9.8	9.4	9.4	10.2	8.8	9.4	9.3	8.2	8.8	7.0	6.3	6.5
5	9.8	9.4	9.6	10.3	8.9	9.5	9.0	7.7	8.4	7.7	6.5	7.1
6	9.8	9.1	9.7	10.8	9.2	9.9	8.7	7.7	8.0	8.1	7.5	7.8
7	10.0	8.9	9.4	11.2	9.1	9.9	9.2	7.7	8.0	8.0	7.7	7.9
8	9.7	8.6	9.1	11.1	9.0	9.9	9.3	8.4	8.9	8.3	7.7	8.0
9	10.1	8.3	9.1	10.9	8.7	9.8	8.8	7.9	8.4	7.7	7.2	7.4
10	9.9	8.2	8.8	10.6	8.3	9.5	8.7	7.9	8.4	7.6	7.0	7.3
11	9.3	8.5	9.1	10.9	8.4	9.6	8.5	7.7	8.1	7.9	7.0	7.3
12	9.3	9.1	9.2	11.2	8.7	9.7	8.0	7.2	7.7	8.0	6.7	7.3
13	---	---	---	11.1	10.0	10.6	7.8	7.1	7.6	7.5	7.0	7.3
14	---	---	---	10.6	9.9	10.1	7.6	7.2	7.4	7.6	7.1	7.3
15	---	---	---	9.9	9.1	9.5	8.4	7.5	7.9	7.8	7.0	7.4
16	9.6	8.4	9.1	10.0	8.8	9.3	8.6	8.0	8.2	7.4	7.0	7.2
17	9.3	8.9	9.2	9.5	8.3	9.0	8.4	8.0	8.1	7.4	7.0	7.2
18	9.5	8.7	9.1	9.5	8.4	9.0	8.2	7.8	7.9	7.1	6.9	7.0
19	9.3	8.8	9.0	9.0	8.2	8.5	8.0	7.4	7.5	7.8	6.8	7.1
20	9.3	8.3	8.7	9.3	8.0	8.7	7.6	6.9	7.1	7.5	6.8	7.2
21	9.3	8.0	8.6	9.0	8.1	8.5	7.9	7.2	7.5	7.7	7.0	7.3
22	9.8	7.8	8.7	8.8	8.0	8.4	8.0	7.3	7.7	7.3	6.8	7.0
23	10.2	7.9	8.9	9.5	8.2	8.8	8.0	7.4	7.6	8.2	6.7	7.2
24	9.2	7.8	8.4	9.1	8.0	8.6	7.8	7.1	7.3	8.5	6.7	7.6
25	9.4	7.5	8.2	9.2	8.0	8.5	7.7	7.0	7.3	7.9	7.2	7.5
26	8.5	7.7	8.1	9.4	7.4	8.5	7.6	7.1	7.3	7.4	6.6	7.1
27	8.6	7.7	8.1	8.7	7.5	8.2	7.6	6.9	7.1	7.4	6.6	7.0
28	---	---	---	9.3	7.0	7.9	7.4	6.9	7.1	7.4	6.5	6.9
29	---	---	---	8.3	7.3	7.9	7.3	6.2	6.8	7.8	6.6	7.2
30	---	---	---	8.6	7.3	8.0	7.4	6.8	7.1	7.8	6.7	7.3
31	---	---	---	8.8	7.8	8.2	---	---	---	7.8	6.5	7.1
MONTH	10.4	7.5	9.0	11.2	7.0	9.1	9.3	6.2	7.8	8.5	6.3	7.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	6.6	6.2	6.5	6.8	6.6	6.7	6.5	5.7	6.1	6.6	5.8	6.1
2	6.7	6.0	6.3	7.1	6.7	6.8	6.5	5.7	6.1	6.8	5.9	6.3
3	6.4	6.0	6.3	6.8	6.5	6.6	6.4	5.5	6.0	6.3	5.9	6.0
4	6.4	6.2	6.3	6.6	6.4	6.5	6.4	5.7	6.1	6.8	5.7	6.1
5	6.6	6.3	6.4	6.6	6.3	6.4	6.4	5.4	6.0	6.9	5.9	6.3
6	6.5	6.2	6.4	6.6	6.2	6.4	6.3	5.2	5.9	6.7	5.7	6.1
7	6.5	6.2	6.3	6.6	6.2	6.4	6.5	5.5	6.0	6.6	5.7	6.1
8	6.4	6.2	6.3	6.6	6.2	6.4	6.7	5.7	6.3	6.6	5.7	6.1
9	6.4	6.2	6.3	6.5	6.1	6.2	6.9	6.0	6.4	6.5	5.6	5.9
10	7.4	6.1	6.7	6.4	6.0	6.1	6.7	5.8	6.3	6.3	5.4	5.8
11	6.8	5.8	6.1	6.5	6.0	6.2	6.5	5.7	6.1	6.2	5.4	5.8
12	7.3	5.8	6.1	6.4	5.9	6.2	6.5	5.4	6.1	6.1	5.4	5.7
13	7.1	6.4	6.8	6.5	5.9	6.2	6.5	5.7	6.0	6.1	5.4	5.7
14	---	---	---	6.5	5.9	6.2	6.3	5.5	5.9	6.2	5.5	5.8
15	---	---	---	6.5	5.8	6.1	6.3	5.4	5.8	6.6	5.6	6.1
16	6.5	6.3	6.3	6.4	5.8	6.1	6.2	5.5	5.8	7.0	5.9	6.5
17	6.7	6.4	6.5	6.4	5.8	6.1	6.2	4.6	5.8	6.9	6.2	6.6
18	6.5	5.9	6.2	6.4	5.8	6.1	6.3	4.6	5.7	6.4	5.6	6.1
19	6.7	6.1	6.5	6.5	6.0	6.2	6.7	4.7	5.9	5.9	5.3	5.6
20	7.1	6.2	6.5	6.5	5.9	6.2	6.7	4.8	6.0	5.7	5.1	5.5
21	7.4	6.6	7.1	6.5	5.9	6.3	6.6	4.9	5.9	5.7	5.1	5.4
22	7.7	7.1	7.4	6.5	5.9	6.3	6.5	4.8	5.8	5.7	5.2	5.5
23	7.3	7.0	7.1	6.5	5.8	6.2	6.3	4.7	5.9	5.7	5.1	5.4
24	7.3	6.6	7.0	6.5	5.7	6.1	6.4	4.6	5.7	6.1	5.4	5.8
25	8.1	6.7	7.2	6.4	5.7	6.1	6.6	4.7	5.8	6.2	5.5	5.8
26	8.2	6.9	7.5	6.4	5.6	6.1	6.2	4.8	5.9	6.0	5.6	5.8
27	7.8	7.4	7.6	6.3	5.6	5.9	6.3	5.1	5.8	6.6	5.9	6.1
28	7.4	7.1	7.3	6.1	5.4	5.8	6.5	5.4	5.8	6.9	6.2	6.5
29	7.1	6.8	7.0	6.3	5.6	6.0	6.4	5.8	6.0	7.1	6.4	6.7
30	6.8	6.6	6.8	6.5	5.7	6.1	6.6	5.7	6.0	6.9	6.4	6.7
31	---	---	---	6.4	5.7	6.1	6.6	5.9	6.1	---	---	---
MONTH	8.2	5.8	6.7	7.1	5.4	6.2	6.9	4.6	6.0	7.1	5.1	6.0
YEAR	11.2	4.6	7.6									

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 good. There are several small diversions upstream from station. Gage-height telemeter (DCP) at station.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 14	0500	433	6.44	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	76	72	72	73	123	106	101	70	46	22	12
2	57	61	70	72	72	128	101	100	65	45	21	11
3	56	62	68	74	72	119	99	97	61	43	21	11
4	55	56	69	75	85	110	100	91	58	42	21	11
5	55	53	67	72	99	103	99	98	56	40	21	11
6	55	53	67	73	105	101	97	119	55	39	21	11
7	55	53	67	74	103	99	101	124	54	38	20	12
8	53	54	66	75	99	97	100	115	53	37	17	12
9	53	62	68	75	96	96	95	111	53	37	17	14
10	54	71	67	72	130	95	91	100	54	36	18	17
11	52	68	65	71	134	93	92	92	54	36	17	14
12	51	65	65	73	125	98	87	86	65	35	17	20
13	51	60	65	71	119	101	88	80	66	34	16	21
14	51	59	71	70	119	99	94	77	61	33	16	139
15	52	57	110	70	125	96	132	74	59	33	15	40
16	52	56	125	70	122	98	122	73	56	32	15	42
17	52	55	114	69	115	95	112	71	58	31	15	36
18	51	56	101	70	110	92	104	72	58	30	14	32
19	51	222	97	139	108	99	101	71	58	30	12	29
20	51	223	90	93	109	108	95	71	58	28	12	27
21	52	165	86	89	109	105	89	68	59	29	12	25
22	52	129	84	84	106	103	85	68	58	28	12	24
23	52	111	82	82	104	103	84	80	57	27	12	23
24	51	102	79	78	103	100	83	89	54	26	12	22
25	51	92	78	76	106	98	81	83	53	25	11	21
26	49	85	76	75	101	98	78	73	54	25	11	22
27	48	81	74	74	98	93	75	69	57	25	11	21
28	48	78	74	73	105	94	75	67	54	23	11	20
29	49	76	76	73	---	94	84	65	49	23	10	20
30	50	73	76	72	---	113	96	67	47	23	10	20
31	53	---	75	73	---	112	---	70	---	22	11	---
TOTAL	1619	2514	2444	2379	2952	3163	2846	2622	1714	1001	471	740
MEAN	52.2	83.8	78.8	76.7	105	102	94.9	84.6	57.1	32.3	15.2	24.7
MAX	57	223	125	139	134	128	132	124	70	46	22	139
MIN	48	53	65	69	72	92	75	65	47	22	10	11
AC-FT	3210	4990	4850	4720	5860	6270	5650	5200	3400	1990	934	1470

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	
MEAN	112	94.3	217	167	171	188	129	211	397	148	57.6	79.2
MAX	630	373	1278	638	922	985	547	696	2785	440	156	249
(WY)	1987	1987	1992	1992	1992	1992	1992	1987	1988	1987	1986	1986
MIN	25.7	31.9	28.9	28.4	41.9	43.2	31.1	18.5	16.3	6.25	3.77	6.80
(WY)	1985	1985	1990	1990	1990	1984	1984	1984	1984	1984	1984	1984

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1983 - 1993

ANNUAL TOTAL	148021	24465	164
ANNUAL MEAN	404	67.0	560
HIGHEST ANNUAL MEAN			35.5
LOWEST ANNUAL MEAN			15600
HIGHEST DAILY MEAN	3600	Mar 4	223
LOWEST DAILY MEAN	48	Oct 27	10
ANNUAL SEVEN-DAY MINIMUM	49	Oct 24	11
INSTANTANEOUS PEAK FLOW			433
INSTANTANEOUS PEAK STAGE			6.44
INSTANTANEOUS LOW FLOW			9.4
ANNUAL RUNOFF (AC-FT)	293600	48530	118900
10 PERCENT EXCEEDS	899	107	317
50 PERCENT EXCEEDS	274	69	65
90 PERCENT EXCEEDS	56	20	21

GUADALUPE RIVER BASIN

325

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 September 1993 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 26...	1130	82	460	8.1	11.0	5	0.90	11.1	103	0.9	K40
AUG 30...	1200	17	524	8.1	27.0	5	0.30	7.4	97	6.9	K22
DATE	TIME	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
JAN 26...	44	270	83	81	17	7.0	0.2	1.1	190	82	13
AUG 30...	86	270	120	76	20	8.1	0.2	1.5	150	110	13
DATE	TIME	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)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
JAN 26...	0.20	9.3	327	5	3	2	0.350	0.350	0.020	0.370	0.370
AUG 30...	0.30	13	334	<1	<1	--	--	--	<0.010	--	<0.050
DATE	TIME	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
JAN 26...	0.010	<0.20	<0.010	<0.010	0.9	<1	30	<0.5	<1.0	<5	<3
AUG 30...	0.040	<0.20	<0.010	<0.010	1.4	<1	36	<0.5	1.0	<5	<3
DATE	TIME	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)
JAN 26...	<10	<3	<10	4	<1	0.2	<10	<10	<1	<1.0	770
AUG 30...	<10	6	<10	6	3	<0.1	<10	<10	<1	<1.0	960
DATE	TIME	VANA-DIUM, DIS-SOLVED (UG/L AS V)	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 26...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
AUG 30...	<6	7	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
DATE	TIME	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 26...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
AUG 30...	<0.01	<0.010	<0.010	<0.01	<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 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 26...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
AUG 30...	<0.01	<0.01	<0.1	<0.01	<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.

DRAINAGE AREA.--634 mi².

PERIOD OF RECORD.--May 1913 to current year. Prior to October 1965, monthend contents only.
Water-quality records.--Chemical analyses: October 1969 to September 1984.

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, 250,000 acre-ft Oct. 1 (gage height, 1,071.3 ft); minimum, 212,200 acre-ft Sept. 28-30 (gage height, 1,064.0 ft).

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

1,064.0	212,200	1,068.0	232,300	1,071.0	248,200
1,066.0	222,300	1,070.0	242,400	1,072.0	254,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	250000	243000	---	242400	241400	243600	244700	243600	247600	244200	235400	221200
2	249400	243600	---	242400	241400	244200	244700	243000	247100	244200	234900	220700
3	248800	243000	---	242400	241400	244200	245300	243600	247100	244200	234400	220200
4	248800	243600	---	242400	241400	244700	245300	243600	246500	243600	233900	220200
5	248200	242400	---	242400	241900	244700	245300	244200	246500	243000	233400	219700
6	248200	242400	---	242400	242400	244700	244200	247100	245900	243000	233400	219700
7	247600	242400	242400	241900	241900	244700	244200	247100	245900	243000	232300	219200
8	247600	242400	242400	242400	241900	244700	244200	247600	245900	242400	232300	218200
9	247100	241900	242400	242400	241400	244200	244200	248200	245900	242400	231800	217700
10	247100	241900	242400	242400	242400	244200	244200	248200	245900	242400	231300	217700
11	247100	241900	242400	241900	242400	244700	244200	248200	245900	242400	230800	217200
12	246500	241900	242400	241900	243600	244200	244200	248200	245900	241400	230300	216700
13	246500	242400	242400	241900	243600	244200	244200	248200	245300	241400	229800	216200
14	245900	241400	242400	241900	243000	244200	244200	247600	245300	241400	229800	216700
15	245900	241400	242400	241400	243000	244200	244200	247600	245300	240900	229300	216200
16	245900	241400	243000	241400	243000	244200	244200	247100	245300	240400	228300	216200
17	245300	240900	243600	241400	243600	244200	244200	247100	245300	240400	228300	216200
18	245300	240900	242400	241400	243600	244200	244200	247100	245300	240400	227300	215700
19	245300	241900	243000	241400	243000	244700	243600	247600	244700	239900	227300	214700
20	244700	243600	243000	241900	243000	244200	243600	247100	244700	239900	226800	214700
21	244700	244700	243000	242400	243600	244700	244200	247100	244700	239400	226300	214700
22	244700	244200	242400	242400	243600	244200	243600	247100	244700	239400	225800	214200
23	244200	244200	242400	242400	243600	244200	243600	247100	244700	238900	225300	213700
24	244200	244200	242400	242400	243600	244200	243600	247600	244200	238400	224800	213700
25	243600	244200	242400	241900	243600	244700	243600	247600	244700	238400	224300	213200
26	243600	243600	242400	242400	243600	244700	243600	247600	244700	237900	223800	213200
27	243600	244200	242400	241900	243600	244700	243600	247100	244700	237400	223300	212700
28	243600	243600	242400	241400	243600	244700	243600	247100	244700	236900	222800	212200
29	243000	243600	242400	241400	---	244700	243600	248200	244700	236400	222300	212200
30	243000	244200	242400	241900	---	244700	243600	248200	244200	236400	221800	212200
31	243000	---	242400	241400	---	245300	---	248200	---	235900	221200	---
MAX	250000	244700	---	242400	243600	245300	245300	248200	247600	244200	235400	221200
MIN	243000	240900	---	241400	241400	243600	243600	243000	244200	235900	221200	212200
(†)	1070.1	1070.3	1070.0	1069.8	1070.2	1070.5	1070.2	1071.0	1070.3	1068.7	1065.8	1064.0
(Φ)	-7000	+1200	-1800	-1000	+2200	+1700	-1700	+4600	-4000	-8300	-14700	-9000

CAL YR 1992 MAX 269600 MIN 240900 (Φ) +1500
WTR YR 1993 MAX 250000 MIN 212200 (Φ) -37800

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

GUADALUPE RIVER BASIN

08180000 MEDINA CANAL NEAR RIOMEDINA, TX

LOCATION.--Lat 29°30'19", long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal, 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.

PERIOD OF RECORD.--March 1922 to May 1934, July 1957 to September 1993 (discontinued).

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

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

REMARKS.--No estimated daily discharges. Records good. 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. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	20	7.0	9.7	.00	58	23	11	41	30	71	134
2	96	30	26	9.6	.00	58	23	4.6	48	30	125	133
3	95	35	27	9.6	.00	54	21	30	48	30	133	126
4	93	35	21	23	.00	45	22	41	47	30	129	116
5	92	35	11	30	.00	39	28	34	67	46	133	116
6	89	38	10	28	.00	35	31	.00	77	59	136	117
7	89	43	9.7	23	.00	32	31	.00	99	59	136	116
8	96	43	9.6	23	.00	35	32	.00	125	55	135	118
9	99	44	9.5	23	.00	43	32	.00	158	46	136	116
10	98	36	3.6	22	.00	43	32	.00	102	46	142	109
11	96	26	.00	24	.00	43	32	.00	74	47	143	107
12	102	27	.00	24	.00	25	43	.00	106	60	142	106
13	115	31	.00	15	.00	9.3	52	.00	46	78	137	98
14	114	34	16	21	.00	9.6	51	16	22	76	135	97
15	111	34	26	22	.00	4.0	61	29	.00	75	134	104
16	100	34	26	11	.00	.00	60	29	.00	74	131	102
17	83	35	26	.00	.00	.00	61	47	.00	71	131	92
18	82	35	25	.00	.00	.00	61	57	.00	71	128	94
19	81	13	25	.00	.00	.00	64	63	.00	78	125	96
20	79	.00	25	.00	15	.00	74	93	.00	90	123	97
21	80	.00	17	.00	33	.00	22	97	.00	89	122	95
22	80	.00	11	.00	36	.00	.00	96	.00	106	120	94
23	80	.00	4.0	.00	39	24	.00	31	5.6	109	121	94
24	79	.00	.00	.00	42	37	2.8	.00	.01	108	128	94
25	78	.00	.00	.00	43	26	.00	.00	.00	108	134	91
26	76	.00	.00	.00	50	36	.00	.00	.00	123	132	88
27	76	.00	.00	.00	58	50	.00	.00	.00	131	130	93
28	76	.00	.00	.00	57	50	3.3	.00	19	132	130	99
29	74	.00	4.3	.00	---	38	.40	.00	30	135	132	97
30	29	.00	12	.00	---	29	7.2	.00	30	135	134	96
31	23	---	10	.00	---	24	---	16	---	61	133	---
TOTAL	2658	628.00	361.70	317.90	373.00	846.90	869.70	694.60	1144.61	2388	4021	3135
MEAN	85.7	20.9	11.7	10.3	13.3	27.3	29.0	22.4	38.2	77.0	130	104
MAX	115	44	27	30	58	58	74	97	158	135	143	134
MIN	23	.00	.00	.00	.00	.00	.00	.00	.00	30	71	88
AC-FT	5270	1250	717	631	740	1680	1730	1380	2270	4740	7980	6220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1993, BY WATER YEAR (WY)

	MEAN	38.5	23.6	19.4	18.0	20.0	35.5	44.7	52.7	80.8	80.2	75.9	48.2
MAX	105	65.3	61.5	65.6	83.0	95.4	131	157	163	179	149	132	
(WY)	1990	1989	1989	1971	1971	1971	1972	1971	1990	1978	1989	1989	
MIN	1.77	.000	.000	.000	2.04	5.49	2.82	3.33	14.2	19.6	16.8	.000	
(WY)	1974	1990	1985	1985	1968	1970	1992	1975	1986	1973	1971	1925	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1923 - 1993

ANNUAL TOTAL	13778.22	17438.41	
ANNUAL MEAN	37.6	47.8	
HIGHEST ANNUAL MEAN			44.9
LOWEST ANNUAL MEAN			95.2
HIGHEST DAILY MEAN	140	Jun 29	14.8
LOWEST DAILY MEAN	.00	*	216
ANNUAL SEVEN-DAY MINIMUM	.00		May *
ANNUAL RUNOFF (AC-FT)	27330	34590	6 1971
10 PERCENT EXCEEDS	102	123	
50 PERCENT EXCEEDS	21	33	
90 PERCENT EXCEEDS	.00	.00	.00

* No flow at times.

GUADALUPE RIVER BASIN

329

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.--No estimated daily discharges. Records good. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	66	161	124	114	79	96	106	156	123	98	77
2	77	66	152	120	114	77	96	111	122	119	65	72
3	77	65	124	121	125	76	93	109	104	115	60	72
4	77	64	121	122	134	76	96	77	99	114	60	73
5	76	64	122	112	149	80	96	531	96	112	60	73
6	76	64	131	97	139	85	86	2720	87	99	58	66
7	76	64	135	98	130	89	96	402	73	78	58	59
8	74	65	135	101	124	93	108	336	72	76	57	57
9	73	70	139	101	123	94	86	305	72	74	53	56
10	73	72	141	103	146	86	80	282	65	72	53	66
11	73	72	138	102	173	83	80	263	67	71	53	61
12	73	74	142	101	157	106	80	251	70	69	53	60
13	73	70	144	100	151	114	77	243	70	69	55	60
14	73	70	152	105	148	120	62	236	72	69	54	58
15	73	70	168	106	146	122	66	216	72	69	54	55
16	73	73	143	103	140	133	57	190	72	67	54	53
17	72	79	127	110	132	138	53	181	80	66	52	53
18	72	79	122	125	130	138	53	154	100	65	53	53
19	72	502	120	131	128	135	51	134	119	65	52	53
20	71	528	119	133	127	135	51	122	169	66	52	53
21	69	238	114	127	118	135	118	104	206	66	51	53
22	69	213	118	126	93	135	72	101	217	65	50	52
23	69	199	129	125	85	135	51	143	194	65	50	53
24	69	191	139	128	81	111	94	114	170	65	50	53
25	68	182	145	112	77	87	101	120	235	63	50	50
26	68	173	144	115	79	91	102	181	240	61	50	50
27	65	170	149	116	74	90	101	183	218	61	50	50
28	65	169	144	116	72	69	102	182	198	61	51	50
29	64	167	144	118	---	66	110	180	162	61	56	49
30	67	166	140	119	---	112	117	181	132	61	68	47
31	67	---	127	115	---	104	---	185	---	86	72	---
TOTAL	2221	4145	4229	3532	3409	3194	2531	8643	3809	2373	1752	1737
MEAN	71.6	138	136	114	122	103	84.4	279	127	76.5	56.5	57.9
MAX	77	528	168	133	173	138	118	2720	240	123	98	77
MIN	64	64	114	97	72	66	51	77	65	61	50	47
AC-FT	4410	8220	8390	7010	6760	6340	5020	17140	7560	4710	3480	3450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)

	MEAN	45.7	56.5	104	221	415	374	217	414	971	194	79.5	55.4
MAX	84.8	138	319	647	2256	1943	1052	1335	4718	702	213	125	
(WY)	1988	1993	1992	1992	1992	1992	1992	1992	1987	1987	1987	1987	
MIN	23.5	21.4	21.6	27.4	24.9	24.3	27.6	25.5	17.7	22.7	21.9	18.8	
(WY)	1992	1990	1990	1991	1991	1990	1989	1990	1990	1989	1989	1989	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1987 - 1993

ANNUAL TOTAL	305026		41575										
ANNUAL MEAN	833		114							183			
HIGHEST ANNUAL MEAN										836		1992	
LOWEST ANNUAL MEAN										29.1		1989	
HIGHEST DAILY MEAN	7240	Mar 5		2720	May 6					18900	May 30	1987	
LOWEST DAILY MEAN	64	Oct 29		47	Sep 30					12	Dec 12	1989	
ANNUAL SEVEN-DAY MINIMUM	65	Nov 2		50	Sep 24					13	Dec 9	1989	
INSTANTANEOUS PEAK FLOW				7530	May 6					24600	May 30	1987	
INSTANTANEOUS PEAK STAGE				18.45	May 6					24.05	May 30	1987	
ANNUAL RUNOFF (AC-FT)	605000			82460						132700			
10 PERCENT EXCEEDS	2010			170						558			
50 PERCENT EXCEEDS	425			93						43			
90 PERCENT EXCEEDS	73			54						23			

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 or probe fouling, and these days were deleted from the record. 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, 135 microsiemens May 6, 1993.
 pH: Maximum, 8.7 units June 17, 1989; minimum, 6.8 units Aug. 4, 5, 1988.
 WATER TEMPERATURE: Maximum, 30.5°C June 24, 26, 27, 1990; minimum, 2.5°C Dec. 24, 1989.
 DISSOLVED OXYGEN: Maximum, 13.1 mg/L Jan. 10, 11, 1988; minimum, 3.7 mg/L May 23, 1992.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 606 microsiemens on Oct. 8; minimum, 135 microsiemens May 6.
 pH: Maximum, 8.2 units on several days; minimum, 7.8 units on many days.
 WATER TEMPERATURE: Maximum, 29.5°C Aug. 16; minimum, 12.0°C Nov. 29, Dec. 18, Jan. 31.
 DISSOLVED OXYGEN: Maximum, 10.4 mg/L Jan. 30, 31; minimum, 6.0 mg/L May 17.

DATE	TIME	DIS-		PH		OXYGEN		OXYGEN		HARD-	
		CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	WATER WHOLE FIELD (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	DIS-SOLVED (PER-CENT SATURATION)	DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS TOTAL (MG/L AS CaCO3)	NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	
OCT 20...	1440	36	575	7.9	21.5	8.0	92	0.8	260	42	
DEC 21...	0930	100	554	7.8	14.0	9.1	90	1.0	250	33	
FEB 08...	1420	17	568	8.2	14.0	9.8	97	0.2	230	30	
APR 12...	1141	220	524	7.8	20.0	7.5	85	1.3	240	37	
JUN 08...	1045	66	553	8.0	26.5	7.0	90	1.3	240	29	
AUG 04...	1040	47	550	8.1	27.0	6.8	87	0.8	260	55	
DATE		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)	LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
OCT 20...	78	17	24	0.6	1.7	220	41	22	0.20	13	
DEC 21...	75	16	17	0.5	1.8	220	39	18	0.20	10	
FEB 08...	68	15	21	0.6	1.8	200	48	23	0.20	11	
APR 12...	69	16	18	0.5	1.8	200	43	19	0.20	11	
JUN 08...	70	15	17	0.5	1.9	210	42	19	0.20	12	
AUG 04...	77	16	20	0.5	2.3	200	43	19	0.20	14	
DATE		SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	GEN. NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	GEN. NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	GEN. NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	GEN. AMMONIA DIS-SOLVED (MG/L AS N)	
OCT 20...	331	6.90	--	<0.010	--	6.90	--	0.020	--	--	
DEC 21...	309	4.47	--	0.030	--	4.50	--	0.030	--	--	
FEB 08...	325	3.54	3.54	--	0.060	3.60	3.60	--	0.020	--	
APR 12...	315	3.69	3.69	--	0.010	3.70	3.70	--	0.050	--	
JUN 08...	321	4.30	--	--	<0.010	4.30	4.30	--	0.030	--	
AUG 04...	331	4.10	--	--	<0.010	4.10	4.10	--	0.020	--	

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

DATE	DIS-		PH		OXYGEN,		OXYGEN		HARD-	
	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	GEN, ORGANIC DIS- SOLVED (MG/L AS N)	GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTH- SOLVED (MG/L AS P)	PHOS- PHORUS ORTH- TOTAL (MG/L AS P)	PHATE, ORTH- DIS- SOLVED (MG/L AS P04)	
OCT 20...	--	--	--	<0.20	0.020	--	--	<0.010	--	
DEC 21...	0.17	--	--	0.20	0.060	--	--	0.020	--	
FEB 08...	--	--	<0.20	--	--	<0.010	<0.010	--	--	
APR 12...	--	0.55	0.60	--	--	<0.010	<0.010	--	--	
JUN 08...	--	0.57	0.60	--	--	0.040	<0.010	--	--	
AUG 04...	--	--	<0.20	--	--	<0.010	0.020	--	0.06	
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. 1992	2221	582	324	1940	22	133	56	337	260	
NOV. 1992	4145	497	273	3050	17	193	48	541	220	
DEC. 1992	4229	532	293	3350	19	216	52	589	240	
JAN. 1993	3532	512	281	2680	18	169	50	475	230	
FEB. 1993	3409	531	293	2700	19	174	52	475	240	
MAR. 1993	3194	510	280	2410	18	152	50	428	230	
APR. 1993	2531	501	274	1870	17	117	49	334	230	
MAY 1993	8643	366	196	4590	11	249	36	844	170	
JUNE 1993	3809	510	280	2880	18	182	50	511	230	
JULY 1993	2373	532	293	1880	19	122	52	331	240	
AUG. 1993	1752	503	276	1300	17	81	49	232	230	
SEPT 1993	1737	496	271	1270	17	79	48	227	220	
TOTAL	41575	**	**	29900	**	1870	**	5320	**	
WTD.AVG.	114	487	267	**	17	**	47	**	220	

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	562	549	555	592	577	586	538	524	530	526	518	521
2	573	558	565	591	580	585	539	526	532	532	520	526
3	583	567	576	591	579	586	540	530	535	536	525	530
4	591	576	583	593	580	586	542	535	539	536	524	531
5	596	583	589	590	576	583	542	533	538	539	527	532
6	602	588	594	589	577	583	558	539	550	537	529	533
7	604	594	598	587	577	584	563	549	555	536	528	533
8	606	594	599	588	582	586	558	523	538	541	531	536
9	601	593	597	590	584	587	525	518	521	549	538	544
10	602	589	594	588	582	585	528	520	522	551	534	543
11	597	589	593	589	583	587	528	518	522	542	533	537
12	599	586	592	589	576	582	530	520	524	541	536	538
13	594	586	590	590	574	583	530	523	527	540	529	534
14	590	583	587	595	586	591	531	512	525	533	526	530
15	589	580	585	597	588	593	512	501	507	538	528	532
16	586	576	581	604	592	598	528	501	515	531	522	526
17	582	573	578	605	597	600	545	522	533	529	515	521
18	579	570	575	601	592	598	564	545	554	520	511	515
19	577	569	573	596	380	514	558	546	550	516	499	509
20	578	570	573	441	169	322	552	544	548	502	493	498
21	580	570	575	391	323	340	551	543	547	495	486	492
22	581	571	576	473	391	431	551	544	548	498	489	492
23	582	573	578	501	467	490	550	539	545	497	487	491
24	582	574	578	509	497	504	547	538	542	493	484	489
25	587	575	579	519	502	510	541	529	534	489	479	483
26	585	576	581	523	504	511	531	520	524	484	473	480
27	586	577	579	524	507	515	524	513	519	481	469	476
28	585	572	579	528	509	520	523	513	518	482	471	477
29	583	575	580	532	516	525	522	516	519	484	476	481
30	583	572	579	533	523	529	526	518	521	490	478	484
31	585	575	581	---	---	---	527	519	523	498	483	491
MONTH	606	549	582	605	169	543	564	501	532	551	469	513

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	505	495	500	566	550	557	524	483	496	440	431	436
2	516	497	508	565	554	559	539	524	534	440	422	431
3	515	503	510	573	553	562	538	516	528	447	404	430
4	519	495	508	578	562	572	518	496	508	461	443	454
5	527	503	514	577	564	572	533	496	511	465	225	420
6	539	514	528	564	553	560	526	515	519	283	135	205
7	571	539	552	556	539	550	525	511	518	382	283	335
8	579	564	574	546	531	539	514	497	506	426	382	409
9	577	555	566	538	521	530	516	504	512	428	395	411
10	560	535	550	530	520	525	526	515	520	395	383	390
11	544	530	537	528	520	524	549	526	538	398	388	392
12	544	529	538	525	509	515	527	515	521	409	392	401
13	540	525	531	524	505	515	517	505	511	425	406	418
14	532	525	528	535	497	515	510	500	507	432	424	428
15	533	523	526	540	524	532	505	496	501	446	430	436
16	532	519	524	530	502	515	508	496	502	459	445	451
17	530	515	522	510	497	503	511	500	505	462	453	457
18	526	516	521	503	496	499	517	507	511	480	462	470
19	528	515	521	498	492	496	523	510	517	486	474	481
20	525	517	522	497	488	492	518	508	512	495	486	490
21	525	517	522	496	487	492	522	505	512	511	492	502
22	531	518	524	499	486	494	550	521	532	519	505	512
23	536	521	528	498	442	471	539	520	529	519	444	495
24	542	527	534	456	444	449	522	500	509	529	472	507
25	554	535	545	464	450	458	504	485	493	539	529	533
26	559	547	554	470	461	464	495	469	483	543	535	539
27	564	549	558	477	463	473	471	446	458	541	520	531
28	567	554	561	497	477	488	450	441	444	522	476	493
29	---	---	---	503	495	500	447	433	440	477	464	469
30	---	---	---	506	487	496	445	430	436	475	465	469
31	---	---	---	492	459	482	---	---	---	475	465	471
MONTH	579	495	532	578	442	513	550	430	504	543	135	447
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	481	469	475	506	494	500	---	---	486	498	485	491
2	487	477	484	517	500	508	---	---	500	498	465	483
3	500	484	493	526	511	519	---	---	525	495	481	490
4	509	497	502	530	516	523	---	---	550	495	483	489
5	517	509	514	530								

GUADALUPE RIVER BASIN

333

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.0	8.0	8.0	7.9	7.9	7.9	8.0	7.9	8.0	8.0	8.0	8.0
2	8.0	8.0	8.0	7.9	7.9	7.9	8.0	7.9	8.0	8.0	8.0	8.0
3	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.8	7.9	8.0	8.0	8.0
4	8.1	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9	8.0	8.0	8.0
5	8.1	8.0	8.0	8.0	8.0	8.0	7.9	7.9	7.9	8.0	8.0	8.0
6	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9	8.0	8.0	8.0
7	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
8	8.1	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
9	8.1	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0
10	8.0	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0
11	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.9	7.9	8.0	8.0	8.0
12	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9	7.9	8.0	8.0	8.0
13	8.0	7.9	7.9	8.0	7.9	7.9	---	---	---	8.0	7.9	8.0
14	7.9	7.9	7.9	8.0	8.0	8.0	8.1	8.0	8.0	8.0	7.9	8.0
15	7.9	7.9	7.9	8.0	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0
16	7.9	7.9	7.9	8.0	7.9	8.0	8.1	8.0	8.1	8.0	8.0	8.0
17	7.9	7.8	7.9	8.0	7.9	7.9	8.1	8.0	8.1	8.0	8.0	8.0
18	7.9	7.8	7.9	8.0	7.9	8.0	8.1	8.0	8.1	8.0	8.0	8.0
19	7.9	7.8	7.9	8.0	7.9	8.0	8.1	8.0	8.1	8.0	8.0	8.0
20	7.9	7.8	7.8	8.1	7.9	8.0	8.1	8.0	8.0	8.0	8.0	8.0
21	7.9	7.8	7.8	7.9	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0
22	7.9	7.8	7.9	8.1	7.9	8.0	8.1	8.0	8.0	8.0	8.0	8.0
23	7.9	7.9	7.9	8.1	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0
24	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0
25	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0
26	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1	8.0	8.0	8.0
27	7.9	7.9	7.9	8.1	8.0	8.0	8.1	8.0	8.1	8.0	8.0	8.0
28	7.9	7.9	7.9	8.1	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0
29	7.9	7.9	7.9	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
30	7.9	7.9	7.9	8.0	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0
31	7.9	7.9	7.9	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
MONTH	8.1	7.8	7.9	8.1	7.9	8.0	8.1	7.8	8.0	8.0	7.9	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	8.0	8.0	8.0	7.9	7.9	8.0	7.9	7.9	8.0	8.0	8.0
2	8.0	8.0	8.0	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.0
3	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.0
4	8.0	7.9	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
5	8.0	7.9	7.9	8.1	8.0	8.0	8.1	8.0	8.0	8.0	7.8	8.0
6	8.0	7.9	8.0	8.1	8.0	8.1	8.0	8.0	8.0	8.0	7.8	7.9
7	8.0	7.9	8.0	8.1	8.0	8.1	8.0	7.9	8.0	8.0	7.8	7.9
8	8.0	7.9	8.0	8.1	8.0	8.1	8.0	7.9	7.9	8.0	8.0	8.0
9	8.0	7.9	8.0	8.1	8.0	8.1	7.9	7.8	7.9	8.0	8.0	8.0
10	8.0	7.9	8.0	8.1	8.0	8.0	7.9	7.8	7.9	8.0	8.0	8.0
11	8.0	8.0	8.0	8.1	8.0	8.0	7.9	7.8	7.9	8.1	8.0	8.1
12	8.0	8.0	8.0	8.0	7.9	8.0	7.9	7.8	7.8	8.1	8.1	8.1
13	8.0	8.0	8.0	8.0	7.9	8.0	7.9	7.8	7.8	8.2	8.1	8.1
14	8.0	7.9	8.0	8.0	7.9	8.0	7.8	7.8	7.8	8.2	8.1	8.1
15	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.8	7.9	8.1	8.1	8.1
16	8.0	7.9	8.0	8.0	8.0	8.0	7.9	7.8	7.9	8.1	8.1	8.1
17	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.8	7.8	8.2	8.1	8.1
18	8.1	8.0	8.0	8.0	8.0	8.0	7.9	7.8	7.8	8.2	8.1	8.1
19	8.1	8.1	8.1	8.0	7.9	8.0	7.8	7.8	7.8	8.2	8.1	8.1
20	8.1	8.0	8.1	8.0	7.9	8.0	7.8	7.8	7.8	8.2	8.1	8.2
21	8.1	8.0	8.0	8.0	7.9	8.0	8.0	7.8	7.9	8.2	8.0	8.1
22	8.0	8.0	8.0	8.0	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.1
23	8.0	8.0	8.0	8.0	7.9	8.0	7.9	7.9	7.9	8.1	8.1	8.1
24	8.0	7.9	8.0	8.0	7.9	7.9	7.9	7.9	7.9	8.1	8.0	8.1
25	8.0	7.9	8.0	7.9	7.8	7.9	8.0	7.9	7.9	8.2	8.1	8.1
26	8.0	7.9	8.0	7.9	7.8	7.8	8.0	7.9	8.0	8.2	8.1	8.2
27	8.0	8.0	8.0	7.8	7.8	7.8	8.0	8.0	8.0	8.2	8.2	8.2
28	8.0	8.0	8.0	8.0	7.8	8.0	8.0	8.0	8.0	8.2	8.1	8.2
29	---	---	---	8.1	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1
30	---	---	---	8.1	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1
31	---	---	---	8.1	7.9	8.0	---	---	---	8.1	8.1	8.1
MONTH	8.1	7.9	8.0	8.1	7.8	8.0	8.1	7.8	7.9	8.2	7.8	8.1

GUADALUPE RIVER BASIN

08180640 MEDINA RIVER AT LA COSTE, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

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	7.9	---	---	---	8.1	8.0	8.0
2	8.1	8.0	8.1	8.0	7.9	8.0	---	---	---	8.0	7.9	7.9
3	8.0	8.0	8.0	8.0	7.9	8.0	---	---	---	8.0	7.9	8.0
4	8.1	7.9	8.0	8.0	7.9	8.0	---	---	---	8.0	7.8	7.9
5	8.0	7.9	8.0	8.0	7.9	7.9	8.1	8.1	8.1	8.0	7.8	7.9
6	8.1	8.0	8.0	8.0	7.9	7.9	8.1	8.1	8.1	8.0	8.0	8.0
7	8.0	8.0	8.0	8.0	7.9	7.9	8.1	8.1	8.1	8.1	8.0	8.0
8	8.1	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1	8.1	7.9	8.0
9	8.1	8.0	8.1	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	7.9
10	8.2	8.1	8.1	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	7.9
11	8.2	8.1	8.1	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	7.9
12	8.2	8.2	8.2	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	7.9
13	8.2	8.1	8.2	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	7.9
14	8.2	8.1	8.1	8.1	8.0	8.0	8.1	8.1	8.1	7.9	7.9	7.9
15	8.2	8.1	8.1	8.0	7.9	8.0	8.1	8.1	8.1	8.0	7.9	7.9
16	8.1	8.0	8.0	7.9	7.9	7.9	8.1	8.1	8.1	8.0	7.9	7.9
17	8.1	8.0	8.0	7.9	7.9	7.9	8.1	8.1	8.1	8.0	7.9	7.9
18	8.1	8.0	8.1	7.9	7.9	7.9	8.1	8.1	8.1	7.9	7.9	7.9
19	8.1	8.1	8.1	7.9	7.9	7.9	8.1	8.1	8.1	7.9	7.9	7.9
20	8.1	8.1	8.1	7.9	7.9	7.9	8.1	8.1	8.1	7.9	7.9	7.9
21	8.1	8.1	8.1	7.9	7.9	7.9	8.1	8.1	8.1	8.0	7.9	7.9
22	8.1	8.1	8.1	7.9	7.9	7.9	8.1	8.1	8.1	8.0	7.9	7.9
23	8.1	8.1	8.1	8.0	7.9	8.0	8.1	8.1	8.1	7.9	7.9	7.9
24	8.1	8.1	8.1	8.0	8.0	8.0	8.1	8.0	8.0	7.9	7.9	7.9
25	8.1	8.1	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9	7.9
26	8.1	8.1	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.9	7.9
27	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0	7.9	7.9	7.9
28	8.1	8.0	8.1	---	---	---	8.0	7.9	8.0	7.9	7.9	7.9
29	8.1	8.0	8.1	---	---	---	8.0	7.9	8.0	7.9	7.9	7.9
30	8.0	7.9	8.0	---	---	---	8.1	7.9	7.9	7.9	7.8	7.9
31	---	---	---	---	---	---	8.1	8.0	8.1	---	---	---
MONTH	8.2	7.9	8.1	8.1	7.9	8.0	8.1	7.9	8.1	8.1	7.8	7.9
YEAR	8.2	7.8	8.0									

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	22.0	21.0	21.5	22.5	21.5	22.0	14.5	13.0	13.5	18.0	16.0	16.5
2	21.5	20.5	21.0	21.5	20.0	20.5	14.0	14.0	14.0	16.0	15.5	15.5
3	21.0	20.5	21.0	20.5	20.0	20.0	14.5	14.0	14.0	15.5	15.5	15.5
4	21.0	20.0	20.5	20.0	18.0	19.0	15.0	14.5	14.5	16.0	15.0	15.5
5	21.0	20.0	20.5	18.0	16.5	17.0	14.5	13.0	13.5	15.0	14.5	14.5
6	21.0	20.5	20.5	16.5	16.0	16.0	13.5	13.0	13.0	14.5	13.5	14.0
7	21.0	20.5	21.0	16.0	15.5	16.0	13.5	12.5	13.0	14.0	13.5	14.0
8	21.0	20.0	20.5	16.0	15.5	16.0	13.5	13.5	13.5	14.0	13.5	14.0
9	20.0	19.5	20.0	17.0	16.0	16.5	14.0	13.5	13.5	15.0	14.0	14.5
10	21.5	20.0	21.0	17.5	17.0	17.0	14.5	13.5	14.0	15.0	13.0	14.0
11	21.5	21.0	21.5	18.0	17.5	18.0	14.5	13.5	14.0	13.0	12.5	13.0
12	21.0	21.0	21.0	18.0	17.5	18.0	14.5	13.5	14.0	14.0	13.0	13.0
13	21.5	21.0	21.0	17.5	16.5	17.0	15.5	14.5	15.0	14.0	13.0	13.0
14	21.5	21.0	21.5	16.5	16.0	16.5	15.5	14.0	15.0	13.0	12.5	12.5
15	22.5	21.5	22.0	16.5	16.0	16.0	14.0	13.5	14.0	13.0	12.5	13.0
16	22.5	22.5	22.5	17.5	16.5	17.0	14.0	13.5	13.5	14.0	12.5	13.0
17	22.5	22.0	22.0	17.5	17.0	17.0	13.5	13.0	13.5	14.0	13.0	13.5
18	22.0	21.5	21.5	18.0	17.0	17.5	13.0	12.0	12.5	15.0	14.0	14.5
19	21.5	21.0	21.5	19.0	17.5	18.0	14.0	13.0	13.5	15.0	14.0	14.5
20	22.0	21.5	21.5	18.5	17.0	17.5	14.0	14.0	14.0	15.5	14.0	14.5
21	22.0	21.5	22.0	18.0	17.0	17.5	14.5	13.5	14.0	15.0	14.0	15.0
22	22.0	22.0	22.0	17.0	16.0	16.5	15.0	14.5	14.5	15.5	14.5	15.0
23	22.5	21.5	22.0	16.5	15.5	16.0	16.5	15.0	15.5	16.0	15.0	15.5
24	22.0	21.5	21.5	16.5	16.0	16.5	16.0	15.0	15.5	16.0	14.5	15.0
25	21.5	21.0	21.5	16.0	15.0	15.5	15.5	15.0	15.5	14.5	13.5	14.0
26	21.5	21.0	21.5	15.0	14.0	14.5	15.5	15.0	15.5	13.5	12.5	13.0
27	21.5	21.0	21.0	14.0	13.0	13.5	15.5	15.0	15.0	13.5	12.5	13.0
28	21.5	21.0	21.5	13.0	12.5	12.5	15.5	15.0	15.5	13.0	12.5	12.5
29	22.0	21.5	21.5	13.0	12.0	12.5	17.0	15.5	16.0	13.0	12.5	13.0
30	22.0	21.5	21.5	13.5	13.0	13.0	18.0	16.5	17.0	13.0	12.5	12.5
31	22.5	21.5	22.0	---	---	---	18.5	18.0	18.0	13.5	12.0	13.0
MONTH	22.5	19.5	21.5	22.5	12.0	16.5	18.5	12.0	14.5	18.0	12.0	14.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	13.5	13.0	13.5	15.0	14.5	15.0	20.5	19.0	20.0	21.5	20.5	21.0
2	14.0	13.5	13.5	15.5	15.0	15.5	20.5	19.0	19.5	21.5	21.0	21.5
3	14.5	14.0	14.0	16.0	14.5	15.5	20.0	19.0	19.5	21.5	20.0	21.0
4	14.5	14.5	14.5	16.0	14.5	15.5	20.0	19.0	19.5	21.5	21.0	21.5
5	14.5	14.0	14.5	16.0	14.5	15.5	19.5	18.0	19.0	21.5	19.5	21.0
6	14.5	13.5	14.0	16.0	14.5	15.5	19.0	18.0	18.5	19.5	18.5	19.0
7	14.0	13.0	13.5	16.5	15.0	16.0	19.5	19.0	19.0	20.5	19.5	20.0
8	14.0	13.0	13.5	17.5	15.0	16.5	19.5	18.5	19.0	22.0	20.5	21.5
9	14.0	13.0	14.0	18.0	15.5	17.0	19.5	18.0	19.0	22.0	21.5	22.0
10	15.0	14.0	14.5	18.0	16.5	17.5	20.5	18.0	19.5	22.0	20.5	21.5
11	15.5	14.5	15.0	18.5	17.0	17.5	21.0	19.0	20.0	22.0	20.5	21.5
12	15.5	14.5	15.0	17.0	14.5	15.5	21.0	20.0	20.5	21.5	20.5	21.0
13	15.5	15.0	15.0	14.5	13.5	14.5	21.0	20.5	21.0	22.0	20.5	21.5
14	15.5	15.0	15.5	14.5	13.0	13.5	21.5	21.0	21.0	22.5	21.0	22.0
15	17.0	15.0	16.0	14.0	13.0	13.5	21.0	19.5	20.0	22.5	21.5	22.0
16	17.0	16.0	16.5	15.5	13.5	14.5	20.0	19.0	19.5	23.5	22.0	22.5
17	16.0	15.0	15.5	17.0	15.0	16.0	20.0	19.5	20.0	24.0	23.0	23.5
18	15.0	14.0	14.5	17.5	16.5	17.0	21.0	20.0	20.5	24.0	23.5	23.5
19	14.0	13.5	14.0	18.0	17.5	17.5	21.5	21.0	21.5	24.0	23.0	23.5
20	14.5	13.5	14.0	19.0	17.5	18.0	22.0	21.0	21.5	23.5	22.5	23.5
21	15.5	14.0	14.5	18.5	18.0	18.0	21.0	20.0	20.5	23.5	22.5	23.5
22	16.0	14.5	15.0	18.5	18.0	18.0	20.5	19.0	20.0	23.5	23.0	23.0
23	16.0	14.0	15.0	19.0	18.0	18.5	20.5	19.5	20.0	23.0	21.5	22.5
24	16.5	15.5	16.0	19.0	18.0	18.5	21.5	20.5	21.0	22.5	21.5	22.0
25	17.5	16.5	17.0	20.5	18.5	19.5	22.0	21.0	21.5	23.0	22.0	22.5
26	17.0	16.0	16.5	20.5	19.0	20.0	22.5	21.0	22.0	23.0	22.5	23.0
27	16.5	15.5	16.0	20.5	19.5	20.0	22.0	21.0	21.5	23.0	22.5	23.0
28	15.5	14.5	15.0	20.0	19.5	19.5	22.0	21.5	21.5	24.0	23.0	23.5
29	---	---	---	21.0	20.0	20.5	22.0	21.0	21.5	24.5	23.5	24.0
30	---	---	---	21.5	20.0	21.0	21.0	20.5	21.0	25.0	23.5	24.0
31	---	---	---	21.0	19.5	20.5	---	---	---	25.5	24.0	25.0
MONTH	17.5	13.0	15.0	21.5	13.0	17.0	22.5	18.0	20.5	25.5	18.5	22.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	25.0	24.5	25.0	27.0	26.5	27.0	---	---	---	26.5	26.0	26.0
2	25.5	24.0	25.0	27.5	26.5	27.0	---	---	---	27.0	25.5	26.5
3	26.0	25.0	25.5	27.5	26.5	27.0	---	---	---	27.0	26.0	26.5
4	26.0	25.5	26.0	27.5	26.5	27.0	---	---	---	26.5	26.0	26.0
5	26.5	25.5	26.0	27.0	26.5	27.0	28.5	28.0	28.5	---	---	---
6	27.0	26.0	26.5	27.5	26.5	27.0	28.5	28.0	28.0	---	---	---
7	26.5	26.0	26.5	27.5	26.5	27.0	28.5	27.5	28.0	---	---	---
8	26.5	26.0	26.0	27.0	26.5	27.0	28.0	26.5	27.5	26.5	25.0	26.0
9	26.5	26.0	26.5	27.0	26.5	27.0	28.0	25.5	27.0	26.5	25.0	26.0
10	26.5	25.5	26.0	27.0	27.0	27.0	27.5	25.5	27.0	26.5	25.5	26.0
11	26.0	25.5	25.5	27.5	26.5	27.0	28.0	27.0	27.5	26.5	25.5	26.0
12	26.0	25.0	25.5	27.5	27.0	27.0	28.0	27.0	27.5	26.0	25.5	26.0
13	25.5	24.5	25.0	27.5	27.0	27.0	28.5	27.5	28.0	26.0	25.5	26.0
14	25.5	25.0	25.5	27.5	27.0	27.5	28.5	27.5	28.0	26.5	25.0	26.0
15	25.5	25.0	25.0	27.5	27.0	27.5	29.0	27.5	28.0	25.0	23.5	24.5
16	25.5	25.0	25.5	27.5	27.0	27.5	29.5	27.5	28.0	24.0	23.5	23.5
17	25.5	25.5	25.5	27.5	27.0	27.5	28.0	27.0	27.5	24.5	23.0	24.0
18	26.0	25.5	25.5	28.0	27.5	27.5	28.0	26.5	27.5	25.5	24.0	24.5
19	25.5	25.0	25.5	28.0	27.5	27.5	28.0	26.5	27.5	26.0	25.0	25.5
20	25.5	25.5	25.5	28.0	27.5	27.5	28.0	27.0	27.5	26.5	25.5	25.5
21	26.0	25.5	25.5	28.0	27.5	27.5	27.5	26.5	27.0	26.5	25.5	26.0
22	26.0	25.5	26.0	28.0	27.5	27.5	27.5	26.0	27.0	27.0	25.5	26.0
23	26.5	25.5	26.0	28.0	27.5	28.0	27.5	26.5	27.0	27.0	26.0	26.5
24	26.5	26.0	26.5	28.5	27.5	28.0	28.0	27.0	27.5	27.5	26.5	27.0
25	26.5	26.0	26.5	28.5	28.0	28.0	27.5	26.5	27.0	27.5	26.5	27.0
26	26.5	25.5	26.0	28.5	27.5	28.0	---	---	---	27.0	25.5	26.5
27	26.0	25.5	26.0	28.5	27.5	28.0	---	---	---	25.5	24.0	25.0
28	26.5	26.0	26.5	---	---	---	26.0	26.0	26.0	24.5	23.0	23.5
29	27.0	26.0	26.5	---	---	---	26.5	26.0	26.0	23.5	22.5	23.0
30	27.0	26.5	26.5	---	---	---	27.0	26.0	26.5	23.5	22.0	22.5
31	---	---	---	---	---	---	27.0	26.0	26.5	---	---	---
MONTH	27.0	24.0	26.0	28.5	26.5	27.5	29.5	25.5	27.5	27.5	22.0	25.5
YEAR	29.5	12.0	20.5									

GUADALUPE RIVER BASIN
08180640 MEDINA RIVER AT LA COSTE, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.8	7.0	7.4	8.5	7.8	8.2	9.6	9.3	9.5	8.6	8.2	8.5
2	7.9	7.0	7.5	9.0	8.2	8.5	9.4	9.2	9.3	8.8	8.4	8.6
3	8.1	7.3	7.7	8.9	8.3	8.6	9.2	8.9	9.0	8.8	8.6	8.7
4	8.2	7.3	7.8	9.0	8.3	8.6	9.0	8.8	8.9	9.3	8.6	8.9
5	8.1	7.3	7.7	9.5	8.8	9.2	9.1	8.8	8.9	9.6	8.8	9.3
6	8.0	7.3	7.6	9.9	9.3	9.6	9.3	9.0	9.2	9.5	9.0	9.3
7	7.7	7.1	7.4	9.8	9.3	9.6	9.4	9.1	9.2	9.5	9.0	9.3
8	7.9	6.9	7.3	9.7	9.4	9.5	9.2	8.9	9.0	9.4	8.9	9.2
9	7.6	7.2	7.4	9.5	9.2	9.3	9.1	8.8	9.0	9.3	8.8	9.1
10	7.6	7.1	7.4	9.3	8.9	9.1	9.1	8.8	8.9	9.4	8.9	9.2
11	7.6	6.9	7.3	9.1	8.7	8.9	9.3	8.7	9.0	9.5	9.1	9.3
12	7.3	6.9	7.1	8.9	8.5	8.8	9.1	8.9	9.0	10.1	9.1	9.6
13	---	---	---	9.1	8.6	8.9	8.9	8.6	8.6	9.8	9.3	9.6
14	---	---	---	9.5	8.9	9.2	8.8	8.4	8.6	9.8	9.4	9.6
15	---	---	---	9.6	9.1	9.3	9.1	8.7	8.9	9.8	9.3	9.6
16	---	---	---	---	---	---	9.1	8.8	9.0	9.8	9.2	9.6
17	---	---	---	---	---	---	9.5	8.9	9.2	9.7	9.3	9.5
18	---	---	---	---	---	---	9.4	9.1	9.3	9.7	9.3	9.5
19	8.3	8.1	8.2	---	---	---	9.3	9.0	9.2	9.3	9.1	9.3
20	8.6	8.1	8.4	9.5	8.8	9.3	9.2	8.8	8.9	9.6	9.1	9.4
21	8.8	8.1	8.5	9.5	9.3	9.4	9.1	8.8	9.0	9.6	9.2	9.4
22	8.9	8.3	8.6	9.9	9.5	9.8	9.1	8.6	8.9	9.6	9.1	9.4
23	8.9	8.3	8.6	9.9	9.6	9.8	9.0	8.6	8.8	9.4	9.1	9.2
24	9.1	8.4	8.7	9.8	9.5	9.6	9.0	8.5	8.7	9.5	8.9	9.2
25	9.1	8.4	8.8	9.9	9.5	9.7	9.0	8.7	8.9	9.5	9.1	9.3
26	9.0	8.4	8.7	10.0	9.6	9.8	9.2	8.7	9.0	9.8	9.2	9.5
27	9.1	8.4	8.7	10.2	9.8	10.0	9.1	8.8	9.0	9.9	9.4	9.7
28	9.0	8.3	8.6	10.2	9.9	10.0	9.0	8.8	8.9	10.3	9.5	9.9
29	8.6	8.1	8.4	10.1	9.9	10.0	9.2	8.6	8.9	10.1	9.9	10.0
30	8.5	7.9	8.3	9.9	9.6	9.8	9.0	8.5	8.7	10.4	9.9	10.2
31	8.4	7.8	8.2	---	---	---	8.6	8.2	8.4	10.4	9.9	10.2
MONTH	9.1	6.9	8.0	10.2	7.8	9.3	9.6	8.2	9.0	10.4	8.2	9.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.1	9.7	9.9	9.0	8.7	8.8	7.8	7.0	7.5	6.8	6.6	6.7
2	9.9	9.5	9.6	9.6	8.8	9.2	8.0	7.3	7.7	7.0	6.6	6.8
3	9.5	9.3	9.4	---	---	---	7.9	7.3	7.5	7.1	6.7	6.9
4	9.3	9.1	9.2	---	---	---	8.1	7.3	7.7	6.9	6.6	6.7
5	9.3	9.0	9.2	---	---	---	8.7	7.4	8.1	7.0	6.2	6.5
6	9.7	9.1	9.4	---	---	---	8.4	7.8	8.0	6.9	6.2	6.7
7	9.7	9.1	9.4	---	---	---	8.0	7.5	7.8	6.5	6.3	6.4
8	9.6	9.1	9.4	---	---	---	8.0	7.4	7.8	6.3	6.2	6.3
9	9.3	9.0	9.1	---	---	---	8.1	7.4	7.8	6.2	6.1	6.2
10	9.5	8.8	9.1	---	---	---	8.1	7.4	7.8	6.4	6.2	6.3
11	9.8	8.9	9.3	---	---	---	8.1	7.2	7.7	6.5	6.3	6.4
12	9.8	9.1	9.4	8.5	8.2	8.4	8.0	7.3	7.6	6.6	6.3	6.4
13	9.7	9.0	9.4	8.7	7.9	8.4	7.7	7.3	7.5	6.5	6.3	6.4
14	9.3	9.0	9.1	8.6	8.0	8.4	7.9	7.3	7.6	6.5	6.2	6.4
15	9.5	8.8	9.1	8.5	8.1	8.2	8.1	7.5	7.8	6.5	6.2	6.3
16	9.6	8.7	9.2	8.7	8.0	8.4	8.1	7.6	7.9	6.4	6.1	6.2
17	9.7	9.0	9.4	8.8	8.1	8.5	7.9	7.5	7.7	6.3	6.0	6.2
18	9.8	9.1	9.5	8.7	8.1	8.4	7.8	7.4	7.6	---	---	---
19	9.8	9.4	9.6	8.3	7.9	8.1	7.6	7.2	7.4	---	---	---
20	9.9	9.3	9.6	8.7	8.0	8.3	7.3	6.8	7.1	---	---	---
21	9.8	9.2	9.6	8.3	8.0	8.1	7.6	7.0	7.3	---	---	---
22	9.7	8.9	9.4	8.3	7.8	8.0	7.4	7.0	7.2	---	---	---
23	9.6	9.0	9.3	8.6	7.9	8.3	7.5	7.1	7.2	---	---	---
24	9.2	8.8	8.9	8.3	7.9	8.0	7.2	6.8	7.0	---	---	---
25	9.0	8.3	8.7	8.1	7.6	7.9	7.2	6.8	7.0	---	---	---
26	9.2	8.5	9.0	8.1	7.4	7.8	7.2	6.7	7.0	---	---	---
27	9.2	8.6	8.9	7.9	7.3	7.5	7.0	6.6	6.8	---	---	---
28	9.0	8.7	8.8	7.4	7.1	7.3	6.9	6.6	6.7	---	---	---
29	---	---	---	7.6	7.1	7.3	6.8	6.6	6.6	---	---	---
30	---	---	---	7.6	7.1	7.4	6.8	6.5	6.6	---	---	---
31	---	---	---	7.6	6.8	7.3	---	---	---	---	---	---
MONTH	10.1	8.3	9.3	9.6	6.8	8.1	8.7	6.5	7.4	7.1	6.0	6.5

GUADALUPE RIVER BASIN

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 including estimated daily discharges. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 41 mi upstream. For diversions to Medina canal, see station 08179500. A large part of streamflow above this station is lost into the Edwards and associated limestones where the Balcones Fault crosses the basin between the upstream end of Medina Lake and a point about 5 mi downstream from Medina Dam, or 0.9 mi downstream from diversion dam. There are several small diversions below Medina Diversion Dam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	141	124	197	180	170	143	132	134	181	151	99	e64
2	140	123	196	180	169	143	131	130	162	147	87	e68
3	141	123	186	179	170	140	129	132	146	145	81	e67
4	141	123	180	180	181	137	129	123	140	142	79	e72
5	139	121	177	177	189	136	130	129	137	138	79	e70
6	139	123	179	166	189	138	125	2060	135	134	77	e69
7	140	123	181	166	179	141	125	712	124	119	75	e67
8	139	124	182	168	175	143	135	499	119	112	75	e64
9	138	129	182	168	173	146	126	435	116	109	75	e67
10	138	132	185	168	186	141	120	395	119	107	75	e66
11	137	132	186	168	197	136	119	375	118	106	74	e69
12	136	134	186	167	191	143	120	346	118	104	74	e67
13	136	131	186	165	185	150	118	330	123	101	73	e71
14	136	130	189	166	185	150	112	315	117	100	73	e68
15	136	130	220	169	184	153	106	299	120	100	71	e65
16	135	132	203	167	180	158	106	281	121	100	72	e64
17	134	137	188	167	176	159	102	271	117	97	71	e62
18	133	141	184	176	172	158	100	259	118	95	71	e63
19	130	239	181	177	172	158	100	240	142	95	69	e63
20	130	585	179	179	172	157	97	217	151	95	69	e63
21	129	295	178	177	171	157	105	182	213	92	68	e62
22	127	245	176	176	155	154	126	168	192	91	69	e62
23	127	230	180	175	151	153	100	285	183	91	68	e61
24	126	221	183	174	148	150	109	288	182	90	68	e61
25	123	214	192	171	146	134	123	186	198	89	67	e60
26	123	207	193	169	144	129	123	191	366	86	66	e60
27	123	203	193	171	143	129	121	193	282	85	67	e61
28	123	202	191	172	140	125	121	194	208	84	67	e59
29	123	202	191	172	---	120	129	197	186	84	68	e58
30	126	198	191	172	---	126	135	191	160	82	68	e59
31	125	---	184	171	---	140	---	192	---	82	e67	---
TOTAL	4114	5353	5799	5333	4793	4447	3554	9949	4794	3253	2262	1932
MEAN	133	178	187	172	171	143	118	321	160	105	73.0	64.4
MAX	141	585	220	180	197	159	135	2060	366	151	99	72
MIN	123	121	176	165	140	120	97	123	116	82	66	58
AC-FT	8160	10620	11500	10580	9510	8820	7050	19730	9510	6450	4490	3830

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	112	74.4	120	167	280	265	177	312	713	167	77.0	60.1
MAX	485	178	432	698	2333	2097	1302	1636	5726	765	280	165
(WY)	1982	1993	1992	1992	1992	1992	1992	1987	1987	1987	1992	1992
MIN	32.3	25.7	18.0	22.1	34.2	39.0	34.1	29.6	25.1	27.4	25.1	27.8
(WY)	1992	1985	1985	1985	1985	1990	1986	1989	1990	1989	1989	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1982 - 1993

ANNUAL TOTAL	348889	55583	209
ANNUAL MEAN	953	152	954
HIGHEST ANNUAL MEAN			38.1
LOWEST ANNUAL MEAN			1989
HIGHEST DAILY MEAN	7420	2060	22300
LOWEST DAILY MEAN	121	58	14
ANNUAL SEVEN-DAY MINIMUM	123	60	16
INSTANTANEOUS PEAK FLOW		4740	36800
INSTANTANEOUS PEAK STAGE			20.58
ANNUAL RUNOFF (AC-FT)	692000	110200	151600
10 PERCENT EXCEEDS	2180	197	322
50 PERCENT EXCEEDS	525	137	48
90 PERCENT EXCEEDS	137	69	30

GUADALUPE RIVER BASIN

339

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.--No estimated daily discharges. Records good. Satellite telemeter at station.

REVISIONS.--Revised figures of daily discharge for water year 1992, superseding those published in WDR Texas, Volume 3, are given below.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	9.2	6.4	5.6	6.7	15	5.2	6.3	7.1	6.5	5.0	4.1
2	5.3	9.1	5.2	5.5	5.8	8.1	4.7	6.3	5.8	5.9	5.2	3.9
3	5.3	7.5	3.5	6.1	6.4	6.4	4.9	4.3	6.0	5.8	4.9	3.9
4	6.1	7.2	5.2	6.5	12	5.6	5.8	4.5	5.8	5.7	4.9	3.7
5	6.5	7.2	5.2	5.6	27	5.2	5.5	220	5.6	5.4	4.5	4.4
6	5.7	6.8	6.2	5.2	11	5.0	4.7	526	5.9	5.9	4.4	4.3
7	6.0	6.8	5.9	5.7	7.3	5.6	13	25	5.9	5.2	4.1	5.1
8	5.7	7.8	5.6	5.8	6.9	5.8	8.4	11	5.6	5.1	4.3	4.4
9	5.6	9.6	5.7	5.4	6.0	5.1	4.5	9.2	5.6	5.2	4.6	4.4
10	6.0	8.9	5.8	5.8	59	5.0	4.4	8.0	8.0	5.1	4.2	6.5
11	6.3	8.4	5.2	5.8	11	4.9	4.7	6.8	8.0	5.4	4.0	5.1
12	6.2	10	5.5	5.4	7.1	34	4.8	6.1	12	5.8	4.2	5.6
13	6.6	8.1	6.2	5.2	6.6	10	4.7	5.7	32	5.6	4.3	6.0
14	6.0	7.1	6.5	5.2	6.5	6.7	4.4	5.5	13	5.3	4.0	5.7
15	6.2	7.6	45	5.4	6.5	6.4	4.1	5.3	23	5.0	4.2	5.4
16	6.2	8.4	10	5.3	6.2	6.7	4.2	5.7	8.5	5.0	4.3	5.5
17	6.0	8.8	7.1	6.0	5.4	6.1	4.1	5.9	6.9	4.9	4.3	6.4
18	6.6	8.2	6.3	5.9	5.3	5.4	4.8	5.4	6.1	5.4	4.2	5.2
19	7.0	60	6.3	8.2	5.3	5.2	5.1	5.8	5.8	5.1	4.1	5.7
20	6.6	111	6.3	8.3	5.4	5.2	4.5	5.5	7.9	4.7	4.0	5.8
21	6.8	13	6.1	6.3	6.2	5.3	4.0	5.5	36	4.2	3.7	5.4
22	6.6	7.2	6.1	5.8	6.2	5.6	4.4	8.4	11	4.3	4.2	5.4
23	6.9	6.7	8.5	5.5	5.5	5.3	4.1	135	10	4.5	4.4	5.1
24	7.2	5.7	6.5	5.9	5.5	5.0	4.5	33	8.5	4.4	4.4	5.0
25	7.4	5.3	6.1	5.9	6.0	5.0	4.7	12	10	4.7	4.2	4.7
26	8.4	5.6	5.6	5.4	6.3	5.0	4.8	8.0	43	4.7	4.0	5.2
27	7.8	5.7	5.9	5.6	5.1	4.8	4.1	7.1	18	4.8	4.3	5.4
28	7.9	5.6	6.3	5.5	9.1	6.0	4.3	6.9	9.7	4.3	3.9	4.6
29	8.4	5.6	6.3	5.7	---	6.5	4.8	7.0	7.9	4.4	4.6	4.7
30	8.5	6.3	6.3	5.4	---	20	6.2	15	7.0	4.0	4.9	4.7
31	8.4	---	6.1	6.4	---	7.6	---	8.8	---	4.0	4.2	---
TOTAL	205.1	384.4	228.9	181.3	263.3	233.5	152.4	1125.0	345.6	156.3	134.5	151.3
MEAN	6.62	12.8	7.38	5.85	9.40	7.53	5.08	36.3	11.5	5.04	4.34	5.04
MAX	8.5	111	45	8.3	59	34	13	526	43	6.5	5.2	6.5
MIN	4.9	5.3	3.5	5.2	5.1	4.8	4.0	4.3	5.6	4.0	3.7	3.7
AC-FT	407	762	454	360	522	463	302	2230	685	310	267	300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)

	5.53	6.69	17.4	11.9	16.7	11.8	8.95	26.0	27.8	11.0	4.98	6.95
MEAN	5.53	6.69	17.4	11.9	16.7	11.8	8.95	26.0	27.8	11.0	4.98	6.95
MAX	6.94	12.8	75.4	37.4	59.1	36.5	16.4	71.2	109	37.3	7.29	16.9
(WY)	1990	1993	1992	1992	1992	1992	1992	1992	1987	1990	1992	1988
MIN	4.08	4.86	5.05	5.33	5.95	5.64	5.00	4.43	4.23	5.04	3.96	4.26
(WY)	1988	1989	1989	1988	1989	1991	1988	1988	1990	1993	1987	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1987 - 1993

ANNUAL TOTAL	9425.6	3561.6	11.7
ANNUAL MEAN	25.8	9.76	30.7
HIGHEST ANNUAL MEAN			6.38
LOWEST ANNUAL MEAN			1992
HIGHEST DAILY MEAN	1240	526	1240
LOWEST DAILY MEAN	3.5	3.5	2.2
ANNUAL SEVEN-DAY MINIMUM	5.0	4.1	3.4
INSTANTANEOUS PEAK FLOW		2510	2510
INSTANTANEOUS PEAK STAGE		10.59	10.59
ANNUAL RUNOFF (AC-FT)	18700	7060	8480
10 PERCENT EXCEEDS	25	9.4	13
50 PERCENT EXCEEDS	8.2	5.7	5.5
90 PERCENT EXCEEDS	5.6	4.3	4.1

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	5.3	4.6	13	15	16	8.0	8.5	17	7.3	5.4	5.1
2	4.5	4.7	4.9	15	171	16	7.6	8.2	113	6.7	5.9	4.9
3	4.6	5.2	4.6	14	158	35	7.6	8.8	33	6.2	20	4.9
4	4.6	5.6	4.7	12	749	714	7.7	9.5	18	6.8	8.2	4.8
5	4.4	5.2	4.2	19	50	55	44	9.6	15	6.5	6.4	4.8
6	4.3	5.1	4.1	15	28	23	18	8.3	13	6.4	6.1	5.3
7	4.9	5.1	4.2	12	23	17	10	7.9	245	6.0	6.1	5.3
8	4.4	4.9	4.9	12	21	16	8.7	7.8	37	5.7	5.8	5.7
9	4.2	4.7	6.3	11	19	15	8.7	7.5	472	5.7	6.0	5.0
10	4.2	5.5	5.8	11	18	12	8.2	8.0	117	6.1	6.1	5.5
11	4.2	5.7	4.4	11	17	11	8.2	8.4	26	6.2	6.0	23
12	3.8	5.5	4.5	22	16	11	8.6	7.8	19	5.9	8.0	7.4
13	4.6	5.2	16	13	16	10	8.4	7.6	15	5.8	10	7.2
14	4.2	5.1	5.8	11	15	10	7.8	18	14	5.8	7.2	9.8
15	4.4	5.1	4.6	11	15	10	8.5	104	13	5.6	6.6	6.7
16	4.3	5.2	4.4	10	15	10	12	74	11	5.5	14	6.5
17	5.0	6.5	3.9	12	15	9.9	103	20	10	5.3	7.8	5.9
18	5.0	7.7	7.8	37	14	9.8	63	16	9.5	5.3	7.1	5.9
19	4.8	5.9	498	17	13	9.1	17	42	8.5	5.9	6.9	5.5
20	5.6	4.8	439	13	13	8.7	12	48	8.0	6.9	7.0	5.9
21	5.8	4.6	994	17	13	9.0	11	242	7.7	6.7	7.4	6.3
22	5.5	4.6	141	20	91	9.5	10	96	7.7	6.4	7.1	6.6
23	5.5	4.3	29	14	23	8.7	9.3	21	7.7	6.2	7.8	5.8
24	5.4	4.7	19	12	69	8.0	8.7	14	7.4	6.3	8.2	5.6
25	5.4	5.0	17	12	43	8.0	25	13	7.0	5.9	8.2	5.4
26	5.3	4.4	25	458	22	7.9	13	16	6.6	6.2	5.8	5.2
27	5.8	4.6	20	248	19	9.8	9.8	1240	6.1	6.2	4.9	6.1
28	6.0	4.9	15	30	17	21	9.1	77	6.4	5.8	4.8	6.4
29	5.6	5.0	14	22	17	12	9.2	24	18	5.7	4.4	5.7
30	5.4	4.7	13	19	---	9.7	8.6	18	8.7	5.7	4.7	5.5
31	5.2	---	13	16	---	8.2	---	16	---	5.7	6.0	---
TOTAL	151.6	154.8	2336.7	1159	1715	1130.3	490.7	2206.9	1297.3	188.4	225.9	193.7
MEAN	4.89	5.16	75.4	37.4	59.1	36.5	16.4	71.2	43.2	6.08	7.29	6.46
MAX	6.0	7.7	994	458	749	714	103	1240	472	7.3	20	23
MIN	3.8	4.3	3.9	10	13	7.9	7.6	7.5	6.1	5.3	4.4	4.8
AC-FT	301	307	4630	2300	3400	2240	973	4380	2570	374	448	384

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1992, BY WATER YEAR (WY)

	5.31	5.47	19.4	12.9	17.9	12.6	9.59	24.3	30.5	12.0	5.09	7.27
MEAN	5.31	5.47	19.4	12.9	17.9	12.6	9.59	24.3	30.5	12.0	5.09	7.27
MAX	6.94	6.10	75.4	37.4	59.1	36.5	16.4	71.2	109	37.3	7.29	16.9
(WY)	1990	1991	1992	1992	1992	1992	1992	1992	1987	1990	1992	1988
MIN	4.08	4.86	5.05	5.33	5.95	5.64	5.00	4.43	4.23	5.23	3.96	4.26
(WY)	1988	1989	1989	1988	1989	1991	1988	1988	1990	1989	1987	1989

SUMMARY STATISTICS

FOR 1991 CALENDAR YEAR

FOR 1992 WATER YEAR

WATER YEARS 1987 - 1992

ANNUAL TOTAL	5005.1	11250.3	12.1
ANNUAL MEAN	13.7	30.7	30.7
HIGHEST ANNUAL MEAN			1992
LOWEST ANNUAL MEAN			1989
HIGHEST DAILY MEAN	994	1240	1240
LOWEST DAILY MEAN	2.8	3.8	2.2
ANNUAL SEVEN-DAY MINIMUM	4.0	4.2	3.4
INSTANTANEOUS PEAK FLOW		2310	2310
INSTANTANEOUS PEAK STAGE		a/10.33	a/10.33
ANNUAL RUNOFF (AC-FT)	9930	22310	8760
10 PERCENT EXCEEDS	11	28	14
50 PERCENT EXCEEDS	5.2	8.0	5.5
90 PERCENT EXCEEDS	4.3	4.7	4.1

a/ From floodmark.

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. There is a problem at this site with one or more probes being at least partially out of the water when the flow is low. This is due to the nature of the site and installation. Some dissolved oxygen data was lost and some conductivity data had to be estimated because of this problem.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens Mar. 5-8, 1987; minimum, 143 microsiemens May 6, 1993.

pH: Maximum, 8.8 units Jan. 30, Feb. 15, 1988, Mar. 9, 1989; minimum, 7.0 units on several days during period of record.

WATER TEMPERATURE: Maximum, 30.5°C on several days during summer months of water years 1991 & 1992;

minimum, 1.0°C Dec. 24, 1989.

DISSOLVED OXYGEN: Maximum, 17.1 mg/L Mar. 11, 1989; minimum, 3.2 mg/L Apr. 13, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 988 microsiemens May 12; minimum, 143 microsiemens May 6.

pH: Maximum, 8.7 units Feb. 8; minimum, 7.4 units on several days.

WATER TEMPERATURE: Maximum, 29.5°C on several days; minimum, 8.5°C Mar. 13.

DISSOLVED OXYGEN: Maximum, 16.1 mg/L Jan 27, 31; minimum, 4.8 mg/L Nov. 21.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CACO3 (MG/L)
OCT 21...	1010	7.4	923	8.2	22.0	7.5	87	0.4	260	57
DEC 21...	1105	8.3	864	8.2	15.0	9.3	70	1.4	280	63
FEB 08...	1320	7.9	832	8.3	14.5	13.5	135	0.7	250	58
APR 12...	1441	4.1	906	8.2	21.5	9.2	108	2.0	280	54
JUN 08...	1250	6.0	950	8.2	27.0	7.0	91	2.1	280	33
AUG 04...	0945	5.2	889	7.5	29.0	5.8	76	1.2	280	51

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 DIS FIX END FIELD CACO3 (MG/L)	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 21...	78	16	82	2	9.0	200	57	110	0.30	14
DEC 21...	86	15	71	2	8.3	210	79	92	0.40	13
FEB 08...	77	13	65	2	6.9	190	85	86	0.20	12
APR 12...	84	16	85	2	8.3	220	84	100	0.30	14
JUN 08...	87	15	84	2	8.6	250	78	110	0.30	16
AUG 04...	86	16	85	2	8.9	230	64	110	0.30	15

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)
OCT 21...	489	9.78	--	0.020	--	9.80	--	0.020	--
DEC 21...	493	7.36	--	0.040	--	7.40	--	0.040	--
FEB 08...	496	7.24	7.24	--	0.060	7.30	7.30	--	0.030
APR 12...	566	7.84	7.84	--	0.060	7.90	7.90	--	0.040
JUN 08...	556	1.29	1.29	--	0.010	1.30	1.30	--	0.040
AUG 04...	544	3.38	3.38	--	0.020	3.40	3.40	--	0.380

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
OCT 21...	0.48	--	--	0.50	4.00	--	--	3.90	--
DEC 21...	0.46	--	--	0.50	2.70	--	--	1.00	--
FEB 08...	--	0.47	0.50	--	--	1.60	1.80	--	5.5
APR 12...	--	0.56	0.60	--	--	3.90	2.10	--	6.4
JUN 08...	--	0.26	0.30	--	--	1.20	1.10	--	3.4
AUG 04...	--	1.4	1.8	--	--	1.90	1.60	--	4.9
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. 1992	205.1	842	462	256	89	49	69	38	260
NOV. 1992	384.4	663	366	380	66	68	57	60	220
DEC. 1992	228.9	808	444	274	84	52	67	41	250
JAN. 1993	181.3	873	478	234	93	46	70	34	260
FEB. 1993	263.3	745	410	292	76	54	63	45	240
MAR. 1993	233.5	776	427	269	80	51	65	41	240
APR. 1993	152.4	847	465	191	90	37	68	28	260
MAY 1993	1125.0	434	242	735	38	116	42	127	160
JUNE 1993	345.6	630	349	325	61	57	56	52	210
JULY 1993	156.3	896	491	207	97	41	70	30	270
AUG. 1993	134.5	847	465	169	89	32	69	25	260
SEPT 1993	151.3	803	442	180	83	34	67	27	250
TOTAL	3561.6	**	**	3500	**	637	**	548	**
WTD.AVG.	9.8	662	365	**	66	**	57	**	220

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	839	789	809	889	857	869	891	869	881	857	821	845
2	798	784	791	882	852	866	899	872	886	874	855	865
3	814	788	804	963	845	893	901	877	890	877	867	871
4	818	803	810	917	861	879	889	872	880	874	852	869
5	825	810	816	865	837	846	884	862	877	862	838	849
6	825	809	816	862	837	848	884	852	868	852	840	846
7	840	810	823	885	862	875	869	845	859	857	840	844
8	843	796	818	908	882	896	889	850	869	869	857	863
9	818	789	805	908	888	898	894	867	882	869	852	861
10	813	795	805	911	873	896	899	840	864	872	864	868
11	799	789	793	891	873	883	886	864	879	867	845	852
12	850	788	812	891	823	843	884	869	878	857	845	852
13	840	790	817	846	793	823	884	877	881	855	835	846
14	848	832	838	849	793	827	884	869	876	867	855	862
15	843	829	837	849	780	802	877	564	730	864	852	860
16	856	835	845	879	808	855	564	508	533	862	852	859
17	861	846	854	915	854	881	659	535	590	872	860	867
18	866	847	858	921	855	911	762	659	710	889	869	879
19	864	843	854	903	372	648	840	762	814	889	882	885
20	892	862	876	416	292	357	850	835	845	889	855	873
21	901	884	891	552	416	485	874	833	856	867	828	853
22	889	867	879	624	552	584	896	864	882	830	801	814
23	874	852	860	737	624	673	889	862	877	840	803	816
24	891	872	879	828	737	791	867	830	850	867	840	853
25	886	857	873	869	828	846	862	811	843	891	867	880
26	862	838	847	869	847	861	811	769	781	933	886	906
27	867	857	862	899	867	885	828	772	806	939	928	934
28	872	850	862	908	867	894	857	828	841	947	938	942
29	879	825	868	889	860	878	869	857	863	955	942	949
30	862	833	851	879	860	874	869	860	863	958	942	951
31	882	847	867	---	---	---	864	847	858	954	928	940
MONTH	901	784	839	963	292	812	901	508	833	958	801	873

343

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	935	921	929	845	657	732	657	596	625	863	814	853
2	941	922	930	698	654	661	818	657	752	814	773	791
3	955	938	947	764	662	711	894	818	859	835	793	808
4	946	859	900	822	764	800	904	864	886	872	832	856
5	883	516	695	865	822	837	933	901	917	864	189	538
6	649	618	632	884	865	874	913	828	869	391	143	263
7	761	649	687	915	884	901	869	557	831	605	391	490
8	888	761	828	920	902	909	737	520	633	750	605	687
9	918	888	911	922	908	915	745	676	705	876	750	820
10	910	316	519	934	912	925	796	701	741	927	867	897
11	620	399	523	929	761	879	906	796	859	967	924	945
12	730	620	669	761	379	578	923	904	913	998	935	953
13	801	730	766	466	388	424	930	923	925	951	898	925
14	855	801	836	669	466	559	923	896	909	935	913	926
15	894	852	876	821	669	746	899	879	888	952	913	934
16	894	879	886	886	821	861	894	882	887	960	926	946
17	906	886	900	901	879	889	896	877	886	955	928	941
18	908	896	903	913	896	906	899	877	887	955	894	931
19	901	879	889	930	901	916	908	886	896	955	908	935
20	896	874	883	952	913	928	916	891	905	940	886	920
21	899	884	891	947	928	939	918	896	908	926	896	912
22	899	879	889	943	906	930	916	889	903	901	857	886
23	911	899	905	955	926	940	904	882	892	---	---	350
24	904	886	897	950	918	936	891	850	867	---	---	500
25	899	869	884	945	933	938	911	874	894	---	---	700
26	879	833	864	950	923	935	916	896	905	---	---	750
27	882	833	860	945	928	936	908	894	900	---	---	860
28	884	823	853	935	921	928	896	867	888	---	---	910
29	---	---	---	926	899	916	894	779	862	---	---	905
30	---	---	---	923	518	771	---	---	858	---	---	610
31	---	---	---	676	554	600	---	---	---	---	---	720
MONTH	955	316	827	955	379	830	933	520	855	998	143	789
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	791	750	763	921	867	902	852	835	841	838	806	824
2	864	774	825	962	818	925	857	835	845	808	794	801
3	913	828	890	987	952	966	850	838	844	801	791	795

GUADALUPE RIVER BASIN

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	7.9	8.1	---	---	---	---	---	---	8.3	7.9	8.1
2	8.3	8.1	8.2	8.2	8.1	8.1	---	---	---	8.1	7.8	8.0
3	8.3	8.1	8.2	8.2	7.7	8.0	---	---	---	8.0	7.8	7.9
4	8.1	7.8	8.0	8.2	8.0	8.1	---	---	---	8.2	7.8	8.0
5	8.1	7.7	7.9	8.3	8.1	8.2	---	---	---	8.3	7.8	8.0
6	8.1	7.8	8.0	8.3	8.2	8.3	---	---	---	8.2	7.9	8.0
7	8.2	7.7	7.9	8.4	8.2	8.3	---	---	---	8.2	7.9	8.1
8	8.1	7.9	8.0	8.2	8.1	8.1	---	---	---	8.1	7.9	8.0
9	8.2	7.9	8.1	8.1	7.9	8.0	---	---	---	---	---	---
10	8.2	7.9	8.0	8.0	7.7	7.9	8.2	7.8	8.0	---	---	---
11	8.3	8.1	8.2	7.9	7.6	7.7	8.3	7.8	8.0	---	---	---
12	8.2	8.0	8.1	8.2	7.8	8.0	8.1	7.7	7.9	---	---	---
13	8.2	7.8	8.1	8.3	8.0	8.2	7.9	7.7	7.8	---	---	---
14	8.3	8.0	8.1	8.5	8.1	8.3	7.9	7.5	7.8	---	---	---
15	8.1	7.9	8.0	8.5	8.3	8.4	7.8	7.4	7.6	8.2	7.6	7.9
16	8.1	7.9	8.0	8.4	8.1	8.3	7.9	7.4	7.8	8.2	7.7	8.0
17	8.0	7.8	7.9	8.3	8.0	8.1	8.1	7.8	7.9	8.0	7.7	7.9
18	8.1	7.9	8.0	8.3	7.9	8.1	8.0	7.7	7.8	8.1	7.8	8.0
19	8.1	7.9	8.0	8.1	7.7	8.0	---	---	---	8.2	7.8	8.1
20	8.0	7.9	7.9	8.2	7.9	8.1	---	---	---	8.1	7.8	8.0
21	8.2	7.8	8.0	---	---	---	---	---	---	8.2	7.8	8.1
22	8.2	8.0	8.1	---	---	---	---	---	---	8.3	8.0	8.1
23	8.1	7.9	8.0	---	---	---	---	---	---	8.2	7.9	8.0
24	8.1	7.9	8.0	8.2	7.9	8.1	8.1	7.8	7.9	8.1	7.9	8.0
25	8.1	7.9	8.0	8.2	8.0	8.1	8.1	7.8	7.9	8.1	7.9	8.0
26	---	---	---	8.3	8.0	8.1	8.3	7.8	8.0	8.2	7.7	8.0
27	---	---	---	8.1	7.9	8.0	8.3	7.9	8.1	8.2	7.6	7.9
28	---	---	---	---	---	---	8.0	7.8	7.9	8.2	7.8	8.0
29	---	---	---	---	---	---	8.0	7.7	7.9	8.3	7.8	8.0
30	---	---	---	---	---	---	8.1	7.8	7.9	8.4	7.7	8.0
31	---	---	---	---	---	---	8.2	7.9	8.0	8.3	7.9	8.0
MONTH	8.3	7.7	8.0	8.5	7.6	8.1	8.3	7.4	7.9	8.4	7.6	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	8.0	7.7	7.8	8.1	7.9	8.0
2	---	---	---	---	---	---	8.2	7.8	8.0	8.1	7.8	8.0
3	---	---	---	8.2	7.9	8.1	8.2	8.0	8.1	8.1	7.9	8.0
4	8.2	8.1	8.2	8.3	7.8	8.0	8.3	8.1	8.2	8.1	7.7	8.0
5	8.1	8.0	8.0	8.4	7.9	8.1	8.4	8.1	8.2	7.9	7.5	7.7
6	8.4	7.9	8.1	8.4	8.0	8.1	8.3	8.0	8.2	8.0	7.6	7.9
7	8.6	8.0	8.3	8.3	7.9	8.1	8.3	7.9	8.1	7.7	7.4	7.5
8	8.7	8.2	8.4	8.1	7.9	8.0	8.1	7.9	8.0	7.6	7.4	7.5
9	8.5	8.2	8.3	8.2	7.9	8.0	8.1	7.9	8.0	7.9	7.5	7.7
10	---	---	---	8.2	7.9	8.1	8.3	7.9	8.1	8.1	7.9	8.0
11	---	---	---	8.2	8.0	8.1	8.4	8.0	8.1	8.1	7.9	8.0
12	8.3	7.9	8.0	8.3	7.9	8.0	8.3	8.1	8.2	8.1	8.0	8.1
13	8.2	7.9	8.0	8.1	7.9	8.0	8.1	7.9	8.0	8.2	8.1	8.1
14	8.2	8.0	8.0	8.2	8.0	8.1	8.2	7.9	8.0	8.5	8.1	8.2
15	8.3	7.9	8.1	8.1	7.9	8.0	8.4	8.0	8.2	8.3	8.2	8.3
16	8.4	8.0	8.1	8.2	7.9	8.0	8.5	8.2	8.3	8.5	8.3	8.4
17	8.4	8.0	8.2	8.4	7.9	8.2	8.5	8.1	8.3	8.5	8.3	8.4
18	8.4	8.1	8.2	8.4	7.8	8.2	8.4	8.1	8.2	8.4	8.2	8.3
19	8.4	8.0	8.2	8.2	7.9	8.1	8.3	8.0	8.2	8.2	8.1	8.2
20	8.4	8.0	8.1	8.2	7.9	8.1	8.3	8.0	8.1	8.2	7.9	8.1
21	8.3	8.0	8.1	8.1	7.8	8.0	8.3	8.0	8.2	8.4	7.8	8.1
22	8.4	8.0	8.2	8.0	7.7	7.9	8.4	8.1	8.2	8.3	7.8	8.0
23	8.2	7.8	8.0	8.2	7.8	8.0	8.4	8.0	8.2	8.2	7.9	8.0
24	7.9	7.6	7.7	8.2	7.7	7.9	8.3	8.0	8.1	8.0	7.9	8.0
25	7.8	7.4	7.6	8.3	7.9	8.1	8.2	8.0	8.1	---	---	---
26	---	---	---	8.3	7.6	8.0	8.2	8.0	8.1	---	---	---
27	---	---	---	8.1	7.7	7.9	8.1	7.9	8.0	8.2	7.8	7.9
28	---	---	---	8.0	7.8	7.9	8.0	7.9	7.9	8.2	8.0	8.1
29	---	---	---	---	---	---	7.9	7.7	7.8	---	---	---
30	---	---	---	8.0	7.9	8.0	8.1	7.7	7.9	---	---	---
31	---	---	---	7.9	7.8	7.8	---	---	---	---	---	---
MONTH	8.7	7.4	8.1	8.4	7.6	8.0	8.5	7.7	8.1	8.5	7.4	8.0

GUADALUPE RIVER BASIN

345

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.1	8.0	8.1	8.0	7.8	7.9	8.0	7.6	7.8	8.2	8.0	8.1
2	8.1	7.9	8.0	8.1	7.9	8.0	8.0	7.5	7.8	8.2	7.8	8.0
3	8.2	8.0	8.1	8.1	7.8	8.0	7.7	7.5	7.6	8.1	7.8	8.0
4	8.2	8.0	8.0	---	---	---	7.9	7.4	7.7	8.0	7.8	7.9
5	8.3	8.0	8.1	---	---	---	7.9	7.6	7.8	8.0	7.8	7.9
6	8.2	8.0	8.1	8.3	7.8	8.1	8.3	7.8	8.1	8.0	7.8	7.9
7	8.2	8.0	8.1	8.2	8.1	8.1	8.2	7.9	8.0	8.0	7.9	7.9
8	8.3	8.1	8.2	8.3	8.0	8.2	8.1	7.7	7.9	8.0	7.9	8.0
9	---	---	---	8.2	7.8	8.2	8.3	7.7	8.0	8.1	7.9	8.0
10	---	---	---	---	---	---	8.3	8.1	8.2	8.0	7.9	8.0
11	---	---	---	---	---	---	8.2	7.9	8.1	8.1	7.9	8.0
12	---	---	---	8.3	7.8	8.0	8.2	8.0	8.1	8.0	7.8	7.9
13	---	---	---	8.3	8.1	8.2	8.1	7.9	7.9	8.0	7.9	7.9
14	8.2	7.9	8.1	8.3	8.1	8.2	8.1	7.9	8.0	8.1	7.9	8.0
15	8.1	7.9	8.1	8.3	8.1	8.2	8.1	7.8	7.9	8.0	7.8	7.9
16	7.7	7.7	7.7	8.3	8.0	8.2	8.1	7.8	7.9	8.1	7.9	8.0
17	7.9	7.7	7.8	8.3	8.1	8.2	8.1	7.6	7.9	8.1	7.8	7.9
18	8.0	7.8	7.9	8.1	7.8	8.0	8.2	8.0	8.1	8.1	7.9	8.0
19	8.1	7.9	8.0	7.9	7.8	7.8	8.2	8.0	8.1	8.0	7.8	7.9
20	8.1	8.0	8.0	8.1	7.8	7.9	8.1	8.0	8.1	8.0	7.7	7.8
21	8.2	7.8	8.0	8.2	7.8	8.0	8.2	8.0	8.1	7.8	7.6	7.7
22	7.8	7.6	7.7	8.1	7.9	8.0	8.2	7.9	8.1	7.8	7.6	7.7
23	8.0	7.7	7.9	8.2	8.0	8.1	8.0	7.8	7.9	7.9	7.7	7.8
24	8.0	7.9	7.9	8.2	8.0	8.1	8.0	7.6	7.9	8.1	7.8	7.9
25	7.9	7.8	7.9	8.2	8.0	8.1	8.1	7.6	7.9	8.1	7.9	8.0
26	8.1	7.8	7.9	8.2	8.0	8.1	8.1	7.9	8.0	8.1	7.8	7.9
27	7.8	7.6	7.7	8.2	8.1	8.1	8.2	8.0	8.1	8.2	8.0	8.1
28	7.8	7.6	7.7	8.2	8.0	8.1	8.3	8.1	8.2	8.2	8.0	8.1
29	7.9	7.7	7.8	8.0	7.9	8.0	8.3	8.1	8.2	8.1	7.8	8.0
30	8.0	7.8	7.9	8.0	7.5	7.8	8.1	8.0	8.1	8.6	7.7	8.2
31	---	---	---	7.7	7.5	7.7	8.1	8.0	8.1	---	---	---
MONTH	8.3	7.6	7.9	8.3	7.5	8.0	8.3	7.4	8.0	8.6	7.6	7.9
YEAR	8.7	7.4	8.0									

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	20.5	18.0	19.5	24.0	21.0	23.0	14.0	12.5	13.0	18.0	14.5	16.0
2	20.5	17.5	19.0	21.0	19.5	20.0	13.5	12.5	13.0	14.5	13.5	14.0
3	20.5	18.0	19.5	21.0	18.5	19.5	13.5	12.5	13.0	14.5	13.5	14.0
4	21.0	18.5	20.0	18.5	15.0	16.5	14.5	13.0	14.0	15.5	14.0	15.0
5	21.5	19.0	20.5	15.0	13.0	14.0	13.0	11.0	12.0	14.5	13.5	14.0
6	21.5	19.5	20.5	14.0	12.5	13.5	12.0	11.0	11.5	13.5	12.0	12.5
7	22.0	20.0	21.5	13.5	12.5	13.0	12.5	10.5	11.5	13.0	12.0	12.5
8	22.0	19.0	20.0	15.5	13.5	14.5	13.0	12.0	12.5	13.5	12.5	13.0
9	20.0	17.5	19.0	18.0	15.5	17.0	14.0	12.5	13.5	16.0	13.5	14.5
10	22.5	20.0	21.0	20.0	18.0	19.0	14.5	12.5	13.5	14.5	11.5	12.5
11	22.5	20.5	21.5	21.0	20.0	20.5	13.5	12.0	13.0	11.5	11.0	11.0
12	22.5	20.0	21.5	21.0	18.0	19.5	14.5	12.5	13.0	13.0	11.0	11.5
13	22.5	20.5	21.5	18.0	15.5	17.0	16.0	14.5	15.0	12.0	11.0	11.5
14	22.5	20.5	22.0	15.5	14.5	15.0	16.0	14.0	15.0	11.5	11.0	11.5
15	23.5	22.5	23.0	15.5	13.5	14.5	14.0	11.0	12.0	13.0	11.5	12.0
16	24.5	23.0	24.0	17.0	15.0	16.0	12.0	11.0	11.5	14.0	11.0	12.5
17	23.5	22.5	23.0	18.5	17.0	17.5	12.5	10.5	11.5	14.0	12.5	13.5
18	22.5	21.5	22.5	20.0	18.0	19.0	12.5	10.0	11.5	16.0	14.0	15.0
19	22.0	20.5	21.5	20.5	19.0	20.0	14.5	12.5	13.5	15.0	14.0	14.0
20	22.5	21.0	21.5	19.0	18.0	18.5	15.0	14.0	14.5	15.5	13.5	14.0
21	23.0	21.5	22.0	18.5	17.0	18.5	14.5	14.0	14.0	15.5	12.5	14.0
22	23.5	22.0	22.5	17.0	16.0	16.5	15.5	14.5	15.0	15.5	12.5	14.0
23	23.5	22.0	23.0	16.0	15.0	15.5	18.0	15.5	16.5	17.0	14.5	15.5
24	22.5	20.5	22.0	16.0	15.0	15.5	17.5	15.5	16.0	15.5	13.0	14.0
25	22.0	20.0	21.0	15.0	14.0	14.5	15.5	15.0	15.5	13.0	11.0	12.0
26	22.0	19.5	20.5	14.0	12.0	13.0	15.0	14.0	14.5	12.0	9.5	11.0
27	22.0	20.0	21.0	12.0	10.5	11.0	15.0	14.0	14.5	12.0	9.5	11.0
28	22.5	20.5	21.5	11.5	9.5	10.5	16.0	15.0	15.5	12.5	11.0	11.5
29	23.0	22.0	22.5	12.0	10.0	11.0	18.5	16.0	17.0	13.5	12.0	12.5
30	23.5	21.5	22.5	12.5	11.5	12.0	20.0	18.0	19.0	12.5	11.0	12.0
31	24.0	22.5	23.5	---	---	---	20.5	18.0	19.5	13.0	10.5	12.0
MONTH	24.5	17.5	21.5	24.0	9.5	16.0	20.5	10.0	14.0	18.0	9.5	13.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	13.5	11.5	12.5	14.5	13.0	14.0	20.5	18.0	19.5	22.5	20.5	21.5
2	14.0	13.0	13.5	17.0	14.0	15.5	19.5	17.5	18.5	22.5	21.0	22.0
3	15.0	14.0	14.5	17.5	14.0	15.5	19.5	18.0	19.0	23.0	20.0	21.5
4	15.5	15.0	15.5	17.5	14.0	16.0	20.0	18.5	19.0	23.0	22.0	22.0
5	15.0	13.0	14.0	17.0	14.5	15.5	19.5	17.0	18.5	22.5	18.5	20.5
6	14.0	11.5	12.5	17.5	13.0	15.5	19.0	18.0	18.5	21.0	18.0	19.0
7	14.0	10.5	12.5	17.5	13.5	15.5	20.0	18.5	19.0	23.0	21.0	22.0
8	14.5	11.0	13.0	18.5	14.0	16.5	20.5	18.5	19.5	23.0	21.5	22.5
9	14.5	13.0	14.0	19.5	15.0	17.0	20.5	17.5	19.0	24.0	22.5	23.0
10	15.5	14.5	15.0	20.5	16.0	18.5	20.5	17.0	19.0	23.5	21.5	22.5
11	16.5	14.5	15.5	18.5	15.5	16.5	22.0	19.0	20.5	23.0	20.5	22.0
12	16.5	13.5	15.0	15.5	9.5	12.5	22.5	21.0	21.5	23.0	21.0	22.0
13	16.5	13.5	15.0	12.0	8.5	10.0	22.0	21.5	22.0	23.0	20.5	22.0
14	16.0	15.5	15.5	12.5	9.0	11.0	23.0	20.0	22.0	24.0	21.0	22.5
15	19.0	15.5	17.5	13.5	11.5	12.5	20.5	18.5	19.5	24.5	21.5	23.0
16	18.0	15.5	17.0	18.0	13.5	15.5	20.0	18.0	19.0	25.0	22.5	24.0
17	15.5	13.5	14.5	19.5	16.5	17.5	20.0	18.5	19.0	26.0	23.5	24.5
18	13.5	12.0	12.5	19.0	17.0	18.0	21.5	19.0	20.5	25.0	24.0	24.5
19	13.0	11.5	12.0	18.5	18.0	18.0	23.5	20.5	22.0	25.0	23.0	24.0
20	15.0	12.5	13.5	20.0	17.5	18.5	22.5	21.0	22.0	24.5	22.5	23.5
21	18.0	14.0	15.5	19.0	17.5	18.5	21.0	19.0	20.0	24.5	22.0	23.5
22	18.0	14.5	16.0	19.0	18.0	18.5	20.5	18.0	19.5	24.0	23.0	23.5
23	17.5	14.0	16.0	20.0	17.5	18.5	21.5	19.0	20.0	23.5	20.5	21.5
24	17.5	16.0	16.5	20.5	19.0	19.5	22.0	20.5	21.0	21.0	20.5	21.0
25	19.5	17.5	18.0	22.5	19.5	21.0	24.0	21.5	22.5	---	---	---
26	18.0	15.5	17.0	22.0	19.5	21.0	23.5	21.5	22.5	---	---	---
27	16.0	14.0	14.5	20.5	20.0	20.0	22.5	22.0	22.0	24.5	23.0	24.0
28	14.0	13.0	13.5	20.5	19.5	20.0	22.0	21.5	22.0	25.5	23.5	24.5
29	---	---	---	22.0	20.0	21.0	22.0	20.5	21.5	---	---	---
30	---	---	---	22.0	20.5	21.0	21.0	20.5	20.5	---	---	---
31	---	---	---	21.5	19.5	20.5	---	---	---	---	---	---
MONTH	19.5	10.5	14.5	22.5	8.5	17.0	24.0	17.0	20.5	26.0	18.0	22.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	27.0	24.5	25.5	28.5	27.0	28.0	29.5	27.5	28.5	28.0	26.0	27.0
2	27.0	25.0	26.0	28.5	27.0	28.0	29.5	27.5	28.5	28.0	26.0	27.0
3	28.0	25.5	27.0	29.0	27.0	28.0	29.5	27.5	28.5	27.5	26.0	26.5
4	27.0	26.0	27.0	28.5	27.0	28.0	29.5	27.5	28.5	27.0	25.5	26.5
5	28.0	26.5	27.0	28.0	27.0	27.5	29.0	27.0	28.0	27.0	24.5	26.0
6	28.5	26.5	27.5	28.5	27.0	27.5	29.0	27.0	28.0	26.5	25.5	26.0
7	28.0	27.0	27.5	28.5	27.0	27.5	29.0	27.0	28.0	26.5	24.5	25.5
8	27.5	26.5	27.0	28.5	27.0	27.5	29.0	27.5	28.0	26.5	24.0	25.5
9	28.0	28.0	27.0	27.5	27.0	27.5	29.0	27.5	28.5	26.5	24.5	25.5
10	---	---	---	---	---	---	29.0	27.0	28.0	27.0	25.0	26.0
11	---	---	---	---	---	---	29.0	27.0	28.0	27.0	25.0	26.0
12	---	---	---	28.0	26.5	27.5	28.5	27.0	28.0	26.5	25.5	26.0
13	---	---	---	28.0	26.5	27.5	29.0	27.0	28.0	26.5	25.5	26.0
14	25.5	25.5	24.5	28.5	26.5	27.5	29.0	27.0	28.0	26.0	24.5	25.5
15	26.5	24.5	25.5	28.5	26.5	27.5	29.0	27.5	28.0	24.5	22.5	23.5
16	27.0	24.5	26.0	28.5	26.5	27.5	29.0	27.5	28.0	24.0	21.5	22.5
17	27.5	25.5	26.5	28.5	26.5	27.5	28.5	27.0	28.0	24.5	22.0	23.5
18	27.5	26.0	26.5	29.0	27.0	27.5	29.0	27.0	28.0	25.5	23.5	24.5
19	27.0	26.0	26.5	28.5	27.0	27.5	28.5	26.5	27.5	27.0	25.0	26.0
20	26.5	25.5	26.0	29.0	27.0	28.0	28.0	26.0	27.0	27.5	25.5	26.5
21	27.0	25.5	26.5	29.0	27.0	28.0	28.0	25.5	27.0	27.5	26.0	27.0
22	27.0	26.0	26.5	29.0	27.0	28.0	28.0	26.5	27.0	28.0	26.5	27.0
23	27.5	26.5	27.0	29.0	27.0	28.0	28.0	26.5	27.0	28.0	26.5	27.5
24	27.5	26.5	27.0	29.0	27.5	28.0	28.5	26.5	27.5	28.0	26.5	27.5
25	27.5	26.5	27.0	29.0	27.5	28.5	28.5	26.5	27.5	28.0	26.5	27.5
26	27.0	24.5	26.0	29.0	27.5	28.0	28.0	26.0	27.0	27.5	25.5	26.5
27	27.0	25.5	26.0	29.0	27.5	28.0	27.0	26.0	26.5	25.5	23.5	24.5
28	28.0	26.0	27.0	29.5	27.5	28.5	27.5	25.5	26.5	23.5	21.0	22.5
29	28.5	27.0	27.5	29.5	27.5	28.5	28.0	26.0	27.0	23.0	20.0	21.5
30	28.5	27.0	28.0	29.5	27.5	28.5	28.0	26.5	27.0	22.5	20.0	21.5
31	---	---	---	29.5	27.5	28.5	28.0	26.5	27.0	---	---	---
MONTH	28.5	24.5	26.5	29.5	26.5	28.0	29.5	25.5	27.5	28.0	20.0	25.5
YEAR	29.5	8.5	20.5									

GUADALUPE RIVER BASIN

347

08180750 MEDIO CREEK AT PEARSALL ROAD AT SAN ANTONIO, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.7	6.8	7.8	8.2	5.4	6.5	9.8	8.3	8.9	10.6	6.7	8.2
2	9.9	7.0	8.0	8.7	6.3	7.1	10.1	8.2	9.0	10.4	7.5	8.6
3	9.9	7.0	8.1	8.9	6.4	7.2	9.6	8.1	8.7	10.4	7.9	8.8
4	10.0	7.0	8.1	9.5	6.8	7.9	9.5	8.0	8.6	11.8	7.8	9.0
5	9.8	6.8	7.9	10.2	7.8	8.8	9.4	8.2	8.7	12.3	7.7	9.4
6	9.8	6.7	7.8	10.9	8.4	9.4	11.1	8.3	9.4	12.3	7.8	9.5
7	9.3	6.5	7.5	11.0	8.7	9.6	11.8	8.8	9.9	12.0	8.0	9.5
8	9.5	6.3	7.5	10.2	8.0	8.8	10.4	8.3	9.2	11.5	8.0	9.2
9	9.6	6.7	7.8	9.1	7.2	8.0	11.3	7.8	8.8	12.7	7.6	9.3
10	9.3	6.5	7.5	8.6	6.5	7.3	11.4	7.7	9.1	11.4	7.8	9.3
11	9.3	6.3	7.4	8.0	6.0	6.7	12.4	7.7	9.5	11.6	8.3	9.5
12	8.9	6.3	7.2	8.4	6.0	7.0	11.9	7.7	9.2	14.2	8.5	10.7
13	8.7	6.2	7.2	9.3	6.6	7.8	8.9	6.9	7.7	13.8	8.5	10.6
14	8.7	6.2	7.1	10.4	7.3	8.5	8.4	6.7	7.4	12.9	8.5	10.2
15	8.4	5.9	6.6	10.4	7.8	8.7	9.0	7.4	8.5	14.3	8.3	10.6
16	8.2	5.7	6.3	10.2	7.4	8.5	9.8	8.4	8.9	14.6	8.4	10.8
17	8.2	5.6	6.5	9.6	7.0	7.9	10.4	8.4	9.2	13.7	8.2	9.9
18	7.9	5.8	6.5	9.8	6.6	7.6	10.4	8.4	9.2	13.5	7.6	9.6
19	8.2	6.0	6.9	7.6	6.3	7.0	10.6	8.2	9.0	9.6	7.4	8.2
20	8.4	6.1	6.9	8.0	7.1	7.5	9.4	7.9	8.5	12.7	7.7	9.5
21	8.5	6.1	7.0	7.3	4.8	6.3	10.8	8.0	8.9	13.6	7.6	9.9
22	8.7	6.2	6.7	8.1	5.8	7.1	10.4	8.2	9.0	14.2	7.7	10.2
23	---	---	---	9.4	7.8	8.5	11.1	8.0	8.9	13.4	7.2	9.4
24	9.0	6.2	7.1	8.4	7.7	8.0	10.2	7.8	8.5	14.1	7.4	10.1
25	9.2	6.3	7.3	8.8	7.8	8.3	10.2	7.6	8.4	13.7	8.0	10.2
26	9.2	6.4	7.4	9.3	8.2	8.8	11.6	7.9	9.2	15.1	8.6	11.2
27	9.5	6.5	7.5	9.9	9.0	9.4	11.1	8.0	9.1	16.1	8.8	11.7
28	9.5	6.4	7.4	10.1	9.3	9.6	9.6	7.8	8.5	14.1	8.6	10.6
29	8.8	6.0	6.8	10.3	9.1	9.6	11.5	7.4	8.7	14.5	8.1	10.2
30	8.3	5.4	6.4	10.3	9.0	9.5	11.2	6.8	8.3	15.9	8.1	11.0
31	8.4	5.4	6.4	---	---	---	10.6	6.4	7.7	16.1	8.7	11.7
MONTH	10.0	5.4	7.2	11.0	4.8	8.1	12.4	6.4	8.8	16.1	6.7	9.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	15.6	8.8	11.1	9.1	7.4	8.2	10.3	7.3	8.5	8.2	6.5	7.2
2	12.1	7.8	9.5	11.7	7.3	8.8	11.8	7.7	9.4	8.3	6.3	7.1
3	11.3	7.2	8.6	12.9	7.2	9.5	11.1	8.4	9.1	8.4	6.6	7.3
4	9.8	7.4	8.2	13.2	8.0	10.0	12.0	8.3	9.7	7.9	6.5	7.0
5	8.8	7.4	8.1	13.5	7.9	10.1	12.2	8.1	9.9	7.4	6.4	6.9
6	11.5	8.4	9.5	14.1	8.2	10.5	10.5	7.3	8.8	7.8	6.6	7.5
7	12.6	8.8	10.2	14.4	8.5	10.7	11.1	7.8	8.5	7.2	6.6	6.8
8	13.1	8.7	10.3	14.2	8.2	10.5	9.8	7.3	8.2	6.7	6.2	6.5
9	11.2	7.9	9.2	14.5	8.0	10.4	10.2	7.1	8.1	6.6	6.1	6.3
10	8.4	7.8	8.1	14.4	7.6	10.1	11.2	7.1	8.5	7.0	6.1	6.6
11	9.5	7.8	8.3	10.3	7.3	8.4	11.4	6.9	8.5	7.2	6.2	6.7
12	11.0	7.8	9.0	9.3	7.6	8.7	10.6	6.6	7.8	7.5	6.4	6.8
13	11.4	8.2	9.3	10.9	9.2	9.8	7.7	5.8	6.7	7.7	6.4	6.9
14	10.4	7.9	8.5	11.5	9.2	10.1	8.8	5.7	6.7	8.0	6.3	6.9
15	10.8	7.4	8.6	10.1	8.3	9.1	9.8	6.2	7.5	8.3	6.2	7.0
16	11.5	7.2	8.9	11.0	7.6	9.0	10.4	6.3	7.9	8.5	6.1	7.0
17	12.2	7.6	9.4	10.8	7.3	8.6	10.1	6.6	7.8	8.7	6.0	7.0
18	12.6	8.2	9.9	10.7	6.9	8.2	10.4	6.4	7.8	8.4	5.8	6.5
19	12.7	8.6	10.1	8.1	6.6	7.1	9.7	5.9	7.3	8.8	5.9	6.9
20	13.0	8.5	10.1	10.0	6.5	7.9	9.3	5.9	6.9	9.3	6.0	7.1
21	13.0	8.1	9.9	9.0	6.5	7.4	9.6	6.2	7.5	9.8	5.9	7.3
22	13.1	7.7	9.7	8.8	6.4	7.1	9.8	6.5	7.7	8.2	5.9	6.5
23	14.0	7.4	9.9	9.6	6.4	7.6	10.1	6.6	7.9	7.1	6.1	6.7
24	13.0	7.1	8.9	8.8	6.0	7.0	9.4	6.3	7.3	7.0	5.9	6.8
25	13.5	6.6	9.2	9.4	5.7	7.0	9.2	5.9	7.1	---	---	---
26	13.4	6.9	9.5	9.7	5.7	7.2	9.1	5.9	7.1	---	---	---
27	11.9	7.0	8.7	---	---	---	8.0	5.9	6.6	7.7	5.3	6.7
28	9.4	7.5	8.4	---	---	---	7.7	5.6	6.5	8.1	6.0	7.1
29	---	---	---	---	---	---	6.6	6.0	6.2	---	---	---
30	---	---	---	9.0	8.0	8.3	8.0	6.2	6.8	---	---	---
31	---	---	---	9.4	7.3	8.1	---	---	---	---	---	---
MONTH	15.6	6.6	9.3	14.5	5.7	8.7	12.2	5.6	7.8	9.8	5.3	6.9

[illegible]

08180800 MEDINA RIVER NEAR SOMERSET, TX

LOCATION (REVISED).--Lat 29°15'43", long 98°34'52", Bexar County, Hydrologic Unit 12100302, on left bank at downstream side of downstream bridge on State Highway 16, 2.0 mi upstream from Elm Creek, 5.0 mi downstream from Medio Creek, 5.2 mi northeast of Somerset, and 14.0 mi upstream from mouth. Prior to June 16, 1993, at site 300 ft upstream at same datum.

DRAINAGE AREA.--967 mi², of which 634 mi² is above Medina 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.--Records good. Flow is 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 Riomedina (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. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1890, that of July 17, 1973.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	149	140	199	187	173	154	165	175	268	222	103	67
2	149	136	e199	184	172	155	158	166	251	e215	106	69
3	148	136	e198	184	175	147	156	165	233	e207	94	69
4	147	138	e197	187	184	142	158	163	223	e200	90	76
5	145	131	e195	187	207	141	158	311	219	e194	88	73
6	146	129	e200	179	218	142	157	1970	215	187	86	71
7	144	129	210	175	197	143	155	1730	209	177	84	70
8	143	128	212	175	188	145	166	586	200	165	83	67
9	141	133	211	176	182	146	166	476	195	159	81	69
10	142	136	211	175	222	145	153	422	196	155	79	68
11	144	138	209	174	231	142	150	397	199	152	78	72
12	141	141	208	172	210	153	150	359	204	148	78	70
13	141	137	212	170	198	178	151	335	241	143	77	74
14	139	133	219	169	193	166	148	319	223	140	77	71
15	139	131	264	169	193	164	138	308	245	137	76	66
16	141	131	263	170	190	166	137	291	219	134	76	66
17	143	137	223	170	185	170	135	276	203	130	76	64
18	144	143	207	173	181	172	133	268	199	128	74	64
19	149	207	202	185	181	172	132	250	207	126	73	65
20	144	759	198	189	182	172	130	240	233	123	72	65
21	142	423	195	188	181	172	128	230	371	121	71	63
22	141	279	192	182	170	173	154	226	319	119	70	62
23	139	251	193	180	159	173	141	437	267	116	69	61
24	139	235	197	179	154	171	131	582	264	113	69	61
25	137	223	200	179	152	161	149	308	247	111	70	60
26	136	215	201	172	148	151	151	265	360	108	69	59
27	137	208	199	172	146	152	151	273	435	104	68	60
28	136	204	198	172	146	172	152	270	307	104	69	58
29	136	202	198	175	---	162	158	276	265	102	69	57
30	143	199	198	175	---	160	172	277	237	99	69	57
31	141	---	195	175	---	179	---	278	---	97	68	---
TOTAL	4406	5832	6403	5499	5118	4941	4483	12629	7454	4436	2412	1974
MEAN	142	194	207	177	183	159	149	407	248	143	77.8	65.8
MAX	149	759	264	189	231	179	172	1970	435	222	106	76
MIN	136	128	192	169	146	141	128	163	195	97	68	57
AC-FT	8740	11570	12700	10910	10150	9800	8890	25050	14790	8800	4780	3920

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1993, BY WATER YEAR (WY)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	208	168	158	182	286	248	222	329	662	306	189	149											
MAX	1284	648	549	751	2449	2326	1480	1663	6432	2875	1222	868											
(WY)	1974	1977	1977	1992	1992	1992	1992	1992	1987	1973	1978	1973											
MIN	41.2	40.2	33.5	37.2	33.4	34.4	35.6	31.1	27.4	22.3	24.5	22.7											
(WY)	1989	1985	1985	1985	1971	1971	1971	1971	1990	1984	1984	1984											

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1971 - 1993

ANNUAL TOTAL	372836	65587	
ANNUAL MEAN	1019	180	
HIGHEST ANNUAL MEAN			258
LOWEST ANNUAL MEAN			1033
HIGHEST DAILY MEAN	7860	Feb 5	1970
LOWEST DAILY MEAN	128	Nov 8	May 6
ANNUAL SEVEN-DAY MINIMUM	132	Nov 3	57
INSTANTANEOUS PEAK FLOW			3970
INSTANTANEOUS PEAK STAGE			16.63
ANNUAL RUNOFF (AC-FT)	739500		130100
10 PERCENT EXCEEDS	2440		263
50 PERCENT EXCEEDS	535		163
90 PERCENT EXCEEDS	143		71

08181400 HELOTES CREEK AT HELOTES, TX

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

DRAINAGE AREA.--15.0 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR 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.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	1745	420	3.50	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.11	3.7	.27	.00	8.5	.00	.00	.25	.00	.00	.00
2	.00	.00	2.7	.17	.00	8.1	.00	.00	.17	.00	.00	.00
3	.00	.00	1.8	.26	.00	8.2	.00	.00	.06	.00	.00	.00
4	.00	.00	1.7	.08	.00	7.9	.00	.00	.02	.00	.00	.00
5	.00	.00	1.6	.00	.00	7.7	.00	41	.00	.00	.00	.00
6	.00	.00	1.9	.00	.00	7.4	.00	22	.00	.00	.00	.00
7	.00	.00	.95	.17	.00	6.9	1.4	19	.00	.00	.00	.00
8	.00	.00	.02	.04	.00	5.7	.07	14	.00	.00	.00	.00
9	.00	.00	.04	.00	.01	5.3	.00	12	.00	.00	.00	.00
10	.00	.00	.00	.00	4.2	4.8	.00	9.5	.00	.00	.00	.44
11	.00	.00	.00	.00	5.3	3.9	.00	7.6	.00	.00	.00	.00
12	.00	.00	.00	.02	5.3	6.9	.00	6.2	.24	.00	.00	.00
13	.00	.00	.00	.00	5.3	4.8	.00	4.9	.33	.00	.00	.00
14	.00	.00	.04	.00	4.8	4.2	.00	3.5	.00	.00	.00	.00
15	.00	.00	6.4	.00	4.0	3.8	.00	2.3	.00	.00	.00	.00
16	.00	.00	5.3	.00	3.5	3.6	.00	1.7	.00	.00	.00	.00
17	.00	.00	4.1	.00	2.9	2.9	.00	1.1	.00	.00	.00	.00
18	.00	.00	3.5	.00	2.9	2.4	.00	1.5	.00	.00	.00	.00
19	.00	27	3.0	.00	2.9	2.2	.00	1.1	.00	.00	.00	.00
20	.00	43	2.4	.02	2.4	2.2	.00	.64	.00	.00	.00	.00
21	.00	49	2.0	.00	1.7	1.9	.00	.45	.60	.00	.00	.00
22	.00	20	1.9	.00	1.4	1.9	.00	1.7	.00	.00	.00	.00
23	.00	17	1.6	.00	1.4	1.7	.00	6.9	.00	.00	.00	.00
24	.00	14	.99	.00	1.3	1.3	.00	3.5	.00	.00	.00	.00
25	.00	11	.90	.00	1.9	1.1	.00	1.9	.00	.00	.00	.00
26	.00	9.9	.74	.00	1.5	.94	.00	1.2	.05	.00	.00	.00
27	.00	8.9	.58	.00	1.3	.46	.00	.86	.25	.00	.00	.00
28	.00	7.5	.54	.00	3.8	.41	.00	.94	.00	.00	.00	.00
29	.00	6.8	.19	.00	---	.33	.04	.99	.00	.00	.00	.00
30	.00	4.9	.00	.00	---	.33	.00	1.9	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.83	---	.00	.00	---
TOTAL	0.00	199.11	48.59	1.03	57.81	117.77	1.51	169.21	1.97	0.00	0.00	0.44
MEAN	.000	6.64	1.57	.033	2.06	3.80	.050	5.46	.066	.000	.000	.015
MAX	.00	43	6.4	.27	5.3	8.5	1.4	41	.60	.00	.00	.44
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	395	96	2.0	115	234	3.0	336	3.9	.00	.00	.9
CFSM	.00	.44	.10	.00	.14	.25	.00	.36	.00	.00	.00	.00
IN.	.00	.49	.12	.00	.14	.29	.00	.42	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1993, BY WATER YEAR (WY)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	5.42	2.32	4.77	2.28	4.42	3.95	3.79	8.44	16.3	4.83	1.10	2.14													
MAX	66.7	16.4	79.0	31.0	66.3	32.3	40.0	66.6	142	84.4	13.5	36.1													
(WY)	1974	1977	1992	1992	1992	1985	1973	1992	1987	1973	1971	1973													
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000													
(WY)	1979	1971	1971	1969	1971	1971	1983	1989	1980	1969	1970	1969													

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1969 - 1993

ANNUAL TOTAL	8159.46	597.44	4.97
ANNUAL MEAN	22.3	1.64	28.3
HIGHEST ANNUAL MEAN			.003
LOWEST ANNUAL MEAN			950
HIGHEST DAILY MEAN	383	43	950
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW	.00	.00	.00
INSTANTANEOUS PEAK STAGE			
ANNUAL RUNOFF (AC-FT)	16180	1190	3600
ANNUAL RUNOFF (CFSM)	1.49	.11	.33
ANNUAL RUNOFF (INCHES)	20.24	1.48	4.50
10 PERCENT EXCEEDS	60	4.9	8.0
50 PERCENT EXCEEDS	6.5	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

* No flow most of time each year.

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

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. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e9.0	27	e6.8	9.0	7.7	33	16	21	31	20	8.8	e5.2
2	e9.0	17	e6.4	8.7	8.3	22	11	13	21	18	e8.2	e5.2
3	e10	15	e6.2	11	21	15	11	13	17	16	e8.0	e5.2
4	e10	15	e6.4	11	24	14	18	12	16	14	e7.8	e5.1
5	e11	14	e7.0	11	57	13	14	383	14	e13	e7.5	e5.0
6	e11	15	e7.4	10	24	12	12	4400	13	e13	e7.2	6.5
7	e12	15	e8.4	16	11	11	36	174	11	e12	e7.0	5.0
8	e12	16	12	11	9.1	12	40	82	10	e12	e7.0	6.8
9	e12	23	14	10	11	13	17	46	10	e11	e6.7	13
10	e12	22	13	9.5	102	13	11	32	38	e11	e6.6	28
11	e11	20	12	9.6	32	13	10	25	18	e11	e6.5	9.7
12	e11	41	12	10	20	76	10	21	183	e10	e6.4	7.8
13	e11	26	12	9.9	16	38	e9.6	18	165	e10	e6.2	13
14	e11	24	13	9.5	15	21	e9.4	16	51	e10	e6.0	8.3
15	e10	23	77	10	14	20	e9.0	16	51	e10	e6.0	7.2
16	e10	23	24	9.3	13	22	e9.0	14	34	e9.0	e5.8	6.2
17	e10	25	18	9.1	13	17	e8.0	13	25	e9.0	e5.8	6.3
18	e10	27	14	9.0	14	16	e7.6	14	24	e9.0	e5.7	6.2
19	e10	182	13	24	14	17	e7.2	15	24	e9.0	e5.6	5.6
20	e10	398	13	18	14	15	e7.2	13	44	e9.0	e5.6	6.0
21	e10	66	12	8.4	13	14	e6.4	11	120	e8.0	e5.6	6.7
22	10	29	12	7.1	13	16	e6.0	53	49	e8.0	e5.6	7.0
23	11	16	12	7.0	13	15	e6.0	295	34	e8.0	e5.5	6.4
24	10	12	10	6.3	13	16	e6.8	178	32	e8.0	e5.5	6.3
25	9.8	9.7	9.8	6.8	19	16	e7.6	70	39	8.4	e5.4	6.2
26	9.4	7.9	9.5	7.3	14	17	e9.0	38	142	8.1	e5.4	5.8
27	9.9	7.3	9.2	8.1	11	16	e10	26	51	8.9	e5.3	5.1
28	11	e6.8	10	8.1	24	28	12	36	36	10	e5.3	5.4
29	12	e6.6	11	9.5	---	20	34	26	30	11	e5.3	4.6
30	31	e6.6	10	7.6	---	64	33	56	27	10	e5.2	3.4
31	13	---	9.8	7.0	---	28	---	32	---	10	e5.2	---
TOTAL	349.1	1135.9	410.9	308.8	560.1	663	403.8	6162	1360	334.4	193.7	218.2
MEAN	11.3	37.9	13.3	9.96	20.0	21.4	13.5	199	45.3	10.8	6.25	7.27
MAX	31	398	77	24	102	76	40	4400	183	20	8.8	28
MIN	9.0	6.6	6.2	6.3	7.7	11	6.0	11	10	8.0	5.2	3.4
AC-FT	692	2250	815	613	1110	1320	801	12220	2700	663	384	433

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1993, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	21.6	12.7	74.6	26.1	56.9	37.4	26.5	96.1	174
MAX	69.6	37.9	575	116	355	192	82.6	356	824
(WY)	1987	1993	1992	1992	1992	1992	1991	1992	1987
MIN	4.94	3.95	4.62	5.36	5.93	6.46	6.92	5.89	4.96
(WY)	1992	1992	1990	1990	1989	1986	1986	1989	1990

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1985 - 1993
ANNUAL TOTAL	41058.0	12099.9	
ANNUAL MEAN	112	33.2	48.4
HIGHEST ANNUAL MEAN			156
LOWEST ANNUAL MEAN			9.41
HIGHEST DAILY MEAN	5020	4400	6190
LOWEST DAILY MEAN	6.2	3.4	1.1
ANNUAL SEVEN-DAY MINIMUM	6.5	5.2	1.4
INSTANTANEOUS PEAK FLOW		12600	21100
INSTANTANEOUS PEAK STAGE		18.60	22.30
ANNUAL RUNOFF (AC-FT)	81440	24000	35070
10 PERCENT EXCEEDS	189	35	46
50 PERCENT EXCEEDS	25	11	9.4
90 PERCENT EXCEEDS	10	6.2	4.0

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.

pH: April 1989 to current year.

WATER TEMPERATURE: September 1984 to current year.

DISSOLVED OXYGEN: April 1989 to current year.

INSTRUMENTATION.--Since September 1984, specific conductance and water temperature are recorded continuously at this station. Since April 1989, pH and dissolved oxygen are recorded continuously.

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, 1,260 microsiemens Nov. 19, 1988; minimum, 39 microsiemens Jan. 18, 1991.

pH: Maximum, 8.5 units Mar. 29, 1990; minimum, 6.7 units June 30, 1991.

WATER TEMPERATURE: Maximum, 32.5°C July 16, 17, 1989; minimum, 4.0°C Dec. 24, 1989.

DISSOLVED OXYGEN: Maximum, 19.8 mg/L Oct. 13, 14, 1989; minimum, 1.2 mg/L Sept. 1, 1990, Sept. 10, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,040 microsiemens Aug. 25; minimum, 68 microsiemens May 6.

pH: Maximum, 8.3 units May 6; minimum, 7.2 May 31.

WATER TEMPERATURE: Maximum, 29.5°C July 14; minimum, 12.0°C Feb. 6, 10.

DISSOLVED OXYGEN: Maximum, 16.6 mg/L Mar. 8; minimum, 1.2 mg/L Sept. 10.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS TOTAL (MG/L AS CAC03)
OCT 21...	0910	13	853	7.7	22.0	5	2.4	6.4	74	0.4	290
DEC 21...	1210	62	810	7.8	15.5	13	0.30	7.6	78	1.9	290
FEB 08...	1220	30	816	7.9	15.5	10	2.8	9.4	96	0.8	290
APR 13...	1325	13	797	7.8	22.0	13	1.9	7.2	85	7.7	310
JUN 08...	1307	30	786	7.8	26.5	<1	12	7.0	89	1.6	280
AUG 04...	0830	24	773	7.7	26.0	8	3.2	5.2	65	0.7	280
DATE	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	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)
OCT 21...	55	91	15	63	2	3.1	230	93	57	0.40	17
DEC 21...	37	96	13	52	1	3.7	260	75	54	0.20	15
FEB 08...	28	93	14	58	1	3.6	260	88	58	0.20	15
APR 13...	41	100	15	53	1	3.2	270	77	56	0.30	15
JUN 08...	22	92	13	57	1	3.8	260	89	46	0.30	16
AUG 04...	14	87	15	65	2	3.2	270	87	45	0.60	16
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)	RESIDUE FIXED NON FILTER- ABLE (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 21...	480	15	15	0	2.49	--	0.010	--	2.50	--	0.060
DEC 21...	464	11	1	10	1.87	--	0.030	--	1.90	--	0.030
FEB 08...	494	<1	<1	--	1.46	1.46	--	0.040	1.50	1.50	--
APR 13...	491	1	1	0	1.58	1.58	--	0.020	1.60	1.60	--
JUN 08...	480	32	14	18	1.00	--	--	<0.010	1.00	1.00	--
AUG 04...	484	10	1	9	1.40	--	--	<0.010	1.40	1.40	--

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
	DATE										
	OCT 21...	--	1.3	--	--	1.4	0.210	--	--	0.090	--
	DEC 21...	--	0.17	--	--	0.20	0.090	--	--	0.080	--
	FEB 08...	0.040	--	0.36	0.40	--	--	0.070	0.050	--	0.15
	APR 13...	0.110	--	0.29	0.40	--	--	0.050	0.050	--	0.15
	JUN 08...	0.050	--	0.25	0.30	--	--	0.070	0.040	--	0.12
	AUG 04...	0.040	--	0.36	0.40	--	--	0.080	0.050	--	0.15
DATE		CARBON, ORGANIC TOTAL (MG/L AS C)	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 21...	3.6	--	--	--	--	--	--	--	--	--
	DEC 21...	3.2	1	68	<0.5	1.0	<5	<3	<10	17	<10
	FEB 08...	3.6	--	--	--	--	--	--	--	--	--
	APR 13...	3.4	1	78	<0.5	<1.0	<5	<3	<10	9	10
	JUN 08...	3.0	1	74	<0.5	<1.0	<5	<3	<10	100	<10
	AUG 04...	2.4	--	--	--	--	--	--	--	--	--
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 21...	--	--	--	--	--	--	--	--	--	--
	DEC 21...	18	22	<0.1	<10	10	<1	<1.0	770	<6	8
	FEB 08...	--	--	--	--	--	--	--	--	--	--
	APR 13...	24	30	<0.1	10	10	<1	<1.0	880	<6	4
	JUN 08...	19	22	<0.1	<10	20	<1	<1.0	760	<6	8
	AUG 04...	--	--	--	--	--	--	--	--	--	--
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.	1992	349.1	770	465	439	52	49	97	92	280	
NOV.	1992	1135.9	466	278	853	28	87	53	164	180	
DEC.	1992	410.9	689	415	461	45	50	85	94	250	
JAN.	1993	308.8	775	469	391	52	44	98	82	280	
FEB.	1993	560.1	585	349	528	36	54	67	102	220	
MAR.	1993	663	663	398	712	42	76	79	142	250	
APR.	1993	403.8	692	416	454	45	49	84	92	260	
MAY	1993	6162	199	116	1930	10	169	19	315	83	
JUNE	1993	1360	597	357	1310	37	137	70	257	230	
JULY	1993	334.4	762	460	415	51	46	96	86	280	
AUG.	1993	193.7	794	481	251	54	28	100	53	290	
SEPT	1993	218.2	564	336	198	34	20	65	38	220	
TOTAL		12099.9	**	**	7900	**	809	**	1520	**	
WTD.AVG.		33	408	243	**	25	**	46	**	160	

GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	736	716	727	841	433	743	806	794	801	834	816	823
2	806	729	756	738	450	608	851	803	833	832	817	824
3	806	789	795	820	731	789	857	840	848	878	831	850
4	805	749	785	831	805	822	898	851	871	880	828	857
5	785	742	761	825	801	815	900	867	885	890	853	870
6	789	752	776	857	804	831	877	844	867	---	---	928
7	774	736	762	867	825	846	876	819	845	---	---	857
8	772	756	765	846	794	810	872	826	842	---	---	739
9	789	757	772	835	786	810	854	834	844	826	799	814
10	759	742	751	800	734	766	---	---	825	835	823	829
11	754	716	744	819	734	786	779	772	775	847	807	830
12	749	737	743	796	555	702	813	772	790	821	786	798
13	769	728	737	705	456	586	816	803	809	874	821	856
14	732	716	725	779	705	762	803	769	780	843	795	810
15	747	716	727	839	773	808	789	184	374	812	783	798
16	773	747	761	816	787	799	658	450	599	860	803	824
17	789	760	773	792	776	787	548	492	519	860	784	811
18	792	770	778	778	768	773	625	537	590	787	769	778
19	823	790	806	795	132	435	671	619	641	769	298	640
20	869	823	856	232	122	177	771	671	715	712	330	597
21	853	842	847	386	232	315	848	767	801	651	548	610
22	847	830	842	482	386	439	852	816	831	673	612	646
23	838	824	830	585	482	540	843	813	830	712	671	686
24	860	806	844	668	585	632	816	794	803	758	712	744
25	841	815	830	736	668	701	822	799	811	780	750	762
26	829	812	821	773	731	757	816	791	800	782	756	768
27	877	827	861	793	767	779	794	780	787	795	748	767
28	867	827	845	810	793	800	790	761	780	797	786	790
29	925	838	891	814	800	805	780	758	772	788	752	776
30	914	489	654	806	795	799	770	750	762	770	729	749
31	750	467	576	---	---	---	834	762	800	756	743	750
MONTH	925	467	779	867	122	701	900	184	769	890	298	780

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	768	726	748	696	360	591	559	422	467	657	465	542
2	768	757	763	632	520	583	693	559	634	776	535	715
3	806	565	752	728	583	655	725	693	713	772	753	763
4	757	384	615	793	728	757	738	713	726	802	753	774
5	630	339	478	799	746	772	713	657	678	798	102	434
6	556	373	440	794	739	766	730	704	722	203	68	117
7	776	556	681	793	772	781	758	444	687	449	194	335
8	808	773	792	792	760	777	643	441	552	554	437	490
9	804	770	792	818	752	775	565	439	472	631	554	595
10	795	205	446	827	769	797	692	565	643	690	624	664
11	424	307	362	880	792	819	751	692	727	753	690	727
12	547	424	490	883	298	587	772	750	760	780	732	762
13	597	547	573	702	304	476	775	754	766	798	754	788
14	606	589	596	795	702	773	760	747	754	804	772	791
15	630	602	612	789	690	749	775	754	763	803	774	788
16	643	617	635	690	652	668	792	736	765	801	766	788
17	667	636	655	681	652	670	813	757	796	816	759	791
18	661	644	652	722	670	691	807	789	799	800	767	789
19	689	647	678	740	716	729	792	745	764	---	---	788
20	694	670	678	738	663	720	770	749	758	---	---	786
21	722	694	713	725	663	704	801	769	787	---	---	790
22	730	715	720	717	674	701	794	770	785	---	---	250
23	743	664	693	727	698	722	823	759	795	---	---	240
24	719	664	692	---	---	760	843	811	832	---	---	260
25	721	691	712	---	---	780	884	843	859	---	---	300
26	721	633	690	816	771	800	879	835	851	---	---	325
27	761	720	735	849	799	827	840	795	825	---	---	357
28	780	471	720	801	742	775	846	822	836	---	---	428
29	---	---	---	747	524	638	875	495	791	---	---	233
30	---	---	---	719	160	510	816	369	545	---	---	322
31	---	---	---	566	447	485	---	---	---	---	---	257
MONTH	808	205	647	883	160	704	884	369	728	816	68	548

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	310	812	786	795	779	757	771	858	775	811
2	---	---	363	815	786	801	---	---	768	816	795	805
3	---	---	511	817	788	797	---	---	770	799	709	742
4	654	572	620	824	791	806	---	---	765	719	701	707
5	696	653	674	797	769	784	---	---	768	735	709	721
6	758	693	725	783	766	777	---	---	770	739	708	729
7	773	752	761	788	770	778	---	---	764	708	663	685
8	---	---	785	793	755	777	---	---	758	---	---	625
9	---	---	780	832	786	814	---	---	750	---	---	400
10	---	---	775	859	795	820	748	735	746	---	---	250
11	799	748	767	847	778	811	762	734	744	---	---	390
12	821	170	632	796	724	755	913	762	833	---	---	490
13	563	188	362	833	679	765	922	885	900	---	---	580
14	792	563	700	761	679	725	896	870	882	---	---	600
15	801	687	734	748	738	742	922	884	905	---	---	620
16	766	656	705	764	738	751	891	815	848	---	---	625
17	803	763	786	760	743	752	815	759	777	---	---	620
18	875	784	826	747	730	737	667	647	656	---	---	610
19	890	748	818	746	721	729	672	632	652	---	---	630
20	848	670	821	734	720	726	684	645	671	---	---	630
21	670	313	431	726	717	721	694	684	688	---	---	625
22	742	409	602	731	692	718	686	645	663	---	---	630
23	828	742	797	717	690	704	838	767	802	---	---	620
24	787	732	752	726	714	719	1030	808	905	---	---	620
25	764	625	738	734	707	722	1040	932	986	---	---	625
26	625	311	432	727	712	718	933	829	869	---	---	630
27	647	403	533	742	719	727	842	824	832	---	---	625
28	794	647	741	732	716	724	862	829	851	---	---	620
29	803	783	797	753	717	739	881	854	870	---	---	615
30	840	794	810	739	696	716	913	858	890	---	---	610
31	---	---	---	777	739	764	869	843	857	---	---	---
MONTH	890	170	670	859	679	755	1040	632	797	858	663	616
YEAR	1040	68	709									

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.8	7.8	7.8	---	---	---	8.0	7.9	7.9	7.9	7.8	7.8
2	7.9	7.7	7.7	7.7	7.4	7.5	7.9	7.8	7.9	7.9	7.8	7.8
3	7.9	7.7	7.7	7.6	7.3	7.5	8.0	7.9	8.0	7.9	7.8	7.9
4	7.8	7.7	7.7	7.6	7.5	7.6	7.9	7.8	7.9	7.9	7.8	7.9
5	7.7	7.6	7.7	7.7	7.6	7.6	7.9	7.8	7.9	8.0	7.9	7.9
6	7.8	7.6	7.7	7.7	7.4	7.6	7.9	7.8	7.8	---	---	---
7	7.8	7.7	7.7	7.7	7.6	7.6	7.9	7.8	7.8	---	---	---
8	7.8	7.6	7.7	7.6	7.5	7.5	7.8	7.7	7.8	---	---	---
9	7.7	7.6	7.6	7.5	7.5	7.5	---	---	---	8.0	7.7	7.8
10	7.7	7.6	7.7	7.5	7.5	7.5	---	---	---	7.8	7.7	7.8
11	7.8	7.6	7.7	---	---	---	---	---	---	7.8	7.7	7.7
12	7.8	7.6	7.7	---	---	---	8.1	7.9	8.0	7.9	7.7	7.8
13	8.1	7.5	7.8	---	---	---	8.0	7.9	8.0	7.9	7.7	7.8
14	7.9	7.6	7.8	7.6	7.5	7.6	8.0	7.9	8.0	7.8	7.7	7.7
15	7.8	7.7	7.8	7.6	7.6	7.6	8.1	7.6	7.9	7.7	7.7	7.9
16	7.8	7.7	7.7	7.6	7.5	7.5	7.9	7.6	7.8	---	---	---
17	7.8	7.6	7.7	7.5	7.5	7.5	7.7	7.6	7.7	---	---	---
18	7.7	7.6	7.7	7.5	7.5	7.5	7.7	7.7	7.7	---	---	---
19	7.7	7.6	7.7	7.9	7.5	7.7	7.8	7.6	7.7	7.9	7.5	7.8
20	7.7	7.6	7.6	8.0	7.8	7.8	7.9	7.7	7.9	7.8	7.5	7.6
21	7.7	7.6	7.6	7.8	7.6	7.7	8.0	7.9	7.9	7.6	7.5	7.6
22	7.7	7.6	7.6	7.7	7.6	7.7	7.9	7.9	7.9	7.6	7.3	7.4
23	7.9	7.6	7.8	7.8	7.6	7.7	8.0	7.8	7.9	7.7	7.4	7.5
24	7.9	7.6	7.8	7.8	7.6	7.7	7.9	7.8	7.9	7.7	7.5	7.6
25	7.8	7.7	7.7	7.9	7.3	7.7	7.9	7.8	7.8	7.7	7.6	7.6
26	7.8	7.6	7.7	7.9	7.8	7.8	8.0	7.7	7.8	7.7	7.5	7.5
27	7.8	7.7	7.7	7.9	7.8	7.9	7.8	7.7	7.7	---	---	---
28	7.8	7.6	7.7	7.9	7.9	7.9	7.8	7.7	7.7	---	---	---
29	7.8	7.6	7.7	7.9	7.9	7.9	7.9	7.7	7.8	---	---	---
30	7.9	7.5	7.6	7.9	7.8	7.9	7.9	7.8	7.8	---	---	---
31	7.6	7.3	7.5	---	---	---	7.8	7.6	7.8	---	---	---
MONTH	8.1	7.3	7.7	8.0	7.3	7.7	8.1	7.6	7.8	8.0	7.3	7.7

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.2	8.0	8.1	---	---	---	---	---	---	7.8	7.5	7.6
2	8.1	8.0	8.0	---	---	---	---	---	---	7.8	7.6	7.7
3	8.1	7.9	8.0	---	---	---	---	---	---	7.8	7.7	7.7
4	8.1	7.8	8.0	---	---	---	---	---	---	7.8	7.7	7.7
5	8.0	7.7	7.8	---	---	---	---	---	---	8.2	7.7	7.9
6	7.7	7.5	7.6	---	---	---	---	---	---	8.3	7.8	8.0
7	7.6	7.5	7.5	---	---	---	---	---	---	7.8	7.7	7.7
8	---	---	---	---	---	---	---	---	---	7.7	7.7	7.7
9	---	---	---	---	---	---	7.8	7.5	7.6	7.7	7.7	7.7
10	---	---	---	---	---	---	7.9	7.7	7.8	7.8	7.7	7.7
11	7.8	7.5	7.6	---	---	---	8.0	7.6	7.7	7.8	7.7	7.8
12	7.6	7.5	7.5	---	---	---	7.7	7.5	7.6	7.8	7.8	7.8
13	7.6	7.6	7.6	---	---	---	7.8	7.6	7.7	7.8	7.8	7.8
14	---	---	---	---	---	---	7.7	7.5	7.6	7.7	7.7	7.7
15	---	---	---	---	---	---	7.8	7.5	7.6	7.7	7.6	7.7
16	7.7	7.6	7.7	---	---	---	7.7	7.7	7.7	7.8	7.7	7.8
17	7.7	7.5	7.6	---	---	---	7.9	7.7	7.8	7.8	7.8	7.8
18	7.5	7.4	7.5	---	---	---	8.0	7.8	7.9	7.8	7.8	7.8
19	---	---	---	---	---	---	8.0	7.7	7.8	---	---	---
20	---	---	---	---	---	---	8.0	7.7	7.9	---	---	---
21	---	---	---	---	---	---	7.9	7.8	7.9	---	---	---
22	---	---	---	---	---	---	7.9	7.7	7.8	---	---	---
23	---	---	---	---	---	---	7.9	7.7	7.8	---	---	---
24	---	---	---	---	---	---	7.8	7.7	7.7	8.0	7.7	7.8
25	---	---	---	---	---	---	7.9	7.7	7.7	8.0	7.5	7.6
26	---	---	---	---	---	---	7.9	7.3	7.6	7.7	7.4	7.6
27	---	---	---	---	---	---	7.6	7.4	7.5	7.7	7.6	7.7
28	---	---	---	---	---	---	7.8	7.5	7.7	7.7	7.5	7.6
29	---	---	---	---	---	---	8.0	7.7	7.8	7.5	7.3	7.4
30	---	---	---	---	---	---	7.9	7.5	7.6	7.6	7.3	7.5
31	---	---	---	---	---	---	---	---	---	7.5	7.2	7.4
MONTH	8.2	7.4	7.7	---	---	---	8.0	7.3	7.7	8.3	7.2	7.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.6	7.5	7.6	7.7	7.6	7.7	7.9	7.7	7.7	7.8	7.7	7.8
2	7.9	7.4	7.6	7.8	7.7	7.7	---	---	---	7.8	7.5	7.7
3	7.7	7.6	7.7	7.8	7.7	7.7	---	---	---	7.8	7.6	7.7
4	7.8	7.8	7.8	7.8	7.7	7.7	---	---	---	7.9	7.5	7.7
5	7.8	7.7	7.8	7.9	7.7	7.8	---	---	---	7.9	7.5	7.7
6	7.8	7.6	7.7	7.9	7.8	7.8	---	---	---	7.7	7.6	7.7
7	7.9	7.7	7.8	7.9	7.7	7.8	---	---	---	7.9	7.5	7.7
8	7.8	7.7	7.8	7.9	7.7	7.7	---	---	---	7.9	7.7	7.8
9	7.8	7.7	7.7	7.9	7.8	7.8	---	---	---	8.0	7.7	7.8
10	7.8	7.7	7.7	7.8	7.8	7.8	7.9	7.6	7.8	7.8	7.5	7.7

GUADALUPE RIVER BASIN

359

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	22.0	20.0	21.0	24.0	21.5	23.5	19.0	17.5	18.0	19.0	15.5	17.0
2	21.5	20.0	21.0	21.5	20.5	21.0	18.5	17.5	18.0	15.5	15.0	15.0
3	22.0	20.0	21.0	21.5	20.0	20.5	18.5	17.5	18.0	16.0	14.5	15.0
4	22.0	20.5	21.5	20.0	18.0	19.0	19.5	18.5	19.0	17.0	15.5	16.0
5	22.0	20.5	21.5	18.0	16.5	17.0	18.5	16.0	17.0	15.5	14.5	15.0
6	22.5	21.0	22.0	16.5	15.5	16.0	16.0	15.5	16.0	---	---	---
7	23.0	21.5	22.5	17.0	15.5	16.0	16.5	15.0	16.0	---	---	---
8	23.0	21.0	21.5	18.5	17.0	17.5	17.0	16.0	17.0	---	---	---
9	21.0	20.0	20.5	20.0	18.5	19.0	17.5	17.0	17.0	18.0	16.0	17.0
10	23.0	21.0	22.0	21.0	20.0	20.5	---	---	---	17.0	14.0	15.5
11	23.0	22.0	22.5	21.5	21.0	21.0	---	---	---	14.0	13.5	13.5
12	23.0	21.5	22.0	21.5	19.0	20.5	---	---	---	15.0	13.0	14.0
13	22.5	21.0	22.0	19.0	17.5	18.0	---	---	---	15.0	14.5	14.5
14	23.0	21.5	22.5	17.5	16.5	17.0	---	---	---	14.5	14.0	14.0
15	24.0	23.0	23.0	17.5	16.0	17.0	---	---	---	15.5	14.0	14.5
16	24.5	23.5	24.0	19.0	17.5	18.0	14.0	12.5	13.5	16.0	14.0	15.0
17	24.0	23.0	23.5	19.5	18.5	19.0	14.0	13.0	13.5	16.5	15.0	16.0
18	23.0	22.5	23.0	20.5	19.0	19.5	14.5	13.0	13.5	18.0	16.5	17.0
19	22.5	21.5	22.0	21.5	19.5	21.0	17.0	14.5	16.0	17.5	13.0	15.5
20	22.5	21.5	22.0	20.5	19.0	20.0	17.5	15.5	16.5	16.0	13.0	14.5
21	23.5	22.0	23.0	21.5	19.0	20.0	16.0	15.5	15.5	16.5	14.5	15.5
22	23.5	22.5	23.0	19.5	17.5	18.5	17.0	16.0	16.5	18.5	15.0	16.0
23	23.5	23.0	23.0	19.5	17.5	18.5	19.0	17.0	18.0	19.0	16.5	18.0
24	23.0	22.0	22.5	21.5	19.5	20.5	18.5	16.5	17.5	18.5	16.0	17.0
25	22.5	21.0	22.0	22.5	19.0	20.5	16.5	16.5	16.5	16.0	14.0	15.0
26	22.0	21.0	21.5	21.5	19.0	20.0	16.5	15.5	16.0	15.0	12.5	14.0
27	22.5	21.5	22.0	19.0	17.0	17.5	16.5	15.5	16.0	15.0	13.0	14.0
28	22.5	21.5	22.0	17.5	16.0	16.5	17.0	16.5	17.0	16.0	14.5	15.0
29	23.5	22.5	23.0	17.5	16.0	17.0	19.0	17.0	18.5	16.5	15.5	16.0
30	23.5	23.0	23.5	18.0	17.5	18.0	20.5	19.0	20.0	15.5	15.0	15.5
31	24.0	23.0	23.5	---	---	---	21.0	19.0	20.5	16.0	14.0	15.0
MONTH	24.5	20.0	22.5	24.0	15.5	19.0	21.0	12.5	17.0	19.0	12.5	15.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	14.5	15.5	15.5	14.5	15.0	21.0	19.5	20.0	25.0	16.5	20.5
2	16.5	15.5	16.0	17.5	15.5	16.5	20.5	19.0	20.0	25.5	21.5	23.0
3	17.5	16.5	17.0	18.5	16.0	17.0	20.0	19.0	19.5	25.0	17.5	22.5
4	17.0	16.5	16.5	19.0	16.0	17.5	21.0	19.0	20.0	25.0	20.5	23.5
5	16.5	13.5	14.5	18.5	17.0	17.5	20.5	18.0	19.5	24.5	16.5	22.0
6	14.0	12.0	13.0	19.0	16.0	17.5	19.5	18.0	19.0	21.5	16.5	19.5
7	15.5	13.0	14.0	19.5	16.0	17.5	20.5	19.0	19.5	24.0	20.5	23.0
8	16.5	14.0	15.0	20.0	16.5	18.0	23.0	19.0	20.5	25.5	22.5	23.5
9	16.5	15.5	16.0	20.5	17.0	18.5	24.0	21.0	22.0	---	---	---
10	17.0	12.0	14.5	21.0	18.0	19.5	22.5	20.0	21.0	24.5	22.0	23.5
11	17.5	12.5	15.5	19.5	18.0	18.5	25.0	21.5	23.0	24.5	21.0	23.0
12	17.5	15.5	16.5	---	---	---	25.5	21.0	24.0	25.5	20.5	24.0
13	18.0	16.0	17.0	---	---	---	---	---	---	---	---	---
14	18.0	17.5	18.0	---	---	---	---	---	---	23.0	21.5	22.0
15	20.0	17.5	18.5	---	---	---	24.0	20.5	22.0	23.0	21.0	22.0
16	19.0	17.0	18.5	---	---	---	23.5	21.0	22.5	24.5	21.5	22.5
17	17.0	15.5	16.0	20.0	18.5	19.5	23.0	22.0	22.0	25.0	23.0	23.5
18	15.5	14.5	15.0	19.5	18.0	19.0	25.0	22.5	23.0	23.5	23.5	23.5
19	15.0	14.0	14.5	19.5	18.5	19.0	26.0	22.0	24.5	---	---	---
20	17.0	15.0	16.0	21.0	18.5	19.5	25.5	23.5	25.0	---	---	---
21	19.5	17.0	18.0	20.0	18.5	19.5	25.0	22.5	23.0	---	---	---
22	19.0	17.0	18.0	20.0	19.0	19.5	23.5	22.5	23.5	---	---	---
23	19.0	16.5	17.5	19.5	18.5	19.0	24.5	21.0	23.0	---	---	---
24	19.0	18.0	18.5	---	---	---	24.5	23.0	23.5	22.0	20.0	21.0
25	21.0	19.0	19.5	---	---	---	---	---	---	22.5	21.5	22.0
26	19.5	17.5	18.5	22.5	21.5	22.0	25.5	22.0	24.5	24.0	22.0	22.5
27	17.5	16.0	16.5	21.5	20.5	21.0	25.5	22.0	24.0	23.5	22.5	23.0
28	16.0	14.5	15.5	21.0	20.5	20.5	25.0	21.0	23.0	25.0	23.0	23.5
29	---	---	---	22.5	21.0	21.5	---	---	---	25.5	24.5	25.0
30	---	---	---	22.0	19.0	21.0	21.5	17.0	19.5	25.0	23.0	24.5
31	---	---	---	21.5	20.0	21.0	---	---	---	25.5	24.0	24.5
MONTH	21.0	12.0	16.5	22.5	14.5	19.0	26.0	17.0	22.0	25.5	14.0	22.5

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	25.5	24.0	24.5	27.5	26.0	26.5	28.0	25.0	26.5	26.5	25.5	25.5
2	25.0	24.5	25.0	27.5	26.0	26.5	27.5	25.0	26.5	26.5	25.0	25.5
3	27.0	24.0	25.5	27.5	26.0	26.5	---	---	---	25.5	24.0	25.0
4	26.0	25.5	26.0	27.5	25.5	26.5	---	---	---	26.5	24.5	25.5
5	27.0	25.5	26.0	27.0	25.5	26.0	---	---	---	26.0	23.5	24.5
6	27.0	25.5	26.0	27.0	25.5	26.0	---	---	---	25.5	24.5	25.0
7	27.0	25.5	26.0	27.0	25.5	26.5	---	---	---	26.5	24.0	25.0
8	26.0	25.5	26.0	27.5	25.5	26.5	---	---	---	25.5	24.5	25.0
9	27.0	25.0	26.0	28.0	25.5	27.0	---	---	---	25.5	23.5	24.5
10	26.0	24.5	25.0	28.0	25.5	26.5	28.0	26.0	27.0	26.5	23.5	25.0
11	25.5	25.0	25.0	27.5	25.5	27.0	27.5	25.0	26.0	26.5	25.0	26.0
12	25.0	22.5	24.5	28.0	26.0	27.5	25.5	23.5	24.5	26.5	24.5	25.5
13	24.0	22.5	23.0	29.0	26.0	27.5	25.5	23.5	24.5	26.5	25.0	26.0
14	24.0	23.5	24.0	29.5	26.5	28.0	25.5	24.0	24.5	26.0	24.5	25.5
15	24.5	23.5	24.0	27.5	25.5	26.5	25.5	24.0	24.5	24.5	22.5	23.5
16	26.0	24.5	25.0	27.5	25.5	26.5	28.0	24.0	25.5	24.0	22.0	23.0
17	26.5	25.0	25.5	28.0	25.5	26.5	27.5	26.0	27.0	24.0	22.0	23.0
18	26.5	25.5	26.0	27.5	25.5	26.5	27.5	25.5	26.5	24.0	22.0	23.5
19	26.0	25.5	25.5	27.5	25.0	26.5	27.5	25.0	26.0	24.5	23.0	23.5
20	25.5	25.0	25.5	27.0	25.5	26.0	27.0	24.5	26.0	24.5	23.0	23.5
21	26.0	25.0	25.5	26.5	25.0	25.5	26.5	24.0	25.5	25.0	23.0	24.0
22	26.0	25.5	26.0	26.5	25.0	26.0	27.0	25.5	26.0	25.5	24.0	24.5
23	26.5	25.5	26.0	27.0	25.5	26.0	27.0	26.0	26.5	24.5	23.5	24.5
24	26.5	26.0	26.0	27.0	25.5	26.0	27.5	26.0	26.5	25.0	23.5	24.0
25	26.0	25.5	26.0	27.5	25.5	26.5	27.5	25.5	26.5	26.0	23.5	24.5
26	26.0	23.5	24.0	27.5	25.5	26.5	26.5	25.0	26.0	24.5	23.5	24.0
27	25.0	24.0	24.5	27.5	25.0	26.5	26.0	24.5	25.5	23.5	21.5	22.5
28	26.5	25.0	25.5	26.5	23.5	25.5	26.5	25.0	25.5	21.5	20.0	20.5
29	27.0	26.0	26.5	27.5	25.0	26.0	27.0	25.0	26.0	21.0	18.5	20.0
30	27.5	26.0	26.5	27.5	24.5	26.0	27.0	25.5	26.0	20.5	19.5	20.0
31	---	---	---	28.0	25.0	26.5	27.0	25.5	26.0	---	---	---
MONTH	27.5	22.5	25.5	29.5	23.5	26.5	28.0	23.5	26.0	26.5	18.5	24.0
YEAR	29.5	12.0	21.5									

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.3	6.4	7.1	6.0	3.7	4.6	---	---	---	9.8	7.1	8.2
2	8.5	6.4	7.1	6.8	4.0	5.4	---	---	---	9.6	7.9	8.7
3	8.5	6.5	7.1	8.1	5.9	6.6	---	---	---	9.9	8.2	9.0
4	8.5	6.3	7.1	8.4	6.1	6.9	---	---	---	10.6	8.0	8.9
5	8.5	6.2	7.0	9.3	6.8	7.9	---	---	---	11.9	8.4	9.6
6	8.4	6.1	6.9	10.0	7.6	8.6	---	---	---	---	---	---
7	8.2	6.0	7.0	9.4	7.8	8.4	---	---	---	---	---	---
8	8.5	5.8	6.7	8.0	6.8	7.3	---	---	---	---	---	---
9	8.6	6.1	7.0	7.1	6.1	6.5	---	---	---	11.3	7.2	8.6
10	8.5	6.2	6.9	6.8	5.6	6.1	---	---	---	9.3	7.2	8.1
11	8.6	5.8	6.7	6.6	5.7	6.0	---	---	---	9.3	7.6	8.2
12	8.8	5.8	6.8	6.8	5.6	6.1	10.9	7.7	8.9	11.2	7.9	9.1
13	8.6	5.9	6.7	7.4	5.5	6.3	8.0	6.6	7.4	10.3	7.8	8.7
14	8.3	5.8	6.6	8.0	6.3	7.0	7.9	6.5	7.1	9.8	7.7	8.5
15	7.5	5.5	6.1	8.1	6.4	7.1	11.0	7.2	10.0	10.6	7.8	8.8
16	7.8	5.1	5.7	8.0	6.2	7.0	9.8	8.7	9.4	10.7	7.6	8.8
17	7.5	4.8	5.7	7.0	5.6	6.2	10.0	8.5	9.1	9.8	7.4	8.2
18	6.8	4.9	5.6	6.6	5.4	5.9	9.7	8.4	8.9	9.7	7.0	8.0
19	6.9	4.9	5.7	7.8	5.3	6.8	9.4	7.7	8.4	8.4	7.0	7.6
20	7.8	5.3	6.1	7.8	7.0	7.6	8.6	7.4	7.9	8.9	7.5	8.2
21	7.8	5.2	6.0	7.7	7.5	7.6	9.9	7.7	8.4	9.8	7.3	8.2
22	7.5	4.9	5.8	7.9	7.5	7.7	9.0	7.6	8.1	9.3	6.6	7.8
23	7.6	5.0	5.9	7.5	6.9	7.3	9.7	7.3	8.1	8.7	6.1	6.9
24	8.2	5.2	6.1	6.9	6.5	6.7	9.1	7.2	7.9	10.0	5.9	7.5
25	8.3	5.2	6.1	7.7	6.5	6.9	9.6	7.4	8.3	10.2	6.5	8.0
26	8.4	5.3	6.2	7.1	5.8	6.7	11.1	7.8	9.0	11.6	7.2	8.9
27	8.3	5.1	6.1	---	---	---	10.5	8.1	8.9	12.1	7.6	9.2
28	8.1	5.3	6.2	---	---	---	9.0	7.8	8.3	10.3	7.4	8.3
29	6.7	5.1	5.6	---	---	---	10.5	7.6	8.5	9.6	6.9	7.8
30	5.4	2.0	3.6	---	---	---	10.3	7.1	8.2	11.1	6.5	8.3
31	4.2	2.0	3.1	---	---	---	9.2	6.8	7.6	12.6	7.2	9.4
MONTH	8.8	2.0	6.2	10.0	3.7	6.8	11.1	6.5	8.4	12.6	5.9	8.4

361

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.9	7.4	8.8	8.3	7.1	7.6	8.8	5.7	6.8	6.3	5.1	5.6
2	8.7	6.7	7.5	10.1	6.5	7.8	9.9	5.8	7.3	7.7	4.9	5.9
3	7.1	6.3	6.6	12.3	6.9	8.8	7.6	6.0	6.5	8.1	5.1	6.2
4	7.5	6.2	6.7	13.3	6.8	9.0	10.5	5.8	7.5	7.3	5.1	5.9
5	8.1	6.6	7.5	13.6	6.8	9.2	10.8	5.4	7.6	7.8	5.2	6.6
6	8.9	7.5	8.0	15.4	6.8	9.9	9.2	6.5	7.5	7.9	6.0	7.6
7	9.4	7.1	7.9	15.9	6.7	10.1	8.0	6.2	6.7	7.7	7.1	7.5
8	9.7	6.9	7.9	16.6	6.3	10.1	8.9	6.2	7.4	7.1	6.6	6.9
9	7.9	6.5	7.1	15.5	6.6	9.8	9.4	5.8	7.0	6.7	6.5	6.6
10	7.8	6.4	7.2	15.5	6.0	9.5	10.7	5.8	7.5	6.9	6.5	6.7
11	8.3	6.8	7.5	8.2	5.5	6.9	11.2	5.6	7.6	6.8	6.3	6.6
12	9.0	7.5	8.0	9.2	5.3	7.8	9.6	5.4	6.9	6.8	6.2	6.4
13	9.0	7.4	8.0	10.5	8.9	9.5	7.2	5.3	6.2	---	---	---
14	8.0	7.0	7.4	12.3	8.4	9.9	9.9	5.4	7.1	---	---	---
15	9.2	6.9	7.7	9.0	6.7	8.0	10.4	5.4	7.4	9.0	7.2	7.7
16	10.0	6.8	8.0	11.7	6.1	8.1	11.3	6.1	8.2	9.5	6.9	7.8
17	10.9	7.6	8.7	12.9	6.0	8.5	10.4	6.3	7.9	10.2	6.7	8.0
18	11.3	8.0	9.2	12.0	6.1	8.2	11.2	5.9	8.0	---	---	---
19	11.3	8.3	9.3	7.8	6.0	6.6	10.9	5.7	7.8	---	---	---
20	12.5	8.1	9.5	12.6	5.5	8.4	9.9	5.4	7.1	---	---	---
21	14.2	7.8	10.0	10.5	6.1	7.8	10.7	5.5	7.6	---	---	---
22	14.8	7.5	10.1	9.2	6.0	7.1	11.2	5.8	8.1	---	---	---
23	14.3	7.7	10.1	---	---	---	11.1	5.8	8.1	---	---	---
24	11.4	6.6	8.4	---	---	---	10.0	5.6	7.3	---	---	---
25	12.4	6.2	8.0	---	---	---	10.0	5.1	7.2	7.5	7.2	7.4
26	12.8	5.7	8.5	---	---	---	10.4	5.1	7.2	7.4	6.8	7.1
27	9.6	6.9	7.8	7.9	5.5	6.6	7.6	5.1	6.2	7.3	6.7	6.9
28	7.8	6.5	7.1	8.8	5.4	6.4	6.9	5.1	5.9	7.4	6.5	6.9
29	---	---	---	6.9	4.7	5.8	6.3	5.1	5.5	6.6	5.5	6.1
30	---	---	---	7.8	5.6	6.7	6.3	4.9	5.4	7.2	6.1	6.7
31	---	---	---	7.9	5.8	6.6	---	---	---	7.0	6.2	6.5
MONTH	14.8	5.7	8.2	16.6	4.7	8.2	11.3	4.9	7.1	10.2	4.9	6.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.3	6.2	6.6	6.1	4.9	5.4	5.9	4.8	5.3	6.2	3.9	4.9
2	7.5	6.2	6.6	6.1	5.0	5.4	---	---	---	6.3	3.6	4.7
3	6.6	5.2	6.0	6.5	4.8	5.4	---	---	---	6.1	3.5	4.5
4	6.2	5.2	5.6	6.2	4.8	5.3	---	---	---	7.5	3.8	5.1
5	6.8	5.4	5.9	6.3	4.7	5.3	---	---	---	7.2	3.9	5.1
6	7.2	5.6	6.1	6.6	4.9	5.5	---	---	---	5.7	3.5	4.6
7	7.3	5.8	6.4	---	---	---	---	---	---	8.4	3.8	5.4
8	6.9	5.7	6.3	---	---	---	---	---	---	9.9	4.2	6.7
9	7.1	5.8	6.2	7.8	5.0	6.1	---	---	---	10.3	5.4	7.3
10	6.5	5.6	5.9	7.5	5.1	6.2	---	---	---	6.5	1.2	4.1
11	6.3	5.1	5.5	8.7	4.9	6.6	7.8	5.0	6.2	7.3	2.7	4.6
12	7.7	5.3	6.1	8.7	5.2	6.8	6.8	4.2	5.4	7.6	3.8	5.3
13	7.5	6.5	7.0	8.6	5.7	7.0	---	---	---	7.0	4.5	5.5
14	6.7	6.1	6.4	8.7	5.8	7.0	---	---	---	7.9	3.4	5.1
15	---	---	---	8.5	5.0	6.3	---	---	---	8.5	4.1	5.7
16	---	---	---	8.2	5.0	6.2	---	---	---	9.4	4.9	6.4
17	---	---	---	8.0	5.0	6.0	---	---	---	9.8	5.2	6.8
18	---	---	---	7.8	4.9	6.0	---	---	---	8.9	5.1	6.5
19	---	---	---	7.7	4.8	5.8	7.3	5.6	6.5	8.7	4.8	6.3
20	---	---	---	7.6	4.7	5.7	7.4	4.4	5.7	9.3	4.6	6.1
21	---	---	---	7.5	4.6	5.6	7.2	4.4	5.6	8.7	4.5	6.0
22	---	---	---	7.1	4.4	5.3	6.8	4.2	5.4	9.5	4.6	6.2
23	---	---	---	7.1	4.2	5.2	6.7	4.1	5.2	9.0	4.5	6.0
24	---	---	---	6.9	4.2	5.2	7.1	3.9	5.2	9.1	4.5	6.1
25	---	---	---	6.6	4.0	5.1	7.0	3.9	5.1	9.3	4.4	6.0
26	6.6	4.5	5.9	6.9	4.2	5.2	6.7	4.0	5.2	6.4	4.4	5.3
27	5.8	5.3	5.6	7.5	4.1	5.6	6.3	4.0	5.0	10.0	4.6	6.3
28	5.7	5.1	5.4	7.1	5.2	6.1	6.8	4.0	5.2	9.9	5.1	6.6
29	5.8	5.0	5.3	6.5	4.9	5.7	7.2	4.1	5.3	9.1	5.4	6.4
30	5.9	4.9	5.2	6.4	5.2	5.7	7.4	3.8	5.2	8.3	4.8	6.0
31	---	---	---	6.0	5.1	5.5	7.0	4.0	5.2	---	---	---
MONTH	7.7	4.5	6.0	8.7	4.0	5.8	7.8	3.8	5.4	10.3	1.2	5.7
YEAR	16.6	1.2	7.0									

08181500 MEDINA RIVER AT SAN ANTONIO, TX

LOCATION.--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 ft/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 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, 2,880 acre-ft from Mitchell Lake and sewage effluent in the amount of 36,960 acre-ft from the Leon Creek plant was discharged into the Medina River above this station. Satellite telemeter at station.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	248	241	294	259	258	288	292	295	400	271	144	132
2	246	228	291	257	260	283	273	268	373	258	158	136
3	246	220	285	261	264	271	264	261	351	245	142	136
4	244	215	273	266	293	262	270	251	332	234	138	142
5	244	209	266	264	358	262	265	1250	322	229	140	138
6	245	211	269	256	355	260	265	5490	313	224	142	135
7	242	206	274	257	309	258	263	6020	303	216	140	133
8	241	207	273	255	291	255	303	4270	286	205	137	130
9	240	220	277	257	279	255	282	e1600	283	205	138	135
10	234	229	278	252	406	255	264	e800	299	201	136	151
11	226	229	276	250	396	251	250	e640	302	194	135	142
12	225	244	273	250	335	334	249	482	345	188	132	139
13	226	235	279	250	308	352	249	463	608	185	128	148
14	224	221	287	246	298	294	250	444	431	181	125	142
15	225	218	408	254	298	282	241	424	439	180	123	135
16	229	222	387	252	292	287	238	405	369	181	127	134
17	227	229	317	249	286	285	236	391	328	178	133	131
18	228	239	287	253	280	284	230	379	312	173	135	134
19	234	413	277	298	279	284	232	363	316	170	134	131
20	230	1040	268	304	283	282	228	340	349	168	130	130
21	228	720	265	281	283	282	227	331	650	166	131	128
22	227	446	262	270	279	279	239	339	449	166	132	126
23	226	386	263	269	263	277	242	1070	359	164	133	124
24	225	360	268	265	258	275	228	986	327	159	134	125
25	222	337	264	262	256	269	239	537	335	155	131	126
26	220	326	264	257	260	254	244	445	615	153	127	122
27	220	309	264	259	251	252	240	421	625	151	130	124
28	217	305	265	260	255	299	241	407	405	151	133	118
29	218	302	269	261	---	325	256	422	334	151	131	117
30	246	300	269	262	---	335	287	437	296	149	133	118
31	233	---	268	261	---	333	---	420	---	145	133	---
TOTAL	7186	9267	8760	8097	8233	8764	7587	30651	11456	5796	4165	3962
MEAN	232	309	283	261	294	283	253	989	382	187	134	132
MAX	248	1040	408	304	406	352	303	6020	650	271	158	151
MIN	217	206	262	246	251	251	227	251	283	145	123	117
AC-FT	14250	18380	17380	16060	16330	17380	15050	60800	22720	11500	8260	7860

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

	201	153	151	169	231	178	191	273	400	206	155	190
MEAN	201	153	151	169	231	178	191	273	400	206	155	190
MAX	1734	835	961	979	2923	2558	1620	2018	7006	3261	1175	1427
(WY)	1974	1977	1992	1968	1992	1992	1992	1987	1987	1973	1978	1973
MIN	7.60	8.50	12.7	5.58	12.7	9.77	6.63	8.71	6.52	6.13	6.40	8.24
(WY)	1956	1956	1955	1957	1953	1956	1956	1953	1956	1954	1952	1954

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1940 - 1993
ANNUAL TOTAL	431936	113924	208
ANNUAL MEAN	1180	312	1218
HIGHEST ANNUAL MEAN			14.3
LOWEST ANNUAL MEAN			1956
HIGHEST DAILY MEAN	9940	6020	28300
LOWEST DAILY MEAN	206	117	3.3
ANNUAL SEVEN-DAY MINIMUM	213	121	4.0
INSTANTANEOUS PEAK FLOW		7880	31900
INSTANTANEOUS PEAK STAGE		23.79	43.59
ANNUAL RUNOFF (AC-FT)	856700	226000	150500
10 PERCENT EXCEEDS	2600	398	373
50 PERCENT EXCEEDS	589	257	90
90 PERCENT EXCEEDS	238	134	16

* Occurred Apr. 18, Nov. 1, 1956, and Jan. 24, 1957.

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

08181500 MEDINA RIVER AT SAN ANTONIO, TX

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, Feb. 15, 1990; minimum, 30 microsiemens July 16, 1990.

pH: Maximum, 8.8 units Dec. 4, 5, 1988, Mar. 22, 1989; minimum, 7.0 units Apr. 1-3, 1989, Mar. 5, 6, 1990.

WATER TEMPERATURE: Maximum, 32.0°C June 11, 1989; minimum, 9.0°C Jan. 11, 1988, Dec 23, 1989.

DISSOLVED OXYGEN: Maximum, 12.7 mg/L Jan. 16, 1989; minimum, 1.8 mg/L Oct. 17, Nov. 8, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 996 microsiemens Aug. 30; minimum, 164 microsiemens May 6.

pH: Maximum, 8.3 units on many days; minimum, 7.7 units on many days.

WATER TEMPERATURE: Maximum, 30.0°C Aug. 2, Sep. 19, 20; minimum, 13.5°C on many days.

DISSOLVED OXYGEN: Maximum, 10.6 mg/l Jan. 31; minimum, 5.8 mg/l Sep. 22.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
OCT 09...	0930	207	892	8.1	22.0	7.8	91	4.5	340	100	100	21	
DEC 22...	1120	243	798	8.0	16.0	8.8	91	1.2	310	75	94	19	
FEB 09...	1200	192	824	8.1	15.5	9.9	101	0.9	280	56	82	19	
APR 12...	1315	226	801	8.0	22.0	7.7	91	2.0	300	87	89	20	
JUN 09...	1207	263	915	8.0	26.5	7.4	95	3.0	340	110	100	21	
AUG 02...	1330	230	931	7.8	30.0	6.8	92	1.1	340	92	100	21	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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)
OCT 09...	62	1		5.0	230	87	82	0.50	14	511	9.59	--	0.010
DEC 22...	51	1		4.0	240	85	66	0.30	13	477	6.26	--	0.040
FEB 09...	51	1		3.8	230	86	69	0.30	12	486	5.67	5.67	--
APR 12...	53	1		3.8	220	86	66	0.40	12	488	5.79	5.79	--
JUN 09...	62	1		4.6	230	100	86	0.50	15	556	6.28	6.28	--
AUG 02...	61	1	18		240	93	91	0.50	14	576	6.44	6.44	--
DATE		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, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	
OCT 09...	--		9.60	--	0.120	--	0.98	--	--	1.1	1.50	--	
DEC 22...	--		6.30	--	0.070	--	0.33	--	--	0.40	0.520	--	
FEB 09...	0.030		5.70	5.70	--	0.020	--	0.18	0.20	--	--	0.560	
APR 12...	0.010		5.80	5.80	--	0.020	--	0.28	0.30	--	--	0.540	
JUN 09...	0.020		6.30	6.30	--	0.040	--	0.56	0.60	--	--	0.550	
AUG 02...	0.160		6.60	6.60	--	0.410	--	0.59	1.0	--	--	0.690	

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	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 09...	--	1.10	--	--	--	--	--	--	--	--	--
DEC 22...	--	0.470	--	1	50	<0.5	2.0	<5	<3	<10	5
FEB 09...	0.590	--	1.8	--	--	--	--	--	--	--	--
APR 12...	0.510	--	1.6	--	--	--	--	--	--	--	--
JUN 09...	0.530	--	1.6	1	58	<0.5	<1.0	<5	<3	<10	13
AUG 02...	0.580	--	1.8	--	--	--	--	--	--	--	--
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 09...	--	--	--	--	--	--	--	--	--	--	--
DEC 22...	<10	18	8	<0.1	<10	<10	<1	<1.0	830	<6	7
FEB 09...	--	--	--	--	--	--	--	--	--	--	--
APR 12...	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	<10	21	7	<0.1	<10	<10	1	<1.0	890	<6	5
AUG 02...	--	--	--	--	--	--	--	--	--	--	--
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. 1992	7186		863	487	9440	75	1460	87	1690		300
NOV. 1992	9267		730	424	10600	57	1440	76	1910		270
DEC. 1992	8760		757	441	10400	59	1400	80	1880		280
JAN. 1993	8097		802	460	10100	65	1430	83	1810		290
FEB. 1993	8233		793	457	10200	64	1430	82	1830		290
MAR. 1993	8764		821	469	11100	69	1620	84	1990		300
APR. 1993	7587		848	480	9840	73	1490	86	1770		300
MAY 1993	30651		556	337	27900	36	2990	61	5080		220
JUNE 1993	11456		770	445	13800	62	1900	80	2480		280
JULY 1993	5796		890	498	7790	80	1250	89	1390		310
AUG. 1993	4165		921	510	5730	85	955	91	1020		310
SEPT 1993	3962		918	509	5440	85	904	91	972		310
TOTAL	113924		**	**	132000	**	18300	**	23800		**
WTD.AVG.	312		744	430	**	59	**	77	**		270

GUADALUPE RIVER BASIN

365

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	886	828	858	909	848	873	786	762	770	782	751	765
2	855	821	837	904	842	864	786	747	769	775	751	765
3	852	825	842	901	848	869	786	752	772	778	756	771
4	855	825	838	977	879	905	794	759	779	791	761	777
5	850	828	838	975	883	914	808	781	796	805	766	782
6	872	838	857	912	809	870	816	781	797	---	---	785
7	867	840	854	948	892	919	808	772	789	---	---	789
8	---	---	882	931	885	904	---	---	785	---	---	791
9	---	---	870	892	872	883	---	---	780	---	---	793
10	869	817	862	898	872	884	---	---	812	---	---	796
11	864	833	848	894	865	879	802	752	779	---	---	799
12	862	833	848	903	868	891	821	706	770	---	---	801
13	869	838	850	896	859	879	---	---	763	822	792	802
14	889	842	863	892	870	880	---	---	702	833	806	823
15	894	842	863	901	874	887	821	608	635	850	797	831
16	879	847	862	921	862	883	686	640	658	854	775	829
17	867	840	852	891	869	880	745	686	712	843	777	820
18	867	823	843	906	874	893	759	737	747	822	785	807
19	855	811	836	933	518	804	764	737	748	850	771	809
20	874	825	851	---	---	462	774	750	762	895	745	812
21	892	854	874	---	---	449	779	757	770	826	754	798
22	927	803	881	---	---	520	798	774	785	816	745	797
23	909	853	891	---	---	620	796	772	784	823	762	804
24	912	870	887	---	---	640	799	777	789	821	750	798
25	901	853	876	---	---	689	791	757	770	823	755	801
26	896	853	876	---	---	711	774	750	764	835	764	813
27	912	846	882	---	---	723	774	750	765	838	791	823
28	904	879	891	---	---	735	769	742	759	838	791	820
29	909	879	894	---	---	747	777	750	765	838	796	820
30	931	874	899	---	---	759	769	745	758	852	774	823
31	883	846	862	---	---	---	774	742	761	845	750	808
MONTH	931	803	863	977	518	794	821	608	761	895	745	802

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	825	789	810	896	835	859	835	774	811	828	767	806
2	833	799	819	860	806	841	862	742	827	816	730	787
3	840	794	817	877	818	860	869	735	839	838	759	809
4	855	779	812	899	821	873	940	781	836	823	764	799
5	811	750	790	891	816	867	855	786	835	825	266	577
6	781	718	756	874	799	852	867	825	853	547	164	317
7	789	718	769	872	799	845	---	---	856	471	327	382
8	799	723	775	874	794	845	---	---	840	623	471	554
9	828	786	808	869	794	843	---	---	814	689	611	645
10	860	601	758	867	803	849	---	---	835	735	681	707
11	777	645	729	886	852	871	---	---	812	752	689	727
12	772	713	754	904	781	848	---	---	818	742	696	725
13	781	728	765	828	740	772	---	---	823	759	708	742
14	781	706	765	808	733	792	852	796	833	774	723	754
15	794	720	768	808	769	792	879	833	866	774	720	758
16	808	737	783	811	759	796	899	845	880	791	723	768
17	818	750	794	816	733	792	891	825	870	801	759	788
18	811	772	796	823	779	804	899	828	871	821	779	803
19	816	777	797	825	781	807	904	840	878	828	759	804
20	823	772	799	825	742	801	904	855	882	835	789	820
21	825	728	791	813	737	794	904	850	889	867	818	848
22	813	742	794	818	772	797	906	845	882	864	825	851
23	845	779	827	821	755	800	882	806	858	877	300	583
24	847	803	831	---	---	810	884	823	864	613	386	526
25	857	784	840	---	---	819	901	818	866	725	613	665
26	872	803	852	---	---	819	894	823	862	818	725	766
27	877	835	861	---	---	868	879	828	860	857	794	828
28	877	838	858	---	---	860	882	835	856	869	801	847
29	---	---	---	---	---	783	882	821	848	869	803	839
30	---	---	---	842	728	793	884	789	828	857	779	816
31	---	---	---	799	706	755	---	---	---	806	767	791
MONTH	877	601	797	904	706	823	940	735	850	877	164	724

GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	811	769	801	874	811	850	935	862	904	952	879	925
2	823	750	793	886	806	857	931	847	889	955	877	923
3	835	769	808	872	811	852	940	864	913	940	877	916
4	847	806	830	874	806	853	938	879	916	921	862	897
5	852	794	836	882	808	860	967	884	936	938	867	906
6	862	799	839	896	847	875	965	894	942	918	872	896
7	872	816	847	906	840	883	962	901	939	979	818	892
8	884	842	866	911	882	900	952	899	930	960	833	905
9	915	847	890	921	882	910	947	904	931	---	---	874
10	928	874	906	921	860	891	957	882	924	---	---	940
11	913	823	876	896	828	875	933	862	912	---	---	896
12	896	723	854	911	855	888	940	877	915	---	---	863
13	723	379	554	---	---	909	950	886	923	---	---	916
14	769	625	715	---	---	901	935	889	924	---	---	914
15	799	625	750	---	---	893	952	891	929	---	---	865
16	896	779	821	913	860	885	935	886	919	---	---	947
17	908	857	887	935	860	908	955	877	924	---	---	966
18	916	872	894	928	850	895	947	872	923	---	---	983
19	926	874	900	921	862	892	952	884	923	---	---	931
20	908	823	867	938	850	903	950	889	926	---	---	941
21	908	527	629	938	838	905	950	879	922	---	---	932
22	703	654	675	933	857	904	947	872	914	---	---	923
23	774	689	731	962	847	914	938	857	907	---	---	921
24	816	735	779	945	869	913	945	879	916	---	---	920
25	833	720	796	921	855	896	935	869	909	957	891	924
26	825	520	689	921	872	903	945	886	919	947	904	925
27	657	608	636	933	877	916	955	901	925	940	889	913
28	750	645	684	940	867	913	947	891	928	952	899	919
29	803	750	770	938	894	916	945	872	918	955	911	930
30	847	769	814	960	884	925	996	879	930	979	916	951
31	---	---	---	943	879	917	950	886	918	---	---	---
MONTH	928	379	791	962	806	894	996	847	921	979	818	918
YEAR	996	164	828									

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.0	7.9	7.9	8.0	7.9	8.0	---	---	---	8.3	8.2	8.2
2	---	---	---	7.9	7.8	7.9	---	---	---	8.3	8.2	8.3
3	---	---	---	7.9	7.8	7.9	---	---	---	8.3	8.2	8.3
4	---	---	---	8.0	7.9	7.9	---	---	---	8.3	8.2	8.3
5	---	---	---	8.0	7.9	7.9	---	---	---	8.3	8.3	8.3
6	8.2	8.1	8.1	8.1	7.9	8.0	---	---	---	---	---	---
7	8.1	8.0	8.1	8.1	8.0	8.0	---	---	---	---	---	---
8	---	---	---	8.0	7.9	7.9	---	---	---	---	---	---
9	---	---	---	7.9	7.8	7.8	8.1	8.1	8.0	---	---	---
10	---	---	---	7.9	7.8	7.8	8.1	7.9	8.0	---	---	---
11	8.1	7.9	8.0	7.9	7.7	7.8	8.0	7.9	8.0	---	---	---
12	8.1	8.0	8.1	8.0	7.8	7.9	8.0	7.8	7.9	---	---	---
13	8.1	8.0	8.0	8.2	8.0	8.1	8.0	7.7	7.8	8.0	8.0	8.0
14	8.1	8.0	8.1	8.2	8.1	8.2	7.9	7.7	7.8	8.1	8.0	8.1
15	8.1	8.0	8.1	8.2	8.1	8.1	7.8	7.7	7.8	8.1	8.0	8.1
16	8.1	8.0	8.0	8.2	8.1	8.1	7.9	7.8	7.8	8.1	8.0	8.0
17	8.2	8.1	8.1	8.2	8.1	8.1	8.0	7.9	8.0	8.0	7.9	8.0
18	8.2	8.1	8.1	8.1	8.1	8.1	8.0	8.0	8.0	7.9	7.8	7.9
19	8.2	8.1	8.1	8.1	8.0	8.1	8.1	8.0	8.0	---	---	---
20	8.2	8.0	8.1	---	---	---	8.1	8.0	8.1	---	---	---
21	8.0	7.9	8.0	---	---	---	8.2	8.0	8.1	---	---	---
22	8.0	7.9	8.0	---	---	---	8.0	7.8	7.9	8.2	8.1	8.1
23	8.0	7.9	8.0	---	---	---	7.9	7.7	7.8	8.2	8.1	8.2
24	8.1	7.9	8.0	---	---	---	7.8	7.7	7.8	8.3	8.2	8.2
25	8.1	8.0	8.0	---	---	---	7.8	7.7	7.8	8.3	8.2	8.2
26	8.1	8.0	8.0	---	---	---	---	---	---	8.3	8.3	8.3
27	8.1	8.0	8.0	---	---	---	---	---	---	8.3	8.3	8.3
28	8.0	8.0	8.0	---	---	---	---	---	---	8.3	8.3	8.3
29	8.0	8.0	8.0	---	---	---	---	---	---	8.3	8.2	8.3
30	8.0	7.9	8.0	---	---	---	---	---	---	8.3	8.2	8.3
31	8.0	7.9	8.0	---	---	---	8.2	8.1	8.2	8.3	8.3	8.3
MONTH	8.2	7.9	8.0	8.2	7.7	8.0	8.2	7.7	7.9	8.3	7.8	8.2

367

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.3	8.2	8.3	8.1	8.1	8.1	---	---	---	8.2	8.1	8.2
2	8.2	8.2	8.2	8.1	8.1	8.1	7.9	7.9	7.9	8.2	8.1	8.2
3	8.2	8.1	8.2	8.2	8.1	8.1	7.9	7.9	7.9	8.2	8.1	8.2
4	8.2	8.1	8.2	8.3	8.2	8.2	7.9	7.9	7.9	8.3	8.1	8.2
5	8.2	8.1	8.2	8.3	8.0	8.2	8.0	7.9	7.9	8.3	8.0	8.2
6	8.2	8.2	8.2	8.0	7.9	8.0	8.0	7.9	7.9	8.2	8.0	8.1
7	8.2	8.2	8.2	8.0	7.9	7.9	7.9	7.8	7.9	8.1	8.0	8.0
8	8.2	8.1	8.2	8.1	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.0
9	8.2	8.0	8.1	8.1	7.9	8.0	7.9	7.9	7.9	8.1	8.0	8.1
10	8.0	7.9	8.0	8.1	7.9	8.0	8.0	7.9	7.9	8.1	8.0	8.0
11	8.0	8.0	8.0	8.1	7.9	8.0	8.0	7.9	7.9	8.1	8.0	8.1
12	8.0	7.9	8.0	8.0	7.8	7.9	8.0	7.8	7.9	8.1	8.0	8.0
13	8.0	7.9	7.9	8.0	7.9	7.9	---	---	---	8.0	7.9	8.0
14	8.0	7.9	8.0	8.3	7.9	8.1	8.0	8.2	8.0	8.0	7.9	8.0
15	8.0	7.9	8.0	8.2	8.0	8.1	8.0	7.9	8.0	8.1	8.0	8.0
16	8.0	7.9	7.9	---	---	---	8.0	8.0	8.0	8.1	8.0	8.1
17	8.0	7.9	8.0	8.2	8.0	8.1	8.0	8.0	8.0	8.1	8.0	8.0
18	8.0	7.9	8.0	8.2	8.1	8.2	8.0	8.0	8.0	8.2	8.0	8.1
19	8.0	7.9	8.0	8.2	8.1	8.1	8.0	7.9	8.0	8.2	8.1	8.1
20	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.9	8.2	8.1	8.1
21	8.0	7.9	7.9	8.1	8.0	8.1	8.0	7.8	7.9	8.2	8.1	8.1
22	7.9	7.9	7.9	---	---	---	7.9	7.8	7.9	8.2	8.1	8.1
23	8.0	7.9	8.0	---	---	---	8.0	7.8	7.9	8.2	8.0	8.1
24	8.0	7.9	7.9	8.2	8.0	8.2	8.0	7.8	7.9	8.1	8.0	8.1
25	7.9	7.9	7.9	8.3	8.0	8.1	8.1	7.9	8.0	8.2	8.1	8.1
26	8.0	7.9	7.9	8.0	7.8	7.9	8.3	8.1	8.1	8.2	8.1	8.1
27	8.0	8.0	8.0	8.2	7.7	7.9	8.3	8.0	8.1	8.2	8.1	8.2
28	8.1	8.0	8.1	---	---	---	8.2	8.0	8.1	8.2	8.1	8.2
29	---	---	---	---	---	---	8.2	8.1	8.2	8.2	8.2	8.2
30	---	---	---	---	---	---	8.2	8.1	8.2	8.2	8.1	8.2
31	---	---	---	---	---	---	---	---	---	8.2	8.2	8.2
MONTH	8.3	7.9	8.0	8.3	7.7	8.0	8.3	7.8	8.0	8.3	7.9	8.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	8.3	8.1	8.2	7.9	7.8	7.9	8.1	7.9	8.0	8.1	7.9	8.0
2	8.2	7.8	8.1	8.0	7.8	7.9	8.2	7.8	8.1	8.1	7.9	8.0
3	8.1	7.9	8.0	7.9	7.8	7.9	8.0	7.9	8.0	8.0	7.9	7.9
4	---	---	---	---	---	---	8.0	7.9	7.9	8.1	7.9	8.0
5	---	---	---	---	---	---	8.0	7.9	7.9	8.1	8.0	8.0
6	---	---	---	7.9	8.0	7.6	7.9	7.8	7.8	8.1	8.0	8.0
7	---	---	---	---	---	---	7.8	7.7	7.8	8.1	7.9	8.0
8	8.0	7.9	8.0	---	---	---	7.9	7.8	7.8	8.2	8.0	8.1
9	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.8	7.9	8.2	8.0	8.1
10	8.0	7.9	7.9	8.0	7.9	8.0	8.1	7.9	8.0	8.1	7.9	8.0
11	---	---	---	8.0	8.0	8.0	8.0	7.9	8.0	8.2	7.9	8.0
12	---	---	---	8.1	8.0	8.0	8.0	7.9	8.0	8.1	7.8	8.0
13	---	---	---	8.0	8.0	8.0	8.1	7.9	8.0	8.1	7.9	8.0
14	---	---	---	---	---	---	8.1	8.0	8.0	8.2	8.0	8.1
15	---	---	---	---	---	---	8.1	7.9	8.0	8.3	7.9	8.1
16	---	---	---	8.1	8.0	8.0	8.0	8.0	8.0	---	---	---
17	8.0	8.0	8.0	8.1	8.0	8.0	8.1	7.8	8.0	---	---	---
18	8.0	8.0	8.0	8.1	8.0	8.0	8.1	8.0	8.0	---	---	---
19	8.1	8.0	8.0	8.0	8.0	8.0	---	---	---	---	---	---
20	8.1	8.0	8.1	8.0	7.9	8.0	8.2	7.9	8.0	---	---	---
21	8.0	7.9	8.0	8.0	8.0	8.0	8.1	8.0	8.1	---	---	---
22	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0	8.2	7.8	8.0
23	8.0	8.0	8.0	8.0	7.9	8.0	8.1	7.9	8.0	8.0	7.8	7.9
24	8.1	8.0	8.1	8.0	7.9	8.0	8.1	8.0	8.1	8.0	7.8	7.9
25	8.1	7.9	8.0	8.1	7.9	8.0	8.1	7.9	8.0	8.0	7.8	7.9
26	8.0	7.9	8.0	8.0	8.0	8.0	8.2	8.0	8.1	8.0	7.8	7.9
27	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.0	8.0	7.9	7.9
28	8.0	7.9	8.0	8.1	7.7	7.9	8.1	7.9	8.0	8.0	7.9	7.9
29	7.9	7.8	7.9	8.1	8.0	8.1	8.1	7.9	8.0	8.0	7.8	7.9
30	8.0	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.0	8.1	7.8	8.0
31	---	---	---	8.0	7.9	7.9	8.1	8.0	8.0	---	---	---
MONTH	8.3	7.8	8.0	8.1	7.7	8.0	8.2	7.7	8.0	8.3	7.8	8.0
YEAR	8.3	7.7	8.0									

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.0	21.5	22.0	24.5	23.0	23.5	15.5	14.5	15.5	19.0	16.5	17.5
2	22.5	21.0	21.5	23.0	21.5	22.0	15.5	14.5	15.0	17.0	15.5	16.0
3	23.0	21.0	21.5	22.5	21.0	21.5	16.0	14.5	15.0	17.0	16.0	16.5
4	23.0	21.0	22.0	21.0	19.0	20.0	16.5	16.0	16.0	17.5	17.0	17.0
5	23.0	21.5	22.5	19.0	18.0	18.0	16.0	14.0	15.0	17.0	15.5	16.0
6	23.5	21.5	22.5	18.0	17.0	17.5	15.0	13.5	14.5	---	---	---
7	23.5	22.0	22.5	18.0	17.0	17.0	15.0	13.5	14.5	---	---	---
8	25.0	23.0	24.0	19.0	17.5	18.0	16.0	14.5	15.5	---	---	---
9	24.0	21.5	22.0	20.0	19.0	19.5	17.0	14.5	16.0	---	---	---
10	23.5	22.0	22.5	20.5	19.5	20.0	---	---	---	---	---	---
11	23.5	22.0	23.0	21.0	20.5	20.5	16.0	14.5	15.0	---	---	---
12	23.5	22.0	22.5	21.0	19.5	20.5	16.5	14.0	15.5	---	---	---
13	23.5	22.0	22.5	19.5	18.5	18.5	18.5	16.5	17.0	15.0	14.0	14.5
14	24.0	22.5	23.0	18.5	17.5	18.0	18.5	16.0	16.5	15.0	13.5	14.5
15	24.5	23.5	23.5	18.5	17.0	17.5	16.0	14.0	15.0	15.5	14.0	14.5
16	25.0	24.0	24.0	19.5	18.0	18.5	15.0	13.5	14.0	16.0	14.0	15.0
17	24.0	23.0	23.5	19.5	18.5	19.0	15.0	13.5	14.5	16.5	15.0	15.5
18	23.5	23.0	23.5	20.0	19.0	19.5	15.5	13.5	14.5	17.5	16.0	16.5
19	23.5	22.0	22.5	20.5	19.5	20.0	17.0	15.5	16.0	17.0	15.0	15.5
20	23.5	22.5	23.0	20.0	18.5	19.0	17.0	15.5	16.5	16.0	15.0	15.5
21	24.0	22.5	23.0	20.0	17.5	18.5	16.5	15.0	16.0	16.5	15.0	15.5
22	24.0	23.0	23.5	19.0	16.5	17.5	17.0	16.0	16.5	17.0	15.0	16.0
23	24.0	23.0	23.5	18.0	16.0	17.5	18.0	17.0	17.5	18.0	16.5	17.0
24	23.5	22.5	23.0	19.0	17.5	18.0	18.0	16.5	17.0	17.5	16.0	16.5
25	23.5	22.0	22.5	18.0	16.0	17.0	17.0	16.0	16.5	16.0	14.0	15.0
26	23.5	22.0	22.5	---	---	---	16.5	16.0	16.0	15.0	13.5	14.0
27	23.5	22.0	22.5	---	---	---	17.0	15.5	16.0	15.0	13.5	14.0
28	23.5	22.5	23.0	---	---	---	17.5	16.5	17.0	15.5	14.0	14.5
29	24.0	23.0	23.5	---	---	---	19.0	17.5	18.0	15.5	14.5	15.5
30	24.0	23.0	23.5	---	---	---	20.0	18.5	19.0	15.5	14.0	14.5
31	24.5	23.5	24.0	---	---	---	20.0	19.0	19.5	15.5	13.5	14.5
MONTH	25.0	21.0	23.0	24.5	16.0	19.0	20.0	13.5	16.0	19.0	13.5	15.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	16.0	14.5	15.0	17.0	15.5	16.5	21.5	20.0	21.0	22.5	21.0	21.5
2	16.0	15.0	15.5	18.0	16.0	17.0	21.0	20.0	20.5	23.5	21.5	22.5
3	17.0	15.5	16.5	18.0	16.5	17.0	22.0	20.0	20.5	23.5	21.5	22.0
4	17.0	16.0	16.5	18.0	16.5	17.0	22.0	20.0	20.5	23.0	22.0	22.5
5	16.5	15.0	16.0	18.0	16.5	17.5	21.0	19.0	20.0	23.0	19.0	21.0
6	15.5	13.5	14.5	18.5	16.0	17.0	20.0	19.0	20.0	20.5	18.0	19.0
7	16.0	13.5	14.5	18.5	16.5	17.5	22.0	19.5	20.5	21.0	20.0	20.5
8	16.0	14.0	15.0	19.0	17.0	18.0	21.5	20.0	20.5	22.0	21.0	21.5
9	16.5	15.0	16.0	20.0	17.5	18.5	21.0	19.0	20.5	22.5	22.0	22.0
10	17.0	16.5	16.5	20.5	18.5	19.5	21.5	19.5	20.5	22.5	21.5	22.0
11	17.0	15.5	16.5	19.5	18.0	19.0	22.5	20.0	21.5	22.5	21.0	22.0
12	17.0	15.0	16.0	18.0	15.0	16.5	22.5	21.0	22.0	23.0	21.5	22.0
13	17.5	15.5	16.5	15.5	13.5	14.5	23.5	22.0	22.5	23.0	21.5	22.0
14	17.5	16.5	17.0	15.5	13.5	14.5	23.5	22.0	22.5	23.5	21.5	22.5
15	19.0	17.0	18.0	16.0	14.5	15.5	22.0	20.5	21.5	24.0	22.0	23.0
16	18.5	17.0	18.0	18.0	16.0	17.0	21.5	20.0	20.5	24.5	23.0	23.5
17	17.5	15.5	16.5	19.0	16.5	18.0	21.5	20.0	20.5	25.0	23.5	24.0
18	16.0	14.5	15.5	19.0	17.5	18.5	22.5	20.5	21.5	24.5	23.5	24.0
19	15.5	14.5	15.0	19.0	18.5	18.5	23.5	21.5	22.5	24.5	23.5	24.0
20	17.0	15.0	16.0	20.0	18.5	19.0	23.0	22.0	22.5	24.5	23.0	23.5
21	18.0	16.5	17.0	19.5	18.5	19.0	22.5	21.0	21.5	24.5	23.0	23.5
22	18.0	16.5	17.0	20.0	18.5	19.0	22.0	20.0	21.0	24.0	23.5	23.5
23	18.0	16.5	17.0	20.5	19.0	19.5	22.5	20.5	21.5	23.5	20.0	22.0
24	18.5	17.5	18.0	21.0	19.5	20.0	23.0	21.5	22.0	22.0	21.0	21.5
25	20.0	18.5	19.0	22.0	19.5	21.0	24.0	22.5	23.0	23.5	22.0	22.5
26	19.0	17.5	18.5	22.0	20.5	21.5	24.0	22.5	23.0	24.0	23.0	23.5
27	18.0	16.5	17.0	22.0	20.5	21.0	23.0	22.0	22.5	24.5	23.0	24.0
28	16.5	15.5	16.0	21.5	20.0	20.5	23.0	22.0	22.5	24.5	23.5	24.0
29	---	---	---	22.0	20.5	21.0	22.5	22.0	22.5	25.5	24.0	24.5
30	---	---	---	22.5	21.5	22.0	22.0	21.0	21.5	25.5	24.0	25.0
31	---	---	---	22.0	20.5	21.0	---	---	---	26.0	24.5	25.5
MONTH	20.0	13.5	16.5	22.5	13.5	18.5	24.0	19.0	21.5	26.0	18.0	22.5

GUADALUPE RIVER BASIN

369

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	26.0	24.5	25.5	28.0	26.5	27.0	29.5	28.0	28.5	28.5	27.0	28.0
2	26.5	24.5	25.5	28.0	26.5	27.0	30.0	28.0	28.5	28.5	27.0	27.5
3	27.0	25.0	26.0	28.0	26.5	27.0	29.5	28.0	28.5	28.0	27.0	27.5
4	26.5	25.5	26.0	28.0	26.5	27.0	29.5	28.0	28.5	28.0	27.0	27.5
5	27.0	25.5	26.0	27.5	26.5	27.0	29.5	28.0	28.5	28.0	26.0	27.0
6	27.5	26.0	26.5	28.0	26.5	27.0	29.5	28.0	28.5	27.5	26.5	27.0
7	27.0	26.5	26.5	28.0	27.0	27.0	29.5	28.0	28.5	28.0	26.0	27.0
8	27.0	26.5	26.5	28.0	26.5	27.5	29.0	27.5	28.5	28.0	25.5	27.0
9	27.5	26.0	26.5	28.0	26.5	27.5	29.5	28.0	28.5	28.0	26.5	27.0
10	26.5	25.5	26.0	27.5	26.5	27.0	29.5	27.5	28.5	28.0	26.5	27.0
11	27.0	25.5	26.0	28.0	26.5	27.0	29.0	28.0	28.5	28.0	25.5	27.0
12	26.0	24.5	25.5	28.0	27.0	27.5	29.0	27.5	28.5	27.5	26.0	27.0
13	25.0	23.5	24.5	---	---	---	29.5	27.5	28.5	28.0	26.5	27.0
14	25.0	24.5	24.5	---	---	---	29.0	27.5	28.5	28.0	26.5	27.0
15	25.5	24.5	25.0	---	---	---	29.5	27.5	28.5	27.0	25.0	26.0
16	26.5	25.0	26.0	28.5	27.0	27.5	29.5	27.5	28.5	27.5	24.5	26.0
17	27.0	25.5	26.0	28.5	27.0	27.5	29.0	27.5	28.5	28.5	25.0	26.5
18	26.5	26.0	26.0	28.5	27.0	28.0	29.5	27.5	28.5	29.0	24.5	27.0
19	26.5	25.5	26.0	28.5	27.0	27.5	29.0	27.5	28.0	30.0	26.5	28.0
20	26.5	25.5	26.0	28.5	27.5	28.0	29.0	27.0	28.0	30.0	27.0	29.0
21	26.5	25.5	26.0	28.5	27.5	28.0	28.5	27.0	27.5	29.5	26.5	28.0
22	26.5	26.0	26.0	29.0	27.5	28.0	28.5	27.0	28.0	28.5	26.5	27.5
23	27.0	26.0	26.5	29.0	27.5	28.0	29.0	27.5	28.0	28.5	27.0	27.5
24	27.0	26.5	26.5	29.0	27.5	28.0	29.0	27.5	28.5	28.5	27.0	27.5
25	27.0	26.5	26.5	29.0	27.5	28.0	29.0	27.5	28.0	28.5	26.5	27.5
26	26.5	25.0	26.0	29.0	27.5	28.0	28.5	27.5	28.0	28.0	26.5	27.0
27	26.5	25.5	26.0	29.0	27.5	28.0	28.0	27.0	27.5	27.0	25.0	26.0
28	27.5	26.0	26.5	29.0	27.5	28.5	28.0	27.0	27.5	25.5	23.5	24.5
29	27.5	26.5	27.0	29.5	27.5	28.5	28.5	27.0	27.5	25.0	23.0	24.0
30	28.0	26.5	27.0	29.5	28.0	28.5	28.5	27.5	28.0	25.5	23.0	24.0
31	---	---	---	29.5	28.0	28.5	28.5	27.5	28.0	---	---	---
MONTH	28.0	23.5	26.0	29.5	26.5	27.5	30.0	27.0	28.0	30.0	23.0	27.0
YEAR	30.0	13.5	22.0									

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.6	8.2	8.3	7.4	7.0	7.2	9.2	9.1	9.2	8.7	8.0	8.3
2	8.6	8.1	8.3	7.7	7.2	7.4	9.3	9.1	9.2	8.9	8.5	8.6
3	8.6	8.1	8.3	7.7	7.4	7.5	9.1	8.7	8.9	8.8	8.4	8.6
4	8.6	8.0	8.3	8.1	7.6	7.9	---	---	---	8.7	8.3	8.5
5	8.6	8.0	8.2	8.6	8.0	8.3	---	---	---	9.0	8.5	8.8
6	8.6	8.0	8.3	8.8	8.4	8.6	---	---	---	---	---	---
7	8.5	7.8	8.2	8.8	8.5	8.6	---	---	---	---	---	---
8	8.6	7.8	8.3	8.5	8.2	8.4	---	---	---	---	---	---
9	8.3	7.7	8.2	8.2	8.0	8.1	---	---	---	---	---	---
10	8.7	8.0	8.2	8.0	7.9	7.9	---	---	---	---	---	---
11	8.7	7.8	8.1	7.9	7.7	7.8	---	---	---	---	---	---
12	8.7	7.8	8.2	8.0	7.7	7.8	---	---	---	---	---	---
13	8.6	7.8	8.1	8.4	8.0	8.2	---	---	---	9.4	9.4	9.4
14	8.4	7.7	8.0	8.7	8.3	8.5	---	---	---	9.5	9.2	9.4
15	8.1	7.6	7.8	8.8	8.5	8.6	---	---	---	9.6	9.0	9.3
16	8.1	7.4	7.7	8.8	8.4	8.5	9.8	9.0	9.3	9.8	9.1	9.3
17	8.2	7.5	7.7	8.5	8.4	8.4	9.3	9.0	9.1	9.4	9.0	9.2
18	8.1	7.6	7.8	8.4	8.2	8.3	9.3	9.0	9.1	9.2	8.7	8.9
19	8.3	7.7	7.9	8.2	7.7	8.0	9.0	8.7	8.8	9.1	8.7	8.9
20	7.9	7.5	7.7	---	---	---	8.7	8.5	8.6	9.2	9.0	9.1
21	7.8	7.4	7.5	---	---	---	8.9	8.6	8.7	9.3	9.0	9.2
22	7.7	7.3	7.5	---	---	---	8.8	8.6	8.7	9.1	8.7	9.0
23	7.7	7.3	7.5	---	---	---	8.7	8.4	8.5	8.8	8.4	8.6
24	7.7	7.4	7.5	---	---	---	8.8	8.4	8.5	9.2	8.4	8.7
25	7.8	7.4	7.5	---	---	---	8.8	8.5	8.6	9.4	8.8	9.0
26	7.8	7.4	7.5	---	---	---	9.1	8.6	8.8	9.8	9.0	9.4
27	7.8	7.4	7.5	---	---	---	9.0	8.6	8.8	9.9	9.3	9.6
28	7.7	7.4	7.5	---	---	---	8.7	8.5	8.6	9.6	9.2	9.4
29	7.5	7.2	7.4	---	---	---	8.7	8.3	8.5	9.5	9.0	9.2
30	7.5	7.2	7.3	---	---	---	8.6	8.1	8.3	10.4	9.1	9.6
31	7.4	7.1	7.2	---	---	---	8.2	7.9	8.0	10.6	9.3	9.9
MONTH	8.7	7.1	7.9	8.8	7.0	8.1	9.8	7.9	8.7	10.6	8.0	9.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.3	9.4	9.8	9.3	9.0	9.1	7.7	7.5	7.6	7.5	7.3	7.4
2	9.9	9.2	9.5	9.5	8.9	9.2	7.9	7.5	7.7	7.5	7.2	7.3
3	9.6	9.1	9.3	9.5	8.9	9.2	8.1	7.7	7.7	7.7	7.3	7.4
4	9.4	9.0	9.2	9.6	9.0	9.3	7.9	7.6	7.7	7.5	7.3	7.4
5	9.5	9.2	9.4	9.7	9.0	9.3	8.1	7.7	7.8	7.5	7.0	7.3
6	10.1	9.5	9.8	9.9	9.1	9.4	8.0	7.7	7.8	7.4	6.8	7.2
7	10.1	9.5	9.9	9.9	9.1	9.4	8.2	7.5	7.8	7.3	6.9	7.1
8	10.1	9.4	9.7	9.9	9.0	9.4	8.3	7.6	7.9	7.3	7.3	7.3
9	9.7	9.3	9.5	9.8	8.8	9.3	8.1	7.7	7.9	7.3	7.2	7.3
10	9.3	9.0	9.1	9.6	8.6	9.1	8.3	7.7	7.9	7.4	7.3	7.4
11	9.3	9.1	9.2	9.1	8.5	8.8	8.0	7.6	7.8	7.6	7.3	7.4
12	9.5	9.2	9.3	9.2	8.7	8.9	7.8	7.1	7.5	7.5	7.3	7.4
13	9.5	9.1	9.3	10.1	9.1	9.7	---	---	---	7.5	7.3	7.4
14	9.2	8.9	9.1	10.3	9.6	9.9	7.6	7.2	7.5	7.5	7.2	7.4
15	9.0	8.8	8.9	9.8	9.3	9.5	8.0	7.3	7.6	7.4	7.2	7.3
16	9.2	8.6	8.9	9.7	9.1	9.4	8.2	7.6	7.8	7.4	7.2	7.3
17	9.7	9.1	9.4	9.6	8.9	9.2	8.0	7.6	7.8	7.3	7.2	7.2
18	9.9	9.4	9.6	9.3	8.7	9.0	8.1	7.5	7.7	7.2	7.0	7.1
19	9.8	9.5	9.7	8.9	8.4	8.6	7.9	7.3	7.5	7.4	7.0	7.2
20	9.8	9.3	9.5	9.1	8.4	8.7	7.7	7.1	7.3	7.5	7.2	7.4
21	9.7	9.1	9.3	8.9	8.4	8.6	8.1	7.4	7.7	7.6	7.3	7.5
22	9.6	9.0	9.3	8.7	8.3	8.5	8.2	7.6	7.8	7.5	7.3	7.4
23	9.7	9.0	9.3	8.9	8.2	8.5	8.0	7.4	7.7	7.7	7.5	7.6
24	9.3	8.9	9.1	9.2	8.0	8.4	7.8	7.2	7.4	7.6	7.4	7.5
25	9.2	8.6	8.9	8.4	7.7	8.0	7.7	7.1	7.4	7.5	7.4	7.5
26	9.5	8.7	9.1	8.2	7.6	7.9	7.8	7.1	7.4	7.6	7.4	7.5
27	9.5	9.0	9.2	8.2	7.6	7.8	7.5	7.1	7.3	7.6	7.4	7.5
28	9.4	9.0	9.2	7.8	7.4	7.7	7.4	7.2	7.3	7.6	7.4	7.5
29	---	---	---	7.7	7.3	7.5	7.3	7.1	7.2	7.6	7.4	7.5
30	---	---	---	7.4	7.2	7.3	7.6	7.2	7.4	7.5	7.3	7.4
31	---	---	---	7.6	7.4	7.5	---	---	---	7.6	7.3	7.4
MONTH	10.3	8.6	9.3	10.3	7.2	8.8	8.3	7.1	7.6	7.7	6.8	7.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.6	7.3	7.4	7.2	7.0	7.1	---	---	---	7.2	6.7	6.9
2	7.5	7.1	7.4	7.3	7.0	7.2	---	---	---	7.2	6.8	7.0
3	7.2	7.0	7.1	7.4	7.1	7.3	7.0	6.3	6.6	7.2	6.5	6.8
4	7.2	6.9	7.0	7.7	7.3	7.5	7.2	6.4	6.8	7.4	6.7	7.0
5	7.2	6.9	7.0	7.9	7.4							

GUADALUPE RIVER BASIN

371

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX

LOCATION (REVISED).--Lat 29°13'19", long 98°21'20", Bexar County, Hydrologic Unit 12100301, at downstream side of bridge on Farm Road 1604, 2.7 mi southwest of Elmendorf, 3.3 mi downstream from Braunig Plant lake, and 203.0 mi upstream from mouth. Prior to June 16, 1993, at site 2.8 mi upstream.

DRAINAGE AREA.--1,743 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 380.00 ft above National Geodetic Vertical Datum of 1929. Sept. 12, 1962, to Dec. 19, 1980, at site 2.5 mi upstream at different datum. Dec. 19, 1980, to Dec. 23, 1986, at same site and datum. Dec. 24, 1986, to June 15, 1993, at site 2.8 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records 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 150,600 acre-ft of sewage effluent into the San Antonio River from their Leon Creek, Salado Creek, and Dos Rios plants, but no sewage effluent was discharged from their Mitchell Lake plant upstream from this station. There was however, 2,880 acre-ft (not sewage effluent) released from Mitchell Lake during the year. The San Antonio City Public Service Board pumped 4,860 acre-ft into Braunig Lake and 17,000 acre-ft into Calaveras Lake upstream from this station and released 1,870 acre-ft from Braunig Lake and 12,600 acre-ft from Calaveras Lake upstream from this station. For additional information relating to sewage effluent, see station 08181500. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter (DCP) at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 6	1400	15,400	36.51	June 26	1600	7,140	35.05
May 23	1900	9,240	30.89				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	642	544	629	568	745	597	703	846	662	310	250
2	332	516	526	579	548	636	548	599	781	628	384	250
3	325	395	518	601	636	546	574	624	739	596	350	251
4	322	350	509	644	697	522	928	568	709	573	304	248
5	329	351	492	602	1000	513	713	4420	683	558	305	249
6	326	378	507	585	799	500	616	13500	665	562	303	244
7	324	404	518	633	646	494	695	5140	658	547	295	255
8	322	404	506	607	614	497	843	1940	660	530	286	246
9	323	454	533	544	604	487	608	1280	621	521	291	262
10	326	415	523	563	1950	448	555	1080	797	506	288	262
11	334	397	503	569	1230	385	539	996	742	492	288	250
12	326	452	499	569	720	1040	532	929	858	470	283	250
13	326	399	502	560	679	886	538	876	2760	429	282	297
14	310	365	551	552	665	655	537	841	1080	419	269	281
15	312	358	1600	556	628	579	520	806	750	409	266	264
16	344	370	1060	554	608	551	515	775	578	428	272	254
17	370	374	709	545	530	517	513	760	578	402	282	255
18	370	381	646	555	529	507	507	748	568	396	272	247
19	355	1560	605	861	533	514	511	768	590	391	276	243
20	325	2870	589	935	527	512	502	692	617	387	262	249
21	328	1420	615	669	520	530	497	665	2330	377	251	232
22	323	743	607	592	516	506	501	724	1280	371	253	205
23	324	640	605	614	495	505	513	4860	913	364	263	205
24	319	605	597	569	491	497	496	3720	705	353	259	200
25	318	567	581	566	609	499	549	1290	1260	343	253	195
26	322	550	578	560	565	491	571	939	4780	340	251	190
27	325	530	600	556	478	470	536	858	3390	339	251	200
28	322	532	597	553	527	727	500	850	980	333	249	186
29	323	528	602	543	---	822	646	1090	781	329	250	184
30	729	539	599	550	---	910	914	1800	698	329	256	183
31	435	---	598	548	---	714	---	1210	---	317	252	---
TOTAL	10702	18489	19019	18563	18912	18205	17614	56051	33397	13701	8656	7087
MEAN	345	616	614	599	675	587	587	1808	1113	442	279	236
MAX	729	2870	1600	935	1950	1040	928	13500	4780	662	384	297
MIN	310	350	492	543	478	385	496	568	568	317	249	183
AC-FT	21230	36670	37720	36820	37510	36110	34940	111200	66240	27180	17170	14060

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993, BY WATER YEAR (WY)

MEAN	499	455	475	523	603	508	542	803	1029	534	422	493
MAX	2424	1255	2176	2191	3803	3031	1997	3293	8527	3764	1760	2761
(WY)	1974	1977	1992	1968	1992	1992	1992	1987	1987	1973	1978	1973
MIN	144	153	160	168	146	143	150	130	88.6	81.9	52.8	120
(WY)	1963	1967	1971	1967	1967	1971	1967	1967	1967	1964	1963	1989

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1963 - 1993	
ANNUAL TOTAL	619846		240396			
ANNUAL MEAN	1694		659		573	
HIGHEST ANNUAL MEAN					1784	
LOWEST ANNUAL MEAN					166	
HIGHEST DAILY MEAN	13600	May 22	13500	May 6	27600	Sep 27 1973
LOWEST DAILY MEAN	310	Oct 14	183	Sep 30	25	Aug 26 1963
ANNUAL SEVEN-DAY MINIMUM	322	Oct 22	191	Sep 24	42	Aug 21 1963
INSTANTANEOUS PEAK FLOW			15400	May 6	40000	Sep 27 1973
INSTANTANEOUS PEAK STAGE			36.51	May 6	53.06	Jun 5 1986
ANNUAL RUNOFF (AC-FT)	1229000		476800		415100	
10 PERCENT EXCEEDS	3400		911		1030	
50 PERCENT EXCEEDS	1060		530		323	
90 PERCENT EXCEEDS	370		262		146	

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; December 1992 to September 1993.

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, 110 microsiemens July 16, 1990.

pH: Maximum, 9.0 units Jun 16, 17, 1993; minimum, 7.0 units Oct. 25, 28, 1988, Jan. 11, 1989.

WATER TEMPERATURE: Maximum, 32.5°C Sept. 3, 1989, June 23, 24, 27, 1990; minimum, 5.5°C Jan. 10, 1973.

DISSOLVED OXYGEN: Maximum, 11.8 mg/L Jun. 23, 1991; minimum, 0.0 mg/L Mar. 2, Apr. 14, 15, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 989 microsiemens on Sept. 30; minimum, 159 microsiemens May 5 and 6.

pH: Maximum, 8.4 units on several days in Oct. and Dec.; minimum, 7.5 units Jun. 13.

WATER TEMPERATURE: Maximum, 31.5°C Jul. 30, 31, Aug. 1; minimum, 13.5°C Dec. 16, Mar. 13.

DISSOLVED OXYGEN: Maximum, 10.6 mg/l Mar. 14; minimum, 5.5 mg/l Jun. 30, Jul. 1.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
OCT 21...	1500	1920	837	8.0	24.5	7.0	85	0.9	280	62	84	18	
DEC 22...	1000	531	793	8.3	18.0	8.8	95	1.4	290	62	87	17	
FEB 09...	1123	480	776	8.1	17.5	9.2	99	0.8	260	49	78	17	
APR 14...	1345	1960	780	7.8	24.0	7.4	92	1.6	310	83	93	18	
JUN 23...	1050	806	726	8.0	27.0	7.8	101	2.3	230	55	73	12	
AUG 06...	0900	1890	970	8.1	29.0	6.4	85	0.8	320	97	96	20	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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)
OCT 21...	56	1		4.9	220	65	75	0.40	15	451	8.79	--	0.010
DEC 22...	49	1		4.9	230	62	66	0.30	14	437	7.38	--	0.020
FEB 09...	54	1		4.9	220	66	72	0.30	12	472	7.75	7.75	--
APR 14...	56	1		5.1	220	65	80	0.50	13	497	6.74	6.74	--
JUN 23...	44	1		--	180	60	65	0.30	14	--	3.95	3.95	--
AUG 06...	79	2		7.0	230	77	110	0.50	16	592	11.0	11.0	--
DATE		NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	
OCT 21...	--		8.80	--	0.030	--	0.37	--	--	0.40	1.60	--	
DEC 22...	--		7.40	--	0.030	--	0.37	--	--	0.40	1.20	--	
FEB 09...		0.050	7.80	7.80	--	0.030	--	0.27	0.30	--	--	1.20	
APR 14...		0.060	6.80	6.80	--	0.100	--	0.30	0.40	--	--	1.00	
JUN 23...		0.050	4.00	4.00	--	0.080	--	0.52	0.60	--	--	0.480	
AUG 06...		0.050	11.0	11.0	--	0.060	--	0.54	0.60	--	--	1.20	

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	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 21...	--	1.40	--	--	--	--	--	--	--	--	--
DEC 22...	--	0.990	--	1	47	<0.5	2.0	<5	<3	<10	14
FEB 09...	1.30	--	4.0	--	--	--	--	--	--	--	--
APR 14...	0.940	--	2.9	--	--	--	--	--	--	--	--
JUN 23...	0.460	--	1.4	2	56	<0.5	<1.0	<5	<3	<10	220
AUG 06...	1.00	--	3.1	--	--	--	--	--	--	--	--
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 21...	--	--	--	--	--	--	--	--	--	--	--
DEC 22...	<10	16	6	0.3	<10	<10	<1	<1.0	760	<6	13
FEB 09...	--	--	--	--	--	--	--	--	--	--	--
APR 14...	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	<10	17	30	0.7	<10	<10	<1	<1.0	630	<6	23
AUG 06...	--	--	--	--	--	--	--	--	--	--	--
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. 1992	10702		785	439	12700	69	2010	69	1980		270
NOV. 1992	18489		635	360	18000	49	2470	58	2870		230
DEC. 1992	19019		699	394	20200	57	2910	63	3220		250
JAN. 1993	18563		703	397	19900	57	2860	63	3160		250
FEB. 1993	18912		645	366	18700	49	2530	59	2990		240
MAR. 1993	18205		711	401	19700	59	2880	63	3120		250
APR. 1993	17614		682	386	18300	54	2570	62	2930		250
MAY 1993	56051		445	256	38700	30	4500	42	6330		170
JUNE 1993	33397		552	315	28400	40	3580	51	4590		210
JULY 1993	13701		881	488	18000	85	3160	75	2770		290
AUG. 1993	8656		914	504	11800	91	2130	77	1790		290
SEPT 1993	7087		934	514	9830	95	1810	78	1490		290
TOTAL	240396		**	**	234000	**	33400	**	37200		**
WTD.AVG.	659		639	361	**	51	**	57	**		230

GUADALUPE RIVER BASIN

375

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	804	787	795	833	560	690	764	710	729	752	694	723
2	802	788	795	729	618	690	772	727	744	746	707	726
3	805	791	800	788	704	740	766	685	727	734	718	729
4	812	783	803	804	774	790	---	---	735	740	708	726
5	828	781	803	803	783	795	---	---	735	759	727	748
6	840	799	821	813	774	791	---	---	735	767	751	758
7	833	799	815	789	767	779	752	716	735	763	676	725
8	818	791	805	784	708	760	775	715	746	724	692	709
9	808	789	798	772	716	755	806	735	757	770	712	740
10	813	796	806	796	735	769	764	738	748	735	711	724
11	813	784	802	823	735	776	772	735	752	729	702	711
12	794	779	787	796	664	748	771	744	752	739	700	715
13	816	784	801	796	698	750	773	739	749	731	709	721
14	823	803	810	781	711	755	765	725	744	750	716	726
15	833	813	821	799	703	763	749	396	571	732	716	724
16	833	813	823	781	735	763	602	512	546	739	718	725
17	842	821	832	801	745	775	721	602	670	735	707	720
18	838	806	830	804	768	790	742	705	727	726	697	714
19	821	796	812	804	318	583	772	736	757	712	514	653
20	828	801	815	511	245	364	789	754	773	628	531	599
21	835	821	827	512	421	465	785	747	771	679	620	650
22	845	828	837	592	512	556	812	768	788	695	672	684
23	845	821	833	649	592	633	813	765	787	708	655	685
24	838	821	831	711	641	673	787	770	779	714	686	699
25	835	811	825	720	661	695	779	734	761	705	684	694
26	821	743	779	726	693	710	745	722	734	733	691	710
27	777	746	760	729	688	707	741	662	732	731	711	722
28	785	757	773	725	685	706	742	724	734	739	715	726
29	801	755	779	738	685	721	763	731	750	766	723	743
30	790	559	677	739	701	720	768	748	760	745	724	735
31	833	740	772	---	---	---	768	745	758	754	712	737
MONTH	845	559	802	833	245	707	813	396	735	770	514	713

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	761	713	724	659	563	594	690	613	654	679	625	652
2	764	729	745	680	581	628	697	657	674	706	664	687
3	776	681	759	743	680	716	719	636	678	713	662	686
4	788	733	765	754	736	745	692	519	596	730	687	708
5	791	585	695	763	734	746	655	534	578	709	159	471
6	700	659	684	763	742	750	681	625	655	231	159	179
7	763	695	729	756	734	747	689	596	657	318	231	286
8	773	722	746	760	740	748	635	563	607	510	318	412
9	787	742	769	798	752	764	676	622	653	614	510	568
10	742	242	487	834	778	812	701	661	677	673	572	642
11	581	326	458	831	801	810	716	672	684	703	654	676
12	682	581	643	831	450	678	700	666	674	707	678	687
13	700	648	675	665	609	631	806	680	725	720	681	690
14	703	669	682	733	665	716	764	718	738	729	680	692
15	697	670	680	765	733	753	746	688	717	701	671	686
16	720	678	702	813	752	771	713	694	703	728	679	692
17	712	683	697	829	776	793	742	708	722	722	687	705
18	701	686	695	808	771	787	752	667	716	762	695	725
19	701	687	693	836	769	785	762	679	714	736	691	715
20	697	686	692	809	744	780	728	691	701	775	729	740
21	703	682	692	768	726	754	728	684	701	803	738	754
22	690	672	681	801	726	762	752	691	707	772	559	758
23	712	676	695	808	727	760	708	686	700	559	203	332
24	748	695	716	820	689	774	740	650	704	492	247	361
25	752	613	704	791	746	760	711	684	699	672	465	581
26	735	636	687	795	745	757	740	696	705	750	672	714
27	746	707	723	760	731	746	750	703	724	801	740	764
28	729	653	714	806	408	713	764	711	728	803	759	790
29	---	---	---	677	408	585	794	669	739	789	672	747
30	---	---	---	635	423	542	747	654	693	752	422	594
31	---	---	---	656	540	596	---	---	---	681	496	593
MONTH	791	242	690	836	408	726	806	519	687	803	159	622

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	730	674	705	870	840	857	---	---	900	954	933	945
2	816	728	754	870	850	864	---	---	820	954	935	948
3	764	698	740	870	860	866	---	---	900	955	936	946
4	737	689	708	870	850	861	---	---	915	947	937	941
5	733	698	718	860	850	854	956	897	922	958	927	936
6	752	691	720	870	850	862	963	914	937	939	908	918
7	740	684	707	880	850	867	961	918	940	919	898	907
8	764	728	745	880	860	869	958	902	925	931	910	917
9	772	725	751	890	870	878	932	882	906	943	931	938
10	728	591	686	890	870	882	951	859	909	944	922	929
11	723	640	682	880	860	872	944	900	908	965	944	951
12	745	269	668	870	860	865	912	891	897	956	925	941
13	366	222	301	890	860	876	923	902	914	936	885	908
14	590	342	463	900	870	892	923	913	916	917	875	892
15	596	464	534	890	758	871	915	904	910	939	917	921
16	464	371	565	---	---	890	906	885	897	950	919	929
17	---	---	620	---	---	895	917	885	894	941	920	929
18	---	---	670	---	---	900	928	897	914	943	921	933
19	---	---	700	---	---	900	928	899	914	954	923	937
20	---	---	715	---	---	900	930	909	917	944	903	921
21	---	---	430	---	---	900	941	930	934	946	914	922
22	---	---	550	---	---	900	942	922	929	958	926	944
23	---	---	730	---	---	900	923	903	910	948	927	939
24	---	---	760	---	---	900	925	904	911	950	928	939
25	---	---	525	---	---	900	936	925	932	962	940	950
26	---	---	325	---	---	900	937	926	936	962	942	953
27	---	---	450	---	---	900	947	927	932	942	922	931
28	730	580	672	---	---	900	939	929	932	965	922	941
29	820	730	793	---	---	900	950	929	948	988	934	969
30	860	810	846	---	---	900	951	921	930	989	972	980
31	---	---	---	---	---	900	942	922	935	---	---	---
MONTH	860	222	641	900	758	885	963	859	916	989	875	935
YEAR	989	159	756									

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.4	8.1	7.9	8.1	8.0	8.1	8.3	8.2	8.2	8.2	8.1	8.1
2	8.4	8.3	7.9	8.2	8.1	8.1	8.3	8.2	8.2	8.1	8.0	8.1
3	8.4	8.0	7.9	8.2	8.1	8.2	8.3	8.2	8.2	8.1	8.0	8.0
4	8.4	8.0	7.8	8.2	8.2	8.2	---	---	---	8.1	8.0	8.0
5	8.3	7.9	7.8	8.3	8.2	8.2	---	---	---	8.1	8.0	8.0
6	8.2	8.1	8.1	8.2	7.9	8.1	---	---	---	8.1	8.1	8.1
7	8.2	8.1	8.2	8.0	8.0	8.0	8.2	8.2	8.2	8.2	8.0	8.1
8	8.2	8.1	8.1	8.0	7.9	8.0	8.3	8.2	8.2	8.1	8.1	8.1
9	8.2	8.1	8.1	8.0	7.9	7.9	8.3	8.0	8.2	8.1	8.1	8.1
10	8.2	8.1	8.1	8.0	7.9	7.9	8.3	8.3	8.3	8.1	8.1	8.1
11	8.2	8.1	8.1	8.0	7.9	8.0	8.4	8.3	8.3	8.1	8.1	8.1
12	8.1	8.1	8.1	8.0	7.9	8.0	8.4	8.4	8.4	8.1	8.1	8.1
13	8.1	8.1	8.1	---	---	---	8.4	8.4	8.4	8.1	8.1	8.1
14	8.1	8.1	8.1	---	---	---	8.4	8.3	8.3	8.1	8.1	8.1
15	8.1	8.0	8.0	---	---	---	8.3	8.1	8.2	8.1	8.1	8.1
16	8.1	8.0	8.0	---	---	---	8.2	8.2	8.2	8.1	8.1	8.1
17	8.0	8.0	8.0	8.2	8.1	8.2	8.3	8.2	8.3	8.1	8.0	8.1
18	8.0	7.9	8.0	8.2	8.2	8.2	8.3	8.3	8.3	8.1	8.0	8.0
19	8.1	8.0	8.0	8.2	8.0	8.1	8.3	8.3	8.3	8.0	7.9	8.0
20	8.0	8.0	8.0	8.1	8.0	8.0	8.3	8.3	8.3	7.9	7.9	7.9
21	8.0	8.0	8.0	8.2	8.1	8.2	8.3	8.3	8.3	8.0	7.9	7.9
22	8.0	8.0	8.0	8.2	8.2	8.2	8.3	8.3	8.3	8.3	7.9	8.1
23	8.1	8.0	8.0	8.3	8.2	8.2	8.3	8.1	8.3	8.3	8.2	8.3
24	8.1	8.0	8.1	8.3	8.2	8.3	8.2	8.1	8.2	8.3	8.2	8.3
25	8.1	8.0	8.1	8.2	8.2	8.2	8.2	8.2	8.2	8.3	8.2	8.2
26	8.2	8.0	8.1	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.1	8.1
27	8.2	8.1	8.2	8.2	8.1	8.2	8.2	8.2	8.2	8.1	8.0	8.1
28	8.2	8.1	8.1	8.2	8.1	8.2	8.2	8.2	8.2	8.1	8.0	8.0
29	8.2	8.1	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.0	8.0	8.0
30	8.2	7.8	8.0	8.2	8.2	8.2	8.2	8.2	8.2	8.1	8.0	8.0
31	8.1	8.1	8.1	---	---	---	8.2	8.1	8.2	8.2	8.0	8.1
MONTH	8.4	7.8	8.0	8.3	7.9	8.1	8.4	8.0	8.2	8.3	7.9	8.1

377

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.1	8.1	8.1	8.3	8.2	8.3	8.1	8.0	8.0	7.9	7.7	7.8
2	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.9	8.0	7.8	7.7	7.8
3	8.1	8.0	8.0	8.2	7.9	8.1	7.9	7.7	7.9	8.1	7.8	7.9
4	8.1	8.0	8.0	8.2	7.9	8.2	8.0	7.9	8.0	8.1	8.0	8.0
5	8.1	8.0	8.0	8.2	8.2	8.2	8.0	7.9	8.0	8.2	7.9	8.1
6	8.0	8.0	8.0	8.2	8.1	8.2	8.0	7.9	8.0	8.2	7.8	8.0
7	8.0	8.0	8.0	8.2	7.9	8.2	7.9	7.9	7.9	7.8	7.8	7.8
8	8.0	8.0	8.0	8.2	8.0	8.2	7.9	7.8	7.8	7.9	7.8	7.9
9	8.1	8.0	8.1	---	---	---	7.9	7.8	7.9	8.0	7.9	8.0
10	8.2	7.8	8.0	---	---	---	7.9	7.9	7.9	8.0	8.0	8.0
11	8.0	7.9	8.0	---	---	---	7.9	7.9	7.9	8.1	8.0	8.0
12	8.1	8.0	8.0	---	---	---	7.9	7.8	7.9	8.1	8.0	8.0
13	8.1	8.0	8.1	---	---	---	7.8	7.7	7.8	8.1	8.0	8.0
14	8.1	8.1	8.1	---	---	---	7.8	7.8	7.8	8.1	8.0	8.0
15	8.1	8.0	8.1	8.2	8.1	8.1	8.1	7.8	8.0	8.0	8.0	8.0
16	8.1	8.0	8.1	8.3	8.0	8.2	8.2	8.1	8.1	8.1	8.0	8.0
17	8.1	8.1	8.1	8.3	8.2	8.2	8.2	8.1	8.1	8.1	8.0	8.0
18	8.2	8.1	8.1	8.3	8.2	8.2	8.1	8.1	8.1	8.0	8.0	8.0
19	8.2	8.2	8.2	8.3	8.2	8.2	8.1	8.0	8.1	8.0	8.0	8.0
20	8.2	8.2	8.2	8.3	8.2	8.3	8.1	8.0	8.0	8.1	8.0	8.0
21	8.2	8.2	8.2	8.3	8.2	8.2	8.1	8.0	8.0	8.1	8.0	8.0
22	8.2	8.2	8.2	8.2	8.2	8.2	8.1	8.0	8.0	8.0	8.0	8.0
23	8.3	8.1	8.2	8.2	8.2	8.2	8.1	7.9	8.0	8.2	7.8	8.0
24	8.3	8.3	8.3	8.2	8.2	8.2	8.0	7.9	7.9	8.0	7.8	7.9
25	8.3	8.2	8.3	8.2	8.2	8.2	8.0	7.8	7.9	8.1	7.8	7.9
26	8.3	8.2	8.2	8.2	8.2	8.2	7.9	7.8	7.9	8.1	8.0	8.1
27	8.3	8.3	8.3	8.2	8.2	8.2	7.9	7.8	7.8	8.1	8.0	8.1
28	8.3	8.3	8.3	8.2	8.0	8.2	7.8	7.8	7.8	8.1	8.0	8.1
29	---	---	---	8.1	7.9	8.1	8.0	7.8	7.9	8.2	8.1	8.1
30	---	---	---	8.1	8.0	8.1	7.9	7.7	7.8	8.1	7.9	8.0
31	---	---	---	8.1	8.1	8.1	---	---	---	8.2	7.9	8.0
MONTH	8.3	7.8	8.1	8.3	7.9	8.2	8.2	7.7	7.9	8.2	7.7	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	8.1	8.0	8.0	8.2	8.1	8.1	8.2	8.1	8.1	8.1	8.1	8.1
2	8.1	8.0	8.1	8.2	8.0	8.1	8.2	8.0	8.1	8.1	8.0	8.1
3	8.1	7.8	8.0	8.1	7.9	8.0	8.1	8.0	8.0	8.1	8.0	8.0
4	7.9	7.8	7.9	8.1	7.9	8.0	8.1	7.9	8.0	8.1	8.0	8.0
5	7.9	7.8	7.9	8.2	8.0	8.1	8.0	7.9	7.9	8.1	8.0	8.0
6	7.9	7.8	7.9	8.2	7.9	8.0	8.1	7.9	8.0	8.1	8.0	8.0
7	7.9	7.8	7.9	8.1	7.9	8.0	8.1	8.0	8.0	8.1	8.0	8.0
8	7.9	7.8	7.9	8.1	7.9	8.0	8.1	8.0	8.1	8.1	8.0	8.0
9	7.9	7.8	7.8	8.2	7.9	8.0	8.1	7.9	8.0	8.1	8.0	8.0
10	7.9	7.7	7.8	8.1	7.8	8.0	8.0	7.9	8.0	8.1	8.0	8.1
11	7.8	7.7	7.8	8.1	7.8	8.0	8.2	8.0	8.1	8.1	8.0	8.0
12	7.8	7.6	7.8	8.1	7.8	8.0	8.2	8.1	8.1	8.2	8.1	8.1
13	7.8	7.5	7.6	8.2	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.1
14	7.8	7.6	7.7	8.0	7.9	7.9	8.1	8.0	8.0	8.0	7.9	8.0
15	---	---	---	7.9	7.8	7.9	8.1	8.0	8.1	8.0	7.9	8.0
16	---	---	---	7.9	7.8	7.9	8.2	8.0	8.1	8.0	8.0	8.0
17	---	---	---	8.0	7.9	7.9	8.2	8.1	8.2	8.0	8.0	8.0
18	---	---	---	8.0	7.9	8.0	8.2	8.1	8.1	8.0	8.0	8.0
19	---	---	---	8.0	7.9	7.9	8.2	8.1	8.1	8.0	8.0	8.0
20	---	---	---	7.9	7.8	7.9	8.2	8.1	8.2	8.1	8.0	8.0
21	---	---	---	7.9	7.8	7.9	8.2	8.1	8.2	8.1	8.0	8.0
22	---	---	---	8.0	7.9	7.9	8.2	8.1	8.1	8.1	8.0	8.0
23	---	---	---	8.0	7.9	8.0	8.1	8.1	8.1	8.1	8.0	8.0
24	---	---	---	8.0	7.9	8.0	8.1	8.1	8.1	8.1	8.0	8.0
25	---	---	---	8.0	7.9	8.0	8.1	8.1	8.1	8.2	7.8	7.9
26	---	---	---	8.1	7.9	8.0	8.2	8.1	8.1	8.1	7.9	8.0
27	---	---	---	8.1	8.0	8.1	8.1	8.1	8.1	8.2	7.9	8.0
28	8.1	8.0	8.1	8.1	8.0	8.1	8.2	8.1	8.1	8.1	7.8	8.0
29	8.1	8.0	8.1	8.1	8.0	8.0	8.2	8.1	8.1	8.2	7.9	8.0
30	8.2	8.1	8.1	8.2	8.0	8.1	8.1	8.0	8.1	8.1	7.9	8.0
31	---	---	---	8.2	8.0	8.1	8.1	8.0	8.1	---	---	---
MONTH	8.2	7.5	7.9	8.2	7.8	8.0	8.2	7.9	8.1	8.2	7.8	8.0
YEAR	8.4	7.5	8.1									

GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	26.0	22.0	29.5	25.0	23.5	24.5	18.5	17.0	17.5	20.5	17.5	18.5
2	24.0	22.0	23.0	23.5	22.0	22.5	18.0	16.5	17.5	17.5	16.5	17.0
3	24.5	22.0	23.0	23.5	21.5	22.5	18.0	17.0	17.5	18.5	17.0	17.5
4	24.5	22.5	23.5	22.0	19.5	20.5	---	---	---	19.5	18.5	19.0
5	25.0	22.5	24.0	19.5	18.0	19.0	---	---	---	18.5	17.5	18.0
6	25.0	23.0	24.0	19.0	18.0	18.5	---	---	---	17.5	16.5	17.0
7	25.0	23.5	24.0	19.5	18.5	19.0	17.5	16.0	17.0	18.0	17.0	17.0
8	25.0	23.0	23.5	20.5	19.0	19.5	18.0	17.0	17.5	18.0	17.0	17.5
9	23.5	21.5	22.5	21.5	20.5	21.0	18.5	17.5	18.0	19.5	18.0	18.5
10	25.5	23.0	24.0	22.5	21.5	22.0	18.5	17.0	17.5	18.5	16.0	17.0
11	25.0	23.5	24.5	23.0	22.0	22.5	18.0	17.0	17.5	16.0	15.0	15.5
12	25.0	23.0	24.0	23.0	21.0	22.0	18.5	17.0	17.5	17.5	15.5	16.5
13	25.0	23.0	24.0	21.0	19.5	20.0	19.5	18.0	19.0	17.0	16.5	17.0
14	25.0	23.5	24.5	19.5	18.5	19.5	19.5	18.0	19.0	16.5	16.0	16.0
15	25.5	24.5	25.0	20.0	18.5	19.0	18.0	14.0	15.5	17.5	16.0	16.5
16	26.0	25.0	25.5	21.0	19.5	20.0	15.0	13.5	14.0	18.0	16.5	17.0
17	25.5	24.5	24.5	21.5	20.5	21.0	16.5	15.0	16.0	18.5	17.5	18.0
18	24.5	24.0	24.0	22.0	21.0	21.5	17.0	16.0	16.5	19.5	18.5	19.0
19	24.0	23.0	23.5	22.0	20.0	21.0	19.0	17.0	18.0	19.0	15.5	17.5
20	24.5	23.0	24.0	20.0	18.5	18.5	19.0	17.5	18.5	16.5	15.0	15.5
21	25.0	23.5	24.0	19.0	18.5	18.5	18.0	17.0	17.5	18.0	16.0	17.0
22	25.0	24.0	24.5	18.5	17.5	18.0	19.0	17.5	18.0	18.5	17.0	17.5
23	25.5	24.0	24.5	18.5	17.5	18.0	20.0	19.0	19.5	20.0	18.0	19.0
24	25.0	23.5	24.5	20.0	18.5	19.0	20.0	18.0	19.0	19.5	17.5	18.0
25	24.5	23.0	24.0	19.0	17.5	18.5	18.0	17.5	18.0	17.5	16.0	16.5
26	24.5	23.0	24.0	17.5	16.0	17.0	18.0	17.5	18.0	16.5	15.0	16.0
27	25.0	23.0	24.0	16.5	15.5	16.0	18.5	17.5	18.0	17.0	15.5	16.0
28	25.0	23.5	24.0	16.5	15.5	15.5	19.0	18.0	18.5	17.5	16.5	16.5
29	25.0	24.0	24.5	17.0	15.5	16.0	20.5	19.0	20.0	17.5	17.0	17.5
30	24.5	23.5	24.0	17.5	16.5	17.0	21.5	20.5	21.0	17.0	16.0	16.5
31	25.0	24.0	24.5	---	---	---	21.5	20.5	21.5	17.0	15.5	16.5
MONTH	26.0	21.5	24.0	25.0	15.5	19.5	21.5	13.5	18.0	20.5	15.0	17.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18.0	16.5	17.0	18.0	17.0	17.5	23.0	21.0	22.0	24.0	22.0	23.0
2	18.5	17.5	18.0	19.5	17.5	18.0	22.5	21.0	21.5	25.0	23.0	24.0
3	19.5	18.0	18.5	20.0	18.0	19.0	21.5	21.0	21.0	25.0	22.5	24.0
4	19.5	18.0	18.5	20.0	18.0	19.0	22.0	20.5	21.0	24.5	23.5	24.0
5	18.0	16.0	17.0	20.0	18.5	19.0	21.5	19.5	20.5	24.0	19.0	21.5
6	16.5	15.0	15.5	20.0	18.0	19.0	21.0	20.5	20.5	19.5	18.5	18.5
7	17.5	15.5	16.5	20.5	18.5	19.5	22.0	21.0	21.0	21.0	19.5	20.5
8	18.0	16.5	17.0	21.0	18.5	19.5	22.0	20.5	21.5	22.5	21.0	21.5
9	18.5	17.0	17.5	21.5	19.5	20.0	22.5	20.0	21.0	23.5	22.5	23.0
10	18.5	16.0	17.5	22.0	20.0	21.0	23.0	20.5	21.5	24.0	22.0	23.0
11	17.5	16.0	17.0	21.0	19.0	20.0	24.5	21.5	22.5	24.0	22.0	23.0
12	18.5	16.5	17.5	19.0	14.5	16.5	24.0	23.0	23.5	24.5	22.5	23.5
13	19.0	17.5	18.0	15.0	13.5	14.5	24.0	23.0	23.5	24.5	22.5	23.5
14	19.0	18.5	18.5	16.5	14.5	15.5	25.0	23.0	23.5	25.5	23.0	24.0
15	20.5	18.5	19.5	17.5	16.0	16.5	23.5	21.0	22.5	26.0	23.5	24.5
16	20.0	18.5	19.5	20.5	17.5	18.5	23.0	21.0	21.5	26.5	24.0	25.0
17	18.5	17.0	17.5	21.0	19.5	20.0	22.5	21.0	21.5	26.5	24.5	25.5
18	17.0	16.0	16.5	20.5	19.5	20.0	24.0	21.5	22.5	25.5	25.0	25.0
19	17.0	16.0	16.5	20.5	20.0	20.0	25.5	23.0	24.0	26.0	24.0	25.0
20	18.5	17.0	17.5	21.5	20.0	20.5	24.5	23.0	23.5	26.0	24.0	25.0
21	20.5	18.5	19.0	20.5	20.0	20.5	23.5	21.5	22.5	26.5	24.0	25.0
22	20.0	18.5	19.0	21.0	20.0	20.5	23.5	21.0	22.0	25.5	24.0	24.5
23	20.0	18.0	19.0	22.0	20.0	21.0	24.0	21.5	22.5	24.0	20.5	22.0
24	20.0	19.0	19.5	22.0	21.0	21.5	24.0	22.5	23.0	22.5	20.5	21.0
25	21.5	20.0	20.5	23.5	21.5	22.5	25.5	23.5	24.0	24.0	22.0	23.0
26	21.0	18.5	19.5	23.5	22.0	23.0	25.5	23.5	24.5	25.0	23.5	24.0
27	19.0	17.5	18.0	22.5	21.5	22.0	24.5	23.5	23.5	26.0	24.0	25.0
28	17.5	17.0	17.0	22.0	20.5	21.5	23.5	23.0	23.5	26.0	24.5	25.0
29	---	---	---	23.0	20.5	21.5	23.5	22.5	23.0	26.0	24.5	25.5
30	---	---	---	23.0	22.5	22.5	22.5	22.0	22.5	25.5	23.5	25.0
31	---	---	---	23.0	21.5	22.5	---	---	---	28.0	24.5	26.0
MONTH	21.5	15.0	18.0	23.5	13.5	20.0	25.5	19.5	22.5	28.0	18.5	23.5

GUADALUPE RIVER BASIN

379

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	27.0	25.5	26.0	29.0	27.5	28.0	31.5	29.0	30.5	30.0	28.5	29.0
2	28.0	25.5	26.5	29.0	27.5	28.0	31.0	29.0	30.0	30.5	28.5	29.5
3	28.5	26.0	27.0	29.0	27.5	28.0	---	---	---	30.0	28.5	29.0
4	27.5	26.5	27.0	29.0	27.5	28.0	---	---	---	29.5	28.5	29.0
5	28.0	26.5	27.0	28.5	27.5	28.0	---	---	---	29.5	27.5	28.5
6	28.5	27.0	27.5	29.0	27.0	28.0	---	---	---	29.0	28.0	28.5
7	28.0	27.0	27.5	29.0	27.5	28.0	---	---	---	29.0	27.5	28.5
8	28.0	27.0	27.5	29.0	27.5	28.5	---	---	---	29.5	27.5	28.5
9	28.0	26.5	27.5	29.5	27.5	28.5	---	---	---	29.5	28.0	28.5
10	27.5	26.5	26.5	29.0	27.5	28.5	---	---	---	29.5	28.0	29.0
11	27.5	26.0	26.5	29.5	27.5	28.5	---	---	---	29.0	28.0	28.5
12	27.0	25.5	26.5	29.5	27.5	28.5	---	---	---	28.5	28.0	28.0
13	25.5	24.0	24.5	29.5	27.5	28.5	31.0	29.0	29.5	28.5	27.5	28.0
14	26.0	25.0	25.5	30.0	27.5	28.5	30.5	29.0	30.0	28.5	27.5	28.0
15	26.5	25.0	25.5	29.5	27.5	28.5	31.0	29.0	30.0	28.0	26.0	26.5
16	28.0	26.5	27.5	29.5	28.0	29.0	31.0	29.0	30.0	27.0	25.0	26.0
17	28.0	27.0	27.5	30.0	28.0	29.0	30.5	29.0	29.5	27.5	25.5	26.5
18	28.0	27.0	27.5	30.0	28.0	29.0	30.5	29.0	30.0	28.0	27.0	27.5
19	27.5	26.5	27.0	30.0	28.0	29.0	30.5	28.5	29.5	29.0	27.5	28.0
20	27.5	26.5	27.0	30.0	28.0	29.0	30.5	28.5	29.5	29.0	28.0	28.5
21	27.0	26.0	26.5	30.5	28.5	29.5	30.0	28.5	29.5	29.5	28.0	29.0
22	27.0	26.5	26.5	30.5	28.5	29.5	30.0	28.5	29.5	29.5	28.5	29.0
23	---	---	---	31.0	28.0	29.5	30.0	28.5	29.5	29.5	28.5	29.0
24	---	---	---	31.0	28.5	29.5	30.5	28.5	29.5	30.0	28.5	29.0
25	---	---	---	31.0	28.5	29.5	30.5	28.5	29.5	30.0	28.0	29.0
26	---	---	---	30.5	28.5	29.5	30.0	28.5	29.5	29.0	27.5	28.0
27	---	---	---	31.0	28.5	29.5	29.5	28.5	28.5	27.5	26.0	26.5
28	28.5	26.5	27.0	31.0	29.0	30.0	29.0	28.0	28.5	26.5	24.5	25.5
29	29.0	27.5	28.0	31.0	29.0	30.0	29.5	28.0	29.0	26.0	24.5	25.0
30	29.0	27.5	28.0	31.5	29.0	30.5	29.5	28.5	29.0	26.0	24.5	25.5
31	---	---	---	31.5	29.0	30.5	30.0	28.5	29.5	---	---	---
MONTH	29.0	24.0	27.0	31.5	27.0	29.0	31.5	28.0	29.5	30.5	24.5	28.0
YEAR	31.5	13.5	23.0									

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.4	6.3	7.0	---	---	---	9.3	9.1	9.2	8.8	8.1	8.5
2	---	---	---	---	---	---	9.3	9.0	9.2	9.0	8.7	8.9
3	---	---	---	---	---	---	9.2	9.0	9.1	9.0	8.7	8.9
4	---	---	---	---	---	---	---	---	---	8.8	8.6	8.7
5	---	---	---	---	---	---	---	---	---	9.0	8.6	8.8
6	---	---	---	10.1	9.0	9.7	---	---	---	9.3	9.0	9.1
7	7.8	6.9	7.3	10.0	9.2	9.6	9.7	9.2	9.5	9.1	8.7	9.0
8	7.3	6.6	6.9	9.5	8.7	9.0	9.8	8.9	9.2	8.9	8.7	8.8
9	7.6	6.8	7.1	8.8	8.4	8.6	9.3	8.5	8.8	8.8	8.5	8.6
10	7.4	6.8	7.0	8.4	8.2	8.3	8.9	8.4	8.6	9.1	8.5	8.8
11	7.4	6.7	7.0	9.0	8.2	8.5	9.2	8.5	8.7	9.3	9.1	9.2
12	7.4	6.8	7.1	9.0	8.1	8.4	9.0	8.4	8.7	9.3	8.9	9.2
13	7.3	6.8	7.0	8.7	8.3	8.5	8.4	8.0	8.2	9.3	8.9	9.1
14	7.3	6.8	7.0	9.0	8.4	8.6	8.3	7.9	8.1	9.3	9.0	9.2
15	7.2	6.7	6.9	9.0	8.5	8.7	9.6	8.3	8.9	9.3	8.9	9.1
16	7.1	6.7	6.8	9.5	8.5	8.9	---	---	---	9.3	8.8	9.0
17	7.3	6.6	7.0	9.3	8.5	8.8	---	---	---	9.0	8.7	8.8
18	7.0	6.7	6.8	9.0	8.4	8.8	---	---	---	8.8	8.5	8.6
19	7.1	6.6	6.8	9.4	8.0	8.6	---	---	---	9.2	8.5	8.7
20	7.0	6.7	6.8	9.0	8.5	8.7	9.1	8.1	8.3	9.5	9.1	9.2
21	7.3	6.7	6.9	9.5	8.5	8.8	8.7	8.4	8.5	9.3	9.0	9.1
22	7.9	7.0	7.4	9.3	8.9	9.1	8.5	8.2	8.4	9.5	9.0	9.3
23	8.3	7.7	8.1	9.5	8.9	9.0	8.3	8.1	8.2	---	---	---
24	9.0	7.6	8.0	8.9	8.7	8.7	8.5	8.0	8.2	---	---	---
25	---	---	---	9.1	8.7	8.9	8.6	8.3	8.5	---	---	---
26	7.9	7.7	7.8	9.4	9.1	9.2	8.8	8.4	8.6	9.6	8.6	8.8
27	8.0	7.5	7.7	9.8	9.4	9.5	8.7	8.5	8.6	8.6	8.2	8.5
28	7.9	7.5	7.6	9.7	9.4	9.5	8.6	8.4	8.5	8.2	7.9	8.1
29	7.8	7.4	7.5	9.6	9.4	9.5	8.5	8.1	8.3	8.1	7.8	7.9
30	8.2	5.7	6.9	9.4	9.2	9.3	8.3	8.0	8.1	8.6	8.0	8.2
31	---	---	---	---	---	---	8.3	7.8	8.0	8.7	8.3	8.4
MONTH	9.0	5.7	7.2	10.1	8.0	8.9	9.8	7.8	8.6	9.6	7.8	8.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	8.4	8.1	8.2	9.5	9.1	9.2	7.8	7.2	7.6	---	---	---
2	8.5	7.8	8.1	9.9	8.9	9.6	7.9	7.6	7.7	---	---	---
3	7.8	7.5	7.7	9.0	8.4	8.7	7.9	7.7	7.8	---	---	---
4	7.7	7.5	7.6	9.1	8.4	8.7	---	---	---	---	---	---
5	8.4	7.6	7.9	9.3	8.1	8.8	---	---	---	---	---	---
6	9.2	8.4	8.8	9.2	8.7	8.9	8.2	8.0	8.1	---	---	---
7	9.1	8.7	8.9	9.5	8.6	9.0	8.1	8.0	8.0	---	---	---
8	9.3	8.8	9.1	9.1	8.4	8.7	---	---	---	---	---	---
9	9.4	9.0	9.2	9.2	8.4	8.6	8.2	7.4	7.9	---	---	---
10	9.4	8.1	9.1	9.1	8.0	8.5	8.1	7.4	8.0	---	---	---
11	9.3	9.1	9.2	---	---	---	8.0	7.7	7.8	---	---	---
12	9.2	9.0	9.1	9.0	8.1	8.6	7.9	7.6	7.7	---	---	---
13	9.1	8.9	9.0	9.7	8.3	9.3	7.8	7.6	7.7	---	---	---
14	9.0	8.7	8.8	10.6	8.8	9.4	7.9	7.5	7.6	---	---	---
15	8.7	8.4	8.5	---	---	---	8.6	7.7	8.2	7.5	7.4	7.4
16	8.7	8.4	8.5	---	---	---	8.8	7.8	8.3	7.5	7.3	7.4
17	9.1	8.7	8.9	---	---	---	8.8	7.8	8.3	7.6	7.1	7.4
18	9.4	9.0	9.2	---	---	---	9.0	7.9	8.3	7.6	6.9	7.2
19	9.5	9.1	9.3	---	---	---	8.9	7.6	8.1	7.9	7.0	7.3
20	9.1	8.8	9.0	---	---	---	8.7	7.3	7.8	8.5	6.9	7.5
21	9.0	8.6	8.8	---	---	---	---	---	---	9.0	6.9	7.7
22	9.2	8.6	8.9	---	---	---	---	---	---	8.0	6.8	7.3
23	9.4	8.7	9.0	---	---	---	---	---	---	7.7	6.1	7.0
24	9.0	8.3	8.6	---	---	---	---	---	---	---	---	---
25	8.9	8.2	8.5	---	---	---	---	---	---	8.2	8.0	8.1
26	---	---	---	---	---	---	---	---	---	8.4	8.0	8.2
27	---	---	---	---	---	---	---	---	---	8.5	8.0	8.2
28	---	---	---	---	---	---	---	---	---	8.2	7.8	8.0
29	---	---	---	7.8	7.5	7.5	---	---	---	8.3	7.9	8.1
30	---	---	---	7.6	7.3	7.4	---	---	---	8.2	7.3	8.0
31	---	---	---	7.6	7.2	7.5	---	---	---	10.0	7.8	8.5
MONTH	9.5	7.5	8.7	10.6	7.2	8.6	9.0	7.2	7.9	10.0	6.1	7.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.8	7.7	7.7	6.6	5.5	6.0	6.8	6.1	6.5	7.2	6.6	6.9
2	8.0	7.6	7.8	6.8	6.0	6.3	7.0	6.5	7.0	7.2	6.6	6.8
3	8.1	7.5	7.8	6.9	5.9	6.3	---	---	---	7.3	6.5	6.9
4	8.2	7.7	7.9	7.3	5.9	6.6	---	---	---	7.2	6.5	6.8
5	8.4	7.9	8.2	7.4	5.9	6.7	7.1	6.3	6.6	7.6	6.5	7.0
6	8.8	8.0	8.3	7.3	6.1	6.8	7.2	6.5	6.7	7.4	6.7	7.1
7	8.8	7.8	8.2	7.3	6.3							

GUADALUPE RIVER BASIN

381

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.--Records good. For diversions and regulation above station, see REMARKS paragraph 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 and by Braunig Lake. Flow from Braunig Lake enters the San Antonio River above the station near Elmendorf, and flow from Calaveras Creek enters the San Antonio River some distance 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, 12,610 acre-ft was released into Calaveras Creek from Calaveras Lake and that 1,870 acre-ft was released from Braunig Lake. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1913 reached a stage of 28.4 ft, from floodmark, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	2200	7,690	10.56	May 24	0600	11,900	14.68
May 8	0300	10,700	13.68	June 27	0700	8,840	11.82

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	538	706	750	724	669	649	882	827	1670	1180	364	266
2	527	688	753	768	668	897	683	822	1000	1120	346	258
3	520	813	740	724	663	845	594	666	906	1050	341	256
4	512	613	733	726	680	732	579	619	842	995	356	261
5	504	504	716	762	856	670	917	1200	794	952	342	261
6	505	481	704	751	1040	661	910	2750	752	916	338	261
7	502	492	714	731	1050	644	683	7680	715	902	343	254
8	495	548	720	745	824	635	697	9460	693	855	345	260
9	496	553	719	766	750	629	980	4290	680	727	332	259
10	494	588	728	691	720	622	732	1440	658	695	313	255
11	492	596	745	690	1860	607	616	1200	703	671	317	271
12	496	580	718	696	1700	538	578	1100	857	648	312	274
13	494	590	702	699	952	1010	551	1030	841	617	309	260
14	497	601	707	695	828	1180	561	961	2600	560	303	271
15	486	539	737	686	e785	795	547	912	1540	528	300	320
16	480	513	1570	671	758	691	544	863	984	509	286	293
17	486	512	1460	679	760	608	526	828	828	499	279	276
18	545	521	946	677	728	587	522	849	750	490	294	263
19	553	3180	831	667	714	547	513	809	727	476	298	265
20	548	4710	770	840	702	551	509	820	756	462	286	259
21	502	3300	736	1170	699	546	502	758	881	460	282	252
22	485	2040	748	879	694	542	489	710	2390	445	266	253
23	481	1120	754	749	690	581	489	3470	2210	439	262	216
24	477	921	735	742	668	544	508	10000	1320	427	259	195
25	469	865	734	700	658	536	489	6700	1020	420	265	192
26	466	818	717	685	705	525	517	2950	3820	403	252	190
27	462	784	703	681	794	516	555	1380	8370	387	251	191
28	462	758	721	675	653	494	549	1210	7390	388	254	201
29	461	756	724	675	---	607	503	1140	2720	383	262	187
30	467	754	739	655	---	1050	551	1210	1360	373	261	176
31	758	---	738	674	---	935	---	1730	---	366	259	---
TOTAL	15660	30444	24512	22673	23268	20974	18276	70384	50777	19343	9277	7396
MEAN	505	1015	791	731	831	677	609	2270	1693	624	299	247
MAX	758	4710	1570	1170	1860	1180	980	10000	8370	1180	364	320
MIN	461	481	702	655	653	494	489	619	658	366	251	176
AC-FT	31060	60390	48620	44970	46150	41600	36250	139600	100700	38370	18400	14670

e Estimated

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1993, BY WATER YEAR (WY)

MEAN	426	373	372	409	468	384	465	643	770	426	298	489
MAX	2926	1592	2668	2705	4803	3536	2615	4303	10120	3662	1564	4100
(WY)	1974	1977	1992	1968	1992	1992	1992	1992	1987	1973	1978	1946
MIN	57.5	67.3	70.6	89.0	94.9	75.6	61.2	84.7	38.0	55.3	40.4	57.7
(WY)	1956	1956	1955	1957	1956	1956	1956	1956	1956	1954	1954	1930

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1926 - 1993	
ANNUAL TOTAL	796373		312984			
ANNUAL MEAN	2176		857		459	1992
HIGHEST ANNUAL MEAN					2253	1956
LOWEST ANNUAL MEAN					92.0	1946
HIGHEST DAILY MEAN	14700	Feb 6	10000	May 24	42200	Sep 29 1946
LOWEST DAILY MEAN	461	Oct 29	176	Sep 30	19	Jun 27 1956
ANNUAL SEVEN-DAY MINIMUM	466	Oct 24	190	Sep 24	23	Jun 8 1956
INSTANTANEOUS PEAK FLOW			11900	May 24	47400	Sep 29 1946
INSTANTANEOUS PEAK STAGE			14.68	May 24	a/33.80	Sep 29 1946
ANNUAL RUNOFF (AC-FT)	1580000		620800		332800	
10 PERCENT EXCEEDS	5160		1170		833	
50 PERCENT EXCEEDS	1280		671		244	
90 PERCENT EXCEEDS	548		273		90	

a/ Maximum stage since at least 1875.

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 or probe fouling, and these days were deleted from the record. 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, 1,270 microsiemens June 28, July 1, 1990; minimum, 71 microsiemens May 24, 1993.

WATER TEMPERATURE: Maximum, 33.5°C June 22-24, 1990, Aug. 30, 31, 1993; minimum, 5.5°C Dec. 24, 1989.

pH: Maximum, 8.9 units Jan. 19, 20, Dec. 11, 14, 1989; minimum, 7.0 units on many days during period of record.

DISSOLVED OXYGEN: Maximum, 15.6 mg/L July 12, 1988; minimum, 0.0 mg/L May 16, 1987, July 3, 1990.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens Aug. 16, 17, 24; minimum, 71 microsiemens May 24.

WATER TEMPERATURE: Maximum, 33.5°C Aug. 30, 31; minimum, 13.0°C Dec. 18.

pH: Maximum, 8.4 units Aug. 13, 14, Sep. 4; minimum, 7.3 units Oct. 26, 27, Nov. 2, 3.

DISSOLVED OXYGEN: Maximum, 9.4 mg/L Sep. 5; minimum, 4.0 mg/L May 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV F.L.D. AS CACO3 (MG/L)
OCT 21...	1210	507	857	8.1	23.5	6.6	78	0.8	300	69
DEC 21...	1059	724	792	7.9	16.0	8.8	91	1.9	300	72
FEB 08...	1125	810	724	8.1	15.0	8.6	87	1.5	230	38
APR 27...	1110	565	865	8.1	23.5	7.3	86	1.0	300	80
JUN 14...	1205	2800	455	7.8	26.5	5.4	68	3.7	--	--
AUG 06...	0800	382	1060	8.2	31.5	6.6	91	1.2	370	120

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 DIS FIX END FIELD CACO3 (MG/L)	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 21...	89	20	65	2	5.2	240	85	88	0.40	15
DEC 21...	89	18	57	1	5.3	220	74	70	0.30	12
FEB 08...	71	14	49	1	4.8	200	69	67	0.30	12
APR 27...	89	19	66	2	5.8	220	81	85	0.40	12
JUN 14...	E40	9.7	18	--	4.2	180	28	22	0.10	8.0
AUG 06...	110	23	90	2	6.9	250	120	120	0.40	15

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)
OCT 21...	509	7.48	--	0.020	--	7.50	--	0.040	--
DEC 21...	460	6.17	--	0.030	--	6.20	--	0.050	--
FEB 08...	427	4.23	4.23	--	0.070	4.30	4.30	--	0.130
APR 27...	527	7.37	7.37	--	0.030	7.40	7.40	--	0.040
JUN 14...	--	1.57	1.57	--	0.030	1.60	1.60	--	0.060
AUG 06...	671	7.83	7.83	--	0.070	7.90	7.90	--	0.040

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)
OCT 21...	0.36	--	--	0.40	1.30	--	--	1.20	--
DEC 21...	0.35	--	--	0.40	1.10	--	--	0.990	--
FEB 08...	--	0.37	0.50	--	--	0.700	0.780	--	2.4
APR 27...	--	0.46	0.50	--	--	1.00	1.00	--	3.1
JUN 14...	--	0.24	0.30	--	--	0.210	0.210	--	0.64
AUG 06...	--	0.66	0.70	--	--	0.990	0.890	--	2.7
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. 1992	15660	873	486	20600	86	3630	79	3360	280
NOV. 1992	30444	588	340	28000	50	4110	55	4530	210
DEC. 1992	24512	745	424	28100	68	4490	69	4560	250
JAN. 1993	22673	803	452	27700	76	4620	74	4510	270
FEB. 1993	23268	747	424	26600	69	4300	69	4330	250
MAR. 1993	20974	773	438	24800	72	4060	71	4030	260
APR. 1993	18276	798	450	22200	75	3700	73	3610	260
MAY 1993	70384	437	256	48700	35	6730	41	7870	160
JUNE 1993	50777	532	311	42600	44	5980	50	6890	190
JULY 1993	19343	913	503	26300	92	4820	82	4300	290
AUG. 1993	9277	1080	580	14500	120	3010	96	2390	320
SEPT 1993	7396	1010	549	11000	110	2160	90	1800	310
TOTAL	312984	**	**	321000	**	51600	**	52200	**
WTD.AVG.	857	668	380	**	61	**	62	**	230

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	867	855	863	816	603	712	762	742	749	809	794	803
2	882	862	869	817	618	740	762	747	754	811	789	799
3	889	877	882	795	736	765	769	750	758	805	755	784
4	891	874	880	---	---	640	781	769	775	793	758	776
5	886	874	883	---	---	812	784	774	780	790	768	776
6	894	877	885	856	829	840	789	774	781	786	766	775
7	889	862	880	852	838	848	799	781	790	809	760	784
8	882	862	874	843	829	837	796	784	789	819	805	812
9	891	869	881	---	---	820	791	772	782	819	791	806
10	899	884	892	---	---	810	789	745	779	823	785	805
11	899	884	891	---	---	810	786	777	781	847	816	831
12	899	886	891	---	---	810	794	779	785	871	827	843
13	896	884	890	---	---	820	801	789	795	832	812	821
14	894	867	885	---	---	830	803	786	794	831	810	819
15	877	862	870	---	---	840	791	774	782	835	824	829
16	899	867	886	859	840	851	781	425	712	848	833	841
17	896	886	891	840	823	833	542	393	493	853	837	842
18	896	867	883	842	821	833	562	508	532	854	839	847
19	879	864	871	838	137	581	701	562	637	856	843	849
20	877	862	872	559	120	309	752	701	727	850	805	832
21	874	840	861	479	256	340	789	750	769	805	584	709
22	860	842	852	435	337	394	796	784	790	720	598	677
23	862	842	852	508	432	467	794	772	781	789	718	750
24	869	857	863	584	505	556	800	782	790	829	789	814
25	877	862	870	662	584	632	812	795	802	825	777	807
26	874	862	869	689	654	671	819	802	810	830	781	818
27	874	860	869	716	689	701	826	377	807	828	803	815
28	872	852	864	740	716	731	817	781	794	825	801	813
29	864	850	858	745	733	739	798	774	785	835	821	830
30	864	850	857	747	725	735	798	776	787	850	828	839
31	872	806	844	---	---	---	806	783	792	862	830	844
MONTH	899	806	873	859	120	710	826	377	757	871	584	806

385

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	862	830	844	886	840	848	745	535	636	855	774	822
2	850	830	838	852	774	810	747	611	685	796	703	734
3	850	808	825	774	676	707	806	747	778	904	725	772
4	833	813	821	759	703	726	833	801	819	821	736	785
5	---	---	863	808	759	785	833	769	804	824	371	675
6	---	---	765	840	808	826	769	611	672	703	267	472
7	---	---	661	833	821	826	720	669	686	267	181	208
8	---	---	718	838	823	829	857	701	758	285	192	236
9	789	725	761	833	818	826	801	706	774	416	275	323
10	811	781	795	823	806	812	755	659	696	615	416	504
11	816	310	662	821	806	814	806	745	768	728	565	661
12	508	393	435	847	813	831	840	799	818	769	701	749
13	612	427	514	899	750	820	847	835	840	810	781	793
14	757	612	703	772	474	600	842	813	828	841	803	820
15	---	---	775	652	620	642	825	811	818	859	827	835
16	811	791	800	747	637	695	842	825	832	862	836	849
17	806	791	797	791	745	767	877	835	857	864	845	854
18	828	794	809	806	781	793	862	852	857	866	743	833
19	833	813	822	835	806	824	877	857	869	859	774	830
20	838	823	831	852	828	839	879	855	870	882	845	861
21	838	828	832	845	825	836	874	850	863	889	853	872
22	845	828	834	838	811	827	867	845	857	922	879	910
23	838	823	830	833	745	810	884	862	872	929	120	639
24	838	821	827	835	799	812	882	857	873	258	71	162
25	838	818	827	821	808	814	889	869	879	312	212	242
26	855	833	844	838	816	828	889	857	876	567	312	442
27	833	757	818	838	823	830	869	830	846	694	567	642
28	886	601	755	845	825	836	847	833	841	789	694	764
29	---	---	---	852	806	842	860	833	846	---	---	820
30	---	---	---	808	488	702	874	852	862	---	---	850
31	---	---	---	730	466	603	---	---	---	---	---	640
MONTH	886	310	772	899	466	786	889	535	809	929	71	664
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	498	444	454	752	669	716	1050	1030	1040	1060	1030	1050
2	713	498	610	800	750	781	1060	1040	1050	1060	1040	1060
3	811	713	769	824	795	809	1070	1050	1060	1040	1020	1030
4	834	801	819	840	816	828	1070	1030	1050	---	---	1030
5	855	833	841	847	834	839	1030	1030	1030	---	---	1030
6	869	850	859	854	838	846	1040	1020	1030	1050	841	1030
7	882	864	872	855	841	846	1060	1040	1050	1030	1020	1020
8	894	872	880	881	847	858	1050	1040	1050	---	---	1010
9	882	862	871	909	881	891	1070	1050	1060	---	---	1000
10	882	857	870	916	895	906	1080	1060	1080	1010	1000	1000
11	911	877	896	944	916	930	1090	1060	1070	1000	975	989
12	882	755	840	960	940	949	1070	1040	1060	1000	977	993
13	833	759	816	960	943	953	1110	1040	1080	1010	995	1000
14	---	---	450	969	957	963	1140	1110	1130	1030	1000	1010
15	453	394	412	987	969	977	1130	1110	1120	1020	964	993
16	642	453	544	1000	982	991	1150	1120	1140	967	948	958
17	755	617	679	1010	994	1000	1150	1130	1140	960	931	943
18	837	755	810	1010	989	998	1140	1110	1130	987	945	969
19	884	827	848	1020	994	1010	1110	1090	1110	1000	975	989
20	884	839	856	1020	1000	1010	1100	1090	1090	1010	975	993
21	846	757	816	1010	994	1010	1120	1090	1110	1010	983	995
22	757	426	593	1010	989	998	1140	1100	1120	1020	991	1000
23	454	306	378	1030	991	1010	1130	1110	1120	1030	991	1000
24	566	454	526	1030	1010	1020	1150	1110	1130	1050	1010	1020
25	719	542	636	1040	1020	1030	1140	1120	1130	1060	1030	1050
26	739	174	526	1040	1010	1030	1120	1100	1110	1070	1060	1070
27	480	154	275	1050	1030	1040	1100	1080	1090	1070	1060	1070
28	468	399	414	1050	1020	1030	1140	1120	1080	1070	1050	1050
29	558	389	452	1030	996	1010	---	---	1100	1050	1040	1050
30	669	558	614	1050	1000	1020	---	---	1080	1070	1050	1060
31	---	---	---	1050	1030	1050	---	---	1040	---	---	---
MONTH	911	154	680	1050	669	947	1150	1020	1090	1070	841	1010
YEAR	1150	71	826									

GUADALUPE RIVER BASIN

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.2	8.1	8.2	7.9	7.5	7.7	8.0	7.9	8.0	8.1	8.1	8.1
2	8.3	8.2	8.2	7.7	7.3	7.5	8.0	7.9	8.0	8.1	8.0	8.1
3	8.3	8.2	8.2	7.8	7.3	7.7	8.0	7.9	8.0	8.1	8.0	8.0
4	8.3	8.3	8.3	---	---	---	8.0	7.9	7.9	8.0	8.0	8.0
5	8.3	8.2	8.3	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
6	8.3	8.2	8.3	8.1	8.1	8.1	8.0	8.0	8.0	8.0	8.0	8.0
7	8.3	8.2	8.2	8.3	8.1	8.2	8.0	8.0	8.0	8.0	8.0	8.0
8	8.3	8.1	8.2	8.2	8.2	8.2	8.0	8.0	8.0	8.0	8.0	8.0
9	8.2	8.1	8.2	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
10	8.2	8.1	8.1	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
11	8.2	8.1	8.2	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
12	8.2	8.2	8.2	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0
13	8.2	8.1	8.2	---	---	---	8.0	7.9	8.0	8.1	8.0	8.0
14	8.2	8.1	8.1	---	---	---	8.0	7.9	7.9	8.1	8.0	8.1
15	8.1	8.0	8.1	---	---	---	8.0	7.9	8.0	8.1	8.1	8.1
16	8.1	8.0	8.1	7.7	7.6	7.7	8.0	7.8	8.0	8.1	8.1	8.1
17	8.2	8.1	8.1	8.1	8.0	8.1	7.9	7.7	7.8	8.1	8.1	8.1
18	8.2	8.2	8.2	8.1	8.0	8.1	7.9	7.8	7.8	8.1	8.0	8.1
19	8.2	8.2	8.2	8.2	7.9	8.1	7.9	7.8	7.9	8.1	8.0	8.1
20	8.2	8.2	8.2	8.2	7.7	7.9	7.9	7.9	7.9	8.1	8.0	8.1
21	8.2	7.7	8.0	7.8	7.7	7.7	8.0	7.9	8.0	8.1	7.9	8.0
22	7.8	7.8	7.8	7.9	7.7	7.8	8.1	8.0	8.0	8.0	7.9	7.9
23	7.8	7.7	7.7	7.9	7.8	7.8	8.1	8.1	8.1	8.0	7.9	7.9
24	7.7	7.6	7.6	7.8	7.7	7.7	8.1	8.1	8.1	8.0	8.0	8.0
25	7.6	7.5	7.5	7.7	7.7	7.7	8.2	8.1	8.1	8.2	7.9	8.0
26	7.5	7.3	7.4	7.7	7.7	7.7	8.2	8.2	8.2	8.2	7.8	8.0
27	7.5	7.3	7.4	7.7	7.7	7.7	8.2	8.2	8.2	8.0	7.8	7.9
28	7.7	7.4	7.5	7.8	7.7	7.8	8.2	8.1	8.2	7.9	7.8	7.9
29	7.8	7.6	7.7	7.9	7.8	7.9	8.1	8.1	8.1	8.0	7.9	7.9
30	7.8	7.6	7.7	7.9	7.9	7.9	8.1	8.1	8.1	8.0	7.9	8.0
31	7.9	7.6	7.8	---	---	---	8.1	8.0	8.0	8.0	7.9	8.0
MONTH	8.3	7.3	8.0	8.3	7.3	7.9	8.2	7.7	8.0	8.2	7.8	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.8	7.9	8.2	8.1	8.1
2	8.0	7.9	7.9	8.2	8.0	8.1	8.0	7.8	7.9	8.2	8.0	8.1
3	8.0	8.0	8.0	8.2	8.0	8.1	8.0	8.0	8.0	8.1	8.0	8.1
4	8.0	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.2	8.1	8.1
5	8.2	7.8	8.0	8.0	8.0	8.0	8.1	8.0	8.0	8.3	8.1	8.2
6	8.1	7.7	7.9	8.1	8.0	8.1	8.2	8.0	8.1	8.2	7.8	8.0
7	8.0	7.6	7.9	8.2	8.1	8.1	8.0	8.0	8.0	---	---	---
8	8.0	7.6	7.8	8.2	8.1	8.1	8.2	8.0	8.0	---	---	---
9	7.9	7.9	7.9	8.1	8.1	8.1	8.2	8.1	8.1	---	---	---
10	7.9	7.9	7.9	8.1	8.1	8.1	8.2	8.1	8.2	7.8	7.8	7.9
11	7.9	7.5	7.8	8.1	8.1	8.1	8.2	8.1	8.1	8.0	7.9	8.0
12	7.7	7.6	7.7	8.1	8.1	8.1	8.2	8.2	8.2	8.1	8.0	8.1
13	7.8	7.7	7.7	8.1	8.1	8.1	8.2	8.1	8.1	8.1	7.9	8.0
14	7.9	7.8	7.8	8.1	7.9	8.0	8.2	8.1	8.1	8.0	8.0	8.0
15	---	---	---	8.1	8.0	8.0	8.2	8.1	8.1	8.0	8.0	8.0
16	7.9	7.9	7.9	8.1	8.0	8.0	8.2	8.1	8.2	8.0	8.0	8.0
17	8.1	7.9	8.0	8.1	8.0	8.0	8.2	8.1	8.2	8.0	7.9	7.9
18	8.1	8.0	8.0	8.1	8.1	8.1	8.2	8.1	8.1	8.0	7.9	7.9
19	8.1	8.0	8.1	8.1	8.1	8.1	8.2	8.1	8.1	8.0	8.0	8.0
20	8.1	8.1	8.1	8.1	8.0	8.0	8.1	8.1	8.1	8.0	8.0	8.0
21	8.1	8.1	8.1	8.0	8.0	8.0	8.2	8.1	8.1	8.0	7.9	8.0
22	8.1	8.0	8.1	8.0	7.7	8.0	8.2	8.1	8.1	7.9	7.8	7.8
23	8.1	8.0	8.1	8.0	7.8	7.9	8.1	8.1	8.1	8.2	7.8	7.9
24	8.1	8.0	8.0	8.0	7.9	7.9	8.1	8.1	8.1	8.3	7.7	8.0
25	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.0	8.0	7.9	7.7	7.8
26	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.7	7.8
27	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.8	8.0	8.0	7.9	7.9
28	8.1	7.9	8.0	8.0	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.8
29	---	---	---	8.0	8.0	8.0	8.1	8.0	8.1	---	---	---
30	---	---	---	8.0	7.7	7.9	8.2	8.1	8.1	---	---	---
31	---	---	---	7.9	7.6	7.7	---	---	---	---	---	---
MONTH	8.2	7.5	7.9	8.2	7.6	8.0	8.2	7.8	8.1	8.3	7.7	8.0

GUADALUPE RIVER BASIN

387

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.9	7.8	7.9	7.7	7.6	7.7	8.2	8.1	8.1	8.2	7.9	8.1
2	7.9	7.8	7.8	7.8	7.6	7.7	8.2	8.1	8.1	8.0	8.0	8.0
3	7.9	7.9	7.9	7.9	7.8	7.9	8.2	8.0	8.1	8.0	8.0	8.0
4	7.9	7.9	7.9	7.9	7.9	7.9	8.2	8.0	8.0	8.4	8.1	8.2
5	7.9	7.9	7.9	7.9	7.9	7.9	8.1	8.0	8.0	8.1	7.9	8.1
6	7.9	7.9	7.9	8.0	7.9	7.9	8.1	8.0	8.0	8.3	8.0	8.1
7	7.9	7.9	7.9	7.9	7.9	7.9	8.1	8.0	8.0	8.0	7.9	7.9
8	7.9	7.9	7.9	7.9	7.9	7.9	8.1	7.9	8.0	---	---	---
9	8.0	7.9	7.9	7.9	7.9	7.9	8.1	7.9	8.0	---	---	---
10	8.0	8.0	8.0	8.0	7.9	7.9	8.1	7.9	8.0	8.0	7.8	7.8
11	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.8	7.8	8.0	7.9	7.9
12	8.1	8.0	8.1	8.2	7.9	7.9	7.9	7.7	7.8	8.0	8.0	8.0
13	8.1	7.9	7.9	8.1	7.9	8.0	8.4	7.7	8.2	8.1	8.0	8.0
14	---	---	---	8.1	8.1	8.1	8.4	8.3	8.3	8.2	8.0	8.1
15	7.8	7.7	7.8	8.1	8.1	8.1	8.3	7.9	8.1	8.2	8.1	8.1
16	7.9	7.7	7.8	8.1	8.1	8.1	8.2	7.9	8.0	8.2	8.0	8.1
17	7.9	7.8	7.9	8.2	8.1	8.1	8.2	8.0	8.1	8.1	8.0	8.0
18	7.9	7.9	7.9	8.2	8.2	8.2	8.2	8.1	8.2	8.0	7.9	8.0
19	7.9	7.9	7.9	8.2	8.2	8.2	8.3	8.2	8.2	8.0	8.0	8.0
20	7.9	7.9	7.9	8.2	8.2	8.2	8.3	8.1	8.2	8.0	7.9	8.0
21	7.9	7.8	7.9	8.2	8.2	8.2	8.2	8.1	8.1	8.0	7.9	8.0
22	7.9	7.7	7.8	8.2	8.2	8.2	8.2	8.1	8.2	8.0	7.9	8.0
23	7.7	7.6	7.7	8.2	8.2	8.2	8.2	8.0	8.1	8.0	7.9	8.0
24	7.8	7.7	7.8	8.2	8.2	8.2	8.1	7.9	8.0	7.9	7.9	7.9
25	7.8	7.7	7.8	8.2	8.1	8.1	8.0	7.9	7.9	7.9	7.9	7.9
26	7.9	7.5	7.8	8.1	7.7	7.9	8.0	7.9	7.9	7.9	7.9	7.9
27	7.9	7.5	7.7	7.8	7.6	7.7	8.0	7.9	8.0	8.0	7.9	7.9
28	7.9	7.7	7.8	7.9	7.7	7.8	8.0	7.9	8.0	8.0	7.9	8.0
29	7.8	7.7	7.8	8.1	7.9	8.0	8.0	7.9	7.9	8.0	7.9	8.0
30	7.9	7.7	7.8	8.2	7.9	8.1	7.9	7.9	7.9	8.0	7.8	8.0
31	---	---	---	8.2	8.0	8.1	8.1	7.9	8.0	---	---	---
MONTH	8.1	7.5	7.9	8.2	7.6	8.0	8.4	7.7	8.0	8.4	7.8	8.0
YEAR	8.4	7.3	8.0									

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	25.0	23.5	24.5	25.5	24.5	25.0	15.5	14.5	15.0	20.0	18.0	19.0
2	24.0	23.0	23.5	24.5	23.0	23.5	15.5	15.5	15.5	18.0	17.0	17.5
3	24.0	22.5	23.5	24.0	22.0	23.0	16.0	15.5	15.5	17.0	16.5	17.0
4	24.0	22.5	23.0	---	---	---	16.5	16.0	16.5	17.0	16.5	16.5
5	24.5	22.5	23.5	---	---	---	16.0	15.0	15.5	16.5	16.0	16.0
6	24.5	23.0	24.0	17.0	17.0	16.5	15.0	14.5	15.0	16.5	16.0	16.0
7	25.0	23.5	24.0	16.0	15.5	16.0	15.0	14.5	14.5	16.0	16.0	16.0
8	24.5	23.0	23.5	17.0	16.5	17.0	15.0	14.5	14.5	16.0	16.0	16.0
9	24.5	23.5	23.5	---	---	---	15.5	15.0	15.5	17.0	16.0	16.5
10	24.5	22.5	24.0	---	---	---	16.0	15.5	16.0	17.0	15.5	16.5
11	24.5	23.5	24.0	---	---	---	16.0	16.0	16.0	15.5	15.0	15.0
12	24.5	23.5	24.0	---	---	---	16.5	16.0	16.0	15.5	15.0	15.0
13	25.0	23.5	24.5	20.0	19.0	20.0	17.5	16.5	17.0	15.0	14.0	14.5
14	25.0	24.0	24.5	20.0	19.0	19.0	17.5	16.5	17.0	14.5	14.0	14.0
15	25.0	24.5	24.5	19.0	18.0	18.0	16.5	16.5	16.5	15.0	14.5	15.0
16	26.5	25.0	25.5	18.5	18.0	18.0	16.5	15.0	16.5	15.0	14.5	15.0
17	26.5	25.5	25.5	19.0	18.0	18.5	15.0	13.5	14.0	16.0	15.0	15.5
18	25.5	25.0	25.0	20.0	19.0	19.0	14.0	13.0	13.5	17.0	16.0	16.5
19	25.5	24.5	25.0	20.0	18.0	19.5	16.0	14.0	15.0	17.0	16.0	16.5
20	25.5	24.5	25.0	20.0	18.0	18.5	16.0	15.5	16.0	17.0	16.0	16.5
21	25.0	23.5	24.5	20.0	18.5	19.0	16.5	15.5	16.0	17.0	15.5	16.5
22	24.5	23.5	24.0	18.5	17.5	18.0	17.0	16.5	17.0	16.0	15.0	15.5
23	24.5	24.0	24.5	17.5	17.0	17.0	18.0	17.0	17.5	17.0	16.0	16.5
24	24.5	23.5	24.0	17.5	17.0	17.5	17.5	17.5	17.5	17.0	16.5	17.0
25	24.5	23.5	24.0	17.0	16.5	17.0	17.5	17.5	17.5	16.5	15.5	16.0
26	24.0	23.5	24.0	16.5	16.0	16.5	17.5	17.0	17.5	15.5	15.0	15.5
27	24.0	23.0	23.5	16.0	15.0	15.5	17.0	16.5	16.5	15.0	14.5	14.5
28	24.0	23.0	23.5	15.0	14.0	14.5	17.0	16.5	17.0	14.5	14.0	14.5
29	24.0	23.0	23.5	14.0	14.0	14.0	18.0	17.0	17.5	15.5	14.5	15.0
30	25.0	24.0	24.5	14.5	14.0	14.5	19.5	18.0	19.0	15.5	15.0	15.0
31	25.0	24.0	24.5	---	---	---	20.5	19.5	20.0	15.5	14.5	15.0
MONTH	26.5	22.5	24.0	25.5	14.0	18.0	20.5	13.0	16.0	20.0	14.0	16.0

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	15.5	15.0	15.5	17.0	16.5	17.0	22.5	21.5	22.0	23.0	22.0	22.5
2	15.5	15.0	15.5	17.0	16.5	17.0	21.5	21.0	21.5	23.5	22.5	23.0
3	16.5	15.5	16.0	17.5	17.0	17.0	21.0	21.0	21.0	23.0	22.5	22.5
4	17.0	16.5	17.0	18.0	17.0	17.5	21.5	21.0	21.0	23.0	22.5	23.0
5	18.0	16.5	17.5	18.0	17.5	18.0	21.0	20.5	20.5	23.0	19.5	22.0
6	17.5	15.5	17.0	18.5	17.5	18.0	20.5	20.0	20.5	21.0	18.5	20.0
7	17.0	15.0	16.0	18.5	18.0	18.0	20.5	20.0	20.5	20.5	16.5	18.0
8	16.0	14.5	15.0	19.0	18.0	18.5	21.0	20.0	20.5	---	---	---
9	16.0	15.0	15.5	19.5	18.5	19.0	21.5	20.5	21.0	---	---	---
10	17.0	16.0	16.5	20.5	19.5	20.0	21.5	21.0	21.0	---	---	---
11	18.5	16.5	17.5	20.5	19.5	20.0	22.5	21.5	22.0	---	---	---
12	16.5	16.0	16.5	19.5	16.5	18.0	23.0	22.0	22.5	---	---	---
13	16.5	16.0	16.0	16.5	15.5	16.0	23.5	23.0	23.0	24.0	23.0	23.5
14	17.5	16.5	17.0	15.5	14.0	14.5	24.0	23.0	23.5	24.5	23.5	24.0
15	---	---	---	14.5	14.0	14.0	23.5	22.5	23.0	25.0	24.0	24.5
16	19.0	19.0	18.5	16.5	14.5	15.5	22.5	22.0	22.0	25.5	24.5	25.0
17	18.0	17.0	17.5	18.0	16.5	17.5	22.0	21.5	21.5	26.0	25.0	25.5
18	17.0	16.0	16.5	19.0	18.0	18.5	22.5	21.0	22.0	26.0	24.5	25.5
19	16.0	15.5	15.5	19.5	19.0	19.5	23.5	22.0	22.5	26.0	24.5	25.0
20	16.0	15.5	15.5	20.0	19.5	19.5	23.5	22.5	23.0	25.5	25.0	25.0
21	17.5	16.0	17.0	20.5	19.5	20.0	23.0	22.0	22.5	25.5	25.0	25.0
22	18.0	17.0	17.5	20.5	20.0	20.0	23.0	21.5	22.0	25.5	25.0	25.0
23	18.5	17.5	18.0	20.0	20.0	20.0	23.0	21.5	22.0	25.0	20.0	23.0
24	18.5	18.5	18.5	20.5	20.0	20.0	23.0	22.0	22.5	21.5	19.5	20.5
25	19.5	18.5	19.0	22.0	20.5	21.0	24.0	22.5	23.5	22.0	21.0	21.5
26	19.0	18.5	19.0	22.5	21.0	21.5	24.5	23.5	24.0	24.0	22.0	23.0
27	18.5	18.0	18.5	22.0	21.5	21.5	24.0	22.5	24.0	25.5	24.0	24.5
28	18.5	17.0	17.5	22.0	21.5	21.5	24.0	23.5	23.5	26.0	25.0	25.5
29	---	---	---	22.5	21.5	22.0	23.5	22.5	23.5	---	---	---
30	---	---	---	22.5	21.5	22.0	22.5	22.0	22.5	---	---	---
31	---	---	---	22.5	21.0	21.5	---	---	---	---	---	---
MONTH	19.5	14.5	17.0	22.5	14.0	19.0	24.5	20.0	22.0	26.0	16.5	23.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	27.0	25.5	26.0	30.0	29.0	29.5	32.0	31.0	31.5	29.5	28.5	29.0
2	28.0	26.5	27.0	30.0	29.0	29.5	32.0	31.0	31.5	29.5	28.5	29.0
3	28.5	27.5	28.0	30.0	29.5	29.5	32.0	31.0	31.5	29.5	29.0	29.5
4	28.5	28.0	28.5	30.0	29.5	29.5	32.0	31.0	31.5	32.5	28.5	29.5
5	29.0	28.5	28.5	30.0	29.0	29.5	32.0	31.0	31.5	32.5	29.0	30.5
6	29.5	28.5	29.0	30.0	29.0	29.5	31.5	30.5	31.5	29.5	28.5	29.0
7	29.0	29.0	29.0	30.0	29.5	29.5	31.5	30.5	31.0	29.0	28.5	29.0
8	29.0	28.5	29.0	30.0	29.5	29.5	31.5	30.5	31.0	---	---	---
9	29.5	28.5	29.0	30.0	29.0	29.5	31.5	31.0	31.0	---	---	---
10	29.0	28.5	28.5	30.0	29.5	29.5	32.0	31.0	31.5	29.0	29.0	29.0
11	29.0	28.0	28.5	30.5	29.5	30.0	31.5	31.0	31.5	29.0	28.5	28.5
12	28.5	27.5	28.0	31.0	29.0	30.0	31.5	30.5	31.0	28.5	28.0	28.5
13	27.5	27.5	27.5	30.5	29.5	30.0	31.5	30.5	31.0	28.5	28.0	28.5
14	---	---	---	30.5	29.5	30.0	31.5	30.5	31.0	28.5	28.0	28.0
15	27.0	26.0	26.5	30.5	29.5	30.0	31.5	30.5	31.0	28.0	26.5	27.0
16	27.0	27.0	27.0	30.5	29.5	30.0	31.5	30.5	31.0	26.5	25.5	26.0
17	28.0	27.0	27.5	30.5	29.5	30.0	31.0	30.5	31.0	26.5	25.5	26.0
18	28.5	28.0	28.0	30.5	29.5	30.0	31.0	30.5	31.0	27.5	26.5	27.0
19	28.5	28.0	28.5	31.0	29.5	30.0	31.0	30.0	31.0	28.0	27.0	27.5
20	28.0	28.0	28.0	31.0	30.0	30.5	31.0	30.0	30.5	28.5	27.5	28.0
21	28.5	27.5	28.0	31.0	30.0	30.5	31.0	30.0	30.5	29.0	28.0	28.5
22	28.0	27.5	28.0	31.5	30.0	30.5	30.5	30.0	30.5	29.0	28.0	28.5
23	28.5	27.0	28.0	31.5	30.0	30.5	30.5	30.0	30.5	29.5	28.5	29.0
24	29.0	28.0	28.5	31.5	30.0	30.5	30.5	30.0	30.5	29.5	29.0	29.5
25	29.0	28.5	29.0	31.5	30.0	31.0	30.5	30.0	30.5	29.5	29.0	29.0
26	29.0	25.5	27.5	31.5	30.0	30.5	30.5	30.0	30.5	29.0	28.5	29.0
27	28.0	25.0	26.5	31.5	30.0	31.0	30.5	29.5	29.5	28.5	27.0	28.0
28	28.0	27.5	27.5	32.0	30.5	31.0	30.0	29.0	29.5	27.0	25.0	26.0
29	29.0	27.5	28.0	32.0	31.0	31.5	33.0	29.5	30.5	25.0	24.0	24.5
30	30.0	29.0	29.0	32.0	31.0	31.5	33.5	29.5	31.0	24.5	24.0	24.0
31	---	---	---	32.0	31.0	31.5	33.5	29.0	30.5	---	---	---
MONTH	30.0	25.0	28.0	32.0	29.0	30.0	33.5	29.0	31.0	32.5	24.0	28.0
YEAR	33.5	13.0	23.0									

GUADALUPE RIVER BASIN

389

08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.6	6.4	6.5	7.2	4.2	6.4	8.8	8.3	8.5	8.2	7.8	8.0
2	6.7	6.5	6.6	7.0	4.1	5.7	8.5	8.1	8.3	8.5	8.1	8.3
3	6.7	6.5	6.6	7.0	6.7	6.9	8.4	7.8	8.0	8.6	8.3	8.4
4	6.7	6.5	6.6	---	---	---	8.1	7.6	7.9	8.7	8.4	8.5
5	6.7	6.5	6.6	---	---	---	8.2	7.7	7.9	8.7	8.4	8.5
6	6.5	6.4	6.4	8.2	7.9	8.0	8.1	7.4	7.8	8.5	8.3	8.4
7	6.5	6.4	6.5	8.4	8.2	8.3	8.3	7.4	8.0	8.4	8.2	8.3
8	6.6	6.3	6.4	8.4	8.2	8.2	8.3	7.4	8.1	8.3	8.0	8.2
9	6.6	6.5	6.5	---	---	---	8.4	7.4	8.1	8.1	8.0	8.0
10	6.6	6.3	6.4	---	---	---	8.3	7.7	8.0	8.3	8.0	8.1
11	6.5	6.2	6.4	---	---	---	8.2	7.5	7.8	8.3	7.2	7.5
12	6.5	6.2	6.4	---	---	---	9.0	7.3	7.9	7.8	7.4	7.6
13	6.9	6.2	6.4	---	---	---	8.2	7.0	7.6	8.1	7.7	7.9
14	6.4	6.1	6.3	---	---	---	7.9	6.8	7.6	7.8	7.4	7.6
15	6.5	6.1	6.3	---	---	---	8.3	7.7	7.9	7.5	7.2	7.3
16	6.3	6.1	6.2	8.6	8.0	8.4	8.5	7.6	8.1	8.3	7.3	7.8
17	6.3	6.0	6.1	8.7	8.5	8.6	8.9	7.7	8.4	8.5	8.0	8.3
18	6.3	6.1	6.2	8.6	8.4	8.5	8.6	8.0	8.3	8.5	8.1	8.3
19	6.3	6.1	6.2	8.4	7.6	8.1	8.5	7.6	8.1	8.2	7.4	8.0
20	6.3	6.1	6.2	7.9	6.4	7.5	8.8	7.8	8.2	7.4	4.4	5.2
21	7.0	6.1	6.5	7.6	6.3	7.1	9.1	8.4	8.8	5.4	4.7	5.2
22	7.6	7.0	7.3	7.7	7.3	7.5	8.9	8.5	8.7	5.9	5.4	5.7
23	8.0	7.6	7.8	7.9	7.5	7.7	8.8	8.5	8.7	---	---	---
24	8.1	7.9	8.0	8.2	7.7	8.0	8.6	8.3	8.5	---	---	---
25	8.1	8.0	8.1	8.4	7.9	8.2	8.6	8.2	8.4	---	---	---
26	8.1	8.0	8.0	8.5	8.1	8.4	8.6	8.2	8.4	---	---	---
27	8.1	7.9	8.0	9.0	8.4	8.6	8.8	8.4	8.6	---	---	---
28	8.0	7.9	8.0	9.1	8.4	8.9	8.7	8.5	8.7	8.9	8.7	8.8
29	7.9	7.6	7.8	9.1	8.6	8.9	8.7	8.4	8.6	8.8	8.6	8.6
30	7.7	7.4	7.5	9.1	8.6	8.8	8.5	8.0	8.3	8.7	8.5	8.6
31	7.4	7.2	7.3	---	---	---	8.1	7.7	7.9	8.8	8.6	8.7
MONTH	8.1	6.0	6.8	9.1	4.1	7.9	9.1	6.8	8.2	8.9	4.4	7.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.8	8.6	8.7	8.4	8.1	8.2	7.0	6.5	6.7	7.5	7.4	7.4
2	8.6	8.5	8.6	9.2	8.3	8.7	7.2	6.5	6.9	7.5	6.7	7.0
3	8.5	8.3	8.4	9.1	8.4	8.7	7.3	7.1	7.2	7.4	6.3	7.1
4	8.3	8.1	8.2	8.7	8.5	8.6	7.5	7.3	7.4	7.2	6.9	7.0
5	---	---	---	8.8	8.5	8.6	7.6	7.3	7.5	7.4	6.7	7.1
6	---	---	---	8.8	8.5	8.7	7.7	7.1	7.4	7.0	4.0	6.1
7	---	---	---	8.8	8.6	8.7	7.4	7.1	7.2	---	---	---
8	8.8	8.6	8.7	8.9	8.6	8.7	7.7	7.1	7.5	---	---	---
9	8.8	8.7	8.7	8.8	8.5	8.7	7.7	7.6	7.6	---	---	---
10	8.7	8.4	8.5	8.7	8.3	8.5	7.7	7.1	7.4	7.8	6.7	6.9
11	8.4	5.4	7.7	8.5	8.2	8.3	7.4	7.2	7.3	7.6	6.1	6.9
12	8.0	7.5	7.8	8.5	8.2	8.3	7.4	7.1	7.3	7.4	6.3	7.0
13	8.3	8.0	8.2	9.0	8.2	8.7	7.4	7.1	7.2	7.1	6.9	7.0
14	8.3	8.2	8.3	9.1	8.0	8.7	7.2	7.0	7.1	7.0	6.8	6.9
15	---	---	---	9.1	8.9	9.0	7.5	7.1	7.3	6.9	6.7	6.8
16	8.2	8.0	8.1	9.0	8.9	9.0	7.6	7.3	7.5	6.8	6.6	6.8
17	8.4	8.2	8.3	8.9	8.5	8.7	7.8	7.4	7.6	6.7	6.5	6.6
18	8.6	8.4	8.5	8.5	8.3	8.4	7.9	7.6	7.7	6.7	6.3	6.5
19	8.9	8.6	8.7	8.3	7.9	8.0	7.9	7.5	7.6	6.6	6.3	6.5
20	8.9	8.8	8.8	8.3	7.9	8.0	7.6	7.3	7.5	6.7	6.5	6.6
21	8.8	8.6	8.6	8.1	8.0	8.0	7.9	7.5	7.7	6.7	6.5	6.6
22	8.6	8.4	8.4	8.0	7.8	7.9	8.1	7.6	7.8	6.6	6.4	6.5
23	8.4	8.3	8.4	7.8	6.7	7.5	8.2	7.7	7.9	6.8	5.9	6.6
24	8.3	8.1	8.2	7.8	7.3	7.6	7.9	7.7	7.7	---	---	---
25	8.2	8.0	8.1	7.8	7.5	7.6	7.7	7.5	7.6	---	---	---
26	8.3	8.0	8.1	7.6	7.4	7.5	7.7	7.5	7.6	6.6	5.1	5.7
27	8.2	8.1	8.1	7.5	7.3	7.3	7.7	7.1	7.3	6.4	6.1	6.2
28	8.5	7.7	8.0	7.3	7.1	7.2	7.2	7.0	7.1	6.3	6.1	6.2
29	---	---	---	7.4	7.1	7.3	7.2	6.9	7.0	---	---	---
30	---	---	---	7.3	5.7	6.8	7.5	7.1	7.3	---	---	---
31	---	---	---	6.7	5.9	6.3	---	---	---	---	---	---
MONTH	8.9	5.4	8.3	9.2	5.7	8.1	8.2	6.5	7.4	7.8	4.0	6.7

08183900 CIBOLO CREEK NEAR BOERNE, TX

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

DRAINAGE AREA.--68.4 mi².

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

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

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

REMARKS.--No estimated daily discharges. 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 above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--The second highest flood occurred at 1700 hours on Sept. 10, 1952, and reached a stage of 16.3 ft (discharge, 25,600 ft³/s).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1215	658	3.88	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	34	21	32	39	77	26	17	12	6.5	.96	8.7
2	11	13	21	30	38	62	26	18	12	5.8	.96	3.6
3	10	11	20	30	41	53	26	16	11	4.9	.90	3.4
4	10	9.4	20	30	42	49	26	14	10	4.9	.85	3.6
5	9.3	8.8	20	27	47	47	26	26	11	4.5	.93	3.3
6	9.2	8.0	20	26	44	46	27	17	10	4.2	1.1	3.1
7	9.2	7.5	20	26	41	45	85	16	8.8	3.6	1.1	3.1
8	8.8	7.2	20	26	38	44	42	15	8.6	3.6	1.1	2.7
9	9.2	16	21	26	38	44	32	14	8.2	3.6	1.2	2.7
10	9.3	12	21	25	81	44	27	13	8.1	3.2	1.2	2.8
11	9.2	11	20	25	59	43	26	12	7.7	3.1	1.3	3.0
12	8.8	11	20	25	51	51	25	12	8.0	2.9	1.4	3.4
13	8.7	9.9	20	25	47	46	24	12	8.6	2.9	1.7	3.6
14	8.3	9.3	29	24	47	43	25	11	7.8	2.9	1.5	9.0
15	8.0	8.8	105	24	50	41	23	12	7.5	2.9	1.4	3.5
16	7.5	8.7	55	24	49	43	21	13	6.7	2.9	1.4	2.3
17	7.8	8.7	47	23	45	41	20	13	6.5	2.9	1.3	1.9
18	7.7	8.9	41	23	45	39	20	14	6.3	2.7	1.3	1.8
19	7.8	250	40	224	43	38	19	14	6.7	2.5	1.3	2.2
20	7.8	123	37	141	44	38	19	14	9.4	2.3	1.4	2.2
21	7.5	63	35	89	45	36	20	13	15	2.2	1.3	2.3
22	7.4	43	34	69	44	36	20	16	11	2.2	1.2	2.3
23	7.4	37	34	61	42	35	20	30	9.4	2.2	1.3	2.1
24	7.4	32	33	53	41	34	19	19	8.4	1.9	1.4	2.2
25	7.6	28	31	49	84	46	18	16	8.3	1.4	1.3	2.1
26	7.8	25	30	47	48	46	16	14	30	1.3	1.4	2.3
27	7.6	23	30	46	41	32	15	13	15	1.1	1.5	2.6
28	7.6	23	30	44	57	31	15	17	12	1.1	1.4	2.7
29	7.8	22	30	44	---	30	24	13	9.1	.90	1.3	2.6
30	7.8	21	30	42	---	30	20	14	7.4	.96	1.3	2.2
31	8.0	---	31	41	---	28	---	13	---	.96	1.6	---
TOTAL	262.5	893.2	966	1421	1331	1318	752	471	300.5	89.02	39.30	93.3
MEAN	8.47	29.8	31.2	45.8	47.5	42.5	25.1	15.2	10.0	2.87	1.27	3.11
MAX	11	250	105	224	84	77	85	30	30	6.5	1.7	9.0
MIN	7.4	7.2	20	23	38	28	15	11	6.3	.90	.85	1.8
AC-FT	521	1770	1920	2820	2640	2610	1490	934	596	177	78	185
CFSM	.12	.44	.46	.67	.69	.62	.37	.22	.15	.04	.02	.05
IN.	.14	.49	.53	.77	.72	.72	.41	.26	.16	.05	.02	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993, BY WATER YEAR (WY)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	
MEAN	21.5	17.5	35.6	25.5	38.4	30.7	33.8	48.5	57.7	24.0	15.3	16.4																				
MAX	165	61.6	380	136	333	206	124	194	430	296	135	130																				
(WY)	1974	1987	1992	1992	1992	1992	1979	1965	1981	1973	1971	1964																				
MIN	.000	.10	.000	.79	1.46	1.00	1.48	.81	.12	.000	.000	.000																				
(WY)	1964	1963	1964	1990	1990	1963	1967	1967	1963	1963	1963	1963																				

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1963 - 1993
ANNUAL TOTAL	38124.7	7936.82	
ANNUAL MEAN	104	21.7	30.3
HIGHEST ANNUAL MEAN			132
LOWEST ANNUAL MEAN			1.38
HIGHEST DAILY MEAN	1810	250	3830
LOWEST DAILY MEAN	7.2	.85	.00
ANNUAL SEVEN-DAY MINIMUM	7.5	.93	.00
INSTANTANEOUS PEAK FLOW		658	36400
INSTANTANEOUS PEAK STAGE		3.88	19.15
ANNUAL RUNOFF (AC-FT)	75620	15740	21980
ANNUAL RUNOFF (CFSM)	1.52	.32	.44
ANNUAL RUNOFF (INCHES)	20.73	4.32	6.03
10 PERCENT EXCEEDS	206	46	59
50 PERCENT EXCEEDS	47	14	7.9
90 PERCENT EXCEEDS	9.4	1.6	.83

* No flow at times in 1962-64, 1966-67, 1971, and 1984.

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.

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

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 Cibola 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).

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. Maximum stage since at least 1869, that of July 16, 1973.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	1800	10,700	12.16	No other peak greater than base discharge.			

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	1710	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	386	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	56	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	6.0	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00
10	.00	.00	.00	.00	4.4	.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	5.6	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	3.0	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.71	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	13	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.28	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.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	4.40	0.00	0.00	2166.68	13.99	0.00	0.00	0.00
MEAN	.0000	.0000	.0000	.0000	.16	.0000	.0000	69.9	.47	.0000	.0000	.0000
MAX	.00	.00	.00	.00	4.4	.00	.00	1710	13	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	8.7	.00	.00	4300	28	.00	.00	.00

MEAN	13.1	2.91	28.4	9.63	17.5	14.0	11.8	50.9	50.6	22.7	3.97	15.9
MAX	304	44.7	1143	371	646	483	217	622	1010	1044	80.6	370
(WY)	1974	1947	1992	1968	1992	1992	1957	1972	1987	1973	1971	1952
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1948	1948	1948	1948	1947	1947	1946	1947	1947	1946	1946	1947

ANNUAL TOTAL	58653.57		2185.07						
ANNUAL MEAN	160		5.99			20.2			
HIGHEST ANNUAL MEAN						257			1992
LOWEST ANNUAL MEAN							.000		1956
HIGHEST DAILY MEAN	10900	May 22	1710	May 5		22500		Jul 16	1973
LOWEST DAILY MEAN	.00	Jan 7	.00	Oct 1		.00		Apr 1	1946
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 7	.00	Oct 1		.00		Apr 1	1946
INSTANTANEOUS PEAK FLOW			10700	May 5		65000		Jul 16	1973
INSTANTANEOUS PEAK STAGE			12.16	May 5		a/26.20		Jul 16	1973
ANNUAL RUNOFF (AC-FT)	116300		4330			14610			
10 PERCENT EXCEEDS	311		.00			.00			
50 PERCENT EXCEEDS	.00		.00			.00			
90 PERCENT EXCEEDS	.00		.00			.00			

a/ Maximum stage since at least 1869.

GUADALUPE RIVER BASIN

393

08186000 CIBOLO CREEK NEAR FALLS CITY, TX

LOCATION (REVISED).--Lat 29°00'50", long 97°55'48", Karnes County, Hydrologic Unit 12100304, at right downstream abutment of bridge on State Highway 123, 5.7 mi northeast of Falls City, and 10.4 mi upstream from mouth. Prior to July 16, 1993, at site 50 ft downstream.

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. Sept. 14, 1940, to Mar. 15, 1990, water-stage recorder at present site and datum. Mar. 16, 1990, to July 15, 1993, water-stage recorder at site 50 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 35 ft occurred in October 1913 (discharge, about 35,000 ft³/s). Maximum stage since at least 1890, that of Sept. 28, 1973.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	2400	8,990	22.49	May 24	0200	13,400	26.09
May 5	2400	6,560	19.72	June 27	Unknown	23,200	a/31.34

a/ From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	51	50	50	47	55	45	44	255	e680	47	33
2	45	58	49	50	47	55	40	71	129	e400	46	33
3	41	51	48	50	48	56	39	48	95	e210	45	32
4	41	50	48	57	48	61	38	40	79	e150	45	31
5	41	49	46	56	55	58	54	1460	70	e125	46	31
6	41	45	45	54	76	53	120	4490	65	e110	46	31
7	41	45	45	56	69	49	73	3760	60	e94	45	30
8	41	43	46	61	65	47	62	586	56	e84	44	30
9	41	44	48	55	60	46	56	355	54	e83	43	31
10	41	47	50	53	82	46	65	248	51	83	42	32
11	42	53	50	51	242	47	58	174	55	77	42	33
12	42	54	50	50	228	118	50	138	64	73	42	33
13	41	53	50	49	125	268	46	118	57	70	38	33
14	41	50	50	48	92	226	44	104	471	66	38	33
15	41	48	60	48	78	125	42	92	278	64	38	33
16	48	48	80	48	71	93	40	82	121	62	38	33
17	46	47	131	48	63	79	40	73	96	62	39	33
18	45	50	98	47	57	69	40	71	124	60	38	33
19	45	2160	85	47	53	62	40	66	101	58	38	33
20	45	3630	72	49	51	57	38	60	101	55	38	33
21	45	446	67	103	50	54	38	56	1390	53	37	33
22	45	147	64	92	49	52	37	55	1740	52	36	33
23	45	94	62	74	47	53	36	3380	972	51	36	33
24	45	78	60	65	47	52	35	7200	638	52	36	32
25	44	69	57	57	47	49	35	787	874	51	36	31
26	44	62	55	53	45	47	35	244	7650	51	35	31
27	42	56	54	51	44	45	32	149	e16900	51	34	31
28	41	53	54	51	50	155	32	277	e14000	51	34	30
29	41	51	52	50	---	600	35	320	e5000	49	34	29
30	49	51	50	48	---	90	42	304	e1300	49	34	29
31	54	---	50	47	---	54	---	413	---	48	34	---
TOTAL	1348	7783	1826	1718	2036	2921	1387	25265	52846	3224	1224	956
MEAN	43.5	259	58.9	55.4	72.7	94.2	46.2	815	1762	104	39.5	31.9
MAX	54	3630	131	103	242	600	120	7200	16900	680	47	33
MIN	41	43	45	47	44	45	32	40	51	48	34	29
AC-FT	2670	15440	3620	3410	4040	5790	2750	50110	104800	6390	2430	1900

e Estimated

GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1993, BY WATER YEAR (WY)

MEAN	104	87.6	104	99.2	119	67.9	171	251	257	102	55.5	163
MAX	996	565	2156	1627	1756	860	1492	2230	2821	1357	909	1579
(WY)	1974	1941	1992	1968	1992	1992	1977	1972	1987	1942	1946	1973
MIN	8.49	8.08	9.99	10.3	9.64	7.04	5.23	4.59	1.74	1.96	2.40	5.41
(WY)	1932	1932	1955	1956	1956	1956	1971	1971	1967	1971	1956	1984

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1931 - 1993

ANNUAL TOTAL	205345		102534									
ANNUAL MEAN	561		281							131		
HIGHEST ANNUAL MEAN										717		1992
LOWEST ANNUAL MEAN										10.4		1956
HIGHEST DAILY MEAN	18000	May 17	16900	Jun 27						27300	Sep 28	1973
LOWEST DAILY MEAN	41	Oct 3	29	Sep 29						.00	*	
ANNUAL SEVEN-DAY MINIMUM	41	Oct 3	30	Sep 24						.00	Aug 4	1956
INSTANTANEOUS PEAK FLOW			23200	Jun 27						33600	Jul 6	1942
INSTANTANEOUS PEAK STAGE			a/31.34	Jun 27						b/35.44	Sep 28	1973
ANNUAL RUNOFF (AC-FT)	407300		203400							95190		
10 PERCENT EXCEEDS	1160		227							126		
50 PERCENT EXCEEDS	121		50							26		
90 PERCENT EXCEEDS	46		34							9.5		

* No flow July 30, 31, Aug. 4-22, 1956, and Aug. 1, 1971.

a/ From floodmark.

b/ Maximum stage since at least 1890.

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 Sept. 1991 (discontinued)

WATER TEMPERATURE: October 1968 to Sept. 1991 (discontinued)

INSTRUMENTATION.--Beginning March 1981, specific conductance and water temperature are recorded continuously at this station. The water quality monitor was discontinued Sept. 30, 1991.

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 (water years 1969-91): Maximum, 2,270 microsiemens May 20, 21, 1971; minimum, 115 microsiemens Dec. 22, 23, 1986.

WATER TEMPERATURE (water years 1969-91): Maximum, 34.0°C July 31, Aug. 8, 9, 1980; minimum, 0.0°C Dec. 25, 26, 1983, Dec. 23, 24, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (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 DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
NOV 05...	1350	52	1170	8.4	16.0	10.4	106	1.4	360	110	110	21	
DEC 29...	1030	58	1190	8.1	16.0	10.2	104	1.5	380	150	120	20	
MAR 06...	1537	49	1130	8.4	18.5	12.2	131	2.0	360	140	110	21	
MAY 03...	1235	45	1060	8.0	22.0	7.6	89	2.8	300	100	92	18	
JUN 30...	1349	302	692	7.7	28.0	6.7	86	1.8	250	64	80	11	
AUG 18...	1240	36	1250	8.3	28.5	8.2	106	1.7	410	160	120	25	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)	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)
NOV 05...	100	2	6.8	250	170	110	0.30	15	685	2.98	--	0.020	
DEC 29...	110	2	6.9	230	220	120	0.40	13	764	2.58	2.58	--	
MAR 06...	110	3	6.4	230	190	130	0.30	7.8	726	3.17	3.17	--	
MAY 03...	110	3	7.7	200	180	130	0.40	15	682	1.75	1.75	--	
JUN 30...	49	1	8.0	180	100	48	0.30	22	432	0.670	0.670	--	
AUG 18...	130	3	8.0	250	230	130	0.40	14	823	1.48	1.48	--	
DATE		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, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	
NOV 05...	--	3.00	--	0.030	--	0.37	--	--	0.40	0.180	--		
DEC 29...	0.020	2.60	2.60	--	0.020	--	--	<0.20	--	--	0.150		
MAR 06...	0.030	3.20	3.20	--	0.030	--	0.37	0.40	--	--	0.140		
MAY 03...	0.050	1.80	1.80	--	0.200	--	0.40	0.60	--	--	0.190		
JUN 30...	0.010	0.680	0.680	--	0.060	--	0.54	0.60	--	--	0.190		
AUG 18...	0.020	1.50	1.50	--	0.030	--	0.27	0.30	--	--	0.060		

[illegible]

GUADALUPE RIVER BASIN

397

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 Manahuiilla 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 upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. There are 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 in the drainage area above this station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	0400	8,570	26.29	May 27	0700	13,300	32.47
May 9	2200	9,800	28.13	June 30	0900	16,200	35.37

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	602	524	863	799	713	803	1010	604	1890	7770	517	357
2	589	787	850	790	722	730	1030	707	2430	2320	533	353
3	582	673	848	796	733	794	856	837	1690	1890	498	354
4	575	748	847	822	732	927	735	862	1320	1660	489	357
5	567	734	832	782	732	851	668	745	1190	1500	477	373
6	559	603	819	795	807	772	701	2160	1100	1390	458	367
7	551	527	810	866	915	733	1050	7520	1030	1310	464	361
8	550	510	799	823	1160	718	897	9420	974	1250	439	358
9	545	525	811	806	1090	704	761	9740	927	1200	443	353
10	543	572	813	828	1130	694	850	9220	902	1100	445	355
11	542	579	809	803	847	698	922	3620	872	993	443	367
12	538	616	822	741	1190	1090	749	1750	888	946	437	360
13	536	607	819	751	2100	804	669	1520	972	907	427	373
14	537	586	806	753	1400	934	631	1380	966	874	419	376
15	532	609	815	753	1050	1570	607	1280	1940	837	413	365
16	538	597	819	746	928	1170	600	1190	2750	776	415	368
17	545	550	1010	736	884	894	593	1110	1510	740	411	413
18	549	532	1720	736	851	779	585	1090	1180	857	394	391
19	544	542	1280	736	831	723	575	1050	1140	919	386	379
20	581	1170	990	732	807	677	568	1060	1570	695	395	368
21	583	6750	901	736	795	642	557	971	1950	635	395	370
22	571	7430	845	1050	781	636	551	950	2950	651	386	367
23	533	3270	825	1110	770	640	542	1330	5370	743	383	361
24	522	1680	830	896	765	644	534	2630	5120	621	374	360
25	512	1220	819	807	758	651	540	8300	3170	607	366	334
26	508	1060	808	795	738	632	549	11900	2200	592	364	310
27	500	989	801	753	723	618	531	12300	4610	581	379	318
28	495	932	787	744	815	607	564	4160	9590	570	365	301
29	492	897	785	739	---	601	599	2220	13300	546	359	300
30	490	871	791	730	---	1350	601	1950	15600	540	358	308
31	494	---	796	722	---	1270	---	1910	---	529	358	---
TOTAL	16805	37690	27170	24676	25767	25356	20625	105486	91101	36549	12990	10677
MEAN	542	1256	876	796	920	818	687	3403	3037	1179	419	356
MAX	602	7430	1720	1110	2100	1570	1050	12300	15600	7770	533	413
MIN	490	510	785	722	713	601	531	604	872	529	358	300
AC-FT	33330	74760	53890	48940	51110	50290	40910	209200	180700	72490	25770	21180

GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1993, BY WATER YEAR (WY)

MEAN	767	602	540	583	708	520	772	1087	1192	610	403	954
MAX	7084	2574	4628	4309	7682	4379	4488	6169	15370	4723	1736	12050
(WY)	1974	1941	1992	1968	1992	1992	1992	1992	1987	1973	1978	1967
MIN	75.1	76.2	86.5	104	107	83.9	86.8	137	26.2	52.4	47.9	66.8
(WY)	1956	1956	1955	1956	1956	1956	1956	1971	1956	1956	1963	1954

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1925 - 1993	
ANNUAL TOTAL	1123873		434892			
ANNUAL MEAN	3071		1191		734	
HIGHEST ANNUAL MEAN					3289	
LOWEST ANNUAL MEAN					98.2	
HIGHEST DAILY MEAN	20300	May 20	15600	Jun 30	121000	Sep 23 1967
LOWEST DAILY MEAN	490	Oct 30	300	Sep 29	2.1	Jun 14 1956
ANNUAL SEVEN-DAY MINIMUM	499	Oct 25	319	Sep 24	5.0	Jun 12 1956
INSTANTANEOUS PEAK FLOW			16200	Jun 30	138000	Sep 23 1967
INSTANTANEOUS PEAK STAGE			35.37	Jun 30	a/53.70	Sep 23 1967
INSTANTANEOUS LOW FLOW					1.2	Jun 16 1956
ANNUAL RUNOFF (AC-FT)	2229000		862600		531900	
10 PERCENT EXCEEDS	8830		1730		1240	
50 PERCENT EXCEEDS	1590		749		326	
90 PERCENT EXCEEDS	582		381		115	

a/ Maximum stage since 1869.

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, 1,300 microsiemens Sep. 30; minimum daily, 200 microsiemens Jun. 28.

WATER TEMPERATURE: Maximum daily, 33.0°C Sep. 3; minimum daily, 13.5°C Dec. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	
OCT 15...	1545	542	1080	8.1	24.5	19	7.4	89	1.5	180	200	340	
JAN 11...	1335	773	940	8.1	14.0	26	10.0	98	1.0	K200	140	320	
MAR 09...	1105	714	1000	8.2	18.5	32	8.2	87	1.1	83	120	330	
MAY 03...	1335	835	992	8.1	23.5	75	7.7	91	1.5	240	480	300	
JUL 12...	1332	667	1100	7.9	28.0	87	7.3	94	1.2	700	280	340	
AUG 18...	0930	439	1200	8.0	29.0	130	6.6	86	1.2	K110	760	400	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
OCT 15...	93	100	22	92	2	5.8	12	279	249	250	110	120	
JAN 11...	48	96	20	76	2	5.4	0	334	274	270	97	100	
MAR 09...	88	97	20	81	2	5.5	0	290	237	240	100	110	
MAY 03...	77	88	19	80	2	5.8	11	248	221	220	100	100	
JUL 12...	83	100	21	93	2	7.1	0	309	254	250	120	120	
AUG 18...	130	120	24	110	2	6.4	0	326	267	260	160	150	
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
OCT 15...	0.40	15	648	650	6.98	7.08	0.020	0.020	7.10	7.10	0.030	0.020	
JAN 11...	0.40	15	574	604	6.18	6.18	--	0.020	6.20	6.20	--	0.020	
MAR 09...	0.40	14	598	603	6.37	6.37	--	0.030	6.40	6.40	--	0.030	
MAY 03...	0.40	13	596	574	7.08	7.08	--	0.020	7.10	7.10	--	0.030	
JUL 12...	0.40	19	680	653	4.29	4.29	--	0.010	4.30	4.30	--	0.030	
AUG 18...	0.50	20	786	778	5.27	5.27	--	0.030	5.30	5.30	--	0.030	

GUADALUPE RIVER BASIN

08188500 SAM ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	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)
OCT 15...	0.37	0.40	1.00	0.950	0.960	0.960	2.9	69	101	84	10
JAN 11...	0.38	0.40	0.930	0.790	0.890	--	2.7	87	182	76	--
MAR 09...	0.47	0.50	0.940	0.840	0.890	--	2.7	87	168	89	<10
MAY 03...	0.77	0.80	0.940	0.860	0.800	--	2.5	235	530	91	<10
JUL 12...	0.67	0.70	0.660	0.570	0.550	--	1.7	1520	2740	15	--
AUG 18...	0.27	0.30	0.800	0.780	0.770	--	2.4	248	294	70	<10
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
OCT 15...	73	<3	<3	31	<1	10	2	1	<1.0	970	<6
JAN 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 09...	73	<3	4	25	2	<10	3	1	<1.0	920	<6
MAY 03...	66	<3	4	25	2	<10	3	<1	<1.0	840	7
JUL 12...	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	98	<3	3	35	3	<10	2	2	<1.0	1000	9
MONTH YEAR	DISCHARGE (CFS-DAYS)	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)		
OCT. 1992	16805	1050	603	27300	130	5690	100	4750	320		
NOV. 1992	37690	597	345	35100	61	6250	57	5840	200		
DEC. 1992	27170	899	518	38000	100	7360	88	6470	290		
JAN. 1993	24676	940	542	36100	110	7120	93	6170	300		
FEB. 1993	25767	868	501	34800	96	6660	85	5900	280		
MAR. 1993	25356	906	522	35800	100	6980	89	6100	290		
APR. 1993	20625	934	539	30000	110	5910	92	5130	290		
MAY 1993	105486	423	245	69800	39	11000	40	11300	150		
JUNE 1993	91101	465	269	66200	44	10700	44	10700	160		
JULY 1993	36549	916	528	52100	110	10500	91	8960	280		
AUG. 1993	12990	1250	717	25200	160	5750	130	4490	360		
SEPT 1993	10677	1250	718	20700	160	4730	130	3700	360		
TOTAL	434892	**	**	471000	**	88700	**	79500	**		
WTD.AVG.	1191	695	401	**	76	**	68	**	220		

GUADALUPE RIVER BASIN

401

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued
(National stream-quality accounting network)SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	1040	880	940	980	950	830	970	850	490	1210	1280
2	1020	1010	900	930	970	960	820	1030	730	700	1200	1290
3	1040	970	900	940	960	940	800	980	550	780	1210	1290
4	1030	950	910	940	970	950	770	930	650	880	1220	1280
5	1040	910	910	950	970	920	830	840	800	960	1210	1270
6	1050	920	930	950	960	860	960	740	920	990	1230	1280
7	1050	850	950	900	940	900	930	250	960	1010	1240	1270
8	1060	920	950	920	910	940	920	340	990	1030	1250	1270
9	1060	980	950	940	890	990	820	270	1010	1020	1230	1280
10	1060	1010	960	940	720	1000	850	320	1010	1030	1230	1280
11	1040	1010	960	950	880	990	920	420	1040	1050	1240	1280
12	1050	1000	960	960	920	790	1000	520	1030	1080	1250	1260
13	1060	990	950	980	790	930	860	660	1020	1090	1260	1260
14	1060	990	960	990	580	950	930	740	1020	1010	1260	1230
15	1060	970	950	990	570	920	980	802	940	1120	1270	1220
16	1050	960	960	970	690	690	1000	840	410	1120	1260	1220
17	1050	980	960	970	820	770	1000	870	510	1140	1240	1230
18	1060	990	870	980	880	770	990	840	570	1150	1270	1210
19	1050	1000	600	990	910	860	880	850	670	1160	1270	1230
20	1050	990	710	980	910	910	1010	890	680	1170	1270	1200
21	1040	220	720	990	930	950	1030	880	620	1170	1270	1190
22	1020	350	840	980	950	970	1040	900	620	1190	1270	1210
23	1030	370	900	890	960	990	1050	690	390	1190	1260	1210
24	1040	460	930	760	960	1020	1050	750	380	1190	1250	1220
25	1050	540	930	850	950	990	1030	220	340	1180	1260	1220
26	1040	600	930	880	960	1000	1040	230	430	1180	1270	1240
27	1050	700	940	940	960	1140	1050	270	430	1200	1250	1270
28	1050	780	950	950	950	1010	1040	490	200	1200	1270	1220
29	1060	820	960	960	---	1010	1020	590	210	1200	1290	1280
30	1060	850	960	950	---	1020	990	670	360	1200	1290	1300
31	1050	---	940	950	---	510	---	790	---	1210	1280	---
MEAN	1050	838	907	942	887	923	948	664	678	1070	1250	1250
MAX	1060	1040	960	990	980	1140	1050	1030	1040	1210	1290	1300
MIN	1020	220	600	760	570	510	770	220	200	490	1200	1190

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	24.0	16.0	17.0	15.0	18.5	23.0	25.0	28.5	19.5	30.5	30.0
2	25.0	23.5	15.5	16.0	15.5	19.5	20.0	24.0	28.0	30.0	32.0	30.0
3	24.0	24.5	17.0	18.0	17.0	19.0	21.5	26.0	28.5	29.0	30.5	33.0
4	24.5	20.5	17.5	19.0	17.0	19.5	22.5	24.0	24.0	19.0	32.0	29.5
5	24.5	19.5	15.0	17.0	16.0	16.5	20.0	25.5	29.0	31.0	31.5	28.5
6	25.0	18.5	13.5	16.0	16.0	18.5	21.5	25.0	---	30.0	32.0	28.5
7	22.0	15.5	14.5	15.0	18.0	19.5	22.0	22.5	30.0	30.0	30.0	29.0
8	23.0	18.5	15.0	17.0	17.0	20.5	22.5	23.0	28.0	30.5	30.0	30.0
9	24.0	21.0	16.5	18.0	17.0	21.0	27.0	23.0	28.0	29.0	30.0	30.0
10	25.0	20.5	16.5	15.5	17.0	22.0	24.0	24.0	27.5	30.0	32.0	30.0
11	25.0	22.0	15.5	14.0	19.0	21.0	24.5	25.0	28.0	30.0	30.5	29.0
12	24.5	22.5	16.0	16.0	18.0	14.5	25.5	25.0	28.0	30.0	31.0	29.0
13	25.5	20.0	19.0	15.0	19.5	14.0	25.0	26.0	27.5	30.0	32.0	29.0
14	25.0	18.5	18.0	15.0	19.0	16.0	25.0	25.5	28.0	30.5	30.0	29.0
15	27.0	18.0	16.0	15.5	20.5	15.5	24.0	27.0	28.0	29.5	30.5	29.5
16	28.0	20.5	14.5	16.0	18.5	17.5	23.5	28.0	27.0	30.0	31.5	27.0
17	25.0	19.5	16.0	18.0	18.5	19.5	23.5	27.0	27.0	29.0	31.0	27.0
18	25.0	20.5	15.0	19.0	15.5	19.0	20.5	25.0	29.0	30.0	31.5	27.0
19	25.0	22.0	19.0	16.0	15.5	19.0	25.0	26.0	27.0	30.5	31.0	27.0
20	25.0	21.0	15.5	18.0	18.5	20.5	25.5	26.0	27.0	30.5	30.5	28.0
21	25.0	20.5	15.0	18.5	19.5	20.5	24.5	28.0	28.5	31.0	30.0	30.0
22	24.5	18.5	19.0	17.0	19.0	20.5	24.5	25.5	28.5	29.0	29.5	30.0
23	25.5	18.5	18.0	19.0	20.0	20.5	23.5	24.0	30.0	29.0	30.5	30.5
24	25.5	19.5	17.5	17.0	19.0	22.0	24.0	24.5	28.5	32.0	30.5	30.0
25	25.0	17.0	19.0	14.5	20.5	23.5	24.5	21.0	30.0	31.0	31.0	29.0
26	24.0	16.0	17.0	14.5	19.5	23.0	29.5	25.0	28.0	31.5	30.0	31.0
27	25.0	14.0	16.0	15.0	18.5	21.5	24.5	24.5	18.0	31.0	29.0	27.0
28	24.0	15.0	18.0	15.0	19.0	23.0	25.0	25.0	27.0	29.0	28.5	25.0
29	26.0	15.0	20.0	15.5	---	23.0	23.5	27.0	27.0	31.5	29.0	26.0
30	26.5	14.0	19.0	15.0	---	23.0	23.0	27.0	29.0	31.0	30.5	26.5
31	27.0	---	21.0	16.0	---	20.0	---	28.5	---	32.0	30.0	---
MEAN	25.0	19.5	17.0	16.5	18.0	19.5	23.5	25.0	27.5	29.5	30.5	29.0
MAX	28.0	24.5	21.0	19.0	20.5	23.5	29.5	28.5	30.0	32.0	32.0	33.0
MIN	22.0	14.0	13.5	14.0	15.0	14.0	20.0	21.0	18.0	19.0	28.5	25.0

GUADALUPE RIVER BASIN

08188600 GBRA CALHOUN CANAL PUMP STATION NEAR LONG MOTT, TX

LOCATION.--Lat 28°30'00", long 96°46'43", Calhoun County, Hydrologic Unit 12100204, at raw water pump station on Goff Bayou, 0.6 mi upstream from State Highway 185, and 1.3 mi northwest of Long Mott.

PERIOD OF RECORD.--March 1968 to February 1970 (monthly discharge only), March 1970 to current year.

GAGE.--Totalizing flow meters on rated pumps. March 1968 to Mar. 6, 1981, Parshall flume and deflection-vane recorder. Mar. 7, 1981, to Oct. 5, 1989, water-stage and velocity recorders with duplex water-stage recorder. Oct. 6, 1989, to June 30, 1992, non-recording gage. All at former site 0.5 mi downstream.

REMARKS.--No estimated daily discharges. Records good. Flow is diverted from Guadalupe River 550 ft upstream from Guadalupe River near Tivoli (station 08188800), and then through a system of canals, Hog Bayou, and Goff Bayou, a distance of 8.2 mi to the pumping station on Goff Bayou. Satellite telemeter at station.

COOPERATION.--Log of pumping station on Goff Bayou provided by the Guadalupe-Blanco River Authority.

AVERAGE DISCHARGE.--25 years (water years 1969-93), 90.8 ft³/s (65,780 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 311 ft³/s July 7, 1968; no flow at times in 1968-74 and 1977-93.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	26	44	54	.00	55	35	98	46	183	156	76
2	74	40	33	53	.00	55	.00	82	66	181	157	69
3	71	47	24	52	44	55	.00	84	108	173	97	82
4	72	45	21	2.6	74	64	.00	82	139	151	29	106
5	74	32	19	.00	32	63	22	60	131	149	90	99
6	75	22	20	.00	.00	53	44	44	136	156	184	106
7	73	22	23	.00	.00	54	55	26	150	165	173	112
8	73	23	41	19	.00	54	57	15	162	155	160	109
9	77	22	47	37	.00	54	53	28	160	141	157	111
10	87	22	28	.00	.00	28	16	38	178	141	156	116
11	86	22	18	31	.00	22	.00	62	182	140	162	115
12	87	22	18	36	.00	13	.00	92	171	137	166	118
13	105	21	18	51	.00	.00	13	143	163	130	156	91
14	116	.00	29	79	4.2	.00	54	160	115	121	145	73
15	101	17	45	47	61	.00	33	144	84	151	145	68
16	89	44	29	.00	62	15	.00	136	71	188	153	68
17	89	29	18	.00	37	18	13	133	110	212	120	69
18	69	.00	18	18	.00	46	18	115	139	203	99	65
19	54	.00	18	.00	.00	36	36	78	95	196	104	65
20	52	.00	18	33	.00	.00	44	47	16	183	103	69
21	51	11	34	32	.00	.00	26	70	27	161	117	58
22	49	22	54	13	37	12	40	88	56	162	120	66
23	48	48	21	.00	55	18	39	60	60	159	120	65
24	58	46	.00	.00	60	22	47	32	83	159	116	60
25	61	7.2	.00	.00	69	42	60	19	87	160	117	66
26	40	25	.00	.00	66	37	65	19	116	178	104	73
27	42	40	.00	47	54	.00	84	19	94	195	77	61
28	54	45	33	70	55	.00	89	11	155	165	74	54
29	54	44	54	38	---	.00	77	6.8	162	156	73	66
30	44	43	53	.00	---	.00	76	9.5	178	167	83	61
31	26	---	53	.00	---	21	---	6.8	---	158	78	---
TOTAL	2128	787.20	831.00	712.60	710.20	837.00	1096.00	2008.1	3440	5076	3791	2417
MEAN	68.6	26.2	26.8	23.0	25.4	27.0	36.5	64.8	115	164	122	80.6
MAX	116	48	54	79	74	64	89	160	182	212	184	118
MIN	26	.00	.00	.00	.00	.00	.00	6.8	16	121	29	54
AC-FT	4220	1560	1650	1410	1410	1660	2170	3980	6820	10070	7520	4790

CAL YR 1992 TOTAL 23739.20 MEAN 64.9 MAX 200 MIN .00 AC-FT 47090
WTR YR 1993 TOTAL 23834.10 MEAN 65.3 MAX 212 MIN .00 AC-FT 47270

GUADALUPE RIVER MAIN STEM

403

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.

DRAINAGE AREA.--10,128 mi².

WATER-STAGE RECORDS

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

REVISED RECORDS.--WDR 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, Jan. 25, 1990. 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), 8.9 ft July 2, 3; minimum, 2.8 ft Sept. 9. Maximum gage height (downstream from barrier), 8.5 ft June 22, 23, July 2, 3; minimum, 2.8 ft Sept. 9.

GAGE HEIGHT, IN FEET, UPSTREAM AND DOWNSTREAM FROM SALTWATER BARRIER
WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MAXIMUM VALUES

DAY	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	5.5	5.4	4.8	4.7	6.8	6.6	6.5	6.4	6.6	6.4	7.2	6.9
2	5.5	5.4	5.0	4.9	6.6	6.4	6.4	6.3	6.6	6.4	7.2	7.0
3	5.6	5.5	5.0	5.0	6.5	6.4	6.5	6.3	6.7	6.5	7.2	7.0
4	5.7	5.6	5.1	5.0	6.5	6.3	6.6	6.4	6.7	6.5	7.1	6.8
5	5.6	5.6	5.1	5.0	6.4	6.2	6.5	6.3	6.7	6.5	7.2	6.9
6	5.5	5.4	5.2	5.1	6.3	6.1	6.5	6.3	6.6	6.4	7.2	6.9
7	5.2	5.2	5.2	5.1	6.3	6.1	6.8	6.6	6.6	6.4	7.2	6.9
8	5.1	5.1	5.1	5.0	6.2	6.0	7.0	6.8	6.9	6.6	7.1	6.8
9	4.9	4.8	5.1	5.0	6.2	6.0	7.1	6.9	7.4	7.2	7.0	6.7
10	4.9	4.8	5.7	5.6	6.2	6.0	7.0	6.9	8.0	7.8	6.9	6.7
11	4.8	4.8	5.8	5.7	6.0	5.9	7.0	6.8	8.1	7.8	7.2	7.0
12	4.8	4.7	5.7	5.6	6.1	5.9	6.9	6.8	8.0	7.8	7.6	7.5
13	4.8	4.7	5.4	5.3	6.3	6.1	6.9	6.7	7.9	7.6	7.9	7.7
14	4.8	4.7	5.2	5.2	6.3	6.2	6.8	6.6	7.9	7.6	7.9	7.7
15	4.8	4.7	5.2	5.1	6.3	6.2	6.7	6.5	8.0	7.7	7.8	7.7
16	5.4	5.4	5.2	5.1	6.4	6.2	6.6	6.4	8.0	7.6	7.9	7.8
17	5.5	5.4	5.2	5.1	6.3	6.1	6.5	6.3	7.8	7.4	7.9	7.8
18	5.3	5.3	5.3	5.2	6.6	6.4	6.4	6.2	7.6	7.3	7.9	7.7
19	5.2	5.1	5.5	5.4	7.3	7.1	6.2	6.1	7.5	7.2	7.8	7.6
20	5.2	5.1	5.8	5.7	7.4	7.2	6.2	6.0	7.4	7.0	7.6	7.5
21	5.1	5.0	6.5	6.3	7.4	7.2	6.2	6.0	7.3	7.0	7.5	7.3
22	5.1	5.0	7.5	7.3	7.3	7.1	6.5	6.3	7.2	6.9	7.4	7.2
23	5.2	5.2	8.1	7.9	7.1	6.9	6.9	6.7	7.1	6.8	7.2	7.1
24	5.2	5.2	8.1	7.9	6.9	6.7	7.1	6.9	7.0	6.8	7.2	7.0
25	5.0	4.9	8.1	7.9	6.8	6.6	7.1	6.9	7.1	6.8	7.2	7.0
26	4.9	4.8	8.0	7.8	6.7	6.5	7.1	6.9	7.0	6.8	7.2	7.0
27	4.8	4.7	7.8	7.6	6.6	6.5	7.0	6.8	6.9	6.7	7.2	7.0
28	4.6	4.5	7.4	7.3	6.6	6.4	6.9	6.7	7.0	6.8	7.2	7.0
29	4.8	4.7	7.1	7.0	6.6	6.4	6.8	6.6	---	---	7.2	7.0
30	4.7	4.6	6.9	6.8	6.6	6.4	6.7	6.5	---	---	7.2	7.0
31	4.7	4.6	---	---	6.6	6.4	6.6	6.4	---	---	7.3	7.1
MAX	5.7	5.6	8.1	7.9	7.4	7.2	7.1	6.9	8.1	7.8	7.9	7.8
MIN	4.6	4.5	4.8	4.7	6.0	5.9	6.2	6.0	6.6	6.4	6.9	6.7

GUADALUPE RIVER MAIN STEM
08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

GAGE HEIGHT, IN FEET, UPSTREAM AND DOWNSTREAM FROM SALTWATER BARRIER
WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
MAXIMUM VALUES

DAY	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.4	7.1	6.4	6.1	8.1	7.8	8.6	8.2	4.6	4.4	3.4	3.3
2	7.4	7.1	6.5	6.2	8.0	7.7	8.9	8.5	4.6	4.4	3.5	3.4
3	7.3	7.1	6.5	6.2	8.0	7.6	8.9	8.5	4.6	4.4	3.5	3.4
4	7.3	7.0	6.7	6.5	7.9	7.6	8.6	8.4	4.5	4.3	3.2	3.1
5	7.1	6.9	7.2	7.0	7.9	7.6	8.1	7.9	4.5	4.2	3.1	3.0
6	6.9	6.6	8.2	8.0	7.8	7.5	8.0	7.7	4.5	4.3	3.2	3.1
7	6.9	6.6	8.2	8.0	7.7	7.4	7.8	7.6	4.1	3.9	3.0	3.0
8	7.1	6.8	8.3	8.1	7.6	7.3	7.8	7.4	4.1	3.9	3.1	3.0
9	7.2	6.9	8.3	8.1	7.5	7.2	7.7	7.4	4.0	3.8	3.1	3.0
10	7.2	6.9	8.4	8.1	7.4	7.1	7.5	7.3	3.9	3.7	3.3	3.2
11	7.0	6.8	8.5	8.2	7.3	7.0	7.5	7.2	3.8	3.7	3.4	3.2
12	7.1	6.9	8.5	8.2	7.4	7.1	7.4	7.1	4.1	3.9	3.6	3.5
13	7.1	6.9	8.5	8.2	7.8	7.5	7.3	7.0	4.1	3.9	4.0	4.0
14	7.0	6.8	8.2	8.0	7.8	7.4	7.1	6.9	4.0	3.8	4.0	4.0
15	6.7	6.5	8.0	7.7	7.8	7.4	7.0	6.7	3.9	3.7	3.3	3.3
16	6.5	6.3	7.9	7.6	7.8	7.4	6.8	6.6	3.8	3.6	3.6	3.5
17	6.4	6.2	7.8	7.5	7.9	7.5	6.8	6.5	3.7	3.5	3.6	3.5
18	6.4	6.1	7.8	7.5	7.9	7.5	6.6	6.4	3.5	3.3	3.6	3.5
19	6.4	6.1	7.8	7.5	8.0	7.7	6.4	6.2	3.7	3.5	3.6	3.6
20	6.3	6.0	7.7	7.4	8.3	8.0	6.3	6.1	3.8	3.5	3.7	3.6
21	6.2	5.9	7.6	7.4	8.6	8.2	6.2	6.0	3.6	3.4	3.9	3.8
22	6.1	5.8	7.6	7.3	8.8	8.5	6.0	5.8	3.7	3.5	3.9	3.8
23	6.1	5.9	7.6	7.3	8.8	8.5	5.9	5.7	3.5	3.5	4.0	3.9
24	6.2	5.9	7.8	7.5	8.5	8.2	5.8	5.6	3.5	3.5	3.8	3.8
25	6.1	5.9	8.0	7.6	8.2	7.9	5.6	5.4	3.3	3.3	3.6	3.5
26	6.0	5.7	8.0	7.7	8.1	7.8	5.4	5.2	3.4	3.3	3.5	3.5
27	6.0	5.7	8.2	7.9	8.1	7.8	5.2	5.0	3.8	3.7	3.4	3.3
28	6.0	5.7	8.5	8.1	8.1	7.8	5.0	4.8	3.7	3.6	3.3	3.2
29	6.1	5.8	8.7	8.3	8.2	7.8	4.7	4.5	3.6	3.5	3.4	3.3
30	6.1	5.8	8.7	8.3	8.2	7.9	4.5	4.3	3.6	3.5	3.6	3.5
31	---	---	8.4	8.1	---	---	4.5	4.3	3.6	3.5	---	---
MAX	7.4	7.1	8.7	8.3	8.8	8.5	8.9	8.5	4.6	4.4	4.0	4.0
MIN	6.0	5.7	6.4	6.1	7.3	7.0	4.5	4.3	3.3	3.3	3.0	3.0

GUADALUPE RIVER MAIN STEM

405

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.--From August 1965 to October 1982 specific conductance was recorded continuously at this station. From March 1981 to October 1982 water temperature was recorded continuously at this station.

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 (1965-69, 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 1992 TO SEPTEMBER 1993

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (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 CAC03)	HARDNESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM, DIS-SOLVED (MG/L AS MG)
NOV 05...	1630	779	8.1	19.5	8.2	89	1.5	280	57	83	18
DEC 31...	0730	690	8.1	18.0	8.6	91	1.7	280	48	84	17
MAR 11...	1113	635	8.1	19.5	8.2	89	--	250	51	74	15
APR 28...	1018	698	7.9	23.0	7.7	89	2.1	270	50	80	17
JUL 14...	1027	771	8.1	29.0	6.2	80	1.4	260	29	81	15
AUG 20...	1055	814	8.2	30.0	6.3	83	1.0	280	55	82	19
DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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 SI02)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)
NOV 05...	49	1	3.7	220	58	63	0.30	14	423	3.26	--
DEC 31...	42	1	3.6	230	52	58	0.30	12	423	2.88	2.88
MAR 11...	41	1	3.8	200	51	59	0.20	12	384	2.18	2.18
APR 28...	46	1	3.3	220	52	64	0.30	11	410	0.960	0.960
JUL 14...	55	1	5.0	240	61	74	0.30	17	458	1.59	1.59
AUG 20...	63	2	5.0	230	67	86	0.30	17	485	1.89	1.89
DATE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS TOTAL (MG/L AS P)
NOV 05...	0.040	--	3.30	--	0.070	--	0.33	--	--	0.40	0.510
DEC 31...	--	0.020	2.90	2.90	--	0.020	--	--	<0.20	--	--
MAR 11...	--	0.020	2.20	2.20	--	0.030	--	0.27	0.30	--	--
APR 28...	--	0.020	0.980	0.980	--	0.040	--	0.66	0.70	--	--
JUL 14...	--	0.010	1.60	1.60	--	0.030	--	0.27	0.30	--	--
AUG 20...	--	0.010	1.90	1.90	--	0.030	--	--	<0.20	--	--

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible][illegible][illegible][illegible]

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.

PERIOD OF RECORD.--June 1970 to current year.

Water-quality records.--Chemical and biochemical analyses: July 1970 to December 1988. Pesticide analyses: July 1970 to July 1981.

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. There are no known diversions above station. Recording rain gage at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1921, 22 ft in September 1967, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 12	2000	942	11.51	May 8	1200	1,040	11.86
Mar. 12	1900	554	9.71	June 22	0400	1,490	13.24

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.01	2.7	12	.74	152	326	.08	.00
2	.00	.00	.00	.00	.00	2.4	6.5	.23	117	214	.01	.00
3	.00	.00	.00	.00	.35	5.1	3.8	.27	105	136	.00	.00
4	.00	.00	.00	.00	33	7.6	3.4	.08	104	98	.00	.00
5	.00	.00	.00	.00	16	7.5	3.6	4.4	98	79	.00	.00
6	.00	.00	.00	.00	9.6	7.2	3.2	434	80	62	.00	.00
7	.00	.00	.00	.00	6.3	6.2	2.6	854	63	51	.00	.00
8	.00	.00	.00	.47	4.0	5.7	3.3	1030	45	44	.00	.00
9	.00	.00	.00	29	5.9	5.4	5.7	989	32	39	.00	.00
10	.00	19	.00	17	292	5.3	5.1	923	24	34	.00	.00
11	.00	37	.00	5.8	593	6.5	3.6	758	22	28	.00	.00
12	.00	13	.00	4.6	860	453	2.7	596	26	15	.00	.00
13	.00	5.5	.00	5.6	885	513	2.2	483	93	9.7	.00	.00
14	.00	2.9	.00	6.3	681	451	3.0	387	445	6.6	.00	.00
15	.00	1.5	.00	5.6	509	382	2.4	269	298	4.6	.00	.00
16	.00	.84	.00	4.2	385	430	1.6	165	210	3.7	.00	.00
17	.00	.39	.02	3.2	244	332	1.2	113	190	2.9	.00	.00
18	.00	.08	.75	2.5	173	240	.97	117	211	2.3	.00	.00
19	.00	.01	.65	1.9	162	170	.76	140	337	2.0	.00	.00
20	.00	.18	.33	1.5	115	123	.52	101	1060	1.7	.00	.00
21	.00	7.0	.14	1.2	73	92	.29	78	1350	1.4	.00	.00
22	.00	4.1	.05	.98	40	76	.08	56	1470	1.4	.00	.00
23	.00	3.4	.00	.78	17	68	.02	76	1300	1.2	.00	.00
24	.00	2.2	.00	.54	9.9	58	.00	234	1180	.90	.00	.00
25	.00	1.4	.00	.41	7.0	46	.00	165	1020	.76	.00	.00
26	.00	.95	.00	.28	5.2	34	.00	117	875	.52	.00	.00
27	.00	.59	.00	.16	4.0	28	.00	80	823	.42	.00	.00
28	.00	.34	.00	.14	3.1	22	.00	129	687	.25	.00	.00
29	.00	.14	.00	.11	---	19	.00	211	541	.29	.00	.00
30	.00	.03	.00	.05	---	17	.43	196	418	.47	.00	.00
31	.00	---	.00	.02	---	15	---	163	---	.34	.00	---
TOTAL	0.00	100.55	1.94	92.34	5133.36	3630.6	68.97	8869.72	13376	1167.45	0.09	0.00
MEAN	.000	3.35	.063	2.98	183	117	2.30	286	446	37.7	.003	.000
MAX	.00	37	.75	29	885	513	12	1030	1470	326	.08	.00
MIN	.00	.00	.00	.00	.00	2.4	.00	.08	22	.25	.00	.00
AC-FT	.00	199	3.8	183	10180	7200	137	17590	26530	2320	.2	.00
CFSM	.00	.04	.00	.03	2.09	1.33	.03	3.26	5.08	.43	.00	.00
IN.	.00	.04	.00	.04	2.17	1.54	.03	3.76	5.67	.49	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1993, BY WATER YEAR (WY)

	MEAN	59.0	46.7	27.0	27.0	45.0	22.6	24.2	73.0	80.4	50.5	2.97	105
MAX	551	589	240	189	459	168	229	508	499	416	16.6	1028	
(WY)	1984	1982	1992	1979	1992	1992	1992	1981	1981	1990	1973	1971	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
(WY)	1978	1989	1971	1983	1971	1971	1971	1971	1971	1971	1974	1977	

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1971 - 1993
ANNUAL TOTAL	40529.20	32441.02	
ANNUAL MEAN	111	88.9	46.8
HIGHEST ANNUAL MEAN			138
LOWEST ANNUAL MEAN			.52
HIGHEST DAILY MEAN	1250	Mar 30	1470
LOWEST DAILY MEAN	.00	Jul 5	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jul 5	.00
INSTANTANEOUS PEAK FLOW			1490
INSTANTANEOUS PEAK STAGE			13.24
ANNUAL RUNOFF (AC-FT)	80390	64350	33900
ANNUAL RUNOFF (CFSM)	1.26	1.01	.53
ANNUAL RUNOFF (INCHES)	17.17	13.74	7.24
10 PERCENT EXCEEDS	437	294	73
50 PERCENT EXCEEDS	2.1	.78	.10
90 PERCENT EXCEEDS	.00	.00	.00

* No flow at times each year.

MISSION RIVER MAIN STEM

08189500 MISSION RIVER AT REFUGIO, TX
(National stream-quality accounting network)

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 except those for estimated daily discharges, which are poor. There are several small diversions above station.

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. Maximum stage since about 1899, that of Sept. 12, 1971.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 11	1000	6,180	24.93	May 25	0900	3,770	20.45
Mar. 13	1600	3,690	20.24	June 23	0300	6,920	25.86

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e19	e24	e21	e12	11	40	38	36	331	141	32	15
2	e19	e20	e20	e12	11	39	35	35	189	111	32	15
3	e19	e18	e19	e12	16	39	34	33	103	92	33	14
4	e19	17	e19	e12	15	38	34	30	73	81	30	14
5	e19	17	e19	e12	28	37	34	201	60	73	29	14
6	e20	e17	e19	12	39	36	34	1560	52	66	26	14
7	e19	e16	e18	19	33	35	32	856	47	62	25	14
8	e19	e16	e17	36	27	34	35	376	44	58	25	13
9	e19	e17	e17	93	176	33	34	193	41	55	24	13
10	e19	e42	e16	60	4070	33	32	102	40	52	24	13
11	e19	e120	e16	54	5750	34	31	65	111	50	23	15
12	e20	e100	e16	38	2670	1050	29	50	312	49	21	13
13	e20	e45	e16	28	549	3370	29	41	216	47	19	13
14	e20	e39	e17	24	248	1830	29	36	801	45	19	13
15	e21	e35	e20	20	163	508	29	33	1230	43	19	13
16	e34	e32	e18	17	118	298	28	30	373	42	18	12
17	e60	e29	e16	16	91	262	27	28	159	41	18	12
18	e52	e29	e15	15	74	158	26	68	145	39	17	12
19	e42	e28	e15	14	65	106	26	257	622	37	17	12
20	e35	e28	e14	14	60	83	26	426	4460	37	17	12
21	e32	e64	e14	13	56	66	25	154	5850	37	16	12
22	e30	e90	e14	13	53	57	25	77	6420	36	16	11
23	e28	e62	e14	13	49	53	25	167	6230	35	15	11
24	e26	e38	e13	13	47	49	24	2160	3040	34	15	11
25	e25	e32	e13	13	45	48	24	3340	1040	32	15	11
26	e24	e29	e13	12	43	45	24	1170	457	32	16	12
27	e23	e27	e13	11	41	43	24	339	536	32	16	13
28	e22	e25	e13	11	40	43	24	372	866	36	16	11
29	e20	e23	e13	11	---	41	27	627	325	36	16	10
30	e19	e22	e12	11	---	39	27	560	194	33	16	10
31	e19	---	e12	11	---	38	---	462	---	32	15	---
TOTAL	782	1101	492	652	14588	8585	871	13884	34367	1596	640	378
MEAN	25.2	36.7	15.9	21.0	521	277	29.0	448	1146	51.5	20.6	12.6
MAX	60	120	21	93	5750	3370	38	3340	6420	141	33	15
MIN	19	16	12	11	11	33	24	28	40	32	15	10
AC-FT	1550	2180	976	1290	28940	17030	1730	27540	68170	3170	1270	750
CFSM	.04	.05	.02	.03	.76	.40	.04	.65	1.66	.07	.03	.02
IN.	.04	.06	.03	.04	.79	.46	.05	.75	1.85	.09	.03	.02

e Estimated

MISSION RIVER MAIN STEM

409

08189500 MISSION RIVER AT REFUGIO, TX--Continued
(National stream-quality accounting network)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

MEAN	156	65.3	63.2	49.2	112	46.5	95.9	192	191	149	60.7	326
MAX	1882	1380	849	417	1178	377	851	1387	1848	2135	1076	7646
(WY)	1974	1982	1992	1992	1958	1992	1992	1972	1973	1990	1942	1967
MIN	.051	.63	.62	.66	.66	2.20	1.90	.46	.65	.40	.096	.027
(WY)	1990	1990	1990	1990	1990	1989	1940	1989	1990	1989	1989	1989

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1940 - 1993	
ANNUAL TOTAL	114766.7		77936		125	
ANNUAL MEAN	314		214		647	
HIGHEST ANNUAL MEAN					1.74	
LOWEST ANNUAL MEAN					1967	
HIGHEST DAILY MEAN	5710	Apr 19	6420	Jun 22	78800	Sep 22 1967
LOWEST DAILY MEAN	5.2	Aug 10	10	Sep 29	.00	*
ANNUAL SEVEN-DAY MINIMUM	5.5	Aug 8	11	Jan 27	.00	Aug 30 1989
INSTANTANEOUS PEAK FLOW			6920	Jun 23	79000	Sep 12 1971
INSTANTANEOUS PEAK STAGE			25.86	Jun 23	a/38.25	Sep 12 1971
ANNUAL RUNOFF (AC-FT)	227600		154600		90760	
ANNUAL RUNOFF (CFSM)	.45		.31		.18	
ANNUAL RUNOFF (INCHES)	6.19		4.20		2.47	
10 PERCENT EXCEEDS	692		304		96	
50 PERCENT EXCEEDS	51		30		11	
90 PERCENT EXCEEDS	14		13		2.2	

* No flow Sept. 1-4, 1989.

a/ Maximum stage since about 1899.

MISSION RIVER MAIN STEM

08189500 MISSION RIVER AT REFUGIO, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1961 to August 1993 (discontinued). Chemical and biochemical analyses: January 1968 to August 1993 (discontinued). Pesticide analyses: October 1970 to April 1979. Sediment analyses: January 1978 to August 1993 (discontinued).

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	
OCT 14...	1830	25	2110	8.1	24.0	3.0	8.4	101	1.4	24	130	430	
MAR 10...	1510	36	1620	7.9	21.5	6.0	8.9	101	1.2	K37	K42	380	
MAY 04...	1845	34	1540	7.9	24.0	7.5	7.9	95	1.4	220	1800	350	
AUG 17...	1700	21	1800	8.3	30.0	12	8.2	109	2.0	K14	K21	410	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD AS CO3	BICAR-BONATE WATER DIS IT FIELD AS HCO3	ALKA-LINITY WAT DIS TOT IT FIELD AS CaCO3	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 14...	150	130	25	280	6	3.2	30	276	276	280	51	460	
MAR 10...	82	120	20	190	4	2.7	0	368	301	300	40	310	
MAY 04...	90	110	19	170	4	2.9	0	322	264	260	45	300	
AUG 17...	120	130	21	220	5	2.7	0	363	297	300	40	400	
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
OCT 14...	0.40	43	1220	1160	--	--	<0.010	<0.010	<0.050	<0.050	0.020	0.020	
MAR 10...	0.30	37	946	904	0.061	0.061	--	0.020	0.081	0.081	--	0.030	
MAY 04...	0.30	36	888	843	--	--	--	<0.010	--	<0.050	--	0.030	
AUG 17...	0.40	44	1010	1040	--	--	--	<0.010	--	<0.050	--	0.020	
DATE		NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	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)	
OCT 14...	0.28	0.30	0.030	0.010	0.010	0.010	0.03	76	5.1	55	<10		
MAR 10...	--	<0.20	0.020	0.020	<0.010	--	--	54	5.2	61	20		
MAY 04...	0.37	0.40	0.040	0.030	0.010	--	0.03	91	8.4	62	<10		
AUG 17...	--	<0.20	0.050	0.030	0.020	--	0.06	75	4.3	65	<10		
DATE		BARIUM, DIS-SOLVED (UG/L AS Ba)	COBALT, DIS-SOLVED (UG/L AS Co)	IRON, DIS-SOLVED (UG/L AS Fe)	LITHIUM, DIS-SOLVED (UG/L AS Li)	MANGA-NESE, DIS-SOLVED (UG/L AS Mn)	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)	
OCT 14...	550	<9	11	51	43	<30	<1	1	<1.0	2100	<18		
MAR 10...	510	<1	4	31	80	<1	<1	1	<1.0	1500	16		
MAY 04...	380	<1	5	28	49	<1	<1	<1	<1.0	1100	14		
AUG 17...	460	<1	4	35	61	4	<1	<1	<1.0	1700	19		

ARANSAS RIVER MAIN STEM

411

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.--Records good except those for estimated daily discharges, which are poor. The city of Beeville discharges sewage effluent into the river via Poesta Creek 3.8 mi upstream. There are no known diversions above station.

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. Maximum stage since at least 1914, that of Sept. 22, 1967.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 12	1700	2,240	16.02	June 14	0300	2,190	15.88
May 6	0600	1,790	14.77	June 21	2200	6,920	23.67
May 10	0900	723	10.41	June 27	0800	624	9.80
May 24	0100	2,180	15.87				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5.4	e7.6	e13	e6.2	6.2	5.9	6.6	15	16	27	9.3	5.3
2	e5.4	e7.2	e12	e6.2	6.2	6.0	6.0	12	11	23	8.6	5.2
3	e5.4	6.9	e9.4	e6.2	7.2	6.1	5.6	7.0	9.5	21	8.3	5.2
4	e5.4	e6.9	e9.0	e6.2	13	5.8	6.1	6.1	8.8	19	8.2	5.1
5	e5.4	e6.9	e8.6	6.6	11	5.5	6.4	26	8.2	18	8.0	5.1
6	e5.8	e6.9	e8.2	6.5	7.8	5.4	6.5	951	8.0	17	7.8	5.1
7	e5.6	e6.0	e8.0	14	6.9	5.3	6.4	81	7.7	17	7.7	5.5
8	e5.6	e6.0	e7.8	29	6.6	5.2	7.0	28	7.3	16	7.4	6.7
9	e5.4	e6.0	e7.4	12	6.9	5.2	7.4	17	7.1	16	6.9	5.2
10	e5.4	e7.0	e7.0	8.0	9.6	5.2	7.8	371	8.3	15	6.9	5.1
11	e5.4	e10	e7.0	6.5	14	5.6	6.4	70	13	14	7.0	5.7
12	e5.4	e20	e7.0	6.0	8.1	1230	6.4	23	38	14	7.4	6.4
13	e5.5	e15	e7.0	5.9	6.8	416	6.4	13	267	14	6.6	7.7
14	e5.5	e12	e7.0	5.9	6.6	57	6.4	9.8	1310	14	6.6	6.1
15	e5.6	e8.0	e6.8	5.9	6.6	29	6.3	8.3	170	13	6.3	5.5
16	e9.0	e7.8	e6.7	5.9	6.6	21	5.7	7.4	49	13	6.1	5.4
17	e15	e8.0	e6.6	5.9	6.6	16	5.5	6.8	28	12	5.9	5.4
18	e10	e9.0	e6.6	6.0	6.2	13	5.4	40	70	12	5.9	5.4
19	e9.0	e11	e6.5	6.1	6.1	11	5.4	61	142	12	5.8	5.6
20	e8.2	e14	e6.5	6.1	6.1	11	5.4	17	473	12	5.7	5.4
21	e7.8	e17	e6.4	5.9	6.1	9.8	5.6	9.8	3140	11	5.4	5.4
22	e7.6	e25	e6.4	6.4	6.0	9.1	5.7	8.2	2770	11	5.4	5.7
23	e7.2	e30	e6.4	7.0	5.9	224	5.7	393	218	10	5.3	6.1
24	e7.2	e34	e6.4	6.4	5.9	62	5.7	1110	84	10	5.1	6.1
25	e7.0	e32	e6.4	5.7	5.9	21	6.3	128	57	10	4.8	5.4
26	e6.8	e30	e6.4	5.1	5.9	13	6.3	43	67	9.8	5.0	5.4
27	e6.6	e25	e6.3	5.7	5.9	9.3	6.2	28	447	9.1	6.0	5.2
28	e6.4	e17	e6.3	5.8	5.9	8.0	6.3	34	119	9.1	15	4.6
29	e6.4	e16	e6.3	6.1	---	7.3	7.5	115	50	9.1	9.7	4.4
30	e6.4	e14	e6.3	6.2	---	6.8	16	96	34	10	6.1	4.4
31	e6.4	---	e6.3	6.2	---	6.7	---	32	---	11	5.3	---
TOTAL	209.2	422.2	228.0	227.6	202.6	2242.2	196.4	3767.4	9637.9	429.1	215.5	164.8
MEAN	6.75	14.1	7.35	7.34	7.24	72.3	6.55	122	321	13.8	6.95	5.49
MAX	15	34	13	29	14	1230	16	1110	3140	27	15	7.7
MIN	5.4	6.0	6.3	5.1	5.9	5.2	5.4	6.1	7.1	9.1	4.8	4.4
AC-FT	415	837	452	451	402	4450	390	7470	19120	851	427	327
CFSM	.03	.06	.03	.03	.03	.29	.03	.49	1.30	.06	.03	.02
IN.	.03	.06	.03	.03	.03	.34	.03	.57	1.45	.06	.03	.02

e Estimated

ARANSAS RIVER MAIN STEM

08189700 ARANSAS RIVER NEAR SKIDMORE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1993, BY WATER YEAR (WY)

MEAN	31.5	7.98	20.3	8.12	15.5	13.6	29.4	64.2	60.1	32.8	13.1	162
MAX	318	39.0	327	38.9	119	117	255	349	512	451	176	2356
(WY)	1974	1982	1992	1992	1969	1992	1992	1972	1973	1990	1980	1967
MIN	.000	.17	.72	1.05	1.10	.55	.31	1.04	.026	.031	.000	.000
(WY)	1990	1965	1965	1971	1967	1966	1967	1989	1967	1986	1965	1965

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1965 - 1993	
ANNUAL TOTAL	24085.1		17942.9		38.1	
ANNUAL MEAN	65.8		49.2		199	
HIGHEST ANNUAL MEAN					3.15	
LOWEST ANNUAL MEAN					199	
HIGHEST DAILY MEAN	2430	Apr 18	3140	Jun 21	49300	Sep 22 1967
LOWEST DAILY MEAN	4.5	Jul 18	4.4	Sep 29	.00	*
ANNUAL SEVEN-DAY MINIMUM	5.1	Jul 13	5.1	Sep 24	.00	Oct 7 1964
INSTANTANEOUS PEAK FLOW			6920	Jun 21	82800	Sep 22 1967
INSTANTANEOUS PEAK STAGE			23.67	Jun 21	a/42.22	Sep 22 1967
ANNUAL RUNOFF (AC-FT)	47770		35590		27620	
ANNUAL RUNOFF (CFSM)	.27		.20		.15	
ANNUAL RUNOFF (INCHES)	3.63		2.70		2.10	
10 PERCENT EXCEEDS	68		34		16	
50 PERCENT EXCEEDS	9.8		7.0		3.8	
90 PERCENT EXCEEDS	5.4		5.4		.59	

* No flow at times.

a/ Maximum stage since at least 1914.

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.

WATER-DISCHARGE RECORDS

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.

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. Maximum stage since at least 1866, that of Sept. 24, 1955.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	2200	175	2.97	No peak greater than base discharge.			

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132	111	114	111	101	118	108	93	61	52	21	14
2	131	109	113	111	100	114	106	93	58	50	21	14
3	129	107	111	111	102	111	106	90	56	48	20	14
4	127	106	111	110	109	109	106	85	54	46	20	14
5	124	108	110	109	120	109	102	91	53	45	20	13
6	122	106	110	109	117	106	100	87	51	43	19	15
7	121	106	109	110	114	106	101	85	49	41	19	14
8	119	108	109	108	112	105	98	84	49	39	19	13
9	119	114	111	106	112	103	97	82	47	38	18	13
10	119	114	109	107	136	102	95	79	103	38	18	13
11	118	114	107	108	132	101	95	77	98	36	18	13
12	117	119	108	107	125	129	95	74	88	35	17	13
13	113	112	109	105	123	127	95	75	79	34	17	19
14	112	110	119	105	126	116	96	73	73	34	17	21
15	113	109	135	104	126	113	99	70	71	31	16	16
16	113	109	134	103	123	111	100	67	70	33	16	16
17	112	108	131	103	120	108	102	66	68	31	16	16
18	113	110	129	103	119	105	102	67	66	31	16	16
19	114	132	129	131	117	106	99	64	65	30	15	16
20	113	152	124	130	117	106	96	62	64	29	15	16
21	109	136	121	116	116	105	94	60	66	28	15	17
22	108	130	120	111	113	108	90	60	64	28	15	22
23	108	128	120	108	111	107	89	75	62	27	15	28
24	108	125	117	107	111	105	88	74	61	27	15	31
25	110	123	117	106	111	104	86	69	59	26	14	33
26	109	121	115	105	110	100	83	65	58	25	14	36
27	108	120	114	104	108	98	80	64	61	25	15	35
28	108	119	114	104	115	100	81	62	59	24	15	36
29	108	117	113	104	---	102	88	61	57	23	14	36
30	113	116	112	103	---	124	93	69	54	22	14	35
31	111	---	112	102	---	116	---	66	---	22	15	---
TOTAL	3581	3499	3607	3361	3246	3374	2870	2289	1924	1041	519	608
MEAN	116	117	116	108	116	109	95.7	73.8	64.1	33.6	16.7	20.3
MAX	132	152	135	131	136	129	108	93	103	52	21	36
MIN	108	106	107	102	100	98	80	60	47	22	14	13
AC-FT	7100	6940	7150	6670	6440	6690	5690	4540	3820	2060	1030	1210
CFSM	.16	.16	.16	.15	.16	.15	.13	.10	.09	.05	.02	.03
IN.	.18	.18	.18	.17	.16	.17	.14	.12	.10	.05	.03	.03

MEAN	216	122	118	106	117	105	111	156	251	164	146	246
MAX	2030	544	894	610	1160	867	766	868	5407	1580	2500	2668
(WY)	1974	1924	1992	1992	1949	1992	1977	1935	1935	1939	1971	1955
MIN	7.39	5.42	5.58	5.46	5.10	7.04	23.7	18.2	12.2	8.11	6.99	8.60
(WY)	1953	1957	1957	1957	1957	1957	1935	1953	1953	1953	1953	1956

ANNUAL TOTAL	128554			29919			
ANNUAL MEAN	351			82.0		155	
HIGHEST ANNUAL MEAN						611	1935
LOWEST ANNUAL MEAN						23.1	1953
HIGHEST DAILY MEAN	3410	Mar	4	152	Nov	20	107000
LOWEST DAILY MEAN	106	Nov	4	13	Sep	5	3.0
ANNUAL SEVEN-DAY MINIMUM	107	Nov	2	13	Sep	5	3.2
INSTANTANEOUS PEAK FLOW				175	Nov	19	307000
INSTANTANEOUS PEAK STAGE				2.97	Nov	19	32.70
ANNUAL RUNOFF (AC-FT)	255000			59340			112200
ANNUAL RUNOFF (CFSM)				.48			.21
ANNUAL RUNOFF (INCHES)	6.49			1.51			2.86
10 PERCENT EXCEEDS	665			120			236
50 PERCENT EXCEEDS	279			102			75
90 PERCENT EXCEEDS	112			17			23

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1949 to June 1952, September 1964 to September 1993 (discontinued).
 Chemical, biochemical, and pesticide analyses: February 1970 to September 1993 (discontinued). Sediment
 analyses: January 1966.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 27...	0945	111	415	7.9	13.5	5	0.40	10.2	101	0.5	K26
AUG 31...	1100	18	423	8.0	25.5	3	0.20	7.7	98	7.4	K32
DATE	STREP-TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 27...	58	200	18	57	13	8.5	0.3	0.80	180	13	17
AUG 31...	140	210	20	61	14	8.4	0.3	0.90	190	13	14
DATE	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)	NITRO-GEN, NITRATE DIS-SOLVED (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 DIS-SOLVED (MG/L AS N)
JAN 27...	0.10	10	231	<1	<1	1.09	1.09	0.010	1.10	1.10	0.010
AUG 31...	0.10	13	242	<1	<1	0.670	--	<0.010	0.670	0.670	0.030
DATE	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
JAN 27...	<0.20	<0.010	<0.010	--	0.8	<1	37	<0.5	<1.0	<5	<3
AUG 31...	<0.20	<0.010	0.020	0.06	1.0	<1	40	<0.5	2.0	<5	<3
DATE	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)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)
JAN 27...	<10	<3	<10	<4	<1	0.1	<10	<10	<1	1.0	230
AUG 31...	<10	<3	<10	5	<1	<0.1	<10	<10	<1	<1.0	240
DATE	VANA-DIUM, DIS-SOLVED (UG/L AS V)	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)	DI-ELDRIN TOTAL (UG/L)
JAN 27...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
AUG 31...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
DATE	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 27...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
AUG 31...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER MAIN STEM

415

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THAME TOTAL (UG/L)	PHORATE 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 27...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
AUG 31...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX

LOCATION.--Lat 29°28'21", long 100°14'10", Kinney County, Hydrologic Unit 12110102, at Wilson Ranch on Farm Road 3199, 1.3 mi 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.--No estimated daily discharges. Records good. 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 FOR PERIOD (WATER YEARS 1940-50).--11 years (water years 1940-50) 13.6 ft³/s (9,860 acre-ft/yr).

EXTREMES FOR PERIOD (WATER YEARS 1940-50).--Maximum discharge, 51,000 ft³/s June 25, 1948 (gage height, 20.95 ft); 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 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).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0230	6.0	1.46	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.5	1.5	1.0	.64	.99	3.6	.45	.15	4.3	.22	.15
2	1.1	1.1	1.4	.94	.64	.90	2.9	.35	.15	3.6	.22	.15
3	1.1	1.1	1.4	.94	.64	.83	2.1	.28	.15	2.4	.19	.15
4	1.1	1.1	1.4	.94	.98	.78	1.4	.32	.15	1.7	.19	.15
5	1.1	1.0	1.4	.94	1.1	.78	1.2	.40	.15	1.3	.19	.15
6	1.2	1.0	1.4	.93	1.6	.78	1.0	.40	.15	1.1	.19	.15
7	1.2	1.0	1.4	.86	1.9	.78	.90	.40	.15	.80	.19	.15
8	1.1	1.1	1.4	.86	1.7	.78	.83	.40	.15	.71	.19	.15
9	1.0	1.3	1.4	.93	1.6	.78	.78	.38	.15	.64	.19	.15
10	1.0	1.3	1.3	.90	1.6	.78	.78	.26	.47	.60	.18	.15
11	1.0	1.3	1.2	.86	1.2	.74	.86	.26	.65	.57	.15	.15
12	1.0	1.3	1.3	.83	1.1	.91	.86	.26	.43	.52	.15	.15
13	1.0	1.2	1.3	.78	1.1	.64	.78	.26	.51	.46	.15	.18
14	1.0	1.2	1.3	.78	1.2	.71	.64	.26	.48	.45	.15	.28
15	1.0	1.2	1.3	.77	1.2	.78	.51	.26	.47	.41	.15	.17
16	.96	1.2	1.3	.71	1.1	.78	.59	.23	.45	.40	.15	.15
17	.94	1.2	1.3	.71	1.1	.78	.64	.22	.42	.43	.15	.15
18	.97	1.5	1.3	.71	1.0	.83	.64	.28	.40	.40	.15	.15
19	1.0	2.1	1.3	1.0	1.0	.86	.64	.22	.36	.40	.13	.15
20	1.0	3.7	1.1	.83	1.0	.86	.58	.19	.35	.37	.13	.15
21	1.0	5.7	1.1	.78	.99	.86	.50	.19	.35	.35	.13	.14
22	1.0	4.7	1.1	.78	.94	.78	.45	.19	.35	.35	.13	.13
23	1.0	3.6	1.1	.78	.94	.78	.47	.40	.35	.35	.13	.15
24	.99	2.8	1.1	.73	.94	.75	.51	.21	.31	.33	.15	.15
25	1.0	2.3	1.1	.71	.94	.71	.47	.19	.33	.30	.15	.15
26	1.0	1.9	1.1	.71	.94	.71	.45	.19	.30	.30	.15	.15
27	1.0	1.7	1.1	.71	.94	.71	.45	.19	.66	.30	.15	.15
28	1.0	1.7	1.1	.71	.98	.71	.45	.19	2.1	.25	.15	.15
29	1.0	1.7	1.0	.68	---	.84	.45	.19	4.5	.23	.15	.15
30	1.1	1.6	1.0	.64	---	.95	.45	.22	4.8	.22	.15	.15
31	1.4	---	1.0	.64	---	2.7	---	.18	---	.22	.15	---
TOTAL	32.36	55.1	38.5	25.09	31.01	26.57	26.88	8.42	20.39	24.76	5.00	4.65
MEAN	1.04	1.84	1.24	.81	1.11	.86	.90	.27	.68	.80	.16	.15
MAX	1.4	5.7	1.5	1.0	1.9	2.7	3.6	.45	4.8	4.3	.22	.28
MIN	.94	1.0	1.0	.64	.64	.64	.45	.18	.15	.22	.13	.13
AC-FT	64	109	76	50	62	53	53	17	40	49	9.9	9.2

NUECES RIVER BASIN

417

08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1993, BY WATER YEAR (WY)

MEAN	77.0	6.51	6.91	3.32	4.00	4.02	13.7	17.0	114	60.6	62.6	94.2
MAX	1113	76.5	164	68.4	81.2	60.2	238	266	1880	737	1308	2180
(WY)	1982	1959	1985	1985	1958	1979	1990	1957	1958	1976	1971	1964
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1958	1957	1957	1957	1957	1957	1956	1956	1956	1956	1956	1956

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1956 - 1993
ANNUAL TOTAL	7424.36	298.73	
ANNUAL MEAN	20.3	.82	39.5
HIGHEST ANNUAL MEAN			237
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	200 Jun 9	5.7 Nov 21	42500 Sep 20 1964
LOWEST DAILY MEAN	.94 Oct 17	.13 Aug 19	.00 *
ANNUAL SEVEN-DAY MINIMUM	.98 Oct 12	.14 Aug 17	.00 Apr 1 1956
INSTANTANEOUS PEAK FLOW		6.0 Nov 21	246000 Sep 20 1964
INSTANTANEOUS PEAK STAGE		1.52 Jun 29	31.30 Sep 20 1964
ANNUAL RUNOFF (AC-FT)	14730.	593	28600
10 PERCENT EXCEEDS	53	1.4	12
50 PERCENT EXCEEDS	10	.77	.06
90 PERCENT EXCEEDS	1.1	.15	.00

* No flow most of time most years.

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.--No estimated daily discharges. 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0530	125	3.45	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	98	105	105	95	92	104	76	67	63	52	51
2	112	98	105	104	93	93	103	74	66	63	52	50
3	110	97	103	104	94	92	100	76	66	62	51	51
4	109	94	103	104	95	90	104	77	65	62	51	53
5	108	95	101	103	102	88	100	91	67	62	51	51
6	108	95	100	102	103	87	98	82	68	61	51	53
7	107	95	99	103	103	86	97	82	67	61	51	52
8	105	95	100	103	103	86	96	84	67	60	50	51
9	104	99	99	100	103	85	94	81	67	60	50	51
10	104	101	98	100	104	83	94	79	74	59	50	53
11	103	104	98	98	107	82	93	78	72	59	51	53
12	102	103	98	98	111	91	93	77	73	58	52	51
13	101	103	99	99	112	87	93	77	74	58	52	52
14	100	102	100	100	109	92	91	75	68	58	51	56
15	100	100	111	98	109	95	91	75	67	58	51	51
16	100	101	113	98	107	95	91	73	66	58	51	50
17	98	101	113	98	104	94	90	73	67	57	51	50
18	100	103	113	98	102	91	90	73	65	57	50	50
19	101	109	114	101	100	91	90	71	65	56	50	49
20	102	117	115	106	99	89	90	73	66	56	50	49
21	102	122	113	114	98	89	88	72	67	55	50	49
22	100	121	112	113	97	90	87	72	66	55	50	48
23	101	117	111	110	95	89	87	76	66	55	50	48
24	100	114	110	107	94	89	85	71	66	55	50	48
25	98	113	108	104	92	88	82	70	66	54	50	47
26	97	112	107	102	90	88	80	69	65	54	50	49
27	95	110	105	100	88	88	80	69	65	53	50	48
28	95	110	108	100	90	90	79	68	64	53	50	47
29	96	108	108	99	---	93	80	67	64	53	55	46
30	100	108	107	98	---	110	77	70	64	53	51	46
31	100	---	105	97	---	105	---	67	---	52	51	---
TOTAL	3171	3145	3281	3166	2799	2808	2727	2318	2010	1780	1575	1503
MEAN	102	105	106	102	100	90.6	90.9	74.8	67.0	57.4	50.8	50.1
MAX	113	122	115	114	112	110	104	91	74	63	55	56
MIN	95	94	98	97	88	82	77	67	64	52	50	46
AC-FT	6290	6240	6510	6280	5550	5570	5410	4600	3990	3530	3120	2980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

	232	84.7	80.6	72.1	102	61.8	74.4	102	238	127	163	234
MEAN	232	84.7	80.6	72.1	102	61.8	74.4	102	238	127	163	234
MAX	3153	380	811	656	2487	909	785	972	3496	1525	3654	3081
(WY)	1974	1959	1992	1985	1949	1992	1977	1987	1958	1976	1971	1964
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1953	1953	1952	1952	1952	1952	1952	1953	1953	1951	1951	1951

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR				FOR 1993 WATER YEAR				WATER YEARS 1940 - 1993			
ANNUAL TOTAL	129418				30283							
ANNUAL MEAN	354				83.0							
HIGHEST ANNUAL MEAN									131			
LOWEST ANNUAL MEAN									547			
HIGHEST DAILY MEAN	2950				122				3.63			
LOWEST DAILY MEAN	94				46				48900			
ANNUAL SEVEN-DAY MINIMUM	96				47				.00			
INSTANTANEOUS PEAK FLOW					125				189000			
INSTANTANEOUS PEAK STAGE					3.45				24.61			
ANNUAL RUNOFF (AC-FT)	256700				60070				94840			
10 PERCENT EXCEEDS	634				108				195			
50 PERCENT EXCEEDS	336				90				26			
90 PERCENT EXCEEDS	101				51				2.1			

* No flow at times in 1951-57.

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.

REVISED RECORDS.--WSP 1118: 1944.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 14	1200	1,170	12.01	No peak greater than base discharge.			

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	56	69	95	92	58	34	.03	.03	276	.00	.00
2	61	52	64	98	92	58	36	.03	.03	196	.00	.00
3	52	50	56	92	88	54	35	.03	.02	141	.00	.00
4	45	48	37	94	93	54	28	.03	.01	104	.00	.00
5	44	42	21	87	100	56	22	.05	.00	81	.00	.00
6	42	35	16	71	102	53	22	.05	.00	67	.00	.00
7	39	27	18	67	99	54	23	.07	.00	57	.00	.00
8	37	22	15	65	99	59	23	.11	.00	47	.00	.00
9	28	22	10	64	98	56	19	.15	.00	34	.00	.00
10	22	24	8.1	67	96	53	19	.22	.00	24	.00	.00
11	30	32	9.1	71	95	47	18	.25	.00	16	.00	.00
12	39	32	8.3	73	92	43	22	.25	.00	6.7	.00	.00
13	45	28	13	72	90	55	25	.25	701	1.7	.00	.00
14	43	25	24	69	90	68	15	.25	1150	.33	.00	.00
15	43	22	40	71	99	74	5.8	.18	960	.08	.00	.00
16	40	28	44	71	103	77	2.4	.12	601	.04	.00	.00
17	37	39	51	73	97	76	1.5	.09	377	.03	.00	.00
18	38	42	52	77	95	75	1.1	.43	260	.03	.00	.00
19	41	51	51	89	89	76	.65	.11	193	.03	.00	.00
20	42	65	72	90	78	75	.28	.06	160	.02	.00	.00
21	42	67	93	85	74	72	.12	.04	146	.02	.00	.00
22	38	61	98	83	71	72	.05	.04	135	.02	.00	.00
23	35	60	101	83	71	79	.04	.74	127	.02	.00	.00
24	37	65	99	85	66	77	.03	.10	110	.01	.00	.00
25	34	63	97	89	62	67	.03	.06	90	.01	.00	.00
26	35	61	100	91	58	55	.02	.04	94	.00	.00	.00
27	32	66	101	89	57	47	.02	.04	424	.00	.00	.00
28	25	72	102	89	54	39	.02	.04	451	.00	.00	.00
29	22	75	100	89	---	39	.03	.03	417	.00	.00	.00
30	34	72	97	89	---	41	.03	.35	356	.00	.00	.00
31	57	---	97	90	---	36	---	.07	---	.00	.00	---
TOTAL	1224	1404	1763.5	2518	2400	1845	353.12	4.31	6752.09	1052.04	0.00	0.00
MEAN	39.5	46.8	56.9	81.2	85.7	59.5	11.8	.14	225	33.9	.000	.000
MAX	65	75	102	98	103	79	36	.74	1150	276	.00	.00
MIN	22	22	8.1	64	54	36	.02	.03	.00	.00	.00	.00
AC-FT	2430	2780	3500	4990	4760	3660	700	8.5	13390	2090	.00	.00

MEAN	363	78.0	48.6	59.5	81.9	73.2	116	247	419	202	204	332
MAX	3254	635	537	724	1498	1347	1256	1738	4349	1845	5246	3674
(WY)	1960	1959	1992	1985	1949	1949	1957	1957	1987	1971	1971	1964
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1941	1941	1942	1940	1942	1942	1943	1956	1945	1944	1943	1952

ANNUAL TOTAL	150885.5		19316.06						
ANNUAL MEAN	412		52.9			186			
HIGHEST ANNUAL MEAN						700			1971
LOWEST ANNUAL MEAN							.003		1989
HIGHEST DAILY MEAN	4510	Jul 27	1150	Jun 14	24800			Oct 6	1959
LOWEST DAILY MEAN	8.1	Dec 10	.00	Jun 5	.00			*	
ANNUAL SEVEN-DAY MINIMUM	12	Dec 7	.00	Jun 5	.00			Oct 1	1939
INSTANTANEOUS PEAK FLOW					28500			Oct 6	1959
INSTANTANEOUS PEAK STAGE					30.88			Oct 6	1959
ANNUAL RUNOFF (AC-FT)	299300		38310		134500				
10 PERCENT EXCEEDS	795		97		272				
50 PERCENT EXCEEDS	351		34			.13			
90 PERCENT EXCEEDS	38		.00			.00			

* No flow for many days most years.

NUECES RIVER MAIN STEM

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.--Records fair. 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 19, 1899, reached a stage of 29.7 ft, from information by local residents. Maximum stage since at least 1879, that of June 18, 1935.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 17	Unknown	e920	e11.2	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	41	72	95	84	63	36	.26	1.2	732	.00	.00
2	61	44	73	94	84	61	36	.10	.59	556	.00	.00
3	61	64	73	93	84	59	35	.02	.26	354	.00	.00
4	57	66	72	91	89	59	31	.01	.09	200	.00	.00
5	52	61	66	91	91	59	30	1.8	e.00	123	.00	.00
6	47	61	61	91	91	55	30	4.4	e.00	81	.00	.00
7	43	60	51	91	91	55	29	e1.2	.00	56	.00	.00
8	40	56	42	85	93	55	26	e.60	.00	43	.00	.00
9	39	53	36	76	94	55	23	e.20	.00	35	.00	.00
10	36	49	33	71	94	55	23	e.09	.00	29	.00	.00
11	36	45	31	69	94	55	23	.03	.00	24	.00	.00
12	34	43	31	69	92	55	23	.02	.05	19	.00	.00
13	29	40	28	69	91	55	22	.00	.20	14	.00	.00
14	29	41	25	69	89	51	20	.00	.10	10	.00	.00
15	35	43	28	70	86	48	19	.00	e.10	7.7	.00	.00
16	44	46	27	71	86	53	19	.00	e600	5.5	.00	.00
17	48	46	34	69	84	63	20	.00	840	3.9	.00	.00
18	48	47	44	69	85	67	19	.00	735	2.4	.00	.00
19	48	205	48	77	86	69	15	.00	187	1.7	.00	.00
20	47	146	53	77	86	68	11	.00	74	.90	.00	.00
21	45	61	53	81	86	66	6.7	.00	90	.41	.00	.00
22	45	58	57	85	82	66	3.9	.00	111	.12	.00	.00
23	47	63	77	86	76	65	2.8	175	95	.01	.00	.00
24	48	65	87	85	73	65	2.3	351	82	.00	.00	.00
25	48	64	93	83	73	65	1.7	30	73	.00	.00	.00
26	47	58	95	82	71	65	1.1	10	67	.00	.00	.00
27	46	63	96	82	68	65	.66	6.0	53	.00	.00	.00
28	46	65	96	85	64	61	.35	4.5	43	.00	.00	.00
29	43	65	96	86	---	53	.24	e3.5	399	.00	.00	.00
30	43	67	97	86	---	44	.32	e2.5	704	.00	.00	.00
31	42	---	98	85	---	38	---	e1.8	---	.00	.00	---
TOTAL	1394	1886	1873	2513	2367	1813	510.07	593.03	4155.59	2298.64	0.00	0.00
MEAN	45.0	62.9	60.4	81.1	84.5	58.5	17.0	19.1	139	74.1	.000	.000
MAX	61	205	98	95	94	69	36	351	840	732	.00	.00
MIN	29	40	25	69	64	38	.24	.00	.00	.00	.00	.00
AC-FT	2760	3740	3720	4980	4690	3600	1010	1180	8240	4560	.00	.00

e Estimated

NUECES RIVER MAIN STEM

421

08194000 NUECES RIVER AT COTULLA, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1993, BY WATER YEAR (WY)

MEAN	483	102	51.5	65.6	56.1	81.0	144	366	642	362	245	561
MAX	3906	1098	414	761	619	2351	1444	2131	10680	3922	6412	6335
(WY)	1960	1977	1970	1985	1992	1949	1957	1929	1935	1971	1971	1932
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1932	1929	1927	1927	1928	1928	1928	1948	1932	1928	1930	1930

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1927 - 1993	
ANNUAL TOTAL	138048		19403.33			
ANNUAL MEAN	377		53.2		264	
HIGHEST ANNUAL MEAN					1430	1935
LOWEST ANNUAL MEAN					2.24	1989
HIGHEST DAILY MEAN	2790	Jul 31	840	Jun 17	79000	Jun 18 1935
LOWEST DAILY MEAN	25	Dec 14	.00	May 13	.00	*
ANNUAL SEVEN-DAY MINIMUM	29	Dec 10	.00	May 13	.00	Oct 1 1926
INSTANTANEOUS PEAK FLOW			e920	Jun 17	82600	Jun 18 1935
INSTANTANEOUS PEAK STAGE			e11.2	Jun 17	a/32.40	Jun 18 1935
ANNUAL RUNOFF (AC-FT)	273800		38490		191100	
10 PERCENT EXCEEDS	776		91		375	
50 PERCENT EXCEEDS	318		43		.60	
90 PERCENT EXCEEDS	46		.00		.00	

* No flow at times each year.

a/ Maximum stage since at least 1879.

e Estimated.

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.--No estimated daily discharges. Records good.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1946, that of Oct. 17, 1971. The next highest stage, 26 ft (discharge 65,200 ft³/s), occurred in 1954, from information by State Department of Highways and Public Transportation.

PEAK DISCHARGES.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 13	0900	522	13.32	May 24	0800	3,120	19.79

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.77	.00	18	.11	.00	.00
2	.00	.00	.00	.00	.00	.00	.36	.00	13	.04	.00	.00
3	.00	.00	.00	.00	.00	.00	.21	.00	8.4	.01	.00	3.3
4	.00	.00	.00	.00	.00	.00	.13	.00	5.4	.00	.00	78
5	.00	.00	.00	.00	.00	.00	.06	.00	3.3	.00	.00	40
6	.00	.00	.00	.00	.00	.00	.04	.00	2.0	.00	.00	3.2
7	.00	.00	.00	.00	.00	.00	.03	.00	1.1	.00	.00	1.5
8	.00	.00	.00	.00	.00	.00	.04	.00	.64	.00	.00	.49
9	.00	.00	.00	.00	.00	.00	.03	.00	.43	.00	.00	.21
10	.00	.00	.00	.00	.00	.00	.02	.00	.29	.00	.00	.07
11	.00	.00	.00	.00	.00	.00	.01	.00	1.3	.00	.00	.02
12	.00	.00	.00	.00	.00	83	.01	.00	3.3	.00	.00	41
13	.00	.00	.00	.00	.00	416	.01	.00	2.8	.00	.00	34
14	.00	.00	.00	.00	.00	142	.01	.00	4.1	.00	.00	6.1
15	.00	.00	.00	.00	.00	53	.00	.00	3.2	.00	.00	1.3
16	.00	.00	.00	.00	.00	13	.00	.00	.93	.00	.00	.37
17	3.5	.00	.00	.00	.00	3.3	.00	.00	.29	.00	.00	.16
18	5.4	.00	.00	.00	.00	1.2	.00	130	25	.00	.00	.04
19	.16	3.1	.00	.00	.00	.58	.00	428	52	.00	.00	.00
20	.00	11	.00	.00	.00	.21	.00	33	23	.00	.00	.00
21	.00	.43	.00	.00	.00	.09	.00	17	92	.00	.00	.00
22	.00	.00	.00	.00	.00	.04	.00	11	109	.00	.00	.00
23	.00	.00	.00	.00	.00	.08	.00	525	42	.00	.00	.00
24	.00	.00	.00	.00	.00	125	.00	2550	24	.00	.00	.00
25	.00	.00	.00	.00	.00	373	.00	1350	11	.00	.00	.00
26	.00	.00	.00	.00	.00	243	.00	317	6.2	.00	.00	.00
27	.00	.00	.00	.00	.00	22	.00	49	3.6	.00	.00	.00
28	.00	.00	.00	.00	.00	9.0	.00	40	1.9	.00	.01	.00
29	.00	.00	.00	.00	.00	3.4	.00	29	.88	.00	.00	.00
30	.00	.00	.00	.00	.00	1.9	.00	23	.24	.00	.00	.00
31	.00	.00	.00	.00	.00	1.3	.00	24	.00	.00	.00	.00
TOTAL	9.06	14.53	0.00	0.00	0.00	1491.10	1.73	5526.00	459.30	0.16	0.01	209.76
MEAN	.29	.48	.000	.000	.000	48.1	.058	178	15.3	.005	.000	6.99
MAX	5.4	11	.00	.00	.00	416	.77	2550	109	.11	.01	78
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.24	.00	.00	.00
AC-FT	18	29	.00	.00	.00	2960	3.4	10960	911	.3	.02	416

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1963	147	3021	1972	.000	1964
1964	18.7	288	1986	.000	1965
1965	9.50	247	1977	.000	1966
1966	2.53	40.2	1977	.000	1967
1967	2.74	19.5	1973	.000	1968
1968	9.36	145	1985	.000	1969
1969	21.3	297	1985	.000	1970
1970	141	747	1981	.000	1971
1971	91.1	606	1981	.000	1972
1972	18.8	365	1976	.000	1973
1973	26.7	377	1980	.000	1974
1974	158	2367	1967	.000	1975

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1963 - 1993
ANNUAL TOTAL	7372.14	7711.65	
ANNUAL MEAN	20.1	21.1	54.0
HIGHEST ANNUAL MEAN			323
LOWEST ANNUAL MEAN			2.44
HIGHEST DAILY MEAN	921	2550	36600
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		3120	82000
INSTANTANEOUS PEAK STAGE		19.79	a/26.87
ANNUAL RUNOFF (AC-FT)	14620	15300	39150
10 PERCENT EXCEEDS	24	11	20
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

* No flow for many days each year.
a/ Maximum stage since at least 1946.

LOCATION.--Lat 28°18'31", long 98°33'25", McMullen County, Hydrologic Unit 12110105, on right bank at downstream side of bridge on State Highway 16, 1.8 mi upstream from Kings Branch, 10.5 mi south of Tilden, and at mile 135.4.

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.

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. 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).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	2300	1.110	11.75	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	e29	52	81	85	73	56	5.9	82	58	.00	.00
2	43	30	51	81	86	70	53	5.6	74	272	.00	.00
3	42	30	50	82	86	68	52	4.1	50	487	.00	.00
4	42	27	49	82	87	65	51	3.6	33	572	.00	.00
5	44	28	42	79	87	63	51	3.3	19	523	.00	.00
6	44	29	45	78	89	62	50	3.0	10	294	.00	.00
7	44	29	52	80	91	60	49	2.7	6.3	162	.00	.00
8	41	30	54	81	92	60	50	2.4	5.7	107	.00	.00
9	38	32	52	80	90	61	49	2.2	3.9	76	.00	.00
10	36	34	49	80	89	61	48	2.3	3.1	54	.00	.00
11	34	35	45	77	91	61	46	2.0	2.4	42	.00	.00
12	32	35	42	71	93	64	45	1.8	1.7	34	.00	.00
13	30	35	41	65	92	68	44	3.7	1.7	27	.00	.00
14	29	35	41	62	92	212	43	5.4	2.0	21	.00	5.8
15	29	35	43	62	92	462	38	4.2	2.5	15	.00	36
16	28	35	44	62	90	253	27	3.3	1.8	11	.00	15
17	e33	35	44	64	87	121	21	2.6	3.2	7.7	.00	4.5
18	e40	36	44	66	86	77	18	2.1	46	5.5	.00	1.6
19	e39	37	43	67	85	64	16	1.8	395	2.8	.00	.56
20	e39	38	43	67	84	59	15	70	555	1.6	.00	.11
21	e37	212	43	68	86	57	14	279	675	1.0	.00	.00
22	36	428	43	70	88	57	12	72	622	.73	.00	.00
23	36	276	44	71	89	55	12	30	502	.44	.00	.00
24	35	137	44	75	87	55	12	50	380	.32	.00	.00
25	e35	94	44	69	86	63	11	304	194	.21	.00	.00
26	e35	69	44	81	83	222	8.8	604	124	.14	.00	.00
27	e35	59	44	81	77	397	7.1	749	94	.04	.00	.00
28	e34	54	49	79	74	259	6.2	892	78	.01	.00	.00
29	e32	53	73	79	---	87	6.2	1040	70	.00	.00	.00
30	e30	52	80	80	---	64	6.4	674	65	.00	.00	.00
31	e29	---	81	83	---	59	---	126	---	.00	.00	---
TOTAL	1127	2088	1515	2303	2444	3459	917.7	4952.0	4102.3	2775.49	0.00	63.57
MEAN	36.4	69.6	48.9	74.3	87.3	112	30.6	160	137	89.5	.000	2.12
MAX	46	428	81	83	93	462	56	1040	675	572	.00	36
MIN	28	27	41	62	74	55	6.2	1.8	1.7	.00	.00	.00
AC-FT	2240	4140	3010	4570	4850	6860	1820	9820	8140	5510	.00	126

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1993, BY WATER YEAR (WY)

MEAN	1000	255	88.7	115	152	119	193	629	751	413	340	804
MAX	11250	3509	1275	1912	4793	2104	2028	4122	5404	6291	7197	10150
(WY)	1972	1977	1977	1958	1958	1949	1949	1957	1987	1971	1971	1967
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.003	.000	.000	.000
(WY)	1953	1953	1951	1951	1964	1954	1955	1971	1984	1953	1951	1952

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1944 - 1993
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ANNUAL TOTAL	190217		25747.06				
ANNUAL MEAN	520		70.5			406	
HIGHEST ANNUAL MEAN						1736	1971
LOWEST ANNUAL MEAN						14.0	1989
HIGHEST DAILY MEAN	4470	May 18	1040	May 29	70000		Sep 24 1967
LOWEST DAILY MEAN	27	Nov 4	.00	Jul 29		.00	*
ANNUAL SEVEN-DAY MINIMUM	29	Oct 31	.00	Jul 29		.00	Feb 11 1944
INSTANTANEOUS PEAK FLOW			1110	May 29	76500		Sep 24 1967
INSTANTANEOUS PEAK STAGE			11.75	May 29		26.57	Sep 24 1967
ANNUAL RUNOFF (AC-FT)	377300		51070			294000	
10 PERCENT EXCEEDS	1170		93			790	
50 PERCENT EXCEEDS	451		43			6.1	
90 PERCENT EXCEEDS	37		.00			.00	

* No flow at times.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0330	1,020	5.27	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	112	102	102	102	120	107	113	80	63	40	35
2	102	100	101	104	102	116	105	120	77	62	39	36
3	102	101	102	105	106	113	105	114	76	60	39	35
4	102	95	101	104	112	111	104	118	75	58	38	35
5	102	95	98	102	127	111	104	140	74	57	38	35
6	101	93	98	102	124	108	106	126	75	57	37	36
7	100	94	98	102	121	107	108	122	73	56	37	36
8	98	97	99	101	117	105	105	118	74	55	37	35
9	98	104	100	100	115	105	102	115	71	55	36	36
10	98	102	98	100	122	103	101	110	77	53	35	36
11	97	102	98	101	122	102	105	107	83	53	35	37
12	96	106	98	98	122	116	106	104	85	52	35	38
13	95	103	99	98	119	107	107	100	82	52	35	48
14	95	98	116	98	118	104	111	100	78	51	34	219
15	98	96	131	98	120	103	119	96	83	50	35	146
16	99	96	129	96	120	104	119	91	79	48	34	93
17	99	95	127	96	118	105	118	88	75	49	33	76
18	101	101	121	95	115	104	117	89	76	49	32	68
19	100	135	116	239	115	107	113	85	74	48	32	62
20	98	137	112	117	114	105	111	86	71	47	31	59
21	98	129	111	121	111	104	109	86	74	47	32	58
22	96	120	109	117	109	105	107	87	72	46	32	56
23	95	114	108	114	109	105	106	106	72	46	32	56
24	94	109	107	108	109	105	104	98	70	45	32	55
25	92	108	105	108	108	103	103	91	68	44	32	53
26	89	109	105	105	108	103	103	86	76	44	32	55
27	91	106	105	105	110	105	101	86	71	42	32	53
28	92	105	105	105	116	106	103	84	66	42	32	50
29	91	105	105	105	---	105	112	84	64	42	34	49
30	97	103	104	103	---	125	118	88	63	40	33	48
31	99	---	105	102	---	110	---	84	---	40	34	---
TOTAL	3017	3170	3313	3351	3211	3332	3239	3122	2234	1553	1069	1734
MEAN	97.3	106	107	108	115	107	108	101	74.5	50.1	34.5	57.8
MAX	102	137	131	239	127	125	119	140	85	63	40	219
MIN	89	93	98	95	102	102	101	84	63	40	31	35
AC-FT	5980	6290	6570	6650	6370	6610	6420	6190	4430	3080	2120	3440
CFSM	.25	.27	.27	.28	.29	.28	.28	.26	.19	.13	.09	.15
IN.	.29	.30	.32	.32	.31	.32	.31	.30	.21	.15	.10	.17

NUECES RIVER BASIN

425

08195000 FRIO RIVER AT CONCAN, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1993, BY WATER YEAR (WY)

MEAN	144	100	101	90.3	97.7	95.8	106	137	180	170	101	139
MAX	648	391	767	525	613	762	859	1041	2468	2823	1050	1333
(WY)	1970	1959	1992	1992	1992	1992	1981	1935	1935	1932	1971	1936
MIN	.000	.000	.000	3.01	8.25	11.8	8.52	6.48	1.08	1.25	.019	.000
(WY)	1957	1957	1957	1957	1957	1956	1956	1956	1956	1953	1956	1956

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1924 - 1993

ANNUAL TOTAL	128694		32345									
ANNUAL MEAN	352		88.6							122		
HIGHEST ANNUAL MEAN										434		1992
LOWEST ANNUAL MEAN										8.80		1956
HIGHEST DAILY MEAN	3350	Mar 4	239	Jan 19						52000	Jul 1	1 1932
LOWEST DAILY MEAN	89	Oct 26	31	Aug 20						.00		*
ANNUAL SEVEN-DAY MINIMUM	92	Oct 23	32	Aug 18						.00	Aug 5	1956
INSTANTANEOUS PEAK FLOW			1020	Jan 19						162000	Jul 1	1 1932
INSTANTANEOUS PEAK STAGE			5.27	Jan 19						a/34.44	Jul 1	1 1932
ANNUAL RUNOFF (AC-FT)	255300		64160							88260		
ANNUAL RUNOFF (CFSM)		.90	.23							.31		
ANNUAL RUNOFF (INCHES)	12.31		3.09							4.26		
10 PERCENT EXCEEDS	645		117							199		
50 PERCENT EXCEEDS	314		100							67		
90 PERCENT EXCEEDS	99		37							18		

* No flow Aug. 5, 1956, to Jan. 6, 1957.

a/ Maximum stage since at least 1869.

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 September 1993 (discontinued). Pesticide analyses: August 1968 to September 1993 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
JAN 27...	1430	126	430	8.2	12.5	5	0.50	11.4	110	0.9	K28	
AUG 31...	1530	30	355	8.0	27.5	4	0.30	8.4	111	6.6	42	
DATE		STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 27...	K36	200	13	60	13	7.4	0.2	0.80	190	17	14	
AUG 31...	46	170	20	48	13	7.6	0.3	0.80	150	13	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)	RESIDUE FIXED NON FILTER-ABLE (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
JAN 27...	0.10	9.8	241	4	2	2	0.930	0.930	0.020	0.950	0.950	
AUG 31...	0.20	14	203	<1	<1	--	0.140	--	<0.010	0.140	0.140	
DATE		NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 27...	0.010	<0.20	<0.010	<0.010	0.9	<1	31	<0.5	<1.0	<5	<3	
AUG 31...	0.030	<0.20	<0.010	<0.010	1.8	<1	30	<0.5	<1.0	<5	<3	
DATE		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)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)
JAN 27...	<10	<3	<10	<4	<1	0.1	<10	<10	<1	<1.0	270	
AUG 31...	<10	<3	<10	4	1	<0.1	<10	<10	<1	<1.0	250	
DATE		VANA-DIUM, DIS-SOLVED (UG/L AS V)	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)	DI-ELDRIN TOTAL (UG/L)
JAN 27...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010
AUG 31...	<6	4	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010
DATE		DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 27...	<0.01	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
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

427

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 27...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
AUG 31...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX

LOCATION.--Lat 29°30'16", long 99°46'52", Uvalde County, Hydrologic Unit 12110106, on right bank 2.3 mi 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 26	2345	46	2.30	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	17	16	15	16	22	27	21	11	26	9.1	9.9
2	13	12	16	15	15	21	25	20	9.8	24	9.0	10
3	13	11	15	14	15	19	24	20	9.6	23	9.1	10
4	12	11	15	15	17	17	23	18	9.1	22	8.7	10
5	12	10	14	14	22	17	21	22	8.7	20	8.8	9.7
6	12	11	14	14	24	17	21	21	8.5	20	8.7	9.7
7	12	11	14	14	24	16	23	19	8.1	19	8.5	9.6
8	12	11	14	14	21	15	22	19	7.7	18	8.5	9.5
9	11	15	15	14	20	15	20	18	7.6	17	8.4	9.6
10	11	17	15	13	30	14	19	16	19	16	8.3	9.6
11	11	15	14	14	30	14	19	15	27	16	8.4	9.6
12	11	16	14	14	30	20	19	14	26	15	8.1	9.2
13	11	14	15	13	27	19	19	14	24	15	8.4	12
14	11	13	28	13	26	18	20	13	23	15	8.0	32
15	11	12	37	13	26	18	21	13	29	14	7.9	23
16	11	12	34	13	24	18	19	12	25	14	8.1	19
17	12	12	29	12	23	17	19	12	23	14	7.9	17
18	12	14	26	12	22	17	18	14	24	14	8.1	16
19	12	24	24	34	21	18	17	12	21	13	8.0	14
20	12	36	22	32	20	19	17	11	21	13	8.1	14
21	12	28	19	30	20	18	16	10	23	12	8.3	14
22	12	24	18	27	19	18	15	10	21	11	8.2	13
23	12	22	18	24	18	19	15	23	19	11	8.6	13
24	12	21	17	22	18	19	15	21	19	11	8.7	13
25	11	20	16	20	18	18	15	16	17	10	8.7	13
26	10	19	16	19	17	17	14	14	32	10	8.7	13
27	10	18	15	18	16	16	14	13	42	9.8	8.7	14
28	10	17	15	18	18	17	14	12	33	9.6	9.4	13
29	10	17	15	17	---	17	18	12	29	9.6	9.1	12
30	11	17	15	17	---	31	21	13	28	9.4	9.0	11
31	13	---	15	16	---	31	---	12	---	9.4	9.4	---
TOTAL	358	497	570	540	597	572	570	480	605.1	460.8	264.9	392.4
MEAN	11.5	16.6	18.4	17.4	21.3	18.5	19.0	15.5	20.2	14.9	8.55	13.1
MAX	13	36	37	34	30	31	27	23	42	26	9.4	32
MIN	10	10	14	12	15	14	14	10	7.6	9.4	7.9	9.2
AC-FT	710	986	1130	1070	1180	1130	1130	952	1200	914	525	778
CFSM	.09	.13	.15	.14	.17	.15	.15	.12	.16	.12	.07	.10
IN.	.11	.15	.17	.16	.18	.17	.17	.14	.18	.14	.08	.12

MUECES RIVER BASIN

429

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993, BY WATER YEAR (WY)

MEAN	53.3	29.7	28.4	22.8	25.1	27.0	27.9	41.3	61.1	38.3	35.9	37.6
MAX	258	134	185	120	131	208	257	338	483	277	365	277
(WY)	1970	1968	1992	1992	1992	1992	1981	1987	1987	1976	1966	1958
MIN	.000	.000	.055	.51	.87	2.24	1.50	.86	.19	.077	.000	.000
(WY)	1957	1957	1957	1957	1957	1954	1956	1956	1953	1953	1956	1956

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1953 - 1993

ANNUAL TOTAL	28517		5907.2									
ANNUAL MEAN	77.9		16.2							35.8		
HIGHEST ANNUAL MEAN										121		1987
LOWEST ANNUAL MEAN										2.99		1956
HIGHEST DAILY MEAN	1440	Mar 4	42	Jun 27						8100	Aug 13	1966
LOWEST DAILY MEAN	10	Oct 26	7.6	Jun 9						.00	*	
ANNUAL SEVEN-DAY MINIMUM	11	Oct 24	8.0	Aug 14						.00	Jul 30	1953
INSTANTANEOUS PEAK FLOW			46	Jun 26						123000	Aug 13	1966
INSTANTANEOUS PEAK STAGE			2.34	Jan 19						27.60	Aug 13	1966
ANNUAL RUNOFF (AC-FT)	56560		11720							25900		
ANNUAL RUNOFF (CFSM)			.13							.28		
ANNUAL RUNOFF (INCHES)	8.42		1.74							3.86		
10 PERCENT EXCEEDS	150		24							65		
50 PERCENT EXCEEDS	60		15							14		
90 PERCENT EXCEEDS	12		9.3							2.2		

* No flow at times.

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1966 to September 1993 (discontinued). Pesticide analyses: January 1974 to September 1993 (discontinued). Sediment analyses: January 1966.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 27...	1300	9.2	404	8.0	14.0	5	0.40	10.8	109	0.6	K34
AUG 31...	1315	13	405	7.8	27.0	3	0.20	8.6	112	6.9	76
DATE	STREP-TOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 27...	K20	190	11	56	11	6.3	0.2	0.50	170	14	12
AUG 31...	K22	210	12	62	13	6.6	0.2	0.50	200	13	12
DATE	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-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (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 DIS-SOLVED (MG/L AS N)
JAN 27...	0.10	8.0	217	<1	<1	0.930	0.930	0.020	0.950	0.950	<0.010
AUG 31...	0.10	13	239	<1	<1	0.120	--	<0.010	0.120	0.120	0.020
DATE	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	CARBON, ORGANIC TOTAL (MG/L AS C)	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)
JAN 27...	--	<0.20	<0.010	0.010	0.03	1.2	<1	34	<0.5	<1.0	<5
AUG 31...	0.78	0.80	<0.010	<0.010	--	1.7	<1	40	<0.5	2.0	<5
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)
JAN 27...	<3	<10	<3	<10	<4	<1	0.6	<10	<10	<1	<1.0
AUG 31...	<3	<10	9	<10	<4	3	<0.1	<10	<10	<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)	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 27...	320	<6	6	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
AUG 31...	340	<6	8	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01
DATE	DI-ELDRIN TOTAL (UG/L)	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 27...	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01
AUG 31...	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01

NUECES RIVER BASIN

431

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 27...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
AUG 31...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

08197500 FRIO RIVER BELOW DRY FRIO RIVER NEAR UVALDE, TX

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

DRAINAGE AREA.--631 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River enters the Edwards and associated limestones in the Balcones Fault Zone, 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--No flow during entire year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY 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	.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	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
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	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1993, BY WATER YEAR (WY)

	64.1	4.30	32.6	12.1	7.79	12.5	29.1	43.3	99.1	38.5	50.2	48.5
MEAN	717	81.3	710	241	300	455	702	865	1461	597	897	699
MAX	1970	1959	1985	1992	1992	1992	1981	1987	1987	1973	1971	1958
(WY)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MIN	1954	1954	1954	1954	1954	1954	1954	1955	1954	1954	1954	1954
(WY)												

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1954 - 1993

ANNUAL TOTAL	45697.87											
ANNUAL MEAN	125									37.0		
HIGHEST ANNUAL MEAN										221		1987
LOWEST ANNUAL MEAN										.00		1962
HIGHEST DAILY MEAN	3020	Mar 4								24100	May 29	1987
LOWEST DAILY MEAN	.00	Sep 12					.00	Oct 1		.00	*	
ANNUAL SEVEN-DAY MINIMUM	.00	Sep 22					.00	Oct 1		.00	Oct 1	1953
INSTANTANEOUS PEAK FLOW										99600	May 29	1987
INSTANTANEOUS PEAK STAGE										25.05	May 29	1987
ANNUAL RUNOFF (AC-FT)	90640									26780		
10 PERCENT EXCEEDS	326						.00			.20		
50 PERCENT EXCEEDS	8.4						.00			.00		
90 PERCENT EXCEEDS	.00						.00			.00		

* No flow for many days each year.

NUECES RIVER BASIN

433

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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	1830	13,100	13.94	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	42	42	40	46	59	62	51	53	45	31	17
2	34	30	42	40	46	61	61	53	46	46	32	17
3	34	29	42	40	46	59	55	53	47	46	26	17
4	34	28	42	41	47	52	56	50	46	45	26	17
5	34	31	40	40	58	52	54	1390	47	45	26	17
6	34	32	41	40	57	50	54	209	48	43	26	17
7	34	32	41	40	50	50	60	93	47	37	26	17
8	34	32	42	40	49	51	59	85	49	38	26	17
9	34	40	42	38	48	52	53	83	49	38	26	16
10	34	42	40	37	61	52	52	73	61	38	26	16
11	33	40	40	37	61	52	50	71	63	38	25	17
12	32	39	40	37	61	67	50	65	61	37	26	17
13	34	39	40	37	60	61	50	62	56	36	25	23
14	36	34	43	37	60	54	50	61	51	38	27	49
15	37	34	67	37	61	54	71	61	58	37	27	53
16	37	34	67	37	60	54	62	61	52	37	26	39
17	35	35	63	37	60	53	61	59	52	37	26	32
18	35	37	55	37	60	52	60	56	52	37	26	30
19	35	163	52	86	60	52	59	54	51	37	26	30
20	35	124	50	59	60	54	51	52	52	32	27	24
21	35	81	50	51	61	52	51	52	54	32	26	23
22	35	66	50	48	54	52	50	52	54	32	22	22
23	34	63	50	48	52	53	50	65	54	31	21	22
24	29	59	48	46	52	52	50	65	52	30	19	22
25	29	53	48	46	52	52	50	56	53	30	18	22
26	29	52	48	47	52	51	49	54	55	31	18	21
27	29	46	48	48	50	50	48	53	54	32	18	22
28	29	44	48	48	51	50	48	54	47	31	19	21
29	29	43	48	47	---	52	51	54	46	31	18	20
30	29	42	47	46	---	96	52	55	46	31	17	21
31	30	---	45	46	---	67	---	55	---	30	17	---
TOTAL	1026	1466	1461	1358	1535	1718	1629	3357	1556	1128	745	711
MEAN	33.1	48.9	47.1	43.8	54.8	55.4	54.3	108	51.9	36.4	24.0	23.7
MAX	37	163	67	86	61	96	71	1390	63	46	32	53
MIN	29	28	40	37	46	50	48	50	46	30	17	16
AC-FT	2040	2910	2900	2690	3040	3410	3230	6660	3090	2240	1480	1410
CFSM	.16	.24	.23	.21	.27	.27	.26	.53	.25	.18	.12	.12
IN.	.19	.26	.26	.25	.28	.31	.29	.61	.28	.20	.13	.13

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1993, BY WATER YEAR (WY)

MEAN	68.0	50.2	51.2	47.6	54.9	59.3	57.2	71.0	121	81.2	56.7	52.0
MAX	318	321	612	408	584	624	392	389	1527	1035	669	306
(WY)	1972	1959	1992	1992	1992	1992	1992	1987	1987	1973	1971	1980
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1952	1952	1952	1952	1952	1952	1954	1953	1953	1953	1948	1951

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1943 - 1993

ANNUAL TOTAL	103874		17690		64.2	
ANNUAL MEAN	284		48.5		340	1992
HIGHEST ANNUAL MEAN					.82	1955
LOWEST ANNUAL MEAN					13000	Jun 17 1958
HIGHEST DAILY MEAN	3460	Jun 9	1390	May 5	.00	*
LOWEST DAILY MEAN	28	Nov 4	16	Sep 9	.00	Aug 10 1946
ANNUAL SEVEN-DAY MINIMUM	29	Oct 24	17	Sep 4	.00	Jun 17 1958
INSTANTANEOUS PEAK FLOW			13100	May 5	55200	Jun 17 1958
INSTANTANEOUS PEAK STAGE			13.94	May 5	28.30	Jun 17 1958
ANNUAL RUNOFF (AC-FT)	206000		35090		46510	
ANNUAL RUNOFF (CFSM)	1.38		.24		.31	
ANNUAL RUNOFF (INCHES)	18.76		3.19		4.23	
10 PERCENT EXCEEDS	622		61		124	
50 PERCENT EXCEEDS	167		46		25	
90 PERCENT EXCEEDS	35		26		.00	

* No flow at times.

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 September 1993 (discontinued). Pesticide analyses: August 1971 to September 1993 (discontinued). Sediment analyses November 1965.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 28...	1000	54	465	7.8	12.0	5	0.50	10.7	103	0.8	52
SEP 01...	1015	16	423	7.7	26.0	4	0.30	6.4	82	6.9	110
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 28...	54	230	28	72	12	7.8	0.2	1.0	200	25	15
SEP 01...	78	210	28	64	12	9.4	0.3	1.1	180	25	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-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (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 DIS-SOLVED (MG/L AS N)
JAN 28...	0.10	10	267	<1	<1	0.610	0.610	0.020	0.630	0.630	<0.010
SEP 01...	0.20	15	251	<1	<1	0.130	--	<0.010	0.130	0.130	0.020
DATE	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 28...	<0.20	<0.010	<0.010	0.9	<1	33	<0.5	<1.0	<5	<3	<10
SEP 01...	<0.20	0.010	<0.010	1.3	<1	33	<0.5	2.0	<5	<3	<10
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)
JAN 28...	<3	<10	4	<1	0.2	<10	<10	<1	2.0	320	<6
SEP 01...	5	<10	6	2	<0.1	<10	<10	<1	<1.0	310	<6
DATE	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)	DI-ELDRIN TOTAL (UG/L)	
JAN 28...	4	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	
SEP 01...	10	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	
DATE	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 28...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
SEP 01...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 28...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
SEP 01...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER BASIN

437

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.--Records fair. 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). Satellite telemeter at station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 6	Unknown	e400	e6.3	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	5.3	7.6	5.0	4.0	4.3	4.3	6.5	7.1	2.9	1.6	2.1
2	3.8	5.8	7.2	5.0	3.9	4.2	5.1	6.5	7.0	2.8	1.5	2.0
3	3.7	6.0	6.9	5.0	3.6	4.2	5.4	6.2	6.9	2.8	1.5	2.0
4	3.8	6.0	6.6	4.8	3.6	4.1	5.3	6.4	6.7	2.7	1.6	2.1
5	3.9	6.1	6.6	4.8	3.6	4.0	5.2	25	6.4	2.6	1.5	2.2
6	3.9	6.2	6.6	4.6	3.6	4.0	5.8	e70	6.2	2.6	1.4	2.2
7	4.0	6.1	6.5	4.6	3.6	3.8	6.1	e50	6.1	2.5	1.4	2.2
8	4.0	6.2	6.4	4.5	3.6	3.6	6.4	e40	6.0	2.5	1.4	1.7
9	4.2	6.2	6.4	4.5	3.6	3.4	6.7	e30	5.7	2.5	1.4	2.0
10	4.1	6.4	6.4	4.5	3.6	3.4	6.9	25	5.9	2.4	1.6	2.0
11	4.0	6.4	6.3	4.4	3.6	3.4	5.6	18	5.5	2.4	e1.6	2.1
12	3.9	6.6	6.2	4.3	3.6	3.2	4.9	15	5.3	2.3	e1.6	2.3
13	4.1	6.4	6.2	4.3	3.6	2.8	5.0	13	5.1	2.2	e1.6	2.4
14	4.2	6.4	6.4	4.2	3.6	2.9	4.9	12	4.9	2.3	e1.9	3.2
15	4.2	6.6	7.0	4.1	3.5	3.0	5.1	12	4.8	2.3	e2.0	2.6
16	4.3	6.6	6.2	4.0	3.3	3.0	5.4	11	4.7	2.2	e1.9	2.2
17	4.2	6.8	6.2	4.0	3.5	3.1	5.5	11	4.9	2.2	e1.9	2.1
18	4.3	11	6.2	4.0	3.7	3.2	5.7	11	4.6	2.2	e1.9	2.0
19	4.3	21	6.1	4.1	3.7	3.4	5.7	10	4.3	2.2	e1.9	1.9
20	4.4	11	6.0	4.0	3.7	3.4	5.8	9.8	4.4	2.3	e2.1	1.8
21	4.3	8.9	6.0	4.0	3.9	3.3	5.5	9.5	4.6	2.2	e2.0	1.8
22	4.2	8.8	6.0	3.9	4.2	3.5	5.5	9.2	4.2	2.1	e2.0	1.6
23	4.3	8.8	5.8	3.8	4.4	3.5	5.6	10	4.2	2.1	2.0	1.6
24	4.3	8.8	5.7	4.3	4.5	3.6	5.7	8.9	3.9	2.1	2.1	1.7
25	4.5	8.8	5.7	4.0	4.6	3.6	5.8	8.4	3.6	2.0	1.9	1.6
26	4.5	8.6	5.7	4.0	4.6	3.7	5.8	8.1	3.5	2.1	1.8	1.5
27	4.6	8.3	5.5	4.0	4.6	3.8	6.0	7.7	3.3	2.1	1.9	1.4
28	4.8	8.1	5.3	4.0	4.2	3.8	6.1	7.5	3.1	2.0	2.1	1.3
29	4.9	7.9	5.1	4.0	---	3.8	6.4	7.4	3.0	1.9	2.1	1.3
30	5.0	7.7	5.1	4.0	---	5.3	6.6	7.7	3.0	1.6	2.0	1.2
31	5.1	---	5.0	4.0	---	4.3	---	7.2	---	1.7	2.1	---
TOTAL	131.5	233.8	190.9	132.7	107.5	112.6	169.8	480.0	148.9	70.8	55.3	58.1
MEAN	4.24	7.79	6.16	4.28	3.84	3.63	5.66	15.5	4.96	2.28	1.78	1.94
MAX	5.1	21	7.6	5.0	4.6	5.3	6.9	70	7.1	2.9	2.1	3.2
MIN	3.7	5.3	5.0	3.8	3.3	2.8	4.3	6.2	3.0	1.6	1.4	1.2
AC-FT	261	464	379	263	213	223	337	952	295	140	110	115

e Estimated

NUECES RIVER BASIN

08198500 SABINAL RIVER AT SABINAL, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993, BY WATER YEAR (WY)

MEAN	38.3	16.3	22.0	17.5	24.0	28.0	29.2	38.8	113	64.3	35.9	24.8
MAX	261	219	498	292	510	535	349	427	1493	1066	709	210
(WY)	1970	1959	1992	1992	1992	1992	1992	1987	1987	1973	1971	1958
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1953	1953	1953	1953	1953	1956	1956	1953	1953	1953	1962	1962

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1953 - 1993
ANNUAL TOTAL	81913.1	1891.9	
ANNUAL MEAN	224	5.18	
HIGHEST ANNUAL MEAN			37.6
LOWEST ANNUAL MEAN			265
HIGHEST DAILY MEAN	2890 Jun 9	70 May 6	.070 1992
LOWEST DAILY MEAN	3.5 Sep 28	1.2 Sep 30	17100 Jun 17 1958
ANNUAL SEVEN-DAY MINIMUM	3.6 Sep 27	1.4 Sep 24	.00 *
INSTANTANEOUS PEAK FLOW		e400 May 6	73300 Jun 17 1958
INSTANTANEOUS PEAK STAGE		e6.30 May 6	33.30 Jun 17 1958
ANNUAL RUNOFF (AC-FT)	162500	3750	27270
10 PERCENT EXCEEDS	551	7.7	50
50 PERCENT EXCEEDS	111	4.2	1.7
90 PERCENT EXCEEDS	4.5	1.9	.10

* No flow at times most years.

NUECES RIVER BASIN

439

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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0400	607	3.38	May 5	1915	1,140	4.17
Jan. 19	0645	514	3.21				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	18	22	22	33	39	31	23	25	12	5.0	e1.3
2	11	10	21	22	33	35	31	25	25	11	4.8	e1.3
3	11	10	20	22	35	34	31	22	24	11	4.5	e1.2
4	10	10	19	22	37	33	31	22	23	10	4.8	e1.2
5	10	11	19	21	37	33	30	146	23	9.7	5.3	e1.2
6	9.8	11	19	21	34	32	31	85	22	9.4	5.2	e1.2
7	9.6	10	20	22	34	31	33	57	21	9.0	4.9	e1.1
8	8.8	12	20	21	34	31	31	54	20	8.4	4.6	1.1
9	9.1	19	21	21	34	30	29	51	20	8.0	4.2	e1.0
10	9.5	16	19	20	44	30	29	48	21	7.7	4.1	e1.0
11	8.7	15	19	20	39	30	29	45	24	7.3	3.9	1.9
12	8.4	15	19	20	38	34	29	44	22	6.8	3.2	19
13	8.7	14	19	20	39	30	29	42	19	6.7	3.2	9.1
14	8.6	13	22	20	40	29	29	41	19	6.5	3.1	50
15	8.8	14	32	20	41	30	27	40	22	6.4	2.9	9.4
16	8.8	14	25	20	39	30	27	38	18	6.2	2.8	6.9
17	8.4	13	24	19	38	29	27	37	19	6.5	2.7	5.7
18	8.4	14	24	19	37	28	27	37	17	6.3	2.8	5.2
19	8.4	152	24	95	38	29	26	36	16	6.1	2.5	5.0
20	8.8	38	24	43	38	29	25	34	16	6.1	2.3	4.4
21	8.7	31	24	40	37	28	25	32	18	5.8	2.2	4.0
22	8.4	28	24	39	35	28	24	31	16	5.9	2.1	3.7
23	e8.1	27	23	39	35	27	24	40	15	5.8	1.7	3.3
24	e8.0	25	23	37	35	27	24	34	14	5.4	1.6	3.2
25	e7.7	24	23	37	36	27	24	31	17	5.4	e1.5	2.9
26	e7.6	24	22	37	34	26	23	29	16	4.7	e1.5	3.0
27	e7.6	24	22	36	33	26	22	29	15	4.3	e1.5	2.8
28	7.7	23	23	36	37	27	23	28	13	5.0	e1.5	2.1
29	8.5	23	23	36	---	26	25	27	13	5.1	e1.4	1.8
30	9.6	22	23	34	---	47	25	30	13	5.2	e1.3	1.7
31	8.6	---	23	34	---	33	---	28	---	5.0	e1.3	---
TOTAL	276.3	680	685	915	1024	948	821	1268	566	218.7	94.4	156.7
MEAN	8.91	22.7	22.1	29.5	36.6	30.6	27.4	40.9	18.9	7.05	3.05	5.22
MAX	11	152	32	95	44	47	33	146	25	12	5.3	50
MIN	7.6	10	19	19	33	26	22	22	13	4.3	1.3	1.0
AC-FT	548	1350	1360	1810	2030	1880	1630	2520	1120	434	187	311
CFSM	.09	.24	.23	.31	.38	.32	.29	.43	.20	.07	.03	.05
IN.	.11	.26	.27	.36	.40	.37	.32	.49	.22	.09	.04	.06

e Estimated

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993, BY WATER YEAR (WY)

MEAN	36.4	26.4	35.5	28.3	36.9	38.3	37.2	70.1	97.4	40.9	38.7	29.9
MAX	254	134	541	172	342	323	178	402	1056	574	654	153
(WY)	1972	1959	1992	1992	1992	1992	1992	1987	1987	1973	1971	1958
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.013	.018	.000	.000
(WY)	1956	1955	1955	1956	1956	1956	1956	1956	1955	1984	1984	1955

SUMMARY STATISTICS FOR 1992 CALENDAR YEAR FOR 1993 WATER YEAR WATER YEARS 1953 - 1993

ANNUAL TOTAL	57656.3	7653.1	43.0	
ANNUAL MEAN	158	21.0	205	1992
HIGHEST ANNUAL MEAN			.41	1956
LOWEST ANNUAL MEAN			11900	Jun 17 1958
HIGHEST DAILY MEAN	2650 May 27	152 Nov 19	.00	*
LOWEST DAILY MEAN	7.6 Oct 26	1.0 Sep 9	.00	Oct 3 1952
ANNUAL SEVEN-DAY MINIMUM	7.9 Oct 22	1.1 Sep 4	.00	Jun 17 1958
INSTANTANEOUS PEAK FLOW		1140 May 5	69800	Jun 17 1958
INSTANTANEOUS PEAK STAGE		4.17 May 5	a/28.20	Jun 17 1958
INSTANTANEOUS LOW FLOW		1.0 Sep 8		
ANNUAL RUNOFF (AC-FT)	114400	15180	31150	
ANNUAL RUNOFF (CFSM)	1.65	.22	.45	
ANNUAL RUNOFF (INCHES)	22.44	2.98	6.11	
10 PERCENT EXCEEDS	386	37	85	
50 PERCENT EXCEEDS	70	21	13	
90 PERCENT EXCEEDS	11	3.2	.10	

* No flow at times.

a/ Maximum stage since at least 1907.

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 September 1993 (discontinued). Pesticide analyses: August 1971 to September 1993 (discontinued). Sediment analyses: November to December 1965.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	
JAN 26...	1330	46	448	8.3	11.5	5	0.80	10.5	99	0.8	K4	
AUG 30...	1415	0.48	365	8.1	30.0	4	0.30	8.1	112	6.8	K26	
DATE		STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	
JAN 26...	K24	210	24	68	9.1	6.3	0.2	1.1	180	30	12	
AUG 30...	94	170	52	49	11	11	0.4	1.3	120	50	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-PENDED (MG/L)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	
JAN 26...	0.20	9.1	248	7	<1	0.350	0.350	0.020	0.370	0.370	<0.010	
AUG 30...	0.30	17	224	<1	<1	0.066	--	<0.010	0.066	0.066	0.030	
DATE		NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 26...	<0.20	0.010	<0.010	1.0	<1	24	<0.5	<1.0	<5	<3	<10	
AUG 30...	<0.20	<0.010	<0.010	2.5	<1	25	<0.5	2.0	<5	<3	<10	
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)
JAN 26...	<3	10	<4	<1	0.1	<10	<10	<1	<1.0	330	<6	
AUG 30...	7	<10	5	2	<0.1	<10	<10	<1	<1.0	350	<6	
DATE		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)	DI-ELDRIN TOTAL (UG/L)	
JAN 26...	3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	
AUG 30...	10	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	
DATE		DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 26...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
AUG 30...	<0.01	<0.010	<0.010	<0.01	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 26...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
AUG 30...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

NUECES RIVER MAIN STEM

443

08200700 HONDO CREEK AT KING WATERHOLE NEAR HONDO, TX

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

DRAINAGE AREA.--149 mi².

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

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

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

REMARKS.--No estimated daily discharges. No flow during entire year. Most of the low flow, when it occurs, 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.

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

PEAK DISCHARGES FOR CURRENT YEAR.--No flow during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY 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	.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	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
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	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
MEAN	10.2	.57	12.7	3.32	8.30	9.89	7.51	35.1	58.6	16.8	37.8	8.00
MAX	160	10.8	379	56.9	187	168	89.5	468	1060	509	1015	151
(WY)	1972	1972	1992	1968	1992	1992	1981	1987	1987	1973	1971	1980
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1962	1961	1962	1961	1962	1962	1961	1961	1962	1962	1961	1961

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1961 - 1993
ANNUAL TOTAL	27824.51		
ANNUAL MEAN	76.0		17.5
HIGHEST ANNUAL MEAN			128
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	2430	May 27	11700
LOWEST DAILY MEAN	.00	Jan 24	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Apr 24	.00
INSTANTANEOUS PEAK FLOW			51800
INSTANTANEOUS PEAK STAGE			17.19
ANNUAL RUNOFF (AC-FT)	55190		12650
10 PERCENT EXCEEDS	211	.00	.39
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

* No flow for many days each year.

NUECES RIVER BASIN

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX

LOCATION.--Lat 29°34'23", long 99°24'10", Medina County, Hydrologic Unit 12110107, on right bank 200 ft 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 Company datum, adjustment unknown.

REMARKS.--Records good except those for estimated daily discharges, which are fair. No known diversions above station.

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).

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	1615	25,600	a/12.0	No other peak greater than base discharge.			

a/ From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	6.2	7.4	6.5	13	15	19	11	24	e13	3.9	1.5
2	2.6	2.7	6.6	6.5	13	13	18	11	22	e12	3.6	1.5
3	2.6	2.3	6.5	6.5	13	12	17	9.5	21	e12	3.6	1.6
4	2.6	2.2	6.6	6.5	14	11	17	8.5	20	12	3.4	1.5
5	2.6	2.2	6.1	6.5	16	11	17	977	19	11	3.4	1.5
6	3.0	2.2	6.1	6.5	16	11	17	118	18	11	3.1	1.4
7	3.1	2.2	6.1	6.5	15	11	17	e92	20	9.5	3.1	1.4
8	2.9	2.4	5.8	6.5	14	11	17	e77	20	9.0	3.1	1.4
9	2.8	9.1	6.0	6.5	14	11	16	e64	17	8.9	3.1	1.4
10	2.8	5.4	5.3	6.5	14	11	16	e54	23	8.0	2.9	1.4
11	2.8	4.1	5.3	6.2	14	10	15	48	22	7.9	2.8	3.9
12	2.6	3.9	5.2	5.7	14	15	15	47	e22	7.9	2.6	5.6
13	2.7	3.0	5.0	5.6	14	11	15	42	e21	7.4	2.6	2.5
14	2.8	2.8	6.0	5.3	15	10	15	40	e21	7.2	2.6	26
15	2.9	2.8	13	5.3	16	11	14	38	e20	6.5	2.6	4.3
16	3.2	2.7	9.0	5.3	16	11	14	36	e19	6.1	2.5	3.2
17	3.2	2.6	8.3	5.3	15	10	14	33	e20	6.2	2.3	2.9
18	3.1	6.3	7.9	5.3	15	9.6	14	33	e19	6.1	2.2	2.7
19	3.1	65	7.9	e75	15	11	14	32	e19	6.1	2.2	2.3
20	2.9	e17	7.4	e21	15	11	13	31	e18	6.1	2.1	2.1
21	2.8	15	7.0	e17	14	10	13	31	e18	5.7	2.0	2.1
22	2.8	15	7.0	16	13	10	12	31	e17	5.7	2.0	2.0
23	2.6	14	7.0	16	13	10	11	41	e16	5.3	1.8	2.0
24	2.5	12	7.0	14	13	10	10	32	e16	4.9	1.8	1.9
25	2.4	11	7.0	14	13	10	11	31	e15	4.9	1.8	1.8
26	2.4	9.9	6.9	14	13	10	10	26	e15	4.7	1.7	1.8
27	2.4	9.2	6.1	13	12	9.6	10	25	e14	4.6	1.7	1.8
28	2.4	8.9	6.4	14	13	9.6	8.6	25	e14	4.5	1.7	1.8
29	2.4	8.2	6.5	14	---	9.6	11	24	e14	4.3	1.7	1.8
30	2.6	7.6	6.5	13	---	e49	11	30	e13	4.3	1.7	1.7
31	2.9	---	6.5	13	---	20	---	25	---	4.0	1.5	---
TOTAL	85.1	257.9	211.4	363.0	395	384.4	421.6	2123.0	557	226.8	77.1	88.8
MEAN	2.75	8.60	6.82	11.7	14.1	12.4	14.1	68.5	18.6	7.32	2.49	2.96
MAX	3.2	65	13	75	16	49	19	977	24	13	3.9	26
MIN	2.4	2.2	5.0	5.3	12	9.6	8.6	8.5	13	4.0	1.5	1.4
AC-FT	169	512	419	720	783	762	836	4210	1100	450	153	176
CFSM	.06	.20	.16	.27	.33	.29	.33	1.59	.43	.17	.06	.07
IN.	.07	.22	.18	.31	.34	.33	.36	1.83	.48	.20	.07	.08

e Estimated

NUECES RIVER BASIN

445

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

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1993, BY WATER YEAR (WY)

MEAN	20.3	12.1	18.4	13.3	15.9	16.7	15.7	29.5	42.2	24.6	23.1	16.0
MAX	169	48.8	241	92.9	136	134	91.1	120	471	276	279	63.1
(WY)	1972	1987	1992	1992	1992	1992	1992	1987	1987	1973	1971	1967
MIN	.24	.50	.40	.67	1.08	.70	1.53	.64	.15	.010	.005	.000
(WY)	1964	1964	1964	1963	1963	1963	1984	1984	1989	1989	1989	1989

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR			FOR 1993 WATER YEAR			WATER YEARS 1962 - 1993		
ANNUAL TOTAL	23843.8			5191.1					
ANNUAL MEAN	65.1			14.2			20.7		
HIGHEST ANNUAL MEAN							87.4		
LOWEST ANNUAL MEAN							.97		
HIGHEST DAILY MEAN	582	Jun 9		977	May 5		3200	Ju1 15	1992
LOWEST DAILY MEAN	2.2	Nov 4		1.4	Sep 6		.00	*	1989
ANNUAL SEVEN-DAY MINIMUM	2.3	Nov 2		1.4	Sep 4		.00	Ju1 30	1963
INSTANTANEOUS PEAK FLOW				25600	May 5		38500	Ju1 15	1973
INSTANTANEOUS PEAK STAGE				a/12.00	May 5		14.40	Ju1 15	1973
ANNUAL RUNOFF (AC-FT)	47290			10300			14980		
ANNUAL RUNOFF (CFSM)	1.51			.33			.48		
ANNUAL RUNOFF (INCHES)	20.58			4.48			6.52		
10 PERCENT EXCEEDS	163			21			42		
50 PERCENT EXCEEDS	36			8.9			5.6		
90 PERCENT EXCEEDS	2.9			2.2			.80		

* No flow for many days in 1963, 1964, 1989, and 1990.

a/ From floodmark.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1965 to September 1969. Chemical and biochemical analyses: March 1970 to September 1993 (discontinued). Pesticide analyses: January 1974 to September 1993 (discontinued).
Sediment analyses: November 1965.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 28...	1130	13	454	8.1	10.5	5	0.60	11.2	104	0.8	K32
SEP 01...	1215	1.2	362	8.0	30.0	3	0.20	9.2	126	7.0	K8
DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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 DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 28...	K26	220	38	72	9.7	6.9	0.2	0.80	180	37	12
SEP 01...	K34	170	42	53	9.6	7.9	0.3	0.90	130	39	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, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRATE DIS-SOLVED (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 DIS-SOLVED (MG/L AS N)
JAN 28...	0.20	9.7	260	<1	<1	0.460	0.460	0.020	0.480	0.480	<0.010
SEP 01...	0.20	14	216	<1	<1	0.071	--	<0.010	0.071	0.071	0.020
DATE	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS-SOLVED (MG/L AS N)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (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)	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)
JAN 28...	--	<0.20	<0.010	<0.010	0.8	<1	26	<0.5	<1.0	<5	<3
SEP 01...	0.48	0.50	<0.010	<0.010	1.5	<1	23	<0.5	1.0	<5	<3
DATE	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)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)
JAN 28...	<10	<3	<10	<4	<1	<0.1	<10	<10	<1	<1.0	350
SEP 01...	<10	<3	<10	5	<1	<0.1	<10	<10	<1	<1.0	300
DATE	VANA-DIUM, DIS-SOLVED (UG/L AS V)	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)	DI-ELDRIN TOTAL (UG/L)
JAN 28...	<6	<3	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
SEP 01...	<6	5	<0.1	<0.10	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010
DATE	DI-SYSTON TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN WATER UNFLTRD REC (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 28...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	
SEP 01...	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	

NUECES RIVER BASIN

447

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PHORATE 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 28...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01
SEP 01...	<0.01	<0.01	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01

08202700 SECO CREEK AT ROWE RANCH NEAR D'HANIS, TX

LOCATION.--Lat 29°21'43", long 99°17'05", Medina County, Hydrologic Unit 12110107, on left bank 2.9 mi north of D'Hanis and 8.0 mi downstream from Rocky Creek.

DRAINAGE AREA.--168 mi².

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

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

REMARKS.--Records fair. All of low flow from 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. There are no known diversions above station.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 5	Unknown	12,600	a/17.80	No other peak greater than base discharge.			
a/ From floodmark.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY 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	e560	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	e693	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	e1.0	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	e.23	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	e.05	.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	.00	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1254.28	0.00	0.00	0.00	0.00
MEAN	.000	.000	.000	.000	.000	.000	.000	40.5	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	693	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	2490	.00	.00	.00	.00

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1993, BY WATER YEAR (WY)

	7.66	.002	5.42	.79	1.19	1.91	3.81	14.0	20.7	9.64	30.8	5.25
MEAN	7.66	.002	5.42	.79	1.19	1.91	3.81	14.0	20.7	9.64	30.8	5.25
MAX	183	.057	117	24.7	33.2	27.0	74.6	277	345	275	862	58.5
(WY)	1972	1977	1992	1968	1992	1992	1981	1987	1987	1973	1971	1980
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1962	1962	1962	1962	1962	1962	1962	1962	1962	1962	1962	1962

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1962 - 1993

ANNUAL TOTAL	2789.11	1254.28	
ANNUAL MEAN	7.62	3.44	
HIGHEST ANNUAL MEAN			8.49
LOWEST ANNUAL MEAN			73.3
HIGHEST DAILY MEAN	931	693	8310
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
INSTANTANEOUS PEAK FLOW		12600	35800
INSTANTANEOUS PEAK STAGE		a/17.80	28.20
ANNUAL RUNOFF (AC-FT)	5530	2490	6150
10 PERCENT EXCEEDS	.00	.00	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

* No flow most of time each year.

a/ From floodmark.

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.

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.--No estimated daily discharges. Records good. Part of flow of the 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. Maximum stage since at least 1860 that of July 4, 1932. Satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 27	0800	1.660	5.03	May 8	0200	1.740	5.18

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	85	130	144	127	118	117	63	76	79	25	18
2	64	78	130	144	127	130	146	78	77	74	26	18
3	64	77	130	144	128	130	136	84	80	68	26	20
4	65	71	133	144	130	140	129	88	75	64	25	20
5	67	70	128	144	130	133	123	96	73	63	24	19
6	69	70	128	144	134	132	118	154	68	60	24	19
7	68	71	130	147	145	114	121	1070	62	58	24	20
8	67	76	128	146	149	110	117	1090	58	56	24	21
9	66	79	126	145	145	123	116	331	57	54	23	20
10	67	86	125	147	139	133	118	213	57	51	19	22
11	65	97	129	146	138	133	118	168	55	46	18	24
12	62	94	133	144	131	144	117	141	59	43	17	24
13	62	91	133	138	121	138	116	123	68	40	17	23
14	62	90	131	137	119	135	115	114	69	38	17	22
15	62	91	146	139	118	117	108	108	71	36	17	24
16	62	92	149	139	118	120	108	99	70	36	17	25
17	64	95	166	140	118	118	106	89	70	36	17	25
18	64	95	175	141	115	118	103	86	70	36	16	25
19	64	126	165	147	113	118	102	81	69	35	16	24
20	64	199	151	144	111	116	102	75	68	33	17	24
21	66	490	147	144	109	113	97	75	70	31	17	24
22	67	347	147	143	106	113	91	69	72	31	17	24
23	71	221	147	141	110	115	88	74	79	31	16	24
24	72	165	147	134	118	116	85	83	85	30	16	25
25	72	142	147	130	118	121	80	134	89	30	16	25
26	72	137	145	130	113	127	73	161	118	29	16	25
27	70	132	395	127	110	121	72	114	311	27	16	24
28	71	125	143	127	108	117	68	94	228	25	17	21
29	72	124	141	127	---	115	63	87	155	26	17	20
30	80	126	142	127	---	113	62	83	98	28	17	20
31	81	---	144	127	---	114	---	78	---	28	18	---
TOTAL	2086	3842	4611	4321	3448	3805	3115	5403	2657	1322	592	669
MEAN	67.3	128	149	139	123	123	104	174	88.6	42.6	19.1	22.3
MAX	81	490	395	147	149	144	146	1090	311	79	26	25
MIN	62	70	125	127	106	110	62	63	55	25	16	18
AC-FT	4140	7620	9150	8570	6840	7550	6180	10720	5270	2620	1170	1330

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 1993, BY WATER YEAR (WY)

MEAN	164	47.3	47.2	52.9	62.9	49.2	120	209	369	265	146	203
MAX	1813	674	950	559	988	1079	1072	2320	8069	8943	5648	3247
(WY)	1920	1920	1992	1992	1992	1992	1957	1935	1935	1932	1971	1919
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1918	1916	1916	1916	1916	1916	1917	1917	1918	1918	1917	1922

WATER YEARS 1916 - 1993

ANNUAL TOTAL	176083		35871						
ANNUAL MEAN	481		98.3			145			
HIGHEST ANNUAL MEAN						1087			1935
LOWEST ANNUAL MEAN						1.76			1952
HIGHEST DAILY MEAN	5140	Mar 6	1090	May 8		135000	Jul 4		1932
LOWEST DAILY MEAN	62	Oct 12	16	Aug 18		.00	*		
ANNUAL SEVEN-DAY MINIMUM	63	Oct 12	16	Aug 21		.00	Oct 5		1915
INSTANTANEOUS PEAK FLOW			1740	May 8		230000	Jul 4		1932
INSTANTANEOUS PEAK STAGE			5.18	May 8		29.45	Jul 4		1932
ANNUAL RUNOFF (AC-FT)	349300		71150			104900			
10 PERCENT EXCEEDS	961		145			157			
50 PERCENT EXCEEDS	307		91			4.6			
90 PERCENT EXCEEDS	71		23			.00			

* No flow at times most years.

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.--No estimated daily discharges. Records good. Part of the flow of the Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone that crosses the basin upstream from U. S. Highway 90 (see REMARKS paragraph for station 08205500). Considerable flow into various permeable formations also occur downstream from the Balcones Fault Zone. There are many small diversions above station for irrigation. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1932 reached a stage of 38.44 ft, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	1400	923	12.34	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	56	95	117	104	93	98	63	103	266	21	11
2	66	59	94	116	104	92	97	63	87	134	19	12
3	64	59	96	118	104	92	98	60	79	103	19	12
4	64	62	100	120	105	89	109	58	76	87	19	12
5	63	58	106	118	102	88	134	68	76	80	18	14
6	63	53	105	116	107	95	133	91	74	74	18	15
7	64	47	104	116	109	102	117	100	67	70	18	17
8	64	44	103	118	110	102	111	101	63	67	17	16
9	63	45	111	122	113	95	108	263	58	63	17	15
10	61	46	111	122	122	90	110	447	54	60	16	16
11	61	48	112	118	129	86	105	643	50	58	17	18
12	58	51	121	117	122	89	103	570	48	57	16	22
13	58	55	122	118	117	87	104	225	49	54	16	20
14	57	63	123	119	115	91	101	158	48	50	15	23
15	57	64	126	116	113	92	97	134	65	46	15	25
16	60	62	125	113	119	92	95	120	74	44	15	21
17	70	60	131	113	116	97	94	110	70	42	14	19
18	64	60	136	114	109	103	92	102	67	39	13	17
19	65	64	147	115	105	104	90	95	66	38	13	18
20	63	321	161	114	105	103	87	88	66	37	13	21
21	64	499	149	116	104	102	82	85	64	35	12	21
22	63	871	135	120	102	102	80	78	66	34	12	20
23	63	624	129	120	98	100	81	94	67	32	12	19
24	64	481	128	120	97	99	79	145	66	31	11	19
25	63	300	127	116	97	99	76	107	67	29	11	18
26	63	180	126	113	97	99	72	95	71	27	11	17
27	63	135	125	108	98	97	65	92	75	26	11	16
28	61	117	126	105	96	99	62	136	223	25	11	15
29	59	108	125	105	---	104	65	475	470	24	11	15
30	56	100	121	104	---	103	66	184	544	23	11	15
31	55	---	119	103	---	100	---	128	---	22	11	---
TOTAL	1928	4792	3739	3570	3019	2986	2811	5178	3053	1777	453	519
MEAN	62.2	160	121	115	108	96.3	93.7	167	102	57.3	14.6	17.3
MAX	70	871	161	122	129	104	134	643	544	266	21	25
MIN	55	44	94	103	96	86	62	58	48	22	11	11
AC-FT	3820	9500	7420	7080	5990	5920	5580	10270	6060	3520	899	1030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1993, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	215	54.1	142	144	169	132	158	254	991	227	81.5	106			
MAX	861	160	1314	877	1745	1188	935	1171	8992	1232	592	315			
(WY)	1986	1993	1992	1992	1992	1992	1992	1980	1987	1990	1980	1991			
MIN	.12	.24	.27	.45	.32	2.91	.55	1.75	.032	.029	.045	.52			
(WY)	1991	1991	1991	1991	1990	1984	1984	1984	1984	1984	1985	1989			

SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1979 - 1993
ANNUAL TOTAL	241698	33825	
ANNUAL MEAN	660	92.7	
HIGHEST ANNUAL MEAN			222
LOWEST ANNUAL MEAN			1000
HIGHEST DAILY MEAN	5700	871	7.06
LOWEST DAILY MEAN	44	11	20100
ANNUAL SEVEN-DAY MINIMUM	48	11	.00
INSTANTANEOUS PEAK FLOW		923	.00
INSTANTANEOUS PEAK STAGE		12.34	20900
ANNUAL RUNOFF (AC-FT)	479400	67090	29.18
10 PERCENT EXCEEDS	1470	127	160800
50 PERCENT EXCEEDS	414	87	350
90 PERCENT EXCEEDS	63	17	34

* No flow for many days in 1984, 1985, 1989, and 1991.

NUECES RIVER BASIN

451

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.

Water-quality records.--Chemical and biochemical analyses: July 1978 to September 1984.

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

GAGE.--Water-stage recorder. Datum of gage is 242.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. There are five diversions above station, but amounts are unknown. At times, excessive amount of 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.

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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	1100	11,200	23.32	June 28	0200	5,800	19.72
June 15	0100	1,200	12.39				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	11	4.6	3.0	3.6	2.1	.03	16	90	.97	.10
2	.00	.00	9.9	4.1	2.6	3.6	2.3	30	12	64	.93	.12
3	.00	.00	8.8	4.1	2.8	3.6	2.2	12	8.0	49	.70	.10
4	.00	.00	7.9	4.1	3.0	3.5	13	4.5	6.3	41	.65	.10
5	.00	.00	7.1	3.7	3.8	3.4	1.7	19	3.9	35	.46	.16
6	.00	.00	6.8	3.2	4.8	3.4	e1.6	78	3.1	31	.25	.16
7	.00	.00	6.2	3.4	4.9	3.4	e1.4	259	2.1	28	.22	.21
8	.00	.00	5.9	3.6	5.0	3.4	e1.4	304	1.4	25	.16	.20
9	.00	.00	5.5	3.6	5.1	e3.2	e1.2	270	1.1	22	.22	.16
10	.00	.00	5.1	3.2	5.8	e3.2	e1.2	87	9.0	21	.24	.16
11	.00	.00	4.8	2.8	15	e4.1	e.97	50	.98	19	.28	.16
12	.00	.00	5.2	2.8	e9.8	e11	e.97	32	.06	16	.35	.16
13	.00	.00	5.4	2.7	e9.1	e3.2	e.74	24	.04	13	.35	.16
14	.00	.00	5.4	2.6	e8.4	e2.2	e.74	19	155	13	.49	.40
15	.00	.00	6.0	2.6	e8.1	e2.0	e.74	12	418	12	.32	.22
16	.00	.00	6.8	2.6	e7.4	e3.4	e.74	8.1	59	11	.26	.15
17	.00	.00	5.6	2.3	e7.1	e2.8	e.52	6.1	36	8.8	.16	.10
18	.00	.00	5.2	2.2	e6.8	e2.6	e.52	4.4	43	7.6	.16	.10
19	.00	168	4.8	2.6	e6.2	e2.6	e.52	3.1	45	6.2	.22	.06
20	.00	7220	4.6	2.6	e5.9	e2.6	e.52	2.3	32	5.5	.16	.06
21	.00	713	4.6	2.6	e5.4	e2.6	.36	1.7	24	5.0	.21	.04
22	.00	159	4.6	2.4	e4.6	e2.8	.14	1.2	73	4.2	.24	.04
23	.00	129	5.2	2.4	3.6	e2.4	.10	32	99	3.7	.24	.04
24	.00	61	5.5	4.0	3.6	e2.2	.06	209	247	3.1	.19	.04
25	.00	37	5.1	4.5	3.6	e2.0	.04	288	254	2.6	.10	.03
26	.00	26	9.1	3.7	3.6	1.8	.03	180	196	2.5	.15	.03
27	.00	21	8.7	3.6	3.6	1.7	.03	83	2230	2.0	.16	.02
28	.00	17	7.6	3.4	3.6	1.6	.03	44	5080	2.0	.18	.01
29	.00	15	7.4	3.4	---	1.6	.06	60	1590	1.9	.16	.01
30	.00	13	6.4	3.3	---	1.8	.04	19	142	1.7	.10	.01
31	.00	---	5.8	3.2	---	1.7	---	18	---	1.3	.10	---
TOTAL	0.00	8579.00	198.0	99.9	156.2	93.0	35.97	2160.43	10786.98	548.1	9.38	3.31
MEAN	.000	286	6.39	3.22	5.58	3.00	1.20	69.7	360	17.7	.30	.11
MAX	.00	7220	11	4.6	15	11	13	304	5080	90	.97	.40
MIN	.00	.00	4.6	2.2	2.6	1.6	.03	.03	.04	1.3	.10	.01
AC-FT	.00	17020	393	198	310	184	71	4290	21400	1090	19	6.6

e Estimated

NUECES RIVER BASIN

08206700 SAN MIGUEL CREEK NEAR TILDEN, TX--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1993, BY WATER YEAR (WY)

MEAN	75.5	23.9	20.1	32.3	29.1	9.54	69.7	148	120	46.6	59.1	104
MAX	486	286	226	641	352	78.0	1065	900	690	748	741	1233
(WY)	1982	1993	1987	1968	1992	1992	1977	1980	1987	1990	1980	1967
MIN	.000	.026	.000	.000	.11	.007	.50	.000	.000	.041	.000	.000
(WY)	1980	1973	1989	1989	1966	1966	1984	1971	1967	1974	1991	1989

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1965 - 1993
ANNUAL TOTAL	37329.26	22670.27	
ANNUAL MEAN	102	62.1	61.5
HIGHEST ANNUAL MEAN			161
LOWEST ANNUAL MEAN			2.43
HIGHEST DAILY MEAN	7220 Nov 20	7220 Nov 20	16700 May 16 1980
LOWEST DAILY MEAN	.00 Aug 11	.00 Oct 1	.00 *
ANNUAL SEVEN-DAY MINIMUM	.00 Aug 21	.00 Oct 1	.00 Oct 10 1964
INSTANTANEOUS PEAK FLOW		11200 Nov 20	20600 May 16 1980
INSTANTANEOUS PEAK STAGE		23.32 Nov 20	27.31 May 16 1980
ANNUAL RUNOFF (AC-FT)	74040	44970	44590
10 PERCENT EXCEEDS	174	39	42
50 PERCENT EXCEEDS	13	2.7	2.6
90 PERCENT EXCEEDS	.00	.00	.00

* No flow at times.

NUECES RIVER BASIN

453

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. Satellite telemeters 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.....	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 and reservoir contents record provided by the city of Corpus Christi.

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, 701,700 acre-ft July 1 (elevation, 220.9 ft); minimum, 640,900 acre-ft Sept. 30 (elevation, 218.5 ft).

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

156.0	4,000	180.0	69,720	210.0	452,600
160.0	6,860	190.0	151,500	220.0	678,300
170.0	25,000	200.0	277,100	223.0	757,500

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	670500	660200	667700	671300	674000	675600	677300	675300	683400	701700	675000	653000
2	669700	659200	667700	671500	674300	676100	676600	677600	682900	699700	674300	652500
3	669200	658700	667000	671300	675000	676100	676300	676100	682400	695500	673800	652000
4	668700	657500	667200	672000	675000	675600	678100	675000	681900	691900	672800	652000
5	668500	655700	668000	671800	675800	675300	678800	676100	681900	691600	671800	652000
6	668000	654700	667500	671800	676100	675300	676600	675800	681700	691400	671300	651500
7	667700	654500	668000	673000	676100	675600	676600	675600	681100	690400	670200	652000
8	667200	654500	667700	672500	675800	675300	676600	676100	681100	689600	669700	651700
9	666000	654200	668200	673000	675800	675000	677600	676600	680400	689100	669000	652500
10	666000	655000	667700	672800	676100	674500	677100	677800	680400	688600	668500	652200
11	665700	655200	667200	672800	677300	674300	675800	678600	679900	688000	668000	651700
12	665200	655000	667500	673300	676600	675800	676100	678900	679600	687500	667500	651500
13	664700	653700	668000	673000	676600	677800	676100	679600	679400	687000	666700	650700
14	664200	653000	668500	673300	676100	676600	676100	679400	679400	686500	666000	651000
15	664000	653200	670000	673300	677300	676300	675800	679400	682900	686000	665200	649500
16	664000	653200	669500	673800	676600	677100	674500	679400	683700	685500	664500	648000
17	663200	653000	669500	673800	676100	677100	674000	679100	683400	684700	663700	647800
18	663200	653200	669700	673800	676300	676800	673800	680100	683700	684500	663000	647300
19	663200	653500	669700	673800	676300	677100	673300	679900	684500	683400	661900	647000
20	663000	655000	669500	674300	676100	677100	673800	679100	684700	682700	661200	646500
21	662400	664500	670000	674500	676600	677300	673000	678600	684700	682400	660200	646000
22	662400	667000	670200	674500	676600	677300	672500	678100	684700	681700	659500	645800
23	662200	667500	670200	674300	676100	678100	671800	678600	685500	680900	658700	645600
24	661900	668700	670000	674800	676300	678100	671500	680600	685500	679900	657700	645100
25	661700	668700	670200	674300	676300	677800	671500	681100	685700	679100	656500	644600
26	661200	668200	670500	674800	675800	677600	671500	681700	686300	678600	656000	644100
27	660900	668200	670200	674500	675800	677000	671300	682200	687800	678300	656200	643100
28	660700	667700	670200	674000	674800	677600	670700	682200	691400	677600	655200	641900
29	660700	667500	670500	674500	---	677800	670700	682400	698400	676800	654500	641400
30	660400	666700	671000	674300	---	677800	674500	683200	701000	676300	653700	640900
31	660200	---	670700	674000	---	678100	---	683400	---	675800	653200	---
MAX	670500	668700	671000	674800	677300	678100	678800	683400	701000	701700	675000	653000
MIN	660200	653000	667000	671300	674000	674300	670700	675000	679400	675800	653200	640900
(↑)	219.3	219.5	219.7	219.8	219.9	220.0	219.9	220.2	220.9	219.9	219.0	218.5
(Φ)	-11600	+6500	+4000	+3300	+800	+3300	-3600	+8900	+17600	-25200	-22600	-12300

CAL YR 1992 MAX 722700 MIN 403300 (Φ) +272100
WTR YR 1993 MAX 701700 MIN 640900 (Φ) -30900

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

NUECES RIVER BASIN

08206910 CHOKE CANYON RESERVOIR OWC NEAR THREE RIVERS, TX

LOCATION.--Lat 28°29'09", Long 98°14'29", Live Oak County, Hydrologic Unit 12110108, 0.2 mi downstream from Choke Canyon Dam on Frio River, 3.7 mi upstream from Atascosa River, and 3.8 mi west of Three Rivers.

DRAINAGE AREA.--5,490 mi².

PERIOD OF RECORD.--November 1991 to current year (operated as a low-flow station only).

GAGE.--Water-stage recorder. Elevation of gage is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good. Daily discharges above 40 ft³/s are not published. Flow is regulated by Choke Canyon Reservoir (station 08206900) 0.2 mi upstream.

EXTREMES FOR WATER YEAR 1992.--November 1991 to September 1992: Maximum gage height during period, 24.94 ft (backwater from Atascosa River) Dec. 24 at 0700 hours; minimum daily discharge, 33 ft³/s Apr. 15, 16, 21-23.

EXTREMES FOR CURRENT YEAR.--Water Year 1993: Maximum gage height, 25.43 ft (backwater from Atascosa River) June 29 at 2200 hours; minimum daily discharge, 31 ft³/s for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	33	34	35	37	37	36	---	31	---	31	e33
2	34	34	34	35	37	37	36	39	31	---	31	e33
3	34	34	34	35	37	37	36	35	31	---	32	e33
4	34	34	35	35	37	37	36	35	32	---	32	e33
5	34	34	35	35	37	37	36	35	32	31	32	e33
6	34	34	35	35	37	37	36	35	32	31	32	e33
7	34	34	35	35	37	37	35	35	33	31	31	e33
8	34	34	35	35	37	37	35	---	34	31	32	e33
9	34	34	35	35	37	37	35	---	33	31	32	e33
10	34	34	35	35	37	37	36	34	33	31	32	34
11	34	34	35	35	37	38	36	34	32	31	32	34
12	34	34	35	35	37	38	37	40	32	32	32	34
13	34	34	35	35	38	37	37	33	32	33	32	34
14	34	34	35	35	38	37	36	34	32	33	32	34
15	34	34	35	35	38	37	35	---	---	34	32	34
16	34	34	35	35	38	38	35	39	32	34	32	35
17	34	34	36	35	38	38	35	33	31	35	32	35
18	33	34	36	35	37	37	35	34	31	36	31	35
19	33	34	35	35	38	37	36	34	31	36	31	35
20	33	34	35	35	37	37	36	33	31	36	32	34
21	33	---	35	35	36	37	36	33	32	37	32	34
22	34	---	35	35	36	37	35	38	32	34	33	34
23	34	---	35	36	36	37	35	37	32	34	33	34
24	34	34	35	36	37	37	36	36	32	33	33	34
25	34	34	35	36	37	37	37	---	32	33	33	34
26	34	34	35	36	37	37	37	---	32	33	33	34
27	34	34	35	35	37	37	---	---	33	32	33	34
28	34	34	35	36	---	37	---	---	---	32	33	34
29	34	34	35	37	---	37	---	32	---	32	33	34
30	34	34	35	37	---	37	---	31	---	31	33	34
31	34	---	35	37	---	36	---	31	---	31	e33	---
TOTAL	1050	---	1084	1096	1039	1150	---	---	---	---	997	1015
MEAN	33.9	---	35.0	35.4	37.1	37.1	---	---	---	---	32.2	33.8
MAX	34	---	36	37	38	38	---	---	---	---	33	35
MIN	33	---	34	35	36	36	---	---	---	---	31	33

e Estimated

NUECES RIVER BASIN

455

08206910 CHOKE CANYON RESERVOIR OWC NEAR THREE RIVERS, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	34	35	37	38	39	---	---	---	36	35
2	---	---	34	35	37	38	39	---	---	---	36	35
3	---	---	34	35	---	38	39	---	---	---	36	35
4	---	---	34	35	---	38	40	---	---	---	36	35
5	---	---	---	35	---	38	39	---	---	---	36	35
6	---	---	---	35	---	38	---	---	---	---	36	35
7	---	---	---	35	---	38	---	---	---	---	36	35
8	---	---	---	35	---	38	---	37	---	---	35	35
9	---	---	---	35	37	38	39	37	---	---	35	35
10	---	---	---	35	37	38	---	37	---	---	35	35
11	---	---	---	35	37	37	39	37	---	---	35	35
12	---	---	---	35	37	37	39	---	---	---	35	35
13	---	---	---	35	37	38	---	---	---	---	35	35
14	---	---	---	35	38	38	---	---	---	---	35	35
15	---	---	---	35	38	38	33	---	---	34	36	35
16	---	---	---	35	38	39	33	---	---	34	36	35
17	---	---	34	35	38	39	---	---	---	34	36	35
18	---	---	34	36	38	39	---	---	---	34	36	35
19	---	---	35	36	38	39	---	---	---	34	36	35
20	---	---	34	36	38	39	---	---	---	35	36	35
21	---	---	---	36	38	39	33	---	---	35	36	35
22	---	34	---	36	39	38	33	---	---	35	36	35
23	---	34	---	36	---	38	33	---	---	34	36	35
24	---	34	---	36	---	38	---	---	---	35	36	35
25	---	34	---	36	---	38	---	---	---	35	36	35
26	---	34	---	37	---	39	---	---	---	35	35	35
27	---	34	---	---	---	39	---	---	---	36	35	35
28	---	34	---	---	---	39	---	---	---	37	35	35
29	---	34	---	---	38	40	---	---	---	38	35	35
30	---	34	35	---	---	39	---	---	---	38	35	35
31	---	---	35	---	---	38	---	---	---	37	35	---
TOTAL	---	---	---	---	---	1188	---	---	---	---	1103	1050
MEAN	---	---	---	---	---	38.3	---	---	---	---	35.6	35.0
MAX	---	---	---	---	---	40	---	---	---	---	36	35
MIN	---	---	---	---	---	37	---	---	---	---	35	35

NUECES RIVER BASIN

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.--No estimated daily discharges. 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 streamflow during dry periods; however, records provided 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.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1881, that of Sept. 23, 1967. Second highest stage, 41 ft (discharge 106,000 ft³/s), occurred in September 1919.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1300	7,220	26.32	June 15	0200	1,590	17.00
May 8	0600	1,730	17.49	June 28	1800	12,300	28.76
May 25	1500	8,690	26.46				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	4.0	33	19	14	11	9.5	31	133	397	19	6.0
2	1.8	3.9	31	18	14	11	8.9	70	83	156	19	5.3
3	1.7	6.3	29	18	14	11	8.5	132	59	115	18	5.0
4	1.6	8.3	27	18	14	11	8.4	276	48	91	17	7.5
5	1.5	6.9	25	18	14	11	9.1	104	41	78	17	10
6	1.7	5.3	25	18	17	11	9.1	415	36	68	15	7.0
7	1.7	4.3	24	18	18	11	8.7	1230	33	61	12	5.8
8	1.8	4.0	24	18	18	11	15	1520	30	55	12	5.7
9	1.9	4.8	23	19	18	11	16	438	28	51	11	6.1
10	2.3	5.7	23	19	18	11	13	105	31	47	11	5.4
11	2.3	6.4	22	20	17	11	12	207	39	44	11	5.2
12	2.4	6.9	22	19	16	12	11	125	35	41	10	5.4
13	2.4	7.4	21	19	16	19	9.9	57	53	38	9.6	5.1
14	2.4	9.3	21	18	15	21	9.2	40	645	36	9.5	4.9
15	2.3	10	21	18	15	22	8.4	32	1110	33	9.4	4.6
16	2.3	11	23	18	15	20	7.7	27	272	31	9.5	4.6
17	2.1	11	26	18	14	18	7.6	24	107	30	9.3	4.3
18	2.4	11	28	18	13	17	7.2	22	70	28	8.7	4.0
19	16	13	26	18	13	15	7.0	30	81	27	8.0	4.3
20	16	302	24	18	13	14	6.8	34	255	26	7.6	4.4
21	10	6020	23	18	12	12	6.5	31	203	25	7.1	4.3
22	7.6	3740	22	17	12	15	6.0	22	255	24	6.8	4.3
23	6.1	566	21	17	12	22	5.8	23	393	23	6.6	4.1
24	4.7	112	21	17	12	12	5.6	989	403	21	6.1	3.8
25	5.1	76	20	16	12	14	5.6	7680	500	20	5.6	3.4
26	5.3	58	20	15	12	14	5.4	4780	562	19	6.0	3.0
27	4.5	48	20	15	12	12	5.1	1270	1350	19	7.3	2.8
28	4.1	42	20	14	11	11	5.1	257	10100	19	6.2	2.6
29	4.4	39	20	14	---	11	12	214	8150	19	6.0	2.6
30	4.4	36	20	14	---	10	9.1	783	2380	19	5.8	2.4
31	4.1	---	19	14	---	10	---	417	---	19	5.8	---
TOTAL	128.7	11178.5	724	538	401	422	259.2	21385	27485	1680	312.9	143.9
MEAN	4.15	373	23.4	17.4	14.3	13.6	8.64	690	916	54.2	10.1	4.80
MAX	16	6020	33	20	18	22	16	7680	10100	397	19	10
MIN	1.5	3.9	19	14	11	10	5.1	22	28	19	5.6	2.4
AC-FT	255	22170	1440	1070	795	837	514	42420	54520	3330	621	285

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1993, BY WATER YEAR (WY)

MEAN	110	53.1	62.5	86.3	98.2	32.7	159	242	253	130	78.0	265
MAX	788	399	1060	2053	1590	250	2298	1365	3445	2879	1207	5006
(WY)	1947	1941	1992	1968	1992	1970	1977	1957	1935	1942	1946	1967
MIN	.048	.21	.19	1.79	1.57	3.27	1.59	2.32	.000	.89	.000	.12
(WY)	1989	1989	1989	1990	1990	1988	1939	1971	1989	1971	1954	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1933 - 1993

ANNUAL TOTAL	122715.0			64658.2					
ANNUAL MEAN	335			177			130		
HIGHEST ANNUAL MEAN							472		1935
LOWEST ANNUAL MEAN							2.29		1989
HIGHEST DAILY MEAN	7330	Feb	5	10100	Jun	28	65000	Sep	23 1967
LOWEST DAILY MEAN	1.5	Oct	5	1.5	Oct	5	.00	*	
ANNUAL SEVEN-DAY MINIMUM	1.7	Oct	1	1.7	Oct	1	.00	Jun	11 1934
INSTANTANEOUS PEAK FLOW				12300	Jun	28	121000	Sep	23 1967
INSTANTANEOUS PEAK STAGE				28.76	Jun	28	41.30	Sep	23 1967
ANNUAL RUNOFF (AC-FT)	243400			128200			94510		
10 PERCENT EXCEEDS	830			128			97		
50 PERCENT EXCEEDS	39			15			12		
90 PERCENT EXCEEDS	4.4			4.3			1.2		

* No flow at times.

NUECES RIVER MAIN STEM

457

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 (see station 08206900), about 11 mi upstream from this station 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 for municipal supply above this station. There is some minor upstream regulation by small reservoirs and by ground-water supplements (see station 08208000, Atascosa River at Whitsett). Satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION---67 years (water years 1916-82) prior to partial regulation by Choke Canyon Reservoir, 857 ft³/s (620,900 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1916-82)---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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	63	137	142	135	121	110	79	494	5380	62	49
2	95	62	132	143	137	119	105	98	245	1940	62	48
3	93	62	129	146	141	117	103	140	191	2720	61	48
4	91	62	127	146	141	113	105	267	145	1620	61	44
5	90	62	125	145	141	112	102	266	118	828	60	44
6	91	62	118	142	143	110	101	205	101	724	58	46
7	91	63	116	146	147	109	101	753	91	445	58	45
8	91	63	123	146	152	106	102	1610	84	294	58	43
9	89	63	125	145	151	105	106	1480	79	217	58	43
10	87	66	124	145	147	104	107	307	77	174	57	43
11	84	67	120	145	145	107	102	165	81	144	56	42
12	82	67	116	143	143	159	98	276	83	127	55	41
13	80	66	114	138	142	116	96	143	84	115	55	41
14	79	66	112	133	141	115	95	107	162	106	55	41
15	79	66	115	129	141	254	93	90	1240	99	54	41
16	79	67	115	128	137	477	90	83	899	94	54	41
17	77	67	116	128	135	299	85	78	228	89	52	41
18	76	68	118	129	132	176	79	77	133	84	52	41
19	76	68	119	130	131	132	75	73	130	81	51	41
20	79	71	116	132	131	116	72	80	640	79	50	41
21	76	1130	115	131	131	110	70	103	1030	76	50	41
22	71	4430	114	130	130	108	69	334	1010	74	48	41
23	69	4210	113	131	129	111	69	150	1170	72	48	41
24	66	800	112	133	129	118	68	180	1100	70	48	40
25	66	309	110	134	130	107	68	1880	1020	70	48	39
26	66	225	110	136	128	110	67	5490	904	68	47	39
27	65	179	109	137	126	300	67	5920	1080	67	47	39
28	65	157	110	137	122	471	66	2330	2580	65	47	39
29	65	147	111	137	---	304	75	1220	6600	64	47	39
30	64	141	131	135	---	145	100	1550	8780	63	46	39
31	63	---	142	134	---	116	---	1530	---	63	45	---
TOTAL	2443	13029	3694	4256	3838	5067	2646	27064	30579	16112	1650	1261
MEAN	78.8	434	119	137	137	163	88.2	873	1019	520	53.2	42.0
MAX	98	4430	142	146	152	477	110	5920	8780	5380	62	49
MIN	63	62	109	128	122	104	66	73	77	63	45	39
AC-FT	4850	25840	7330	8440	7610	10050	5250	53680	60650	31960	3270	2500

NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993#, BY WATER YEAR (WY)

MEAN	591	343	304	297	372	254	368	618	1405	656	297	295
MAX	2126	1805	1572	1361	2808	1015	1730	2514	8451	2687	1643	1699
(WY)	1986	1986	1992	1992	1992	1992	1992	1992	1987	1990	1990	1983
MIN	41.8	21.7	10.8	10.9	10.9	10.3	4.30	10.2	39.2	26.9	1.47	1.28
(WY)	1989	1983	1984	1983	1984	1984	1984	1984	1988	1986	1984	1984

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR			FOR 1993 WATER YEAR			WATER YEARS 1983 - 1993#		
ANNUAL TOTAL	414211			111639			483		
ANNUAL MEAN	1132			306			1261		
HIGHEST ANNUAL MEAN							82.3		
LOWEST ANNUAL MEAN							17600		
HIGHEST DAILY MEAN	8690			8780			Sep 21 1983		
LOWEST DAILY MEAN	62			39			Aug 29 1984		
ANNUAL SEVEN-DAY MINIMUM	62			39			Aug 25 1984		
INSTANTANEOUS PEAK FLOW				9120			18300		
INSTANTANEOUS PEAK STAGE				30.29			37.29		
ANNUAL RUNOFF (AC-FT)	821600			221400			349800		
10 PERCENT EXCEEDS	3130			455			1120		
50 PERCENT EXCEEDS	628			108			108		
90 PERCENT EXCEEDS	79			48			9.4		

Period of regulated streamflow.

NUECES RIVER MAIN STEM

459

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 summers of 1977, 1978, and 1981; minimum daily, 7.0°C Jan. 2, 3, 1979.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
OCT 13...	1200	63	640	8.0	23.0	6.3	7.4	87	1.4	K20	140	200
JAN 13...	1230	112	860	8.2	12.0	10	10.2	94	1.2	84	200	250
MAR 12...	1235	183	714	8.1	16.0	50	8.3	84	2.4	1700	7800	190
MAY 06...	1120	166	781	7.9	22.0	140	7.8	90	3.7	2500	1300	170
JUN 30...	1043	21100	152	7.5	27.5	120	4.5	57	2.6	500	1900	56
AUG 16...	1350	36	900	7.8	30.0	1.4	7.7	103	1.1	K140	K40	240

DATE	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	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)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT 13...	39	60	11	50	2	6.8	0	191	156	160	46	81
JAN 13...	48	73	16	84	2	5.3	0	244	200	200	89	110
MAR 12...	43	55	13	62	2	5.4	0	181	148	150	70	89
MAY 06...	34	49	11	85	3	10	0	164	134	130	95	99
JUN 30...	12	17	3.4	15	0.9	9.2	0	54	44	44	8.7	9.4
AUG 16...	65	70	16	90	3	8.8	0	215	176	180	110	120

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	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)
OCT 13...	0.20	11	370	361	0.065	0.072	0.020	0.020	0.092	0.092	0.080	0.080
JAN 13...	0.20	12	508	510	0.130	0.130	--	0.010	0.140	0.140	--	0.020
MAR 12...	0.10	8.0	379	393	0.170	0.170	--	0.030	0.200	0.200	--	0.070
MAY 06...	0.30	13	467	447	0.590	0.590	--	0.080	0.670	0.670	--	0.170
JUN 30...	0.10	12	111	103	0.150	0.150	--	0.030	0.180	0.180	--	0.080
AUG 16...	0.30	17	561	542	0.600	--	--	<0.010	0.600	0.600	--	0.130

NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued
(National stream-gaging accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	SEDI- MENT, SUS- PENDEED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUM- INUM, DIS- SOLVED (UG/L AS AL)
OCT 13...	0.42	0.50	0.120	0.090	0.080	0.090	0.25	16	2.7	98	20
JAN 13...	0.28	0.30	0.090	0.060	0.050	--	0.15	18	5.4	97	--
MAR 12...	0.53	0.60	0.160	0.080	0.070	--	0.21	95	47	97	20
MAY 06...	1.2	1.4	0.300	0.150	0.130	--	0.40	149	67	99	190
JUN 30...	0.72	0.80	0.320	0.320	0.290	--	0.89	312	17800	18	--
AUG 16...	0.37	0.50	0.110	0.120	0.110	--	0.34	18	1.7	100	<10
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
OCT 13...	97	<3	11	15	14	<10	1	<1	<1.0	390	<6
JAN 13...	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	87	<3	9	18	8	<10	<1	<1	<1.0	420	<6
MAY 06...	64	<3	140	33	1	<10	2	<1	<1.0	430	<6
JUN 30...	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	95	<3	5	43	15	<10	1	<1	<1.0	590	<6

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 upstream 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 cities of Alice, Beeville, and Mathis withdrew 6,540 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	-
Top of south spillway gates.....	94.0	241,200
Crest of spillways.....	88.0	137,100
Lowest gated outlet (invert).....	55.5	-

COOPERATION.--Capacity curve 5-C is from a January 1987 survey provided by the city of Corpus Christi. Figures for new capacity curve were used beginning Oct. 1, 1989. Elevation and content records were provided by the city of Corpus Christi.

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, 241,200 acre-ft June 30 to July 9 (elevation, 94.0 ft); minimum, 173,600 acre-ft May 18, Sept. 30 (elevation, 90.3 ft).

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

86.0	107,900	89.0	152,800	92.0	204,000
87.0	122,100	90.0	169,200	93.0	222,300
88.0	137,100	91.0	186,300	94.0	241,200

MUECES RIVER MAIN STEM

08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX--Continued

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 06:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216700	195700	205800	200700	198800	198100	200200	188500	211200	241200	225100	199800
2	215600	195200	205800	200700	198800	198200	199800	188000	209800	241200	224200	199300
3	214900	194500	205400	200900	198800	198400	199000	188000	209200	241200	223200	198200
4	214300	194000	205200	200700	201300	197700	198200	186400	208100	241200	222700	198100
5	214000	193100	205200	201500	201500	199100	199100	184900	208700	241200	221900	197900
6	213600	192200	205100	200700	201500	196800	198200	186100	208300	241200	220800	197300
7	213100	191500	204900	202500	201300	197300	197700	184700	206300	241200	220100	197000
8	212700	190300	204700	202200	201100	196600	200400	183300	206700	241200	218800	196500
9	211800	190300	204300	202200	200900	196300	198600	183300	206300	241200	218200	195600
10	211200	189900	204500	204300	201500	195900	197500	187100	206100	240500	217800	194900
11	210700	192900	204500	202500	201500	195700	196800	182400	206700	240100	217100	194300
12	210100	192700	204300	202200	201300	195700	195600	180200	206300	239300	216400	193300
13	209800	192400	203800	202500	201300	200700	198500	178700	206300	238900	215400	192200
14	209200	191900	204900	202000	200500	199300	196300	177100	209800	238200	214300	192000
15	208700	191500	205800	201800	200400	199500	196300	175900	210500	237800	213200	191500
16	208100	191300	205400	201300	200400	199500	195400	174700	212100	237000	212900	190600
17	208500	191000	205100	200900	201600	200400	194700	173900	213200	236100	212100	189200
18	208100	190800	204700	200700	200000	200400	194500	173600	213100	235700	211200	187800
19	207600	189800	204500	200900	200400	200400	194200	178800	214300	235500	210500	186800
20	206700	191200	204500	200900	199800	199300	193800	177600	215100	235300	209400	184900
21	205800	190600	204900	201100	199100	200600	193300	177000	214500	234400	208500	184200
22	204700	190600	204000	200900	199700	199500	192600	175900	218600	233200	207200	183100
23	203300	197500	202900	200600	199300	201300	190800	176300	220300	232300	206700	181600
24	201800	204900	202400	200200	199000	200400	189600	181100	221400	231300	205200	180000
25	200400	207000	201300	200400	198600	200000	189100	182100	223800	230400	204700	178300
26	198600	207200	201500	200400	198600	199500	189400	184500	225700	230200	204000	176800
27	197500	206500	201100	200000	198600	199100	188000	191900	227500	229800	203800	177100
28	197200	206000	201100	199300	198100	198600	187100	201300	228700	228900	202200	175100
29	196800	206000	200900	199300	---	199100	187000	205800	233600	228100	201800	174200
30	196800	206000	200600	200700	---	200600	188500	207600	241200	227200	200900	173600
31	195900	---	200900	199300	---	200400	---	209400	---	226000	200400	---
MAX	216700	207200	205800	204300	201600	201300	200400	209400	241200	241200	225100	199800
MIN	195900	189800	200600	199300	198100	195700	187000	173600	206100	226000	200400	173600
(↑)	91.6	92.1	91.8	91.7	91.7	91.8	91.1	92.3	94.0	93.2	91.8	90.3
(Φ)	-21900	+10100	-5100	-1600	-1200	+2300	-11900	+20900	+31800	-15200	-25600	-26800
CAL YR 1992	MAX	241200	MIN	189800	(Φ)	-32300						
WTR YR 1993	MAX	241200	MIN	173600	(Φ)	-44200						

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

(Φ) Change in contents, in acre-feet.

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, of which 16,656 mi² is above Wesley E. Seale Dam.

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

Water-quality records.--Chemical analyses: October 1947 to September 1991. Specific Conductance: October 1947 to September 1991. Water temperature: October 1947 to September 1991.

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.

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. Maximum stage since at least 1888, that of Sept. 24, 1967.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	148	220	113	93	83	95	137	148	698	7080	229	186
2	139	193	115	84	83	98	117	155	633	4910	229	182
3	131	175	109	81	96	98	107	402	208	1050	229	182
4	122	211	130	86	110	95	134	867	150	1070	229	182
5	133	161	156	85	117	93	111	995	174	843	228	182
6	213	151	138	94	115	87	98	779	163	343	229	182
7	200	144	130	117	111	88	131	1170	185	169	227	178
8	213	136	128	118	107	91	186	1120	144	155	227	182
9	188	129	137	119	107	141	175	1150	141	153	224	209
10	181	154	128	137	112	171	152	1250	159	153	216	222
11	177	167	123	119	126	209	145	1100	160	147	214	221
12	166	180	110	114	112	330	138	1070	157	146	214	182
13	158	161	103	110	106	160	138	855	156	144	213	184
14	149	151	144	108	100	119	159	448	363	144	214	183
15	143	150	139	106	99	116	156	420	169	142	214	203
16	142	148	128	102	119	126	131	342	175	143	211	436
17	145	144	128	99	107	134	122	201	154	144	218	587
18	139	139	122	99	104	130	118	182	150	144	224	593
19	188	139	122	109	95	131	128	215	149	154	222	594
20	510	155	131	110	91	141	166	199	123	189	222	618
21	614	163	345	99	93	138	257	180	171	179	220	627
22	640	394	673	97	134	131	365	169	129	180	220	625
23	612	628	656	94	219	196	383	245	116	208	210	637
24	645	323	345	124	282	311	397	234	90	203	237	606
25	641	124	62	178	209	366	419	167	95	198	397	598
26	623	133	63	258	102	339	425	162	96	137	425	612
27	313	125	57	247	96	180	278	184	135	158	378	428
28	144	113	79	154	93	139	140	186	220	241	204	180
29	134	113	71	90	---	147	144	222	734	260	196	179
30	131	121	90	97	---	159	151	308	4470	246	191	178
31	182	---	97	86	---	157	---	507	---	239	205	---
TOTAL	8264	5445	5072	3614	3328	4916	5708	15632	10667	19672	7316	10358
MEAN	267	181	164	117	119	159	190	504	356	635	236	345
MAX	645	628	673	258	282	366	425	1250	4470	7080	425	637
MIN	122	113	57	81	83	87	98	148	90	137	191	178
AC-FT	16390	10800	10060	7170	6600	9750	11320	31010	21160	39020	14510	20550

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

	MEAN	1337	449	202	313	351	297	462	1316	1383	869	557	1634
MAX	14850	4552	1871	4994	5165	4377	4639	10500	8204	10440	10050	24950	
(WY)	1972	1977	1977	1958	1958	1958	1977	1941	1987	1942	1971	1967	
MIN	55.3	31.0	27.9	28.1	24.3	31.0	37.3	39.3	43.7	67.0	41.6	44.0	
(WY)	1953	1940	1940	1940	1942	1948	1948	1948	1948	1951	1943	1945	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1940 - 1993

ANNUAL TOTAL	466299	99992	765
ANNUAL MEAN	1274	274	2167
HIGHEST ANNUAL MEAN			104
LOWEST ANNUAL MEAN			125000
HIGHEST DAILY MEAN	8000	Feb 7	7080
LOWEST DAILY MEAN	57	Dec 27	57
ANNUAL SEVEN-DAY MINIMUM	74	Dec 25	74
INSTANTANEOUS PEAK FLOW			7230
INSTANTANEOUS PEAK STAGE			25.47
INSTANTANEOUS LOW FLOW			138000
ANNUAL RUNOFF (AC-FT)	924900	198300	554100
10 PERCENT EXCEEDS	4130	593	1380
50 PERCENT EXCEEDS	547	158	126
90 PERCENT EXCEEDS	134	98	50

a/ Maximum stage since at least 1888.

NUECES RIVER BASIN

08211200 NUECES RIVER ABOVE CALALLEN, TX

LOCATION.--Lat 27°56'15", long 97°46'32", Nueces County, Hydrologic Unit 12110111, on right bank, at downstream end of bridge on Farm Road 666, 1.2 mi south of San Patricio, 5.5 mi upstream from Cayamon Creek, and 10.3 mi northwest of Calallen.

DRAINAGE AREA.--16,772 mi², of which 16,656 mi² is above Wesley E. Seale Dam.

PERIOD OF RECORD.--January 1966 to February 1967, March 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 27, 1992, at same site at datum 6.04 ft higher.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Discharges are not published for days when instantaneous discharge exceeds 2,950 ft³/s. Flow is largely regulated by Lake Corpus Christi (station 08210500).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 27.18 ft Mar. 29, 1992, at 1500 hours; minimum daily discharge, 83 ft³/s Feb. 7-9, 1966.

EXTREMES FOR WATER YEAR 1992.--March to September 1992: Maximum gage height during period, 27.18 ft Mar. 29 at 1500 hours; minimum daily discharge, 124 ft³/s Aug. 30.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 25.84 ft July 2 at 1200 hours; minimum daily discharge, 100 ft³/s Dec. 12, 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	e172	e108	e106	132	e122	174	174	635	---	246	217
2	119	e205	e110	e107	131	138	152	169	788	---	242	202
3	115	161	e105	e115	136	139	136	193	582	---	239	195
4	111	182	e117	e120	e157	138	136	590	253	1900	239	193
5	110	179	e141	e123	e175	136	146	991	202	1570	239	193
6	120	150	e130	125	e170	132	132	1120	201	1030	238	193
7	e160	140	e119	143	e162	129	128	1320	191	474	238	191
8	e200	132	e116	157	151	127	165	1400	202	266	238	184
9	e210	125	e121	156	e151	138	185	1360	178	213	237	191
10	e180	138	e117	165	155	172	178	1500	177	197	230	219
11	e170	156	e113	169	e156	206	164	1460	194	188	223	230
12	e160	160	e100	158	158	316	157	1360	194	180	218	219
13	e150	165	e100	154	e151	500	155	1260	231	175	219	191
14	e140	149	e121	151	e132	245	151	827	1940	170	216	189
15	e135	143	e122	150	e130	170	175	559	1580	167	216	182
16	e135	140	e116	146	183	153	158	471	876	164	215	250
17	e137	136	e116	144	153	159	143	355	490	160	216	502
18	e132	133	e108	142	e145	163	138	230	311	156	222	624
19	e139	140	e106	143	e126	157	132	289	262	155	224	643
20	e188	160	e118	152	e120	159	147	269	297	177	227	660
21	e500	148	e340	145	e121	167	175	231	559	191	230	686
22	e610	186	e645	140	e203	159	289	210	1240	186	232	691
23	e635	513	e631	140	218	173	388	241	747	191	232	696
24	e605	605	e324	152	e478	291	408	987	397	208	219	683
25	e635	272	e120	157	e323	367	435	577	241	206	302	668
26	e630	e140	e108	260	186	398	459	320	218	191	426	667
27	e613	e120	e106	296	e120	328	454	235	580	153	461	665
28	e334	e109	e104	289	e121	194	256	243	509	186	339	381
29	e134	e109	e106	171	---	169	170	270	533	251	240	218
30	e124	e114	e108	148	---	171	175	296	---	253	212	193
31	e121	---	e106	140	---	180	---	429	---	254	210	---
TOTAL	7877	5382	5002	4864	4744	6196	6261	19936	---	---	7685	11216
MEAN	254	179	161	157	169	200	209	643	---	---	248	374
MAX	635	605	645	296	478	500	459	1500	---	---	461	696
MIN	110	109	100	106	120	122	128	169	---	---	210	182
AC-FT	15620	10680	9920	9650	9410	12290	12420	39540	---	---	15240	22250

e Estimated

NUECES RIVER BASIN

465

08211200 NUECES RIVER ABOVE CALALLEN, TX--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	1700	---	---	344	154	160
2	---	---	---	---	---	---	1870	1150	---	300	155	160
3	---	---	---	---	---	---	---	870	---	266	155	157
4	---	---	---	---	---	---	2330	1080	---	261	166	155
5	---	---	---	---	---	---	1750	1330	---	e253	164	152
6	---	---	---	---	---	---	2410	1290	---	e221	184	150
7	---	---	---	---	---	---	---	1130	---	e206	545	170
8	---	---	---	---	---	---	---	824	---	e187	819	155
9	---	---	---	---	---	---	---	472	---	e187	878	148
10	---	---	---	---	---	---	2110	294	---	e180	603	144
11	---	---	---	---	---	---	1100	286	---	e170	280	141
12	---	---	---	---	---	---	768	286	---	e173	197	146
13	---	---	---	---	---	---	621	351	---	e181	182	148
14	---	---	---	---	---	---	502	529	---	e165	177	144
15	---	---	---	---	---	---	407	---	---	e161	172	143
16	---	---	---	---	---	---	350	2350	2220	e160	179	144
17	---	---	---	---	---	---	325	---	2300	e157	158	141
18	---	---	---	---	---	---	1710	---	---	e157	150	135
19	---	---	---	---	---	---	---	---	---	e158	146	130
20	---	---	---	---	---	---	---	---	---	e215	144	127
21	---	---	---	---	---	---	2300	---	---	e200	142	135
22	---	---	---	---	---	---	1740	---	---	e190	139	e260
23	---	---	---	---	---	---	1050	---	---	e180	187	e485
24	---	---	---	---	---	---	607	---	1890	e170	154	e540
25	---	---	---	---	---	---	597	---	1400	e160	138	e570
26	---	---	---	---	---	---	980	---	940	e155	135	e545
27	---	---	---	---	---	---	---	---	627	e160	132	e525
28	---	---	---	---	---	---	---	1560	548	e155	130	e295
29	---	---	---	---	---	---	---	1900	506	e150	127	141
30	---	---	---	---	---	---	---	2330	413	198	124	133
31	---	---	---	---	---	---	---	---	---	154	140	---
TOTAL	---	---	---	---	---	---	---	---	---	5974	7156	6579
MEAN	---	---	---	---	---	---	---	---	---	193	231	219
MAX	---	---	---	---	---	---	---	---	---	344	878	570
MIN	---	---	---	---	---	---	---	---	---	150	124	127
AC-FT	---	---	---	---	---	---	---	---	---	11850	14190	13050

e Estimated

NUECES RIVER BASIN

08211500 NUECES RIVER AT CALALLEN, TX

LOCATION.--Lat 27°52'34", long 97°37'32", Nueces County, Hydrologic Unit 12110111, at the Cunningham pumping station in Corpus Christi, 0.4 mi upstream from Calallen Dam, 0.5 mi northwest of Calallen, about 1.4 mi upstream from bridge on Interstate Highway 37, about 1.5 mi upstream from Missouri-Pacific Railroad bridge, and about 8 mi upstream from Nueces Bay.

DRAINAGE AREA.--16,920 mi², of which 16,656 mi² is above Wesley E. Seale Dam.

PERIOD OF RECORD.--October 1989 to current year (operated as a low-flow station only). Maximum annual gage height and discharge were published at this site from October 1983 to September 1989. Gage-height records collected from April 1920 to July 1950 were not published but are filed in the District Office in Austin. Records collected from August 1915 to September 1918 (referenced in WSP 1312) are unreliable and should not be used.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 0.84 ft above National Geodetic Vertical Datum of 1929. From Aug. 12, 1915, to Mar. 31, 1919, and Apr. 1, 1920, to July 31, 1950, nonrecording gage at same site and datum.

REMARKS.--Records fair. Discharges are not published for days when instantaneous discharge exceeds 2,570 ft³/s. There are numerous diversions above station for agricultural, municipal, and industrial supply. The cities of Corpus Christi, San Patricio, Robstown, and the Nueces River Water Control and Improvement District No. 3 have a combined withdrawal capacity of 205,500 gallons/per/minute. Satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,780 ft³/s June 11, 1987 (gage height, 9.25 ft), from extension of rating above 2,500 ft³/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,450 ft³/s July 3 at 0800 hours (gage height, 8.08 ft); no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	10	.00	.32	.59	1.1	6.7	5.9	269	1490	18	11
2	2.7	19	5.3	.45	3.1	.97	3.8	8.0	448	2060	4.5	6.7
3	.10	16	1.7	4.0	16	.32	.00	6.8	348	2380	6.8	8.0
4	.60	13	.59	.07	15	.00	.00	147	72	1810	12	6.7
5	.16	17	1.6	.00	14	.00	.00	565	27	1300	2.9	10
6	.00	9.4	8.6	.00	11	2.3	.00	876	16	857	3.9	5.1
7	2.2	6.1	14	.00	8.0	.03	.00	833	16	289	11	7.3
8	9.6	4.5	1.5	3.6	13	.00	.00	892	12	94	7.5	5.5
9	10	.00	8.5	13	8.5	.00	1.2	825	7.7	22	4.6	.02
10	12	14	3.8	8.6	19	.00	3.4	958	9.1	23	6.6	6.1
11	13	11	3.7	6.7	12	5.5	8.2	983	15	12	1.8	15
12	9.3	13	1.5	14	14	38	3.9	903	19	11	1.4	16
13	1.1	13	.78	4.0	6.3	159	2.5	850	49	1.5	3.3	6.8
14	4.6	17	5.4	8.0	11	80	.09	572	1030	.00	.00	5.5
15	.42	8.5	4.3	2.2	3.3	12	3.7	305	1280	.83	.04	.14
16	10	5.8	16	.68	1.1	5.7	3.2	210	814	.00	.11	1.0
17	11	5.1	8.2	8.7	10	4.0	1.9	103	345	.00	.00	101
18	4.4	8.0	5.8	1.1	3.8	5.7	.28	60	117	.00	.00	284
19	4.0	14	4.9	1.9	1.6	4.8	.00	64	94	.00	.00	247
20	19	24	3.5	4.0	.45	1.6	.00	75	215	.00	.21	282
21	164	12	9.0	3.9	3.6	20	.00	50	522	.00	6.7	284
22	292	12	.88	.54	.88	6.7	21	34	973	.00	6.5	303
23	301	145	331	7.3	.91	7.7	54	123	652	.00	2.0	295
24	292	270	349	9.8	25	36	98	583	231	.00	1.1	281
25	346	107	152	6.6	83	89	118	436	87	.35	3.5	269
26	325	13	17	18	30	94	108	188	43	2.5	82	290
27	326	9.8	1.3	44	14	113	136	41	180	.00	176	310
28	114	7.8	.44	54	4.3	23	65	67	282	.00	93	152
29	11	3.6	.00	35	---	12	9.2	97	156	.00	33	32
30	13	.56	.00	13	---	5.8	17	92	700	2.2	8.0	13
31	.88	---	.05	1.4	---	11	---	139	---	13	9.3	---
TOTAL	2307.56	809.16	1047.46	274.86	333.43	739.22	665.07	11091.7	9028.8	10368.38	505.76	3253.86
MEAN	74.4	27.0	33.8	8.87	11.9	23.8	22.2	358	301	334	16.3	108
MAX	346	270	349	54	83	159	136	983	1280	2380	176	310
MIN	.00	.00	.00	.00	.45	.00	.00	5.9	7.7	.00	.00	.02
AC-FT	4580	1600	2080	545	661	1470	1320	22000	17910	20570	1000	6450

CAL YR 1992 TOTAL --- MEAN --- MAX --- MIN --- AC-FT ---
WTR YR 1993 TOTAL 40425.26 MEAN 111 MAX 2380 MIN .00 AC-FT 80180

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.

PERIOD OF RECORD.--September 1972 to current year.

Water-quality records.--Chemical and biochemical analyses: July 1972 to August 1988. Pesticide analyses: July 1972 to July 1981.

GAGE.--Water-stage recorder. Datum of gage is 1.91 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversions above station. An undetermined amount of water from oil-field operations enter the stream upstream from station at various points.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 24.5 ft occurred in May 1968, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 23	2300	2,710	21.89	June 21	2300	4,600	24.58

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.4	1.5	1.5	1.5	1.4	1.6	27	43	6.3	2.8	2.4
2	2.7	2.4	1.5	1.5	1.4	1.4	1.6	14	17	5.2	2.8	2.5
3	2.7	2.4	1.5	1.5	2.2	1.4	1.6	6.8	8.1	4.6	2.8	2.4
4	2.6	2.4	1.5	1.5	3.7	1.4	1.6	3.8	5.6	4.4	2.8	2.3
5	2.5	2.4	1.5	1.5	2.7	1.4	1.5	2.7	4.3	4.0	2.8	2.3
6	2.5	2.5	1.4	1.5	10	1.4	1.6	392	3.9	3.8	2.8	2.2
7	2.5	2.6	1.4	1.6	4.2	1.4	2.0	294	3.2	3.6	2.7	2.2
8	2.6	2.6	1.4	1.6	2.6	1.4	1.4	91	3.0	3.4	2.7	2.2
9	2.6	2.6	1.5	1.6	2.1	1.4	1.9	22	2.8	3.6	2.6	2.2
10	2.6	8.3	1.5	1.6	2.2	1.4	8.9	19	2.8	3.5	2.6	2.1
11	2.5	18	1.5	1.6	38	1.4	3.9	126	5.7	3.3	2.6	2.1
12	2.4	20	1.5	1.5	17	1.7	2.4	45	2.2	3.1	2.6	2.1
13	2.4	8.8	1.5	1.5	5.4	3.15	1.8	9.4	36	3.0	2.6	2.1
14	2.4	4.6	1.5	1.5	3.1	101	15	4.6	151	2.9	2.6	2.1
15	2.4	3.4	1.9	1.5	2.5	34	9.9	3.3	227	2.9	2.6	1.9
16	6.1	3.0	2.0	1.5	2.1	10	3.7	2.8	96	2.9	2.6	1.9
17	6.5	2.8	2.1	1.5	1.7	4.7	2.1	2.4	20	2.9	2.6	2.3
18	8.1	2.8	2.0	1.5	1.5	3.4	1.8	7.7	8.4	2.9	2.6	2.2
19	4.8	2.3	1.9	1.5	1.4	2.8	1.7	247	132	2.9	2.6	2.2
20	3.3	5.5	1.8	1.5	1.4	2.4	1.6	112	2440	2.9	2.5	2.1
21	3.0	7.9	1.7	1.5	1.4	2.1	1.6	18	3550	2.9	2.5	2.1
22	2.8	1.9	1.6	1.5	1.4	2.0	1.4	6.3	3300	2.9	2.5	2.1
23	2.6	5.9	1.6	1.5	1.3	1.8	1.3	705	899	2.9	2.5	2.0
24	2.5	3.2	1.5	1.5	1.3	7.5	1.3	1890	194	2.9	2.5	1.9
25	2.5	2.2	1.5	1.5	1.3	6.7	1.3	533	74	3.0	2.4	1.8
26	2.5	1.8	1.5	1.5	1.3	2.2	1.3	143	4.5	2.9	2.6	2.0
27	2.5	1.6	1.5	1.5	1.2	7.4	1.3	197	34	2.9	5.6	4.2
28	2.5	1.5	1.5	1.5	1.3	3.9	1.3	291	17	2.9	5.4	7.2
29	2.5	1.5	1.5	1.7	---	2.7	2.1	188	11	2.9	2.6	4.7
30	2.5	1.5	1.5	1.6	---	2.1	44	144	7.7	2.9	2.4	2.9
31	2.5	---	1.5	1.5	---	1.8	---	103	---	2.8	2.4	---
TOTAL	95.3	289.2	49.3	47.3	194.6	853.5	173.1	5744.4	11363.5	104.0	86.7	74.7
MEAN	3.07	9.64	1.59	1.53	6.95	27.5	5.77	185	379	3.35	2.80	2.49
MAX	8.1	7.9	2.1	1.7	3.8	3.15	4.4	1890	3550	6.3	5.6	7.2
MIN	2.4	1.5	1.4	1.5	1.2	1.4	1.3	2.4	2.8	2.8	2.4	1.8
AC-FT	189	574	98	94	386	1690	343	11390	22540	206	172	148

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1973	47.7	355	1974	1.26	1991
1974	22.1	119	1982	1.45	1989
1975	15.1	181	1992	1.27	1991
1976	15.1	130	1984	1.53	1993
1977	25.1	238	1982	1.29	1975
1978	13.7	89.2	1990	.89	1988
1979	18.1	96.0	1990	1.05	1975
1980	38.7	185	1993	1.71	1978
1981	67.1	379	1993	1.28	1980
1982	29.1	339	1976	1.09	1977
1983	26.5	454	1980	1.07	1974
1984	52.7	228	1979	1.91	1986

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1973 - 1993

ANNUAL TOTAL	14420.57	19075.6	
ANNUAL MEAN	39.4	52.3	
HIGHEST ANNUAL MEAN			30.9
LOWEST ANNUAL MEAN			54.3
HIGHEST DAILY MEAN	1690	3550	3.03
LOWEST DAILY MEAN	.60	1.2	6160
ANNUAL SEVEN-DAY MINIMUM	.73	1.3	.27
INSTANTANEOUS PEAK FLOW			.35
INSTANTANEOUS PEAK STAGE			
ANNUAL RUNOFF (AC-FT)	28600	37840	12100
10 PERCENT EXCEEDS	48	43	29.37
50 PERCENT EXCEEDS	2.5	2.6	22370
90 PERCENT EXCEEDS	1.3	1.5	22
			2.4
			1.2

RIO GRANDE MAIN STEM

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 current year.

REMARKS.--Records of specific conductance and discharge for water year 1993 are given in International Boundary and Water Commission Water Bulletins Nos. 62 and 63.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CAC03)	HARD- NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
15...	1235	710	1170	7.8	18.0	270	94	78	18
NOV									
19...	0810	170	1900	8.0	--	420	170	120	29
DEC									
18...	0710	144	1970	7.9	3.5	420	160	120	29
JAN									
21...	0815	260	1480	7.7	4.5	320	110	96	20
FEB									
18...	0810	320	1410	7.8	9.0	290	98	84	20
MAR									
18...	0815	975	1000	7.9	24.5	230	100	69	15
APR									
22...	0830	968	950	7.8	16.5	220	60	64	15
JUN									
17...	0835	1070	1110	7.9	21.0	250	70	71	17
SEP									
16...	0820	957	1090	7.7	21.0	250	70	71	17

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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)
OCT									
15...	140	4	7.8	170	240	120	0.70	13	722
NOV									
19...	270	6	10	250	390	220	0.70	25	1220
DEC									
18...	280	6	10	260	420	230	0.60	25	1270
JAN									
21...	200	5	9.0	210	300	180	0.60	21	951
FEB									
18...	180	5	8.2	190	260	180	0.60	18	867
MAR									
18...	130	4	7.1	130	220	110	0.60	16	646
APR									
22...	120	4	6.9	160	200	86	0.60	11	601
JUN									
17...	140	4	7.2	180	240	100	0.60	15	697
SEP									
16...	140	4	6.7	180	220	97	0.70	14	673

RIO GRANDE MAIN STEM

469

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPECIFIC CONDUCTANCE (US/CM)	PH WATER WHOLE FIELD (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	COLIFORM, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS TOTAL (MG/L AS CaCO3)
DEC 02...	1110	1300	1380	8.5	12.5	45	12.8	125	4.8	K4	K6	310
JAN 26...	1105	797	1570	8.4	11.5	63	11.1	106	4.8	K2	K8	330
APR 27...	1025	663	1500	8.3	21.0	35	8.8	104	2.1	31	350	320
AUG 17...	1100	903	1260	8.3	26.5	41	9.3	122	0.8	K13	>2000	270
DATE		HARDNESS NONCARB DISSOLV. FLD. AS CaCO3 (MG/L)	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)	CARBONATE WATER DIS-IT FIELD (MG/L AS CO3)	BICARBONATE WATER DIS-IT FIELD (MG/L AS HCO3)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)
DEC 02...		140	88	21	170	4	6.2	6	189	164	300	160
JAN 26...		180	90	25	200	5	6.6	3	181	154	330	210
APR 27...		180	85	25	200	5	7.3	0	168	138	370	170
AUG 17...		130	75	19	160	4	6.8	0	165	136	330	120
DATE		FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
DEC 02...		1.1	17	862	864	0.055	0.052	0.010	0.020	0.072	0.072	0.010
JAN 26...		1.1	12	1010	969	0.063	0.063	--	0.020	0.083	0.083	--
APR 27...		1.3	17	1080	961	0.094	--	--	<0.010	0.094	0.094	--
AUG 17...		1.4	23	852	820	0.310	--	--	<0.010	0.310	0.310	--
DATE		NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, PHOSPHORUS TOTAL (MG/L AS P)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO TOTAL (MG/L AS P)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DIS-CHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	ALUMINUM, DIS-SOLVED (UG/L AS AL)
DEC 02...		<0.010	0.89	0.90	0.140	<0.010	<0.010	0.010	113	397	90	<10
JAN 26...		0.020	1.2	1.2	0.190	<0.010	<0.010	--	145	312	99	<10
APR 27...		0.010	0.69	0.70	0.070	<0.010	<0.010	--	78	140	99	<10
AUG 17...		0.020	--	<0.20	<0.010	<0.010	<0.010	--	168	410	97	<10

RIO GRANDE MAIN STEM

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
DEC 02...	70	<3	4	85	<1	10	<1	1	<1.0	1700	7
JAN 26...	68	<3	3	95	<1	10	2	1	<1.0	1900	<6
APR 27...	74	<3	<3	110	1	<10	1	1	<1.0	1900	<6
AUG 17...	94	<3	5	87	<1	10	<1	1	<1.0	1600	11

08407500 PECOS RIVER AT RED BLUFF, NM

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 the Delaware River, and at mile 411.2.

DRAINAGE AREA.--19,540 mi², approximately (contributing area).

WATER-DISCHARGE RECORDS

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.--Records good. Flow regulated by many reservoirs and diversion dams above station. There are diversions and ground-water withdrawals upstream from station for the irrigation of about 202,000 acres, 1959 determination. Several observations of water temperature were made during the year.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	235	87	90	97	68	57	45	42	44	47	136
2	68	225	85	92	97	55	52	43	38	50	45	109
3	70	140	86	91	97	52	52	50	40	53	42	84
4	67	106	86	89	95	51	49	51	41	47	43	68
5	69	98	87	86	93	47	50	45	36	48	51	64
6	84	97	89	91	93	52	51	46	37	44	55	59
7	83	97	91	126	93	54	55	46	38	35	79	57
8	79	97	89	137	93	55	58	45	41	31	107	65
9	81	95	89	137	93	49	55	43	43	33	63	49
10	576	95	89	139	94	52	52	43	39	39	53	49
11	681	95	87	139	94	53	59	41	50	45	49	47
12	691	93	86	129	93	48	58	42	44	47	51	51
13	706	92	86	125	91	45	51	42	41	41	47	52
14	710	90	87	121	93	43	56	42	43	48	41	60
15	633	91	86	113	94	43	58	50	45	52	39	60
16	337	91	86	108	94	51	75	52	41	51	39	58
17	149	91	86	105	97	52	72	45	44	369	47	54
18	115	91	87	104	126	59	60	41	43	633	52	62
19	102	91	87	106	116	60	53	43	64	627	52	69
20	93	91	87	109	96	54	50	50	49	645	53	60
21	93	93	87	111	94	54	55	54	63	644	52	55
22	93	95	87	103	95	56	41	60	56	653	57	57
23	91	97	86	100	88	55	70	70	51	661	50	61
24	95	90	86	98	82	61	60	66	49	325	46	59
25	91	89	85	95	80	61	48	57	45	135	50	60
26	91	87	84	94	80	59	44	48	40	88	54	63
27	86	86	84	96	78	60	47	49	44	76	47	56
28	107	86	85	96	77	55	51	51	43	65	48	55
29	117	86	86	97	---	52	55	56	53	50	52	55
30	105	86	87	98	---	50	61	47	54	51	56	53
31	107	---	87	98	---	55	---	47	---	49	63	---
TOTAL	6539	3096	2687	3323	2613	1661	1655	1510	1357	5779	1630	1887
MEAN	211	103	86.7	107	93.3	53.6	55.2	48.7	45.2	186	52.6	62.9
MAX	710	235	91	139	126	68	75	70	64	661	107	136
MIN	67	86	84	86	77	43	41	41	36	31	39	47
AC-FT	12970	6140	5330	6590	5180	3290	3280	3000	2690	11460	3230	3740

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1993, BY WATER YEAR (WY)

	MEAN	279	152	128	115	99.0	71.1	59.3	230	190	111	165	300
MAX	5255	1382	813	703	534	295	681	6954	3181	1273	4210	6521	
(WY)	1942	1942	1942	1942	1942	1942	1942	1941	1941	1941	1966	1941	
MIN	10.0	6.71	8.57	10.7	13.7	7.76	6.38	7.90	4.30	2.55	5.08	5.77	
(WY)	1965	1978	1978	1965	1965	1978	1978	1971	1990	1966	1964	1977	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1938 - 1993

ANNUAL TOTAL	61383												
ANNUAL MEAN	168												
HIGHEST ANNUAL MEAN										159			
LOWEST ANNUAL MEAN										1655		1941	
HIGHEST DAILY MEAN										19.2		1977	
LOWEST DAILY MEAN													
ANNUAL SEVEN-DAY MINIMUM													
INSTANTANEOUS PEAK FLOW													
INSTANTANEOUS PEAK STAGE													
INSTANTANEOUS LOW FLOW													
ANNUAL RUNOFF (AC-FT)	121800												
10 PERCENT EXCEEDS	397												
50 PERCENT EXCEEDS	87												
90 PERCENT EXCEEDS	75												

a/ From rating curve extended above 32,000 ft³/s, on basis of slope-area measurement of peak flow.

08407500 PECOS RIVER AT RED BLUFF, NM--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1937 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	COLI-FORM, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)	
OV 12...	1130	92	9710	8.3	15.5	7.0	3.5	--	10.1	106	22	K62	
EB 23...	0930	82	9280	8.2	15.0	10.5	14	695	10.5	107	K4	20	
APR 02...	1200	52	--	8.1	23.0	16.5	33	683	8.8	--	>600	K550	
JUN 01...	1100	42	10500	8.0	32.0	25.5	20	684	7.3	103	73	>2500	
29...	1130	52	11900	8.0	34.0	26.0	25	684	7.5	108	28	500	
DATE		HARD-NESS TOTAL (MG/L AS CAC03) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L) (00904)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39086)	ALKA-LINITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
NOV 12...	1900	1700	450	180	1200	12	32	164	0	134	126	1600	
EB 23...	2000	1800	480	200	1200	12	30	217	0	178	166	--	
APR 02...	--	--	--	--	--	--	--	207	0	170	150	2000	
JUN 01...	1900	1800	450	190	1600	16	46	146	0	120	127	2100	
29...	2400	2300	530	250	1700	15	51	110	0	90	95	2200	
DATE		CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)
NOV 12...	1900	0.80	3.1	5420	5460	0.880	0.920	0.060	0.060	0.940	0.980	0.040	
EB 23...	--	--	--	--	--	2.05	2.05	--	0.050	--	2.10	--	
APR 02...	3200	1.1	9.8	8880	--	0.780	0.780	--	0.050	--	0.830	--	
JUN 01...	2400	0.90	8.6	7610	6880	0.320	0.320	--	0.030	--	0.350	--	
29...	2300	0.50	5.8	8470	7100	--	--	--	<0.010	--	<0.050	--	
DATE		NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (70507)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 12...	0.020	1.7	1.7	2.6	0.070	0.010	0.010	0.020	<0.010	20	<100	<1	50
FEB 23...	0.070	0.53	0.60	2.7	<0.010	<0.010	<0.010	--	<0.010	--	--	--	--
APR 02...	0.150	0.75	0.90	1.7	0.120	0.020	0.020	--	0.020	<10	--	<1	<10
JUN 01...	0.100	0.70	0.80	1.2	0.060	0.020	0.020	--	<0.010	--	<100	<1	10
29...	0.090	1.6	1.7	1.7	0.090	0.030	0.030	--	0.020	750	<100	<1	560
DATE		LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
NOV 12...	70	20	--	--	2	2	<1.0	4500	51	39	9.7	95	
FEB 23...	--	--	--	--	--	--	--	--	--	92	20	54	
APR 02...	--	<10	--	--	<1	<1	<1.0	--	76	131	18	89	
JUN 01...	90	40	4	1	1	<1.0	7600	62	94	11	84		
29...	100	130	2	<2	1	<1.0	8600	45	141	20	95		

08408500 DELAWARE RIVER NEAR RED BLUFF, NM

LOCATION.--32°01'23", long 104°03'15", in NE1/4SW1/4SE1/4 sec.23, T.26 S., R.28., Eddy County, Hydrologic Unit 13070002, near center of channel at 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, 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.--Records good. One small diversion upstream. Several observations of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	2.5	3.8	3.8	3.6	.28	.24	.34	.06	10	.00	13
2	1.7	2.4	3.8	3.7	3.5	.24	.22	.18	.01	2.7	.00	7.4
3	1.7	2.4	3.7	3.8	2.6	.26	.20	.21	.00	.28	.00	3.4
4	1.7	2.5	3.7	3.8	2.6	.31	.20	.22	.00	.01	.00	1.7
5	1.7	2.7	3.8	3.7	.67	.27	.21	.11	.04	.00	.00	1.4
6	1.7	3.1	3.7	3.5	.65	.21	.20	.08	.45	.00	.00	1.2
7	1.7	3.0	3.7	3.6	3.2	.21	.21	.06	.45	.00	.00	1.1
8	1.7	3.1	3.9	3.5	3.4	.23	.24	.13	.38	.00	.00	1.0
9	1.8	3.2	3.8	3.5	3.5	.24	.25	.07	.31	.55	1.1	1.0
10	1.9	3.1	3.7	3.1	3.5	.24	.24	.09	.28	1.6	1.4	.94
11	1.9	3.1	3.7	3.0	3.3	.24	.24	.13	5.6	.15	.21	.96
12	2.0	3.0	3.8	3.1	3.1	.24	.23	.15	.31	.47	.01	.98
13	2.0	2.9	3.8	3.3	3.2	.24	.24	.25	.00	.65	.00	.93
14	2.0	3.0	3.7	3.7	3.2	.24	.44	.87	.00	.00	.00	1.1
15	1.8	3.1	3.7	3.8	3.4	.27	.46	.41	.00	.00	.00	1.1
16	1.7	3.3	3.7	3.8	2.9	.39	.34	.17	.00	.00	.00	.96
17	1.8	3.5	3.7	3.7	.54	.78	.32	.14	.00	.00	.00	.88
18	2.0	3.5	3.8	3.6	.34	2.7	.30	.13	.00	.00	.00	.79
19	2.1	3.4	3.9	3.9	.30	2.5	.25	.10	.00	.00	.00	.62
20	2.2	3.4	3.9	3.9	.39	.40	.26	.14	.00	.00	.00	.50
21	2.2	3.5	3.9	3.7	.41	.24	.30	.11	.00	.45	.00	.43
22	2.2	3.4	3.9	3.4	.36	.19	.28	.32	.00	.00	.00	.43
23	2.2	3.4	3.9	3.3	.34	.18	.24	.32	.00	.06	.00	.43
24	2.3	3.3	3.6	3.2	.34	.19	.23	.14	.00	.00	.00	.40
25	2.3	3.2	3.6	3.2	.36	.27	.19	.11	.00	.00	.00	.51
26	2.4	3.3	3.6	3.3	.41	.32	.21	.14	.00	.35	.00	.47
27	2.3	3.4	3.6	3.4	.36	.27	.24	.20	.00	.00	.00	.41
28	2.4	3.6	3.7	3.5	.28	.24	.26	.14	.00	.00	.00	.32
29	2.5	3.7	3.7	3.8	---	.25	.27	.12	.00	.04	.00	.23
30	2.7	3.8	3.7	3.7	---	.22	.52	.20	.00	.00	.00	.18
31	2.6	---	3.6	3.7	---	.22	---	.12	---	.00	114	---
TOTAL	62.9	94.8	116.1	110.0	50.75	13.08	8.03	5.90	7.89	17.31	116.72	44.77
MEAN	2.03	3.16	3.75	3.55	1.81	.42	.27	.19	.26	.56	3.77	1.49
MAX	2.7	3.8	3.9	3.9	3.6	2.7	.52	.87	5.6	10	114	13
MIN	1.7	2.4	3.6	3.0	.28	.18	.19	.06	.00	.00	.00	.18
AC-FT	125	188	230	218	101	26	16	12	16	34	232	89

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1993, BY WATER YEAR (WY)

	MEAN	30.9	3.63	3.30	3.40	3.19	2.82	5.98	10.0	19.1	14.8	23.0	23.1
MAX	748	18.9	7.99	8.57	8.77	9.44	135	233	281	166	326	303	
(WY)	1956	1979	1987	1987	1987	1987	1954	1941	1938	1952	1966	1978	
MIN	.000	.030	.17	.41	.12	.42	.23	.003	.000	.000	.000	.000	
(WY)	1952	1965	1966	1965	1966	1993	1968	1950	1950	1947	1983	1953	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1938 - 1993

ANNUAL TOTAL	1845.58	648.25	
ANNUAL MEAN	5.04	1.78	
HIGHEST ANNUAL MEAN			12.0
LOWEST ANNUAL MEAN			66.1
HIGHEST DAILY MEAN	154	114	22000
LOWEST DAILY MEAN	.94	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.98	.00	.00
INSTANTANEOUS PEAK FLOW		358	a/81400
INSTANTANEOUS PEAK STAGE		4.86	b/27.00
ANNUAL RUNOFF (AC-FT)	3660	1290	8690
10 PERCENT EXCEEDS	4.4	3.7	7.2
50 PERCENT EXCEEDS	3.4	.43	2.3
90 PERCENT EXCEEDS	1.7	.00	.00

a/ From rating curve extended above 6,500 ft³/s, on basis of slope-area measurements at gage height, 12.84 ft, 17.55 ft, and 27.0 ft.

b/ From floodmark

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, 157,100 acre-ft June 24-26 (gage height, 2,827.2 ft); minimum observed, 75,770 acre-ft Oct. 1 (gage height, 2,812.4 ft).

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

2,812.0	74,090	2,818.0	101,700	2,824.0	135,800
2,814.0	82,630	2,820.0	112,200	2,826.0	148,900
2,816.0	91,830	2,822.0	123,600	2,828.0	162,800

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144500	149800	151700	154600	159300	162200	151900	141600	132000	120700	115800	100700
2	144400	149800	151700	154900	159300	162200	151300	141400	131700	119900	115300	100800
3	144500	149900	151800	155200	159400	162300	150600	141300	131500	119200	114900	100900
4	144500	149900	152000	155300	159500	162400	149900	140900	131200	118500	114100	101000
5	144500	149900	152100	155400	159600	162500	149200	140400	131000	117800	113300	101000
6	144500	150000	152200	155600	159800	162500	148500	139900	130700	117000	113100	100800
7	144500	150000	152400	155700	159900	162500	148100	139600	130500	116000	112800	100600
8	143800	150100	152500	155900	160000	162600	147600	139300	130200	115100	112500	100400
9	144100	150200	152600	156000	160200	162600	147300	139000	129900	114200	112200	100200
10	144300	150200	152600	156200	160300	162700	146900	138700	129400	113300	111800	99940
11	144600	150400	152700	156300	160500	162700	146600	138300	129100	112400	111500	99690
12	145700	150500	152800	156400	160600	162800	146300	138000	128900	111700	111200	99430
13	146700	150600	152800	156600	160800	162600	146100	137700	128700	111300	110800	99180
14	147800	150700	152900	156700	160900	162500	145800	137400	128500	111200	110400	98930
15	149000	150800	153000	156900	161000	162500	145500	137100	128400	111100	110000	98730
16	149300	150900	153000	157200	161200	162500	145400	136700	127900	111000	109600	98580
17	149700	151000	153100	157400	161300	161700	145100	136400	127400	110800	109000	98580
18	149700	151200	153100	157600	161400	161000	144900	136100	127000	111500	108300	98430
19	149700	151300	153200	157900	161500	160400	144700	135800	126600	112200	107500	98280
20	149700	151500	153200	158100	161500	159800	144600	135500	126200	113000	106700	98130
21	149700	151600	153300	158300	161600	159100	144300	135100	125800	115100	105900	97930
22	149800	151700	153400	158400	161700	158500	144000	134800	125500	115800	105100	97680
23	149800	151900	153500	158600	161800	157800	143700	134500	125100	116800	104300	97430
24	149800	152000	153500	158700	161800	157200	143300	134100	124600	117100	103600	97180
25	149800	152200	153600	158800	161900	156600	143000	133900	124200	117300	102800	96930
26	149800	152100	153700	158800	162000	155900	142700	133600	117800	117500	102000	96680
27	149800	152000	153700	158900	162000	155300	142300	133300	117800	117300	101300	96630
28	149800	152000	153800	159000	162100	154700	141900	133000	117800	117100	100900	96580
29	149800	151900	153900	159100	---	154000	141800	132700	121800	116800	100600	96530
30	149800	151800	154100	159100	---	153300	141700	132500	121200	116500	100600	96480
31	149800	---	154300	159200	---	152600	---	132200	---	116200	100700	---
MAX	149800	152200	154300	159200	162100	162700	151900	141600	132000	120700	115800	101000
MIN	143800	149800	151700	154600	159300	152600	141700	132200	117800	110800	100600	96480
(†)	2826.14	2826.43	2826.79	2827.49	2827.90	2826.55	2824.92	2823.43	2821.60	2820.71	2817.80	2816.96
(Φ)	+4900	+2000	+2500	+4900	+2900	-9500	-10900	-9500	-11000	-5000	-15500	-4220
CAL YR 1992	MAX	157100	MIN	119500	(Φ)	-48420						
WTR YR 1993	MAX	162700	MIN	96480	(Φ)	+31300						

(†) Gage height, in feet, at end of month.

(Φ) Change in contents, in acre-feet.

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1938 - 1993	
ANNUAL TOTAL	26725		42875.44			
ANNUAL MEAN	73.0		117		149	
HIGHEST ANNUAL MEAN					1284	1941
LOWEST ANNUAL MEAN					13.1	1953
HIGHEST DAILY MEAN	454	May 23	502	Jul 2	23700	Sep 28 1941
LOWEST DAILY MEAN	11	Nov 13	.84	Jul 20	.00	Sep 9 1946
ANNUAL SEVEN-DAY MINIMUM	11	Nov 13	11	Nov 13	.00	Jul 7 1965
ANNUAL RUNOFF (AC-FT)	53010		85040		108200	
10 PERCENT EXCEEDS	171		363		380	
50 PERCENT EXCEEDS	20		70		35	
90 PERCENT EXCEEDS	13		12		5.1	

RIO GRANDE BASIN

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.

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, 32.0°C, Aug 4, 1991; minimum daily, 0.0°C, many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 15,800 microsiemens Jan. 4; minimum daily, 6,900 microsiemens Mar. 30.

WATER TEMPERATURE: Maximum daily, 27.5°C, July 19; minimum daily 3.5°C, Dec. 6.

WATER QUALITY DATA WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

ATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L) (00904)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	
CT	02...	1800	15	--	8.1	--	22.0	--	--	1900	--	480	
EC	29...	1440	14	16000	7.9	24.5	7.0	700	12.5	2500	2400	650	
EB	02...	1230	15	15100	8.1	14.5	9.0	703	11.2	2500	--	640	
AR	17...	0900	354	7900	8.2	7.0	10.0	712	10.5	2000	--	490	
AY	30...	1150	350	6900	8.3	23.5	14.5	685	9.6	2000	1900	490	
UG	27...	1350	148	8900	7.9	31.0	22.0	691	8.8	2100	2000	510	
UG	06...	1025	156	9580	7.9	28.0	24.5	692	8.4	2100	2000	520	
DATE		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
CT	02...	170	1400	14	31	--	--	--	1700	2100	0.70	10	--
EC	29...	220	2400	21	33	153	0	125	2300	3100	0.70	9.5	8790
EB	02...	230	2500	22	33	--	--	--	2300	3100	0.70	8.7	--
AR	17...	190	1300	13	35	--	--	--	1700	2100	0.80	11	--
AY	30...	190	1300	13	31	146	0	120	1700	2000	0.90	9.3	5790
UG	27...	190	1300	12	34	129	0	105	1900	2000	1.2	11	6010
UG	06...	200	1400	13	17	123	0	101	2000	1900	0.80	13	6110

08412500 PECOS RIVER NEAR ORLA, TX--Continued

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9080	11100	---	14800	---	11800	---	---	9400	9600	9990	10500
2	9200	13800	9800	14800	---	11500	8900	---	9200	9600	9980	11000
3	9330	13600	11900	15000	9400	12200	9300	---	9300	9500	9980	11900
4	12800	13700	14000	15800	9500	12300	9000	9200	9300	---	9980	11500
5	13200	13600	14300	15500	---	12300	9100	9200	9300	9700	9990	---
6	---	13800	13800	15200	9200	12000	8900	9200	---	9400	9990	10700
7	13400	13800	---	15000	9500	11500	9100	9300	9300	9700	9990	10400
8	8650	13900	14600	14900	9300	11700	9100	9400	9300	9500	10000	---
9	9210	---	14500	14800	9300	11300	9300	9300	9400	9500	10000	10900
10	---	14700	13200	14900	---	11400	9300	9300	9400	9800	9950	10900
11	9270	14300	13900	14200	9400	11300	9200	---	9400	9800	9960	10800
12	9580	14300	---	14200	9200	11200	8900	9300	9400	9800	9980	---
13	12700	14200	13900	14100	9200	11000	9200	9200	9400	9900	---	10900
14	13500	13700	13800	14200	8900	11300	9200	9200	---	9900	9990	11000
15	13700	14000	13700	14100	9000	11200	9200	9200	9400	10100	10000	10800
16	13800	---	14100	14200	9300	11300	9200	9200	9400	9800	---	11000
17	8750	14200	13700	14200	9600	8000	9400	9100	9300	9700	10000	---
18	9360	14300	13800	14200	9700	7200	9400	9200	9300	10100	9990	11100
19	9300	14300	13800	13900	9700	7200	---	8900	9300	10200	9990	10900
20	9490	14300	13600	14000	9600	7100	---	9200	---	10200	10000	10900
21	9460	14600	13900	14800	9700	7000	9400	9200	9300	---	9990	10500
22	10400	14600	13700	---	9600	7100	9300	8900	9300	9900	9980	10500
23	13500	15000	13800	15100	9200	7000	9200	9200	9500	9800	9990	10900
24	9940	15200	13800	15100	---	7000	9200	9200	9600	10100	10000	---
25	9490	---	13800	14800	9200	---	8500	9200	9700	9900	10000	---
26	9500	---	13700	14300	---	7200	9100	9300	9400	9800	10000	11000
27	9490	---	---	14100	8900	7100	8700	9200	9400	10100	9990	11100
28	9470	---	13600	14200	9000	---	8900	9300	9400	9700	10000	11100
29	9550	---	13600	14100	---	7300	9100	---	9800	10500	10000	11900
30	9570	---	15500	14100	---	6900	9300	9200	9800	10300	10000	10000
31	9640	---	14800	14500	---	---	---	9200	---	---	10000	---
MEAN	10500	14000	13700	14600	9340	9690	9130	9200	9410	9850	9990	10900
MAX	13800	15200	15500	15800	9700	12300	9400	9400	9800	10500	10000	11900
MIN	8650	11100	9800	13900	8900	6900	8500	8900	9200	9400	9950	10000

WTR YR 1993 MEAN 10900 MAX 15800 MIN 6900

FROM DAILY OBSERVER

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	17.0	---	9.0	---	9.0	---	---	20.0	25.0	25.0	23.0
2	20.0	15.0	7.0	8.0	---	10.0	13.5	---	20.0	24.5	25.0	25.0
3	18.0	13.0	8.0	9.0	9.0	11.0	16.0	---	26.0	25.0	25.0	25.5
4	22.0	11.0	8.0	7.0	8.0	13.5	14.0	18.0	20.0	---	27.0	24.5
5	18.0	9.0	4.5	9.0	---	13.0	12.0	21.0	23.0	---	25.5	---
6	---	9.0	3.5	9.0	7.0	---	13.5	17.0	---	25.0	26.0	24.5
7	18.0	9.0	---	10.0	7.0	12.0	13.0	17.0	22.0	25.0	25.5	24.0
8	18.0	11.0	5.0	10.5	11.0	13.0	13.0	19.0	24.0	25.0	25.5	---
9	16.0	---	7.0	9.0	10.5	13.0	13.0	18.0	21.5	26.0	25.0	24.0
10	---	14.0	8.0	7.0	---	14.0	14.0	18.0	---	24.5	26.0	23.5
11	18.0	16.5	7.0	5.5	13.0	12.0	15.0	---	23.0	25.5	25.5	23.5
12	18.0	12.0	---	5.0	12.0	11.0	15.0	18.0	24.0	25.0	25.0	---
13	17.0	10.0	---	6.0	10.0	6.0	14.0	18.0	25.0	25.0	---	23.0
14	20.0	10.0	5.0	6.0	10.5	9.0	16.0	---	---	26.5	25.0	22.0
15	22.0	12.0	4.0	8.0	12.0	11.0	14.0	19.0	---	26.0	25.0	19.0
16	17.0	---	5.0	8.0	10.0	13.5	14.0	20.0	22.0	26.0	---	21.0
17	21.0	---	4.0	9.0	8.0	10.0	20.0	20.0	22.0	25.0	25.5	---
18	17.5	13.5	5.0	10.5	5.0	10.0	16.0	20.0	23.0	26.0	25.5	23.0
19	---	12.0	6.0	9.0	5.0	11.0	---	19.5	24.0	27.5	25.0	20.0
20	---	11.0	7.0	8.0	10.0	12.0	---	20.0	---	27.0	25.0	20.0
21	---	11.0	8.0	8.0	11.5	12.0	15.0	20.0	23.0	---	25.0	22.0
22	---	9.5	8.0	---	11.0	12.0	16.0	21.0	24.0	25.0	25.5	23.0
23	---	9.0	8.5	10.0	11.5	12.0	16.0	22.5	24.0	25.0	26.0	23.0
24	---	9.0	7.0	7.0	---	14.0	16.0	20.0	26.0	26.0	26.0	---
25	---	---	7.0	6.0	10.5	---	18.0	21.0	24.5	26.0	25.0	---
26	18.0	---	7.0	5.0	---	15.0	18.0	23.0	25.0	25.0	---	23.0
27	17.0	---	---	7.0	11.0	13.0	22.0	20.0	25.0	27.0	25.5	20.0
28	17.0	---	9.0	9.0	11.0	---	18.0	24.0	23.0	---	24.5	19.0
29	19.5	---	11.0	8.5	---	13.0	17.5	---	24.0	26.0	---	25.0
30	20.0	---	12.0	7.0	---	14.0	21.0	20.0	24.5	26.0	25.0	24.0
31	20.0	---	13.0	8.0	---	---	---	21.0	---	---	23.0	---
MEAN	18.7	11.6	7.1	7.9	9.7	11.8	15.7	19.8	23.3	25.6	25.3	22.7
MAX	22.0	17.0	13.0	10.5	13.0	15.0	22.0	24.0	26.0	27.5	27.0	25.5
MIN	16.0	9.0	3.5	5.0	5.0	6.0	12.0	17.0	20.0	24.5	23.0	19.0

WTR YR 1993 MEAN 16.6 MAX 27.5 MIN 3.5

08446500 PECOS RIVER NEAR GIRVIN, TX

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.

DRAINAGE AREA.--29,560 mi² approximately, for contributing area of supplementary gage 7.2 mi downstream.

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 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.--No estimated daily discharges. Records good. Flow is largely regulated (70 percent) by Red Bluff Reservoir (station 08410000). There are also numerous diversions above station for irrigation.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1932, that of Oct. 5, 1941.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	33	32	34	42	39	21	11	27	13	34	17
2	37	32	33	34	41	39	20	23	28	13	34	28
3	35	31	33	33	40	38	20	29	28	12	34	27
4	32	30	33	33	40	38	20	29	27	12	34	28
5	30	30	32	33	40	38	21	30	27	12	33	28
6	30	30	32	34	40	37	25	36	26	12	31	22
7	30	32	32	34	39	37	26	48	24	12	25	20
8	30	34	34	34	39	38	26	42	22	26	26	19
9	29	34	35	33	39	40	27	26	30	28	27	18
10	29	35	36	34	40	40	26	21	34	24	25	17
11	30	34	36	37	40	40	26	20	31	21	22	16
12	31	34	35	39	39	39	25	20	28	18	20	16
13	31	33	34	39	39	39	25	19	25	16	17	22
14	30	32	35	39	39	39	27	15	26	15	17	22
15	31	31	35	40	40	39	24	13	31	15	19	23
16	32	31	36	39	40	39	24	11	31	14	19	16
17	31	31	35	40	39	39	23	9.8	30	17	17	15
18	31	32	34	41	39	39	21	8.9	29	17	16	16
19	33	33	34	41	39	39	18	9.2	28	17	16	17
20	34	33	34	42	39	38	16	25	25	18	15	18
21	33	33	33	42	39	38	14	25	29	19	14	17
22	32	33	33	42	38	39	13	25	42	32	15	16
23	31	33	33	42	38	40	13	30	36	28	14	15
24	30	34	33	41	38	39	13	34	30	26	14	15
25	29	33	33	40	39	45	13	36	27	24	14	15
26	28	33	33	39	39	57	13	32	23	23	13	15
27	30	33	33	39	38	49	13	30	21	38	15	17
28	33	32	33	40	38	36	12	29	17	40	15	23
29	33	32	33	41	---	30	12	27	16	35	13	21
30	34	32	33	41	---	26	12	26	14	34	14	18
31	34	---	33	42	---	23	---	26	---	34	15	---
TOTAL	981	973	1043	1182	1100	1196	589	765.9	812	665	637	577
MEAN	31.6	32.4	33.6	38.1	39.3	38.6	19.6	24.7	27.1	21.5	20.5	19.2
MAX	38	35	36	42	42	57	27	48	42	40	34	28
MIN	28	30	32	33	38	23	12	8.9	14	12	13	15
AC-FT	1950	1930	2070	2340	2180	2370	1170	1520	1610	1320	1260	1140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1993, BY WATER YEAR (WY)

	MEAN	217	114	72.7	68.1	57.5	46.9	37.7	48.9	110	49.9	35.5	69.5
MAX	8506	3007	1192	935	769	314	142	538	3556	813	376	1168	
(WY)	1942	1942	1942	1942	1942	1942	1957	1942	1941	1941	1941	1941	
MIN	9.52	13.0	15.7	18.3	14.5	16.7	11.3	7.62	2.84	3.86	4.13	6.05	
(WY)	1980	1974	1984	1984	1982	1966	1985	1985	1983	1964	1969	1983	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1940 - 1993

ANNUAL TOTAL	18207	10520.9	77.4
ANNUAL MEAN	49.7	28.8	
HIGHEST ANNUAL MEAN			1386
LOWEST ANNUAL MEAN			16.2
HIGHEST DAILY MEAN	863	May 25	19400
LOWEST DAILY MEAN	14	May 5	1.9
ANNUAL SEVEN-DAY MINIMUM	17	Apr 10	2.3
INSTANTANEOUS PEAK FLOW			20000
INSTANTANEOUS PEAK STAGE			20.49
INSTANTANEOUS LOW FLOW			1.9
ANNUAL RUNOFF (AC-FT)	36110	20870	56060
10 PERCENT EXCEEDS	59	39	90
50 PERCENT EXCEEDS	35	31	30
90 PERCENT EXCEEDS	25	15	11

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, and 15.0 mi upstream from confluence with the Rio Grande.

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)
DEC 03...	0945	214	4110	8.2	12.0	0.50	10.4	102	0.5	K10	K8	810
JAN 25...	1315	218	4330	8.2	12.5	0.50	10.3	102	0.5	<1	K2	960
MAR 01...	1350	218	4700	8.1	12.5	1.3	11.7	117	0.4	K4	K1	870
APR 26...	1248	157	4160	8.1	23.5	0.90	8.7	108	0.6	K2	78	820
AUG 18...	0918	109	3140	8.2	28.0	0.30	7.6	103	0.3	260	>1000	620

DATE	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FLD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FLD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
DEC 03...	640	180	86	590	9	9.9	0	202	166	570	900
JAN 25...	800	200	110	640	9	9.8	0	194	159	560	1100
MAR 01...	720	190	97	680	10	10	0	185	152	630	1100
APR 26...	690	180	88	590	9	10	0	155	127	540	970
AUG 18...	500	130	70	430	8	7.6	0	136	111	430	700

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
DEC 03...	0.90	14	2610	2460	0.700	0.730	<0.010	0.010	0.740	0.740	0.020
JAN 25...	0.90	12	2860	2730	0.610	0.610	--	0.020	0.630	0.630	--
MAR 01...	0.80	11	2980	2810	0.600	0.600	--	0.010	0.610	0.610	--
APR 26...	0.90	11	2710	2470	0.270	--	--	<0.010	0.270	0.270	--
AUG 18...	0.80	16	1940	1850	0.120	--	--	<0.010	0.120	0.120	--

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-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (MG/L AS P)	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)
DEC 03...	0.010	--	<0.20	<0.010	<0.010	<0.010	<0.010	7	4.0	80	<10
JAN 25...	0.030	--	<0.20	<0.010	<0.010	<0.010	--	3	1.8	82	<10
MAR 01...	0.030	--	<0.20	<0.010	<0.010	<0.010	--	2	1.2	53	--
APR 26...	0.050	0.35	0.40	<0.010	<0.010	<0.010	--	8	3.4	92	<10
AUG 18...	0.060	0.34	0.40	<0.010	<0.010	<0.010	--	3	0.88	79	<10

RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
DEC 03...	<100	<1	<10	80	10	6	<1	<1	<1.0	3300	28
JAN 25...	<100	<1	<10	90	10	7	<1	<1	<1.0	3600	31
MAR 01...	--	--	--	--	--	--	--	--	--	--	--
APR 26...	<100	<1	<10	90	10	5	<1	<1	<1.0	3400	33
AUG 18...	<100	<1	<10	70	<10	3	<1	<1	<1.0	2600	23

RIO GRANDE BASIN

481

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX
(Hydrologic bench-mark station)

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 microsiemens 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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC 01...	1220	392	417	8.2	15.5	1.5	11.6	121	0.5	K5	K4
JAN 27...	1010	370	416	8.2	13.0	1.2	10.1	100	0.5	K3	26
APR 28...	0840	329	404	8.3	21.0	1.6	8.7	102	0.6	K3	180
AUG 16...	1605	324	367	8.2	29.5	0.20	9.0	124	0.2	<1	>1000

DATE	HARD-NESS TOTAL (MG/L AS CaCO3)	HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS-IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS-IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS-TOT IT FIELD (MG/L AS CaCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
DEC 01...	210	15	61	13	8.6	0.3	1.3	0	233	191	9.6
JAN 27...	200	9	59	13	8.6	0.3	1.3	0	235	193	8.3
APR 28...	190	12	54	14	9.2	0.3	1.4	0	221	181	8.4
AUG 16...	170	11	48	13	8.4	0.3	1.3	0	199	163	8.1

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, 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, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE 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, NO2+NO3 DIS-SOLVED (MG/L AS N)
DEC 01...	15	0.30	14	267	246	1.78	1.78	<0.010	0.020	1.80	1.80
JAN 27...	14	0.30	14	226	243	1.77	1.77	--	0.030	1.80	1.80
APR 28...	15	0.30	14	262	232	1.38	1.38	--	0.020	1.40	1.40
AUG 16...	15	0.30	16	192	214	1.19	1.19	--	0.010	1.20	1.20

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 01...	0.010	<0.010	<0.20	0.010	<0.010	<0.010	<0.010	1	1.1	92
JAN 27...	--	0.020	<0.20	<0.010	<0.010	<0.010	--	13	13	49
APR 28...	--	0.030	<0.20	<0.010	<0.010	<0.010	--	16	14	55
AUG 16...	--	0.030	<0.20	<0.010	<0.010	<0.010	--	3	2.6	82

RIO GRANDE BASIN

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued
(Hydrologic bench-mark station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
DEC 01...	<10	110	<3	3	5	<1	<10	<1	<1	<1.0
JAN 27...	20	110	<3	15	6	<1	<10	<1	<1	<1.0
APR 28...	<10	120	<3	<3	5	<1	<10	<1	<1	<1.0
AUG 16...	<10	110	<3	6	4	<1	10	<1	<1	<1.0
DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	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/ Y-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ Y-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
DEC 01...	520	9	--	--	--	--	--	--	--	--
JAN 27...	520	10	2.2	<0.6	2.6	<0.6	2.0	<0.6	0.22	1.1
APR 28...	520	8	--	--	--	--	--	--	--	--
AUG 16...	470	10	1.5	<0.6	1.8	<0.6	1.4	<0.6	0.19	1.2

RIO GRANDE MAIN STEM

483

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 1993 are given in International Boundary and Water Commission Water Bulletins Nos. 62 and 63.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 21...	0650	614	993	7.8	23.0	230	110	65	16
NOV 18...	0745	547	1010	7.9	--	240	120	69	17
JAN 20...	0745	1130	1030	7.7	11.0	240	120	68	17
FEB 17...	0745	118	1120	7.8	13.0	250	130	70	19
MAR 18...	0750	1500	1100	7.9	13.5	260	140	73	19
APR 21...	0700	1830	1100	7.8	15.0	250	120	69	19
JUN 16...	0745	3110	1090	7.6	17.5	250	120	68	19
SEP 15...	0730	108	1110	7.5	14.5	260	140	70	20

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L)	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 21...	110	3	5.1	120	210	110	0.90	17	606
NOV 18...	120	3	5.3	120	220	120	1.0	18	641
JAN 20...	120	3	5.2	120	220	120	0.90	18	643
FEB 17...	130	4	5.2	130	230	140	0.80	18	689
MAR 18...	130	4	5.5	120	230	140	1.0	18	690
APR 21...	130	4	5.2	130	230	140	0.90	17	687
JUN 16...	130	4	4.9	130	230	130	0.90	18	679
SEP 15...	140	4	5.0	120	230	130	1.0	18	687

RIO GRANDE BASIN

08459000 RIO GRANDE AT LAREDO, TX

LOCATION.--Lat 27°29'45", long 99°29'30", Webb County, Hydrologic Unit 13080002, at gaging station 1.1 mi downstream from the highway bridge between Laredo and Nuevo Laredo, Tamaulipas, Mex., and 891.0 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--132,578 mi², United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: April 1952, July 1955 to September 1986, October 1989 to current year. Chemical, biochemical, and sediment analyses: January 1973 to September 1986. Pesticide analyses: March to May 1979. Sediment analyses: May 1973 to September 1986.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1954 to September 1986.

WATER TEMPERATURE: February 1973 to August 1976.

REMARKS.--Records of discharge for water year 1993 are given in International Boundary and Water Commission Water Bulletin Nos. 62 and 63.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,690 microsiemens June 1, 1963; minimum daily, 214 microsiemens Sept. 26, 1964.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
20...	1420	1400	844	7.8	26.5	240	110	70	16
NOV									
18...	1055	2000	909	7.9	18.0	250	120	75	16
DEC									
15...	1120	2000	929	7.9	13.0	260	120	75	17
JAN									
22...	0930	1100	936	7.6	13.0	280	140	83	18
FEB									
17...	1045	2010	992	7.7	3.0	260	130	72	19
MAR									
16...	0923	1980	1080	7.8	13.0	270	150	77	20
APR									
20...	0845	1600	1090	7.8	15.0	260	130	72	19
JUN									
15...	1235	4940	1070	7.5	26.0	250	120	69	19
JUL									
20...	1025	5330	1100	7.9	31.0	260	130	71	19
SEP									
14...	1200	1770	942	7.5	30.0	250	120	73	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 DIS FIX END FIELD CACO3 (MG/L)	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									
20...	82	2	3.5	130	170	87	0.60	15	523
NOV									
18...	97	3	4.0	140	180	95	0.70	16	565
DEC									
15...	100	3	4.1	140	190	110	0.70	13	593
JAN									
22...	89	2	3.5	150	190	100	0.50	8.0	580
FEB									
17...	110	3	4.2	130	210	110	0.60	9.9	612
MAR									
16...	120	3	4.7	130	220	130	0.80	13	661
APR									
20...	130	4	5.2	130	230	130	0.90	8.6	674
JUN									
15...	120	3	4.8	130	220	120	0.90	19	649
JUL									
20...	130	4	4.8	130	230	130	0.90	17	681
SEP									
14...	100	3	4.1	130	180	100	0.70	18	571

RIO GRANDE MAIN STEM

485

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 1993 are given in International Boundary and Water Commission Water Bulletins Nos. 62 and 63.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
15...	1130	3570	959	7.7	23.5	230	120	63	17
NOV									
16...	0930	530	960	7.9	18.5	230	120	66	17
DEC									
17...	1030	750	960	7.9	15.0	240	120	67	17
JAN									
22...	1100	883	969	7.7	15.5	240	120	68	16
FEB									
15...	1230	2010	1160	7.1	14.5	230	73	64	17
MAR									
15...	1130	1240	981	7.8	14.5	250	140	70	18
APR									
19...	1400	13600	980	7.9	19.0	230	110	66	17
JUN									
16...	1000	1590	1030	7.7	25.5	250	130	67	19
JUL									
19...	1130	3710	1040	7.5	25.5	240	130	65	19
SEP									
13...	1140	2650	1090	7.5	25.5	250	140	68	20

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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									
15...	110	3	5.2	110	210	110	0.80	14	596
NOV									
16...	110	3	5.3	110	210	110	0.80	15	602
DEC									
17...	110	3	5.2	120	210	110	0.80	15	604
JAN									
22...	110	3	5.3	120	210	110	0.80	16	607
FEB									
15...	130	4	5.3	160	210	110	0.70	15	646
MAR									
15...	110	3	5.2	110	210	110	0.80	16	606
APR									
19...	110	3	5.2	120	210	110	0.80	15	608
JUN									
16...	120	3	4.9	120	230	110	0.80	14	635
JUL									
19...	120	3	4.8	110	230	120	0.80	14	638
SEP									
13...	130	4	4.9	110	230	120	0.90	15	656

RIO GRANDE MAIN STEM

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 1993 are given in International Boundary and Water Commission Water Bulletins Nos. 62 and 63.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
16...	1000	4630	970	7.9	26.0	230	120	65	17
NOV									
18...	1045	380	1330	7.9	21.0	290	170	80	21
DEC									
17...	1100	681	1270	7.7	16.5	280	150	79	21
JAN									
19...	1130	4560	1010	7.7	18.0	240	130	70	17
FEB									
17...	1332	2260	1040	7.6	17.0	240	110	66	18
MAR									
15...	1330	1550	1130	7.9	18.0	270	140	76	19
APR									
14...	1230	11600	988	7.7	22.0	240	110	67	17
JUN									
15...	0915	3530	1060	7.6	28.0	250	130	68	19
JUL									
15...	0915	3230	1080	7.5	29.0	250	140	69	20
SEP									
15...	0950	1620	1200	7.4	27.0	270	150	72	21

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L)	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									
16...	110	3	5.1	110	210	110	0.80	14	598
NOV									
18...	170	4	5.7	120	250	190	0.70	15	805
DEC									
17...	160	4	5.6	130	260	170	0.70	14	788
JAN									
19...	120	3	5.3	120	220	120	0.70	16	639
FEB									
17...	120	3	5.4	130	220	120	0.70	15	641
MAR									
15...	140	4	5.3	120	240	140	0.80	14	710
APR									
14...	120	3	5.2	120	220	110	0.80	15	629
JUN									
15...	120	3	5.0	120	230	120	0.70	14	649
JUL									
15...	120	3	4.9	110	240	120	0.80	15	657
SEP									
15...	150	4	5.5	110	250	150	0.90	16	733

RIO GRANDE MAIN STEM

487

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.

REMARKS.--Records of specific conductance and discharge for water year 1993 are given in International Boundary and Water Commission Water Bulletins Nos. 62 and 63.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	
OCT 16...	1355	3600	1020	7.8	28.0	240	130	67	18	
NOV 18...	1415	720	1300	7.9	24.0	300	180	83	23	
DEC 17...	1445	1230	1300	7.9	18.0	310	180	87	23	
JAN 19...	1220	4060	1020	7.7	19.5	250	130	71	18	
FEB 17...	1454	2180	1130	7.8	18.0	260	130	71	19	
MAR 15...	1610	1620	1450	7.7	22.0	340	190	94	25	
APR 14...	1315	11500	995	7.8	22.0	240	110	67	17	
JUN 15...	1240	2630	960	7.5	28.0	230	110	68	15	
JUL 15...	1240	4520	1140	7.5	30.0	260	150	72	20	
SEP 15...	1320	1590	1240	7.6	29.0	280	170	76	23	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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 16...	120	3	5.2	110	220	110	0.80	15	621	
NOV 18...	160	4	5.6	120	270	180	0.70	15	812	
DEC 17...	160	4	5.7	130	280	180	0.70	14	831	
JAN 19...	120	3	5.2	120	220	120	0.70	16	642	
FEB 17...	130	4	5.2	120	250	130	0.80	16	695	
MAR 15...	180	4	5.7	140	300	190	0.70	17	899	
APR 14...	120	3	5.3	120	220	110	0.90	15	629	
JUN 15...	110	3	4.7	120	190	110	0.50	11	582	
JUL 15...	130	3	4.9	120	250	130	0.80	15	692	
SEP 15...	150	4	5.1	120	260	150	0.90	16	752	

RIO GRANDE MAIN STEM

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. 44.

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 specific conductance and discharge for water year 1993 are given in International Boundary and Water Commission Water Bulletins Nos. 62 and 63. 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 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, 2,550 microsiemens July 8; minimum daily, 591 microsiemens June 23.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	HARD-NESS TOTAL (MG/L AS CAC03)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT 14...	0808	1700	1020	7.8	25.5	240	130	67	18
NOV 18...	0850	406	1290	7.9	21.0	300	170	84	23
DEC 18...	0850	250	1730	7.9	16.5	400	240	110	31
JAN 22...	0850	968	1050	7.8	17.0	250	130	71	18
FEB 17...	0850	607	1210	7.5	18.5	290	160	82	21
MAR 19...	0900	99	1320	7.8	18.5	300	170	84	22
APR 21...	0830	3010	1050	7.8	21.0	250	120	69	18
JUN 18...	0740	597	990	7.6	26.5	220	110	63	16
JUL 22...	0845	2300	1130	7.8	28.5	260	170	70	21
SEP 15...	0900	1000	1320	7.8	25.5	290	170	77	23
DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	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 14...	120	3	5.1	110	230	120	0.80	15	643
NOV 18...	160	4	5.4	130	270	180	0.70	16	818
DEC 18...	220	5	6.3	160	350	270	0.70	15	1100
JAN 22...	120	3	5.2	120	230	120	0.70	17	656
FEB 17...	140	4	5.3	130	260	160	0.70	16	764
MAR 19...	170	4	5.5	130	260	180	0.60	14	812
APR 21...	120	3	5.1	120	230	120	0.80	15	652
JUN 18...	120	3	4.7	110	200	120	0.50	11	602
JUL 22...	130	3	5.0	95	250	130	0.80	15	679
SEP 15...	160	4	5.3	120	270	170	0.80	16	794

RIO GRANDE MAIN STEM

489

08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX--Continued

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. 1992	31074	1070	654	54900	130	11100	230	19300	250
NOV. 1992	11684	1350	825	26000	180	5660	280	8970	300
DEC. 1992	8704	1560	953	22400	220	5110	320	7620	340
JAN. 1993	638.2	1120	684	1180	140	242	240	413	260
FEB. 1993	471.1	1210	742	944	160	198	260	328	280
MAR. 1993	566.3	1260	770	1180	160	251	270	408	290
APR. 1993	2210	1050	642	3830	130	770	230	1350	240
MAY 1993	1727	1100	670	3120	140	636	230	1090	250
JUNE 1993	1795.5	1140	695	3370	150	705	240	1170	260
JULY 1993	1746.3	1270	774	3650	170	791	270	1260	290
AUG. 1993	1957	1120	686	3630	140	743	240	1270	260
SEPT 1993	971.5	1210	740	1940	160	408	260	675	280
TOTAL	63545.0	**	**	126000	**	26600	**	43800	**
WTD.AVG.	174	1200	735	**	160	**	260	**	270

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY EQUIVALENT MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	1440	1610	1230	1100	1210	1190	1040	1490	1750	1160	1150
2	1300	1640	1660	1140	1090	1170	1160	1070	1360	1870	1140	1130
3	1220	1450	1740	1160	1110	1120	1100	1070	1530	2110	1130	1210
4	1210	1320	1760	1270	1060	1070	1110	1060	1380	2210	1100	1160
5	1190	1320	1760	1350	1150	1080	1040	1090	1290	2350	1150	1180
6	1170	1310	1770	1170	1150	1100	1010	1060	1320	2390	1100	1210
7	1120	1270	1680	1150	1200	1120	1010	1070	1310	2460	1110	1200
8	1100	1200	1630	1170	1160	1190	1010	1090	1200	2550	1190	1160
9	1070	1190	1520	1160	1140	1340	1040	1070	1170	1570	1130	1140
10	1020	1140	1520	1180	1160	1390	998	1070	1150	1260	1090	1130
11	1050	1220	1490	1070	1140	1270	1050	1120	1130	1260	1140	1130
12	1020	1270	1520	1090	1130	1190	1050	1130	1130	1230	1120	977
13	1020	1360	1560	1120	1120	1560	1060	1180	1100	1230	1090	1150
14	1040	1390	1620	1100	1150	1190	1060	1200	1090	1190	1110	1230
15	1020	1390	1590	1080	1200	1120	1070	1140	1110	1090	1090	1240
16	1020	1310	1620	1090	1230	1210	1020	1180	1410	1150	1100	1350
17	1030	1350	1750	1130	1200	1260	1030	1150	1380	1090	1120	1170
18	1050	1310	1800	1130	1190	1150	1060	1160	1060	1150	1180	1180
19	1120	1290	1660	1140	1200	1140	1060	1120	1180	1100	1120	1170
20	1040	1300	1680	1100	1180	1640	1060	1130	1220	1190	1140	1290
21	1040	1340	1590	1100	1160	1450	1050	1110	1250	1130	1130	1450
22	1030	1570	1520	1070	1180	1340	1070	1050	1420	1120	1080	1350
23	1000	1700	1430	1050	1220	1360	1030	1080	591	1060	1070	1410
24	1080	1720	1400	1040	1460	1280	1040	1100	731	1160	1070	1500
25	1050	1690	1410	1030	1340	1330	1050	1070	853	1210	1080	1530
26	1050	1640	1430	1090	1540	1420	1060	1100	1140	1180	1130	1450
27	1080	1530	1390	1050	1300	1340	1070	1110	1450	1120	1220	1340
28	1080	1400	1490	1060	1260	1310	1040	1140	1450	1140	1150	1370
29	1190	1410	1400	1070	---	1380	1050	1210	1810	1140	1110	1430
30	1280	1540	1360	1150	---	1280	1060	1230	1830	1120	1150	1680
31	1280	---	1270	1090	---	1230	---	1290	---	1170	1150	---
TOTAL	34250	42010	48630	34830	33520	39240	31708	34690	37535	44750	34850	38067
MEAN	1100	1400	1570	1120	1200	1270	1060	1120	1250	1440	1120	1270
MAX	1300	1720	1800	1350	1540	1640	1190	1290	1830	2550	1220	1680
MIN	1000	1140	1270	1030	1060	1070	998	1040	591	1060	1070	977

CAL YR 1992 TOTAL 450841 MEAN 1230 MAX 1840 MIN 991
WTR YR 1993 TOTAL 454080 MEAN 1240 MAX 2550 MIN 591

08470400 ARROYO COLORADO AT HARLINGEN, TX

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 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CAC03)
OCT 14...	1300	172	4520	8.0	25.0	56	9.0	106	5.0	310	210	930
JAN 12...	1505	184	4720	7.8	14.0	57	9.5	93	4.3	320	1200	960
MAR 11...	1445	216	4480	7.9	23.5	73	8.7	104	5.1	5500	K72	920
MAY 05...	1515	346	3660	7.8	27.0	120	7.1	90	4.8	520	330	780
JUN 29...	1435	342	4120	7.8	32.0	100	7.0	97	3.6	K900	K340	870
AUG 17...	1158	216	4130	8.2	28.5	320	7.4	96	3.7	K600	K300	900
DATE	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD MG/L AS C03	BICAR-BONATE WATER DIS IT FIELD MG/L AS HC03	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CAC03	ALKA-LINITY WAT DIS FIX END FIELD CAC03 (MG/L)	SULFATE DIS-SOLVED (MG/L AS S04)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 14...	700	220	91	650	9	10	10	262	230	230	790	880
JAN 12...	720	230	93	670	9	10	0	300	246	250	810	950
MAR 11...	690	220	88	640	9	11	0	281	230	230	800	860
MAY 05...	580	190	72	490	8	51	0	239	196	200	670	680
JUN 29...	650	220	79	610	9	11	0	273	224	220	720	820
AUG 17...	690	210	90	590	9	9.6	0	258	212	210	860	850
DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
OCT 14...	0.90	25	2960	2820	2.99	2.93	0.110	0.070	3.00	3.00	0.040	0.040
JAN 12...	0.90	26	3100	2940	--	--	--	--	--	--	--	--
MAR 11...	0.80	25	2940	2810	4.72	4.72	--	0.180	4.90	4.90	--	0.020
MAY 05...	0.90	23	2380	2320	5.42	5.42	--	0.280	5.70	5.70	--	0.090
JUN 29...	0.70	26	2730	2640	3.50	3.50	--	0.100	3.60	3.60	--	0.030
AUG 17...	0.90	28	2820	2780	3.11	3.11	--	0.090	3.20	3.20	--	0.030
DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO TOTAL (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)	
OCT 14...	1.3	1.3	0.510	0.280	0.270	0.380	0.83	116	54	98	20	
JAN 12...	--	--	--	--	--	--	--	142	71	94	<10	
MAR 11...	0.98	1.0	0.530	0.230	0.260	--	0.80	179	104	96	<10	
MAY 05...	1.0	1.1	0.340	0.220	0.200	--	0.61	269	251	93	<10	
JUN 29...	0.57	0.60	0.230	0.190	0.190	--	0.58	688	635	40	--	
AUG 17...	0.47	0.50	0.230	0.200	0.180	--	0.55	253	148	88	<10	

RIO GRANDE BASIN

491

08470400 ARROYO COLORADO AT HARLINGEN, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
OCT 14...	<100	<1	<10	130	10	17	2	2	<1.0	4600	43
JAN 12...	<100	<1	20	140	40	17	3	2	<1.0	4600	40
MAR 11...	100	<1	<10	130	20	16	2	2	<1.0	4400	39
MAY 05...	<100	<1	<10	110	<10	15	2	1	<1.0	3700	32
JUN 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 17...	100	<1	<10	130	<10	15	1	1	<1.0	4300	34

RIO GRANDE MAIN STEM

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: 1966-69, 1970-75, 1977-83.

SUSPENDED-SEDIMENT DISCHARGE: February 1966 to September 1983.

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: 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 1992 TO SEPTEMBER 1993

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS TOTAL (MG/L AS CaCO3)	
OCT 14...	1000	429	1710	8.0	26.0	7.4	7.8	96	4.8	1300	160	430	
JAN 12...	1240	156	1810	7.7	14.5	27	8.8	86	4.2	500	K44	450	
MAR 11...	1120	118	1570	8.3	23.0	27	8.6	100	4.6	180	K56	360	
MAY 05...	1140	395	1100	8.2	26.0	40	8.1	101	2.8	680	180	250	
JUN 29...	0945	1160	872	7.7	29.0	150	5.7	74	2.0	4400	560	180	
AUG 17...	1015	218	1230	8.4	30.0	17	7.0	93	3.7	>5600	230	280	
DATE		HARD-NESS NONCARB DISSOLV FLD. AS CaCO3 (MG/L)	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)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3)	ALKA-LINITY WAT DIS FIX END FIELD CaCO3 (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
OCT 14...	210	120	32	190	4	6.7	13	246	224	190	320	240	
JAN 12...	260	120	36	210	4	6.9	0	235	193	200	320	280	
MAR 11...	200	99	27	190	4	5.8	5	187	161	160	320	220	
MAY 05...	120	71	18	120	3	5.3	7	143	128	130	230	120	
JUN 29...	68	55	10	100	3	6.0	0	135	110	110	150	120	
AUG 17...	150	77	22	140	4	5.8	0	162	132	130	260	150	
DATE		FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	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)
OCT 14...	0.70	18	1070	1060	--	--	0.010	<0.010	<0.050	<0.050	0.030	0.010	
JAN 12...	0.70	13	1180	1100	0.100	0.100	--	0.020	0.120	0.120	--	0.270	
MAR 11...	0.70	16	970	977	--	--	--	0.020	--	<0.050	--	0.020	
MAY 05...	0.80	14	680	659	0.130	--	--	<0.010	0.130	0.130	--	0.050	
JUN 29...	0.40	12	524	525	0.590	0.590	--	0.070	0.660	0.660	--	0.030	
AUG 17...	0.80	16	782	753	--	--	--	<0.010	--	<0.050	--	0.020	

RIO GRANDE MAIN STEM

493

08475000 RIO GRANDE NEAR BROWNSVILLE, TX--Continued
(National stream-quality accounting network)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO TOTAL (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	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)
OCT 14...	0.87	0.90	0.120	0.020	0.020	0.050	0.06	28	32	97	<10
JAN 12...	1.0	1.3	0.160	0.040	0.020	--	0.06	56	24	99	--
MAR 11...	0.88	0.90	0.140	0.030	<0.010	--	--	56	18	100	<10
MAY 05...	0.85	0.90	0.170	0.050	0.030	--	0.09	89	95	100	<10
JUN 29...	0.27	0.30	0.060	0.050	0.060	--	0.18	254	796	97	--
AUG 17...	0.38	0.40	0.040	<0.010	<0.010	--	--	38	22	100	<10
DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	COBALT, DIS- SOLVED (UG/L AS CO)	IRON, DIS- SOLVED (UG/L AS FE)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	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)
OCT 14...	120	<3	<3	56	3	<10	1	<1	<1.0	1900	<6
JAN 12...	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	110	<3	<3	55	2	<10	<1	<1	<1.0	1700	<6
MAY 05...	95	<3	12	44	1	10	1	<1	<1.0	1200	<6
JUN 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 17...	98	<3	5	49	3	<10	1	<1	<1.0	1400	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 1993

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† 1959-93	10-20-92 12-15-92 04-08-93 06-02-93 07-29-93 09-16-93	17.3 16.8 16.5 16.1 13.7 13.0
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, 1958-93	03-08-93 05-11-93 07-01-93 08-25-93 09-08-93	36.4 39.6 37.6 29.0 34.5
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, 1959-93	10-27-92 12-08-92 02-02-93 03-30-93 08-24-93	10.0 10.7 11.3 11.6 7.33
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, 1959-93	01-28-93 03-16-93 05-12-93 06-30-93 08-11-93 08-25-93	31.6 27.9 29.0 26.8 24.9 24.0
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, 1959-93	01-28-93 03-16-93 05-12-93 06-30-93 08-11-93 08-25-93	21.4 22.5 21.4 20.0 21.7 19.2
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	1919-93	10-09-92 06-03-93 09-23-93	6.60 7.77 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	1944-93	11-17-92 01-20-93 03-19-93 05-13-93 09-01-93	73.8 85.4 109 91.9 62.3
08177818	San Antonio Springs at San Antonio, Tex.	Lat 29°27'56", long 98°28'04", Bexar County, just below Hildebrandt Street in San Antonio.	--	1951-52, 1959-62, 1972, 1974-77, 1979-93	10-27-92 12-22-92 02-18-93 04-08-93 04-08-93 05-10-93 06-29-93 09-01-93	110 168 165 119 121 136 137 8.07
08178090	San Pedro Springs at San Antonio, Tex.	Lat 29°26'42", long 98°30'06", Bexar County, at San Pedro Park in San Antonio.	--	1933-35, 1951-52, 1958-61, 1966, 1971, 1974-77, 1979-93	12-22-92 02-18-93 05-11-93 06-10-93 06-30-93 07-30-93 09-02-93	21.7 19.1 16.8 17.2 17.2 10.4 6.60

See footnotes at end of table.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record station during water year 1993—Continued

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
Nueces River Basin						
06204000	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 southeast of Uvalde.	a	1935-65† 1966-93	11-17-92 01-21-93 03-09-93 05-12-93 06-30-93 08-25-93	58.0 61.4 58.7 71.4 55.8 34.2
Rio Grande Basin						
06425500	Phantom Lake Spring near Toyahvale, Tex.	Lat 30°09'15", 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† 1967-93	10-01-92 12-02-92 01-20-93 03-23-93 05-19-93 07-15-93	6.66 5.37 4.93 4.46 4.66 2.68
06427000	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† 1941-66, 1966-93	10-01-92 12-02-92 01-20-93 03-23-93 05-19-93 07-15-93	4.18 4.51 4.27 4.45 4.62 4.06
06456300	Las Moras Springs at Brackettville, Tex. b/	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, 1951-93	10-20-92 11-10-92 12-08-92 01-12-93 03-09-93 04-14-93 05-11-93 06-09-93 07-13-93 08-10-93 09-14-93	27.8 23.7 24.5 23.3 18.0 16.6 15.7 11.5 14.5 7.4 8.2

† Operated as a continuous-record station.

a Not applicable.

b Records 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 1993

Station name and number	Location	Drainage area (mi ²)	Period of record	Water Year 1993 maximum			Period of record maximum		
				Date	Gage height (ft)	Discharge (ft ³)	Date	Gage height (ft)	Discharge (ft ³)
Colorado River Basin									
Hords Creek at Coleman, Tex. 08142000	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. Highway 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† 1971-93	02-25-93	2.14	17.3	04-30-56	21.50	25,100
Boggy Creek at U.S. Highway 183, Austin, Tex. 08158050	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† 1987-93	06-26-93	10.29	1,700	05-24-81	16.85	5,760
Guadalupe River Basin									
Guadalupe River at New Braunfels, Tex. 08169500	Lat 29°41'52", long 98°06'23", Comal County, Comal Mills in New Braunfels and 0.4 mi upstream from IH-35.	1,652	1968-1902, 1915-27† 1974-93	05-05-93	15.11	11,100	09-10-21	28.60	56,600
Guadalupe River at Gonzales, Tex. 08173900	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.	--	1977-93	05-07-93	24.88	--	05-05-87	34.70	52,000
San Antonio River at Navarro Street, San Antonio, Tex. 08177900	Lat 29°25'50", long 98°29'24", Bexar County, at bridge on Navarro Street in San Antonio.	--	1973-93	05-05-93	*636.75	--	08-08-74	*642.77	--
San Antonio River at Dolorosa Street, 08177920	Lat 29°25'24", long 98°29'32", Bexar County, just downstream Dolorosa Street in San Antonio.	--	1980-93	02-10-93	22.34	--	09-06-80	*632.06	--
San Pedro Creek at Santa Rosa Street, San Antonio, Tex. 08178100	Lat 29°25'51", long 98°29'49", Bexar County, at bridge on Santa Rosa Street in San Antonio.	--	1973-93	05-05-93	*639.76	--	07-16-90	*648.38	--
Martinez Creek at Fredericksburg Rd., San Antonio, Tex. 08178350	Lat 29°27'22", long 98°31'04", Bexar County, at bridge on Fredericksburg Road in San Antonio.	--	1973-93	05-05-93	*683.20	--	09-27-73	*683.84	--
Alazan Creek at West Martin Street, San Antonio, Tex. 08178400	Lat 29°25'51", long 98°30'51", Bexar County, at bridge on West Martin Street in San Antonio.	--	1973-93	05-05-93	*641.63	--	08-03-92	*644.20	--
Apache Creek at S. Zarzamora Street, San Antonio, Tex. 08178450	Lat 29°24'47", long 98°31'42", Bexar County, at bridge on South Zarzamora Street in San Antonio.	--	1973-93	05-05-93	*629.49	--	09-27-73	*643.74	--
San Pedro Creek at Furnish Street, San Antonio, Tex. 08178500	Lat 29°24'22", long 98°30'38", Bexar County, at bridge on Furnish Street in San Antonio.	--	1973-93	02-10-93	*603.17	--	06-04-86	*616.28	--
San Antonio River at Ashley Street (Berg's Mill), San Antonio, Tex. 08178550	Lat 29°20'04", long 98°27'20", Bexar County, at bridge on Ashley Street in San Antonio.	--	1973-93	02-10-93	*520.21	--	07-16-90	*522.94	--
Nueces River Basin									
Rutledge Hollow at 7th Street, Poteet, Tex. 08207220	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	1979-93	05-25-93	*422.17	--	07-17-90	*424.89	--
Atascosa River at U.S. Highway 281, Pleasanton, Tex. 08207300	Lat 28°57'44", long 98°28'51", Atascosa County, bridge on U.S. Highway 281 in Pleasanton.	--	1973-93	06-28-93	*352.94	--	05-26-75	*350.82	--
San Fernando Creek Basin									
Tranquitas Creek at Kingsville, Tex. 08212300	Lat 27°31'33", long 95°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, 1984-93	06-21-93	2.05	--	08-10-80	6.88	--

* Elevation, in feet.

† Operated as a continuous-record station.

INDEX

	Page		Page
Access to WATSTORE data	14	Colorado River, near Cuthbert	26-30
Accuracy of the records	10	near Gail	25
Acre-foot, definition of	14	near San Saba	97-100
Adenosine triphosphate (ATP), definition of	14	near Stacy	77-80
Alazan Creek at West Martin Street, San Antonio	497	Colorado River Basin, crest-stage partial-record stations in	497
Algae, definition of	14	discharge measurements at miscellaneous sites	498
Algal growth potential (AGP), definition of	14	gaging-station records in	25-194
Apache Creek at South Zarzamora Street, San Antonio	497	low-flow partial-record stations in	495
Aransas River near Skidmore	411-412	Comal River at New Braunfels	258
Arrangement of records	11	Concho River, at San Angelo	70-71
Arroyo Colorado at Harlingen	490-491	at Paint Rock	72-74
Artificial substrate, definition of	20	Contents, definition of	15
Ash mass, definition of	15	Continuing-record station, definition of	11
Atascosa River, at Whitsett	456	Control, definition of	15
at U.S. Highway 281 at Pleasanton	497	structure	16
Bacteria, definition of	14	Cooperation	2
Barton Creek, above Barton Springs at Austin	495	Copano Creek near Refugio	407
at Barton Creek Blvd. near Austin	125	Cubic foot-per-second day, definition of	16
at Loop 360, Austin	132-135	Cubic foot per second (CFS, ft ³ /s), definition of	16
at Lost Creek Boulevard, Austin	126-131	Cubic foot per second per square mile, definition of	16
at State Highway 71 near Oak Hill	119-124		
Barton Springs at Austin	136-139	Data collection and computation	7
Beals Creek near Westbrook	37-43	presentation	8, 13
Bear Creek below Farm Road 1826 near Driftwood	166-169	Definition of terms	14-21
Beaver Creek near Mason	103	Delaware River near Red Bluff, NM	473
Bed load, definition of	19	Devils River at Pafford Crossing near Comstock	481
discharge, definition of	19	Diatoms, definition of	18
Bed material, definition of	15	Discharge, at low-flow partial-record stations	495-496
Biochemical oxygen demand (BOD), definition of	15	definition of	16
Biomass, definition of	15	measurements at miscellaneous sites	498
Blanco River, at Wimberley	262-265	Dissolved, definition of	16
near Kyle	266-267	Dissolved-solids concentration, definition of	16
Blue-green algae, definition of	18	Diversity index, definition of	16
Boggy Creek at U.S. Highway 183, Austin	497	Dove Creek at Knickerbocker	63
Bottom material, definition of	15	Dove Creek Spring near Knickerbocker	495
Bull Creek at Loop 360 near Austin	110-114	Downstream order numbering	7
		Drainage area, definition of	16
Canyon Lake near New Braunfels	234-254	Drainage basin, definition of	16
Cells/volume, definition of	15	Dry Frio River near Reagan Wells	428-431
Chemical oxygen demand (COD), definition of	15	Dry mass, definition of	15
Chlorophyll, definition of	15		
Choke Canyon Reservoir, near Three Rivers	453	Elm Creek at Ballinger	58
Outflow Works Channel near Three Rivers	454-455	E.V. Spence Reservoir near Robert Lee	50
Cibola Creek, at Schertz	498	Explanation of the records	7
at Selma	392		
near Boerne	391	Fecal coliform bacteria, definition of	15
near Falls City	393-396	Fecal streptococcal bacteria, definition of	15
Classification of records	11	Fifteenmile Creek near Weser	282
Clear Creek near Menard	498	Frio River, at Concan	424-427
Coleta Creek, at Arnold Road Crossing near Schroeder	283	at Tilden	450
near Victoria	291-292	below Dry Frio River near Uvalde	432
Coleta Creek Reservoir, (Condenser No. 1) near Fannin	286-287	near Derby	449
inflow (Guadalupe Diversion) near Schroeder	284		
near Victoria	288	Gage height, definition of	16
(Outflow) near Victoria	289-290	Gaging station, definition of	16
Color unit, definition of	15	Gaging-station records	25-494
Colorado River, above Lagrange	185	Garcitas Creek near Inez	218-219
above Silver	44-49	Green algae, definition of	18
at Austin	153-155	Giffin Springs at Toyahvale	496
at Bastrop	176-184	Guadalupe-Blanco River Authority Calhoun Canal	
at Colorado City	31-35	Flume No. 1 near Long Mott	402
at Columbus	188-189	Guadalupe River, above Comal River at New Braunfels	257
at Robert Lee	51-52	at Comfort	229-230
at Wharton	190-193	at Cuero	276-277
at Winchell	81-87	at Gonzales	497
below Austin	160-161	at Hunt	223-224
near Ballinger	53-57	at Kerrville	227-228
near Bay City	194		

	Page		Page
Guadalupe River, at New Braunfels	497	Medina Lake near San Antonio	327
at Sattler	255-256	Medina River, at Bandera	324-326
at Victoria	278-281	at La Coste	329-337
below New Braunfels	259	at San Antonio	362-370
near Spring Branch	231-233	near Macdonna	338
near Tivoli	403-406	near Somerset	349
Guadalupe River Basin, crest-stage partial-record stations in	497	Medio Creek at Pearsall Road at San Antonio	339-348
discharge measurements at miscellaneous sites	498	Metamorphic stage, definition of	16
gaging-station records in	221-406	Methylene blue active substance (MBAS), definition of	17
low-flow partial-record stations in	495	Micrograms per gram, definition of	17
Hardness, definition of	16	Micrograms per liter, definition of	17
Helotes Creek at Helotes	350-352	Middle Concho River above Tankersley	61
Hondo Creek, at King Waterhole near Hondo	443	Milligrams of carbon per area or volume per unit time	19
near Tarpley	439-442	Milligrams of oxygen per area or volume per unit time	19
Hords Creek at Coleman	497	Milligrams per liter, definition of	17
Hords Creek Lake near Valera	88	Miscellaneous sampling sites	11
Hueco Springs near New Braunfels	495	Mission River at Refugio	408-410
Hydrographs:		National Geodetic Vertical Datum of 1929 (NGVD), definition of	17
Colorado River near San Saba	98	National stream-quality accounting network (NASQAN),	
Colorado River near Stacy	78	definition of	17
Llano River at Llano	105	National Trends Network (NTN), definition of	17
Hydrologic bench-mark network	6,16	Natural substrate, definition of	20
Hydrologic conditions	2	Navidad River, near Hallettsville	203-204
Hydrologic unit	16	North Concho River, at Sterling City	66
Identifying estimated daily discharge	10	near Carlsbad	67-68
Illustrations	4, 5	North Fork Guadalupe River near Hunt	221-222
Instantaneous discharge, definition of	16	Nueces River, above Calallen	464-465
Introduction	1	at Calallen	466
Johnson Creek near Ingram	225-226	at Cotulla	420-421
Laboratory measurements	12	at Laguna	413-415
Lake Austin at Austin	115-118	below Uvalde	418
Lake Colorado City near Colorado City	36	near Asherton	419
Lake Corpus Christi near Mathis	461-462	near Mathis	463
Lake Nasworthy near San Angelo	65	near Three Rivers	457-460
Lake Texana near Edna	212-217	near Tilden	423
Lake Surveys (Water Quality):		Nueces River basin, crest-stage partial-record stations in	497
Austin, Lake, at Austin	116-118	gaging-station records in	412-466
Canyon Lake near New Braunfels	235-254	low-flow partial-record station in	496
Texana, Lake, near Edna	213-217	O.C. Fisher Lake at San Angelo	69
Town Lake at Austin	144-152	O.H. Ivie Reservoir near Voss	76
Lakes and reservoirs:		Olmos Creek, at Dresden Drive, San Antonio	293-295
Austin, Lake, at Austin	115-118	Onion Creek, at Buda	164-165
Canyon Lake near New Braunfels	234-254	at U.S. Highway 183 near Austin	174-175
Choke Canyon Reservoir near Three Rivers	453	near Driftwood	162-163
Colorado City, Lake, near Colorado City	36	On-site measurements and sample collection	11
Corpus Christi, Lake, near Mathis	461-462	Organic mass, definition of	15
E.V. Spence Reservoir near Robert Lee	50	Organism, definition of	17
Hords Creek Lake near Valera	88	Organism count/area, definition of	17
Medina Lake near San Antonio	327	Organisms count/volume, definition of	17
Nasworthy, Lake, near San Angelo	65	Oso Creek at Corpus Christi	467
O.C. Fisher Lake at San Angelo	69	Other records available	10
O.H. Ivie Reservoir near Voss	76	Parameter code, definition of	17
Red Bluff Reservoir near Orla	474	Partial-record station, definition of	11,17
Texana, Lake, near Edna	212-217	Partial-record stations, crest-stage	497
Town Lake at Austin	143-152	low-flow	495-496
Twin Buttes Reservoir near San Angelo	64	miscellaneous	498
Las Moras Springs at Brackettville	496	Particle size, definition of	17
Lavaca River, at Hallettsville	197-198	Particle-size classification, definition of	18
near Edna	199-202	Pecan Bayou near Mullin	89-91
Lavaca River basin, gaging-station records in	196-217	Pecos River, at Red Bluff, NM	471-472
Leona River spring flow near Uvalde	496	near Girvin	478
Leon Creek at I.H. 35 at San Antonio	353-361	near Langtry	479-480
Llano River, at Llano	104-105	near Orla	475-477
near Junction	101	Pedernales River, near Fredericksburg	107
near Mason	102	near Johnson City	108-109
Low-flow partial-record station, definition of	7	Percent composition, definition of	18
Martinez Creek at Fredericksburg Road, San Antonio	497	Periphyton, definition of	18
Mean concentration, definition of	19	Perdido Creek at Farm Road 622 near Fannin	285
Mean discharge, definition of	16	Pesticides, definition of	18
Medina Canal near Riomedina	328	Phantom Lake Springs near Toyahvale	496
		Phytoplankton, definition of	18

	Page		Page
Picocurie, definition of	18	Seco Creek, at Rowe Ranch near D'Hanis	448
Placado Creek near Placado	220	at Miller Ranch near Utopia	444-447
Plankton, definition of	18	Sediment, collection and examination	12
Plum Creek, at Lockhart	270	definition of	19
near Luling	271-272	Seven Hundred Springs near Telegraph	495
Polychlorinated biphenyls (PCBs), definition of	18	Shoal Creek at 12th Street, Austin	140-142
Primary productivity, definition of	18	Slaughter Creek at Farm Road 1826 near Austin	170-171
Publications of techniques of water-resources investigations	22-23	Sodium adsorption ratio (SAR), definition of	19
Radiochemical program	6, 19	Solute, definition of	20
Records, accuracy of	10	South Concho River at Christoval	59-60
arrangement of	11	South Llano River near Telegraph	495
classification of	11	Special networks and programs	6
explanation of	7	Specific conductance, definition of	20
of stage and water discharge	7	Spring Creek above Tankersley	62
of surface-water quality	11	Springs at Fort McKavett	495
other available	11	Stage-discharge relation, definition of	20
Recoverable from bottom material, definition of	19	Station identification numbers	7
Red Bluff Reservoir near Orla	474	Streamflow definition of	20
Redgate Creek near Columbus	186-187	Streamflow yearly summary	2
Remark codes	14	Substrate, definition of	20
Reservoirs. See Lakes and reservoirs.		Surface area, definition of	20
Return period, definition of	19	Surficial bed material, definition of	20
Rio Grande, at Fort Ringgold, Rio Grande City	486	Suspended (as used in tables of chemical analyses), definition of	20
at Foster Ranch near Langtry	469-470	Suspended, recoverable, definition of	20
at Laredo	484	Suspended sediment, definition of	19
below Amistad Dam near Del Rio	483	Suspended-sediment, concentration, definition of	20
below Anzalduas Dam	488-489	discharge, definition of	19
below Falcon Dam	485	load, definition of	19
near Brownsville	492	Suspended, total, definition of	19
near El Paso	468	Tanner spring near Telegraph	498
near Los Ebanos	487	Taxonomy, definition of	20
Rio Grande basin, gaging-station records in	468-492	Thermograph, definition of	21
low-flow partial-record stations in	496	Time-weighted average, definition of	21
Runoff in inches, definition of	19	Tons per acre-foot, definition of	21
Rutledge Hollow at 7th Street, Poteet	497	Tons per day, definition of	21
Sabinal River, at Sabinal	437-438	Total coliform bacteria, definition of	15
near Sabinal	433-436	Total (in tables of chemical analyses), definition of	21
Salado Creek, lower station at San Antonio	313-323	Total discharge	21
upper station at San Antonio	309-312	Total organism count, definition of	17
San Antonio River, at Ashley Street (Berg's Mill), San Antonio	497	Total, recoverable, definition of	21
at Doloresa Street, San Antonio	497	Total sediment discharge	19
at Goliad	397-401	Total sediment load, definition of	19
at Loop 410 at San Antonio	301-308	Town Lake at Austin	143-152
at Navarro Street, San Antonio	497	Tranquitas Creek at Kingsville	497
at Mitchell Street, San Antonio	298-300	Tres Palacios River near Midfield	195-196
at San Antonio	296-297	Tritium network	21
near Elmendorf	371-380	Twin Buttes Reservoir near San Angelo	64
near Falls City	381-390	Walnut Creek at Webberville Road, Austin	156-159
San Antonio Springs At San Antonio	495	Water quality yearly summary	3
San Casimiro Creek near Freer	422	Water temperature, explanation of	12
San Marcos River at Luling	268-269	Water year, definition of	21
San Marcos River springflow at San Marcos	260-261	WATSTORE data, access to	14
San Miguel Creek near Tilden	451-452	WDR, definition of	21
San Pedro Creek, at Furnish Street, San Antonio	497	Weighted average, definition of	21
at Santa Rosa Street, San Antonio	497	West Mustang Creek near Ganado	209-211
San Pedro Springs at San Antonio	495	West Nueces River near Brackettville	416-417
San Saba River, at Menard	92-93	Wet mass, definition of	15
at San Saba	95-96	Williamson Creek at Oak Hill	172-173
near Brady	94	WSP, definition of	21
San Saba Springs at San Saba	495	Zooplankton, definition of	18
Sandies Creek near Westhoff	273-275		
Sandy Creek, near Kingsland	106		
near Louise	205-208		

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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