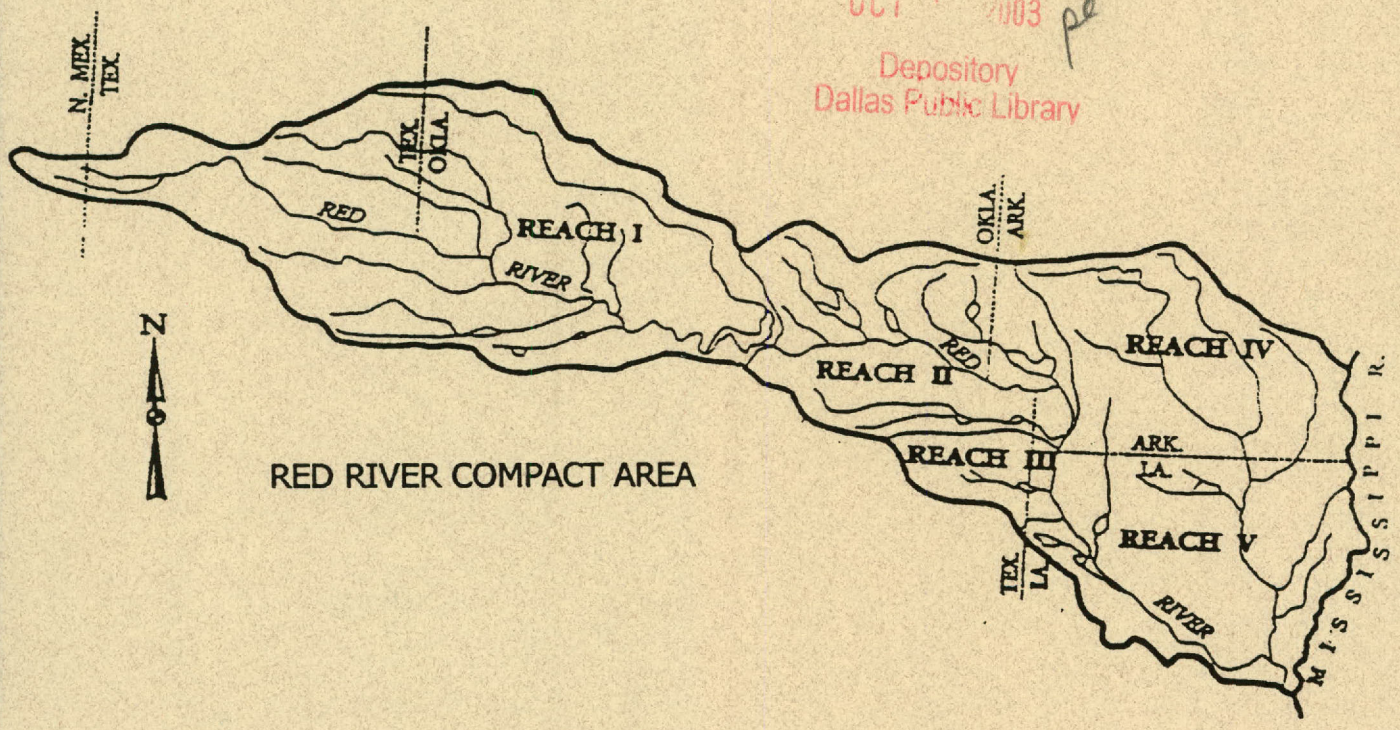
REPORT
OF THE

RED RIVER COMPACT COMMISSION
2002



RED RIVER COMPACT AREA

Published
June, 2003

REPORT
OF THE

RED RIVER COMPACT COMMISSION 2002

Arkansas **Oklahoma**

Louisiana **Texas**

Published
June, 2003

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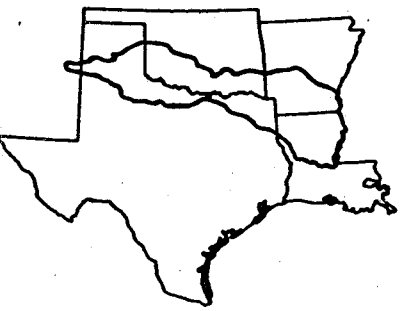

RED RIVER COMPACT COMMISSION

July 7, 2003

The President
United States of America

The Honorable Mike Huckabee, Governor
State of Arkansas

The Honorable M. J. "Mike" Foster, Jr., Governor
State of Louisiana

The Honorable Brad Henry, Governor
State of Oklahoma

The Honorable Rick Perry, Governor
State of Texas

Dear Mr. President and Governors:

The Red River Compact is an interstate agreement entered into by the States of Arkansas, Louisiana, Oklahoma and Texas with the consent of Congress dealing with the water resources of the Red River Basin.

Pursuant to Section 10.02 paragraphs (d) and (e) of the Red River Compact and as directed by the Red River Compact Commission (RRCC), the interstate body overseeing the Compact, the Compact at its twenty-second annual meeting submitted the report of the RRCC, together with an account of all funds received and expended in the conduct of its work for FY 2002 and a budget covering the anticipated expenses of the Commission for Fiscal Years 2001 through 2003.

The State of Arkansas hosted the twenty-second annual meeting on April 11, 2002, in Hot Springs.

Pursuant to the previous agreement to rotate the office of Vice-Chairman and Secretary in connection with the rotation of the annual meeting Host State, the State of Oklahoma accepted the responsibility for both offices for FY 2003. The Office of Treasurer remained with the State of Arkansas.

Sincerely,

Gordon W. Fassett

Gordon W. Fassett
United States Commissioner and Chairman
Red River Compact Commission
JRY/lab

0005

Red River Compact Commission Members

(Revised: 02/15/02)

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2002
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Red River Compact Commission
FY 00 – 2003 Budget
(July 1, 2000 through June 30, 2003)

Proposed: 4/10/02

	Actual		Budget	
	FY00	FY01	FY02	FY 03
Personnel Services, Office Expenses, Rent, Travel (Mtg. Expenses)	$946.88	$0.00	$500.00	$500.00
Audit	$275.00	$275.00	$275.00	$275.00
Postage, Stationery, & Office Supplies	$0.00	$0.00	$250.00	$250.00
Printing & Reports	$0.00	$2,123.20	$1,150.00	$1,150.00
Contingency	$0.00	$0.00	$0.00	$0.00
TOTAL	$1,221.88	$2,398.20	$2,200.00	$2,200.00

State Assessments

In accordance with Article IX, Section 9.04.C, of the Compact, the amount of such budget shall be borne equally by the signatory states in an equal amount. Therefore, the FY 02 assessment is $550.00 per state and the FY 2003 assessment is $550.00 per state.

Red River Compact Commission
FY 2002 – 2003 Budget
(July 1, 2002 through June 30, 2003)

Approved:

	FY 2002	FY 2003
Personnel Services, Office Expenses, Rent, Travel (Mtg. Expenses)	$1,000.00	$1,000.00
Audit	$275.00	$275.00
Postage, Stationery, & Office Supplies	$250.00	$250.00
Printing & Reports	$2,250.00	$2,250.00
Contingency	$0.00	$0.00
TOTAL	$3,775.00	$3,775.00

State Assessments

In accordance with Article IX, Section 9.04.C, of the Compact, the amount of such budget shall be borne equally by the signatory states in an equal amount. Therefore, the FY 2002 assessment is $550.00 per state and the FY 2003 assessment is $550.00 per state.

Timothy A. Bunch, CPA PA

Certified Public Accountants

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Jacksonville, AR 72078

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Fax (501) 982-8165

Red River Compact Commission
Little Rock, Arkansas

I have audited the accompanying statement of cash receipts and disbursements of the Red River Compact Commission for the period July 1, 2001 through June 30, 2002. The financial statement is the responsibility of the commission's management. My responsibility is to express an opinion on this financial statement based on my audit.

I conducted my audit in accordance with generally accepted auditing standards for cash basis statements. Those standards require that I plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. I believe that my audit provides a reasonable basis for our opinion.

The commission's policy is to prepare its financial statements on the basis of cash receipts and disbursements; consequently, certain revenue and related assets are recognized when received rather than when earned, and certain expenses are recognized when paid rather than when the obligation is incurred. Accordingly, the accompanying financial statement is not intended to present results of operations in conformity with generally accepted accounting principles.

In my opinion, the financial statement referred to above presents fairly, in all material respects, the recorded cash transactions of the Red River Compact Commission for the period ended June 30, 2002 on the basis of accounting described in the preceding paragraph.

Timothy A. Bunch, CPA PA
August 26, 2002

Red River Compact Commission
Statement of Cash Receipts
and Disbursements
July 1, 2001 through June 30, 2002

Red River Compact Commission
Statements of Cash Receipts and Disbursements
For the Period July 1, 2001 through June 30, 2002

Cash Balance, Regions Bank, July 1, 2001	$	14,176
Cash Receipts		
Member Assessments		2,200
Interest Income		147
Total Cash Receipts	$	2,347
Cash Disbursements		
Accounting		275
Report printing		2,123
Delivery		225
Meeting Expense		33
Total Cash Disbursements	$	2,656
Cash Balance, Regions Bank, June 30, 2002	$	13,867

Minutes of the

RED RIVER COMPACT COMMISSION
Twenty-second Annual Meeting

Hot Springs, Arkansas
April 11, 2002

The Twenty-second Annual Meeting of the Red River Compact Commission was called to order at 8:45 a.m., at the Arlington Resort Hotel & Spa, Hot Springs, Arkansas.

Representing the host State of Arkansas, and in the absence of the Federal Commissioner and Chairman, Vice-chairman Mitchell welcomed members of the Commission, staff and guests to Arkansas.

Commissioners in attendance: Don Mitchell and J. Randy Young, Arkansas; Arthur Theis and Zahir Bolourchi for Kam Movassaghi, Louisiana; Ken Fergeson and Duane Smith, Oklahoma; and William Abney and Jeffrey Saitas, Texas. See (Attachment A) for a list of attendees.

APPROVAL OF AGENDA

Mr. Smith made a motion to approve the agenda (Attachment B) with one addition and Mr. Fergeson seconded the motion. The addition concerned the appointment of a federal chairman. *The motion carried* unanimously.

APPROVAL OF THE MINUTES OF APRIL 23, 2001

Mr. Fergeson made a motion to approve the minutes (Attachment C) as presented and Mr. Theis seconded the motion. The motion carried unanimously.

REPORT OF THE CHAIRMAN

Mr. Young advised that there was no federal chairman and therefore no report.

REPORT OF THE SECRETARY-TREASURER

Earl Smith distributed (Attachment D) a report. He stated that fiscal year 01 started with a little over $12,300 in the treasury, inflows of membership dues and interest deposits were approximately $3,000; and expenses were $1,200. He noted that the printing for the annual report is approximately $2,000 and will not appear until 2002. The balance in the bank account is $12,774.76.

Mr. Young made a motion to accept the Secretary-Treasurer Report and Mr. Fergeson seconded the motion. The motion carried unanimously.

REPORT OF THE COMMISSIONERS

Arkansas - Commissioner Young distributed (Attachment E) the report. He stated Arkansas has two navigational feasibility studies in progress. (1) The Red River from Shreveport to Index and (2) the White River. Arkansas initiated a mitigation-banking program. A bank site has been purchased and wetlands restoration is underway with the sale of credits through the 404-permit area. There are a number of irrigation projects at various stages in Arkansas, both within and outside the compact area. The Walnut Bayou Project is within the compact area and USDA NRCS is the principal federal agency planning that project. The other project is the Southeast Arkansas Project in which Arkansas River water is being considered for use in the Bayou Bartholomew (Boeuf-Tensas Basin) watershed. This project is in the second year of a four-year feasibility study by the State of Arkansas, Boeuf-Tensas Irrigation District and the Corps of Engineers.

The Grand Prairie Demonstration Irrigation Project is in the construction phase (limited to on-farm features). There has been about $35,000,000 in contracts between USDA NRCS and local farmers. The local farmers pay about 40 plus percent of the on farm features. This project is unique in that the COE partnered with USDA and the local irrigation district to develop the plan. The USDA targeted the on farm conservation features while the COE targeted the supply, development and distribution aspects of the project.

The Bayou Meto Irrigation Project seeks to divert water from the Arkansas River into the Bayou Meto Basin. The plan for that project should be completed this fiscal year.

Interest in the Groundwater Management Program stems from the designation of critical groundwater areas, protection, and management activities. Significant progress has been seen in Union County in developing additional surface supplies in order to reduce dependence on groundwater while moving toward a sustained level of pumping from the Sparta Aquifer.

A designated critical groundwater area is "The Grand Prairie area of Arkansas" (East of Little Rock and South of Interstate 40). The Cache River Basin critical groundwater area (North of Interstate 40) is still in the evaluation stage.

Oklahoma - Commissioner Smith distributed a report (Attachment F.) He advised that Oklahoma successfully worked out a compact agreement on administration of water rights and water quality standards - "The Joint Tribal State Water Compact and Water Sale from Oklahoma to Texas." However, negotiations between Oklahoma and North Texas Water Alliance broke down. The primary reason for the break was due to requirements for drought protections, lake level protections, and the price of the water.

Commissioner Smith assured the Commission that Oklahoma would analyze and comply with the terms of the compact. He specified that there were questions with respect to letting water go to Arkansas.

Texas - Commissioner Abney stated he had three areas (Attachment G) to talk about. (1) Sweetwater Creek did not receive tax money therefore; a feasibility study could not be conducted. (2) Caddo Lake - The City of Marshall has had a permit to withdraw water from Caddo Lake for over fifty years. The City requested amendments to allow industrial use and to correct technical defects to an adjudication process from the 1980s. He stated he did not believe the Commission would be involved; however; the Caddo Lake question would persist. (3) Oklahoma's sale of water to Texas. He stated although the negotiations failed, a lot of progress was made in that Oklahoma solved internal issues with the Indian Tribes. The bottom line is Oklahoma has the water; Texas has the demand and basic economics evolve.

Commissioner Saitas reported that the Texas Water Development Board adopted the fifty-year state water plan. For the first time the State of Texas has in place a plan to address the needs for Texas over the next fifty years. The next stage is to implement the plan. Water availability models for 22 of the 23 river basins in Texas are completed and shall provide more current, effective and useful science in helping solve some of the water supply challenges. The Rio Grande model is the last to be completed and poses significant challenges, in particular identifying water supplies from Mexico.

Currently the State of Texas has identified 248 impaired watersheds and has sought and received finances to address the impaired water bodies. To date Texas has completed or begun the process to develop TMDL's on 72% of those impaired watersheds. Implementation plans are being developed and simple plans are tackled while more difficult plans are begun.

Texas has chosen to oppose EPA in the administration of the TMDL process in the State of Texas. The State of Texas has joined with the State of Montana to sue the federal government over EPA's recently approved rules. Texas disagrees with the role of the federal government in the implementation plans.

The State Environmental Agency is focusing on all permit processing. The aim is to process an application efficiently while enabling an applicant to track the process on the web.
Key issues to be brought before the legislature in January are:

1. Movement of groundwater - He noted that there were financially influential people that would develop resources in rural areas and enter into agreements with larger metropolitan areas to move that water. Additionally,

a majority of senators and representatives reside in large metropolitan areas to make a majority of votes in such an instance.

2. Instream permits - environmental groups applied for water rights permit and asked for every remaining gallon of water for instream uses (habitat, aquatic life, etc.) The permit application has been determined to be administratively complete.

3. Desalinization projects - Such projects are occurring in Freeport and El Paso.

Louisiana - Commissioner Theis stated that the Dam Safety Program has been approved by FEMA. Groundwater in North Louisiana is in limited supply and would be considered for determination of critical ground water areas, to develop, maintain and protect the water supply. Port Construction in Louisiana is a watershed resource development program to benefit the state and create jobs (Attachment H).

DISCUSSION OF APPOINTMENT OF A FEDERAL CHAIRMAN

Mr. Abney advised that the President had not appointed a federal chairman since 1994. The Federal Chairman position has been vacant since the resignation of General Witherspoon in 1997.

It was agreed it would be appropriate to have the position filled by a qualified person. Qualifications are to include a broad experience in water law and interstate problems. The qualified person should come from a state outside of the Red River Compact. The Corps of Engineers would continue as part of the Commission.

A possible applicant, who was previously a state engineer with Wyoming for ten years and is now in private business in Wyoming was found. Letters of support were written by Oklahoma, Arkansas and Texas and were forwarded to the White House.

Mr. Theis opposed the idea stating Louisiana operates on the riparian provision and does not have a state law for water rights, therefore some of the other state laws and water programs are not applicable to Louisiana. To date the compact has been relatively inexpensive for the four states. He was concerned that the compact was not designed to develop water rights and water management programs for the four states. The federal government may not assume all of the risks, responsibilities and costs for an outside person to manage the program and stay in contact with it. Until additional information is provided with respect to a third party, Louisiana would have reservations to such an appointment.

Mr. Young asked if there would be a need to pay a salary or a contract amount.

Mr. Abney advised that the federal chairman's salary is the responsibility of the United States and it is budgeted through the USGS budget. He noted that the commission was deficient in a central record keeping location, and this appointment person could keep such records.

Mr. Smith stated that the appointment of a federal chairman was not to affect the Commissions relationship with the COE. The COE status may be elevated to an official technical liaison to make it known that it is an intricate part of the Commission. The COE assisted the compact technically however has not helped in disputes over rules and regulations. A federal chairman appointment with experience in contracts and disputes between states can facilitate basic support between the states. He would oppose a federal chairman that would direct Oklahoma or Louisiana to administer water rights.

Mr. Theis stated the Commission has depended upon the legal committee to keep abreast of legal issues and to resolve disputes. He stated that Louisiana would defer action until more details are received.

Mr. Abney stated no action was to be made by the commission at this time. The Chairman serves at the pleasure of the president.

Gary Ethridge stated that the Federal Commissioner does not have a vote as the chairman. Rule 2.2 states the duties and 2.7 addresses the fact that whenever there is a change to the commander of the Lower Mississippi Valley Division the vice chairman is to immediately request the president appoint the new commander to address the commission.

Mr. Abney stated a change in the appointment process of a chairman is overdue and would benefit all.

Mr. Theis stated that it was never intended that the chairman direct the Red River Compact Commission between the four states. He stated he agreed with Commissioner Smith that in no way did the compact want to take action that would change the COE input or other federal government support by the NRCS, etc.

Mr. Fergeson stated he was reluctant to vote immediately. He would support a committee to determine if a change in the compact was needed for a chairman.

Mr. Young pointed out that such a committee would not preclude the president from appointing whomever he wants as the federal chairman.

The following topics were discussed: Shall the compact operate as it has in the past by trying to get the president to appoint the federal chairman from the Lower Mississippi Valley Division? Shall the compact seek a qualified person from outside the federal government?

Commissioner Thies made a motion to appoint a Special Committee (composed of members of each of the compact's committees to draw upon different expertise) with the responsibility of coming to the Commission with a recommendation on the duties of the chairman and Commissioner Young seconded the motion.

It was noted that the recommendations would then be assigned with the appropriate safeguards of concerns expressed. It was suggested that the Special Committee make a recommendation within two months.

Mr. Bo Bolourchi stated a wait of another year was not inappropriate to make sure everyone was pleased with the process before proceeding with the appointment. He asked if it was appropriate that each state unilaterally write a letter in regard to the appointment of a commissioner.

Ms. Janet Atwood stated that any rules that the committee proposes to further delineate the role of the federal chairman is an administrative type of rule change and it was not necessary for the Commission to wait to pass such rules until it meets next year. Further, the preparation of a job description does not require a modification of the compact. The legal committee would be careful to assure that the compact would envision the duties.

It was determined that the current vice chair would appoint the chairman of the Special Committee.

The motion carried unanimously.

REPORT OF COMMITTEES

Budget Committee - The Budget Committee recommendations (Attachment I) the actual expenses for the fiscal years 00-01 and a proposed budget for fiscal years 02-03, were distributed. Earl Smith advised that the Budget Committee recommended assessments remain the same as they were last year in the amount of $550 per state.

Mr. Smith made a motion to adopt the Budget Report and Mr. Young seconded the motion. The motion carried unanimously.

Legal Committee - The Legal Committee (Attachment J) assignments:

1. Sweetwater Creek Basin 1, Reach 1 Project. The tax election failed and there is currently no effort to further that project. It was recommended that monitoring continue.

2. Status of funding by Oklahoma legislation. As the Texas tax did not pass it was not necessary for Oklahoma to provide funding.

3. State laws and their effects on the Red River Compact Commission. Neither Arkansas nor Texas was in session. Louisiana did not have any activities that would impact the compact area. Oklahoma has several bills pending in the legislature but they change daily or are not far enough along to make a definite report.

Mr. Theis made a motion to approve the Legal Committee Report and Mr. Young seconded the motion. The motion carried unanimously.

Engineering Committee - The Engineering Committee (Attachment K) met and had several assignments.

1. Continue monitoring the proposed cutbacks of the gauging network. For several years cutbacks have been seen in the COE operating and maintenance budget that has resulted in decreased funding for gauging stations. It is believed this will continue with similar cutbacks in state budgets, thus reducing funds to the gauging network in the future. This impacts the assignment of drafting rules and regulations for two reaches (accounting procedures) assigned last year: the Ouachita Basin between Arkansas and Louisiana and the Little River Basin between Arkansas and Texas. The committee met twice in the past year to begin discussions on developing accounting procedures. The Committee recommends going forward with discussions next year. The committee did schedule another meeting in anticipation that it will be asked to continue this assignment. A meeting is scheduled to review draft rules and regulations of the gauging network coupled with anticipation of cutbacks.

2. Website - The Commission website is posted on the Oklahoma Water Resources website. It will possibly include reservoir site information from the COE along with the stream gauging information.

3. Drafting of the 2001 annual report has been accomplished.

4. The final assignment was to monitor changes and impacts of the Southeast Oklahoma Water Plan Developers to the Red River Compact and this information was provided in Oklahoma's Commissioner's Report.

Discussion followed and Earl Smith explained that the accounting for withdrawals and gauging stations is becoming more sophisticated via satellite transmission of data. There are rules and regulations in place on three of the reaches; however, they have not been activated.

Mr. Bolourchi made a motion to approve the Engineering Committee Report and Mr. Theis seconded the motion. The motion carried unanimously.

Environmental & Natural Resources Committee - Max Forbes advised that he was from the Louisiana Department of Environmental Quality and speaking for the Environmental and Natural Resource Committee (Attachment L) This committee met with the Engineering Committee April 10. The Commissioners handled a number of the topics discussed. The Committee looked at three areas:

1. Uses of the Waters of the Red and Ouachita Rivers
2. TMDL Activity
3. Other Concerns and Activities in the Red and Ouachita River Basins

The Committee proposes to put together a coordinated list of the uses of the two river systems to find out what is going on out there. One part will address water quality discharges, quantities of effluent discharge and the constituents of concerned discharge. The other part will address other areas such as navigation, recreation and commercial fishing.

TMDL activity in the Red and Ouachita Basins - it seems that the main stem segments of the Red River in Arkansas, Oklahoma and Texas do not appear on the impacted list. There are some tributaries that appear but not the main stem. The Red and Ouachita in Louisiana are on the impacted list. The TMDL for the Arkansas and Louisiana portions of the Ouachita are due in 2002.

Louisiana is gathering Red River data for a comprehensive report due in 2005. There have been a number of comments received on proliferation of merchant power plants. Louisiana has experienced some stagnation of water on the Red River and tributaries during low flow periods. The Ouachita is favorable in that operation changes have resulted in higher DO values. The Red River chlorides maximum is 280 and the average is 94; the chloride alleviation upstream has been effective.

Mr. Theis made a motion to approve the Environmental and Natural Resources Report and asked that typed copies of all Committee Reports be provided to the Secretary as soon as possible. Mr. Bolourchi seconded the motion. The motion carried unanimously.

FEDERAL/STATE AGENCY REPORTS

Informational activity reports were presented by representatives of the following federal and state agencies. Reports were given by:

US Bureau of Reclamation - No Report
Col. Thomas A. Holden, Jr., US Army Corps of Engineers, Mississippi Valley Division - Elizabeth Beat, USDA Natural Resources, Southwest Division
Kalven Trice, USDA Natural Resources, Arkansas
Shane Barks, USGS, Arkansas District
Robert Blazs, USGS, Oklahoma District
US Fish and Wildlife - No Report

UNFINISHED BUSINESS - None

NEW BUSINESS

Assignments & Appointments to Committees

Jeff Saitas made a motion to formalize the constitution of the special committee and report back to the Commission monthly, beginning May 31, 2002. Randy Young seconded the motion.

Texas	Jane Atwood and Herman Settemeyer
Arkansas	Mark Bennett and Earl Smith
Oklahoma	Dean Couch and Mike Mathis
Louisiana	Gary Ethridge and Bo Bolourchi

The motion carried unanimously. Don Mitchell appointed Herman Settemeyer to chair the committee. It was suggested a document (Attachment M) be prepared by July 31.

Budget - Engineering - Young made a motion to continue the standing assignments of the Budget Committee, report a proposed budget at the next annual meeting, and that the assignments pending the Engineering Committee be continued with emphasis on completion. Bo Bolourchi seconded the motion and the motion carried unanimously.

Legal - Duane Smith made a motion that the Legal Committee assignments continue and include monitoring of Sweetwater Creek, and Bill Abney seconded the motion. The motion carried unanimously.

Environmental & Natural Resources - Duane Smith made a motion to have the Environmental and Natural Resources Committee continue formulating their own agenda - monitoring programs of the various agencies, etc., and Randy Young seconded the motion. The motion carried unanimously.

Election of Officers (Vice-Chairman; Secretary; & Treasurer)
Jeff Saitas made a motion to elect Duane Smith Vice-Chairman, Mary Schooley Secretary, and Earl Smith, Treasurer; Randy Young seconded the motion. The motion carried unanimously.

Duane Smith stated that the April 2003 meeting will be held at Quartz Mountain, OK.

There being no further business, the meeting was adjourned.

DATED: October 1, 2002

Laura Brown 5/9/03

Laura Brown, Acting Secretary
Arkansas Soil & Water Conservation Commission

PROXY

RED RIVER COMPACT COMMISSION

THIS IS TO CERTIFY that I have designated and do hereby authorize ZAHIR "BO" BOLOURCHI, Chief, Water Resources Programs, to serve as my proxy for the Red River Compact Commission meetings and any committee meetings held in connection with the Red River Compact Commission, with full authority to act on my behalf as a voting member of the Commission

SIGNED at Baton Rouge, Louisiana, this 5th day of April, 2002.

KAM K. MOVASSAGHI, PH.D., P.E.
SECRETARY, DOTD
LOUISIANA COMMISSIONER, RRCC

Red River Compact Commission
List of Attachments
Hot Springs, Arkansas
4/11/02

Attachment "A" -List of Attendees

Attachment "B" – Agenda

Attachment "C" – April 24, 2001 Minutes

Attachment "D" – FY 01 Year-End Financial Report

Attachment "E" –Arkansas Commissioner Report

Attachment "F" – Oklahoma Commissioner Report

Attachment "G" – Texas Commissioner Report

Attachment "H" – Louisiana Commissioner Report

Attachment "I" – Budget

Attachment "J" – Legal Committee Report

Attachment "K" – Engineering Committee Report

Attachment "L" – Environmental & Natural Resources Committee Report

Attachment "M" – Special Committee Report

RED RIVER COMPACT COMMISSION

LIST OF ATTENDEES
DATE : APRIL 11, 2002

NAME, PLEASE PRINT	BUSINESS/ADDRESS, PLEASE PRINT
Wes Wyche (City of Shreveport)	P.O. Box 31109, Shreveport, LA 71130
Chris Davidson	ADEQ, 8001 National Dr. Little Rock, AR 72219
Max Forbes LDEQ	1064 Highland Park Dr. Baton Rouge, La 70808
George Arcement Jr. USGS-LA	3535 S. Sherwood Forest Blvd., Suite 120 Baton Rouge, LA 70816
Jayne May USGS-TX	8027 Exchange Drive Austin, TX 78754
Shane Barks USGS	401 Hardin Road Little Rock, AR 72211
Keith Garrison	Ark. Waterways Commission 101 E. Capitol St. Little Rock, AR 72203
Lucretia Norris Transportation Policy Advisor	Office of the Governor Little Rock AR 72201
Tom McGuire	Ark. Democrat-Gazette 121 E. Capitol Little Rock AR 72202
David Weeks	Rm 3416 Federal Bldg. 700 W. Capitol Ave. Little Rock AR 72201
Kalven Trice	" " " " "
ELIZABETH BEAT	1100 COMMERCE ST., RM 8A11 DALLAS, TX 75242-0216
Ralph Boelter Jr	7703 N. Congress - Texas Water Development Bd Austin, TX 78711
Bob Tullos	305 East 5th St Suite 800 Texarkana, AR 71854
RICHARD BRONTOLI	P.O. Box 709 SHREVEPORT, LA 71162
MARK G. GUTHRIE	210 N. BROADWAY cityobb@pine-net.com BROKEN BOW, OK 74728
Crystal Phelps	AR Soil & Water 101 E Capitol St, Little Rock, AR 72201
James R. Barnett	Kerr Irwin Rhodes & Ables 201 East S. Kerr #600 Ada OK 74820
Donna Kirby	Lugert-Altus Irr. Dist. Box 520, Altus OK 73522
Steve Loop	ASWCC steve.loop@mail.state.ar.us 101 E. Capitol Ste 350 Little Rock, AR 72201

RED RIVER COMPACT COMMISSION

LIST OF ATTENDEES
DATE: APRIL 11, 2002

NAME, PLEASE PRINT	BUSINESS/ADDRESS, PLEASE PRINT
KEN BRAZIL (ABWCC)	101 E. CAPITOL SUITE 350, LR, AR 72201
MARK BENNETT (ASWCC)	101 E. CAPITOL AVE Suite 350 LR 72201
EARL SMITH (ASWCC)	"
Tom Holden (MVD)	1400 WALNUT ST, VICKSBURG, MS 39181
Dean Couch (OWRB)	3800 N CLASSEN Blvd OKC 73118
DEREK SMITHEE (OWRB)	"
MIKE MATHIS (OWRB)	" "
Bob Blazs (USGS)	202 NW 66th, Bldg 7, OKCity 73116
Joseph Harris (LA DOTD)	
Herman Settemeyer (TWRCC)	P.O Box 13087 (mc-157) Austin, TX 78711
JANE ATWOOD (OAG-TX)	POBOX 12548, AUSTIN, TX 78711
Gary C. Ethridge	LA DOTD Office of General Counsel POB 94245, Baton Rouge LA 70804
0036	

RED RIVER COMPACT COMMISSION

LIST OF ATTENDEES
DATE : APRIL 11, 2002

NAME, PLEASE PRINT	BUSINESS/ADDRESS, PLEASE PRINT
KEN FERGESON	OKLA. Commission
Duane Smith	O/C Commissioner
Bo Bolourchi	LA Commissioner (Proxy)
ART THEIS	LA. Commissioner
Don R Mitchell	AR commissioner
Randy Young	AR Commissioner
JEFF SANDS	TX Commissioner
Bill Abney	Tx Commissioner

RED RIVER COMPACT COMMISSION

22nd Annual Meeting

April 11, 2002, 8:30 a.m.

The Arlington Resort Hotel & Spa, Hot Springs, Arkansas

AGENDA

I. Call to Order - 8:30 AM

II. Welcome

III. Approval of Agenda

IV. Approval of Minutes; April 23, 2001 Regular Meeting, New Orleans, Louisiana

V. Report of the Chairman

VI. Discuss the Appointment of a Federal Chairman

VII. Report of the Secretary-Treasurer

VIII. Report of Commissioners

- A. Arkansas
- B. Oklahoma
- C. Texas
- D. Louisiana

IX. Report of Committees

- A. Budget
- B. Legal
- C. Engineering
- D. Environmental & Natural Resources

X. Federal/State Agency Reports

- A. US Bureau of Reclamation
- B. US Army Corps of Engineers
- C. USDA Natural Resources Service
- D. US Geological Survey
- C. US Fish & Wildlife Service
- D. Other

XI. Unfinished Business

XII. New Business

- A. Assignment & Appointments to Committees
  1. Budget
  2. Legal
  3. Engineering
  4. Environmental & Natural Resources
- B. Election of Officers (Vice-Chairman; Secretary; & Treasurer)
- C. 23rd Annual Meeting

XIII. Other Business

XIV. Public Comment

XV. Adjourn

RED RIVER COMPACT COMMISSION

21st ANNUAL MEETING
MINUTES

CHATEAU LEMOYNE FRENCH QUARTER HOTEL
NEW ORLEANS, LOUISIANA
TUESDAY, APRIL 24, 2001

I. - II. CALL TO ORDER AND WELCOME

The twenty-first Annual Meeting of the Red River Compact Commission was called to order at 8:30 a.m. by Mr. Arthur Theis, Vice Chairman, on April 24, 2001, at the Chateau LeMoyne French Quarter Hotel in New Orleans, Louisiana.

Mr. Theis introduced Colonel Rick Clapp from the Mississippi Valley Division of the U.S. Army Corps of Engineers who was representing Brigadier General Edwin Arnold.

Those present at the meeting were:

Red River Compact Commissioners
Mr. Randy Young, Arkansas
Mr. Don Mitchell, Arkansas
Mr. Edmond J. Preau, Louisiana, representing Secretary Kam Moyassaghi (Proxy presented; see Attachment 1)
Mr. Arthur Theis, Louisiana
Colonel Rick Clapp, Mississippi Valley Division, U.S. Army Corps of Engineers, representing the Federal Chairman
Mr. Duane Smith, Oklahoma
Mr. Ken Fergeson, Oklahoma
Ms. Leigh Ing, Texas
Mr. William Abney, Texas

Representatives, Federal Agencies and Guests from Arkansas
Shane Barks, U.S. Geological Survey
Mark Bennett, Arkansas Soil & Water Conservation Commission
Ken Brazil, Arkansas Soil & Water Conservation Commission
Earl Smith, Arkansas Soil & Water Conservation Commission

Representatives, Federal Agencies and Guests from Colorado
Russ Livingston, U.S. Geological Survey, Central Region

Representatives, Federal Agencies and Guests from Louisiana
George Arcement, Jr., U.S. Geological Survey
Zahir "Bo" Bolourchi, Louisiana Department of Transportation & Development
Gary Ethridge, Louisiana Department of Transportation & Development
Max Forbes, Jr., Louisiana Department of Environmental Quality
Clyde Martin, Louisiana Department of Transportation & Development

Representatives, Federal Agencies and Guests from Oklahoma
James R. Barnett, Lugert-Altus Irrigation District
Bob Blazs, U.S. Geological Survey
Dean Couch, Oklahoma Water Resources Board
Donna Kirby, Lugert-Altus Irrigation District
Mike Mathis, Oklahoma Water Resources Board
Donald Moomaw, U.S. Bureau of Reclamation
Robert Robbins, Lugert-Altus Irrigation District

Representatives, Federal Agencies and Guests from Texas
Charles Armstrong, U.S. Army Corps of Engineers, Dallas District
Jane Atwood, Office of the Attorney General of Texas
Herman Settemeyer, Texas Natural Resources Conservation Commission

III. APPROVAL OF THE AGENDA

Motion by Commissioner Smith, seconded by Commissioner Abney to add the Sweetwater Creek controversy and Attorney Jim Barnett to the agenda. Motion passed without opposition.

Motion by Commissioner Young, seconded by Commissioner Smith to approve the agenda for the Red River Compact Commission 21st Annual meeting. Motion passed without opposition. (Attachment 2)

IV. APPROVAL OF THE MINUTES OF APRIL 25, 2000

Commissioner Ing stated that the draft minutes of the April 25, 2000, meeting were previously distributed. She asked if there were any additions or deletions to the minutes. The following amendments to the minutes were discussed:

1. on page 4 under the Report of Commissioners for Louisiana, it should read Mr. Curtis Patterson in lieu of Mr. Art Theis;
2. in several places it reads Mr. Frank Denton was the representing Commissioner for Louisiana and it should read Dr. Kam K. Movassaghi
3. changes to the legal minutes were also discussed by Mr. Gary Ethridge and previously noted in the legal committee meeting

Ms. Jane Atwood amended the minutes and redistributed them during the course of the meeting. (Attachment 3)

Motion by Commissioner Smith, seconded by Commissioner Young to accept the minutes of the Red River Compact Commission 20th Annual Meeting with the approved amendments. Motion passed without opposition.

V. REPORT OF THE CHAIRMAN

Commissioner Theis, Vice-Chairman, stated that there was no report.

Colonel Clapp announced the change in the Division Engineer, Mississippi Valley Division, U.S. Army Corps of Engineers, from Major General Phillip Anderson to Brigadier General Edwin Arnold.

VI. REPORT OF THE TREASURER

Mr. Earl Smith presented the Treasurer's Report. (Attachment 4)

Motion by Commissioner Fergeson, seconded by Commissioner Mitchell to approve the Treasurer's Report. Motion passed without opposition.

VII. REPORT OF THE COMMISSIONERS

A. ARKANSAS

Commissioner Randy Young presented the State of Arkansas Commissioner's report. (Attachment 5)

B. LOUISIANA

Acting Commissioner Edmond J. Preau presented the State of Louisiana Commissioner's report. (Attachment 6)

C. TEXAS

Commissioner Leigh Ing presented the State of Texas Commissioner's report. (Attachment 7)

D. OKLAHOMA

Commissioner Duane Smith presented the State of Oklahoma Commissioner's report. (Attachment 8)

VIII. REPORT OF THE COMMITTEES

A. BUDGET COMMITTEE

Mr. Bolourchi reviewed the proposed budget with the Commissioners. There were no changes in the proposed budget from the one offered last year. It was recommended that each state pay an assessment of $550 for FY 2002.

Upon motion duly made and seconded, the FY 2002-2003 Budget was unanimously accepted. (Attachment 9)

B. LEGAL COMMITTEE

Mr. Ethridge presented the Legal Committee report. He stated that the assignment of last year was to try and facilitate an agreement on the Sweetwater Controversy with Oklahoma and Texas. No agreement has been reached and the assignment will continue for the coming year. Mr. Ethridge informed the Commission that the Wheeler County Water Supply District Board has scheduled a tax election to obtain funds for a feasibility study.

Upon motion duly made and seconded, the Legal Committee report was unanimously accepted.

C. ENGINEERING COMMITTEE

Mr. Bolourchi presented the Engineering Committee report and stated that the assignment of last year was to monitor the gauging station network by the U.S. Geological Survey. He also stated the federal cutback of 20% on the water division should have no affect on the agreement with the state.

Mr. Bolourchi also said that the Arkansas state line gauging station on the Ouachita River is of some concern to groundwater and surface water interests. The Compact rule needs to go into effect. The City of Monroe is the financer and they would like to move the station to the actual city of Monroe although, then it would not directly gauge the water coming into the state of Louisiana. There is no funding available and the Commission may be asked to fund this particular gauging station.

Mr. Bolourchi also stated that another assignment was the development of a web site. The site is being worked on and should be on-line for use shortly. He also said that he had no comment on the Sweetwater Creek controversy and that he would like the Legal Committee to continue working on it.

It was also stated that the annual report has been completed by the state of Texas and should be printed and distributed shortly.

Upon motion duly made and seconded, the Engineering Committee report was unanimously accepted.

0044

D. ENVIRONMENTAL COMMITTEE

The recommendation for members of next years committee were established. The assignments for next year were also discussed.

Motion by Commissioner Young, seconded by Commissioner Abney to accept all of the committee reports. Motion passed without opposition.

IX. FEDERAL AGENCY REPORTS

A. U.S. BUREAU OF RECLAMATION

Mr. Donald Moomaw presented the U.S. Bureau of Reclamation Federal Agency report. (Attachment 10)

B. U.S. ARMY CORPS OF ENGINEERS

Colonel Rick Clapp addressed the Mississippi Valley Division Corps of Engineers' portion of the Red River Issue. He spoke of the J. Bennett Johnston Waterway, Red River below Dennison Dam, Red River Emergency Bank Protection and the Red River Navigation Study.

Colonel Clapp then turned the floor over to Mr. Chuck Armstrong who presented a report on the Southwestern Division Corps of Engineers. (Attachment 11)

C. NATURAL RESOURCES CONSERVATION SERVICE

No report was given.

D. U.S. GEOLOGICAL SURVEY

Mr. Bob Blazs presented the U.S. Geological Survey Federal Agency report. (Attachment 12)

Motion by Commissioner Abney, seconded by Acting Commissioner Preau to accept all of the federal agency reports. Motion passed without opposition.

X. UNFINISHED BUSINESS

A. ANNUAL REPORT

The 2000 Annual Report was prepared by Texas and should be printed and distributed shortly. Louisiana will do the annual report for the year 2001.

B. ASSIGNMENTS TO COMMITTEES

0045

The Engineering Committee assignments are as follows:

1. Continue monitoring proposed cutbacks in gauging a station network
2. Continue development of the web site
3. Draft rules and regulations for allocation of Ouachita River Reach 4, Subbasin 2
4. Draft rules and regulations for allocation of Red River Reach 2, Subbasin 3
5. Draft the annual report for distribution
6. Monitor the changes, stages and impact of the Southeast Oklahoma Water Plan development to the Red River Compact Commission

Motion by Commissioner Young, seconded by Acting Commissioner Preau to accept the Engineering Committee assignments. Motion passed without opposition.

The Environmental Committee assignments are as follows:

1. Provide current status of uses of waste water for the Ouachita River
2. Keep up with the activity in the Red and Ouachita River
3. Keep up with the new or long term information on environmental matters
4. Keep up with the recommendations of the Committee on preservation and desired water quality

Motion by Commissioner Young, seconded by Commissioner Ing to accept the Environmental Committee assignments. Motion passed without opposition.

The Legal Committee assignments are as follows:

1. Continue facilitation and follow the development of the conflict in the Sweetwater Basin Reach 1 and what additional structures are made and also to follow the impact it has on Texas and Oklahoma
2. Follow the Oklahoma legislature to find out the status of funding
3. Follow legislation in the various states and how it affects the Red River Compact Commission

Motion by Commissioner Fergeson, seconded by Commissioner Abney to accept the legal assignments. Motion passed without opposition.

The Budget Committee is to propose a biannual budget for consideration at the next meeting.

Motion by Commissioner Young, seconded by Commissioner Smith to select a member from each state to be represented on the Budget Committee.

C. ELECTION OF OFFICERS

0046 Motion by Commissioner Young, seconded by Commissioner Fergerson to elect Mr. Don

Mitchell from Arkansas as Vice Chairman; Ms. Laura Brown as Secretary and Mr. Earl Smith as Treasurer of the 2002 meeting. Motion passed without opposition.

D. APPOINTMENT TO COMMITTEES

The recommended Environmental Committee is as follows:

Ken Brazil, Arkansas
Max Forbes, Louisiana
Herman Settemeyer, Texas
Derrick Smith, Oklahoma

E. 22ND ANNUAL MEETING

Motion by Commissioner Abney, seconded by Commissioners Fergeson to have the 2002 meeting on the 4th Tuesday in April in Hot Springs, Arkansas. Motion passed without opposition.

XI. OTHER BUSINESS

Ms. Donna Kirby advised that she gathered all of the information and documentation on Sweetwater that is available to her. She also provided a newspaper article from Wheeler County to be included in the minutes. (Attachment 13)

The Sweetwater Controversy was discussed at length with varying opinions. Commissioner Young advised to continue encouraging the 2 states to work together and resolve this problem.

XII. PUBLIC COMMENT

There was no public comment.

XIII. ADJOURNMENT

Motion by Mr. Young to adjourn, second by Ms. Ing. Motion passed without opposition.

0047

Report of the Acting Treasurer
Before the Red River Compact Commission
April 10, 2002

The 2001 Year-end Financial Report has been distributed. The report covers July 1, 2000 through June 30, 2001.

Regions Bank Balance per 06/25/01 was $14,176.31

RECEIPTS

Member Assessments	$2,750.00
Dividend Income	$ 289.45
TOTAL	$3,039.45

EXPENSES

Audit	$ 275.00
Annual Meeting	$ 946.88
TOTAL	$1,221.88

Regions Bank Balance per 03/25/2002 was $12,774.76

Register Report

7/1/00 Through 6/30/01

Date	Num	Description	Memo	Category	Clr	Amount
	BALANCE 6/30/00					12,358.74
7/26/00	DEP	Regions Bank	July 2000	Div Income	R	23.40
8/23/00	DEP	Regions Bank	August 2000	Div Income	R	19.89
9/13/00	DEP	State of Texas	FY 00	Assessment	R	550.00
9/26/00	DEP	Regions Bank	September 00	Div Income	R	24.58
10/3/00	DEP	Regions Bank	October 00	Div Income	R	21.59
10/12/00	1022	Johnson, Bunch & Associates	1999-2000	Annual Audit	R	-275.00
10/27/00	DEP	State of Arkansas	FY 01	Assessment	R	550.00
11/6/00	DEP	State of Oklahoma	FY 01	Assessment	R	550.00
11/6/00	DEP	State of Texas	FY 01	Assessment	R	550.00
11/21/00	DEP	State of Louisiana	FY 01	Assessment	R	550.00
11/24/00	DEP	Regions Bank	November 00	Div Income	R	23.98
12/26/00	DEP	Regions Bank	December	Div Income	R	27.45
1/25/01	DEP	Regions Bank	January 01	Div Income	R	25.83
2/26/01	DEP	Regions Bank	February 01	Div Income	R	27.62
3/23/01	DEP	Regions Bank	March 01	Div Income	R	21.61
4/24/01	DEP	Regions Bank	April 01	Div Income	R	26.76
4/27/01	1023	Chateau LeMoyne	New Orleans, LA 2001	Mtg. Expenses	R	-946.88
5/23/01	DEP	Regions Bank	May 01	Div Income	R	22.44
6/25/01	DEP	Regions Bank	June 01	Div Income	R	24.30
	TOTAL 7/1/00 - 6/30/01					**1,817.57**
	BALANCE 6/30/01					14,176.31

TOTAL INFLOWS	3,039.45
TOTAL OUTFLOWS	-1,221.88
NET TOTAL	**1,817.57**

FY 2002 Interim Financial Report

7/1/01 Through 2/15/02

Cat/Sub	Num	Description	Memo	Clr	Amount
INCOME					
Div Income-Dividend Income					
	DEP	Regions Bank	July 01	R	19.93
	DEP	Regions Bank	August 01	R	17.99
	DEP	Regions Bank	Sept. 01	R	19.33
	DEP	Regions Bank	October 01	R	13.23
	DEP	Regions Bank	November 01	R	13.38
	DEP	Regions Bank	December 01	R	10.00
	DEP	Regions Bank	January 02	R	10.30
TOTAL Div Income-Dividend Income					**104.16**
TOTAL INCOME					**104.16**
EXPENSES					
Annual Audit					
	1024	Bob Johnson	7/1/00-6/30/01	R	-275.00
TOTAL Annual Audit					**-275.00**
Printing-Report					
	1025	ASWCC	2000 Report	R	-2,123.20
TOTAL Printing-Report					**-2,123.20**
TOTAL EXPENSES					**-2,398.20**
TOTAL INCOME - EXPENSES					**-2,294.04**

RED RIVER COMPACT COMMISSION
STATE OF ARKANSAS
COMMISSIONER'S REPORT
APRIL 2002

NAVIGATION

The Corps of Engineers study is continuing on both the White River Navigation Project and the Southwest Arkansas Project (Navigation from Shreveport, Louisiana to Index, Arkansas).

WATERSHED PLANNING

Mitigation Banking Program

- ASWCC has completed the purchase of the first mitigation-banking site. Restoration efforts are now underway. The state mitigation-banking program will make credits available to satisfy mitigation requirements for 404 permits. Potential users will include government, public, and private entities.

IRRIGATION PROJECTS

(Within the Compact Area)

Walnut Bayou Project

- The NRCS and the Little River Conservation District continue to make progress on the feasibility study for the project.

Southeast Arkansas Project

- The feasibility study for this irrigation project is underway. The project proposes to utilize Arkansas River to augment existing irrigation supply in Bayou Bartholomew watershed.

(Outside the Compact Area)

Grand Prairie Demonstration Project

- Contracts totaling approximately thirty-five million dollars ($35,000,000) have been reserved for the construction of "on farm" features.

Bayou Meto Project

- The Corps of Engineers and NRCS are currently working on the design phase of this project. This project proposes to divert Arkansas River water to irrigate 431,000 acres in Lonoke, Prairie, Arkansas, and Jefferson Counties.

0053

NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

The ASWCC and its partners continue to advance the Nonpoint Source Pollution Management Program (State Program) through both watershed-based implementation and categorical programs.

Priority Watershed Program

- Watershed management teams are now active in the Bayou Bartholomew, Smackover Creek, Millwood Lake, Spavinaw Creek, Beaver Lake, L'Anguille River, Strawberry, and the Upper and Lower Red River watersheds. Additional teams are being formed in the lower White River and Lake Fayetteville. The first priority of each of these watershed management teams is to develop a Watershed Restoration Action Strategy (WRAS). A WRAS had been completed for the Bayou Bartholomew and Beaver Lake watershed.

- FTN Associates completed a draft TMDL for the L'Anguille River and Bayou Bartholomew watersheds for the Arkansas Department of Environmental Quality. These TMDLs are the first to be written in the State. Both TMDLs were written to address a significant NPS element (sediment). The ASWCC will be working with the Watershed Management Teams to develop a Nonpoint Source Implementation Plan for these TMDLs.

- The ADEQ completed its assessment of Bayou Bartholomew. The report concluded in part, "habitat is the single most limiting parameter to macroinvertebrate communities.... Channelization and alterations to riparian buffer zones has limited macroinvertebrate communities". Furthermore, two sites within the assessment area did support fish communities due to lack of flow and several sites were listed as impaired.

- The Strawberry River assessment has not been completed at this time.

0054

Categorical Implementation

- **Row Crop Agriculture**: The ASWCC is initiating projects in the Cache River, L'Anguille River and Big Creek Watersheds this summer to address row crop issues. We are concentrating on winter cover, conservation buffer strips and conservation tillage.
- **Confined Animal Management**: Arkansas completed our initial Phosphorus Index for use in developing Comprehensive Nutrient Management Plans. Our PI is a risk based assessment tool to be used in making manure application recommendations.
- Arkansas' Clean Water Act State Revolving Fund is now making loans to livestock producers for implementation of BMPs.
- **Silviculture**: The AFC is currently conducting training for foresters, loggers and landowners. Compliance monitoring shows approximately 80% implementation of BMPs. We hope to improve to 95% implementation or better. A new BMP Manual is now being reviewed and will be published this year. The AFC will initiate BMP effectiveness monitoring in the next year.
- **Construction and Urban**: The U of A Civil Engineering Department is initiating a construction BMP training program for Consulting Engineers, Contractors and Developers.
- **Resource Extraction**: The ADEQ has updated its Mining BMP Manual
- **Hydrologic Modification:** Several streambank stabilization demonstration projects have been implemented throughout the Ozarks. Conservation Districts have been very interested in expanding this program. Tax credits are available for landowners implementing streambank stabilization.

Utilization of Funds

Since 1993, total federal expenditures in the Section 319(h) grant program are $9,445,801.79 and the required state or local match has been $ 6,176,184.14 for a total expenditure of 15,621,985.93.

CRITICAL GROUNDWATER AREAS

The ASWCC has designated two critical groundwater areas in Arkansas: The Sparta and Alluvial Aquifers in Arkansas, Jefferson, Prairie, and portions of Lonoke, Pulaski, and White Counties.

Union County has formed a countywide board, which is accessing a 24-cent/1,000 gallon fee for Sparta water withdrawn. The board has plans to construct a surface water treatment and distribution project to supplement groundwater use in the county.

OKLAHOMA COMMISSIONERS' REPORT
Red River Compact Commission

Annual Meeting
Hot Springs, Arkansas
April 10-11, 2002

STATE CLIMATE & STREAMFLOW

An ongoing drought, beginning last summer, continues to worsen throughout northern and western Oklahoma. Across the northern and western parts of the state, precipitation totals are around 50 percent below normal since June 1, 2001. The North Central climate division is more than 12 inches below normal for that period, while rainfall totals for West Central and Panhandle regions are 11.46 and 8.51 inches below normal, respectively. Statewide precipitation is 78 percent of normal for the same period, a 6.49-inch precipitation deficit. Rainfall last weekend benefited many areas of Oklahoma, although relatively minor amounts fell in areas most impacted by this ongoing drought situation.

BASIN AREA WATER RESOURCES REPORTS/STUDIES

The OWRB continues to cooperate with the Tulsa District of the U.S. Army Corps of Engineers on several projects funded through the Corps' Planning Assistance to the States Program, including:

- an investigation of a regional water treatment and distribution system in the Kaw Reservoir area in north central Oklahoma;
- a study on the feasibility of a regional sewer system in the Lake Texoma area of south central Oklahoma (Phase I has been completed; Phase II is in development); and
- a study on water management strategies for the Oologah Lake Watershed in northeast Oklahoma.

In 2001, the OWRB also secured funding, through the Bureau of Reclamation, for a detailed study of the North Fork of the Red River and Salt Fork of the Red River. The study, just underway, will develop a groundwater/stream water flow model, determine the extent and nature of groundwater-surface water interactions, and evaluate groundwater quality in the study area.

Water quality-related studies, related to the Compact area, during 2001 included the following:

- Completion of a draft report to assess the impact of CAFOs on the City of Oklahoma City's water supply reservoirs extending from Canton Lake to McGee Creek Lake.
- A cooperative assessment with the Central Oklahoma Master Conservancy District (COMCD) to address water quality concerns, especially those caused by suspended solids, at Lake Thunderbird. A pilot demonstration program to control shoreline erosion at Thunderbird, in cooperation with the U.S. Bureau of Reclamation, Oklahoma Department of Tourism and Recreation, and COMCD, will be implemented in 2003.
- Completion of an EPA-funded demonstration project at Lake Wister to reduce suspended solids and control erosion through introduction of non-invasive aquatic plants. A project was also initiated between the OWRB and the Corps of Engineers to monitor water quality at Wister and develop a plan to control suspended solids and increase oxygen.

THE 2001 OKLAHOMA LEGISLATIVE SESSION

The Water Resources Board was again very successful in achieving legislative goals established prior to the 2001 legislative session. The 2002 session began in February.

- The Legislature appropriated $1.2 million (a 20 percent increase from 2000) for the OWRB's Beneficial Use Monitoring Program, created in 1998. The additional funds will allow the OWRB to initiate a pilot project of biological assessments and integrate the collection of streamflow data along with water quality samples.
- A $250,000 agency appropriation, especially supported by Gov. Keating, will fund various agency duties related to water planning and drought preparedness.
- Additional funding was secured to participate with the Corps of Engineers in studies related to an offstream storage site on the Barren Fork River and potential construction of Mangum Reservoir.
- House Bill 1480 precludes the OWRB from making waste by pollution determinations on groundwater use applications related to activities under jurisdiction of the Department of Agriculture and/or Department of Environmental Quality.
- HCR 1008 directs the OWRB to initiate dialogue with the states of Nebraska, Colorado, Kansas, New Mexico and Texas, as well as appropriate federal agencies, regarding formation of a High Plains Ogallala Aquifer Compact. This Compact would represent a first-ever interstate agreement to preserve this vitally important, shared groundwater resource.

THE 2002 OKLAHOMA LEGISLATIVE SESSION

Current measures of particular importance to the OWRB include:

- House Bill 2895: This bill would provide for wholesale changes in the way water planning is conducted in Oklahoma as a reaction to perceived problems relating to negotiations of the State-Tribal Water Compact and contract negotiations with North Texas. The bill would create a "blue ribbon" commission to consider and make recommendations on many issues that could be addressed in water planning. The bill would prohibit the Oklahoma Water Resources Board from publishing a 2005 update of the Oklahoma Comprehensive Water Plan until the Legislature instructed the Board to do so, and the Legislature would not do so until the blue ribbon commission filed its final report on water planning issues. As last drafted, the House and Senate staff and Attorney General's office would be staff for the blue ribbon commission. The Water Board and other agencies would simply provide input to the commission.
- House Joint Resolution 1038: This legislation would provide for a Legislative Referendum referring to a vote of the people the question of whether there should be a vote of the people for each and every out-of-state water sale.

CANADIAN RIVER COMPACT DISPUTE (OKLAHOMA-TEXAS)

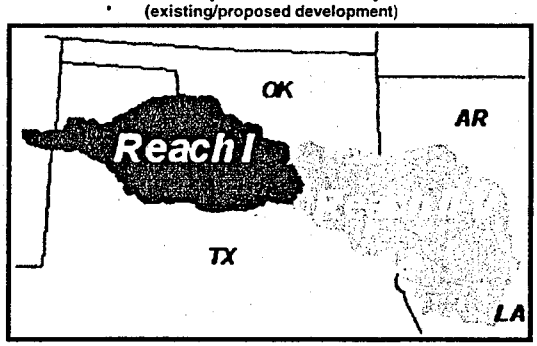
Through Senate Concurrent Resolution 18, passed in 2001, the OWRB is directed to pursue U.S. Supreme Court action against the State of Texas for violating terms of the Canadian River Compact. Texas' development of Palo Duro Reservoir (on Palo Duro Creek, a tributary of the Beaver-North Canadian River) in 1991, approximately 12 miles upstream from the Texas/Oklahoma state line. The situation precludes water releases sufficient to satisfy Oklahoma's apportionment under terms of the Compact. Of specific concern is reduced flows for Canton Lake, a primary source of water for Oklahoma City on the North Canadian River, which could be further impacted by a second proposed reservoir on a separate tributary of the North Canadian in Texas.

Red River Compact Commission

Arkansas Louisiana Oklahoma Texas

Next Meeting:
April 10-11, 2002
Hot Springs, Arkansas

Compact Area Map
(existing/proposed development)



State Support Agencies
ARKANSAS SOIL & WATER
CONSERVATION COMMISSION
LOUISIANA DEPARTMENT OF
TRANSPORTATION & DEVELOPMENT
OKLAHOMA WATER
RESOURCES BOARD
TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION

Federal Support Agencies
US ARMY CORPS
OF ENGINEEERS
BUREAU OF
RECLAMATION
US GEOLOGICAL
SURVEY
NATURAL RESOURCES
CONSERVATION SERVICE

Compact Area Data
US DAILY
STREAMFLOW CONDITIONS

Compact Articles and Provisions
PREAMBLE &
ARTICLES I-VIII

The Red River Compact was formed by Congress in 1955 (and signed by member states in 1978) to resolve and prevent disputes over waters of the Red River Basin that are shared between the neighboring states of Arkansas, Louisiana, Oklahoma and Texas, and to assure the receipt by member states of adequate surface flows and releases.

The Red River Compact Commission consists of nine members -- two members from each of the four states (the director of the state water agency and a basin resident appointed by the governor) and a federal representative appointed by the President. The federal commissioner is a non-voting member and serves as Commission chairman. Various state and federal agencies support the compact commissioners in negotiating and administering the agreement. The Commission meets once each year.

While provisions of the Red River Compact specifically state how much water each signatory state is allowed to develop or store on an interstate stream, the compact generally provides a means of working out problems between member states in an orderly manner, thus preventing the likelihood of litigation in most cases. Although the compacts continue to address problems concerning quantities and equitable development of river waters, annual meetings of the compact commissions deal increasingly with quality and pollution problems. The Red River Compact Commission has already established a standing environmental committee.

According to Article 1 of the Red River Compact, its principal purposes are:

- To promote interstate comity and remove causes of

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Red River Compact Commission
Texas Report
April 11, 2002

The Texas report was presented by Commissioners William A. Abney and Jeffrey Saitas. Commissioner Abney discussed the proposed Sweetwater Creek Reservoir, City of Marshall water rights application, and Oklahoma water sale.

Sweetwater Creek Reservoir: A local election was held in Wheeler County regarding the proposed reservoir on Sweetwater Creek. The tax election to do a feasibility study for the Sweetwater Creek Reservoir failed. The Wheeler area interests are still trying to locate money for a feasibility study.

City of Marshall water rights application: The City of Marshall has made an application to the Texas Natural Resource Conservation Commission to convert their existing 16,000 acre-foot municipal water right to include as a permissible use industrial purposes. The water right is upstream of Caddo Lake. The permit has been approved by the TNRCC but it is likely that litigation will been filed by opponents of the permit change.

Oklahoma water sale: Considerable effort was directed toward a sale of water from Southeastern Oklahoma to North Texas interests. Progress was made in Oklahoma toward a compact with tribal interests to allocate the water.

Commissioner Saitas discussed the statewide water plan, water availability models, TMDL process, permitting process time reduction efforts, and the legislative session.

Statewide water plan: The statewide water plan has been completed. The plan was a regional approach which identified the needs of each region for the next 50 years. The next phase will be the implementation of the plan.

Water availability models: Texas has completed water availability models for all (including the Red) river basins in the state with the exception of the Rio Grande. The models are publicly available for use. The models will be used for permitting and planning purposes.

TMDL process: The TNRCC has identified 248 impaired watersheds, 72% of which have been completed or started. One very significant area was the Bosque River where there were dairies upstream of the City of Waco.

Permitting process time reduction: The TNRCC effort to reduce the time to process uncontested permit applications was discussed. Goal is to set time frames for applications to be processed to enable the public and industry to now how long it will take for an application to be processed.

Legislative session: The next legislative session for Texas will begin in January. Groundwater and its transfer will be a key issue, along with instream environmental flows, and desalination.

RED RIVER COMPACT COMMISSION

STATE OF LOUISIANA
COMMISSIONERS REPORT

April 2002

DAM SAFETY PROGRAM

Louisiana's Dam Safety Program has been approved by FEMA under the Community Rating System (CRS). The program meets all pertinent requirements of the National Dam Safety Act of 1996 and we have received a $40,794 FEMA grant for fiscal year 2001-2002. The funding is being used to set up a Dam Inventory Data File, to digitize dam safety documents and design an interactive website which would allow direct uploading of dam safety inspection reports, photos, and piezometer readings from Headquarters and various field offices, into a server for display on DOTD's Intranet website.

In 2001, a total of 135 dams were inspected and reports prepared by the Dam Safety staff at DOTD Headquarters and District offices.

GROUND WATER MANAGEMENT COMMISSION

Senate Bill 965 of 2001 Regular Session was signed into Law last year and became known as Act 446, Ground Water Management Act of 2001. In essence, the Act provides for the creation of a 15-member Commission in the Office of the Governor, a 49-member Advisory Task Force, and designates the Office of Conservation to serve as the staff for the Commission. The Act also provides for the determination of "critical ground water areas," development of a contingency plan to respond to emergency situations, provides for possible limitation of access to ground water sources, encourages appointment or designation of local or regional bodies to function in advisory capacities to the Commission, and requires the development of a plan for implementation of a statewide comprehensive ground water management system.

Also, beginning July 1, 2001, the Act requires that for any water well other than a domestic or a replacement well, the owner shall send an application to the Commissioner of Conservation, at least 60 days prior to drilling the well.

C. H. Fenstermaker & Associates, Inc. of Lafayette, Louisiana has been contracted to prepare a framework for a plan to implement the Ground Water Management Act which must be presented to the legislative oversight committees for their review prior to January 2003. Any portions of the plan that require statutory implementation must be prepared for legislative consideration, during the 2003 Regular Session of the Legislature.

PORT CONSTRUCTION AND DEVELOPMENT PRIORITY PROGRAM

Approximately $235.5 million of state funds have been committed through the Port Construction and Development Priority Program since it was created in 1989, funding 124 projects. One hundred and eighty-three separate contracts have been completed. When all of the funded projects have been completed, they will produce over $1.8 billion in benefits and will have created or retained 7,172 permanent jobs.

RED RIVER WATERWAY PROJECT

According to the Corps of Engineers, Vicksburg District, the project is just over 90% complete. Much of the remaining work includes refining the revetment and dike system to provide a safe and reliable navigation alignment and to reduce maintenance cost, development of the remaining recreation features as per the master plans and cost-sharing agreements and completion of the required mitigation portions of the overall project.

The Red River Waterway Commission is moving forward at present with recreation development and has four projects under construction and nine projects in the various stages of design throughout the District.

Port Development has been a major priority of the Red River Waterway Commission. The Commission is currently involved with the port commissions of the District on nine projects that rely on the Commissions financial assistance so they can come to fruition and positively impact the local economies.

Red River Compact Commission
FY 99 – 2002 Budget
(July 1, 2000 through June 30, 2003)

Proposed: 4/10/02

	Actual		Budget	
	FY00	FY01	FY02	FY 03
Personnel Services, Office Expenses, Rent, Travel (Mtg. Expenses)	$946.88	$0.00	$500.00	$500.00
Audit	$275.00	$275.00	$275.00	$275.00
Postage, Stationery, & Office Supplies	$0.00	$0.00	$250.00	$250.00
Printing & Reports	$0.00	$2,123.20	$1,150.00	$1,150.00
Contingency	$0.00	$0.00	$0.00	$0.00
TOTAL	$1,221.88	$2,398.20	$2,200.00	$2,200.00

State Assessments

In accordance with Article IX, Section 9.04.C, of the Compact, the amount of such budget shall be borne equally by the signatory states in an equal amount. Therefore, the FY 02 assessment is $550.00 per state and the FY 2003 assessment is $550.00 per state.

Report of the Legal Advisory Committee
to the 22nd Annual Meeting
of the Red River Compact Commission
The Arlington Resort Hotel & Spa, Hot Springs, Arkansas
April 11, 2002

Assignment 1. Continue facilitation and follow the development of the conflict in the Sweetwater Basin Reach 1 and what additional structures are made and also to follow the impact it has on Texas and Oklahoma.

At last year's commission meeting the Legal Committee reported that the Wheeler County Water Supply District had scheduled a tax election to obtain funds to carry out a feasibility study for a surface water project, including impoundment, on Sweetwater Creek in Texas. The tax election failed. To date, Wheeler County has not found another source of funds for a feasibility study.

There were no meetings between Texas and Oklahoma this year to discuss resolution of the dispute concerning compliance rules for Reach I, Subbasin 1.

Assignment 2. Follow the Oklahoma legislature to find out the status of funding.
There is no funding available because Wheeler County did not vote to appropriate funds for the feasibility study. The Legal Committee will continue to monitor.

Assignment 3. Follow legislation in the various states and how it affects the Red River Compact Commission.

OKLAHOMA
Several Bills are pending in the Oklahoma Legislation as of the Commissions annual meeting. Oklahoma will report next year on bills enacted.

ARKANSAS, LOUISIANA, AND TEXAS
Arkansas and Texas have not been in session since the last Compact meeting. Louisiana has not been in session that would affect the Compact.

Respectfully Submitted,
Red River Compact Commission Legal Committee

A. Mark Bennett, III, Chairman
Arkansas Representative

Jane Atwood, Texas Representative

Dean Couch, Oklahoma Representative

Gary Etheridge, Louisiana Representative

Red River Compact Commission
Report of the Engineering Committee
22nd Annual Meeting
Hot Springs, Arkansas

The Engineering Committee met on April 10, 2002 to address the following assignments from the commission. The meeting was attended by the engineer advisors from Louisiana, Arkansas, Oklahoma, and Texas. Also attending were representatives from the US Geological Survey (USGS).

Assignment 1. Continue monitoring proposed cutbacks in the USGS gauging station network

Committee members reported that the USGS anticipates another series of funding cutbacks, which will impact the USGS's gauging station network. This coupled with reduction in state budgets and other cooperating entities could mean a loss of some gauges. It does not appear that any of the gauges required to administer the Compact will be impacted within the next fiscal year. The Engineering Committee will address this issue with the USGS on an annual basis.

Assignment 2. Continue development of web site

Oklahoma reported that they have established a Web Site for the Red River Compact Commission at the Oklahoma Water Resources Board and it is in place and functioning. Oklahoma reported that they would continue to add additional information relating to the Red River Compact as time allows.

Assignments 3 and 4. DRAFT Rules and Regulations for allocation of Reach IV Sub-basin 2, Interstate Streams - Arkansas and Louisiana (Quachita River) and Reach 2, Sub-basin 3 - Interstate Streams - Oklahoma and Arkansas (Little River).

The committee continued its discussions on the development of Draft Rules and Regulations for these reaches. Two previous preliminary meetings had been held to begin discussion of the issues. The committee discussed developing conceptual rules for these reaches. In addition, the Committee discussed identifying the information or data necessary to administer rules for these reaches. The committee will need to address the issue of the adequacy of the existing gauging stations, as well the possibility of adding new gauges. The Committee recommends that the assignment of Drafting Rules and Regulations for the reaches be continued and has scheduled a meeting for September to

prepare draft rules for these reaches. The Committee proposes to present draft rules to the Commission at the 2003 meeting.

Assignment 5. Draft the Annual Report for distribution.

Louisiana has prepared and provided a draft 2001 annual report. The Engineering Committee recommends that they continue to draft and prepare the annual reports for the Commission.

Assignment 6. Monitor the changes, stages and impact of the Southeast Oklahoma Water Plan development to the Red River Compact.

Oklahoma indicated that considerable discussions had occurred between Texas interests and Oklahoma regarding this issue but that currently no discussions were taking place. The Oklahoma Commissioner's Report provides considerable detail on this issue.

Respectfully Submitted,

Earl Smith, Chairman
Arkansas Representative

Michael E. Mathis
Oklahoma Representative

Zahir "Bo" Bolourchi
Louisiana Representative

Herman R. Settemeyer
Texas Representative

Report of the
Environmental and Natural Resources Committee
Red River Compact Commission

April 11, 2002

Members: Ken Brazil – Arkansas; Derek Smithee – Oklahoma; Herman Settemeyer – Texas; and Max Forbes – Louisiana

The Environmental and Natural Resources Committee met with the Engineering Committee on April 10, 2002 and that group discussed assignments previously given to the Committees.

1. Uses of the waters of the Red and Ouachita Rivers.

   a. Representatives of the four states are to prepare, from discharge monitoring reports, listings of discharges by type (as: municipal, industrial, etc.), quantity of effluent discharged, and constituents of concern discharged (as permitted). Stream segments (main stem or tributary) on the impacted listings are of first priority, with remaining main stem segments having second priority.

   b. Representatives of the four states will prepare listings of other uses (as: navigation, recreation, commercial fisheries, etc.) on main stem segments.

These listings are to be ready for the 2003 meeting.

2. Total Maximum Daily Load (TMDL) activity in the Red and Ouachita River Basins.

   a. The main stem segments of the Red River in Arkansas, Oklahoma, and Texas do not appear on the impacted (303D) listings. Upper reaches of the Ouachita River in Arkansas do not appear on the impacted listings. Reaches 2 and 4 of the Ouachita River in Arkansas are listed for "Mercury" with the TMDL due in 2002. One small tributary of Bayou Bartholomew is listed for "Mercury" and two other small tributaries in the system are listed for other impairment sources.

The TMDL for the Ouachita River in Louisiana (State Line to Columbia Lock and Dam) is due in May 2002.

The TMDL for the Red River in Louisiana is due in 2005; comprehensive data gathering began in 2002.

Texas and Montana are suing EPA with the key issue being EPA's desire to spearhead implementation of corrective action called for by TMDL's for segments in those states.

3. Other concerns and activities in the Red and Ouachita Basins.

   a. Red River in Louisiana: High pool stages cause stagnation of waters in tributaries during low flow periods.

   b. With regard to chloride concentrations in the Red River at the LDEQ collection site north of Shreveport in Louisiana: Of 287 samples taken only 5 samples had chloride concentrations above 250 mg/1.

   c. In the Ouachita River Basin, major concerns for water resources (surface and ground) have arisen with the proliferation of merchant power.

   d. Changes in the release plan for waters from Felsenthal Dam have resulted in much improved DO conditions in the Ouachita River downstream from the Dam. Changes in release include a continuous flow of 1000 CFS and release of the flow from higher in the Dam.

Submitted by Max Forbes, LDEQ, Louisiana.

RECEIVED
JUL 22 2002
WATER RIGHTS TEAM

RED RIVER COMPACT COMMISSION

SPECIAL COMMITTEE ON POSITION AND DUTIES OF FEDERAL COMMISSIONER INTERIM REPORT

At its annual meeting on April 9, 2002, the Red River Compact Commission created a Special Committee to review and report on the position and duties of the Federal Commissioner. Part of the assignment to the Special Committee is to present a proposed list of duties that the Commission could specify to be undertaken by the Federal Commissioner. An Interim Report is to be completed by May 31, 2002. Herman Settemeyer, P.E., Engineering Advisor for Texas, was designated as Chairman of the Special Committee.

COMPACT PROVISIONS

STATES RIGHTS - Section 2.01 provides that each Signatory State may use the water allocated to it by this Compact in any manner deemed beneficial by that state. Each state may freely administer water rights and uses in accordance with the laws of that state, but such uses shall be subject to the availability of water in accordance with the apportionments made by this Compact.

APPOINTMENT, CHAIRMAN, FAILURE TO APPOINT - Article IX, Section 9.01, of the Compact states that the Commission shall be composed of two representatives from each Signatory State "and one Commissioner representing the United States, who shall be appointed by the President." Section 9.01 goes on to provide that "[t]he Federal Commissioner shall be the Chairman of the Commission but shall not have a right to vote." If the President fails to appoint a Federal Commissioner, Section 9.01 is clear that such failure will not prevent the operation or effect of the Compact, "and the eight representatives from the Signatory States will elect a Chairman for the Commission."

COMMISSION ACTIONS - Section 9.03 provides that representatives for three states shall constitute a quorum. Any action concerned with administration of the Compact or any action requiring compliance with specific terms of this Compact shall require six concurring votes. If a proposed action of the Commission affects existing water rights in a state, and that action is not expressly provided for in this Compact, eight concurring votes shall be required.

EXPENSES - Section 9.04(a) of the Compact indicates that the salaries and personal expenses of each state's representatives shall be paid by the government represented, "and the salaries and personal expenses of the Federal Commissioner will be paid for by the United States." Section 9.04(b) is a provision on the costs of stream gauging. Section 9.04(c) of the Compact provides that "[a]ll other expenses incurred by the Commission shall be borne equally by the Signatory States. . .."

COMMISSION RULES

The Commission's Rules for Internal Organization in Article II reiterate the Compact language that the Federal Commissioner shall be the Chairman of the Commission. The rules go on to provide that the duties of the Federal Commissioner "shall be those usually imposed upon such officers and [duties] as may be assigned by these rules or by the Commission from time to time." After several years of not having a Federal Commissioner appointed or otherwise available to chair annual meetings, the Commission's rules evolved to provide for the election of the Vice-Chairman from the Commissioners of the host state for the coming year, with such Vice-Chairman to serve as Chairman in the event the President fails to appoint a Federal Commissioner or in the absence of a Federal Commissioner. The one-year term of such Vice-Chairman is from July 1 through June 30. Finally, Rule 2.7 provides that whenever there is a permanent change in the Commander of the Lower Mississippi Valley Division, the Vice-Chairman "shall immediately request the President to appoint the new Commander as the U.S. Commissioner to the Compact Commission."

RECOMMENDED LIST OF CHAIRMAN DUTIES

As noted above, the Compact itself declares that the Federal Commissioner is the Chair of the Commission. The Commission's rules clarify that there are three categories of duties of the Federal Commissioner as Chairman: (1) those usually imposed on such officers, (2) those assigned by the Commission's rules, and (3) duties assigned to the Chairman from time to time.

DUTIES USUALLY IMPOSED ON CHAIRMEN – Duties usually imposed on chairpersons of organizations are generally described in Robert's Rules of Order, and range from calling meetings to order, to recognizing members for motions and debate on questions, to drafting the agendas and ensuring that the agendas are followed once adopted by the Commission. General familiarity with parliamentary procedures would be an appropriate prerequisite for a Federal Chairman.

DUTIES ASSIGNED BY COMMISSION RULES – Duties assigned to the Federal Chairman by the Commission's rules include the following (numbers are rule designations):

- 3.1 – May maintain principal office of the Commission (either office of Chairman or Secretary as directed by the Commission)
- 4.2 – May or shall call special meetings (anytime by chairman, or on request of commissioners from two states)
- 4.3 – Shall send notice of special meetings to all members of the Commission by ordinary mail at least 10 days in advance of the special meeting (such notice should include a draft meeting agenda)
- 4.4 – Shall call emergency meetings upon concurrence of at least two states
- 4.5 – Shall furnish notice of all meetings to the Commissioners of the states (such notice should include a draft meeting agenda), who shall then provide the notice to the public in accordance to the respective state's requirements
- 5.4 – May appoint non-voting member of each standing committee

OTHER DUTIES THAT MIGHT BE ASSIGNED FROM TIME TO TIME

A review of the Commission's minutes since the Commission's organizational meeting in 1981 shows that the Commission has not made any particular assignments to the Federal Commissioner. However, the Commission rules clearly envisioned that the Commission could assign duties to the Federal Commissioner. The following categories of activities may be appropriate for the Commission to assign to the Federal Commissioner:

1. Facilitator/mediator – The Commission could designate specific issues that could be subject of facilitation or mediation of a resolution. Facilitation and/or mediation could be arranged for meetings of the appropriate members of standing committees and/or Commissioners from the states involved with the particular issue.
2. Organization of annual, special and emergency meetings – Instead of having the host state take on the secretarial and other administrative roles to organize Commission meetings (coordinate calendars among other commissioners, schedule and block hotel rooms and meeting rooms, organize field trips, etc.), the Federal Commissioner could be assigned that role. The host state rotating Secretary could still be responsible for recording or arranging court reporter services to transcribe meeting proceedings (if deemed necessary by the Commission) and preparation of the Commission's annual report.
3. Commission's principal office – The Federal Commissioner could be assigned the specific task of establishing a permanent "principal office" of the Commission. It should be noted that the Commission's rule 3.1 currently provides that the principal office of the Commission shall be the office of the Federal Chairman or the Secretary. If the office of the Federal Chairman is at a great distance or otherwise inconvenient for the public or representatives of the Signatory States, the Commission could designate a particular physical location for a permanent office or assign the duty of finding a suitable office location (perhaps at permanent offices of a participating federal agency) to the Federal Commissioner. The Commission could specify that the Federal Commissioner inventory and gather originals or copies of all permanent records of the Commission, such as agendas, minutes, copies of reports and the annual reports of the Commission and locate the same at the principal office. Inventories of the records should be made available to the Signatory States.
4. Stationary and correspondence of Commission – The Commission could assign the duty to the Federal Commissioner of coordinating all correspondence of the Commission. As part of this assignment, uniform letterhead stationary could be prepared and kept by the Federal Commissioner. The Federal Commissioner could recommend a policy concerning preparation and use of Commission's stationary by individual Commissioners from the Signatory States.

OTHER SPECIAL COMMITTEE RECOMMENDATIONS

As discussed at the meeting on April 11th, there may be some misunderstanding or confusion caused by Commission Rule 2.7. Rule 2.7 currently mandates that the Vice-Chair immediately request the President to appoint the new Commander of the Lower Mississippi Valley Division as Federal Commissioner whenever there is a permanent change of the Commander. As was reported at the annual meeting, the current Commander is retiring. If Rule 2.7 no longer reflects the intent of the Commission, the rule

should be amended or revoked. It is the view of the Special Committee that changing the rule requires the vote of six of the eight state commissioners.

SPECIAL COMMITTEE MEMBERS

6/18/02
Herman Settemeyer
Engineer Advisor - Texas

Jane E. Atwood 6/27/02
Jane Atwood
Legal Advisor - Texas

6/19/02
Mike Mathis
Engineer Advisor - Oklahoma

6/19/02
Dean Couch
Legal Advisor - Oklahoma

Z. Bolourchi 7/8/02
Zahir "Bo" Bolourchi
Engineer Advisor - Louisiana

7/8/02
Gary Etheridge
Legal Advisor - Louisiana

7-15-02
Earl Smith
Engineer Advisor - Arkansas

7/15/02
Mark Bennett
Legal Advisor - Arkansas

0176

STREAMFLOW GAGE DATA

WATER YEAR OCTOBER 2001 through SEPTEMBER 2002

(as recommended for inclusion in the annual report by the Engineering Committee)

RED RIVER BASIN

07337000 RED RIVER AT INDEX

LOCATION.--Lat 33°33'07", long 94°02'28", in NW1/4SW1/4 sec.7, T.14 S., R.28 W., Miller County, Hydrologic Unit 11140106, near right bank on downstream side of southbound bridge on U.S. Highway 71 at Index, 2.2 mi south of Ogden, 20.6 mi upstream from Little River, and at mile 485.3.

DRAINAGE AREA.--48,030 mi^2, of which 5,936 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1936 to current year. Gage-height records collected at same site since 1917 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 246.87 ft above NGVD of 1929. Prior to Dec. 12, 1939, nonrecording gage, and Dec. 12, 1939, to July 19, 1979, water-stage recorder, at site 500 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Some regulation since Oct. 31, 1943, by Lake Texoma (Texas), 241 mi upstream, capacity, 5,392,900 acre-ft, since Sept. 28, 1967, by Pat Mayse Lake (Texas), capacity, 352,700 acre-ft, and since Jan. 18, 1974, by Hugo Lake (Oklahoma) capacity, 966,700 acre-ft. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2840	3240	4770	18900	16500	9270	56800	30900	5100	4840	7610	4550
2	2570	2640	3860	18000	40600	8220	50300	29500	4580	4690	7480	5580
3	2430	2200	3210	18600	45800	8020	44900	26900	4820	4590	7290	5750
4	2340	2100	3020	17400	37100	7120	37100	24800	4990	4500	6440	5780
5	2270	2500	2700	15000	28800	6190	32100	21900	5100	4340	6120	5000
6	2160	3070	2510	12600	24500	5580	30600	19800	4820	4560	5680	3510
7	1990	3020	2540	11600	23100	8180	30400	17200	4960	5970	5490	3100
8	2310	2540	2570	11200	26400	11100	33100	13100	6080	6980	5640	4530
9	2430	2190	2720	9580	29800	10800	56900	11900	7710	6500	5900	5350
10	2530	1920	2960	7160	25800	8190	78900	12800	7620	5890	5930	5480
11	4260	1790	3170	6090	21800	6290	81000	13100	8560	5310	5950	5060
12	6660	1820	5130	7310	19200	6690	67500	11500	8290	5340	5260	3890
13	7970	1940	7550	7910	16400	7160	56800	9200	7450	5600	4670	3340
14	11000	2000	7940	6720	14300	7750	56300	9230	6520	5170	5120	3180
15	18100	1980	7390	5820	13300	7050	61600	9760	5280	4450	5300	4140
16	22200	1950	11200	5710	12200	6020	69900	8930	4540	4610	5060	5290
17	21800	1800	39400	4910	8970	5780	73200	7500	4330	5200	5100	5230
18	18600	1640	67400	4330	7180	6070	68300	7400	5970	5260	5760	5240
19	15400	1630	70200	5620	6960	6730	64900	10500	8100	4470	9930	4960
20	13200	1760	54400	7430	7010	17300	66600	12100	7830	3880	13600	4140
21	11500	1810	43000	7600	8370	63500	68600	12500	5890	4130	11300	3320
22	9230	1810	36500	7570	12700	88900	68900	11800	4300	4240	9990	3150
23	8110	1780	38900	7370	18700	90700	66000	9870	3850	4700	8790	3680
24	8140	1690	39600	6930	17900	65000	62100	7520	3750	5540	6710	3500
25	7190	1580	34700	9640	14400	51300	54100	5380	3610	6520	5420	3190
26	4770	1580	29300	14700	12400	50100	48600	4560	3490	6660	4690	2910
27	3500	1710	26400	17600	11200	46700	44800	4540	3320	6900	3990	2650
28	3820	2450	25300	17600	9950	43800	42200	4680	3140	7310	3630	2510
29	3790	4250	24400	15900	---	42600	36500	5520	2900	7400	3400	2600
30	3410	5170	22900	13400	---	41300	32300	5590	4030	7490	2900	2540
31	3270	---	21100	11400	---	53300	---	4900	---	7650	2700	---
TOTAL	229790	67560	646740	331600	531340	796710	1641300	384880	160930	170690	192850	123150
MEAN	7413	2252	20860	10700	18980	25700	54710	12420	5364	5506	6221	4105
MAX	22200	5170	70200	18900	45800	90700	81000	30900	8560	7650	13600	5780
MIN	1990	1580	2510	4330	6960	5580	30400	4540	2900	3880	2700	2510
AC-FT	455800	134000	1283000	657700	1054000	1580000	3256000	763400	319200	338600	382500	244300

07337000 RED RIVER AT INDEX-CONTINUED

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)

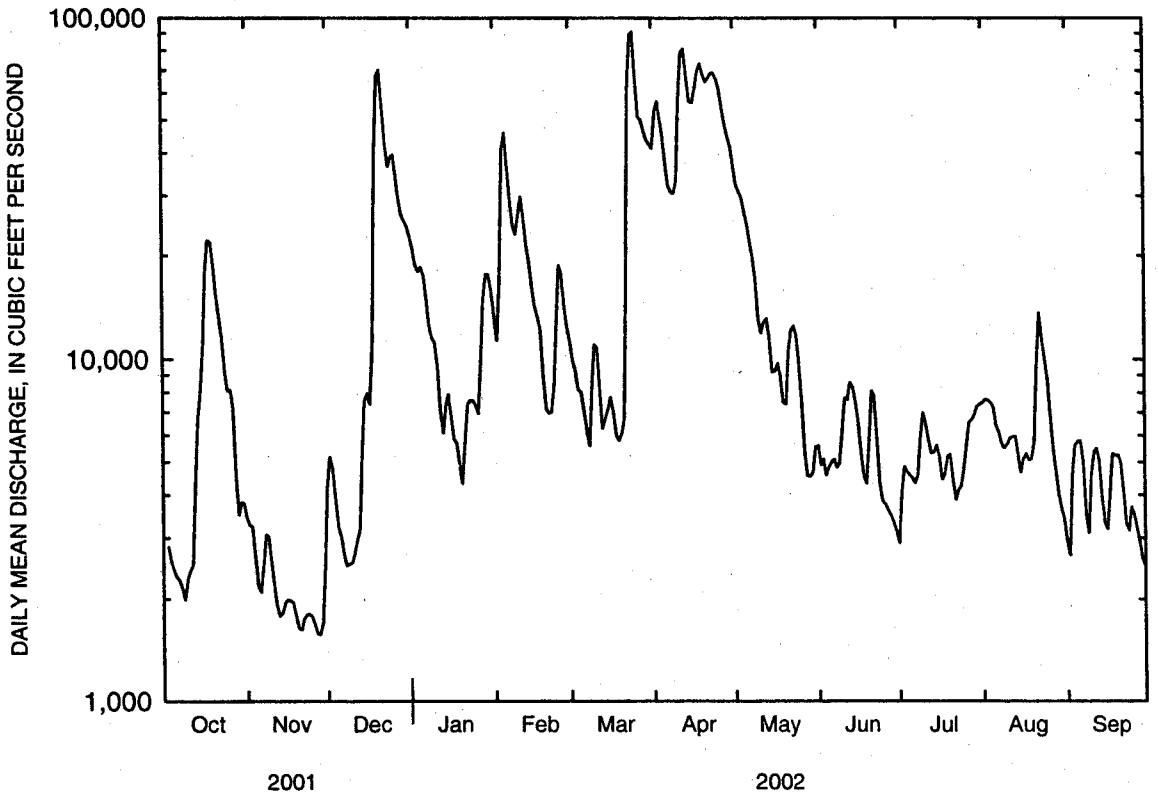
MEAN	8060	10760	12170	11340	14340	17630	17240	23740	21710	9712	5791	5895
MAX	41690	47140	47910	60160	38960	67730	61460	121000	94400	33990	39230	30340
(WY)	1946	1975	1992	1998	.1946	1945	1990	1990	1957	1989	1950	1950
MIN	716	642	1206	1360	2127	2233	2096	4199	3098	1162	1025	909
(WY)	1957	1957	1957	1964	1964	1967	1956	1972	1988	1944	1944	1944

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1944 - 2002	
ANNUAL TOTAL	6418330		5277540			
ANNUAL MEAN	17580		14460		[1]13210	
HIGHEST ANNUAL MEAN					30420	1990
LOWEST ANNUAL MEAN					4383	1964
HIGHEST DAILY MEAN	96400	Feb 19	90700	Mar 23	268000	May 10 1990
LOWEST DAILY MEAN	1580	Nov 25	1580	Nov 25	384	Nov 28 1956
ANNUAL SEVEN-DAY MINIMUM	1710	Nov 21	1710	Nov 21	397	Oct 19 1956
MAXIMUM PEAK FLOW			96800	Mar 23	[2]270000	May 10 1990
MAXIMUM PEAK STAGE			17.59	Mar 23	[3]32.30	May 10 1990
INSTANTANEOUS LOW FLOW			1540	Nov 25-26	378	Nov 28 1956
ANNUAL RUNOFF (AC-FT)	12730000		10470000		9570000	
10 PERCENT EXCEEDS	46800		42800		35300	
50 PERCENT EXCEEDS	8630		6730		6010	
90 PERCENT EXCEEDS	2540		2560		2290	

[1]Prior to regulation, water years 1937-43, 11,970 ft^3/s

[2]Maximum discharge for period of recorld 297,000 ft^3/s Feb. 23, 1938

[3]Maximum gage height for period of record, 34.25 ft Feb. 23, 1938, from graph based on gage readings



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947-1956, April 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
OCT											
24...	1345	81213	80513	7940	757	8.1	93	8.3	452	21.7	120
JAN											
16...	1415	81213	80513	5380	771	10.9	94	8.2	1130	9.4	280

Date	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN,, AMMONIA DISSOLVED (MG/L AS N) (00608)
OCT										
24...	34.0	7.90	3.40	2	39.0	41	54.0	62.0	260	.04
JAN										
16...	72.0	24.0	4.80	3	110	46	160	170	663	.14

Date	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)
OCT									
24...	.90	.05	.08	<.010	.86	.98	.061	<.02	.02
JAN									
16...	.70	.18	.20	<.010	.56	.90	.031	<.02	.01

Date	PHOSPHORUS TOTAL (MG/L AS P) (00665)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT							
24...	.13	340	E250	210	85	232	4970
JAN							
16...	.07	E23	E20	E11	95	163	2370

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	SAMPLE LOCATION, CROSS SECTION (FT FM R BK) (72103)	SAMPLING DEPTH (FEET) (00003)	STREAM WIDTH (FT) (00004)	BAROMETRIC PRESSURE (MM OF HG) (00025)	TEMPERATURE WATER (DEG C) (00010)
JAN								
16...	1417	80513	80513	1030	1.00	400	771	9.4
16...	1418	80513	80513	990.0	1.00	400	771	9.4
16...	1419	80513	80513	950.0	1.00	400	771	9.4
16...	1420	80513	80513	910.0	1.00	400	771	9.4
16...	1421	80513	80513	870.0	1.00	400	771	9.4
16...	1422	80513	80513	830.0	1.00	400	771	9.4
16...	1423	80513	80513	790.0	1.00	400	771	9.4
16...	1424	80513	80513	750.0	1.00	400	771	9.4
16...	1425	80513	80513	710.0	1.00	400	771	9.5
16...	1426	80513	80513	670.0	1.00	400	771	9.5

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
MAR											
05...	1330	81213	80513	6330	768	9.8	81	8.1	990	7.2	230
APR											
24...	1300	81213	80513	58300	775	8.4	91	7.8	838	19.7	190
JUN											
26...	1620	81213	80513	3240	771	6.9	90	8.4	559	29.6	180

07337000 RED RIVER AT INDEX--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
MAR										
05...	62.0	19.0	3.70	3	98.0	47	140	140	588	.05
APR										
24...	51.0	15.0	3.10	3	86.0	49	100	98.0	405	.03
JUN										
26...	51.0	12.0	4.60	1	42.0	33	43.0	60.0	326	.04

Date	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)
MAR								
05...	.70	.06	.14	<.010	.65	.84	.153	<.02
APR								
24...	.70	.04	.17	<.010	.67	.87	.031	<.02
JUN								
26...	1.0	.05	<.02	<.010	.96	--	--	<.02

Date	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAR								
05...	.05	.12	E28	40	42	95	180	3080
APR								
24...	.01	.22	E42	96	E12	64	865	136000
JUN								
26...	<.01	.08	E10	E6	54	73	73	639

Date	Time	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL-LECTING SAMPLE (CODE NUMBER) (00027)	SAM-PLING DEPTH (FEET) (00003)	STREAM WIDTH (FT) (00004)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE WATER (DEG C) (00010)	SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009)
AUG								
22...	1300	80513	80513	1.00	410	762	30.2	670
22...	1302	80513	80513	1.00	410	762	30.3	711
22...	1305	80513	80513	1.00	410	762	30.3	752
22...	1306	80513	80513	1.00	410	762	30.2	793
22...	1309	80513	80513	1.00	410	762	30.2	834
22...	1310	80513	80513	1.00	410	762	30.2	875
22...	1311	80513	80513	1.00	410	762	30.3	916
22...	1312	80513	80513	1.00	410	762	30.3	957
22...	1313	80513	80513	1.00	410	762	30.3	998
22...	1314	80513	80513	1.00	410	762	30.3	1040

Date	Time	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL-LECTING SAMPLE (CODE NUMBER) (00027)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
AUG											
22...	1315	81213	80513	9990	762	7.5	100	7.9	990	30.2	220

Date	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
AUG										
22...	59.0	18.0	4.60	3	98.0	48	150	140	581	.01

07337000 RED RIVER AT INDEX--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHO PHOSPHATE, DISSOLVED (MG/L AS P) (00671)
AUG 22...	1.0	.01	.14	<.010	.99	1.1	<.02	<.01

Date	PHOSPHORUS TOTAL (MG/L AS P) (00665)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
AUG 22...	.20	300	400	370	92	347	9360

Remark codes used in this report:
< -- Less than
E -- Estimated value

WATER TEMPERATURE, DEGREES C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	23.0	20.2	21.5	18.2	16.6	17.4	9.7	8.1	8.9	7.1	6.6	6.9
2	26.1	18.1	21.2	22.5	17.5	19.1	10.7	9.1	9.8	6.6	5.8	6.2
3	27.1	18.5	21.6	24.9	16.9	20.1	11.5	10.1	10.7	5.8	5.0	5.4
4	26.2	19.5	21.9	23.6	16.7	19.0	13.8	11.4	12.7	5.1	4.4	4.8
5	24.0	16.3	20.6	26.0	15.5	19.0	17.3	13.0	15.4	4.9	4.7	4.8
6	18.8	12.4	15.5	19.8	18.1	19.0	18.0	16.3	17.1	5.6	4.5	5.0
7	23.4	11.9	16.4	19.8	18.1	19.0	19.3	16.3	17.8	5.8	4.8	5.3
8	24.8	13.6	17.9	22.5	15.6	18.7	17.9	11.5	14.0	6.2	4.8	5.5
9	22.0	16.6	19.7	20.1	15.5	17.2	13.4	9.9	11.3	7.7	5.6	6.5
10	22.6	20.3	21.3	20.9	15.0	17.2	13.2	10.5	12.1	8.8	7.6	8.0
11	20.8	19.5	19.9	25.9	13.1	17.6	12.4	11.3	11.6	9.9	8.8	9.3
12	20.7	19.4	20.0	22.7	13.6	17.0	11.5	10.9	11.1	9.6	8.7	9.2
13	20.7	19.8	20.2	21.1	14.5	17.3	11.4	11.1	11.2	9.5	8.4	9.1
14	19.9	18.7	19.4	22.5	14.3	17.7	11.3	10.7	11.0	9.8	8.8	9.3
15	19.9	18.8	19.4	23.9	13.6	17.4	10.8	10.2	10.4	9.6	8.6	9.2
16	19.2	18.3	18.6	21.6	14.7	17.4	10.7	10.3	10.4	9.6	8.9	9.2
17	18.3	17.4	17.7	21.5	14.2	16.9	11.2	10.7	11.0	9.8	9.3	9.6
18	17.7	16.8	17.3	24.1	12.5	17.6	11.3	10.9	11.1	9.3	8.2	8.5
19	18.1	16.7	17.4	18.3	11.4	15.8	11.2	10.7	10.9	8.4	7.8	8.0
20	18.9	17.6	18.2	20.0	8.5	11.8	10.7	10.1	10.4	7.9	7.2	7.6
21	19.6	18.2	18.8	20.4	7.1	11.1	10.2	9.7	10.0	8.3	7.0	7.7
22	20.5	18.8	19.6	16.5	9.5	13.1	10.2	9.8	10.0	8.5	7.5	7.9
23	21.2	20.0	20.6	21.3	15.3	18.3	10.1	9.6	9.8	10.3	8.5	9.2
24	21.9	20.8	21.3	22.6	12.8	16.2	9.6	9.2	9.4	10.5	9.9	10.3
25	21.3	19.8	20.5	23.2	9.0	14.9	9.2	8.7	9.0	9.9	9.0	9.5
26	20.3	18.5	19.3	20.0	11.4	15.8	8.8	8.1	8.4	9.5	8.5	9.0
27	19.0	17.5	18.1	15.2	6.5	11.4	8.2	7.5	7.9	9.4	8.4	8.9
28	17.8	16.3	16.9	9.8	5.4	7.5	8.4	7.7	8.0	9.9	8.8	9.3
29	17.3	15.7	16.4	9.4	7.7	8.7	8.4	7.9	8.2	10.7	9.7	10.2
30	17.1	15.6	16.3	8.7	7.3	8.0	8.1	7.4	7.8	12.7	10.6	11.5
31	17.3	15.5	16.5	---	---	---	7.5	7.0	7.2	13.0	11.6	12.6
MONTH	27.1	11.9	19.0	26.0	5.4	15.9	19.3	7.0	10.8	13.0	4.4	8.2

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WATER TEMPERATURE, DEGREES C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.6	9.9	10.7	8.6	7.9	8.1	15.5	14.2	14.8	22.7	20.8	21.6
2	9.9	8.1	8.7	8.4	7.0	8.0	16.7	15.5	16.1	22.9	22.5	22.7
3	8.1	7.8	7.9	7.0	5.5	6.2	16.9	16.2	16.6	22.5	20.7	21.4
4	8.3	7.8	8.0	6.8	4.9	5.9	16.4	15.7	16.0	20.7	19.9	20.2
5	8.1	6.9	7.6	7.8	5.7	6.7	16.0	15.1	15.5	20.4	19.4	19.8
6	6.9	6.6	6.7	9.3	7.2	8.0	15.4	14.7	15.0	22.4	20.3	21.2
7	7.1	6.4	6.8	12.0	9.3	10.6	---	---	---	23.5	21.8	22.5
8	7.6	6.8	7.2	12.2	11.1	11.5	15.0	14.5	14.8	24.5	22.6	23.5
9	7.7	7.2	7.5	13.1	12.2	12.6	14.8	14.2	14.6	24.9	23.6	24.2
10	7.5	7.1	7.3	12.5	11.2	11.9	15.3	14.0	14.5	24.4	22.9	23.5
11	7.7	6.7	7.2	12.0	10.4	11.1	16.6	15.3	15.8	24.1	22.2	23.0
12	8.1	6.9	7.5	11.1	10.0	10.5	17.5	16.6	17.0	24.7	23.0	23.7
13	8.7	7.5	8.1	12.6	10.2	11.3	18.0	17.3	17.6	24.5	22.6	23.5
14	8.9	7.8	8.3	14.7	12,0	13.1	18.3	17.5	17.9	23.9	22.2	23.2
15	8.7	8.1	8.4	15.7	14.4	15.0	18.4	17.8	18.1	24.0	22.3	23.2
16	9.2	7.6	8.4	15.5	13.5	14.3	18.2	17.8	17.9	24.0	22.5	23.3
17	9.7	8.2	9.0	13.5	13.1	13.2	18.3	17.6	18.0	24.1	22.5	23.4
18	9.8	9.0	9.5	13.5	12.9	13.2	19.1	18.0	18.5	22.5	21.2	21.8
19	11.0	9.8	10.5	14.2	13.5	13.8	19.5	18.8	19.1	22.4	20.4	21.5
20	12.2	10.3	11.2	14.6	14.0	14.3	19.4	18.9	19.2	22.9	20.8	21.8
21	11.8	11.1	11.4	14.3	13.7	14.0	19.5	19.2	19.4	23.3	21.3	22.3
22	12.2	10.6	11.4	13.9	13.1	13.4	19.4	18.9	19.2	23.6	21.5	22.5
23	12.0	11.0	11.5	13.1	12.5	12.9	19.3	18.5	18.9	23.9	21.8	22.9
24	12.5	11.2	11.8	13.0	12.7	12.8	19.7	19.0	19.3	24.0	22.7	23.4
25	12.7	11.9	12.2	13.6	13.0	13.2	19.4	18.7	19.0	25.4	23.2	24.1
26	11.9	9.5	10.7	13.1	12.1	12.5	18.9	17.3	18.1	26.4	24.0	25.0
27	9.6	8.5	9.1	12.5	11.5	12.0	17.6	17.0	17.3	26.8	24.4	25.5
28	9.1	7.6	8.4	13.6	12.2	12.8	18.8	17.5	18.0	26.3	24.7	25.5
29	---	---	---	14.5	13.5	14.0	19.4	18.3	18.8	25.9	24.7	25.1
30	---	---	---	14.6	14.1	14.4	21.0	19.2	20.0	25.5	24.5	24.9
31	---	---	---	14.4	13.7	14.1	---	---	---	27.2	24.5	25.7
MONTH	12.7	6.4	9.0	15.7	4.9	11.8	---	---	---	27.2	19.4	23.1
		JUNE			JULY			AUGUST			SEPTEMBER	
1	28.8	25.8	27.1	28.8	27.5	28.1	31.6	29.8	30.7	30.5	28.4	29.3
2	29.7	27.2	28.3	29.5	27.7	28.4	31.7	30.1	30.9	30.8	28.9	29.7
3	30.1	27.8	28.9	29.6	27.6	28.5	31.8	30.1	31.0	30.8	29.0	29.9
4	30.3	28.3	29.3	30.6	28.0	29.2	32.4	30.4	31.4	30.8	29.2	30.0
5	30.1	28.4	29.2	32.0	29.0	30.3	32.1	30.4	31.2	30.5	29.2	29.8
6	29.9	28.0	29.0	32.4	30.0	31.1	32.1	30.3	31.1	30.3	28.7	29.4
7	29.9	27.7	28.8	32.7	30.8	31.6	31.7	30.3	31.0	28.7	26.2	27.9
8	29.5	28.0	28.7	32.7	30.7	31.8	31.0	29.5	30.3	28.0	26.9	27.4
9	28.8	27.8	28.2	33.1	31.1	32.0	30.9	29.0	29.9	27.5	26.7	27.1
10	28.7	27.0	27.8	33.1	31.5	32.3	30.8	29.2	30.0	28.5	26.3	27.2
11	29.1	27.5	28.3	32.7	31.5	32.2	30.3	29.0	29.6	29.3	27.2	28.1
12	30.2	28.0	29.0	32.9	30.7	31.6	30.5	28.5	29.4	29.1	27.5	28.3
13	30.5	29.0	29.7	32.6	30.7	31.6	30.3	28.7	29.4	29.3	27.0	28.1
14	29.5	28.4	28.9	31.5	30.3	30.9	29.4	28.0	28.6	28.9	26.9	28.0
15	29.1	27.2	28.1	30.5	29.2	29.9	28.6	27.6	28.0	29.2	27.3	28.3
16	28.4	26.8	27.4	30.0	28.1	28.9	27.8	27.0	27.3	28.7	27.2	27.7
17	28.9	25.9	27.3	28.9	27.4	28.0	29.0	26.5	27.6	27.9	26.8	27.3
18	29.0	26.7	27.9	30.4	27.7	28.8	30.3	28.2	29.0	27.9	26.5	27.0
19	29.4	27.4	28.4	31.4	29.0	30.1	30.4	28.7	29.6	27.2	25.6	26.5
20	29.5	28.0	28.9	32.2	29.9	31.0	30.3	28.8	29.6	26.7	25.1	25.7
21	30.1	28.3	29.1	32.9	30.5	31.6	30.6	28.9	29.7	26.8	24.6	25.6
22	30.4	28.3	29.3	33.1	30.9	32.0	31.1	29.3	30.1	26.9	24.9	25.9
23	30.7	28.6	29.6	32.7	31.1	32.0	31.1	29.5	30.4	25.9	23.5	24.5
24	30.6	28.7	29.5	32.2	31.1	31.6	31.4	29.8	30.7	24.0	22.3	23.2
25	30.2	28.1	29.0	31.8	30.3	31.1	31.2	29.5	30.2	23.9	21.8	22.8
26	29.9	27.9	28.9	32.2	30.1	31.1	31.2	29.1	30.0	23.1	21.7	22.5
27	29.6	27.9	28.6	31.5	30.3	31.0	30.6	29.0	29.4	26.6	20.5	23.2
28	29.8	27.9	28.8	31.2	29.9	30.6	29.8	27.7	28.7	29.2	20.4	24.3
29	28.5	26.3	27.3	30.9	29.5	30.2	29.2	27.7	28.4	29.8	21.8	24.8
30	29.0	27.5	28.1	31.2	29.5	30.4	28.2	26.4	27.5	30.9	22.1	25.6
31	---	---	---	31.2	29.7	30.5	30.1	25.0	27.5	---	---	---
MONTH	30.7	25.8	28.6	33.1	27.4	30.6	32.4	25.0	29.6	30.9	20.4	26.8

RED RIVER BASIN

07340000 LITTLE RIVER NEAR HORATIO

LOCATION.--Lat 33°55'10", long 94°23'15", in NE1/4 sec.10, T.10 S., R.32 W., Sevier County, Hydrologic Unit 11140109, near left bank on downstream side of bridge on State Highway 41, 0.9 mi downstream from Rolling Fork, 2.0 mi southwest of Horatio, 28.5 mi upstream from Cossatot River, and at mile 72.0.

DRAINAGE AREA.--2,662 mi^2.

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 858: 1932, 1935-36. WSP 1211: 1931, drainage area. WSP 1561: 1932. WDR Ark. 1978: drainage area.

GAGE.--Water-stage recorder. Datum of gage is 272.89 ft above NGVD of 1929. Prior to Feb. 5, 1935, nonrecording gage, and Feb. 5, 1934, to Sept. 13, 1961, water-stage recorder, at site 50 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good Some regulation since Oct. 3, 1968, by Broken Bow Lake (Oklahoma), 31.4 mi upstream, capacity, 1,368,000 acre-ft, and since June 1, 1969, by Pine Creek Lake (Oklahoma), 73.3 mi upstream, capacity, 465,800 acre-ft. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1915, reached a stage of 38.0 ft, discharge, 124,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	463	1920	1920	11400	16400	3260	23700	9030	13000	590	3140	522
2	484	695	1600	11700	17600	3430	16400	8870	7340	707	3910	510
3	455	806	1390	10600	16600	3060	14600	5070	6250	1030	3150	598
4	472	501	1420	9880	14800	3780	14700	5970	5710	830	1470	1140
5	995	451	1970	9280	15000	4560	15500	2830	5690	830	1190	1230
6	716	662	2080	6680	15100	4530	14600	1680	4540	1000	1470	1550
7	539	752	1950	5180	15300	3150	13200	3040	4370	1320	1140	1210
8	453	770	3080	5590	16300	1970	13600	3340	5880	924	1040	688
9	471	886	3230	4610	15900	1750	16200	2710	3030	1590	783	555
10	447	503	2390	3870	11000	2100	15900	3630	4180	2050	558	994
11	583	451	3060	4320	9200	2620	15400	4170	3550	1320	564	1030
12	701	450	5170	3670	10900	3770	17100	2260	3580	852	544	635
13	2850	448	5800	1720	10800	4300	17600	1420	2570	649	680	549
14	5070	637	6620	1130	10500	5280	16500	1480	1470	589	806	523
15	3560	751	6330	3130	8530	5020	15400	1730	874	555	622	660
16	1750	477	12100	2840	8410	4160	15600	1790	709	1800	669	697
17	2740	450	27200	3120	7930	2460	16600	4260	600	2190	971	587
18	3160	448	29900	3280	6510	2200	16700	7960	601	1370	681	528
19	3190	446	28300	3060	7150	4130	15700	4940	796	988	534	699
20	2820	447	27200	1200	12800	18200	15500	2370	1470	2690	664	1100
21	1430	447	23400	900	12900	25800	15600	3980	987	2700	590	1110
22	872	538	14800	2150	11100	24400	15400	4320	1430	2320	530	779
23	811	460	11800	3940	9440	23100	13300	3710	1040	1630	1500	600
24	1040	473	13100	4330	6970	21200	12700	2430	589	1570	2000	662
25	1370	452	14200	8070	6180	17400	12400	1220	1570	2050	1040	597
26	1650	446	15000	11000	5980	16900	12800	992	973	1290	624	596
27	1590	448	15100	10900	5870	17400	12900	952	635	1060	893	655
28	550	572	13000	10500	4270	17200	8980	2950	589	831	1410	646
29	454	2120	13100	9680	---	17000	5960	9130	576	744	884	566
30	1420	2490	13100	9650	---	18800	6740	14800	637	1070	670	640
31	2350	---	12700	10100	---	25700	---	15800	---	946	538	---
TOTAL	45456	21397	332010	187480	309440	308630	437280	138834	85236	40085	35265	22856
MEAN	1466	713.2	10710	6048	11050	9956	14580	4479	2841	1293	1138	761.9
MAX	5070	2490	29900	11700	17600	25800	23700	15800	13000	2700	3910	1550
MIN	447	446	1390	900	4270	1750	5960	952	576	555	530	510
AC-FT	90160	42440	658500	371900	613800	612200	867300	275400	169100	79510	69950	45330

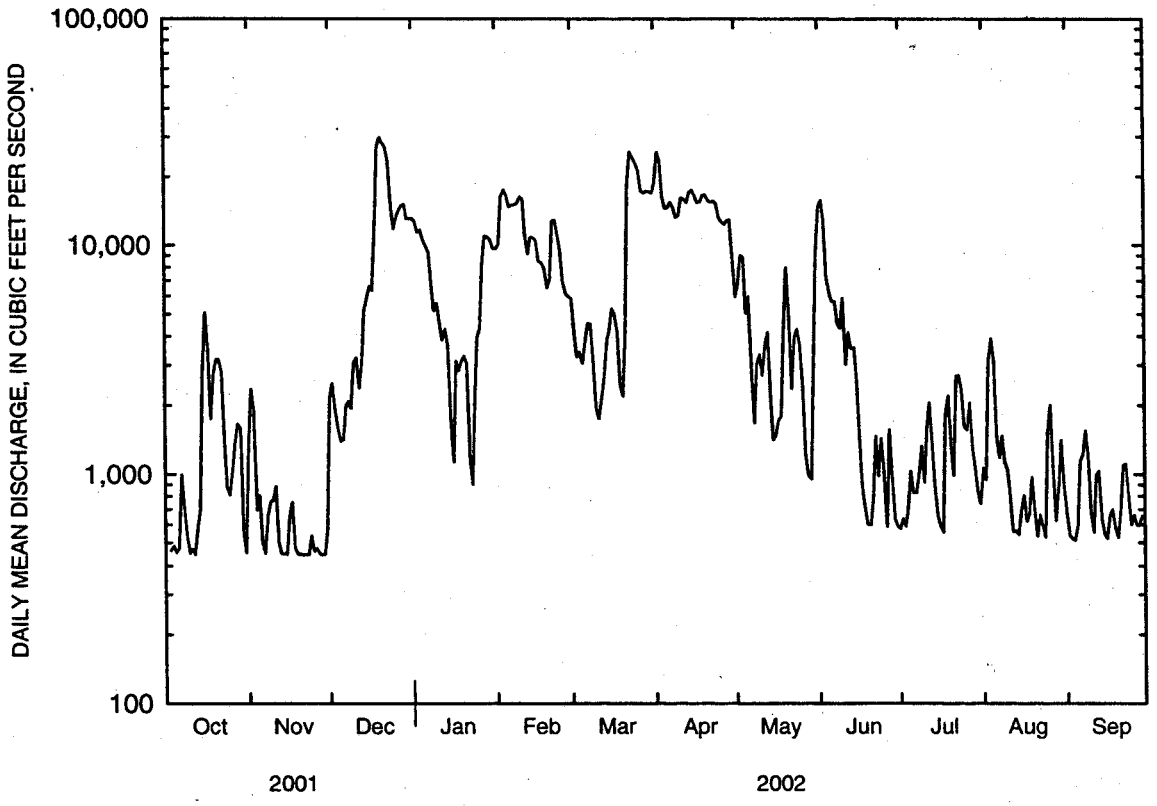
07340000 LITTLE RIVER NEAR HORATIO--CONTINUED

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2002, BY WATER YEAR (WY)

MEAN	2104	4410	6531	4901	5905	7058	5739	6039	4206	1724	1149	1449
MAX	9360	15960	17120	15890	12390	15020	16250	16790	14180	8397	3542	10430
(WY)	1985	1975	1972	1998	1989	1997	1973	1990	1990	1983	1992	1974
MIN	242	232	244	493	669	665	1449	530	346	281	411	303
(WY)	2000	2000	1990	1981	1996	1996	1981	1988	1988	1972	1977	1977

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1969 - 2002	
ANNUAL TOTAL	1827192		1963969			
ANNUAL MEAN	5006		5381		[1]4259	
HIGHEST ANNUAL MEAN					7523	1973
LOWEST ANNUAL MEAN					1547	1976
HIGHEST DAILY MEAN	31400	Feb 17	29900	Dec 18	57700	Dec 12 1971
LOWEST DAILY MEAN	446	Nov 19	446	Nov 19	[2]121	Oct 5 1972
ANNUAL SEVEN-DAY MINIMUM	462	Nov 17	462	Nov 17	152	Oct 4 1972
MAXIMUM PEAK FLOW			30900	Dec 17	[3]65100	Dec 10 1971
MAXIMUM PEAK STAGE			28.62	Dec 17	[4]32.84	Dec 10 1971
ANNUAL RUNOFF (AC-FT)	3624000		3896000		3085000	
10 PERCENT EXCEEDS	15100		15500		12600	
50 PERCENT EXCEEDS	2130		2370		1860	
90 PERCENT EXCEEDS	637		550		367	

[1]Prior to regulation, water years 1931-68, 3,742 ft^3/s
[2]Minimum discharge for period of record, 1.0 ft^3/s Aug. 18 to Sept. 1, 1934
[3]Maximum discharge for period of record, 120,000 ft^3/s Mar. 30, 1945, from rating curve extended above 93,000 ft^3/s
[4]Maximum gage height for period of record, 37.70 ft Mar. 30, 1945



RED RIVER BASIN

07362000 OUACHITA RIVER AT CAMDEN.

LOCATION.--Lat 33°35'47", long 92°49'05", in SE1/4 sec.14, T.13 S., R.17 W., Ouachita County, Hydrologic Unit 08040102, at bridge on U.S. Highway 79B at Camden, 3.4 mi downstream from Ecore Fabre Bayou, 6.2 mi upstream from Two Bayou Creek, and at mile 354.1.

DRAINAGE AREA.--5,357 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to September 1960 and October 1965 to current year in reports of Geological Survey. October 1929 to date in reports of U.S. Army Corps of Engineers. Monthly discharge only, October 1929 to September 1960 published in WSP 1311 and WSP 1731. Gage heights collected since 1885 in this vicinity are contained in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 71.69 ft above NGVD of 1929. Aug. 8, 1928, to July 10, 1935, and July 11, 1935, to Jan. 4, 1945, non-recording gage at present site and datum. Jan. 5, 1945, to Oct. 27, 1947, non-recording gage at site 0.4 mi downstream at present datum. Aug. 10, 1938, to May 31, 1949, supplementary non-recording gage, 4.5 mi upstream. Since Jan. 1, 1957, auxiliary water-stage recorder, 3.2 mi downstream.

REMARKS.--No estimated daily discharges. Water-discharge records good. Flow regulated since 1925 by Lake Catherine, 102 mi upstream, capacity, 35,250 acre-ft, since 1932 by Lake Hamilton, capacity, 190,100 acre-ft, since 1949 by Lake Greeson, capacity, 407,900 acre-ft, since 1952 by Lake Ouachita, capacity, 2,768,400 acre-ft, and since August 1969 by DeGray Lake, capacity, 881,900 acre-ft. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	721	769	18000	12200	8640	6180	31200	7080	14800	2330	4470	1880
2	755	808	17800	11700	11700	6350	39700	7760	12500	1430	4580	1690
3	767	766	17100	11600	14500	7850	46400	7690	9770	2140	4490	1290
4	762	704	13200	11700	13800	8330	48600	10000	7400	2870	4020	1210
5	760	1230	8480	11900	11700	9530	44300	11400	6190	3280	3500	1280
6	721	920	6390	10200	12000	8030	34800	10500	5870	3860	3050	1540
7	1050	817	5330	8930	13300	6420	25600	8300	5500	3300	3500	1810
8	961	704	5210	9560	13100	6300	21800	6540	4810	2720	3400	1810
9	763	766	5840	9810	13800	6780	22100	4730	4340	1820	4040	1810
10	715	713	5340	10000	12500	8010	23600	5260	2840	2830	3640	1330
11	1660	1050	4800	9340	10100	7880	25000	10900	2950	3400	3040	1360
12	8390	850	6160	8340	8950	10900	24000	16800	4320	3600	2070	1620
13	12800	786	14800	9000	8690	21300	21700	17900	4350	3680	1500	1640
14	15100	1200	21600	9910	8430	27900	18800	19000	3890	3590	2150	1630
15	18100	1060	26900	9580	8580	30200	16500	18400	3480	2910	3080	1690
16	17400	1770	30600	8210	8740	28200	14700	14100	3250	3260	3590	1810
17	12300	2280	35700	6730	8650	23100	13100	10500	1950	3560	3080	1850
18	7310	1830	45200	5450	7930	24900	11600	9230	1550	3850	2900	1210
19	4950	1670	59000	6500	7950	31200	11400	9440	2240	5540	2300	1090
20	3920	1030	80900	6700	11400	40300	10400	6710	2740	4930	1800	1130
21	2000	760	85100	5790	18900	47300	8850	4650	2770	4330	2050	1280
22	2310	1260	72800	5520	21700	53500	6460	4050	2850	3370	2500	1860
23	2720	1140	55900	6270	20200	57100	5250	3850	2530	3170	2600	1440
24	2710	881	41200	7790	16500	57300	4840	3450	1720	3620	2620	1080
25	2580	684	31600	11400	11500	51500	3580	2730	1620	4070	2270	1040
26	2460	689	24000	14500	8690	43000	3540	2150	2550	3740	2430	980
27	2090	733	19100	14400	7180	34800	3980	2550	2740	4650	2230	988
28	1670	878	16100	11600	6460	28500	4980	3000	2800	4800	1790	1040
29	1050	5690	14100	10100	---	23300	4990	3780	2180	3760	1780	1180
30	814	15300	13400	9620	---	19500	4880	6010	1730	3240	2030	1180
31	797	---	12700	8290	---	22500	---	13500	---	3950	1940	---
TOTAL	131106	49738	814350	292640	325590	757960	556650	261960	128230	107600	88440	42748
MEAN	4229	1658	26270	9440	11630	24450	18560	8450	4274	3471	2853	1425
MAX	18100	15300	85100	14500	21700	57300	48600	19000	14800	5540	4580	1880
MIN	715	684	4800	5450	6460	6180	3540	2150	1550	1430	1500	980
AC-FT	260000	98660	1615000	580500	645800	1503000	1104000	519600	254300	213400	175400	84790

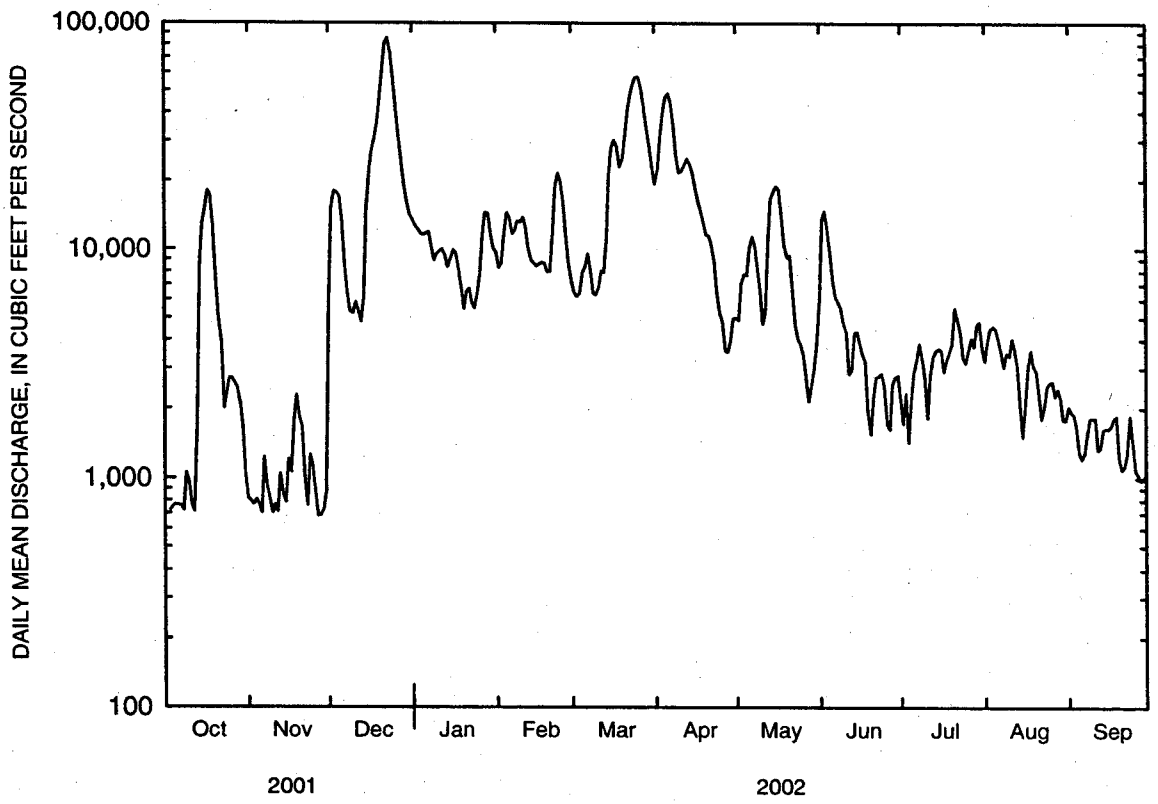
07362000 OUACHITA RIVER AT CAMDEN--CONTINUED

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

MEAN	2479	5211	9560	12230	12420	13100	13000	12370	5249	2886	2008	2221
MAX	18200	25370	41930	46610	40110	45110	48110	52200	31090	13640	7469	19410
(WY)	1985	1973	1983	1937	1950	1945	1945	1968	1974	1989	1966	1974
MIN	291	381	740	686	1542	1742	1578	1674	411	260	176	154
(WY)	1933	1933	1940	1940	1936	1954	1930	1932	1936	1930	1930	1943

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	3878051		3557012			
ANNUAL MEAN	10620		9745		7706	
HIGHEST ANNUAL MEAN					16120	1973
LOWEST ANNUAL MEAN					2292	1936
HIGHEST DAILY MEAN	85100	Dec 21	85100	Dec 21	238000	Apr 3 1945
LOWEST DAILY MEAN	684	Nov 25	684	Nov 25	125	Sep 16 1943
ANNUAL SEVEN-DAY MINIMUM	762	Sep 30	791	Oct 1	132	Sep 11 1943
MAXIMUM PEAK FLOW			88700	Dec 21	243000	Apr 3 1945
MAXIMUM PEAK STAGE			37.40	Dec 21	44.82	Apr 3 1945
INSTANTANEOUS LOW FLOW			497	Nov 14	125	[1]Sep 16 1943
ANNUAL RUNOFF (AC-FT)	7692000		7055000		5582000	
10 PERCENT EXCEEDS	29400		23400		19400	
50 PERCENT EXCEEDS	4420		4980		3460	
90 PERCENT EXCEEDS	1020		1060		791	

[1]Also September 24-26, 1943



07362000 OUACHITA RIVER AT CAMDEN--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947-52, October 1974 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
OCT												
24..	0945	81213	80513	2090	764	8.3	90	7.4	53	19.4	15	4.40
JAN												
16..	1115	81213	80513	8750	780	10.2	85	7.7	60	8.1	20	5.80
MAR												
05..	0900	81213	80513	9400	775	11.8	94	7.4	72	6.4	21	6.40
APR												
24..	0830	81213	80513	5780	778	7.7	83	7.2	66	20.0	21	6.10
JUN												
26..	1155	81213	80513	2950	777	7.3	90	7.5	76	27.6	23	6.50
AUG												
22..	0845	81213	80513	2420	766	8.5	112	7.1	70	29.8	20	5.70

Date	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT										
24...	1.00	1.40	.3	3.1	29	3.30	6.10	43	.03	.40
JAN										
16...	1.40	1.10	.3	3.0	23	2.90	5.50	41	.05	<.20
MAR										
05...	1.20	1.00	.4	3.9	28	4.40	8.40	48	.02	.40
APR										
24...	1.30	1.10	.3	3.4	25	3.70	5.30	40	.04	.30
JUN										
26...	1.60	1.20	.4	4.8	30	4.20	8.00	47	.01	.30
AUG										
22...	1.50	1.10	.4	4.5	31	3.50	7.50	42	.01	.40

Date	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	E COLI, MTEC MF WATER (COL/100 ML) (31633)
OCT										
24...	.04	.14	<.010	.37	.54	.031	<.02	.01	.04	110
JAN										
16...	.06	.15	<.010	--	--	--	<.02	<.01	.02	E10
MAR										
05...	.03	.17	<.010	.38	.57	.153	<.02	.05	.04	73
APR										
24...	.05	.11	<.010	.26	.41	--	<.02	<.01	.04	E17
JUN										
26...	.01	.05	<.010	.29	.35	--	<.02	<.01	<.02	71
AUG										
22...	.01	.07	<.010	.39	.47	--	<.02	<.01	.03	73

Date	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/100 ML) (31673)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT					
24...	E250	40	96	31	175
JAN					
16...	<3	E10	91	25	591
MAR					
05...	110	67	94	41	1040
APR					
24...	E12	E17	89	38	593
JUN					
26...	57	29	87	16	127
AUG					
22...	52	87	86	13	84.9

Remark codes used in this report:
< -- Less than
E -- Estimated value

RED RIVER BASIN

07362100 SMACKOVER CREEK NEAR SMACKOVER

LOCATION.--Lat 33°22'33", long 92°46'37", in NW1/4SE1/4 sec.32, T.15 S., R.16 W., Union County, Hydrologic Unit 08040201, near right bank on downstream side of bridge on State Highway 7, 0.1 mi downstream from Camp Creek, 3.3 mi northwest of Smackover, and at mile 22.0.

DRAINAGE AREA.--385 mi^2.

PERIOD OF RECORD.--October 1961 to current year. Gage-height records collected and occasional discharge measurements made by U.S. Army Corps of Engineers at this site since September 1938. Daily stages 1940 to date and results of discharge measurements 1947 to 1960 are published in reports of U.S. Army Corps of Engineers.

REVISED RECORDS.--WDR Ark. 1967: 1965. WDR Ark. 1979: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 97.56 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Mar. 1, 1989, water-stage recorder at site 100 ft downstream at same datum. Mar. 1, 1989 to Sept. 4, 1991, non-recording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

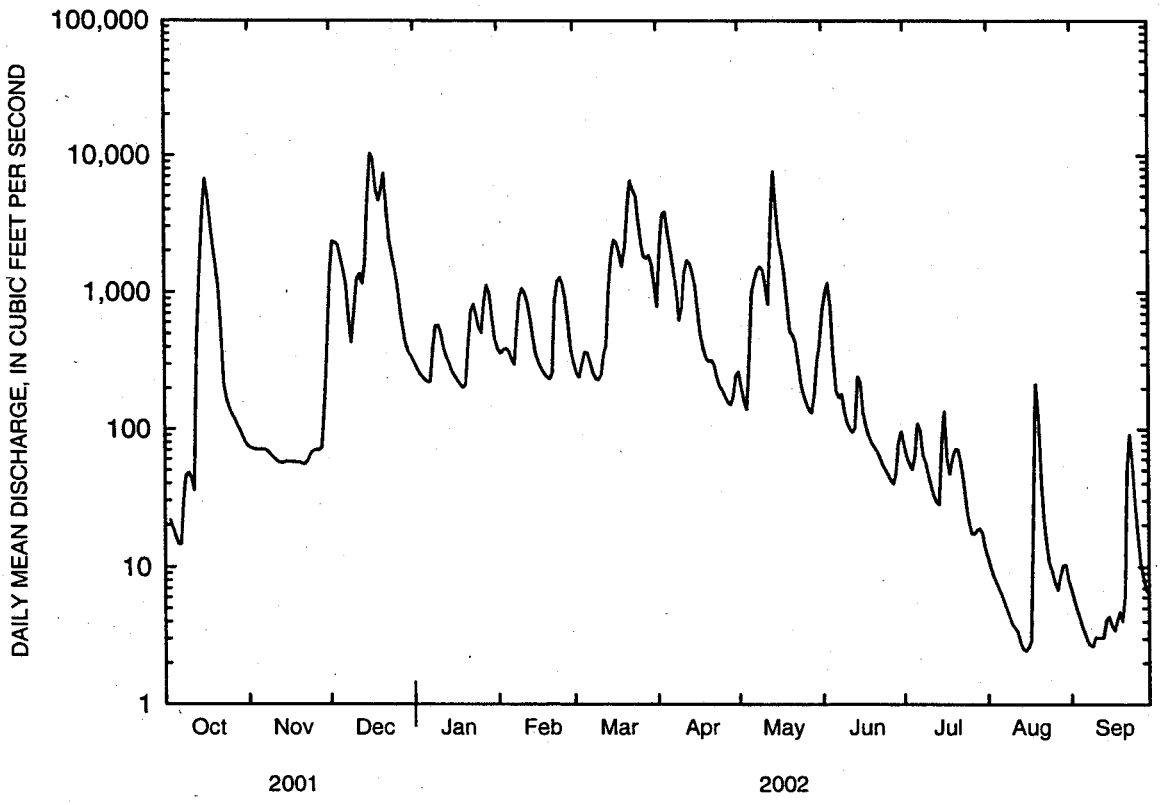
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	71	2300	259	381	240	3730	165	1170	56	8.7	5.0
2	19	71	2190	242	390	297	3850	140	798	51	7.7	4.4
3	16	71	1760	232	373	369	2750	325	333	63	7.0	3.7
4	15	71	1440	223	332	364	1990	989	192	110	6.3	3.3
5	14	71	1120	225	298	306	1490	1250	171	98	5.5	2.9
6	30	69	656	385	529	258	1030	1440	183	65	4.9	2.7
7	45	65	430	565	918	237	625	1530	137	56	4.4	2.6
8	48	62	743	572	1060	230	781	1450	113	46	3.8	3.1
9	44	59	1220	505	981	250	1370	1120	101	39	3.6	3.0
10	36	57	1350	396	839	352	1710	815	95	33	3.4	3.0
11	440	57	1150	339	654	408	1630	3370	102	30	2.8	3.1
12	1370	57	1640	305	463	1070	1400	7640	244	28	2.5	4.1
13	3390	58	5030	269	360	1800	1100	4300	224	80	2.4	4.4
14	6730	57	10300	245	312	2400	741	2480	136	136	2.6	3.8
15	5250	57	9330	230	278	2300	496	1890	107	60	2.9	3.4
16	3400	57	5530	216	257	1930	395	1390	89	47	24	4.1
17	2210	57	4670	204	243	1540	336	870	80	62	214	4.7
18	1600	57	5520	212	234	2140	316	527	74	71	125	4.0
19	1110	55	7340	392	258	4100	322	492	68	71	41	6.2
20	507	56	3910	723	841	6500	297	433	62	56	22	53
21	216	61	2390	813	1200	5670	240	303	56	42	14	92
22	168	67	1820	701	1280	5010	209	216	51	29	10	55
23	145	69	1440	559	1130	3270	194	180	47	22	9.3	29
24	128	70	1090	506	909	2280	175	156	42	17	7.6	16
25	118	70	757	834	604	1810	159	140	40	17	6.8	11
26	107	74	541	1120	383	1760	152	132	48	18	8.6	8.4
27	97	165	423	988	305	1850	174	184	79	19	10	6.9
28	87	438	371	658	259	1600	245	320	96	17	10	6.3
29	79	1340	341	462	---	1120	265	415	77	14	8.1	5.9
30	74	2350	314	388	---	785	207	752	63	12	6.9	5.9
31	73	---	284	358	---	2240	---	982	---	10	5.8	---
TOTAL	27588	5939	77400	14126	16071	54486	28379	36396	5078	1475	591.6	360.9
MEAN	889.9	198.0	2497	455.7	574.0	1758	946.0	1174	169.3	47.58	19.08	12.03
MAX	6730	2350	10300	1120	1280	6500	3850	7640	1170	136	214	92
MIN	14	55	284	204	234	230	152	132	40	10	2.4	2.6
AC-FT	54720	11780	153500	28020	31880	108100	56290	72190	10070	2930	1170	716
CFSM	2.31	0.51	6.49	1.18	1.49	4.57	2.46	3.05	0.44	0.12	0.05	0.03
IN.	2.67	0.57	7.48	1.36	1.55	5.26	2.74	3.52	0.49	0.14	0.06	0.03

07362100 SMACKOVER CREEK NEAR SMACKOVER--CONTINUED

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

MEAN	132.0	245.5	608.3	660.9	846.3	885.6	755.9	524.5	429.7	124.4	49.32	90.53
MAX	1784	1143	2497	1980	2875	2875	4078	1701	2864	1949	346	2174
(WY)	1985	1975	2002	1962	2001	2001	1991	1966	1974	1989	1971	1974
MIN	1.51	3.66	33.5	38.8	44.6	112	90.6	33.6	8.91	1.81	0.22	1.29
(WY)	1996	1996	1982	2000	1996	1967	1971	1996	1972	1964	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1962 - 2002	
ANNUAL TOTAL	420643.7		267890.5			
ANNUAL MEAN	1152		733.9		443.8	
HIGHEST ANNUAL MEAN					1074	1974
LOWEST ANNUAL MEAN					94.4	1963
HIGHEST DAILY MEAN	21000	Jun 1	10300	Dec 14	35300	Apr 6 1997
LOWEST DAILY MEAN	5.5	Aug 26	2.4	Aug 13	0.00	Aug 24 1978
ANNUAL SEVEN-DAY MINIMUM	6.9	Aug 7	2.9	Aug 9	0.00	Aug 8 2000
MAXIMUM PEAK FLOW			11400	Dec 14	52700	Jun 8 1974
MAXIMUM PEAK STAGE			18.46	Dec 14	24.97	Jun 8 1974
INSTANTANEOUS LOW FLOW			2.3	Aug 12	0.00	Aug 9 1964
ANNUAL RUNOFF (AC-FT)	834300		531400		321500	
ANNUAL RUNOFF (CFSM)	2.99		1.91		1.15	
ANNUAL RUNOFF (INCHES)	40.64		25.88		15.66	
10 PERCENT EXCEEDS	2910		1910		1250	
50 PERCENT EXCEEDS	275		216		96	
90 PERCENT EXCEEDS	14		6.9		6.0	



RED RIVER BASIN

07363500 SALINE RIVER NEAR RYE

LOCATION.--Lat 33°42'03", long 92°01'33", in SW1/4NW1/4 sec.3, T.12 S., R.9 W., Bradley County, Hydrologic Unit 08040204, near left bank on downstream side of bridge on State Highway 15, 3.6 mi southwest of Rye, 5.8 mi upstream from Hudgin Creek, and at mile 71.0.

DRAINAGE AREA.--2,102 mi².

PERIOD OF RECORD.--August 1937 to current year.

REVISED RECORDS.--WDR Ark. 1979: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 97.06 ft above NGVD of 1929. Prior to May 30, 1939, non-recording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1927 reached a stage of 30.5 ft, discharge, about 73,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

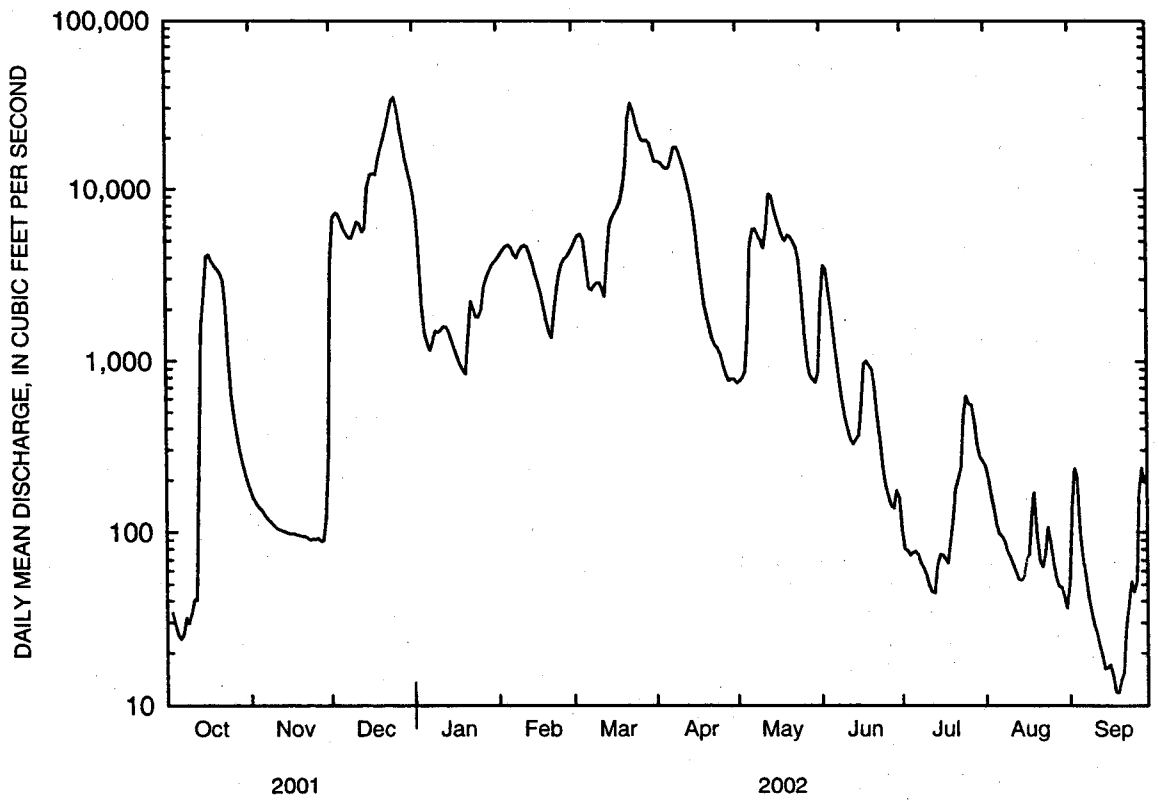
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	146	7310	4220	4440	5400	14400	826	3420	96	191	235
2	29	139	7090	2070	4670	5510	13700	894	2590	91	158	211
3	26	134	6440	1480	4760	5080	13300	1560	1960	94	131	117
4	24	127	5840	1270	4590	3790	13400	4700	1420	95	116	89
5	26	121	5470	1160	4180	2690	15100	5890	1040	92	113	72
6	32	116	5190	1310	3990	2590	17700	5920	784	84	106	57
7	29	111	5200	1510	4340	2750	17800	5440	611	78	95	49
8	34	106	5790	1470	4610	2870	16500	5030	499	73	89	43
9	40	104	6450	1520	4720	2860	14700	4570	418	65	82	39
10	40	103	6300	1600	4640	2640	12900	5830	369	60	76	34
11	244	101	5630	1590	4260	2380	11100	9420	346	59	69	31
12	1620	100	5920	1490	3710	4090	9410	9180	369	81	68	28
13	2360	98	10100	1330	3220	6200	7530	7740	388	92	71	28
14	4050	98	12200	1190	2850	6820	5610	6740	581	91	87	29
15	4140	98	12400	1070	2470	7340	3940	5940	989	88	91	26
16	3790	96	12200	972	2060	7850	2830	5350	1030	83	138	22
17	3560	95	14900	890	1730	8450	2170	5030	976	106	188	22
18	3430	94	17400	840	1500	10300	1860	5460	922	134	112	25
19	3260	95	19700	1330	1380	14300	1580	5300	718	195	87	27
20	2920	92	23300	2240	1960	26300	1370	4990	499	226	80	41
21	2010	90	27600	2030	2660	32200	1270	4630	357	260	93	51
22	1040	91	33100	1820	3280	29000	1220	3900	258	494	123	67
23	632	90	34900	1810	3710	24600	1120	2580	207	650	106	60
24	463	92	30300	2000	3950	21700	977	1530	179	586	84	67
25	367	89	24200	2690	4090	19800	863	1060	161	582	70	191
26	298	89	19200	3050	4320	19200	791	858	156	461	64	258
27	250	119	15600	3340	4660	19600	817	809	194	345	63	215
28	217	271	13100	3600	5050	18800	811	776	177	296	56	223
29	192	3690	11100	3790	---	16600	767	883	122	283	50	120
30	172	6810	9200	3980	---	14600	792	2330	98	265	67	94
31	157	---	7040	4210	---	14700	---	3610	---	230	156	---
TOTAL	35486	13605	420170	62872	101800	361010	206328	128776	21838	6435	3080	2571
MEAN	1145	453.5	13550	2028	3636	11650	6878	4154	727.9	207.6	99.35	85.70
MAX	4140	6810	34900	4220	5050	32200	17800	9420	3420	650	191	258
MIN	24	89	5190	840	1380	2380	767	776	98	59	50	22
AC-FT	70390	26990	833400	124700	201900	716100	409300	255400	43320	12760	6110	5100
CFSM	0.54	0.22	6.45	0.96	1.73	5.54	3.27	1.98	0.35	0.10	0.05	0.04
IN.	0.63	0.24	7.44	1.11	1.80	6.39	3.65	2.28	0.39	0.11	0.05	0.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

MEAN	496.6	1187	3031	3787	5104	5480	5274	4550	1483	575.0	280.0	333.7
MAX	10570	9690	13550	14830	16710	13920	16340	21470	11950	8191	1573	4511
(WY)	1985	1958	2002	1946	1950	1945	1973	1958	1974	1989	1971	1950
MIN	15.4	50.7	111	143	307	706	640	352	80.5	32.5	10.6	4.95
(WY)	1939	1940	1940	1956	2000	1940	1972	1992	1972	1954	1954	1954

07363500 SALINE RIVER NEAR RYE--CONTINUED

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1937 - 2002	
ANNUAL TOTAL	1335368		1363971			
ANNUAL MEAN	3659		3737		2619	
HIGHEST ANNUAL MEAN					5436	1973
LOWEST ANNUAL MEAN					704	1972
HIGHEST DAILY MEAN	34900	Dec 23	34900	Dec 23	72500	May 18 1968
LOWEST DAILY MEAN	24	Oct 4	22	Sep 16	3.8	Sep 16 1954
ANNUAL SEVEN-DAY MINIMUM	29	Oct 1	26	Sep 13	4.0	Sep 15 1954
MAXIMUM PEAK FLOW			35600	Dec 23	74500	May 18 1968
MAXIMUM PEAK STAGE			26.57	Dec 23	31.40	May 18 1968
INSTANTANEOUS LOW FLOW			19	Sep 16	3.5	Sep 27 1954
ANNUAL RUNOFF (AC-FT)	2649000		2705000		1898000	
ANNUAL RUNOFF (CFSM)	1.74		1.78		1.25	
ANNUAL RUNOFF (INCHES)	23.63		24.14		16.93	
10 PERCENT EXCEEDS	10900		12300		7470	
50 PERCENT EXCEEDS	935		1040		679	
90 PERCENT EXCEEDS	82		67		65	



07364150 BAYOU BARTHOLOMEW NEAR MCGEHEE

LOCATION.--Lat 33°37'40", long 91°26'45", in NE1/4SW1/4 sec.30, T.12 S., R.3 W., Desha County, Hydrologic Unit 08050001, near center of stream on downstream side of bridge on State Highway 4, 2.7 mi west of McGehee, 17.5 mi downstream from Ables Creek, at mile 200.5.

DRAINAGE AREA.--576 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to September 1942, October 1945 to current year. Gage-height records collected and occasional discharge measurements made by U.S. Army Corps of Engineers at this site since August 1938. Daily stages 1940 to date and results of discharge measurements 1938, 1947 to date are published in reports of U.S. Army Corps of Engineers.

REVISED RECORDS.--WDR Ark. 1979: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 120.48 ft above NGVD of 1929. Prior to Sept. 7, 1949, nonrecording gage at same site. October 1938 to June 6, 1972, at datum 1.00 ft higher. Since Jan. 20, 1971, auxiliary water-stage recorder 14 mi upstream.

REMARKS.--No estimated daily discharges. Water-discharge records good except discharges below 50 ft³/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	836	2210	4550	1220	492	3580	179	533	135	116	128
2	15	749	2530	4280	1130	464	3680	157	477	137	104	115
3	15	661	2710	3990	1050	438	3740	204	430	151	93	106
4	17	570	2830	3680	973	420	3760	684	395	166	86	95
5	19	477	2890	3370	904	400	3750	1080	372	170	80	83
6	22	393	2900	3180	896	391	3690	1380	366	160	73	71
7	22	339	2930	2920	891	410	3590	1570	356	145	80	62
8	23	256	2960	2650	869	413	3490	1660	335	125	95	55
9	23	187	2930	2380	840	393	3380	1690	303	106	104	48
10	23	134	2850	2140	809	372	3220	1840	266	98	105	41
11	219	95	2740	1910	776	352	3030	2070	237	100	98	35
12	736	70	2840	1700	743	530	2820	2180	221	98	90	32
13	1170	58	3280	1500	705	715	2590	2240	217	96	78	28
14	1530	54	3810	1330	665	830	2370	2250	213	90	75	26
15	1650	52	4220	1170	625	923	2150	2210	206	82	78	24
16	1700	49	4580	1020	592	1130	1910	2120	198	81	87	21
17	1710	47	5060	886	562	1280	1750	2010	190	86	113	20
18	1710	49	5260	775	531	1530	1570	1870	177	92	144	18
19	1710	56	5380	796	513	1760	1400	1720	161	112	168	17
20	1700	61	5430	843	570	2050	1240	1570	145	147	182	21
21	1700	63	5450	846	609	2430	1090	1420	132	185	206	22
22	1680	65	5470	857	626	2690	959	1280	118	209	241	22
23	1640	69	5520	877	626	2910	826	1140	106	212	277	22
24	1580	73	5480	1070	617	3080	706	1020	97	211	305	22
25	1490	72	5430	1320	605	3170	593	898	89	211	322	23
26	1400	74	5370	1430	587	3270	492	800	81	206	322	26
27	1310	122	5300	1490	558	3300	404	759	80	196	303	27
28	1210	171	5210	1500	525	3290	355	738	106	185	269	27
29	1110	828	5100	1470	---	3240	278	705	128	165	226	27
30	1020	1610	4960	1400	---	3210	220	656	134	143	184	28
31	926	---	4770	1310	---	3460	---	594	---	125	150	---
TOTAL	29095	8340	128400	58640	20617	49343	62633	40694	6869	4425	4854	1292
MEAN	938.5	278.0	4142	1892	736.3	1592	2088	1313	229.0	142.7	156.6	43.07
MAX	1710	1610	5520	4550	1220	3460	3760	2250	533	212	322	128
MIN	15	47	2210	775	513	352	220	157	80	81	73	17
AC-FT	57710	16540	254700	116300	40890	97870	124200	80720	13620	8780	9630	2560
CFSM	1.63	0.48	7.19	3.28	1.28	2.76	3.62	2.28	0.40	0.25	0.27	0.07
IN.	1.88	0.54	8.29	3.79	1.33	3.19	4.05	2.63	0.44	0.29	0.31	0.08

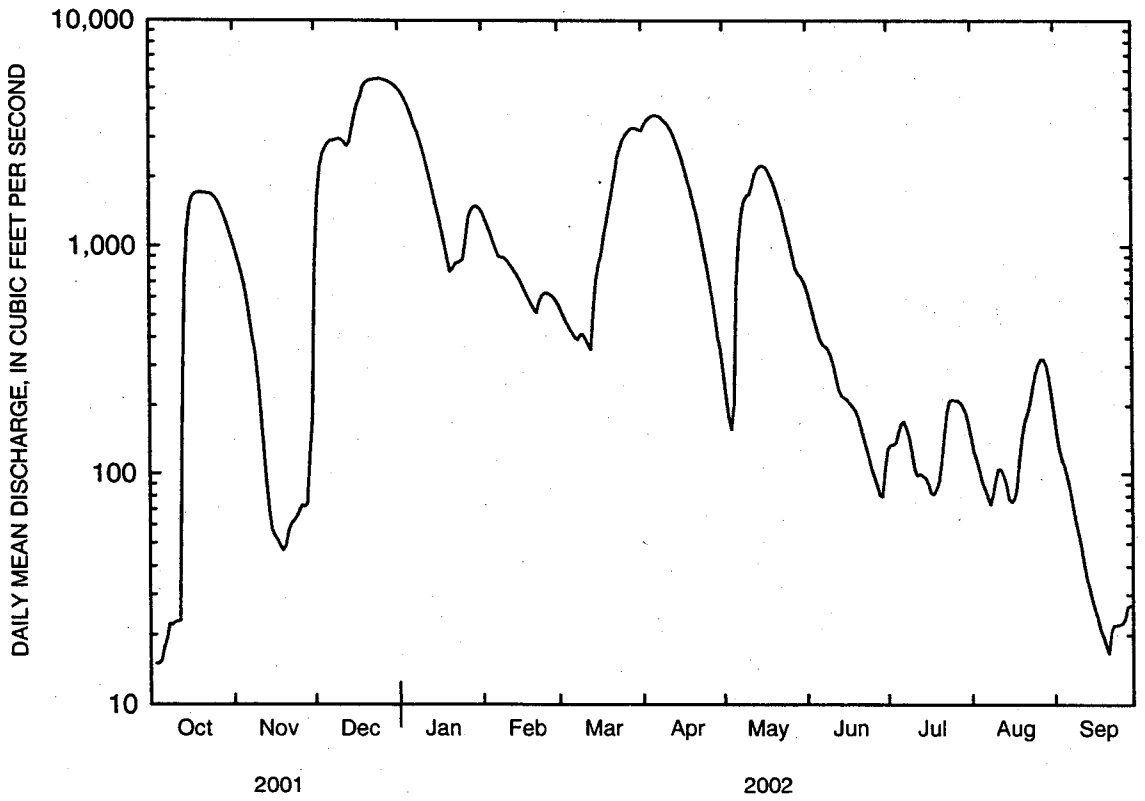
07364150 BAYOU BARTHOLOMEW NEAR MCGEHEE--CONTINUED

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939-42, 1946-02, BY WATER YEAR (WY)

MEAN	178.2	339.5	775.9	1040	1406	1408	1221	1050	451.1	211.6	151.6	148.2
MAX	1491	2240	4142	3900	5085	4006	3127	5972	2575	3688	1032	1792
(WY)	1985	1958	2002	1946	1990	1997	1991	1958	1974	1989	1989	1974
MIN	8.45	6.88	31.9	39.3	98.3	189	82.8	73.0	22.1	6.03	0.44	14.4
(WY)	1996	1996	1982	1966	2000	1954	1966	1965	1972	1954	1956	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939-42, 1946-02	
ANNUAL TOTAL	400681		415202			
ANNUAL MEAN	1098		1138		694.8	
HIGHEST ANNUAL MEAN					1488	1973
LOWEST ANNUAL MEAN					149	1972
HIGHEST DAILY MEAN	5520	Dec 23	5520	Dec 23	6870	May 11 1958
LOWEST DAILY MEAN	15	Sep 30	15	Oct 1	0.20	Aug 15 1956
ANNUAL SEVEN-DAY MINIMUM	16	Sep 27	18	Oct 1	0.20	Aug 15 1956
MAXIMUM PEAK FLOW			5530	Dec 22-23	6870	May 11 1958
MAXIMUM PEAK STAGE			24.52	Dec 23-24	[1]25.49	May 11 1958
INSTANTANEOUS LOW FLOW			14	Oct 3	0.20	Aug 15 1956
ANNUAL RUNOFF (AC-FT)	794800		823600		503400	
ANNUAL RUNOFF (CFSM)	1.91		1.97		1.21	
ANNUAL RUNOFF (INCHES)	25.88		26.82		16.39	
10 PERCENT EXCEEDS	3280		3270		2010	
50 PERCENT EXCEEDS	428		570		244	
90 PERCENT EXCEEDS	63		53		31	

[1]At present datum



0096

07364150 BAYOU BARTHOLOMEW NEAR MCGEHEE--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-1972, October 1973, January 1975, December 1975 to August 1976, Water years 1977 through 1979, and Water years 1996 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
OCT												
23..	1400	81213	80513	1710	767	3.8	40	7.1	145	17.3	48	12.0
JAN												
15..	1230	81213	80513	1460	782	8.4	67	7.1	54	6.8	17	4.20
MAR												
04..	1300	81213	80513	421	775	7.2	58	7.4	89	6.7	27	6.70
APR												
23..	1300	81213	80513	851	783	4.4	49	6.9	55	22.4	12	3.30
JUN												
25..	1615	81213	80513	88	775	3.5	43	7.5	138	26.6	43	11.0
AUG												
21..	1225	81213	80513	207	765	5.7	74	7.6	425	29.1	150	37.0

Date	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT										
23...	4.30	7.90	.3	5.1	16	8.20	6.40	79	.06	.90
JAN										
15...	1.50	2.70	.2	2.2	19	2.40	3.40	46	.09	.60
MAR										
04...	2.40	2.50	.4	4.8	26	4.90	6.30	60	.05	.80
APR										
23...	1.00	1.50	.2	1.3	17	1.50	3.10	41	.04	.70
JUN										
25...	3.70	3.50	.5	8.0	27	11.0	6.40	94	.09	1.0
AUG										
21...	13.0	4.20	.9	24.0	26	37.0	8.60	237	.03	.60

Date	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NITRATE DISSOLVED (MG/L AS NO3) (71851)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS NO2) (71856)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)
OCT									
23...	.08	--	--	<.02	--	<.010	.84	--	1.07
JAN									
15...	.12	--	--	.11	--	<.010	.51	.71	.245
MAR									
04...	.06	--	--	.26	--	<.010	.75	1.1	.215
APR									
23...	.05	--	--	.15	--	<.010	.66	.85	.583
JUN									
25...	.12	.49	2.17	.50	.033	.010	.91	1.5	.184
AUG									
21...	.04	--	--	.23	--	<.010	.57	.83	.245

07364150 BAYOU BARTHOLOMEW NEAR MCGEHEE--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT									
23...	.31	.35	.39	140	E220	360	96	30	139
JAN									
15...	.07	.08	.13	E35	E25	E26	95	28	110
MAR									
04...	.08	.07	.25	80	150	62	97	69	78.4
APR									
23...	.13	.19	.32	E73	320	90	94	51	117
JUN									
25...	.06	.06	.32	120	190	234	96	93	22.1
AUG									
21...	.09	.08	.13	96	180	100	96	36	20.1

Remark codes used in this report:
< -- Less than
E -- Estimated value

RED RIVER BASIN

07369680 BAYOU MACON AT EUDORA

LOCATION.--Lat 33°06'09", long 91°15'08", in SE1/4SE1/4 sec.25, T.18 S., R.2 W., Chicot County, Hydrologic Unit 08030100, near left bank on downstream side of bridge on U.S. Highway 65, 0.6 mi south of Eudora.

DRAINAGE AREA.--500 mi^2.

PERIOD OF RECORD.--October 1988 to current year. Gage-height record and results of discharge measurements since January 1938, are contained in reports of the U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 80.92 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good except estimated daily discharges, which are fair. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1938, 27.43 ft May 10, 22, 1958.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e52	e39	2810	113	805	102	1680	e67	88	145	95	63
2	e56	e37	2670	88	810	97	1300	e60	80	92	113	60
3	e37	e39	2470	76	719	91	983	55	75	75	93	60
4	e53	e37	2170	71	610	89	777	161	72	74	75	61
5	e38	53	e1610	124	528	87	643	100	76	70	65	61
6	e43	60	e1220	979	918	92	536	82	114	63	60	59
7	e73	60	e948	941	909	85	295	72	101	63	60	60
8	e57	60	953	547	632	80	621	65	105	56	62	61
9	e43	59	1010	321	289	84	1240	64	97	45	68	61
10	e32	60	941	232	163	80	1000	78	123	49	71	60
11	e54	63	840	188	124	79	735	73	122	40	71	62
12	67	58	1030	156	108	348	590	65	129	53	69	62
13	339	57	2180	127	97	358	488	64	141	130	90	61
14	701	58	2670	106	86	177	244	64	132	156	105	62
15	484	56	2580	92	82	120	158	63	76	133	95	63
16	244	58	2390	79	81	929	131	99	47	95	123	63
17	131	61	2410	73	80	764	119	190	49	82	236	63
18	93	62	2330	74	78	612	115	203	37	82	139	48
19	77	60	2090	138	103	484	e102	140	31	79	102	43
20	e74	58	e1820	148	710	728	e92	133	25	68	79	55
21	e65	59	1410	114	550	1370	e86	114	26	65	71	51
22	e55	59	1050	101	541	1050	e84	107	24	73	65	49
23	e45	61	1310	315	472	820	e90	105	36	86	57	48
24	e55	48	1260	e882	291	680	e84	114	54	100	57	46
25	e69	36	933	e1190	165	560	e81	105	65	130	67	47
26	e59	65	655	e1430	134	316	e66	102	79	115	68	76
27	e56	510	673	e1640	122	235	e62	104	89	87	69	102
28	e51	922	648	e1570	110	207	e62	102	164	72	69	72
29	e41	e2200	572	e1430	---	170	e68	93	230	68	63	63
30	e40	2890	502	1130	---	149	e72	93	206	65	60	53
31	e35	---	275	852	---	1350	---	82	---	62	61	---
TOTAL	3319	7945	46430	15327	10317	12393	12604	3019	2693	2573	2578	1795
MEAN	107.1	264.8	1498	494.4	368.5	399.8	420.1	97.39	89.77	83.00	83.16	59.83
MAX	701	2890	2810	1640	918	1370	1680	203	230	156	236	102
MIN	32	36	275	71	78	79	62	55	24	40	57	43
AC-FT	6580	15760	92090	30400	20460	24580	25000	5990	5340	5100	5110	3560

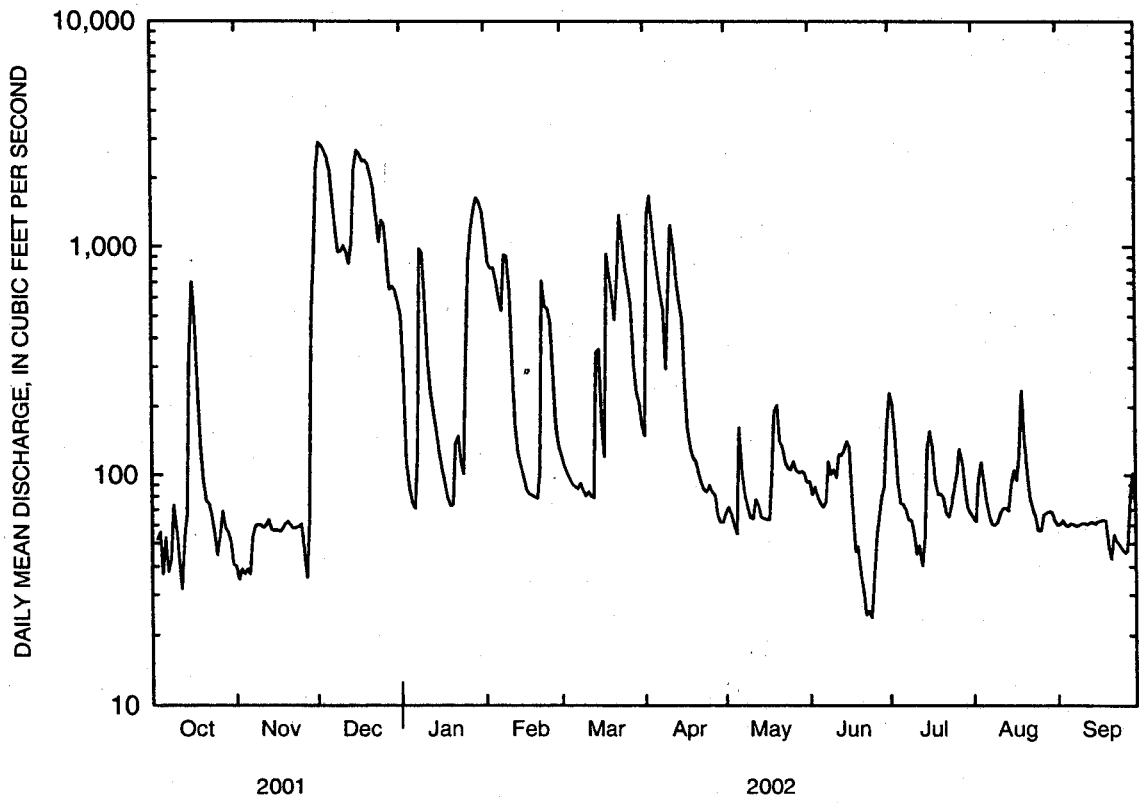
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2002, BY WATER YEAR (WY)

MEAN	90.61	132.7	372.8	476.5	502.2	401.1	402.0	279.0	175.9	246.5	156.1	94.93
MAX	297	265	1498	924	1174	858	1053	1510	330	847	425	150
(WY)	1995	2002	2002	1999	1991	1995	1991	1991	1989	1994	1994	1994
MIN	41.8	51.5	58.5	51.0	51.1	98.1	63.0	72.0	89.8	83.0	83.2	59.8
(WY)	1994	1996	2000	2000	2000	1993	1998	1992	2002	2002	2002	2002

07369680 BAYOU MACON AT EUDORA--CONTINUED

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1989 - 2002	
ANNUAL TOTAL	128013		120993			
ANNUAL MEAN	350.7		331.5		276.7	
HIGHEST ANNUAL MEAN					493	1991
LOWEST ANNUAL MEAN					130	1996
HIGHEST DAILY MEAN	2890	Nov 30	2890	Nov 30	4170	Apr 23 1995
LOWEST DAILY MEAN	32	Oct 10	24	Jun 22	24	Jun 22 2002
ANNUAL SEVEN-DAY MINIMUM	38	Oct 29	33	Jun 17	33	Jun 17 2002
MAXIMUM PEAK FLOW			2900	Nov 30	4280	Apr 23 1995
MAXIMUM PEAK STAGE			22.92	Nov 30	24.41	Apr 29 1991
INSTANTANEOUS LOW FLOW			23	Jun 22	23	Jun 22 2002
ANNUAL RUNOFF (AC-FT)	253900		240000		200400	
10 PERCENT EXCEEDS	1050		981		648	
50 PERCENT EXCEEDS	98		90		107	
90 PERCENT EXCEEDS	59		53		56	

[e]Estimated



0100

07344370 RED RIVER AT SPRING BANK, AR

LOCATION.--Lat. 33°04'50", Long. 93°51'42", in SW ¼ NW ¼ sec.24, T.19 S., R.27 W., Lafayette County, near right bank on downstream side of bridge on State highway 160, 0.1 mi downstream from Sulphur river, 4.5 mi upstream from Arkansas-Louisiana State line, and 2.5 mi east of intersection of U.S. Highway 71 and State Highway 160 at Doddridge, AR.

PERIOD OF RECORD.--October 1, 1995 to July 10, 1996 daily observer record. July 11, 1998 to current year.

GAGE.--Water-stage recorder. Prior to July 11, 1998, observer record of daily readings only.

REMARKS.--Records fair. Datum of gage not determined. Satellite telemetry at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9070	11800	19500	61100	40400	30100	109000	58100	23500	4940	7850	3840
2	8550	11600	20500	56900	49700	24900	116000	56100	15600	5800	7800	3880
3	7740	11300	18700	54600	69900	20100	112000	56800	9950	6250	7930	5070
4	7300	11500	16700	53400	74000	17000	106000	57600	10100	6170	8750	5740
5	7000	11300	15500	48400	67600	15100	95100	53200	18300	6050	8590	5730
6	6620	10900	14600	44700	61600	13700	84200	47100	23700	5880	8070	5690
7	6000	10000	13400	42300	57700	13900	77500	43700	23100	5960	8540	4970
8	5620	9990	12100	40400	56400	17300	77900	40500	20100	6330	8140	4240
9	5460	9460	12300	37500	57600	20400	82300	36200	17500	7570	7170	4160
10	5760	8110	11600	34400	58500	21400	110000	35300	18800	8250	6840	4980
11	18400	6740	11300	31700	56000	20500	132000	37200	18600	7740	6170	5580
12	24500	5650	17000	28900	53700	20100	132000	37100	16000	7170	6080	5560
13	31300	5100	24100	27700	51600	22800	121000	35500	15100	6680	5990	5080
14	34000	4740	32300	28200	e46300	27900	113000	32100	12600	6270	5310	4280
15	34600	4380	35500	26100	42800	29800	111000	29900	10900	e6400	4970	3840
16	39200	4190	38400	23000	39100	28100	115000	e28500	8730	6010	5290	3780
17	44500	4100	52500	22500	36000	25300	124000	26400	7490	5860	5470	4460
18	43300	4040	84900	22800	33500	30200	125000	23600	6710	6000	5230	5150
19	38500	3920	e111000	21900	31800	33700	118000	20200	6310	6280	5260	5330
20	33900	3770	e112000	22000	32500	37800	113000	20200	7680	6530	6100	5550
21	31200	3690	e105000	24000	36900	58700	115000	23100	8990	6040	10300	5180
22	29600	3640	e90000	25000	41700	86800	116000	25400	8270	5700	12900	4410
23	26400	3670	e77000	25100	43000	104000	118000	24600	6730	5730	12400	3760
24	22700	3610	e68000	26100	45800	107000	114000	22600	5690	5880	10400	3630
25	21500	3630	e66000	30600	45500	84000	106000	19200	5330	7410	9140	3870
26	19800	3550	e69000	35500	40300	78400	92600	15400	5230	8580	7390	3730
27	16200	3400	70000	39800	36900	86400	84400	13800	5340	8090	6630	3570
28	13600	4850	69400	43200	34500	89800	79300	13300	5200	7890	6910	3420
29	12800	10100	69000	47600	---	89900	75700	12800	5040	8140	4900	3270
30	12600	15100	67400	49200	---	88600	65500	13100	4890	8430	4290	3170
31	12300	---	65400	44700	---	93200	---	17700	---	8400	4160	---
TOTAL	630020	207830	1490100	1119300	1341300	1436900	3140500	976300	351480	208430	224970	134920
MEAN	20320	6928	48070	36110	47900	46350	104700	31490	11720	6724	7257	4497
MAX	44500	15100	112000	61100	74000	107000	132000	58100	23700	8580	12900	5740
MIN	5460	3400	11300	21900	31800	13700	65500	12800	4890	4940	4160	3170
AC-FT	1250000	412200	2956000	2220000	2660000	2850000	6229000	1936000	697200	413400	446200	267600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)

MEAN	9710	11730	28310	39340	35450	48310	43810	22780	19080	11280	6134	6122
MAX	20320	34920	48070	87290	56960	106200	104700	31490	31770	16960	7257	9104
(WY)	2002	2001	2002	1998	2001	2001	2002	2002	2000	2000	2002	2001
MIN	2518	2183	6406	4203	5312	11020	16420	10300	6655	4176	4614	4154
(WY)	2000	2000	2000	2000	2000	2000	2000	1998	1998	1998	1998	1999

07344370 RED RIVER AT SPRING BANK, AR--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1998 - 2002	
ANNUAL TOTAL	12615390		11262050			
ANNUAL MEAN	34560		30850		23450	
HIGHEST ANNUAL MEAN					34790	2001
LOWEST ANNUAL MEAN					10730	2000
HIGHEST DAILY MEAN	138000	Mar 14	132000	Apr 11	138000	Mar 14 2001
LOWEST DAILY MEAN	3400	Nov 27	3170	Sep 30	1910	Nov 24 1999
ANNUAL SEVEN-DAY MINIMUM	3600	Nov 21	3520	Sep 24	2070	Nov 21 1999
MAXIMUM PEAK FLOW			135000	Apr 11	140000	Mar 14 2001
MAXIMUM PEAK STAGE			32.16	Apr 11	34.05	Jan 12 1998
INSTANTANEOUS LOW FLOW			3150	Sep 30	1890	Nov 24 1999
INSTANTANEOUS LOW STAGE			12.30	Sep 30	a11.98	Oct 25 2000
ANNUAL RUNOFF (AC-FT)	25020000		22340000		16990000	
10 PERCENT EXCEEDS	80400		84300		57200	
50 PERCENT EXCEEDS	25900		18600		12900	
90 PERCENT EXCEEDS	5840		4920		3870	

a Also occurred Oct. 26, 2000.
e Estimated

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.35	16.32	18.52	26.39	23.04	20.94	30.87	25.98	19.46	13.46	14.86	12.79
2	15.14	16.24	18.75	25.79	24.60	19.78	31.30	25.66	17.43	13.91	14.84	12.82
3	14.81	16.17	18.30	25.41	27.58	18.65	31.04	25.78	15.67	14.13	14.89	13.52
4	14.62	16.24	17.78	25.21	28.08	17.86	30.69	25.91	15.72	14.09	15.22	13.88
5	14.48	16.15	17.44	24.42	27.29	17.32	29.97	25.18	18.17	14.04	15.16	13.88
6	14.30	16.02	17.20	23.81	26.47	16.92	29.10	24.21	19.52	13.95	14.95	13.86
7	14.01	15.70	16.82	23.38	25.91	16.98	28.47	23.64	19.36	13.99	15.14	13.47
8	13.82	15.69	16.41	23.04	25.70	17.93	28.51	23.06	18.66	14.17	14.98	13.05
9	13.74	15.49	16.48	22.47	25.90	18.74	28.92	22.20	18.01	14.73	14.56	13.00
10	13.89	14.96	16.24	21.84	26.05	18.97	30.88	22.01	18.34	15.02	14.40	13.48
11	18.10	14.36	16.15	21.27	25.63	18.74	32.01	22.40	18.29	14.81	14.09	13.80
12	19.70	13.84	17.83	20.68	25.26	18.65	32.01	22.39	17.58	14.56	14.05	13.80
13	21.19	13.55	19.60	20.43	24.92	19.31	31.53	22.06	17.34	14.33	14.01	13.53
14	21.75	13.34	21.39	20.53	---	20.46	31.12	21.35	16.58	14.14	13.66	13.07
15	21.88	13.13	22.07	20.07	23.48	20.88	31.01	20.90	16.01	---	13.47	12.79
16	22.80	13.02	22.64	19.35	22.78	20.50	31.23	---	15.21	14.02	13.65	12.76
17	23.78	12.96	25.06	19.24	22.17	19.89	31.65	20.13	14.70	13.94	13.75	13.18
18	23.57	12.92	29.06	19.29	21.66	20.95	31.73	19.48	14.35	14.01	13.62	13.58
19	22.68	12.85	---	19.10	21.28	21.71	31.40	18.68	14.16	14.14	13.64	13.67
20	21.74	12.75	---	19.12	21.44	22.54	31.14	18.68	14.78	14.26	14.06	13.79
21	21.17	12.69	---	19.57	22.35	25.94	31.21	19.37	15.31	14.03	15.79	13.59
22	20.82	12.66	---	19.82	23.28	29.30	31.30	19.90	15.03	13.86	16.67	13.15
23	20.12	12.68	---	19.83	23.52	30.55	31.39	19.72	14.36	13.88	16.52	12.74
24	19.28	12.64	---	20.07	24.00	30.74	31.19	19.26	13.86	13.95	15.85	12.65
25	18.98	12.66	---	21.03	23.95	29.05	30.69	18.44	13.68	14.66	15.37	12.81
26	18.59	12.60	---	22.06	23.02	28.55	29.78	17.41	13.62	15.16	14.65	12.72
27	17.62	12.49	27.61	22.93	22.35	29.29	29.12	16.96	13.68	14.96	14.31	12.62
28	16.90	13.33	27.53	23.55	21.86	29.58	28.64	16.81	13.60	14.88	14.44	12.51
29	16.64	15.71	27.47	24.29	---	29.59	28.28	16.64	13.52	14.98	13.43	12.40
30	16.59	17.33	27.26	24.55	---	29.48	27.00	16.72	13.42	15.09	13.08	12.32
31	16.47	---	26.98	23.80	---	29.82	---	18.02	---	15.08	13.00	---
MAX	23.78	17.33	---	26.39	28.08	30.74	32.01	25.98	19.52	15.16	16.67	13.88
MIN	13.74	12.49	16.15	19.10	21.28	16.92	27.00	16.64	13.42	13.46	13.00	12.32

0102

07350500 RED RIVER AT COUSHATTA, LA

LOCATION.--Lat 32°00'45", long 93°21'10", in lot 23, T. 12 N., R. 10 W., Red River Parish, Hydrologic Unit 08040301 at bridge on U.S. Highway 84 at Coushatta, 11.0 mi downstream from Coushatta Bayou, and at mile 242.4.

DRAINAGE AREA.--63,362 mi^2.

PERIOD OF RECORD.--Water years 1970-1976, 1987 to current year.

REMARKS.--Water-quality samples are non-integrated and collected from center span of bridge. All dissolved constituents are results from water that has be filtered through 0.45 micron filters.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L) (00310)	TOTAL COLI-FORM, M ENDO MF, WTR (COL/ 100 ML) (31501)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/ 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT													
24...	1400	156	7.4	21.3	70	59	6.8	20	1.1	400	--	140	53
NOV													
27...	1400	374	7.8	16.5	30	2.9	6.9	30	2.0	--	116	200	--
JAN													
08...	1015	275	7.1	7.2	70	49	13.8	20	6.6	1500	48	150	70
31...	0945	376	7.3	14.4	100	42	10.2	20	1.3	--	140	100	99
FEB													
27...	1055	232	7.5	10.2	80	63	10.1	10	2.1	860	36k	700	71
MAR													
27...	0915	173	7.7	12.7	30	350	8.1	30	1.7	2300	--	200k	61
APR													
29...	1045	509	7.7	22.1	50	99	8.1	20	1.6	--	>150	70k	140
MAY													
30...	0900	344	7.8	24.3	40	14	7.0	30	2.3	200k	4k	160	100
JUL													
02...	0850	446	8.0	27.6	20	2.3	3.5	20	1.3	--	3k	--	160
AUG													
01...	1020	764	8.5	30.3	20	3.5	6.4	10	--	50k	<4	18k	210
21...	1010	783	8.4	29.0	20	4.9	14.5	20	--	--	7k	--	200
SEP													
25...	1200	914	8.2	25.5	120	100	8.1	10	--	135	12k	10k	130

Date	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)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
OCT													
24...	15.5	3.39	10.4	2.71	49	11.8	11.8	.1	103	85	64	<.01	.140
NOV													
27...	--	9.50	33.0	3.80	82	43.0	40.0	.1	240	--	8	<.01	.090
JAN													
08...	20.0	4.80	21.0	2.70	42	31.0	29.0	<.1	154	134	3	<.01	.170
31...	27.0	7.60	33.0	3.00	56	49.0	47.0	.1	227	191	46	<.01	.190
FEB													
27...	21.0	4.60	16.0	2.30	55	25.0	21.0	<.1	143	127	68	<.01	.210
MAR													
27...	19.0	3.30	8.7	2.30	56	12.0	10.0	.1	116	89	243	<.01	.160
APR													
29...	37.0	11.0	47.0	2.90	68	68.0	69.0	.1	293	276	126	.01	.190
MAY													
30...	30.0	7.20	26.0	2.80	77	33.0	32.0	.1	194	177	17	<.01	<.020
JUL													
02...	44.0	11.0	31.0	3.40	135	41.0	35.0	.2	264	247	6	.02	.060
AUG													
01...	57.0	16.0	74.0	4.00	142	90.0	95.0	.2	452	422	8	<.01	<.020
21...	54.0	16.0	77.0	4.00	137	96.0	100	.2	455	429	8	<.01	<.020
SEP													
25...	37.0	8.90	46.0	3.90	168	55.0	53.0	.2	285	304	97	<.01	.060

07350500 RED RIVER AT COUSHATTA, LA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORTHO TOTAL (MG/L AS P) (70507)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT					
24...	.05	E.70cl	E.07cl	.080	10.4
NOV					
27...	.10	E.60cl	E.05cl	E.050cl	12.6
JAN					
08...	.04	.50	.06	.050	8.5
31...	.07	.60	.09	.060	7.2
FEB					
27...	.07	.60	.10	.090	8.0
MAR					
27...	.08	1.0	.21	.140	12.2
APR					
29...	.04	.70	.10	.050	8.4
MAY					
30...	.06	.50	.05	.030	8.4
JUL					
02...	.03	.70	.04	.020	7.5
AUG					
01...	.03	.80	.04	.020	7.0
21...	<.01	.80	.04	.030	7.4
SEP					
25...	.06	1.3	.03	.040	8.0

Date	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT													
24...	2	M	M	2.3	2.3	2160	2	132	<.1	3.3	M	8	<.01
JAN													
31...	1	<1	<1.0	1.5	2.1	1420	1	58	<.1	2.3	<1	8	<.01
APR													
29...	<1	<1	<1.0	2.7	<1.0	2820	2	130	<.1	4.8	<1	10	<.01
AUG													
01...	2	<1	<1.0	<1.0	1.5	130	<1	113	<.1	1.9	<1	3	<.01
SEP													
25...	1	<1	<1.0	<1.0	1.3	2490	<1	149	<.1	1.7	<1	11	<.01

Date	PHENOLS TOTAL (UG/L) (32730)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)
OCT		
24...	<16	<7
JAN		
31...	<16	<7
APR		
29...	<16	<7
AUG		
01...	<16	<7
SEP		
25...	<16	<7

Remark codes used in this report:

E Estimated value.
< Actual value is known to be less than the value shown.
> Actual value is known to be greater than the value shown.
M Presence of material verified but not quantified.

Value qualifier codes used in this report:
c -- See laboratory comment
k -- Counts outside acceptable range
l -- Sample lab preparation problem

0104

07355500 RED RIVER AT ALEXANDRIA, LA

LOCATION.--Lat 31°18'46", long 92°26'34", in SE ¼ sec. 10, T. 4 N., R. 1 W., Rapides Parish, Hydrologic Unit 08040301, near center of span on downstream side of Murray Street bridge between Alexandria and Pineville, and 1.7 mi downstream from Bayou Rigolette. Water-quality sampling site at center of channel 0.3 mi downstream.

DRAINAGE AREA.--67,500 mi^2, of which 5,936 mi^2 above Denison Dam is noncontributing.

PERIOD OF RECORD.--Water years 1947, 1952-62, 1969, 1973 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1952 to September 1963, June 1973 to September 1981.
WATER TEMPERATURES: October 1952 to September 1963, June 1973 to September 1984.
CHLORIDE: October 1974 to September 1984.
SUSPENDED-SEDIMENT DISCHARGE: October 1972 to September 1982.

REMARKS.--All dissolved constituents are results from water that has been filtered through 0.45 micron filters. Sample is a dip sample, non-depth integrated, from centrum of flow.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 2,020 micromhos Oct.8, 1956; minimum daily, 133 micromhos June 24, 1953.
WATER TEMPERATURES: Maximum daily, 34.0 oC Aug. 2, 8, 10, 1956; minimum daily, 0.0 oC Dec. 24, 25, 1983.
CHLORIDE: Maximum daily, 420 mg/L Oct. 12, 1978; minimum daily, 8.6 mg/L Apr. 7, 1977.
SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 1,495,000 tons Dec. 9, 1973; minimum daily, 1,000 tons Oct. 10-22, 1972, Oct. 1 to Nov. 7, 1978, Sept. 27-30, Oct. 1-4, 1980, Jan. 30-31, Apr. 24-25, Oct. 1-6, 1981.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	TURBIDITY (NTU) (00076)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	TOTAL COLIFORM, M ENDO MF, WTR (COL/100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	FECAL STREP, KF STRP MF, WATER (COL/100 ML) (31673)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
OCT													
24...	1045	199	7.4	21.5	120	79	5.7	20	.1	106	--	17	66
NOV													
27...	1130	308	7.6	18.3	20	6.5	6.5	20	1.1	533	236	392	98
JAN													
08...	1330	189	7.1	7.5	70	52	15.8	30	8.7	4300k	110	110	55
31...	1245	320	7.2	16.5	100	39	10.9	20	2.0	800	79	48	--
FEB													
27...	1355	235	7.5	10.4	80	36	9.8	20	1.8	620	24k	400	71
MAR													
27...	1545	196	7.9	14.6	30	530	7.8	20	1.3	310	--	170k	71
APR													
29...	1400	499	7.7	23.4	60	100	8.8	20	2.4	220	88	20	120
MAY													
30...	1530	436	7.7	24.7	20	6.4	6.9	20	1.9	670	140	80k	130
JUL													
02...	1030	327	8.0	27.4	10	3.3	4.1	20	.2	--	5k	--	110
AUG													
01...	1900	667	8.2	30.6	20	3.2	7.2	20	--	7k	7k	<7	190
21...	1340	843	8.4	31.5	10	3.2	16.8	20	--	--	4k	--	210
SEP													
25...	0915	736	--	25.6	10	3.6	6.1	E10	--	175	42	4k	190

Date	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
OCT													
24...	19.0	4.60	14.0	3.00	57	17.0	17.0	.1	121	105	83	<.01	.220
NOV													
27...	28.0	6.90	26.0	3.70	73	35.0	30.0	.1	196	173	6	<.01	.220
JAN													
08...	16.0	3.70	15.0	2.40	39	22.0	19.0	<.1	119	94	53	<.01	.180
31...	--	--	23.0	2.40	42	40.0	37.0	<.1	187	--	36	<.01	.160
FEB													
27...	21.0	4.60	18.0	2.30	51	27.0	22.0	<.1	149	125	39	<.01	.180
MAR													
27...	22.0	3.80	10.0	2.30	62	15.0	11.0	.1	120	102	332	<.01	.190
APR													
29...	35.0	8.70	44.0	2.70	70	64.0	65.0	.1	274	261	86	.01	.190
MAY													
30...	36.0	8.90	35.0	3.00	90	46.0	45.0	.1	247	228	5	<.01	<.020
JUL													
02...	30.0	7.50	24.0	2.60	91	29.0	28.0	.1	195	176	7	.01	.030
AUG													
01...	50.0	15.0	63.0	3.80	130	74.0	77.0	.2	387	361	10	<.01	<.020
21...	57.0	17.0	88.0	4.10	139	100	110	.2	481	459	5	<.01	<.020
SEP													
25...	50.0	15.0	73.0	4.10	119	89.0	98.0	.2	423	401	8	.01	.040

07355500 RED RIVER AT ALEXANDRIA, LA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORTHO TOTAL (MG/L AS P) (70507)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT					
24...	.06	E.70	E.08	.100	10.8
NOV					
27...	.15	E.70cl	E.07cl	.060	9.0
JAN					
08...	.04	.60	.08	.090	7.4
31...	.04	.90	.08	.050	7.9
FEB					
27...	.05	.60	.08	.070	8.2
MAR					
27...	.12	1.1	.28	.200	--
APR					
29...	.04	.50	.08	.050	8.7
MAY					
30...	.07	.70	.02	.020	7.3
JUL					
02...	.02	.50	.04	.020	6.2
AUG					
01...	.01	.70	.03	.010	6.5
21...	<.01	.60	.03	.020	7.1
SEP					
25...	.06	.50	.05	.030	6.4

Date	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT													
24...	2	<1	<1.0	3.1	3.0	2810	2	145	<.1	4.0	<1	10	<.01
JAN													
31...	1	<1	<1.0	1.4	2.7	1390	<1	56	<.1	2.2	<1	10	<.01
APR													
29...	1	<1	<1.0	2.2	<1.0	2490	2	118	<.1	3.8	2	8	<.01
AUG													
01...	2	<1	<1.0	<1.0	1.3	101	<1	54	<.1	1.8	<1	<2	<.01

Date	PHENOLS TOTAL (UG/L) (32730)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	DEF TOTAL (UG/L) (39040)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)
OCT													
24...	<16	<1	<.01	<.10	<.02	<.02	<.01	<.006	<.1	<.007	<.006	<.009	<.006
JAN													
31...	<16	E4	--	--	--	--	--	--	--	--	--	--	--
APR													
29...	<17	<7	<.01	<.10	<.02	<.02	<.01	<.006	<.1	<.007	<.006	<.009	<.006
AUG													
01...	<16	<7	--	--	--	--	--	--	--	--	--	--	--

07355500 RED RIVER AT ALEXANDRIA, LA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ENDO-SULFAN I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)	2,4-D, TOTAL (UG/L) (39730)
OCT													
24...	<.02	<.01	<.01	<1	<.01	<.009	<.020	<.1	<.10	<.01	<.02	<.01	.08
JAN													
31...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
29...	<.02	<.01	<.01	<1	<.01	<.009	<.020	<.1	<.10	<.01	<.02	<.02	.03
AUG													
01...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	CARBO-PHENO-THION WATER UNFLTRD (UG/L) (39786)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)
OCT						
24...	<.01	<.006	<.01	<.02	<.02	<.01
JAN						
31...	--	--	--	--	--	--
APR						
29...	<.01	<.006	<.02	<.02	<.02	<.01
AUG						
01...	--	--	--	--	--	--

Remark codes used in this report:
< -- Less than
E -- Estimated value
M Presence of material verified but not quantified.

Value qualifier codes used in this report:
c -- See laboratory comment
k -- Counts outside acceptable range
l -- Sample lab preparation problem

07364100 OUACHITA RIVER NEAR ARKANSAS-LOUISIANA STATE LINE

LOCATION.--Lat 33°01'55", long 92°05'16", in SE ¼ NE ¼ sec.25, T.19 S., R.10 W., Union County, Hydrologic Unit 08040202, on right bank 500 ft below lock and dam No. 6, 1.6 mi north of Arkansas-Louisiana State line, 3.5 mi downstream from Missouri Pacific Railroad Co. bridge, and 4.5 mi southeast of Felsenthal, Ark.

DRAINAGE AREA.--10,787 mi^2.

PERIOD OF RECORD.--April 1958 to current year (daily gage heights and daily discharges below 19.0 ft stage only). Gage-height record for some periods collected at same site since 1912 are contained in reports of Corps of Engineers, Vicksburg District.

REVISED RECORDS.--WDR LA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 44.09 ft above NGVD of 1929 (levels by Corps of Engineers). Prior to Aug. 26, 1958, nonrecording gage at same site and datum. Water-stage recorder with telemetry for Ouachita River at Sterlington (station 07364535) used as auxiliary gage for this station. Prior to Oct. 1, 1980, water-stage recorder for Ouachita River at Alabama Landing near Haile (station 07364103) was used as auxiliary gage for this station.

REMARKS.--Records fair except for estimated discharge, which is poor. Discharge computed for stages below bankfull, about 19 ft. Considerable regulation by 5 reservoirs in Arkansas, combined capacity, 3,107,880 acre-ft and a series of navigation locks and dams. Several measurements of water temperature were made during the year. Satellite telemetry at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 43.04 ft, May 14, 15, 1958 (discharge not determined); minimum daily discharge, 190 ft^3/s, Sept. 13, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum gage height since 1912, 44.2 ft, Apr. 11, 12, 1945; minimum, -0.3 ft, Nov. 11, 1916; minimum since 1928, 5.8 ft, Aug. 25, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 35.50 ft., Dec. 30; minimum discharge, 1,060 ft^3/s, Sept. 26, gage height, 7.80 ft.; minimum gage height, 7.80 ft., Sept. 26, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1430	1800								2430	e3600	e1580
2	e1480	2010								2510	e3500	e1610
3	e1510	2010								1740	4100	e1590
4	e1510	1580								3330	3910	e1420
5	e1470	1760								3510	3370	e1380
6	e1330	e2200								3330	2690	e1490
7	e1400	e1800								4220	2300	e1690
8	e1420	e2000								2920	e2240	e1940
9	e1570	1610							e16000	2530	e2660	e1670
10	e1650	1520							e13000	1830	e2870	e1520
11	e3150	1740							e10000	2620	e2860	e1380
12	5580	e1950							e8300	3270	e2280	e1350
13	11300	e1450							e6500	4340	e1680	e1380
14	15600	1520							e5300	4550	e1530	e1450
15		2090							e4300	4240	e2290	e1610
16		e1450							e3600	4060	e2930	e1830
17		e1350							e3000	3550	e4300	e1770
18		e1300							e2500	3830	e3330	e1730
19		e1400							e2100	4040	e3110	e1340
20		e1310							4080	5030	e2000	e1430
21		e1370							4100	5380	e1530	e1400
22		e1380							4070	4250	e2240	e1420
23		e1430							3630	e3300	e2190	e1810
24	15600	e1440							3160	e3400	e2090	e1400
25	13200	e1380							2350	3990	e2480	e1220
26	10700	e1400							2760	4230	e2200	e1140
27	8520	e1550							3340	3620	e1830	e1240
28	6250	e2330							3550	4300	e1870	e1190
29	4110	13500							3970	4520	e1410	e1180
30	2820								2440	3710	e1620	e1160
31	2370	---							---	e3400	e1780	---
TOTAL	---	---							---	111980	78790	44320
MEAN	---	---							---	3612	2542	1477
MAX	---	---							---	5380	4300	1940
MIN	---	---							---	1740	1410	1140

e Estimated

07364100 OUACHITA RIVER NEAR ARKANSAS-LOUISIANA STATE LINE--Continued

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.18	8.60	21.79	35.31	28.10	22.52	31.98	28.56	20.27	8.95	9.63	8.29
2	8.25	8.77	22.21	35.13	27.88	22.29	32.38	28.08	20.49	9.06	9.65	8.30
3	8.29	8.77	22.45	---	27.64	---	32.70	27.64	20.69	8.47	10.12	8.29
4	8.29	8.36	22.61	---	27.42	---	32.93	27.28	20.85	9.56	10.03	8.17
5	8.24	8.48	22.75	34.26	27.21	21.46	33.10	26.89	20.95	9.78	9.61	8.14
6	8.13	---	22.89	34.03	27.11	21.23	33.24	26.58	20.92	9.63	9.10	8.22
7	8.16	---	23.02	33.73	26.97	20.99	33.35	26.32	20.72	10.21	8.80	8.42
8	8.16	---	23.13	33.41	26.82	20.67	33.64	26.10	20.30	9.35	8.75	8.64
9	8.28	8.42	23.01	33.09	26.66	20.26	33.93	25.86	19.39	9.01	9.06	8.35
10	8.40	8.28	22.89	32.78	26.52	19.67	34.13	25.60	18.38	8.51	9.24	8.22
11	9.43	8.45	22.83	32.45	26.37	19.41	34.26	25.28	17.12	9.08	9.25	8.11
12	11.07	8.59	23.00	32.11	26.20	19.73	34.34	24.95	16.00	9.57	8.82	8.07
13	14.52	8.31	23.90	31.76	26.01	20.24	34.36	24.71	15.20	10.27	8.31	8.10
14	16.98	8.24	25.02	31.41	25.76	20.61	34.34	24.54	14.41	10.42	8.16	8.16
15	18.43	8.67	26.12	31.05	25.46	21.02	34.27	24.46	13.58	10.23	8.83	8.30
16	19.48	8.21	27.12	30.68	25.13	21.41	34.16	24.47	12.42	10.11	9.36	8.51
17	20.03	8.02	28.16	30.31	24.76	21.73	34.01	24.54	11.68	9.76	10.30	8.44
18	20.30	8.04	29.04	29.93	24.37	22.04	33.80	24.60	10.41	9.89	9.59	8.37
19	20.50	8.07	29.87	29.56	23.99	22.31	33.54	24.57	9.69	10.05	9.41	8.05
20	20.62	8.03	30.61	29.18	23.74	22.70	33.24	24.47	10.12	10.72	8.59	8.15
21	20.53	8.08	31.24	28.84	23.44	23.28	32.93	24.30	10.17	10.99	8.19	8.13
22	19.99	8.08	31.83	28.54	23.21	24.09	32.60	24.06	10.12	10.23	8.80	8.15
23	18.78	8.12	32.44	28.23	23.05	24.94	32.23	23.73	9.84	9.39	8.80	8.48
24	17.30	8.15	33.04	28.24	22.96	25.86	31.83	23.30	9.53	9.31	8.68	8.13
25	16.05	8.08	33.68	28.51	22.91	26.85	31.40	22.81	8.95	10.08	9.01	7.94
26	14.68	8.10	34.29	28.50	---	27.88	30.95	22.29	9.18	10.21	8.79	7.87
27	13.37	8.35	34.81	28.52	---	28.84	30.48	21.75	9.69	9.79	8.43	7.94
28	11.92	8.79	35.19	28.54	22.69	29.59	30.00	21.08	9.84	10.23	8.49	7.88
29	10.46	15.82	35.41	28.50	---	30.20	29.53	20.31	10.12	10.42	8.12	7.86
30	9.44	19.58	35.49	28.41	---	30.74	29.05	19.83	9.01	9.87	8.24	7.84
31	9.03	---	35.44	28.27	---	31.49	---	19.94	---	9.33	8.42	---
MAX	20.62	19.58	35.49	35.31	28.10	31.49	34.36	28.56	20.95	10.99	10.30	8.64
MIN	8.13	8.02	21.79	28.23	22.69	19.41	29.05	19.83	8.95	8.47	8.12	7.84

RED RIVER BASIN

07300500 SALT FORK RED RIVER AT MANGUM, OK

LOCATION.--Lat 34°51'30", long 99°30'30", in SW $^1/_4$ SE $^1/_4$ sec.34. T.5 N, R.22 W., Greer County, Hydrologic Unit 11120202, near
left bank on downstream side of pier of bridge on State Highway 34, 0.5 mi south of Mangum, 13.0 mi downstream from Fish
Creek, and at mile 35.5.

DRAINAGE AREA.--1,566 mi^2, of which 209 mi^2 is probably noncontributing.

PERIOD OF RECORD.--April 1905 to June 1906, October 1937 to current year. Monthly discharge only for some periods, published in
WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1241: 1938.

GAGE.--Water-stage recorder. Datum of gage is 1,490.87 ft above sea level (levels by U.S. Bureau of Reclamation). Apr. 11, 1905
to June 30, 1906, nonrecording gage at site 0.2 mi upstream at different datum. Oct. 1, 1937 to Nov. 8, 1938, nonrecording
gage at present site and datum.

REMARKS.--Records fair. U.S. Geological Survey satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft^3/s:

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)

No peak greater than base discharge.

DISCHARGE VIA SATELLITE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	25	e17	76	e24	29	18	9.7	2.4	0.63	0.00
2	0.00	0.00	21	e16	73	e22	25	13	8.6	1.8	0.37	0.00
3	0.00	0.00	23	e16	54	e22	22	11	7.3	1.9	0.24	0.00
4	0.00	0.00	22	e22	44	e23	22	9.4	6.2	19	0.17	0.00
5	0.00	0.00	21	29	49	e25	22	6.6	53	94	0.10	0.00
6	0.00	0.00	18	28	60	29	22	10	22	321	0.04	0.00
7	0.00	0.00	17	27	77	29	28	19	21	346	0.00	0.00
8	0.00	0.00	17	28	86	30	35	17	18	166	0.00	0.00
9	0.00	0.00	16	30	70	27	37	8.4	10	315	0.00	0.00
10	0.00	0.00	16	27	56	27	43	5.9	6.2	138	0.00	0.00
11	0.00	0.00	15	26	48	25	39	6.5	4.3	76	0.00	0.00
12	0.00	0.00	16	26	41	24	36	5.2	3.1	136	0.00	82
13	0.00	0.00	17	25	37	24	724	5.0	5.0	41	0.00	61
14	0.00	0.00	19	24	36	24	174	4.9	19	40	0.00	49
15	0.00	22	20	24	34	23	148	4.4	20	25	0.00	36
16	0.00	46	21	24	33	23	90	4.1	38	15	0.00	16
17	0.00	66	22	23	33	24	55	3.7	45	7.8	0.00	14
18	0.00	141	22	24	33	26	41	3.3	35	4.2	0.00	6.9
19	0.00	147	20	24	32	34	31	2.9	22	2.0	0.00	5.7
20	0.00	84	20	24	31	38	23	2.7	14	0.83	0.00	2.1
21	0.00	55	20	24	32	38	19	2.2	9.6	0.43	0.00	0.57
22	0.00	40	19	24	30	36	16	2.0	6.8	0.26	0.00	0.10
23	0.00	34	18	24	30	35	15	1.9	5.0	0.18	0.00	0.00
24	0.00	28	17	24	29	34	13	3.2	3.3	0.13	0.00	0.00
25	0.00	25	17	24	27	30	11	56	2.7	0.08	0.00	0.00
26	0.00	22	17	25	e22	30	10	15	1.7	0.03	0.00	0.00
27	0.00	17	19	25	e20	30	14	10	1.3	0.00	0.00	0.00
28	0.00	16	19	24	25	29	16	9.5	0.79	0.00	0.00	0.00
29	0.00	20	18	24	---	27	16	9.9	0.63	100	0.00	0.00
30	0.00	26	20	38	---	27	23	9.8	2.1	29	0.00	0.00
31	0.00	---	e19	48	---	30	---	10	---	1.1	0.00	---
TOTAL	0.00	789.00	591	788	1218	869	1799	290.5	401.32	1884.14	1.55	273.37
MEAN	0.000	26.30	19.06	25.42	43.50	28.03	59.97	9.371	13.38	60.78	0.050	9.112
MAX	0.00	147	25	48	86	38	724	56	53	346	0.63	82
MIN	0.00	0.00	15	16	20	22	10	1.9	0.63	0.00	0.00	0.00
AC-FT	0.00	1560	1170	1560	2420	1720	3570	576	796	3740	3.1	542

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

MEAN	75.55	31.95	38.15	47.30	57.19	56.04	104.1	256.5	232.7	64.14	38.97	49.48
MAX	919	196	148	199	263	344	1292	1389	1602	575	539	424
(WY)	1961	1987	1992	1960	1998	1998	1997	1957	1941	1953	1995	1995
MIN	0.000	0.000	0.000	0.000	0.000	0.12	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1941	1940	1940	1940	1953	1971	1955	1953	1952	1963	1943	1939

e Estimated

RED RIVER BASIN

07300500 SALT FORK RED RIVER AT MANGUM, OK--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	18021.58		8904.88			
ANNUAL MEAN	49.37		24.40		87.72	
HIGHEST ANNUAL MEAN					277	1941
LOWEST ANNUAL MEAN					12.3	1940
HIGHEST DAILY MEAN	1320	May 5	724	Apr 13	22600	May 28 1978
LOWEST DAILY MEAN	0.00	at times	0.00	at times	0.00	most years
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 1	0.00	Oct 1	0.00	Aug 14 1938
MAXIMUM PEAK FLOW			2760	Apr 13	72000	May 16 1957
MAXIMUM PEAK STAGE			8.31	Apr 13	14.70	Jun 16 1938
ANNUAL RUNOFF (AC-FT)	35750		17660		63550	
10 PERCENT EXCEEDS	113		45		128	
50 PERCENT EXCEEDS	20		17		19	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

RED RIVER BASIN

07301420 SWEETWATER CREEK NEAR SWEETWATER, OK

LOCATION.--Lat 35°25'20", long 99°58'08", in NW $^1/_4$ NE $^1/_4$ sec.20, T.11 N, R.26 W., Roger Mills-Beckham County line, Hydro-
logic Unit 11120302, on right bank downstream bridge piling of State Highway 152, 0.4 mi downstream from Freezeout Creek, 3.3
mi west of Sweetwater, and at mile 16.0.

DRAINAGE AREA.--424 mi^2, of which 20 mi^2 is probably noncontributing.

PERIOD OF RECORD.--April 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,087.76 ft above sea level.

REMARKS.--Records good. U.S. Bureau of Reclamations' satellite telemeter at station.

DISCHARGE VIA SATELLITE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	8.6	19	e19	e22	e22	23	23	14	3.7	3.2	0.46
2	3.2	8.9	18	e18	e24	e19	21	22	13	4.4	2.6	0.45
3	3.2	9.7	17	e19	33	e20	19	20	11	4.8	2.1	0.45
4	3.1	11	17	e18	30	e23	19	19	9.9	8.5	1.8	0.45
5	2.9	11	17	e22	30	25	20	19	12	18	1.6	0.62
6	3.2	11	18	23	36	23	20	18	15	e28	1.5	4.8
7	3.4	11	18	23	37	23	22	19	14	23	1.3	1.1
8	3.6	11	18	22	34	23	27	17	12	21	1.2	0.85
9	3.7	11	17	22	31	22	27	14	11	18	1.0	1.2
10	3.9	10	18	23	27	21	26	14	11	15	1.0	1.3
11	3.9	10	18	22	26	21	24	15	9.0	13	1.1	3.0
12	4.4	10	18	21	26	21	24	15	8.2	12	1.0	2.4
13	4.8	12	19	21	26	22	29	14	12	11	1.1	2.2
14	5.3	13	20	21	27	21	34	14	17	8.7	1.0	2.9
15	5.2	20	19	21	26	20	32	13	25	6.8	1.0	4.1
16	5.0	22	19	21	26	21	29	12	25	5.9	1.1	3.2
17	4.6	27	19	21	25	21	26	26	22	5.2	1.0	2.8
18	4.8	34	19	21	26	21	26	28	17	4.8	0.75	2.8
19	5.1	23	19	22	26	22	25	22	14	4.4	0.66	3.4
20	5.4	19	19	22	25	23	23	18	11	3.4	0.73	4.1
21	5.7	18	19	22	24	22	23	16	9.8	3.0	0.84	4.2
22	6.0	18	20	22	22	22	22	13	8.5	3.7	0.81	3.4
23	6.2	18	19	22	22	22	22	12	7.5	4.2	0.94	3.1
24	6.2	17	19	22	22	23	20	11	6.5	12	0.80	3.1
25	6.4	17	e19	22	22	22	18	11	5.8	11	e0.84	3.0
26	6.4	17	e19	22	e20	22	19	11	5.2	7.0	e0.70	2.8
27	7.0	e15	22	22	e20	23	24	12	5.3	4.9	e0.60	2.8
28	8.4	e14	22	22	e21	23	27	17	5.0	3.3	0.55	2.7
29	8.2	e15	21	22	---	23	25	28	4.5	2.9	0.50	2.5
30	8.5	19	e20	e21	---	21	24	22	3.9	3.5	0.51	2.4
31	8.6	---	e19	e22	---	22	---	18	---	3.4	0.47	---
TOTAL	159.4	461.2	585	663	736	679	720	533	345.1	278.5	34.30	72.58
MEAN	5.142	15.37	18.87	21.39	26.29	21.90	24.00	17.19	11.50	8.984	1.106	2.419
MAX	8.6	34	22	23	37	25	34	28	25	28	3.2	4.8
MIN	2.9	8.6	17	18	20	19	18	11	3.9	2.9	0.47	0.45
AC-FT	316	915	1160	1320	1460	1350	1430	1060	685	552	68	144

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

MEAN	17.10	21.89	24.97	28.76	31.31	38.97	38.40	43.42	38.62	12.60	6.954	10.70
MAX	72.2	61.1	51.5	53.7	53.6	85.6	126	150	115	31.6	38.7	51.6
(WY)	1987	1987	1998	1998	2001	1998	1997	1997	1995	1997	1995	1988
MIN	0.20	5.23	6.73	11.2	15.2	17.9	16.2	17.2	7.08	0.97	0.080	0.084
(WY)	1995	1995	1995	1995	1995	1991	1991	2002	1994	1994	1994	1994

e Estimated

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1986 - 2002	
ANNUAL TOTAL	11656.90		5267.08			
ANNUAL MEAN	31.94		14.43		26.31	
HIGHEST ANNUAL MEAN					53.0	1997
LOWEST ANNUAL MEAN					10.9	1994
HIGHEST DAILY MEAN	427	May 20	37	Feb 7	755	May 25 1997
LOWEST DAILY MEAN	0.88	Aug 9	0.45	Sep 2,3,4	0.00	at times
ANNUAL SEVEN-DAY MINIMUM	0.98	Aug 4	0.47	Aug 29	0.00	Sep 28 1994
MAXIMUM PEAK FLOW			38	Nov 18	1940	Jun 3 1995
MAXIMUM PEAK STAGE			7.86	Nov 18	15.89	Jun 3 1995
INSTANTANEOUS LOW FLOW					0.00	Aug 27 1994
ANNUAL RUNOFF (AC-FT)	23120		10450		19060	
10 PERCENT EXCEEDS	65		25		49	
50 PERCENT EXCEEDS	19		17		20	
90 PERCENT EXCEEDS	2.2		1.7		2.2	

RED RIVER BASIN

07301500 NORTH FORK RED RIVER NEAR CARTER, OK

LOCATION.--Lat 35°10'05", long 99°30'25", in NW $^1/_4$ SE $^1/_4$ sec.15, T.8 N., R.22 W., Beckham County, Hydrologic Unit 11120302, on
left bank on downstream side of roadway on State Highway 34, 3.0 mi south of Carter, 10.8 mi downstream from Timber Creek,
and at mile 110.5.

DRAINAGE AREA.--2,337 mi^2, of which 399 mi^2 is probably noncontributing.

PERIOD OF RECORD.--October 1944 to September 1962. Annual maximum and occasional low-flow measurements, water years 1963-64.
August 1964 to current year.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,673.71 ft above sea level.

REMARKS.--Records good. U.S. Army Corps of Engineers' satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft^3/s:

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)

No peak greater than base discharge.

DISCHARGE VIA SATELLITE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	7.2	42	e51	109	e70	67	96	50	5.7	4.1	0.00
2	0.0	8.2	42	e54	117	e68	66	85	40	5.6	3.1	0.00
3	0.0	8.9	44	55	114	e67	62	77	31	5.7	2.7	0.00
4	0.0	11	45	59	115	e67	61	70	30	15	2.0	0.00
5	0.0	12	47	58	118	75	60	67	37	104	1.4	0.00
6	0.0	13	46	57	122	76	61	64	53	412	0.89	0.00
7	0.0	13	46	63	129	89	70	63	37	203	0.69	0.00
8	0.0	14	46	60	130	89	76	59	30	155	0.39	0.00
9	0.0	13	47	59	129	86	85	53	27	127	0.14	0.00
10	0.0	14	48	58	112	81	100	49	23	107	0.0	0.00
11	0.0	16	48	55	97	80	100	48	20	83	0.0	0.00
12	0.0	17	50	54	91	76	98	48	17	67	0.0	0.00
13	1.4	20	51	53	84	76	117	45	22	52	0.0	0.00
14	1.7	23	52	52	81	76	215	43	77	42	0.0	0.00
15	1.8	28	53	54	82	75	187	41	61	34	0.0	0.00
16	1.8	34	55	58	81	73	161	39	70	28	0.0	0.00
17	1.9	43	54	60	81	71	133	63	80	22	0.0	0.00
18	2.0	47	54	60	81	78	129	160	56	18	0.0	0.00
19	2.3	94	53	62	84	84	123	114	45	13	0.0	0.00
20	2.8	95	51	64	84	85	110	83	34	8.8	0.0	0.00
21	3.3	81	50	65	83	83	105	67	27	6.3	0.0	0.00
22	3.7	67	50	67	81	79	95	57	21	5.3	0.0	0.00
23	4.2	58	49	71	81	78	92	53	16	5.0	0.0	0.00
24	4.5	57	50	72	80	78	87	55	12	23	0.0	0.00
25	4.4	55	50	71	79	75	80	54	9.5	17	0.0	0.00
26	4.7	49	50	71	75	74	78	48	8.6	15	0.0	0.00
27	5.0	47	48	73	71	74	88	47	7.8	7.0	0.00	0.00
28	5.3	e45	49	73	72	73	116	46	7.5	5.1	0.00	0.00
29	5.5	e43	51	72	---	70	122	51	6.0	7.9	0.00	0.00
30	6.0	44	e50	79	---	69	108	55	5.6	12	0.00	0.00
31	6.2	---	e49	88	---	68	---	53	---	6.6	0.00	---
TOTAL	68.5	1077.3	1520	1948	2663	2363	3052	1953	961.0	1618.0	15.41	0.00
MEAN	2.210	35.91	49.03	62.84	95.11	76.23	101.7	63.00	32.03	52.19	0.497	0.000
MAX	6.2	95	55	88	130	89	215	160	80	412	4.1	0.00
MIN	0.00	7.2	42	51	71	67	60	39	5.6	5.0	0.00	0.00
AC-FT	136	2140	3010	3860	5280	4690	6050	3870	1910	3210	31	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

MEAN	90.86	60.32	67.48	80.62	104.7	116.0	151.4	407.7	283.9	73.59	46.61	54.11
MAX	1195	360	333	362	365	466	1253	2713	1560	828	560	432
(WY)	1987	1987	1998	1998	1960	1998	1997	1977	1995	1950	1995	1996
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.079	0.000	0.60	0.000	0.000	0.000
(WY)	1946	1946	1953	1953	1953	1955	1971	1971	1966	1954	1952	1945

e Estimated

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	63127.90		17239.21			
ANNUAL MEAN	173.0		47.23		128.3	
HIGHEST ANNUAL MEAN					356	1987
LOWEST ANNUAL MEAN					12.9	1981
HIGHEST DAILY MEAN	5380	May 20	412	Jul 6	20700	May 26 1959
LOWEST DAILY MEAN	0.00	at times	0.00	at times	0.00	at times
ANNUAL SEVEN-DAY MINIMUM	0.00	Sep 26	0.00	Oct 1	0.00	May 24 1945
MAXIMUM PEAK FLOW			513	Jul 6	53400	May 26 1959
MAXIMUM PEAK STAGE			4.05	Jul 6	15.08	Jun 4 1995
ANNUAL RUNOFF (AC-FT)	125200		34190		92970	
10 PERCENT EXCEEDS	294		95		229	
50 PERCENT EXCEEDS	67		49		39	
90 PERCENT EXCEEDS	1.2		0.00		0.00	

RED RIVER BASIN

07315500 Red River near Terral, OK

LOCATION.--Lat 33x52'43", long 97x56'03", Jefferson County, Hydrologic Unit 11130201, on left bank at downstream side of bridge
abutment on U.S. Highway 81, 0.5 mi downstream from Chicago, and Rock Island Railroad Co. bridge, 1.2 mi south of Terral, 3.6
mi downstream from Little Wichita River, and at mile 872.

DRAINAGE AREA.--28,723 mi^2 of which 5,936 mi^2 probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Apr. 1938 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 770.31 ft above NGVD of 1929. Prior to Jan. 12, 1939, nonrecording gage at same
site and datum. Satellite telemeter at station.

REMARKS.--Records fair. Since installation of gage in Apr. 1938, at least 10% of contributing drainage area has been regulated.
There are many small diversions upstream from station for irrigation, oil field operations, and for municipal uses.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1935, reached a stage of 27.2 ft, although floods in 1891 and on May 1,
1908, are reported to have reached about the same stage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	213	123	408	234	273	320	667	1620	1000	278	857	108
2	195	124	462	238	306	319	913	1270	757	302	677	87
3	184	121	431	235	499	313	930	1050	573	493	522	67
4	179	124	422	244	1150	328	726	899	473	686	520	58
5	174	124	415	274	1020	340	565	788	1090	1410	457	49
6	156	123	401	283	827	340	507	712	6670	1240	488	48
7	151	116	382	300	734	330	647	e690	11900	3080	443	46
8	145	110	351	344	711	320	2900	e670	7020	3640	396	57
9	149	118	326	327	674	288	8600	645	3640	3540	350	e70
10	178	121	315	313	667	264	5910	588	2080	4770	335	e115
11	233	125	301	289	689	256	2920	583	1400	4340	325	e190
12	239	124	309	281	643	249	1620	592	1030	3850	297	314
13	532	120	302	274	587	250	2010	581	876	3620	274	302
14	450	126	304	265	544	241	13500	555	870	3600	261	296
15	369	122	297	259	505	240	13900	541	962	4230	253	294
16	256	125	374	256	471	230	13500	496	972	3360	272	291
17	214	140	436	247	444	230	5840	511	828	2120	304	288
18	186	146	506	245	425	245	2930	480	1050	1440	313	285
19	177	217	470	249	440	287	2140	445	1290	1090	288	282
20	164	2190	362	249	434	400	1710	417	1990	855	258	278
21	153	2070	340	247	423	615	1440	394	1460	690	243	275
22	148	1350	314	242	423	1000	1270	382	989	581	225	270
23	143	953	288	239	401	983	1170	370	749	502	204	262
24	130	754	267	230	379	814	1060	358	598	441	180	228
25	126	645	259	227	363	662	952	370	497	431	162	225
26	123	536	254	227	333	565	1260	395	419	408	149	224
27	113	453	248	232	320	500	2810	457	364	410	161	227
28	111	446	247	246	315	464	4270	678	320	340	144	227
29	113	437	245	247	---	437	3730	702	290	416	125	227
30	114	423	236	246	---	452	2430	846	266	552	114	229
31	121	---	235	268	---	516	---	1050	---	763	116	---
TOTAL	5939	12706	10507	8057	15000	12798	102827	20135	52423	53478	9713	5919
MEAN	191.6	423.5	338.9	259.9	535.7	412.8	3428	649.5	1747	1725	313.3	197.3
MAX	532	2190	506	344	1150	1000	13900	1620	11900	4770	857	314
MIN	111	110	235	227	273	230	507	358	266	278	114	46
AC-FT	11780	25200	20840	15980	29750	25380	204000	39940	104000	106100	19270	11740

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

MEAN	2959	1540	1140	960.1	1408	2050	2619	6436	6131	1652	1305	1961
MAX	23900	9713	11810	5306	9320	14710	18080	43580	37460	8077	14730	9653
(WY)	1987	1987	1992	1992	1987	1998	1990	1957	1941	1950	1995	1986
MIN	108	102	91.2	76.5	136	66.1	142	134	517	158	155	100
(WY)	1953	1940	1939	1940	1953	1940	1971	1971	1966	1964	1970	2000

e Estimated

07315500 Red River near Terral, OK--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	760913		309502			
ANNUAL MEAN	2085		848.0		2512	
HIGHEST ANNUAL MEAN					8925	1987
LOWEST ANNUAL MEAN					523	1953
HIGHEST DAILY MEAN	18500	May 22	13900	Apr 15	215000	Jun 7 1995
LOWEST DAILY MEAN	110	Nov 8	46	Sep 7	46	Mar 20 1940
ANNUAL SEVEN-DAY MINIMUM	117	Oct 26	56	Sep 3	47	Mar 18 1940
MAXIMUM PEAK FLOW			15800	Apr 14	236000	Jun 7 1995
MAXIMUM PEAK STAGE			13.92	Apr 14	33.60	Oct 22 1983
ANNUAL RUNOFF (AC-FT)	1509000		613900		1819000	
10 PERCENT EXCEEDS	6120		1620		5510	
50 PERCENT EXCEEDS	607		363		599	
90 PERCENT EXCEEDS	178		128		177	

WATER YEAR

RED RIVER BASIN

07316500 WASHITA RIVER NEAR CHEYENNE, OK

LOCATION.--Lat 35°37'35", long 99°40'05", in SE ¼ sec.5, T.13 N., R.23 W., Roger Mills County, Hydrologic Unit 11130301, on left bank on downstream side of bridge on U.S. Highway 283, 0.5 mi downstream from Sergeant Major Creek, 1.0 mi north of Cheyenne, 5.2 mi upstream from Dead Indian Creek, and at mile 543.9.

DRAINAGE AREA.--794 mi².

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,900.98 ft above sea level. May 1, 1938, to Nov. 16, 1946, and Oct. 1, 1947, to Jan. 11, 1948, nonrecording gage at site 50 ft upstream and datum 5.00 ft higher. Jan. 12, 1948 to Dec. 31, 1976, at site 50 ft upstream and datum 5.00 ft higher. Jan. 1, 1977, to Dec. 20, 1979, at site 50 ft upstream at present datum.

REMARKS.--Records good except for estimated periods, which are poor. Flow regulated since 1961 by numerous flood-retarding structures. U.S. Army Corps of Engineers' satellite telemeter at site.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 3, 1934, reached a stage of 1.7 ft lower than that in 1954, at site on upstream side of highway fill (at old bridge site).

DISCHARGE VIA SATELLITE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	3.7	11	e9.0	e17	e19	15	18	17	1.8	1.4	0.00
2	1.2	3.1	12	e8.0	e22	e16	16	17	14	1.8	1.3	0.00
3	1.1	3.3	10	e9.0	26	e15	18	16	11	1.9	0.70	0.00
4	1.1	4.3	12	e14	24	e18	16	15	10	6.8	0.25	0.00
5	1.3	4.4	12	17	26	22	15	14	13	85	0.00	0.00
6	1.3	4.6	12	17	27	20	16	15	12	43	0.00	0.00
7	1.4	4.6	12	16	28	19	18	14	11	32	0.00	0.00
8	1.4	4.8	11	17	28	18	22	13	10	24	0.00	0.00
9	1.7	4.8	11	17	26	19	22	11	12	19	0.00	0.00
10	2.2	5.2	10	16	24	19	21	10	9.8	15	0.00	0.00
11	1.9	5.2	10	16	23	19	21	9.9	8.7	13	0.00	0.65
12	1.8	5.4	9.9	16	22	18	21	9.9	7.7	11	0.00	0.00
13	2.1	5.5	10	16	22	17	26	9.0	12	9.0	0.00	0.00
14	1.9	5.2	11	16	21	17	31	7.3	16	7.9	0.00	0.00
15	1.9	6.1	12	16	21	17	29	7.0	12	7.2	0.00	0.00
16	1.9	7.6	12	17	21	17	27	6.9	13	6.3	0.00	0.00
17	2.1	9.1	12	17	20	18	23	30	15	5.7	0.00	0.00
18	1.8	8.7	12	17	21	18	24	24	13	5.2	0.00	0.00
19	1.9	8.4	12	16	21	19	23	26	12	4.4	0.00	0.00
20	2.7	8.5	12	17	21	20	22	25	9.3	3.5	0.00	0.00
21	2.9	8.0	11	17	20	21	21	20	6.7	3.0	0.00	0.00
22	2.9	7.7	12	15	20	20	20	18	5.1	2.9	0.00	0.00
23	2.5	7.8	12	16	20	20	19	16	3.6	3.2	0.00	0.00
24	1.7	8.9	12	17	20	20	17	15	2.7	3.5	0.00	0.00
25	1.6	8.4	12	16	20	20	16	14	2.2	4.7	0.00	0.00
26	1.7	8.2	13	17	e17	20	18	14	1.9	3.2	0.00	0.00
27	2.0	e8.0	13	18	e17	18	23	16	2.9	2.3	0.21	0.00
28	2.7	e7.0	13	15	e18	19	22	20	2.9	1.8	0.00	0.00
29	2.7	e7.5	e12	17	---	18	21	23	2.2	2.1	0.00	0.00
30	3.2	e9.0	e11	e15	---	15	20	23	1.8	2.0	0.00	0.00
31	3.4	---	e10	e13	---	15	---	20	---	1.8	0.00	---
TOTAL	61.2	193.0	356.9	480.0	613	571	623	497.0	270.5	334.0	3.86	0.65
MEAN	1.974	6.433	11.51	15.48	21.89	18.42	20.77	16.03	9.017	10.77	0.125	0.022
MAX	3.4	9.1	13	18	28	22	31	30	17	85	1.4	0.65
MIN	1.1	3.1	9.9	8.0	17	15	15	6.9	1.8	1.8	0.00	0.00
AC-FT	121	383	708	952	1220	1130	1240	986	537	662	7.7	1.3

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

MEAN	8.752	9.945	12.10	15.67	20.26	27.49	33.33	50.34	40.59	8.715	4.491	5.553
MAX	72.9	64.3	67.7	80.7	71.0	138	146	348	203	61.7	32.8	44.7
(WY)	1987	1987	1998	1998	2001	1998	1997	1977	1982	1982	1995	1997
MIN	0.000	0.000	0.000	0.026	1.50	2.22	1.08	0.000	0.005	0.000	0.000	0.000
(WY)	1964	1964	1964	1973	1973	1967	1971	1971	1970	1964	1963	1964

e Estimated

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1962 - 2002	
ANNUAL TOTAL	12924.39		4004.11			
ANNUAL MEAN	35.41		10.97		[a]19.74	
HIGHEST ANNUAL MEAN					64.0	1997
LOWEST ANNUAL MEAN					2.60	1972
HIGHEST DAILY MEAN	301	Jun 5	85	Jul 5	1560	Apr 23 1990
LOWEST DAILY MEAN	0.00	several days	0.00	several days	0.00	most years
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 5	0.00	Aug 5	0.00	Oct 1 1961
MAXIMUM PEAK FLOW			178	Jul 5	[b]7250	Apr 22 1990
MAXIMUM PEAK STAGE			10.04	Jul 5	[c]16.60	Apr 22 1990
ANNUAL RUNOFF (AC-FT)	25640		7940		14300	
10 PERCENT EXCEEDS	80		21		44	
50 PERCENT EXCEEDS	13		11		7.7	
90 PERCENT EXCEEDS	0.23		0.00		0.00	

[a]Prior to regulation, water years 1938-60, 41.7 ft^3/s.
[b]Maximum discharge for period of record 69,800 ft^3/s, Apr. 29, 1954, from rating curve extended above 27,000 ft^3/s on basis of contracted opening.
[c]Maximum gage-height for period of record, 20.24 ft, Apr. 29, 1954, present datum.

RED RIVER BASIN

07331000 WASHITA RIVER NEAR DICKSON, OK

LOCATION.--Lat 34°14'00", long 96°58'32", in SW $^1/_4$ SE $^1/_4$ sec.3, T.4 S., R.3 E., Carter County, Hydrologic Unit 11130303, on right bank on downstream side of bridge on U.S. Highway 177, 1.3 mi downstream from Caddo Creek, 3.2 mi north of Dickson, 12.0 mi northeast of Ardmore, and at mile 63.4.

DRAINAGE AREA.--7,202 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to Oct. 1, 1979, published as Washita River near Durwood.

REVISED RECORDS.--WSP 1211: Drainage area. WSP 1281: 1935 (M).

GAGE.--Water-stage recorder. Datum of gage is 650.57 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Feb. 16, 1939, nonrecording gage, at same site and datum. Dec. 15, 1950, to Feb. 19, 1952, nonrecording gage, at site 500 ft upstream, at same datum. Apr. 24, 1975, to May 8, 1986, water-stage recorder, at site 500 ft upstream, at same datum.

REMARKS.--Records poor. Some diversions for irrigation upstream from station. Flow regulated by Fort Cobb Reservoir (station 07325900) since March 1959; by Foss Reservoir (station 07324300) since February 1961; and by numerous flood-retarding struc- tures. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE VIA SATELLITE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	216	247	e760	545	395	1670	1290	694	456	e210	394
2	1210	215	247	e776	802	344	1350	1140	490	525	e206	292
3	1110	210	240	e765	922	334	1150	1020	379	457	e197	239
4	1020	211	238	e744	892	341	999	750	e368	549	e213	215
5	954	224	236	e701	829	332	823	611	2800	508	e215	257
6	450	264	236	e754	1050	334	745	559	3420	413	e173	340
7	346	254	228	e851	1110	331	9520	505	2740	403	e155	279
8	305	221	220	e915	1140	319	27400	453	1850	375	e164	204
9	281	208	213	e877	1040	318	16100	419	1520	e373	e161	309
10	445	197	207	e824	930	308	10000	379	1220	e379	e161	897
11	6800	200	210	e685	821	304	7680	e356	955	e392	e155	1050
12	4600	199	230	e694	732	304	6540	e356	1540	e379	e148	527
13	5140	198	238	e503	662	e300	11800	593	4170	e385	e159	491
14	3570	200	247	483	601	e298	17400	997	3300	e392	5470	395
15	2950	200	253	543	484	e296	11400	630	2500	e341	4130	463
16	2590	200	2200	521	437	e294	8160	666	2320	e312	2470	252
17	2290	203	10500	514	412	e290	6860	665	2050	375	1880	197
18	1630	213	e4900	500	395	e298	6570	2330	1860	e255	1350	172
19	1030	216	e4000	514	414	903	5370	1390	1790	e220	945	157
20	824	223	e3450	509	483	3710	4640	852	1450	e205	915	162
21	702	223	e2710	423	699	3330	4100	876	1180	e190	847	e187
22	619	238	e2100	402	528	2410	3610	765	1040	e179	614	e671
23	605	232	e1800	393	421	2110	3210	603	934	e168	391	e472
24	470	221	e1680	404	384	1850	2890	506	843	e168	330	e305
25	390	214	e1580	459	367	1690	2680	378	661	e213	303	e259
26	348	208	e1350	693	340	1500	2530	e374	524	e188	333	e237
27	320	208	1110	571	381	1290	2470	575	438	e177	1270	e213
28	295	230	e1090	475	399	1180	2220	842	370	e168	2600	198
29	280	240	e1080	426	---	1100	1640	1590	e404	e226	1670	197
30	266	240	e984	406	---	1160	1500	1820	e398	e296	908	177
31	236	---	e888	435	---	1980	---	1180	---	e217	529	---
TOTAL	43426	6526	44912	18520	18220	29953	183027	25470	44208	9884	29272	10208
MEAN	1401	217.5	1449	597.4	650.7	966.2	6101	821.6	1474	318.8	944.3	340.3
MAX	6800	264	10500	915	1140	3710	27400	2330	4170	549	5470	1050
MIN	236	197	207	393	340	290	745	356	368	168	148	157
AC-FT	86140	12940	89080	36730	36140	59410	363000	50520	87690	19600	58060	20250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

MEAN	1525	1615	1415	1234	1569	2413	2540	4033	3500	1006	609.8	1142
MAX	8274	5879	9324	6061	6996	10890	15940	18720	14090	4042	3048	5236
(WY)	1987	1987	1992	1998	2001	1990	1990	1993	1995	1987	1995	1991
MIN	30.4	73.5	103	103	93.6	78.4	210	249	158	31.4	12.8	42.1
(WY)	1964	1964	1967	1967	1967	1967	1971	1971	1966	1964	1972	1972

e Estimated

RED RIVER BASIN

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1962 - 2002	
ANNUAL TOTAL	835492		463626			
ANNUAL MEAN	2289		1270		[a]1882	
HIGHEST ANNUAL MEAN					5644	1987
LOWEST ANNUAL MEAN					340	1964
HIGHEST DAILY MEAN	27800	Feb 16	27400	Apr 8	94400	May 3 1990
LOWEST DAILY MEAN	156	Aug 14	148	Aug 12	[b]0.10	Aug 11 1964
ANNUAL SEVEN-DAY MINIMUM	161	Aug 9	158	Aug 7	0.30	Aug 8 1964
MAXIMUM PEAK FLOW			28700	Apr 8	[c]118000	May 3 1990
MAXIMUM PEAK STAGE			24.82	Apr 8	45.24	May 30 1987
ANNUAL RUNOFF (AC-FT)	1657000		919600		1364000	
10 PERCENT EXCEEDS	5140		2720		4280	
50 PERCENT EXCEEDS	1670		491		724	
90 PERCENT EXCEEDS	215		208		145	

[a]Prior to regulation, water years 1929-58, 1,573 ft^3/s.
[b]No flow Aug. 28, Sept. 14 to Oct. 1, 7-12, 1956.
[c]Gage height 44.26 ft.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1944 to September 1995; October 1996 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1944 to January 1982, February 1984 to April 1990; December 1996 to current year.
WATER TEMPERATURE: April 1947 to January 1982, February 1984 to April 1990; December 1996 to current year.

REMARKS.--Samples were collected monthly and specific conductance, pH, water temperature, alkalinity, and dissolved oxygen were
determined in the field.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 2,180 microsiemens, Sept. 29, 2000; minimum daily, 95 microsiemens, Nov. 2, 1951.
WATER TEMPERATURE: Maximum daily, 38.0°C, July 16, 1985; minimum daily, -0.5°C, Dec. 20, 1996, Jan. 12-18, 1997, Jan. 4, 5,
10, 1999.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 1,670 microsiements, Aug. 10; minimum, 258 microsiemens, Oct. 13.
WATER TEMPERATURE: Maximum, 36.9°C, July 11; minimum, 0.3°C, Jan. 3.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	GAGE HEIGHT (FEET) (00065)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)
SEP											
03...	1345	1028	1028	10.04	239	765	8.9	7.7	874	30.6	--
18...	0928	1028	1028	9.85	176	741	6.9	8.0	816	25.6	4.00
18...	0931	1028	1028	9.85	176	741	6.8	8.0	817	25.4	21.0
18...	0933	1028	1028	9.85	176	741	6.6	8.0	817	25.4	38.0
18...	0936	1028	1028	9.85	176	741	6.6	8.0	817	25.4	55.0
18...	0939	1028	1028	9.85	176	741	6.7	8.0	817	25.4	72.0
18...	0942	1028	1028	9.85	176	741	6.7	8.0	816	25.4	89.0
18...	0945	1028	1028	9.85	176	741	6.7	8.0	816	25.4	106
18...	0948	1028	1028	9.85	176	741	6.6	8.0	817	25.4	123
18...	0951	1028	1028	9.85	176	741	6.6	8.0	817	25.4	140
18...	0954	1028	1028	9.85	176	741	7.1	8.0	825	25.6	157

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	GAGE HEIGHT (FEET) (00065)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
OCT													
10...	1130	80020	1028	10.65	431	747	97	8.5	8.4	1330	26.7	20.7	550
NOV													
30...	0910	80020	1028	10.45	240	746	97	12.8	8.3	1440	10.1	2.8	630
DEC													
27...	1735	80020	1028	11.51	1000	745	102	12.2	8.1	959	9.5	6.4	420
JAN													
15...	1030	80020	1028	10.31	228	754	95	11.7	8.1	1380	13.5	5.7	610
FEB													
20...	1000	80020	1028	10.61	474	749	128	13.4	8.2	1340	17.3	12.2	560
MAR													
12...	1200	80020	1028	10.30	304	740	111	11.0	7.9	1390	19.1	14.3	630
APR													

09...	1100	80020	1028	19.87	14900	749	96	10.0	7.9	423	22.1	12.8
140												
MAY												
08...	1030	80020	1028	10.44	453	736	100	8.2	8.1	1170	23.3	23.1
500												
JUN												
13...	0930	80020	1028	13.83	4420	739	56	4.2	7.8	1080	29.7	27.4
470												
JUL												
17...	1120	80020	1028	10.30	375	742	142	10.6	7.8	1350	30.3	28.8
520												
AUG												
15...	1045	80020	1028	13.61	4130	745	71	5.8	7.7	318	26.1	24.4
120												
SEP												
18...	0930	80020	1028	9.85	176	741	84	6.7	8.0	816	26.0	25.4
300												

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	HARDNESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT 10...	340	129	56.0	4.46	1	78.6	23	212	254	2	85.1	.5	10.3
NOV 30...	410	151	62.0	3.81	2	87.4	23	218	266	0	96.2	.5	10.7
DEC 27...	200	111	34.8	3.14	1	50.7	21	220	270	0	58.6	.3	8.9
JAN 15...	370	149	57.8	2.94	1	79.7	22	242	291	2	88.8	.4	8.1
FEB 20...	360	135	53.1	3.52	1	70.5	21	202	243	0	82.2	.4	6.2
MAR 12...	440	149	63.7	3.41	1	86.5	23	197	237	1	95.6	.4	4.1
APR 09...	28	39.4	11.1	3.39	.5	14.2	17	116	141	0	41.5	.2	5.8
MAY 08...	290	119	48.2	3.87	1	68.2	23	209	252	0	77.9	.3	5.3
JUN 13...	330	117	42.2	5.60	1	50.8	19	141	171	0	51.5	.3	10.7
JUL 17...	410	116	55.1	5.51	2	83.4	26	105	122	3	97.8	.4	7.5
AUG 15...	29	35.6	8.54	3.81	.5	12.3	17	96	115	0	13.2	.2	7.2
SEP 18...	140	71.0	30.3	4.78	1	52.7	27	165	195	3	58.2	.6	8.3

Date	SULFATE DISSOLVED (MG/L AS SO4) (00945)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NITRATE DISSOLVED (MG/L AS NO3) (71851)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS NO2) (71856)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)
OCT 10...	374	.87	<.04	--	--	--	--	E.02	--	<.008	--	--	E.04
NOV 30...	457	.81	.13	.11	.93	.17	.491	.12	.026	.008	.68	.104	E.04
DEC 27...	215	.57	E.03	--	.92	--	--	.35	--	E.007	--	.071	E.03
JAN													

15...	394	.80	E.04	.25	1.1	--	1.12	.27	.069	.021	--	--
<.06												
FEB												
20...	398	1.2	E.02	.19	1.4	--	.845	.21	.069	.021	--	--
<.06												
MAR												
12...	446	.61	<.04	.07	.69	--	.297	.08	.046	.014	--	--
<.06												
APR												
09...	59.1	2.8	.08	.19	3.0	.10	.841	.20	.036	.011	2.7	.086
<.06												
MAY												
08...	330	.68	<.04	--	--	--	--	E.02	--	E.006	--	--
E.05												
JUN												
13...	343	3.1	.21	.42	3.8	.27	1.84	.67	.841	.256	2.9	.067
E.06												
JUL												
17...	452	2.4	<.04	--	--	--	--	E.04	--	E.006	--	.254
.09												
AUG												
15...	28.0	2.4	.08	.58	3.0	.11	2.55	.62	.128	.039	2.3	.147
.06												
SEP												
18...	150	1.1	<.04	.18	1.3	--	.801	.21	.099	.030	--	.086
E.03												

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)
OCT 10...	E.02	.14	25	1.18	1010	865	3	E3	192	190	<8	<.1	<.8
NOV 30...	.03	.11	116	1.36	648	1000	3	3	144	146	<8	<.1	<.8
DEC 27...	.02	.08	54	.84	1670	617	E1	2	140	145	<8	E.1	<.8
JAN 15...	<.02	.06	26	1.26	570	927	E1	E2	150	155	<8	<.1	<.8
FEB 20...	<.02	.11	50	1.18	1110	870	2	3	140	142	<8	<.1	<.8
MAR 12...	E.02	.09	22	1.32	794	967	E1	3	137	135	<8	<.1	<.8
APR 09...	.03	.98	167	.33	9870	245	<2	6	74.2	431	<8	.2	<.8
MAY 08...	E.02	.13	61	1.06	950	777	<5	E2	183	195	<8	<.1	<.8
JUN 13...	.02	.94	1690	.96	8460	709	2	11	224	591	<8	.6	<.8
JUL 17...	.08	.32	<10	1.20	892	881	3	3	184	207	<8	E.1	<.8
AUG 15...	.05	.75	60	.23	1890	169	3	6	61.6	329	<8	.2	<.8
SEP 18...	.03	.16	49	.65	226	476	2	3	138	151	<8	<.1	<.8

Date	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
OCT 10...	E.5	<6	2.3	<10	380	.09	M	5.0	95.0	<.01	<.01	<30	<70
NOV 30...	<.8	<6	1.5	<10	230	E.04	M	28.4	44.0	<.01	E.01	<30	<70
DEC 27...	E.4	<6	2.0	<10	530	E.07	1	21.1	57.9	<.01	<.02	<30	<70
JAN													

15...	E.4	<6	1.7	<10	170	.10	<1	18.8	34.3	E.01	.01	<30
<70												
FEB												
20...	E.4	<6	1.6	<10	410	.34	<1	11.7	84.0	E.01	.05	<30
<70												
MAR												
12...	E.5	<6	2.5	<10	220	.36	M	16.5	90.7	.03	E.01	<30
<70												
APR												
09...	11.2	<6	18.8	20	13700	E.06	21	3.3	1160	<.01	.04	<30
<70												
MAY												
08...	E.5	<6	4.2	<10	470	.47	1	18.5	118	<.01	E.01	<30
<70												
JUN												
13...	13.0	E3	23.7	<10	13400	.43	18	E1.4	1870	<.01	.03	<30
<70												
JUL												
17...	<.8	<6	2.5	<10	460	.35	1	7.1	128	<.01	<.01	<30
<70												
AUG												
15...	9.9	<6	20.0	13	11300	.10	17	E1.0	1210	.01	.03	<30
<70												
SEP												
18...	E.8	<6	2.4	<10	770	.13	1	4.5	157	<.01	<.01	<30
<70												

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ALDRIN, TOTAL (UG/L) (39330)	ALPHA BHC TOTAL (UG/L) (39337)	ALPHA-HCH-D6 SUR SCD 1608 WATER UNFLTRD PERCENT (99778)	AROCLOR 1016/1242 PCB WATER UNFLTRD (UG/L) (81648)	AROCLOR 1221 PCB TOTAL (UG/L) (39488)	AROCLOR 1232 PCB TOTAL (UG/L) (39492)	AROCLOR 1248 PCB TOTAL (UG/L) (39500)
OCT 10...	<2	<4	<.2	<.3	<24	<20	--	--	--	--	--	--	--
NOV 30...	<2	<2	<.2	<.3	<24	70	--	--	--	--	--	--	--
DEC 27...	E1	<2	<.2	<.3	<24	<20	--	--	--	--	--	--	--
JAN 15...	E2	E1	<.2	<.3	<24	<20	--	--	--	--	--	--	--
FEB 20...	E2	E1	<.1	<.3	<24	<20	--	--	--	--	--	--	--
MAR 12...	<2	<2	<.1	<.3	<24	<20	<.04	<.03	63.0	<.1	<1	<.1	<.1
APR 09...	<2	E1	<.1	<.3	<24	50	--	--	--	--	--	--	--
MAY 08...	<2	<2	<.1	<.3	<24	<20	--	--	--	--	--	--	--
JUN 13...	<2	E1	<.4	<.3	<24	90	--	--	--	--	--	--	--
JUL 17...	<2	<2	<.1	<.3	<24	E20	--	--	--	--	--	--	--
AUG 15...	<2	<2	<.1	<.3	<24	80	--	--	--	--	--	--	--
SEP 18...	<2	<2	<.2	<.3	<24	40	<.04	<.03	130	<.1	<1	<.1	<.1

Date	AROCLOR 1254 PCB TOTAL (UG/L) (39504)	AROCLOR 1260 PCB TOTAL (UG/L) (39508)	BETA BENZENE HEXACHLORIDE TOTAL (UG/L) (39338)	CHLORDANE CIS WATER WHOLE TOTAL (UG/L) (39062)	CHLORDANE, TECHNICAL WHOLE TOTAL (UG/L) (39350)	CHLORDANE TRANS WATER WHOLE TOTAL (UG/L) (39065)	DELTA BENZENE HEXACHLORIDE TOTAL (UG/L) (34259)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN-I WATER WHOLE REC (UG/L) (34361)	ENDOSULFAN II TOTAL (UG/L) (34356)	ENDOSULFAN SULFATE TOTAL (UG/L) (34351)	ENDRIN ALDEHYDE TOTAL (UG/L) (34366)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 15...	--	--	--	--	--	--	--	--	--	--	--	--	--

FEB												
20...	--	--	--	--	--	--	--	--	--	--	--	--
--												
MAR												
12...	<.1	<.1	<.03	<.1	<.1	<.1	<.09	<.02	<.1	<.04	<.6	<.2
<.06												
APR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
--												
MAY												
08...	--	--	--	--	--	--	--	--	--	--	--	--
--												
JUN												
13...	--	--	--	--	--	--	--	--	--	--	--	--
--												
JUL												
17...	--	--	--	--	--	--	--	--	--	--	--	--
--												
AUG												
15...	--	--	--	--	--	--	--	--	--	--	--	--
--												
SEP												
18...	<.1	<.1	<.03	<.1	<.1	<.1	<.09	<.02	<.1	<.04	<.6	<.2
<.06												

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	ISODRIN SUR SCD 1608 WTR, UNFLTRD PERCENT (90570)	LINDANE TOTAL (UG/L) (39340)	PCB 207 SUR SCD 1608 WATER UNFLTRD PERCENT (99781)	P,P' DDD, TOTAL (UG/L) (39310)	P,P' DDE, TOTAL (UG/L) (39320)	P,P' DDT, TOTAL (UG/L) (39300)	TOX-APHENE, TOTAL (UG/L) (39400)
OCT 10...	--	--	--	--	--	--	--	--	--
NOV 30...	--	--	--	--	--	--	--	--	--
DEC 27...	--	--	--	--	--	--	--	--	--
JAN 15...	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--
MAR 12...	<.8	<.03	39.0	<.03	22.3	<.1	<.04	<.1	<2
APR 09...	--	--	--	--	--	--	--	--	--
MAY 08...	--	--	--	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--	--	--	--
JUL 17...	--	--	--	--	--	--	--	--	--
AUG 15...	--	--	--	--	--	--	--	--	--
SEP 18...	<.8	<.03	61.8	<.03	116	<.1	<.04	<.1	<2

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	695	675	690	1310	1280	1290	1510	1480	1500	1300	1220	1270
2	714	690	700	1330	1310	1330	1490	1460	1480	1330	1300	1320
3	738	713	724	1340	1330	1330	1460	1420	1450	1360	1330	1350
4	770	738	749	1360	1330	1350	1440	1360	1410	1380	1360	1370
5	778	767	774	1380	1350	1360	1420	1390	1410	1370	1340	1360
6	1020	744	819	1410	1380	1400	1400	1370	1390	1370	1340	1360
7	1200	1020	1120	1420	1350	1390	1400	1360	1380	1340	1300	1310
8	1240	1150	1190	1420	1370	1390	1430	1400	1410	1340	1310	1330
9	1280	1200	1240	1400	1330	1370	1440	1420	1430	1340	1320	1330
10	1330	880	1230	1400	1340	1360	1460	1440	1450	1360	1340	1340
11	1080	271	445	1440	1400	1420	1470	1450	1460	1370	1360	1360
12	348	281	320	1450	1440	1450	1460	1450	1450	1360	1340	1350
13	338	258	293	1450	1430	1440	1460	1410	1440	1380	1360	1370
14	408	338	377	1480	1450	1470	1440	1410	1430	1370	1360	1360
15	553	408	480	1480	1470	1480	1440	1410	1420	1380	1240	1330
16	643	515	559	1490	1480	1480	1420	310	972	1250	1230	1240
17	754	643	702	1500	1480	1490	910	302	365	1250	1220	1230
18	670	626	645	1490	1470	1480	405	321	365	1260	1240	1250
19	692	644	668	1480	1440	1460	448	405	426	1250	1240	1250
20	768	681	719	1470	1460	1470	488	448	466	1260	1240	1250
21	892	768	831	1500	1460	1470	548	488	516	1380	1250	1310
22	940	892	922	1530	1500	1510	652	548	609	1410	1380	1400
23	979	914	946	1540	1520	1530	735	652	697	1400	1390	1400
24	1080	973	1000	1530	1510	1520	803	735	766	1420	1390	1400
25	1120	1080	1100	1510	1480	1490	870	803	841	1420	1400	1410
26	1100	1030	1070	1520	1500	1510	922	870	896	1480	1300	1420
27	1060	1010	1030	1550	1520	1530	972	920	943	1310	1150	1220
28	1130	1060	1090	1520	1480	1500	1010	971	986	1290	1120	1190
29	1160	1130	1150	1480	1460	1470	1040	1010	1020	1310	1270	1290
30	1190	1150	1170	1500	1470	1480	1060	1040	1050	1320	1270	1300
31	1280	1190	1240	---	---	---	1220	1050	1080	1350	1320	1340
MONTH	1330	258	838	1550	1280	1440	1510	302	1080	1480	1120	1320

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1360	1330	1340	1240	1230	1240	951	819	912	893	868	885
2	1340	1120	1290	1330	1210	1270	947	911	928	938	893	910
3	1230	1120	1170	1380	1330	1350	1010	926	966	970	938	951
4	1270	1230	1240	1400	1370	1390	1060	1010	1040	1090	970	1020
5	1270	1160	1230	1410	1400	1400	1170	1050	1110	1090	1090	1090
6	1300	1080	1190	1410	1400	1400	1220	1160	1180	1110	1070	1100
7	1330	1270	1300	1430	1380	1410	1160	284	605	1150	1100	1130
8	1350	1220	1300	1410	1390	1400	355	286	308	1180	1150	1170
9	1350	1110	1230	1390	1360	1370	474	331	410	1220	1180	1200
10	1120	1090	1110	1380	1350	1360	549	474	520	1250	1220	1240
11	1160	1120	1140	1380	1360	1370	538	513	523	1260	1250	1260
12	1150	1100	1120	1390	1370	1380	529	500	520	1260	1180	1240
13	1140	1100	1120	1400	1380	1390	510	388	449	1180	1070	1150
14	1160	1140	1150	1420	1400	1410	456	358	394	1070	855	998
15	1250	1140	1190	1430	1410	1420	606	456	516	923	821	880
16	1310	1240	1280	1450	1430	1440	606	533	553	934	873	901
17	1340	1310	1330	1460	1440	1450	621	550	568	1060	867	936
18	1360	1340	1360	1460	1370	1420	812	621	745	927	739	816
19	1370	1320	1350	1370	467	1080	856	716	790	840	784	804
20	1340	1310	1330	770	396	593	716	647	666	921	804	872
21	1350	1220	1300	713	572	604	673	644	655	940	877	901
22	1220	1130	1170	694	583	635	719	670	694	994	895	956
23	1220	1210	1220	778	685	726	740	718	735	1030	936	1000
24	1270	1220	1250	845	778	821	749	721	740	1030	1020	1020
25	1310	1270	1290	915	845	885	765	746	755	1120	1000	1050
26	1340	1300	1320	958	915	942	790	744	766	1140	1120	1130
27	1360	1230	1320	972	944	959	964	758	870	1150	1040	1110
28	1250	1230	1240	984	959	972	883	846	861	1160	1040	1100
29	---	---	---	987	967	977	893	853	868	1090	755	895
30	---	---	---	1040	827	966	899	853	870	1070	810	937
31	---	---	---	935	804	838	---	---	---	923	791	887
MONTH	1370	1080	1250	1460	396	1160	1220	284	717	1260	739	1020

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	834	725	760	1190	764	1060	1280	1230	1260	859	685	777
2	998	834	934	1050	754	928	1240	998	1160	901	828	870
3	1010	966	994	1020	931	975	1400	1000	1260	1000	829	919
4	1130	1010	1080	1060	941	1000	1400	1190	1280	1180	1000	1090
5	1140	514	718	1110	1060	1080	1350	1050	1250	1210	1120	1170
6	814	490	667	1070	1020	1040	1290	1120	1220	1120	969	1020
7	785	678	720	1150	1070	1120	1240	936	1070	1180	1080	1150
8	812	727	769	1140	949	1050	1500	1240	1420	---	---	e1020
9	756	665	709	1140	1050	1110	1590	1470	1530	---	---	e950
10	714	672	687	1200	1130	1170	1670	1410	1560	---	---	e840
11	828	714	770	1270	1200	1240	---	---	e1260	---	---	e790
12	1110	802	851	1270	1030	1190	---	---	e1030	---	---	e740
13	1240	833	1090	1320	1200	1260	---	---	e760	1060	843	982
14	833	648	707	1320	1060	1170	---	---	e550	1180	1060	1130
15	721	649	682	1180	1120	1150	---	---	e320	1140	707	941
16	751	716	732	1300	1150	1240	472	356	408	927	797	857
17	806	751	782	1410	1300	1350	577	472	539	831	798	822
18	861	806	831	1560	1370	1450	586	569	579	906	814	837
19	905	861	891	1560	1420	1530	590	545	561	1040	906	985
20	897	859	876	---	---	e1450	760	590	687	1150	1040	1100
21	937	897	924	---	---	e1350	697	676	685	1240	1150	1190
22	956	936	948	---	---	e1250	721	697	712	1300	1010	1240
23	986	956	975	---	---	e1150	888	718	790	1010	882	956
24	977	965	973	1330	827	1230	950	888	926	905	823	845
25	1000	964	981	1340	1190	1260	1030	950	993	1250	871	1060
26	1030	1000	1020	1190	1080	1120	1060	1020	1040	1330	1240	1280
27	1090	1020	1060	1090	822	986	1050	612	846	1450	1330	1400

28	1100	1090	1090	1130	911	1060	681	466	545	1480	1390	1440
29	1140	1090	1110	1250	1080	1140	616	479	573	1400	1280	1350
30	1200	1140	1180	1220	570	997	683	590	644	1280	1200	1250
31	---	---	---	1260	1160	1200	685	589	641	---	---	---
MONTH	1240	490	884	1560	440	1160	1670	356	906	1480	685	1030

e Estimated

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	22.8	19.2	20.9	19.8	16.3	17.8	8.7	4.6	6.7	4.5	2.8	3.6
2	22.6	19.3	20.9	21.4	18.3	19.7	11.1	6.7	8.9	3.6	2.1	2.9
3	22.7	19.5	21.0	22.2	18.9	20.6	12.8	10.5	11.5	2.9	0.3	1.6
4	24.1	20.7	22.2	22.2	20.1	21.1	15.7	12.8	14.2	2.9	0.7	1.9
5	22.8	18.3	20.9	22.3	19.1	20.5	17.6	15.7	16.6	4.3	2.8	3.4
6	19.7	15.7	17.7	20.6	17.9	19.3	16.7	14.6	15.5	6.1	3.0	4.4
7	19.8	15.7	17.6	19.5	16.6	18.2	15.4	13.3	14.2	5.8	3.4	4.6
8	20.3	16.6	18.3	19.4	16.4	17.7	13.4	9.3	11.2	6.9	3.8	5.2
9	20.7	19.0	19.7	17.2	14.9	15.8	9.8	6.8	8.4	8.9	5.3	7.0
10	21.7	19.7	20.6	16.7	13.0	14.8	9.0	5.6	7.4	9.3	8.4	8.8
11	19.7	17.5	18.0	17.2	13.9	15.6	7.7	6.1	7.1	9.8	7.2	8.4
12	18.9	17.0	17.9	18.0	16.4	17.1	9.4	7.6	8.4	9.1	6.5	7.7
13	19.0	17.9	18.4	17.6	16.7	17.1	8.8	8.4	8.6	8.9	6.0	7.4
14	19.2	17.1	18.2	18.8	16.2	17.4	10.1	7.4	8.6	9.1	6.3	7.6
15	19.2	17.6	18.4	18.2	16.2	17.2	8.6	7.7	8.3	8.4	5.7	7.1
16	18.0	15.7	17.0	17.8	16.8	17.2	11.1	8.6	9.8	10.0	6.8	8.1
17	17.5	15.4	16.6	17.9	16.3	17.0	10.7	10.1	10.5	8.4	6.6	7.4
18	18.2	15.3	16.8	18.6	16.5	17.5	10.1	9.0	9.6	6.6	5.3	5.6
19	20.0	16.6	18.1	17.7	13.6	16.0	9.6	8.4	9.0	7.7	4.8	6.0
20	21.5	17.6	19.5	13.8	10.7	12.3	8.8	7.3	8.2	7.8	4.8	6.2
21	22.4	18.8	20.5	12.4	9.0	10.9	9.3	7.6	8.6	8.2	4.8	6.5
22	22.6	19.7	21.1	13.9	9.8	11.8	11.2	9.3	10.2	10.0	6.3	7.9
23	23.4	20.5	21.7	16.0	13.1	14.5	10.0	7.5	8.8	10.9	9.1	9.9
24	21.8	19.6	20.8	15.3	12.7	14.0	7.5	5.7	6.4	9.8	7.9	8.8
25	19.6	16.3	17.9	14.4	11.2	12.9	6.5	4.5	5.5	9.3	5.8	7.5
26	18.0	14.2	16.3	14.7	12.5	13.3	6.2	4.3	5.2	9.3	5.8	7.5
27	17.3	14.0	15.7	12.6	6.8	9.5	6.4	4.1	5.3	10.3	7.0	8.6
28	17.0	13.9	15.5	6.8	3.2	4.7	7.6	5.2	6.3	12.7	8.4	10.4
29	16.3	14.0	15.1	4.7	2.9	3.5	6.6	4.9	5.8	15.6	12.0	13.5
30	17.3	13.4	15.3	7.1	3.0	4.8	5.5	3.9	4.6	13.9	9.2	11.4
31	17.2	14.4	15.9	---	---	---	5.2	2.9	3.9	9.2	6.7	8.2
MONTH	24.1	13.4	18.5	22.3	2.9	15.0	17.6	2.9	8.8	15.6	0.3	6.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	8.3	4.9	6.5	9.3	8.2	8.8	19.6	15.6	17.5	27.2	22.5	24.7
2	7.1	5.0	6.1	9.1	4.4	6.3	18.2	15.0	17.1	26.2	21.4	23.6
3	8.5	6.3	7.2	6.2	2.0	4.1	15.4	12.1	13.9	21.4	19.4	20.1
4	8.4	6.6	7.5	8.4	2.7	5.5	14.2	12.0	13.1	22.7	18.5	20.2
5	7.5	5.7	6.7	11.1	5.8	8.4	16.5	11.4	14.0	25.0	20.3	22.6
6	6.2	5.2	5.7	14.3	8.9	11.4	15.6	13.2	14.3	26.0	23.0	24.5
7	8.0	5.3	6.4	17.5	12.5	15.0	13.2	10.9	11.6	26.5	23.2	24.9
8	9.9	6.4	7.9	17.3	15.9	16.6	12.0	11.1	11.4	25.4	23.0	24.3
9	11.2	8.3	9.5	17.3	12.5	14.2	14.4	12.0	13.0	24.5	21.5	23.2
10	9.8	7.3	8.5	13.9	9.6	11.8	16.1	14.1	15.0	22.8	20.6	21.8
11	8.7	5.5	7.1	13.7	10.9	12.2	17.6	15.3	16.4	25.1	21.0	22.9
12	9.8	6.0	7.7	16.5	11.8	14.0	17.4	16.5	16.9	24.5	20.9	23.3
13	10.4	7.2	8.5	18.2	13.0	15.5	16.6	15.6	15.9	22.7	18.3	20.4
14	9.8	6.9	8.4	20.5	15.0	17.7	18.5	15.9	16.9	23.1	18.9	21.0
15	10.3	8.0	8.9	19.4	14.5	16.5	20.0	18.5	19.2	22.4	20.0	21.1
16	11.3	7.0	9.1	14.7	12.0	13.5	19.8	19.1	19.5	22.6	19.8	21.2
17	12.2	8.3	10.2	15.6	12.9	14.2	21.8	18.9	20.2	22.1	20.7	21.4
18	11.6	9.9	10.8	14.8	14.3	14.6	21.7	20.8	21.4	21.8	18.9	20.3
19	15.1	11.6	13.2	14.5	13.9	14.3	21.3	20.2	20.7	23.3	19.2	21.1
20	15.8	12.2	14.0	14.8	13.1	13.9	20.8	19.5	20.2	24.3	20.0	22.0
21	15.1	13.2	14.0	14.1	11.7	13.2	20.7	19.3	20.1	24.6	20.9	22.6
22	14.9	11.5	13.1	11.8	9.4	10.8	20.6	18.0	19.5	24.0	20.9	22.5
23	14.9	11.4	13.1	13.3	9.7	11.4	20.0	17.9	19.0	23.0	20.7	22.0
24	15.9	12.2	14.0	16.8	12.5	14.5	22.2	18.6	20.3	22.0	20.7	21.4
25	14.8	9.8	12.6	16.2	10.8	13.5	21.2	17.0	18.2	22.8	20.1	21.2
26	9.8	6.5	7.7	13.0	8.7	10.9	17.2	14.3	15.5	27.5	20.7	23.7
27	8.4	4.0	6.2	15.0	10.7	12.7	18.2	14.0	15.7	26.2	23.2	24.5

28	10.1	5.2	7.5	17.4	13.0	15.2	22.0	17.8	19.5	23.9	22.0	22.8
29	---	---	---	19.9	16.1	17.7	24.0	19.8	21.6	24.3	21.4	22.8
30	---	---	---	18.3	15.2	16.6	24.2	21.8	23.1	27.7	23.3	25.1
31	---	---	---	17.8	14.2	15.9	---	---	---	29.1	24.9	27.0
MONTH	15.9	4.0	9.2	20.5	2.0	12.9	24.2	10.9	17.4	29.1	18.3	22.6

07331000 WASHITA RIVER NEAR DICKSON, OK--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	30.7	25.5	28.0	27.1	25.4	26.2	34.6	28.2	31.2	32.7	27.0	29.6
2	30.9	26.8	28.9	28.3	24.9	26.3	35.1	29.1	32.2	32.9	27.5	30.0
3	31.0	26.8	28.9	28.9	25.5	27.0	36.0	29.4	32.6	33.0	27.8	30.2
4	30.9	26.9	28.9	30.5	25.9	28.1	35.6	29.6	32.6	33.4	28.2	30.5
5	28.9	23.5	24.9	32.5	27.0	29.6	35.0	29.2	32.0	32.9	28.4	30.5
6	26.7	24.1	25.2	33.0	27.9	30.5	35.2	26.9	31.5	32.7	27.9	30.1
7	27.8	24.7	26.2	34.3	28.7	31.4	34.4	25.3	30.6	31.5	27.4	29.4
8	28.3	25.9	27.0	35.2	29.6	32.4	34.1	28.6	31.4	---	---	---
9	29.7	26.0	27.6	35.9	30.5	33.2	33.7	27.8	30.7	---	---	---
10	29.6	26.7	28.1	36.3	30.5	33.3	32.0	27.4	29.8	---	---	---
11	30.2	26.5	28.3	36.9	30.3	33.1	32.9	25.4	28.5	---	---	---
12	30.6	26.9	28.6	34.9	29.1	31.7	31.5	23.4	27.4	---	---	---
13	29.2	26.0	27.4	34.2	28.7	31.5	31.9	24.9	27.9	30.2	25.8	28.0
14	27.6	24.8	26.1	34.6	29.1	31.7	---	---	---	30.1	25.8	27.7
15	28.3	25.4	26.8	33.4	28.9	31.0	---	---	---	27.3	22.9	25.6
16	27.9	25.2	26.5	31.6	28.5	30.1	29.1	25.7	27.1	28.0	24.0	25.9
17	29.1	25.4	27.1	29.8	27.6	28.8	30.2	26.7	28.3	29.4	24.6	26.8
18	29.0	26.2	27.6	32.6	26.7	29.3	31.9	27.3	29.3	30.5	25.8	27.8
19	29.9	26.2	27.9	33.9	27.9	30.6	32.1	28.1	30.0	28.9	25.5	27.0
20	30.9	27.1	28.9	34.3	28.4	31.1	32.4	28.4	30.3	28.2	22.6	25.1
21	32.3	28.2	30.0	32.7	27.9	29.8	31.8	27.5	29.6	27.6	22.3	24.9
22	32.4	28.6	30.4	34.9	25.8	30.2	33.0	27.7	30.1	25.8	22.0	24.0
23	32.3	27.8	30.1	35.0	28.9	31.8	34.0	28.8	31.1	25.5	20.4	22.8
24	32.1	28.1	30.1	34.6	29.2	31.4	34.6	29.4	31.7	25.3	19.8	22.5
25	32.4	28.0	30.3	34.6	27.2	30.7	32.5	29.6	30.5	26.5	20.1	23.0
26	32.0	28.2	30.1	34.8	28.8	31.7	33.2	27.7	30.0	27.3	21.6	24.4
27	33.4	27.7	30.4	33.9	28.3	30.9	31.2	24.5	27.3	27.8	22.0	24.7
28	33.8	28.6	31.1	32.8	26.6	30.0	28.5	24.9	26.6	28.2	22.7	25.4
29	33.3	29.0	30.9	30.4	26.6	28.4	29.6	26.5	27.8	28.8	23.4	26.0
30	30.1	27.1	28.5	28.5	25.1	27.3	30.5	26.0	28.1	28.3	23.9	26.1
31	---	---	---	32.9	26.2	29.3	31.5	26.2	28.6	---	---	---
MONTH	33.8	23.5	28.4	36.9	24.9	30.3	36.0	23.4	29.8	33.4	19.8	26.7
YEAR	36.9	0.3	18.8									

07300000 Salt Fork Red River near Wellington, TX

LOCATION.--Lat 34°57'27", long 100°13'14", Collingsworth County, Hydrologic Unit 11120202, near center of stream at downstream side of bridge on U.S. Highway 83, 4.0 mi downstream from Fort Worth and Denver (Burlington) Railway Co. bridge, 4.5 mi south of Lutie, and 7.2 mi north of Wellington.

DRAINAGE AREA.--1,222 mi^2, of which 209 mi^2 probably is noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,941.41 ft above NGVD of 1929. Satellite telemeter at station.

REMARKS.--Records good. Since water year 1967, at least 10% of contributing drainage area has been regulated. There are several small diversions upstream from gage for irrigation.

AVERAGE DISCHARGE FOR PERIOD PRIOR TO REGULATION.--14 years (water years 1953-66) prior to completion of Greenbelt Lake, 72.6 ft^3/s (52,600 acre-ft/yr).

EXTREMES FOR PERIOD PRIOR TO REGULATION (WATER YEARS 1953-66).--Maximum discharge, 146,000 ft^3/s May 16, 1957 (gage height, 19.00 ft), from rating curve extended above 11,000 ft^3/s on basis of slope-area measurement of 63,400 ft^3/s; minimum, 0.1 ft^3/s June 19, 1952.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	4.4	12	16	36	21	15	14	6.1	11	3.7	2.8
2	2.8	4.4	11	19	27	21	15	12	5.4	13	3.6	2.6
3	2.9	4.6	10	19	27	21	14	12	5.3	13	3.7	2.5
4	3.0	4.8	9.0	21	25	20	14	12	7.2	21	3.5	2.5
5	3.1	4.8	9.2	22	43	21	14	12	9.5	831	3.3	2.5
6	3.2	5.1	8.7	21	103	21	15	15	8.8	490	3.2	2.6
7	3.3	5.1	9.6	18	69	21	26	14	7.6	709	3.2	2.5
8	3.6	5.3	8.8	18	44	21	49	14	6.4	580	3.3	2.7
9	4.3	5.7	8.0	19	32	18	34	10	5.9	127	3.3	3.0
10	4.0	5.8	7.9	19	22	18	21	9.3	5.8	36	e2.8	109
11	4.0	6.0	8.5	18	20	19	16	9.7	6.2	28	e2.4	585
12	4.0	5.9	9.7	19	20	19	15	9.5	6.2	48	1.9	17
13	3.8	5.9	12	21	21	18	314	9.2	24	29	1.9	6.1
14	3.8	8.8	12	20	21	17	438	8.5	15	25	2.0	10
15	3.8	24	12	21	21	15	136	8.8	16	22	1.9	8.1
16	3.8	143	12	21	22	14	53	9.0	20	17	1.9	3.3
17	3.8	504	12	20	23	15	26	8.5	16	12	1.9	1.9
18	4.0	290	13	e21	24	15	19	8.3	14	9.1	1.8	1.1
19	4.0	62	12	e21	23	20	15	7.4	12	7.3	1.9	1.3
20	4.1	25	11	e20	20	21	16	6.8	11	5.8	4.7	3.6
21	4.3	18	11	e21	20	19	22	6.4	9.6	5.0	5.4	2.5
22	4.4	15	12	e20	20	17	20	6.2	9.3	4.9	3.5	1.3
23	4.2	15	12	e20	21	16	18	7.1	9.1	5.1	3.0	0.79
24	3.9	12	11	18	22	17	15	7.0	9.2	4.8	2.7	0.64
25	3.9	10	12	19	20	15	14	6.9	9.3	4.3	2.5	0.61
26	4.1	9.7	12	18	20	15	15	7.8	9.6	3.7	2.3	0.69
27	4.2	8.8	13	19	20	16	69	8.2	11	3.7	2.1	0.73
28	4.2	8.4	14	19	19	16	61	11	10	3.9	2.4	0.77
29	4.3	9.2	14	20	---	16	28	9.2	9.9	4.1	4.3	0.76
30	4.2	15	15	37	---	15	17	8.8	9.7	4.0	3.3	0.80
31	4.4	---	15	65	---	14	---	7.7	---	3.9	2.9	---
TOTAL	118.1	1245.7	349.4	670	805	552	1544	296.3	305.1	3081.6	90.3	779.69
MEAN	3.810	41.52	11.27	21.61	28.75	17.81	51.47	9.558	10.17	99.41	2.913	25.99
MAX	4.4	504	15	65	103	21	438	15	24	831	5.4	585
MIN	2.7	4.4	7.9	16	19	14	14	6.2	5.3	3.7	1.8	0.61
AC-FT	234	2470	693	1330	1600	1090	3060	588	605	6110	179	1550

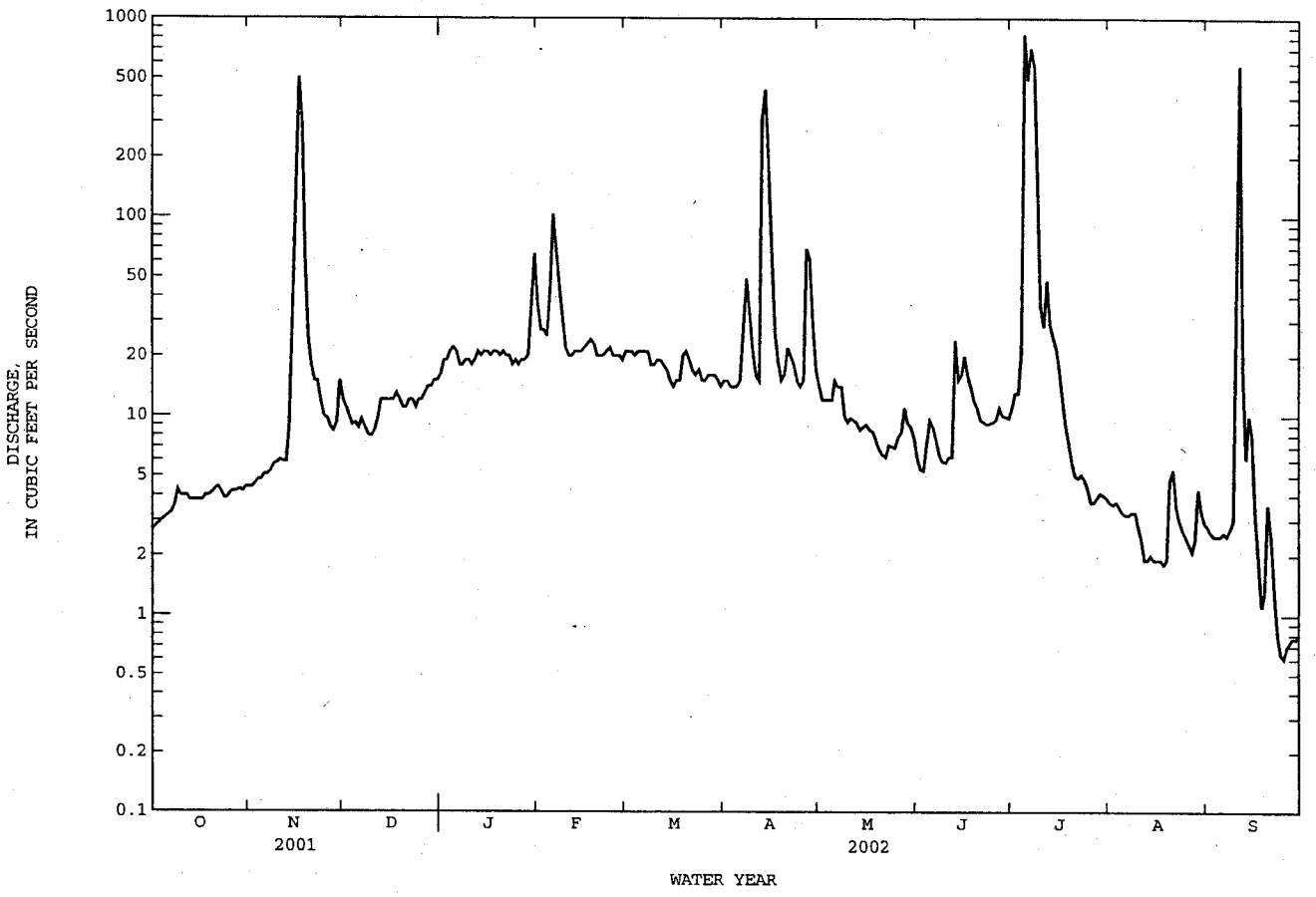
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002z, BY WATER YEAR (WY)

MEAN	29.97	28.65	27.57	32.31	39.46	47.42	91.11	108.9	140.9	30.96	26.63	29.84
MAX	279	213	92.4	86.0	117	165	1218	468	1006	155	301	113
(WY)	1987	1987	1992	1993	1998	1998	1997	1977	1995	1993	1968	1981
MIN	3.81	8.03	3.59	10.5	10.9	8.15	6.10	2.61	8.17	2.65	1.68	2.22
(WY)	2002	1981	1984	1971	1967	1972	1971	1971	1970	1970	1970	1984

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1967 - 2002z	
ANNUAL TOTAL	16922.9		9837.19			
ANNUAL MEAN	46.36		26.95		52.69	
HIGHEST ANNUAL MEAN					165	1997
LOWEST ANNUAL MEAN					10.5	1971
HIGHEST DAILY MEAN	1920	May 4	831	Jul 5	17500	Apr 3 1997
LOWEST DAILY MEAN	1.6	Aug 21	0.61	Sep 25	0.40	Jun 2 1985
ANNUAL SEVEN-DAY MINIMUM	1.8	Aug 1	0.71	Sep 23	0.71	Sep 23 2002
MAXIMUM PEAK FLOW			2850	Sep 10	81100	Apr 3 1997
MAXIMUM PEAK STAGE			5.36	Sep 10	17.10	Apr 3 1997
ANNUAL RUNOFF (AC-FT)	33570		19510		38170	
10 PERCENT EXCEEDS	91		25		71	
50 PERCENT EXCEEDS	12		11		17	
90 PERCENT EXCEEDS	2.9		2.8		4.1	

e Estimated
z Period of regulated streamflow.

07300000 Salt Fork Red River near Wellington, TX--Continued



07300000 Salt Fork Red River near Wellington, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL DATA: Feb. 1951 to Oct. 1954, Oct. 1967 to Sept. 1997, Oct. 1999 to current year.
BIOLOGICAL DATA: Oct. 1974 to Sept. 1997, Oct. 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: June 1952 to Sept. 1954, Oct. 1967 to Sept. 1991.
TEMPERATURE: June 1952 to Sept. 1954, Oct. 1967 to Sept. 1991.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

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 WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	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)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
DEC													
28...	1320	15	3420	8.1	7.6	12.5	103	6k	10k	1500	1300	456	88.6
MAR													
28...	1000	17	3330	8.0	14.2	10.0	108	36	63	1600	1400	467	93.8
JUN													
04...	1220	6.7	3220	7.6	28.2	7.6	98	360	220	1700	1600	553	89.0
SEP													
05...	0905	2.7	3170	7.8	21.4	7.6	98	120	280	1700	1600	553	84.3

Date	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
DEC													
28...	234	3	17.4	165	1380	351	.6	20.4	2660	12	--	<.008	1.53
MAR													
28...	244	3	4.19	141	1380	336	.7	17.6	2640	<10	1.47	.012	1.48
JUN													
04...	153	2	4.21	129	1580	223	.6	19.5	2710	<10	2.58	.019	2.60
SEP													
05...	148	2	3.41	139	1570	201	.6	21.6	2670	<10	1.99	.017	2.01

Date	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)
DEC									
28...	.18	1.7	--	.18	.17	<.004	E.003	.02	.058
MAR									
28...	.17	1.6	--	.14	.16	.005	<.004	<.02	--
JUN									
04...	.16	2.8	.08	.15	.24	E.003	E.002	<.02	--
SEP									
05...	.21	2.2	--	.15	.16	.005	E.003	<.02	--

Remark codes used in this report:
< -- Less than
E -- Estimated value

Value qualifier codes used in this report:
k -- Counts outside acceptable range

07308500 Red River near Burkburnett, TX

LOCATION.--Lat 34°06'36", long 98°31'53", Cotton County, OK, Hydrologic Unit 11130102, on downstream guardrail of downstream bridge on U.S. Highways 277 and 281, 2.5 mi northeast of Burkburnett, and at mile 933.

DRAINAGE AREA.--20,570 mi^2, of which 5,936 mi^2 probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to Aug. 1925 (monthly discharge only), Dec. 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 952.57 ft above NGVD of 1929. July 11, 1924, to Aug. 31, 1925, nonrecording gage at site 1,000 ft downstream at same datum. Dec. 16, 1959, to Jan. 11, 1960, nonrecording gage at present site and datum. Satellite telemeter at station.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. There are many small diversions upstream from station for irrigation, but total amounts are unknown. No flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 3, 1957, reached a stage of 13.54 ft, from floodmarks. According to local residents, higher stages occurred in 1891 and June 1941.

DISCHARGE FROM DCP, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	44	354	e124	260	128	421	264	295	e96	153	17
2	87	45	322	e117	1090	136	451	209	184	102	183	18
3	79	47	315	e125	1120	136	374	163	135	124	221	17
4	74	59	e304	143	765	135	372	135	97	121	202	18
5	64	63	e283	192	654	131	307	117	1210	189	163	32
6	63	63	252	217	590	126	208	106	1990	2890	128	38
7	61	60	220	214	557	131	402	97	2250	2120	106	28
8	60	55	203	199	560	139	1340	88	1060	2290	94	23
9	84	55	e181	192	627	111	1190	70	487	4390	85	26
10	104	57	e178	175	581	108	781	86	414	5330	77	26
11	128	64	172	169	488	108	724	87	303	4950	66	24
12	118	66	164	165	448	99	661	115	216	4260	51	30
13	76	73	158	158	374	99	2290	96	173	4400	49	26
14	61	70	e156	151	352	93	2080	83	230	3550	50	21
15	51	71	144	146	321	83	5390	72	254	e1890	e58	19
16	52	80	194	142	293	84	3080	63	247	e932	e81	16
17	51	313	183	137	295	89	1620	54	356	e487	68	16
18	50	1470	166	143	283	114	1180	51	1340	e302	57	18
19	53	3590	155	149	294	204	837	50	1570	e204	45	26
20	53	1570	e159	150	277	391	829	45	e1010	e150	41	58
21	53	938	154	145	264	609	742	43	e634	e118	35	63
22	54	658	136	139	223	559	579	41	e315	e101	32	42
23	52	472	128	141	176	363	487	38	e184	e92	29	59
24	47	362	130	139	159	316	361	40	e112	78	26	59
25	46	290	129	141	138	263	245	46	91	66	22	45
26	45	221	132	137	130	231	380	62	70	63	22	34
27	42	179	131	131	131	208	814	87	54	164	47	30
28	37	195	131	130	127	190	e541	546	42	116	32	25
29	35	173	128	128	---	175	e363	1080	33	273	25	23
30	36	e352	e131	144	---	233	266	951	32	232	22	21
31	41	---	e129	184	---	315	---	533	---	158	19	---
TOTAL	1954	11755	5722	4767	11577	6107	29315	5518	15388	40238	2289	898
MEAN	63.03	391.8	184.6	153.8	413.5	197.0	977.2	178.0	512.9	1298	73.84	29.93
MAX	128	3590	354	217	1120	609	5390	1080	2250	5330	221	63
MIN	35	44	128	117	127	83	208	38	32	63	19	16
AC-FT	3880	23320	11350	9460	22960	12110	58150	10940	30520	79810	4540	1780

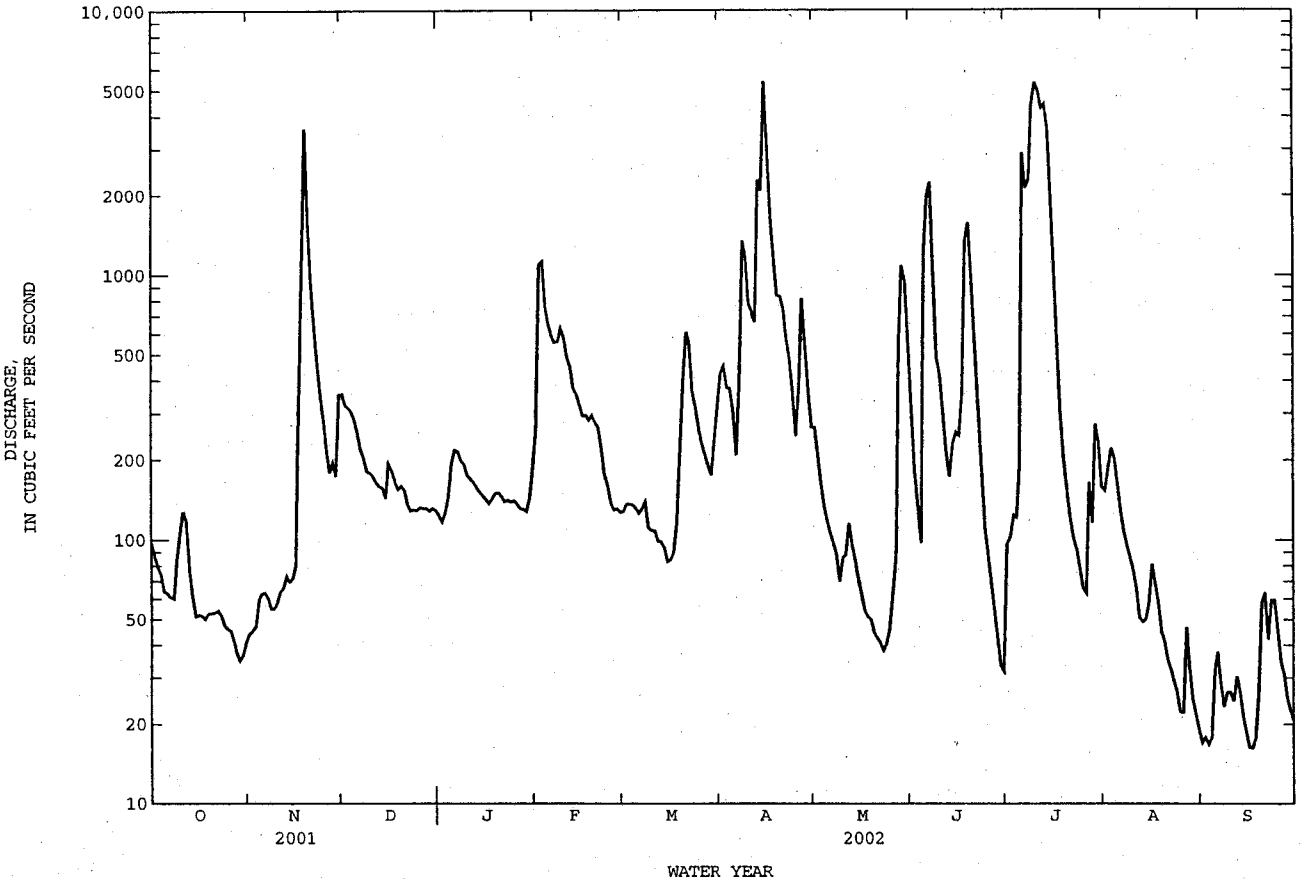
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

MEAN	1481	692.9	571.0	501.4	728.2	971.6	1112	2361	3339	882.3	852.0	1306
MAX	14900	4960	4435	2293	4986	10050	13040	12470	24780	5947	10540	6381
(WY)	1987	1987	1992	1998	1998	1998	1997	1977	1995	1975	1995	1996
MIN	21.9	0.96	2.98	5.53	8.37	7.97	0.15	11.4	148	0.058	1.29	29.9
(WY)	1971	1971	1971	1971	1971	1971	1971	1971	1970	1970	1964	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1960 - 2002	
ANNUAL TOTAL	331186		135528			
ANNUAL MEAN	907.4		371.3		1237	
HIGHEST ANNUAL MEAN					4424	1987
LOWEST ANNUAL MEAN					178	1964
HIGHEST DAILY MEAN	14300	May 21	5390	Apr 15	144000	Jun 6 1995
LOWEST DAILY MEAN	35	Oct 29	16	Sep 16	0.00	Jul 19 1964
ANNUAL SEVEN-DAY MINIMUM	40	Oct 26	19	Aug 29	0.00	Jul 19 1964
MAXIMUM PEAK FLOW			10600	Apr 15	174000	Jun 6 1995
MAXIMUM PEAK STAGE			7.01	Apr 15	16.90	Oct 21 1983
ANNUAL RUNOFF (AC-FT)	656900		268800		895900	
10 PERCENT EXCEEDS	1920		820		2470	
50 PERCENT EXCEEDS	373		136		307	
90 PERCENT EXCEEDS	72		36		53	

e Estimated

07308500 Red River near Burkburnett, TX--Continued



07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL DATA: May 1968 to current year.
BIOCHEMICAL DATA: Oct. 1974 to Aug. 1994.
PESTICIDE DATA: Oct. 1973 to Sept. 1982, Oct. 1996 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1968 to Sept. 1981, Oct. 1994 to current year.
WATER TEMPERATURE: July 1968 to Sept. 1981, Oct. 1994 to current year.

INSTRUMENTATION.--Water-quality monitor Dec. 1968 to Sept. 1981 and Oct. 1994 to current year.

REMARKS.--Records fair. Interruptions in the record were due to malfunction of the instrument. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and a regression relation between each chemical constituent and specific conductance. The computation of the selected constituent loads might include estimated discharge or specific conductance data. New regression equations were developed based on data from water years 1993 to 2002. The standard error of estimate for dissolved solids is 3%, chloride is 8%, sulfate is 14% and for hardness is 10%. Regression equations developed for this station may be obtained from the U.S. Geological Survey Texas District Office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 17,400 microsiemens/cm, July 30, 1972; minimum, 440 microsiemens/cm, Apr. 13, 2002.
WATER TEMPERATURE: Maximum, 38.0°C, July 24, 2001; minimum, 0.0°C, on many days during winter months.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 15,200 microsiemens/cm, Aug. 29; minimum, 440 microsiemens/cm, Apr. 13.
WATER TEMPERATURE: Maximum, 36.9°C, Aug. 7; minimum, 0.0°C, Jan. 4.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

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 WATER (DEG C) (00010)	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)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)
OCT													
24...	1050	50	8210	8.0	14.4	9.8	103	1400	1300	343	130	1360	16
NOV													
01...	1130	48	8600	8.2	19.4	9.5	111	1400	1300	354	132	1320	15
DEC													
19...	1205	190	9820	8.1	7.2	12.4	109	1600	1400	426	126	1580	17
JAN													
09...	1345	184	10100	8.3	11.3	11.7	116	1700	1500	444	135	1670	18
FEB													
22...	1305	242	10300	8.3	11.7	12.2	120	1700	1500	437	140	1680	18
MAR													
22...	1020	480	6760	8.1	5.2	12.2	101	1100	940	284	89.0	911	12
APR													
18...	1110	796	2750	8.0	22.5	7.4	90	480	390	133	35.1	368	7
MAY													
29...	1030	1090	4830	7.7	22.8	7.2	85	940	840	255	73.8	696	10
JUN													
28...	1345	31	8850	8.0	32.5	7.7	109	1400	1300	383	111	1480	17
JUL													
31...	1125	147	6100	8.2	28.1	7.8	105	1100	970	280	90.2	945	13
AUG													
29...	1025	28	15600	7.8	23.1	7.8	96	2200	2100	597	176	2680	25
SEP													
18...	1130	24	7810	7.9	24.5	8.2	102	1400	1300	349	131	1250	15

07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, TOTAL (MG/L AS N) (00600)
OCT													
24...	10.6	82	1190	2140	.4	2.3	5230	120	--	<.008	<.05	.08	--
NOV													
01...	9.28	110	1220	2190	.4	3.2	5300	38	--	<.008	<.05	.06	--
DEC													
19...	8.71	154	1320	2590	.5	7.1	6150	20	.78	.014	.79	.12	1.3
JAN													
09...	8.86	140	1350	2710	.5	3.9	6410	42	.66	.028	.69	.12	1.1
FEB													
22...	10.7	126	1530	2910	.47	2.96	6790	34	.24	.009	.25	.10	.82
MAR													
22...	7.86	134	966	1620	.4	3.3	3970	296	.34	.014	.36	E.02	1.9
APR													
18...	8.04	87	403	578	.3	7.9	1590	1340	.66	.052	.71	.07	2.9
MAY													
29...	8.41	104	800	1100	.4	5.8	3010	2430	.47	.048	.52	.09	4.7
JUN													
28...	12.2	111	1220	2430	.5	7.1	5700	131	--	<.008	<.05	.09	--
JUL													
31...	9.05	102	891	1520	.5	7.3	3810	<10	--	<.008	<.05	E.04	--
AUG													
29...	18.1	86	1920	4230	.6	7.9	9670	54	--	<.008	<.05	.26	--
SEP													
18...	10.0	92	1250	1980	.5	8.6	5030	68	--	<.008	<.05	<.04	--

Date	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)
OCT													
24...	.99	1.1	.08	<.06	<.02	--	4	2.3	102	93	E.08	<.10	<3.0
NOV													
01...	.92	.99	E.05	<.06	<.02	--	4	2.3	89	83	<.14	<.10	<4.0
DEC													
19...	.38	.50	.07	<.06	.02	.064	5	2.7	70	70	<.14	<.10	<1.6
JAN													
09...	.32	.43	E.03	<.06	<.02	--	E2	2.3	56	54	<.18	<.20	<1.6
FEB													
22...	.47	.57	E.05	<.06	<.02	--	<4	2.7	68	53	<.18	<.20	<1.6
MAR													
22...	--	1.5	.33	<.06	<.02	--	5	2.6	100	66	.14	<.1	3
APR													
18...	2.1	2.2	.85	E.04	.03	.092	9	2.7	323	96	.17	<.07	13.4
MAY													
29...	4.1	4.2	1.43	<.06	E.01	--	15	2.2	406	85	.22	<.07	18.9
JUN													
28...	.77	.85	.17	<.06	<.02	--	6	5.4	169	157	<.04	<.10	.8
JUL													
31...	--	1.1	.18	<.06	<.02	--	19	4.1	182	158	<.11	<.10	1.0
AUG													
29...	.93	1.2	.09	<.06	<.02	--	5	5.2	151	137	E.06n	<.30	E1.2n
SEP													
18...	--	1.2	.10	<.06	<.02	--	6	5.9	102	95	<.11	<.10	.9

07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY DISSOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, DISSOLVED (UG/L AS NI) (01065)
OCT 24...	<2.4	6.0	4.5	380	<50	<4	<.30	70	15.8	E.01	<.01	8	4.99
NOV 01...	<4.0	5.6	4.1	100	<50	<4	<.30	38	15.4	<.011	<.01	8	5.98
DEC 19...	<.8	6.6	7.4	50	<50	<4	E.17	21	11.2	<.01	<.01	9	9.96
JAN 09...	<1.6	5.0	4.4	<40	<100	<5	<.40	17	12.8	<.01	<.01	6	<.30
FEB 22...	2.0	6.8	5.9	E30n	<100	<5	<.40	23	8.8	<.01	<.01	10	<.30
MAR 22...	.4	8.5	3.9	970	<50	3	2.70	136	8.3	E.01n	E.01n	14	2.92
APR 18...	<.8	22.6	2.7	11400	<30	16	<.20	695	.2	.02	<.01	29	4.51
MAY 29...	<.8	23.9	3.6	15600	<30	18	<.20	1160	.4	.03	<.01	41	5.74
JUN 28...	<.8	14.0	8.0	700	<50	<1	E.16	26	7.9	<.01	<.01	3	4.08
JUL 31...	<.8	8.9	4.8	860	<30	<3	<.20	161	2.0	E.01n	<.01	12	2.00
AUG 29...	<1.6	17.1	12.9	340	<100	<3	<.60	159	60.2	<.01	<.01	26	7.74
SEP 18...	<.8	16.4	6.7	630	<50	<4	<.20	143	20.1	<.01	<.01	18	7.14

Date	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	ALDRIN, TOTAL (UG/L) (39330)	AROCLOR 1016/ 1242 PCB WATER UNFLTRD (UG/L) (81648)	AROCLOR 1221 PCB TOTAL (UG/L) (39488)	AROCLOR 1232 PCB TOTAL (UG/L) (39492)	AROCLOR 1248 PCB TOTAL (UG/L) (39500)	AROCLOR 1254 PCB TOTAL (UG/L) (39504)	AROCLOR 1260 PCB TOTAL (UG/L) (39508)
OCT 24...	5.6	5.6	<.20	<4	13	6	--	--	--	--	--	--	--
NOV 01...	7.0	6.4	<.20	<4	8	<10	--	--	--	--	--	--	--
DEC 19...	6.7	7.3	<.20	<4	6	4	--	--	--	--	--	--	--
JAN 09...	7.2	7.6	<.25	<5	6	<5	--	--	--	--	--	--	--
FEB 22...	6.6	9.4	<.25	<5	8	<5	--	--	--	--	--	--	--
MAR 22...	4.3	6.0	<.15	<3	168	12	--	--	--	--	--	--	--
APR 18...	2.2	2.5	<.10	<2	45	<2	<.04	<.1	<1	<.1	<.1	<.1	<.1
MAY 29...	3.9	4.5	E.08n	<2	65	3	--	--	--	--	--	--	--
JUN 28...	1.4	4.1	<.05	<4	14	7	<.040	<.10	<1.0	<.1	<.1	<.1	<.1
JUL 31...	4.0	2.7	<.15	<3	14	<3	--	--	--	--	--	--	--
AUG 29...	6.3	5.3	<.15	<7	14	7	--	--	--	--	--	--	--
SEP 18...	3.9	5.3	<.15	<3	9	5	--	--	--	--	--	--	--

07308500 Red River near Burkburnett, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN SULFATE TOTAL (UG/L) (34351)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ENDRIN ALDEHYDE TOTAL (UG/L) (34366)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	PCB 207 SUR SCD 1608 WATER UNFLTRD PERCENT (99781)	TOXAPHENE, TOTAL (UG/L) (39400)	ENDOSULFAN-I WATER WHOLE REC (UG/L) (34361)	ALPHA BHC TOTAL (UG/L) (39337)	ALPHA-HCH-D6 SUR SCD 1608 WATER UNFLTRD PERCENT (99778)
OCT													
24...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
18...	<.1	<.02	<.6	<.06	<.2	<.03	<.8	<.03	18.7	<2	<.1	<.03	97.7
MAY													
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
28...	<.1	<.020	<.6	<.060	<.2	<.030	<.800	<.0300	39.9	<2	<.1	<.03	59.7
JUL													
31...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
18...	--	--	--	--	--	--	--	--	--	--	--	--	--

Date	ENDOSULFAN II TOTAL (UG/L) (34356)	BETA BENZENE HEXACHLORIDE TOTAL (UG/L) (39338)	CHLORDANE CIS WATER WHOLE TOTAL (UG/L) (39062)	DELTA BENZENE HEXACHLORIDE TOTAL (UG/L) (34259)	P,P' DDD, TOTAL (UG/L) (39310)	P,P' DDE, TOTAL (UG/L) (39320)	P,P' DDT, TOTAL (UG/L) (39300)	CHLORDANE TRANS WATER WHOLE TOTAL (UG/L) (39065)
OCT								
24...	--	--	--	--	--	--	--	--
NOV								
01...	--	--	--	--	--	--	--	--
DEC								
19...	--	--	--	--	--	--	--	--
JAN								
09...	--	--	--	--	--	--	--	--
FEB								
22...	--	--	--	--	--	--	--	--
MAR								
22...	--	--	--	--	--	--	--	--
APR								
18...	<.04	<.03	<.1	<.09	<.1	<.04	<.1	<.1
MAY								
29...	--	--	--	--	--	--	--	--
JUN								
28...	<.04	<.03	<.1	<.09	<.1	<.04	<.1	<.1
JUL								
31...	--	--	--	--	--	--	--	--
AUG								
29...	--	--	--	--	--	--	--	--
SEP								
18...	--	--	--	--	--	--	--	--

Remark codes used in this report:
< -- Less than
E -- Estimated value

Value qualifier codes used in this report:
n -- Below the NDV

0145

07308500 Red River near Burkburnett, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 2001 TO SEPTEMBER 2002

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.	2001	1954	8240	5190	27390	2000	10680	1300	6740	1500
NOV.	2001	11755	7530	4750	150800	1800	57980	1200	37920	1400
DEC.	2001	5722	10760	6760	104400	2800	43550	1500	22890	1700
JAN.	2002	4767	10670	6700	86200	2800	35780	1500	19090	1700
FEB.	2002	11577	10780	6760	211500	2800	88030	1500	46580	1700
MAR.	2002	6107	7310	4610	75990	1800	29240	1200	19080	1300
APR.	2002	29315	3840	2440	192900	860	67940	690	54550	800
MAY	2002	5518	6620	4180	62320	1600	23650	1100	15960	1200
JUNE	2002	15388	3150	2000	83040	690	28660	580	24050	670
JULY	2002	40238	3970	2520	273300	880	96090	710	77430	830
AUG.	2002	2289	7180	4530	27990	1800	10840	1100	6960	1300
SEPT	2002	898	9100	5730	13890	2300	5590	1300	3240	1600
TOTAL		135528	**	**	1309700	**	498000	**	334500	**
WTD.AVG.		371	5670	3580	**	1400	**	910	**	1100

SPECIFIC CONDUCTANCE FROM DCP, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8850	8580	8720	8680	8530	8580	---	---	e9100	10500	10400	10500
2	8700	8420	8570	8680	8450	8570	---	---	e9480	10600	10500	10500
3	8540	8180	8340	8570	8370	8490	---	---	e10100	10800	10600	10700
4	8290	8160	8240	8450	8150	8260	---	---	e10500	10900	10700	10800
5	8380	8280	8330	8280	8140	8210	12200	11000	11500	10800	10600	10700
6	8390	8240	8330	8240	8110	8190	13000	12200	12700	10900	10700	10800
7	8370	8220	8300	8260	8090	8190	---	---	e12900	11000	10700	10900
8	8330	8160	8260	8240	8140	8190	---	---	e12700	10900	10600	10800
9	8260	8120	8210	8290	8150	8210	12500	12100	12200	10800	10300	10600
10	8270	8190	8230	8350	8200	8280	12100	11800	12000	10500	10400	10400
11	8330	8170	8240	8290	8180	8240	11900	11400	11700	10600	10400	10500
12	8280	8170	8230	8260	8210	8250	11400	11300	11400	10600	10400	10500
13	8290	8160	8230	8290	8200	8250	11500	11400	11400	10600	10500	10600
14	8310	8090	8180	8300	8230	8270	11600	11400	11500	10700	10500	10600
15	8200	8060	8140	8340	8290	8320	11500	11500	11500	10700	10500	10600
16	8190	7920	8080	8720	8330	8520	11500	11200	11400	10600	10500	10600
17	8050	7940	8000	8650	4630	7320	11300	10400	10900	10700	10600	10600
18	8040	7900	7980	6390	4860	5710	10600	9530	10200	10800	10700	10800
19	8010	7860	7950	7810	5230	6380	9640	9320	9540	10800	10600	10700
20	8000	7850	7940	8760	7550	8600	9750	9600	9670	10800	10700	10800
21	7980	7840	7920	8700	8660	8680	9780	9650	9710	10800	10600	10700
22	7970	7860	7930	8670	8640	8650	9810	9690	9740	10800	10600	10700
23	8010	7900	7960	8650	8630	8640	9940	9810	9870	10700	10600	10600
24	8160	8010	8100	8650	8610	8620	10000	9920	9970	10800	10600	10700
25	8230	8130	8180	8620	8520	8550	10100	9950	10000	10800	10600	10700
26	8290	8180	8240	8590	8520	8560	10200	10000	10100	10800	10600	10700
27	8360	8250	8310	8670	8580	8620	10200	10100	10100	10800	10600	10700
28	8400	8290	8360	8700	8640	8670	10200	10100	10200	10700	10500	10600
29	8440	8320	8390	---	---	e8920	10300	10200	10300	10700	10500	10600
30	8490	8380	8450	---	---	e9100	10400	10300	10400	10800	10600	10700
31	8540	8460	8500	---	---	---	10500	10300	10400	10800	10700	10800
MONTH	8850	7840	8220	---	---	8270	---	---	10700	11000	10300	10700

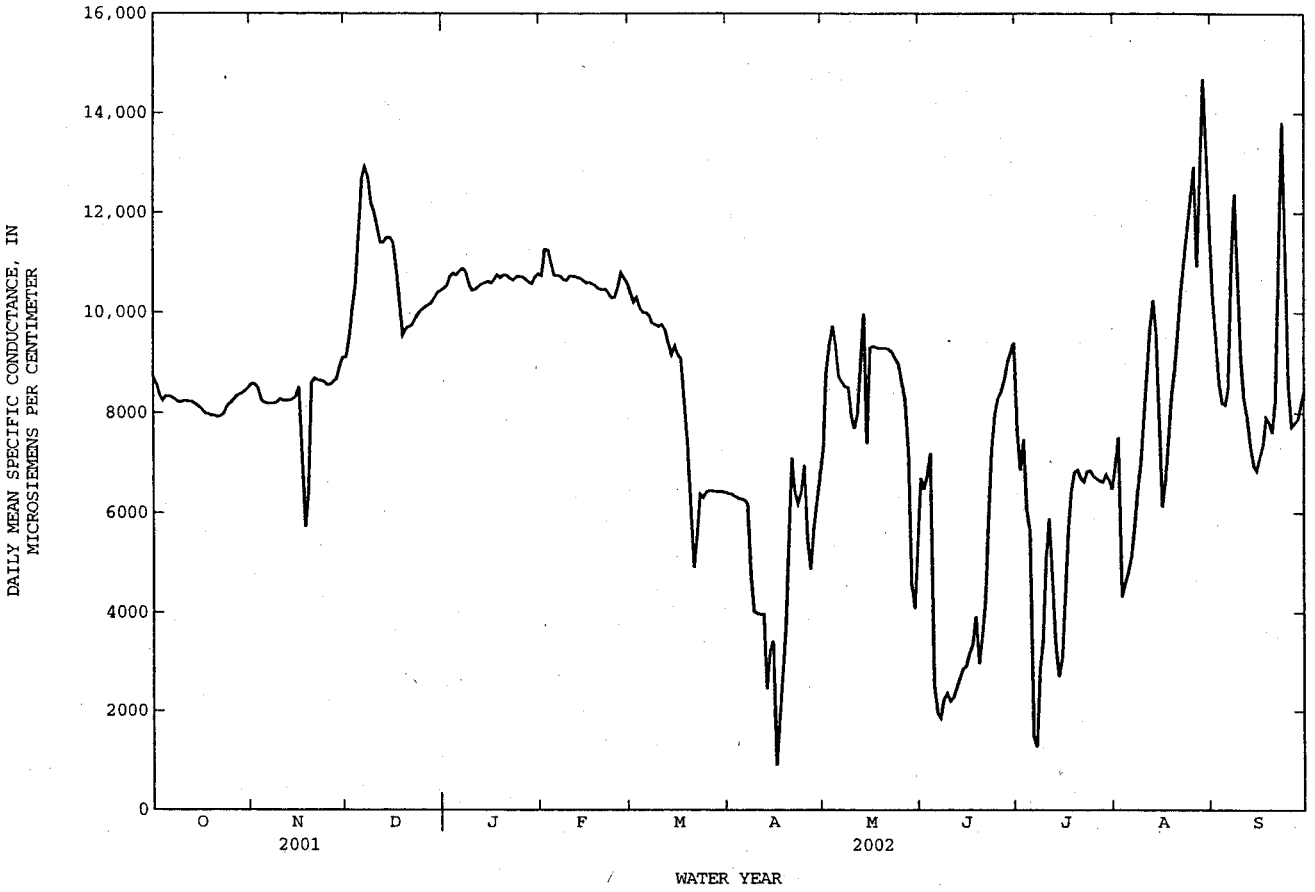
07308500 Red River near Burkburnett, TX--Continued

SPECIFIC CONDUCTANCE FROM DCP, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10900	10600	10700	10500	10200	10400	6410	6370	6380	7890	7120	7290
2	11400	10800	11300	10300	10100	10200	6390	6360	6380	9100	7890	8800
3	11300	11200	11300	10700	10000	10300	6380	6310	6330	9710	8890	9360
4	11200	10800	11000	10200	9980	10100	6320	6280	6300	---	---	e9740
5	10800	10700	10700	10100	9900	10000	6290	6270	6280	---	---	e9320
6	10800	10700	10700	10100	9960	10000	6280	6230	6260	---	---	e8730
7	10800	10600	10700	10000	9770	9940	6300	5810	6190	8680	8560	8620
8	10700	10600	10600	9950	9560	9790	6460	4020	4730	8720	8190	8530
9	10700	10600	10600	9890	9560	9760	4220	3960	4020	8560	8430	8510
10	10800	10700	10700	9810	9610	9720	4000	3940	3980	8450	7220	7910
11	10800	10600	10700	9810	9700	9760	3990	3920	3960	8180	7320	7690
12	10800	10600	10700	9770	9540	9650	3980	3950	3970	8240	7840	7980
13	10800	10600	10700	9570	9220	9400	4010	440	2440	11400	7800	9050
14	10800	10600	10700	9450	8690	9160	---	---	e3230	11400	8010	9980
15	10700	10500	10600	9430	9080	9330	---	---	e3430	9350	3820	7390
16	10700	10500	10600	9320	9000	9150	1300	700	900	9380	9180	9290
17	10600	10500	10600	9120	9000	9080	---	---	e1940	9360	9280	9330
18	10600	10500	10500	9080	7910	8290	3210	---	e2800	9390	9170	9300
19	10500	10400	10500	8210	6680	7410	4200	3210	3700	9350	9220	9290
20	10600	10400	10500	6840	5090	6200	7120	4200	5620	9330	9240	9290
21	10500	10400	10500	---	---	e4900	7380	6670	7110	9340	9250	9290
22	10600	10200	10400	6420	---	e5500	6670	6210	6410	9300	9210	9260
23	10400	10200	10300	6450	6280	6370	6340	6040	6180	9230	9180	9200
24	10400	10300	10300	6340	6230	6300	---	6130	e6410	9370	8930	9090
25	10600	10400	10500	6450	6340	6410	7260	---	6960	9080	8890	8980
26	10800	10600	10800	6500	6420	6450	6130	4740	5420	9090	7490	8620
27	10900	10600	10700	6460	6420	6440	5210	4720	4870	8810	7780	8270
28	10800	10500	10600	6440	6410	6430	6160	5210	5720	8200	5240	7230
29	---	---	---	6450	6410	6430	6620	5750	6200	5240	3850	4570
30	---	---	---	6440	6410	6430	7120	6420	6750	4990	3530	4080
31	---	---	---	6440	6380	6410	---	---	---	6080	4990	5420
MONTH	11400	10200	10700	---	---	8250	---	---	5030	---	---	8370

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	6950	6080	6700	9040	6680	7620	8110	6420	6950	11000	9910	10400
2	6800	6250	6470	7420	6590	6860	8180	5930	7520	9910	9070	9500
3	---	---	e6740	7750	7200	7480	5930	2920	4310	9070	8350	8610
4	---	---	e7200	7300	5500	6090	---	---	e4580	8400	8020	8200
5	5700	939	2510	5880	5030	5630	---	---	e4800	8260	7960	8170
6	2260	1550	1960	5030	663	1480	5390	4940	5110	9690	7910	8490
7	2000	1750	1860	2890	671	1270	6050	5390	5680	12700	9690	11000
8	2370	2000	2230	4150	2080	2880	---	---	e6420	12900	11700	12400
9	2370	2310	2350	5240	2080	3420	---	---	e7020	11700	9750	10800
10	2310	2130	2200	6570	3370	5080	---	---	e7870	9750	8660	9180
11	2370	2190	2270	6610	---	e5880	---	---	e8770	8660	8140	8310
12	2560	2370	2460	---	---	e4560	---	---	e9660	8220	7610	7900
13	2820	2560	2650	---	---	e3380	---	---	e10300	7610	7080	7330
14	2910	2790	2850	---	---	e2700	---	---	e9660	7120	6790	6940
15	3090	2870	2930	---	---	e3090	---	---	e7720	7020	6780	6850
16	3270	3080	3170	---	---	e4390	---	---	e6120	7310	7020	7120
17	3450	3270	3350	---	---	e5640	---	---	e6680	7490	7250	7340
18	4560	3440	3920	---	---	e6420	---	---	e7500	8560	7490	7910
19	4780	---	e2970	6860	---	e6810	---	---	e8360	8430	7630	7820
20	---	---	e3570	6990	6630	6860	---	---	e8910	7900	7310	7610
21	---	---	e4210	6900	6420	6690	---	---	e9660	9620	7680	8270
22	---	---	e5930	6790	6500	6620	---	---	e10500	14000	9620	11500
23	---	---	e7220	6880	6770	6830	---	---	e11100	14700	12800	13800
24	8210	---	e7970	6910	6790	6850	---	---	e11700	12800	9820	11100
25	8370	8210	8280	6840	6640	6740	---	---	e12300	9820	7850	8550
26	8550	8360	8410	6750	6620	6690	---	---	e12900	7870	7550	7720
27	8860	8550	8650	6700	6570	6640	---	---	e10900	7870	7720	7800
28	9260	8860	9020	6650	6580	6620	---	---	e12700	8090	7760	7880
29	9390	9110	9220	7180	6620	6770	---	---	e14700	8330	8060	8160
30	9440	9040	9400	6690	6600	6640	14300	12500	13300	8760	8160	8420
31	---	---	---	6600	6260	6470	12500	11000	11600	---	---	---
MONTH	---	---	4960	---	---	5520	---	---	8880	14700	6780	8840

e Estimated



WATER TEMPERATURE FROM DCP, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	25.4	15.2	19.9	23.6	16.1	19.2	---	---	---	5.9	1.3	3.2
2	24.0	15.5	19.4	25.0	16.7	20.4	---	---	---	4.0	0.8	2.8
3	23.6	15.6	19.3	25.4	18.0	20.9	---	---	---	4.2	---	---
4	26.0	17.6	21.1	20.9	18.0	19.2	18.2	---	---	5.0	---	---
5	21.1	13.9	17.2	23.1	16.8	19.6	18.6	14.9	17.1	8.6	4.7	6.1
6	20.2	11.2	15.0	22.9	16.1	19.0	14.9	11.4	13.0	9.1	3.0	5.9
7	20.2	12.3	15.7	21.0	14.0	17.2	12.8	9.2	11.0	8.6	2.3	5.4
8	22.6	13.0	17.1	17.7	12.4	15.4	11.3	7.2	8.9	11.8	4.0	7.5
9	22.8	17.8	19.6	16.7	10.9	13.2	10.4	4.4	7.2	13.7	7.0	10.2
10	20.3	17.4	19.1	19.1	10.0	14.3	9.9	4.0	6.8	11.1	8.0	9.3
11	22.1	15.1	18.1	20.5	14.5	17.1	6.9	4.9	5.8	11.8	5.1	8.3
12	20.8	14.8	17.8	19.0	15.9	17.1	11.0	6.8	8.7	10.8	4.9	7.8
13	19.1	12.4	15.6	21.0	15.8	17.9	9.0	6.2	7.3	11.4	4.4	7.7
14	21.1	12.8	16.4	19.5	16.3	17.5	9.6	3.6	6.5	11.1	4.4	7.7
15	17.8	13.2	15.3	17.0	15.3	16.2	8.3	6.2	7.1	10.5	4.2	7.3
16	19.7	10.1	14.3	18.4	15.2	16.6	10.4	8.3	9.3	11.9	6.7	8.7
17	17.9	11.1	14.2	16.7	15.4	16.0	11.7	6.9	9.2	9.4	5.7	7.2
18	20.3	10.8	14.9	18.2	15.4	16.6	12.5	6.5	9.3	5.7	3.0	3.7
19	22.8	13.5	17.6	17.1	11.8	14.5	10.4	6.0	8.1	9.2	2.4	5.3
20	23.3	14.7	18.5	11.8	9.6	10.4	11.2	4.4	7.6	9.7	2.7	5.9
21	23.7	15.9	19.3	10.5	9.4	9.9	11.3	5.5	8.5	10.5	2.8	6.4
22	23.6	16.6	19.5	10.4	10.1	10.2	11.9	8.1	9.8	14.9	5.6	9.7
23	22.3	16.6	19.1	11.0	10.4	10.7	8.9	5.0	6.8	12.5	8.3	10.8
24	19.3	13.6	16.4	11.1	10.8	11.0	6.7	2.4	4.3	10.0	4.9	7.2
25	18.8	11.7	14.9	11.1	10.1	10.8	7.6	1.2	4.1	10.5	2.6	6.4
26	19.3	11.3	14.8	11.2	10.5	11.0	7.3	1.1	4.0	12.2	3.4	7.6
27	18.8	11.7	14.9	10.5	7.6	8.9	6.6	2.4	4.6	12.8	5.5	9.1
28	19.5	11.5	15.0	7.6	6.4	7.0	8.0	2.4	5.2	16.9	7.7	12.0
29	21.2	13.0	16.5	---	---	---	5.9	0.4	3.4	18.0	10.4	14.4
30	21.0	13.0	16.5	---	---	---	3.3	0.9	1.7	10.4	4.8	6.7
31	20.1	13.9	16.5	---	---	---	5.1	---	---	7.2	2.8	4.7
MONTH	26.0	10.1	17.1	---	---	---	---	---	---	18.0	---	---

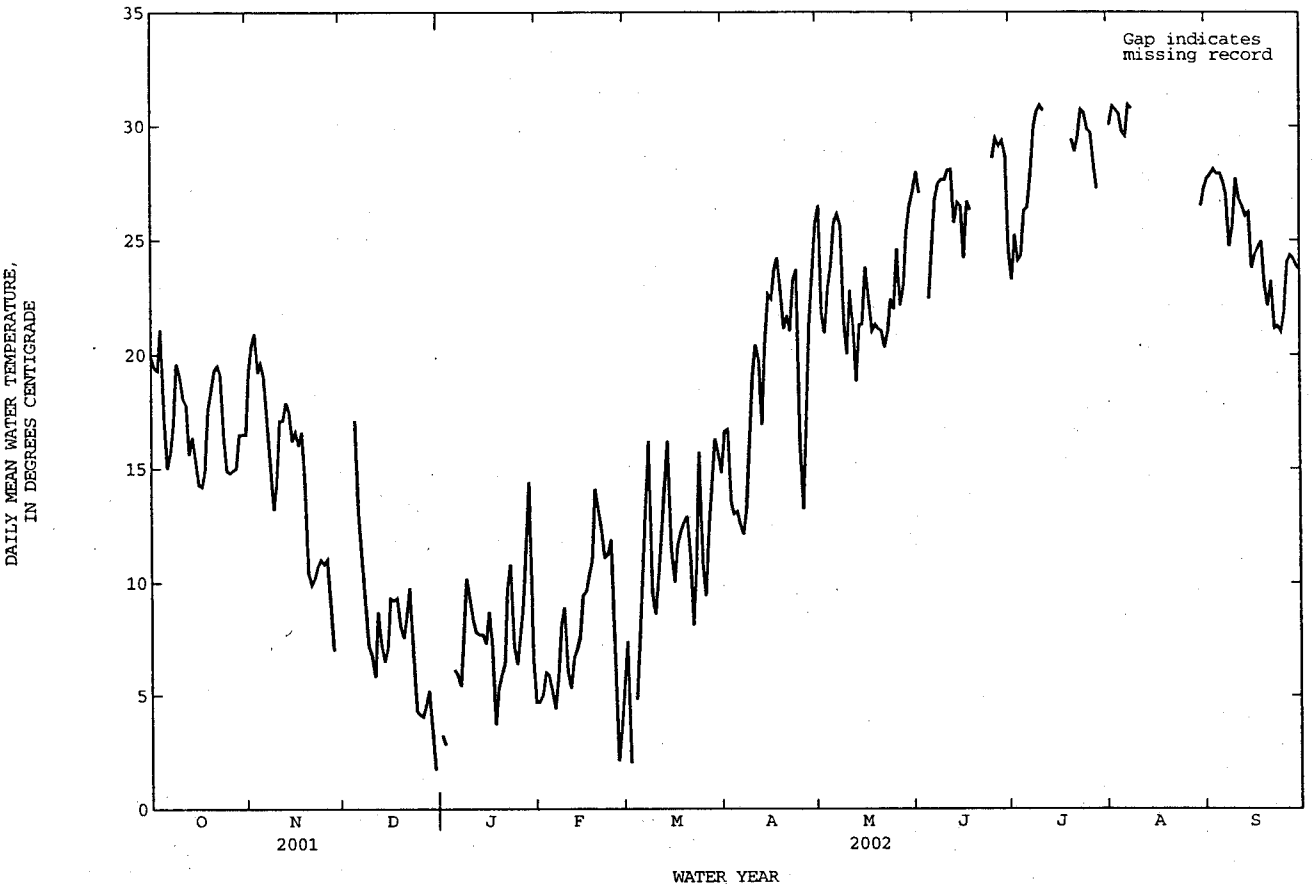
07308500 Red River near Burkburnett, TX--Continued

WATER TEMPERATURE FROM DCP, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	9.5	0.6	4.7	9.2	5.2	7.4	18.3	14.9	16.6	30.9	22.7	26.5
2	6.2	3.6	5.0	5.2	0.2	2.0	18.0	15.2	16.7	26.9	18.8	21.8
3	7.5	4.9	6.0	6.3	---	---	15.2	12.4	13.5	26.3	16.2	20.9
4	6.9	5.0	5.9	10.4	0.2	4.8	13.7	12.2	13.0	27.2	19.5	22.9
5	6.1	4.0	5.2	12.5	3.5	7.6	13.8	12.1	13.1	27.8	20.4	23.9
6	6.2	3.0	4.4	16.6	6.3	11.0	13.4	11.8	12.5	29.2	22.3	25.7
7	10.0	2.7	5.9	19.0	9.9	14.1	12.6	11.8	12.1	29.1	23.3	26.1
8	12.2	4.7	8.2	19.6	13.9	16.2	15.0	11.9	13.3	29.7	22.5	25.6
9	11.4	7.1	8.9	15.4	5.2	9.5	20.6	12.9	16.1	25.6	17.5	21.4
10	8.0	4.2	6.0	13.2	4.6	8.6	23.0	15.7	18.9	23.5	17.0	20.0
11	9.2	2.0	5.3	14.7	7.3	10.6	24.6	17.1	20.4	24.7	20.6	22.8
12	10.6	3.5	6.7	17.8	7.1	12.3	21.1	18.4	19.7	23.1	17.1	21.3
13	10.7	3.7	7.0	19.6	9.7	14.3	19.4	12.9	16.9	24.7	13.8	18.8
14	11.0	4.3	7.6	21.0	11.9	16.2	24.4	17.3	20.5	26.6	16.7	21.3
15	12.6	6.6	9.4	15.4	7.2	11.5	24.5	20.6	22.6	25.5	17.8	21.3
16	13.7	5.7	9.6	12.9	7.3	10.0	23.7	21.3	22.4	29.0	19.2	23.8
17	13.9	7.2	10.4	13.6	10.0	11.6	26.9	21.3	23.7	25.6	20.3	22.3
18	13.3	7.9	11.0	13.6	11.3	12.2	25.9	22.8	24.2	26.6	16.4	21.0
19	17.0	12.5	14.1	13.2	11.3	12.6	24.0	22.1	22.8	25.3	17.7	21.3
20	17.0	9.6	13.2	17.0	9.7	12.9	22.7	19.3	21.1	24.4	18.4	21.1
21	13.8	10.7	12.3	13.3	7.4	11.1	25.1	19.2	21.7	23.9	18.5	21.0
22	15.2	7.5	11.1	12.1	5.1	8.1	24.3	17.9	21.0	22.6	18.5	20.3
23	14.9	7.8	11.2	16.2	6.2	10.8	27.4	19.7	23.2	22.4	20.0	21.0
24	16.0	8.6	11.9	21.0	11.7	15.7	26.7	20.5	23.7	28.2	19.6	22.4
25	10.7	3.5	7.6	15.4	8.8	10.8	20.5	13.5	16.0	27.3	17.2	21.9
26	5.2	0.2	2.1	12.9	6.4	9.4	13.5	13.0	13.2	31.6	20.0	24.6
27	8.1	0.2	3.4	14.7	9.9	12.2	23.2	12.9	17.7	26.2	20.7	22.1
28	10.1	1.2	5.2	16.8	12.1	14.2	25.6	17.7	21.2	27.8	19.8	22.9
29	---	---	---	18.0	14.8	16.3	28.4	19.7	23.6	29.2	22.3	25.4
30	---	---	---	17.5	14.5	15.6	28.9	22.8	25.7	29.9	23.6	26.5
31	---	---	---	17.3	12.9	14.8	---	---	---	31.4	23.9	27.1
MONTH	17.0	0.2	7.8	21.0	---	---	28.9	11.8	18.9	31.6	13.8	22.7

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	32.0	24.5	28.0	27.2	20.9	23.3	35.0	25.8	30.0	31.6	24.0	27.7
2	31.2	23.9	27.0	28.4	23.0	25.2	35.1	27.3	30.8	33.5	23.2	27.8
3	---	22.8	---	25.1	23.3	24.1	34.7	27.0	30.7	33.8	24.0	28.1
4	30.4	---	---	27.0	22.2	24.3	34.7	27.4	30.5	33.2	23.5	27.9
5	24.2	21.1	22.4	29.8	23.1	26.3	34.7	26.2	29.7	32.5	23.9	27.9
6	28.8	21.8	24.8	27.6	25.1	26.4	33.7	25.9	29.5	31.8	23.7	27.6
7	29.5	24.3	26.7	30.6	25.6	27.8	36.9	26.0	30.9	31.9	23.6	26.9
8	30.0	25.5	27.4	32.5	27.7	29.9	35.4	27.5	30.7	27.1	23.2	24.7
9	31.1	24.9	27.6	32.6	28.8	30.6	---	26.5	---	30.3	22.8	25.6
10	30.6	24.9	27.6	32.8	29.1	30.9	---	---	---	32.9	24.1	27.7
11	32.3	24.5	28.0	33.2	29.0	30.6	---	---	---	32.3	22.2	26.8
12	32.4	25.1	28.1	---	---	---	---	---	---	30.5	22.8	26.5
13	28.7	24.0	25.7	---	---	---	---	---	---	30.1	22.8	26.0
14	31.5	22.7	26.6	---	---	---	---	---	---	32.4	22.0	26.2
15	29.2	23.1	26.5	---	---	---	---	---	---	27.0	21.4	23.8
16	28.4	20.8	24.2	---	---	---	---	---	---	30.6	19.1	24.3
17	31.0	23.1	26.7	---	---	---	---	---	---	29.1	20.8	24.7
18	29.0	23.7	26.3	---	---	---	---	---	---	29.9	21.6	25.0
19	---	23.8	---	34.2	---	---	---	---	---	26.6	19.6	23.1
20	---	---	---	33.4	26.2	29.4	---	---	---	28.8	16.8	22.1
21	---	---	---	33.3	25.1	28.8	---	---	---	29.4	18.6	23.2
22	---	---	---	34.7	25.1	29.5	---	---	---	25.1	17.0	21.1
23	---	---	---	36.2	26.2	30.7	---	---	---	27.4	16.5	21.2
24	33.0	---	---	35.9	27.3	30.5	---	---	---	26.7	16.6	21.0
25	34.1	24.2	28.6	36.2	25.4	29.8	---	---	---	28.8	16.2	21.8
26	34.7	25.0	29.4	34.1	26.3	29.7	---	---	---	29.9	18.8	24.0
27	34.2	25.1	29.1	33.1	24.8	28.4	---	---	---	30.1	19.5	24.3
28	34.8	25.1	29.3	30.0	24.7	27.2	---	---	---	29.3	19.8	24.2
29	33.9	25.0	28.7	---	---	---	29.2	---	---	29.5	19.4	23.9
30	27.2	22.2	24.6	---	---	---	32.2	22.5	26.5	27.9	19.9	23.7
31	---	---	---	34.3	---	---	33.5	22.2	27.3	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	33.8	16.2	25.0

07308500 Red River near Burkburnett, TX--Continued



07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX

LOCATION.--Lat 33°49'08", long 96°33'47", Grayson County, Hydrologic Unit 11140101, on right bank 1,800 ft downstream from Denison Dam powerhouse, 0.4 mi upstream from Shawnee Creek (spillway flow return), 4.5 mi north of Denison, and at mile 725.5.

WATER-DISCHARGE RECORDS

DRAINAGE AREA.--39,720 mi^2, of which 5,936 mi^2 is probably noncontributing. At site used prior to October 1961 drainage area was 39,777 mi^2, of which 5,936 mi^2 probably was noncontributing.

PERIOD OF RECORD.--October 1923 to September 1989; December 1996 to current year. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1934, published as "near Denison, TX", and October 1934 to September 1961, published as "near Colbert, OK". Gage-height records collected at various sites in this vicinity 1892-93, 1906-28, 1931-49 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 807: 1935 (M). WSP 1211: Drainage area. WSP 1241: 1924-29, 1932-33, 1934 (M), 1935.

GAGE.--Water-stage recorder. Datum of gage is 495.00 ft above National Geodetic Vertical Datum of 1929. Oct. 9, 1923, to Sept. 24, 1934, nonrecording gage, and July 29, 1942, to Sept. 30, 1961, water-stage recorder, at county road bridge 2.5 mi downstream. Prior to Oct. 1, 1931, at datum 11.85 ft higher; Oct. 1, 1931, to Sept 24, 1934, at datum 12.07 ft higher; and July 29, 1942, to Sept. 30, 1961, at datum 2.36 ft higher; Sept. 25, 1934, to July 28, 1942, water-stage recorder at railway bridge 1.9 mi downstream at datum 12.36 ft higher. July 29, 1942 to Sept. 30, 1989, at same site and datum 5.00 ft higher.

REMARKS.--No estimated daily discharge. Records fair except for discharges less than 100 ft^3/s which are poor. Flow regulated since October 1943 by Lake Texoma (station 07331500). U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 26, 1908, reached a stage of 45.5 ft (at site and datum used July 29, 1942, to Sept. 30, 1961); from record of National Weather Service.

DISCHARGE VIA SATELLITE, in CFS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1790	2600	210	7030	4610	2010	3950	11100	279	3510	3530	136
2	2030	1040	53	7200	4850	4960	4980	11100	52	3440	3870	4760
3	2020	208	1050	6990	4540	10100	7300	11200	1300	3620	3870	5050
4	2040	51	1290	7120	5410	10900	6240	4820	1560	4170	3870	5030
5	2040	857	1310	636	7850	6060	7250	6370	1930	3940	4030	5200
6	284	1020	1270	60	5480	1340	5770	7120	1550	3410	3720	1440
7	51	1050	1270	5030	5500	1160	5250	7450	1560	5010	3600	192
8	1790	1020	266	5310	4560	1190	2170	3830	313	4570	4390	115
9	2050	980	52	3840	447	3650	333	3750	55	2630	4780	1300
10	2090	203	2310	3230	53	693	5090	5170	1560	3400	4260	5230
11	2280	51	3280	4530	3230	962	10900	3050	1810	3870	4240	4370
12	2010	863	2480	581	3600	1120	13700	2800	1570	4770	4370	4510
13	557	1020	2230	59	2360	1140	17500	2040	1570	3510	3790	4620
14	68	1040	2250	5050	3600	1180	18900	2880	1560	2440	4890	2630
15	1790	1030	305	5840	3550	1150	18900	2700	308	3100	10300	308
16	2040	1030	315	6180	416	230	20700	2440	61	2850	10400	1960
17	2690	209	261	6280	58	53	22600	2380	1270	3600	4480	3330
18	2050	51	70	6540	2740	3180	24900	318	1550	4040	3940	2650
19	4630	849	8060	3010	2580	3660	26800	57	1540	6350	3920	2360
20	312	1020	10800	2310	2380	2190	26900	57	1550	6290	3620	1820
21	53	1030	10800	5820	2380	184	27000	1300	1530	6060	2660	1300
22	4030	1020	7290	6540	4300	2860	22000	592	306	6840	2380	1390
23	3060	1020	6940	6510	2150	455	13300	1880	54	7100	2390	2100
24	2440	173	7370	6540	2800	5000	12000	2310	3740	7090	343	1330
25	2020	53	6710	6710	3530	8810	13700	422	4100	7090	68	1270
26	3360	846	6950	957	5090	11100	13800	54	2940	7400	2430	1250
27	297	1540	6990	63	4710	11200	13700	54	2510	7220	4140	2000
28	53	1070	2570	873	4130	6150	13700	1920	2490	7300	4470	160
29	1790	1010	6570	1030	---	3550	12300	1500	2510	6410	5480	47
30	2040	1020	7010	1770	---	4210	11100	2190	2500	5080	5120	627
31	3550	---	7020	2360	---	3650	---	1160	---	4070	1420	---
TOTAL	57305	24974	115352	125999	96904	114097	402733	104014	45628	150180	124771	68485
MEAN	1849	832.5	3721	4064	3461	3681	13420	3355	1521	4845	4025	2283
MAX	4630	2600	10800	7200	7850	11200	27000	11200	4100	7400	10400	5230
MIN	51	51	52	59	53	53	333	54	52	2440	68	47
AC-FT	113700	49540	228800	249900	192200	226300	798800	206300	90500	297900	247500	135800

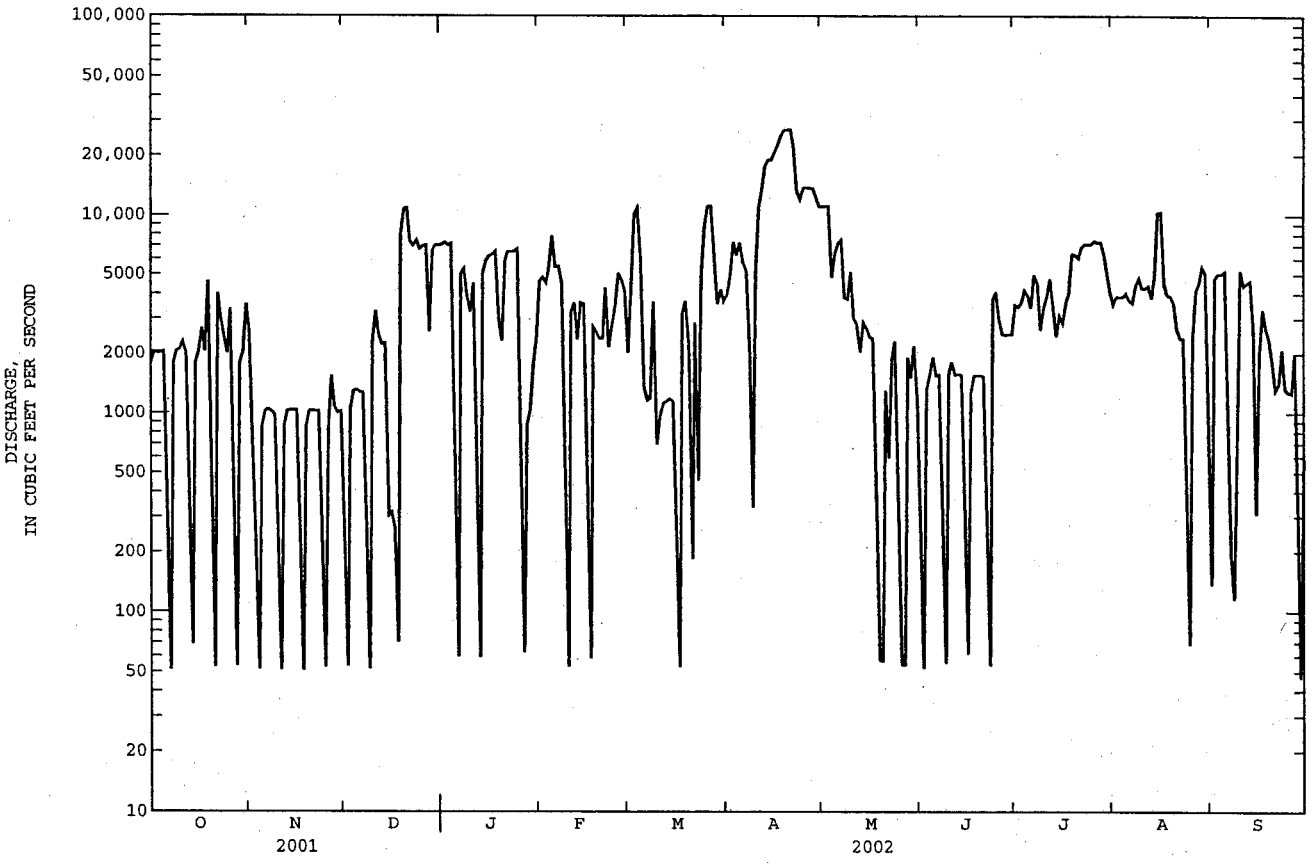
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

MEAN	4782	3688	3431	3675	3569	4745	5006	7473	11160	5458	3499	2606
MAX	27860	18880	13320	20630	13800	24760	20400	34710	66960	21820	25570	10330
(WY)	1987	1975	1997	1998	1987	1987	1945	1957	1957	1982	1950	1950
MIN	66.7	79.6	569	271	678	614	789	712	1449	1580	953	325
(WY)	1957	1957	1981	1945	1945	1976	1978	1959	1956	1956	1972	1984

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	2373951		1430442			
ANNUAL MEAN	6504		3919		[a]4871	
HIGHEST ANNUAL MEAN					16030	1987
LOWEST ANNUAL MEAN					1510	1964
HIGHEST DAILY MEAN	32800	Mar 11	27000	Apr 21	96200	Jun 5 1957
LOWEST DAILY MEAN	46	Jun 17	47	Sep 29	18	Feb 27 2000
ANNUAL SEVEN-DAY MINIMUM	519	Sep 4	737	Nov 20	25	Mar 8 2000
MAXIMUM PEAK FLOW			27500	Apr 22	[b]102000	Jun 5 1957
MAXIMUM PEAK STAGE			16.24	Apr 22	[c]26.26	Jun 5 1957
ANNUAL RUNOFF (AC-FT)	4709000		2837000		3529000	
10 PERCENT EXCEEDS	11500		7380		10600	
50 PERCENT EXCEEDS	4850		2650		2780	
90 PERCENT EXCEEDS	277		210		190	

[a]Prior to regulation, water years 1924-43, 5,684 ft^3/s.
[b]Maximum discharge for period of record, 201,000 ft^3/s May 21, 1935.
[c]Maximum gage height for period of record, 32.00 ft Apr. 25, 1942, site and datum then in use.



0152

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1944 to August 1989; October 1996 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1944 to September 1989; February 1997 to current year.
WATER TEMPERATURE: October 1945 to September 1989; February 1997 to current year.

INSTRUMENTATION.--Water-quality monitor February 1997 to current year.

REMARKS.--Samples were collected monthly, and specific conductance, pH, water temperature, alkalinity and dissolved oxygen were determined in the field.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 3,520 microsiemens Aug. 14, 1944; minimum daily, 656 microsiemens Oct. 16, 1945.
WATER TEMPERATURE: Maximum daily, 31.0°C July 17, 1969; minimum daily, 3.0°C Feb. 2-4, 7, 1966.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 2,140 microsiemens Dec. 15; minimum, 779 microsiemens Aug. 27.
WATER TEMPERATURE: Maximum, 25.8°C Oct. 1, Sept. 11; minimum, 5.0°C Mar. 2.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	GAGE HEIGHT (FEET) (00065)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)
SEP											
17...	1440	1028	1028	8.11	5380	743	3.7	7.7	1350	25.5	370
17...	1443	1028	1028	8.11	5380	743	3.6	7.6	1340	25.5	330
17...	1446	1028	1028	8.11	5380	743	3.5	7.6	1330	25.4	290
17...	1449	1028	1028	8.11	5380	743	3.1	7.6	1340	25.1	250
17...	1452	1028	1028	8.11	5380	743	2.9	7.6	1340	24.9	210
17...	1455	1028	1028	8.11	5380	743	2.8	7.6	1340	24.8	170
17...	1458	1028	1028	8.11	5380	743	2.8	7.6	1340	24.8	130
17...	1501	1028	1028	8.11	5380	743	2.8	7.6	1330	24.6	90.0
17...	1504	1028	1028	8.11	5380	743	2.8	7.6	1320	24.6	50.0
17...	1507	1028	1028	8.11	5380	743	2.8	7.6	1330	24.6	10.0

Date	Time	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	GAGE HEIGHT (FEET) (00065)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
OCT													
11...	0940	80020	1028	5.44	560	751	85	7.3	8.0	1480	19.0	21.8	350
NOV													
28...	0920	80020	1028	5.06	129	756	87	9.0	8.4	1490	.2	13.0	360
DEC													
27...	1105	80020	1028	10.67	10800	752	88	9.6	8.2	1490	14.2	10.9	380
JAN													
15...	1650	80020	1028	5.59	773	757	99	11.2	7.8	1500	12.1	9.5	360
FEB													
20...	1700	80020	1028	4.99	83	751	149	15.8	8.5	1520	17.2	11.8	340
MAR													
13...	0800	80020	1028	5.15	207	736	105	12.1	8.2	1480	10.1	7.5	370
APR													
09...	2000	80020	1028	5.18	239	750	141	13.6	8.5	1520	24.1	16.0	350
MAY													
08...	1945	80020	1028	10.25	9870	737	87	7.9	7.9	1270	25.1	18.3	310
JUN													
13...	1530	80020	1028	4.98	75	746	104	9.0	7.8	1070	22.4	21.1	370
JUL													
17...	1930	80020	1028	9.08	7370	743	74	6.3	7.9	1280	32.7	21.6	420
AUG													
15...	1500	80020	1028	10.46	10300	754	28	2.3	7.5	1320	33.0	23.6	310
SEP													
17...	1510	80020	1028	8.11	5380	743	39	3.1	7.6	1340	30.6	25.0	300

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	HARDNESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT 11...	240	86.6	32.2	4.84	4	160	50	111	135	0	241	.3	4.8
NOV 28...	240	88.5	32.7	5.12	4	170	51	116	134	4	250	.4	3.3
DEC 27...	260	95.5	33.2	4.60	4	172	50	113	137	0	266	.3	3.6
JAN 15...	240	86.2	34.0	4.70	4	175	51	115	139	0	254	.3	3.6
FEB 20...	240	85.3	30.9	4.48	4	163	51	105	124	2	256	.3	3.1
MAR 13...	260	93.8	33.3	4.62	4	172	50	112	135	1	258	.3	3.9
APR 09...	230	87.5	31.3	5.00	4	171	51	118	142	1	261	.3	3.5
MAY 08...	190	80.8	26.6	4.14	4	143	49	122	148	0	221	.2	5.1
JUN 13...	260	101	27.5	8.64	6	255	60	106	128	0	412	.3	8.1
JUL 17...	300	122	28.9	8.94	7	353	64	126	154	0	568	.3	12.5
AUG 15...	190	82.4	24.5	4.65	3	137	49	119	144	0	215	.3	4.7
SEP 17...	180	74.4	26.6	4.84	4	154	53	115	139	0	231	.3	5.1

Date	SULFATE DISSOLVED (MG/L AS SO4) (00945)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, NITRATE DISSOLVED (MG/L AS NO3) (71851)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS NO2) (71856)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)
OCT 11...	238	.39	E.03	--	.57	--	--	.18	--	E.004	--	.055	E.03
NOV 28...	245	.40	<.04	--	.55	--	--	.15	--	<.008	--	--	<.06
DEC 27...	250	.42	E.04	.13	.57	--	.584	.14	.039	.012	--	--	<.06
JAN 15...	241	.43	.05	.17	.61	.06	.744	.18	.049	.015	.38	.138	E.04
FEB 20...	242	.41	E.03	.15	.57	--	.655	.16	.026	.008	--	--	<.06
MAR 13...	239	.43	.06	--	.62	.08	--	.19	--	E.005	.37	--	<.06
APR 09...	240	.46	<.04	--	.58	--	--	.12	--	E.005	--	--	<.06
MAY 08...	201	.40	<.04	--	.70	--	--	.30	--	E.004	--	--	E.04
JUN 13...	240	.53	E.04	.45	.98	--	1.97	.46	.033	.010	--	.067	E.04
JUL 17...	302	2.2	E.03	.49	2.7	--	2.15	.50	.049	.015	--	.282	.12
AUG 15...	177	.68	.23	--	--	.30	--	<.05	--	<.008	.45	.135	E.06
SEP 17...	181	.81	.28	--	--	.36	--	<.05	--	<.008	.53	.150	.08

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)
OCT													
11...	.02	E.04	<10	1.14	1260	835	2	E2	118	114	<8	<.1	<.8
NOV													
28...	<.02	E.03	14	1.18	302	866	3	2	125	125	<8	<.1	<.8
DEC													
27...	E.01	<.06	<10	1.21	26100	893	E2	E2	129	124	<8	<.1	<.8
JAN													
15...	.04	E.05	<10	1.18	1810	869	E1	E2	126	126	<8	<.1	<.8
FEB													
20...	<.02	<.06	<10	1.15	190	848	2	2	119	108	<8	<.1	<.8
MAR													
13...	<.02	E.04	<10	1.19	488	873	E1	E2	124	117	<8	<.1	<.8
APR													
09...	<.02	<.06	<10	1.18	562	871	<2	E1	120	115	<8	<.1	<.8
MAY													
08...	E.01	E.04	<10	1.03	20200	756	E1	E1	109	110	<8	<.1	<.8
JUN													
13...	.02	E.05	308	1.52	226	1120	4	6	170	230	<8	.3	<.8
JUL													
17...	.09	.84	<10	2.01	29300	1480	6	9	134	369	<24	E.1	<.8
AUG													
15...	.04	.07	<10	.97	20000	717	3	3	107	106	<8	<.1	<.8
SEP													
17...	.05	.12	<10	1.02	10800	746	2	2	120	116	<8	E.1	<.8

Date	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
OCT													
11...	<.8	<6	E.9	<10	60	<.08	<1	4.5	22.2	<.01	<.01	<30	<70
NOV													
28...	<.8	<6	E1.0	<10	80	E.07	M	<2.0	26.5	<.01	E.01	<30	<70
DEC													
27...	<.8	<6	E1.0	<10	60	.09	M	E.9	13.1	<.01	<.02	<30	<70
JAN													
15...	<.8	<6	1.3	<10	40	<.08	<1	E1.6	15.3	E.01	.01	<30	<70
FEB													
20...	<.8	<6	E1.2	<10	20	.19	<1	E1.8	7.7	.02	<.01	<30	<70
MAR													
13...	<.8	<6	E.9	<10	30	.14	<1	E2.0	12.6	<.01	E.01	<30	<70
APR													
09...	<.8	<6	1.5	<10	80	E.05	<1	3.8	14.8	<.01	<.01	<30	<70
MAY													
08...	<.8	<6	1.9	<10	110	E.07	<1	3.6	18.1	<.01	<.01	<30	<70
JUN													
13...	4.1	11	10.4	E6	3390	1.48	5	5.9	250	<.01	.02	<30	<70
JUL													
17...	9.6	E10	19.8	<30	9500	.31	12	6.7	705	<.01	.02	<90	E40
AUG													
15...	<.8	<6	E.8	13	40	E.05	<1	306	282	<.01	E.01	<30	E40
SEP													
17...	<.8	<6	4.3	<10	60	.13	M	316	331	E.01	E.01	<30	<70

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ALDRIN, TOTAL (UG/L) (39330)	ALPHA BHC TOTAL (UG/L) (39337)	ALPHA-HCH-D6 SUR SCD 1608 WATER UNFLTRD PERCENT (99778)	AROCLOR 1016/ 1242 PCB WATER UNFLTRD (UG/L) (81648)	AROCLOR 1221 PCB TOTAL (UG/L) (39488)	AROCLOR 1232 PCB TOTAL (UG/L) (39492)	AROCLOR 1248 PCB TOTAL (UG/L) (39500)
OCT													
11...	E1	<2	<.1	<.3	<24	<20	--	--	--	--	--	--	--
NOV													
28...	<2	E1	<.2	<.3	<24	<20	--	--	--	--	--	--	--
DEC													
27...	E1	<2	<.2	<.3	<24	<20	--	--	--	--	--	--	--
JAN													
15...	E1	E1	<.2	<.3	<24	<20	--	--	--	--	--	--	--
FEB													
20...	E1	E1	<.1	<.3	<24	<20	--	--	--	--	--	--	--
MAR													
13...	<2	<2	<.1	<.3	<24	<20	<.04	<.03	92.4	<.1	<1	<.1	<.1
APR													
09...	<2	E1	<.1	<.3	<24	<20	--	--	--	--	--	--	--
MAY													
08...	<2	<2	<.1	<.3	<24	<20	--	--	--	--	--	--	--
JUN													
13...	<2	<2	<.4	<.3	33	40	--	--	--	--	--	--	--
JUL													
17...	2	<2	<.2	<.3	<72	50	--	--	--	--	--	--	--
AUG													
15...	E2	<2	<.1	<.3	<24	E20	--	--	--	--	--	--	--
SEP													
17...	<2	<2	<.2	<.3	<24	E30	<.04	<.03	118	<.1	<1	<.1	<.1

Date	AROCLOR 1254 PCB TOTAL (UG/L) (39504)	AROCLOR 1260 PCB TOTAL (UG/L) (39508)	BETA BENZENE HEXA-CHLOR-IDE TOTAL (UG/L) (39338)	CHLOR-DANE CIS WATER WHOLE TOTAL (UG/L) (39062)	CHLOR-DANE, TECH-NICAL TOTAL (UG/L) (39350)	CHLOR-DANE TRANS WATER WHOLE TOTAL (UG/L) (39065)	DELTA BENZENE HEXA-CHLOR-IDE TOTAL (UG/L) (34259)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN-I WATER WHOLE REC (UG/L) (34361)	ENDO-SULFAN II TOTAL (UG/L) (34356)	ENDO-SULFAN SULFATE TOTAL (UG/L) (34351)	ENDRIN ALDE-HYDE TOTAL (UG/L) (34366)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)
OCT													
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
13...	<.1	<.1	<.03	<.1	<.1	<.1	<.09	<.02	<.1	<.04	<.6	<.2	<.06
APR													
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
17...	<.1	<.1	<.03	<.1	<.1	<.1	<.09	<.02	<.1	<.04	<.6	<.2	<.06

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	ISODRIN SUR SCD 1608 WTR, UNFLTRD PERCENT (90570)	LINDANE TOTAL (UG/L) (39340)	PCB 207 SUR SCD 1608 WATER UNFLTRD PERCENT (99781)	P,P' DDD, TOTAL (UG/L) (39310)	P,P' DDE, TOTAL (UG/L) (39320)	P,P' DDT, TOTAL (UG/L) (39300)	TOX-APHENE, TOTAL (UG/L) (39400)
OCT									
11...	--	--	--	--	--	--	--	--	--
NOV									
28...	--	--	--	--	--	--	--	--	--
DEC									
27...	--	--	--	--	--	--	--	--	--
JAN									
15...	--	--	--	--	--	--	--	--	--
FEB									
20...	--	--	--	--	--	--	--	--	--
MAR									
13...	<.8	<.03	75.9	<.03	51.5	<.1	<.04	<.1	<2
APR									
09...	--	--	--	--	--	--	--	--	--
MAY									
08...	--	--	--	--	--	--	--	--	--
JUN									
13...	--	--	--	--	--	--	--	--	--
JUL									
17...	--	--	--	--	--	--	--	--	--
AUG									
15...	--	--	--	--	--	--	--	--	--
SEP									
17...	<.8	<.03	72.2	<.03	106	<.1	<.04	<.1	<2

SPECIFIC CONDUCTANCE VIA SATELLITE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	1660	1500	1560	1490	1460	1490	1550	1540	1540	1490	1480	1480
2	1540	1510	1530	1490	1460	1480	1550	1530	1540	1480	1480	1480
3	1540	1500	1520	1500	1460	1480	1540	1510	1530	1500	1480	1490
4	1530	1500	1520	1500	1470	1480	1530	1520	1530	1500	1480	1490
5	1520	1520	1520	1500	1460	1490	1530	1510	1520	1490	1420	1450
6	1640	1500	1540	1510	1470	1500	1520	1510	1510	1480	1460	1470
7	1640	1500	1570	1540	1500	1520	1510	1500	1510	1510	1480	1490
8	1660	1510	1610	1580	1530	1560	1510	1490	1500	1510	1490	1500
9	1650	1510	1530	1580	1520	1550	1510	1500	1500	1500	1490	1500
10	1520	1490	1510	1530	1510	1520	1510	1500	1500	1500	1480	1490
11	1510	1420	1480	1520	1500	1510	1900	1510	1610	1500	1490	1490
12	1620	1470	1530	1520	1500	1510	2000	1590	1680	1500	1460	1480
13	1610	1470	1520	1530	1510	1520	1860	1580	1670	1490	1470	1490
14	1610	1480	1560	1530	1500	1520	1920	1580	1680	1500	1490	1500
15	1610	1500	1570	1530	1500	1520	2140	1650	2000	1500	1490	1500
16	1610	1500	1570	1530	1500	1520	1990	1840	1920	1490	1480	1490
17	1620	1520	1560	1540	1510	1520	1970	1530	1660	1490	1480	1490
18	1610	1500	1560	1530	1520	1520	1840	1520	1680	1490	1480	1490
19	1610	1520	1540	1530	1510	1530	1840	1500	1580	1490	1470	1490
20	1590	1490	1520	1530	1510	1530	1510	1500	1500	1500	1470	1490
21	1530	1490	1510	1540	1510	1530	1510	1500	1500	1500	1490	1500
22	1520	1510	1510	1540	1520	1530	1500	1500	1500	1500	1490	1500
23	1510	1440	1480	1540	1530	1540	1510	1500	1500	1500	1500	1500
24	1460	1420	1450	1550	1530	1540	1500	1490	1500	1500	1490	1500
25	1480	1430	1460	1550	1530	1540	1500	1480	1490	1500	1500	1500
26	1480	1440	1460	1550	1530	1540	1490	1480	1490	1500	1490	1500
27	1480	1450	1470	1550	1540	1550	1490	1470	1480	1510	1490	1500
28	1500	1450	1480	1550	1510	1540	1490	1470	1480	1510	1500	1500
29	1500	1460	1480	1550	1530	1550	1490	1460	1480	1520	1500	1510
30	1500	1450	1480	1550	1540	1550	1490	1480	1480	1520	1500	1510
31	1500	1480	1490	---	---	---	1490	1480	1480	1510	1240	1430
MONTH	1660	1420	1520	1580	1460	1520	2140	1460	1570	1520	1240	1490

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

SPECIFIC CONDUCTANCE VIA SATELLITE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1510	1500	1510	1530	1500	1520	1530	1260	1510	1480	1300	1400
2	1510	1500	1510	1520	1510	1520	1530	1510	1520	1330	1240	1280
3	1510	1510	1510	1530	1520	1520	1530	1530	1530	1260	1240	1250
4	1510	1510	1510	1530	1520	1520	1530	1440	1510	1350	1260	1290
5	1520	1500	1510	1540	1520	1520	1510	1490	1500	1370	1280	1300
6	1510	1490	1510	1530	1520	1530	1540	1470	1500	1340	1270	1290
7	1510	1500	1510	1540	1500	1520	1530	1000	1410	1340	1270	1290
8	1510	1500	1510	1540	1500	1520	1520	1460	1480	1400	1260	1320
9	1510	1490	1500	1520	1430	1450	1530	1510	1520	1400	1260	1320
10	1530	1490	1510	1490	1340	1420	1530	1500	1520	1380	1270	1310
11	1530	1500	1520	1350	1300	1320	1520	1510	1510	1390	1280	1330
12	1530	1500	1520	1500	1310	1380	1520	1500	1510	1390	1280	1330
13	1530	1510	1520	1490	1460	1480	1510	1480	1500	1550	1280	1410
14	1530	1520	1530	1500	1450	1480	1500	1500	1500	1380	1280	1320
15	1530	1520	1530	1500	1440	1470	1510	1500	1510	1380	1280	1330
16	1530	1510	1520	1500	1440	1480	1540	1510	1520	1430	1270	1340
17	1530	1520	1530	1500	1440	1480	1520	1490	1500	1510	1280	1380
18	1540	1520	1530	1480	1240	1390	1500	1480	1490	1540	1280	1380
19	1540	1420	1500	1490	1210	1370	1500	1440	1460	1370	1370	1370
20	1540	1520	1520	1410	1270	1370	1450	1430	1440	1380	1360	1370
21	1520	1460	1500	1400	1340	1370	1450	1400	1430	1370	1270	1360
22	1550	1480	1510	1360	1340	1350	---	---	e1450	1370	1300	1330
23	1550	1520	1540	1350	1230	1310	---	---	e1460	1370	1270	1340
24	1520	1500	1510	1440	1190	1260	---	---	e1490	1360	1270	1310
25	1530	1500	1520	1320	1160	1270	1460	1440	1440	1360	1280	1330
26	1530	1520	1520	1170	1160	1160	1480	1450	1470	1500	1340	1370
27	1530	1520	1520	1300	1160	1290	1520	1480	1500	1510	1340	1360
28	1530	1520	1520	1290	1150	1280	1520	1460	1490	1370	1250	1330
29	---	---	---	1400	1140	1270	1470	1450	1460	1340	1260	1300
30	---	---	---	1530	1270	1500	1500	1430	1460	1340	1240	1300
31	---	---	---	1540	1400	1500	---	---	---	1340	1260	1310
MONTH	1550	1420	1520	1540	1140	1410	1540	1000	1490	1550	1240	1330

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	1350	1280	1320	1340	1290	1310	1300	1270	1290	1310	1280	1300
2	1360	1340	1350	1330	1280	1310	1300	1280	1290	1310	1290	1300
3	1350	1280	1330	1330	1280	1300	1300	1280	1290	1300	1290	1300
4	1330	1270	1300	1320	1290	1300	1300	1280	1290	1310	1290	1300
5	1470	1280	1370	1330	1280	1300	1300	1280	1280	1310	1290	1300
6	1410	1260	1320	1320	1280	1300	1310	1280	1290	1310	1280	1300
7	1440	1260	1320	1310	1270	1290	1300	1280	1290	1310	1280	1290
8	1490	1400	1450	1320	1280	1290	1300	1280	1290	1290	1030	1230
9	1480	1460	1470	1330	1290	1300	1300	1290	1290	1320	1280	1290
10	1470	1370	1440	1350	1260	1300	1310	1290	1290	1340	1290	1320
11	1450	1330	1400	1320	1280	1300	1300	1290	1290	1350	1300	1320
12	1420	1360	1390	1320	1280	1290	1310	1290	1300	1340	1290	1320
13	---	---	e1100	1310	1280	1290	1310	1290	1300	1380	1330	1370
14	---	---	e1130	1310	1280	1290	1340	1180	1280	1410	1310	1370
15	---	---	e1160	1320	1280	1290	1330	1320	1330	1400	1350	1360
16	---	---	e1190	1330	1280	1290	1340	1320	1330	1410	1340	1370
17	---	---	e1210	1300	1250	1280	1350	1320	1330	1400	1340	1360
18	---	---	e1240	1310	1280	1290	1340	1310	1330	1340	1320	1330
19	---	---	e1270	1310	1290	1300	1330	1310	1320	1350	1300	1330
20	---	---	e1290	1320	1290	1300	1330	1310	1320	1350	1300	1330
21	1350	1300	1330	1320	1300	1300	1330	1300	1310	1350	1300	1320
22	1360	1310	1340	1300	1290	1300	1320	1300	1310	1360	1290	1320
23	1360	1350	1360	1300	1290	1300	1320	1290	1300	1520	1300	1380
24	1360	1290	1330	1300	1290	1290	1310	1280	1290	1540	1410	1470
25	1350	1280	1310	1310	1280	1290	1290	1240	1280	1510	1420	1460
26	1380	1290	1320	1300	1280	1290	1290	1270	1280	1480	1330	1420
27	1350	1290	1320	1300	1280	1290	1290	779	1190	1340	1290	1320
28	1340	1290	1320	1290	1280	1280	1310	1280	1300	1330	1280	1300
29	1340	1290	1320	1300	1280	1280	1310	1300	1310	1300	1280	1290
30	1340	1290	1310	1310	1280	1290	1310	1300	1300	1330	1280	1300
31	---	---	---	1300	1280	1290	1320	1300	1310	---	---	---
MONTH	1490	1260	1310	1350	1250	1290	1350	779	1300	1540	1030	1330
YEAR	2140	779	1420									

e Estimated

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07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER TEMPERATURE VIA SATELLITE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	25.8	21.1	22.9	20.4	18.8	19.2	15.8	12.9	14.2	10.1	9.5	9.8
2	25.0	21.7	23.3	21.4	19.1	19.7	15.8	12.5	14.1	9.5	9.0	9.4
3	25.1	22.0	23.3	21.6	18.6	19.8	14.6	13.7	14.0	9.5	8.3	9.0
4	25.5	22.5	23.5	20.5	18.7	19.5	15.6	13.9	14.5	9.0	8.2	8.8
5	23.4	22.3	23.0	21.3	18.1	19.2	15.4	13.8	14.4	9.0	8.1	8.6
6	24.0	20.5	22.1	21.0	17.7	19.1	15.4	13.6	14.2	10.5	7.3	8.4
7	24.1	19.9	21.6	20.5	17.7	18.9	15.9	13.7	14.5	9.6	7.0	8.3
8	22.9	20.0	21.4	21.0	18.0	19.2	14.2	12.2	13.1	9.8	7.9	8.6
9	22.5	21.3	22.0	19.0	17.6	18.2	14.5	11.9	12.9	10.1	8.4	8.8
10	23.0	21.9	22.3	20.2	17.3	18.6	14.4	11.5	13.3	9.5	8.5	8.8
11	22.2	20.9	21.7	20.1	17.3	18.6	13.4	12.4	13.1	10.4	8.2	8.8
12	23.9	20.6	21.7	19.3	18.1	18.6	13.6	12.8	13.2	10.5	7.6	8.8
13	21.7	20.1	21.1	19.6	18.2	18.7	13.1	12.2	12.8	10.3	7.1	8.6
14	23.9	19.4	21.1	19.8	18.0	18.6	13.6	11.6	12.7	10.1	7.7	8.6
15	23.2	19.5	20.9	19.7	17.6	18.5	12.5	11.7	12.0	9.6	7.8	8.8
16	22.4	19.0	20.7	19.0	18.0	18.4	12.6	11.7	12.2	11.0	9.0	9.5
17	21.3	19.0	20.4	19.6	18.0	18.6	13.9	11.5	12.5	9.4	9.0	9.2
18	22.3	18.9	20.4	19.4	17.5	18.4	13.7	10.5	12.0	9.2	8.8	9.0
19	21.0	19.7	20.6	18.2	17.1	17.7	12.5	10.6	12.1	10.8	8.3	9.0
20	23.0	19.9	21.2	18.6	15.6	17.1	12.4	12.3	12.3	10.3	7.9	8.7
21	23.1	19.4	21.0	18.4	15.4	16.9	12.3	12.2	12.2	10.1	8.2	8.9
22	20.8	19.8	20.5	18.6	15.6	17.1	12.7	12.0	12.2	9.6	8.5	8.8
23	21.9	20.4	20.7	18.6	16.7	17.5	12.0	11.2	11.8	10.4	8.8	9.1
24	22.4	20.1	20.6	17.4	15.1	16.1	11.7	10.7	11.4	9.7	8.8	9.1
25	22.0	18.2	19.8	18.1	15.1	16.3	11.7	10.7	11.3	10.9	8.6	9.2
26	21.4	18.4	20.0	18.1	15.7	16.7	11.4	10.2	11.0	10.9	8.0	9.2
27	21.3	18.0	19.5	16.1	14.4	15.1	11.6	10.2	11.0	10.7	7.9	9.3
28	21.0	17.6	19.0	15.5	12.7	14.0	11.6	10.4	11.0	11.6	8.8	9.6
29	20.2	17.6	18.8	14.5	12.5	13.4	11.1	9.5	10.7	11.1	9.1	9.9
30	21.2	17.6	19.0	15.4	12.7	14.0	10.7	10.0	10.4	9.3	8.9	9.1
31	19.4	17.8	18.9	---	---	---	10.7	9.7	10.2	9.6	8.4	9.0
MONTH	25.8	17.6	21.1	21.6	12.5	17.7	15.9	9.5	12.5	11.6	7.0	9.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10.6	8.0	9.1	8.0	7.4	7.6	14.1	10.8	11.6	17.7	16.8	17.3
2	9.4	8.2	8.9	7.7	5.0	6.5	13.0	10.8	11.4	19.8	17.7	18.7
3	10.0	8.8	9.2	7.0	5.6	6.7	11.5	9.9	11.1	19.6	18.7	19.2
4	10.0	8.7	9.2	7.1	6.7	6.8	13.0	11.0	11.6	19.2	16.2	17.8
5	9.0	8.6	8.9	8.8	6.4	7.2	12.0	10.7	11.6	18.2	15.9	17.5
6	9.1	8.6	8.8	9.7	6.5	7.5	11.8	11.5	11.6	18.0	17.0	17.7
7	10.0	8.6	9.0	9.7	6.8	7.7	11.5	11.2	11.3	18.3	16.8	17.8
8	10.7	8.3	9.0	8.9	7.2	7.8	14.2	11.3	12.1	18.5	17.3	18.0
9	11.6	8.3	9.4	8.2	5.6	7.2	16.0	11.4	13.6	20.3	16.7	18.6
10	9.5	7.6	8.4	10.0	6.3	7.9	15.0	12.9	13.5	20.0	17.2	18.8
11	11.1	6.9	8.8	7.7	6.9	7.2	13.6	13.2	13.3	19.2	17.0	18.3
12	11.2	8.0	9.2	10.3	6.8	8.2	13.6	13.2	13.4	19.6	17.1	18.2
13	11.2	7.9	9.1	12.2	8.1	9.4	14.7	13.6	14.1	20.6	15.4	18.3
14	10.4	7.9	8.9	12.6	8.9	9.9	14.2	13.8	14.0	20.7	16.6	18.7
15	10.6	8.5	9.1	10.9	9.3	9.8	14.0	13.4	13.7	20.0	16.9	18.7
16	12.5	7.8	9.6	11.6	8.3	9.8	13.7	13.2	13.4	20.0	17.4	18.9
17	11.8	7.9	9.5	12.0	9.5	10.5	14.2	13.4	13.8	20.9	17.1	18.9
18	10.0	8.2	9.1	10.7	9.4	10.1	14.6	14.0	14.4	20.8	17.0	18.9
19	12.1	9.0	10.1	10.6	9.4	9.9	15.2	14.2	14.9	20.3	15.5	17.9
20	11.9	8.5	9.7	11.9	9.8	10.5	15.6	15.1	15.3	20.4	15.8	18.0
21	10.2	8.1	8.7	13.8	8.8	10.7	16.6	15.1	15.7	20.3	16.0	18.3
22	11.0	7.7	8.7	12.8	8.0	9.8	---	---	---	21.1	17.7	19.2
23	10.8	7.4	8.7	13.3	9.2	11.0	---	---	---	19.8	17.1	18.5
24	10.9	7.8	8.8	11.4	10.1	10.5	---	---	---	20.2	17.9	19.0
25	10.2	8.1	8.6	10.5	10.2	10.4	18.0	17.2	17.7	21.2	17.9	19.4
26	8.3	6.9	7.7	10.5	10.0	10.2	17.5	16.0	16.6	21.6	17.1	18.9
27	9.7	6.7	7.9	10.3	10.0	10.2	16.8	15.6	16.0	19.0	17.4	18.2
28	9.4	6.7	7.8	11.3	9.8	10.3	17.6	15.6	17.0	20.9	17.0	18.5
29	---	---	---	14.4	10.4	11.4	17.7	17.2	17.5	21.6	18.2	19.6
30	---	---	---	11.1	10.2	10.5	17.8	16.5	17.3	21.5	18.2	19.9
31	---	---	---	14.0	10.2	11.4	---	---	---	21.9	18.2	20.0
MONTH	12.5	6.7	8.9	14.4	5.0	9.2	18.0	9.9	14.0	21.9	15.4	18.6

07331600 RED RIVER AT DENISON DAM NEAR DENISON, TX--Continued

WATER TEMPERATURE VIA SATELLITE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	21.5	17.9	19.6	22.4	19.7	20.9	23.2	20.3	21.5	24.6	20.6	22.4
2	22.1	17.2	19.3	22.3	19.6	20.7	23.5	20.8	21.8	25.0	20.2	23.0
3	22.3	17.8	19.4	22.3	19.7	20.8	23.5	20.6	21.7	25.2	21.2	23.8
4	21.5	18.7	19.7	22.2	20.1	21.0	23.2	20.8	21.7	25.2	21.5	23.9
5	21.0	18.4	19.7	22.0	20.2	21.1	23.6	20.7	21.8	25.3	21.4	23.8
6	22.3	18.6	20.0	22.7	19.6	21.1	23.9	20.4	22.1	25.5	21.8	23.5
7	22.3	18.8	20.1	22.7	20.3	21.7	24.1	20.4	22.0	24.2	20.7	22.5
8	21.0	18.8	20.0	22.7	20.1	21.6	23.6	21.2	22.3	22.1	20.8	21.3
9	22.1	18.5	20.2	22.1	20.1	21.1	23.9	21.0	22.3	23.6	20.5	21.9
10	22.3	19.1	20.1	22.8	20.0	21.2	23.4	21.0	22.0	25.5	20.6	23.5
11	22.6	19.4	20.3	22.8	19.8	21.2	23.4	21.1	22.2	25.8	21.9	24.2
12	22.6	19.4	20.4	22.7	20.4	21.4	23.7	20.9	22.2	25.5	21.4	23.8
13	---	---	---	21.8	20.5	21.2	23.7	21.3	22.3	24.5	19.8	22.1
14	---	---	---	22.7	20.5	21.2	24.9	20.8	22.7	23.2	20.0	21.8
15	---	---	---	22.6	19.9	20.8	24.7	23.5	24.0	21.8	19.0	20.3
16	---	---	---	22.5	20.3	21.2	24.1	23.7	23.9	22.2	18.2	20.1
17	---	---	---	22.8	20.4	21.5	24.1	21.7	23.0	25.5	18.6	21.9
18	---	---	---	22.0	19.5	20.6	24.2	21.1	22.6	23.9	21.5	22.9
19	---	---	---	21.7	19.6	20.9	24.5	21.1	22.7	24.6	21.1	23.0
20	---	---	---	21.5	19.5	20.7	24.0	20.8	22.3	24.1	20.1	22.4
21	22.8	19.2	20.5	21.4	19.4	20.6	22.7	20.9	21.9	24.5	20.0	22.5
22	22.8	19.1	20.7	21.9	19.7	21.0	23.4	20.9	22.2	24.3	20.1	22.5
23	23.5	18.4	20.5	22.2	20.2	21.6	23.6	21.1	22.2	24.5	19.3	21.5
24	22.3	18.7	20.5	23.1	20.1	21.8	23.5	21.0	22.2	20.1	16.7	18.3
25	22.9	19.7	21.2	23.1	20.5	22.0	22.7	20.2	21.3	20.0	16.2	18.1
26	23.7	19.6	21.1	22.5	19.9	21.7	24.9	20.2	22.1	24.3	17.1	19.7
27	22.9	19.4	21.0	22.4	20.4	21.7	25.6	21.3	23.3	24.7	20.8	23.0
28	23.0	19.6	21.2	22.7	20.7	21.7	24.8	14.2	21.2	24.7	20.9	22.7
29	22.6	19.6	20.9	23.8	21.1	22.5	25.1	13.9	22.4	24.2	20.6	22.3
30	22.1	19.7	20.7	23.6	20.4	22.1	25.0	21.0	23.4	24.4	20.7	22.5
31	---	---	---	23.0	20.8	21.9	24.3	21.4	23.0	---	---	---
MONTH	---	---	---	23.8	19.4	21.3	25.6	13.9	22.3	25.8	16.2	22.2

RED RIVER COMPACT

ARKANSAS – LOUISIANA – OKLAHOMA – TEXAS

MAY 12, 1978

PREAMBLE

The states of Arkansas, Louisiana, Oklahoma, and Texas, pursuant to the acts of their respective Governors or legislatures, or both, being moved by considerations of interstate comity, have resolved to compact with respect to the water of the Red River and its tributaries. By Act of Congress, Public Law No. 346 (84th Congress, First Session), the consent of the United States has been granted for said states to negotiate and enter into a compact providing for an equitable apportionment of such water; and pursuant to that Act the President has designated the representative of the United States.

Further, the consent of Congress has been given for two or more states to negotiate and enter into agreements relating to water pollution control by the provisions of the Federal Water Pollution Control Act (P. L. 92-500, 33 U.S.C. § 1251 et seq.).

The Signatory States acting through their duly authorized Compact Commissioners, after several years of negotiations, have agreed to an equitable apportionment of the water of the Red River and its tributaries and do hereby submit and recommend that this compact be adopted by the respective legislatures and approved by Congress as hereinafter set forth:

ARTICLE I

PURPOSES

SECTION 1.01. The principal purposes of this Compact are:

(a) To promote interstate comity and remove causes of controversy between each of the affected states by governing the use , control and distribution of the interstate water of the Red River and its tributaries;

(b) To provide an equitable apportionment among the Signatory States of the water of the Red River and its tributaries.

(c) To promote an active program for the control and alleviation of natural deterioration and pollution of the water of the Red River Basin and to provide for enforcement of the laws related thereto;

(d) To provide the means for an active program for the conservation of water, protection of lives and property from floods, improvement of water quality, development of navigation and regulation of flows in the Red River basin; and

(e) To provide a basis for state or joint state planning and action by ascertaining and identifying each state's share in the interstate water of the Red River Basin and the apportionment thereof.

ARTICLE II

GENERAL PROVISIONS

SECTION 2.01. Each Signatory State may use the water allocated to it by this Compact in any manner deemed beneficial by that state. Each state may freely administer water rights and uses in accordance with the laws of that state, but such uses shall be subject to the availability of water in accordance with the apportionments made by this Compact.

Section 2.02. The use of water by the United States in connection with any individual Federal project shall be in accordance with the Act of Congress authorizing the project and the water shall be charged to the state or states receiving the benefit therefrom.

Section 2.03. Any Signatory State using the channel of Red River or its tributaries to convey stored water shall be subject to an appropriate reduction in the amount which may be withdrawn at the point of removal to account for transmission losses.

SECTION 2.04. The failure of any state to use any portion of the water allocated to it shall not constitute relinquishment or forfeiture of the right to such use.

SECTION 2.05. Each Signatory State shall have the right to:

(a) Construct conservation storage capacity for the impoundment of water allocated by this Compact;

(b) Replace within the same area any storage capacity recognized or authorized by this Compact made unusable by any cause, including losses due to sediment storage;

(c) Construct reservoir storage capacity for the purposes of flood and sediment control as well as storage of water which is either imported or is to be exported if such storage does not adversely affect the delivery of water apportioned to any other Signatory State; and

(d) Use the bed and banks of the Red River and its tributaries to convey stored water imported or exported water, and water apportioned according to this Compact.

SECTION 2.06. Signatory States may cooperate to obtain construction of facilities of joint benefit to such states.

SECTION 2.07. Nothing in this Compact shall be deemed to impair or affect the powers, rights, or obligations of the United States, or those claiming under its authority, in, over and to water of the Red River Basin.

SECTION 2.08. Nothing in this Compact shall be construed to include within the water apportioned by this Compact any water consumed in each state by livestock or for domestic purposes; provided, however, the storage of such water is in accordance with the laws of the respective states but any such impoundment shall not exceed 200 acre-feet, or such smaller quantity as may be provided for by the laws of each state.

SECTION 2.09. In the event any state shall import water into the Red River Basin from any other river basin, the Signatory State making the importation shall have the use of such imported water.

SECTION 2.10. Nothing in this Compact shall be deemed to:

(a) Interfere with or impair the right or power of any Signatory State to regulate within its boundaries the appropriation, use, and control of water, or quality of water, not inconsistent with its obligations under this Compact.

(b) Repeal or prevent the enactment of any legislation or the enforcement of any requirement by any Signatory State imposing any additional conditions or restrictions to further lessen or prevent the pollution or natural deterioration of water within its jurisdiction; provided nothing contained in this paragraph shall alter any provision of this Compact dealing with the apportionment of water or the rights thereto; or

(c) Waive any state's immunity under the Eleventh Amendment of the Constitution of the United States, or as constituting the consent of any state to be sued by its own citizens.

SECTION 2.11. Accounting for apportionment purposes on interstate streams shall not be mandatory under the terms of the Compact until one or more affected states deem the accounting necessary.

SECTION 2.12. For the purposes of apportionment of the water among the Signatory States, the Red River is hereby divided into the following major subdivisions:

(a) Reach I - the Red River and tributaries from the New Mexico-Texas State boundary to Denison Dam;

(b) Reach II - the Red River from Denison Dam to the point where it crosses the Arkansas-Louisiana state boundary and all tributaries which contribute to the flow of the River within this reach;

(c) Reach III - the tributaries west of the Red River, which cross the Texas-Louisiana state boundary, the Arkansas-Louisiana state boundary, and those, which cross both the Texas-Arkansas state boundary and the Arkansas-Louisiana state boundary.

(d) Reach IV - the tributaries east of the Red River in Arkansas which cross the Arkansas -Louisiana state boundary; and

(e) Reach V - that portion of the Red River and tributaries in Louisiana not included in Reach III or in Reach IV.

SECTION 2.13. If any part or application of this Compact shall be declared invalid by a court of competent jurisdiction, all other severable provisions and applications of this Compact shall remain in full force and effect.

SECTION 2.14. Subject to he availability of water in accordance with this Compact, nothing in this Compact shall be held or construed to alter, impair, or increase, validate, or prejudice any existing water right or right of water use that is legally recognized on the effective date of this Compact by either statutes or courts of the Signatory State within which it is located.

ARTICLE III

DEFINITIONS

SECTION 3.01. In this Compact:

(a) The States of Arkansas, Louisiana, Oklahoma, and Texas are referred to as "Arkansas," "Louisiana," "Oklahoma," and "Texas," respectively, or individually as "State" or "Signatory State," or collectively as "States" or "Signatory States."

(b) The term "Red River" means the stream below the crossing of the Texas-Oklahoma state boundary at longitude 100 degrees west.

(c) The term "Red River Basin" means all of the natural drainage area of the Red River and its tributaries east of the New Mexico-Texas state boundary and above its junction with Atchafalaya and Old Rivers.

(d) The term "water of the Red River Basin" means the water originating in any part of the Red River Basin and flowing to or in the Red River or any of its tributaries.

(e) The term "tributary" means any stream which contributes to the flow of the Red River.

(f) The term "interstate tributary" means a tributary of the Red River, the drainage area of which includes portions of two or more Signatory States.

(g) The term "intrastate tributary" means a tributary of the Red River, the drainage area of which is entirely within a single Signatory State.

(h) The term "Commission" means the agency created by Article IX of this Compact for the administration thereof.

(i) The term "pollution" means the alteration of the physical, chemical, or biological characteristics of water by the acts or instrumentalities of man which create or are likely to result in a material and adverse effect upon human beings, domestic or wild animals, fish and other aquatic life, or adversely affect any other lawful use of such water; provided, that for the purposes of this Compact, "pollution" shall not mean or include "natural deterioration."

(j) The term "natural deterioration" means the material reduction in the quality of water resulting from the leaching of solubles from the soils and rocks through or over which the water flows naturally.

(k) The term "designated water" means water released from storage, paid for by non-Federal interests, for delivery to a specific point of use or diversion.

(l) The term "undesignated water" means all water released from storage other than "designated water."

(m) The term "conservation storage capacity" means that portion of the active capacity of reservoirs available for the storage of water for subsequent beneficial use, and it excludes any portion of the capacity of reservoirs allocated solely to flood control and sediment control, or either of them.

(n) The term "runoff" means both the portion of precipitation, which runs off the surface of a drainage area and that portion of the precipitation that enters the streams after passing through the portions of the earth.

ARTICLE IV

APPORTIONMENT OF WATER - REACH I

OKLAHOMA - TEXAS

Subdivision of Reach I and apportionment of water therein.

Reach I of the Red River is divided into topographical subbasins, with the water therein allocated as follows.

SECTION 4.01. Subbasin 1 - Interstate streams - Texas.

(a) This includes the Texas portion of Buck Creek, Sand (Lebos) Creek, Salt Fork Red River, Elm Creek, North Fork Red River, Sweetwater Creek, and Washita River, together with all their tributaries in Texas which lie west of the 100th Meridian.

(b) The annual flow within this subbasin is hereby apportioned sixty (60) percent to Texas and forty (40) percent to Oklahoma.

SECTION 4.02. Subbasin 2 - Intrastate and Interstate streams - Oklahoma.

(a) This subbasin is composed of all tributaries of the Red River in Oklahoma and portions thereof upstream to the Texas-Oklahoma state boundary at longitude 100 degrees west, beginning from, Denison Dam and upstream to and including Buck Creek.

(b) The State of Oklahoma shall have free and unrestricted use of the water of this subbasin.

SECTION 4.03. Subbasin 3 - Intrastate streams - Texas.

(a) This includes the tributaries of the Red River in Texas, beginning from Denison Dam and upstream to and including Prairie Dog Town Fork Red River.

(b) The State of Texas shall have free and unrestricted use of the water in this subbasin.

SECTION 4.04. Subbasin 4 - Mainstem of the Red River and Lake Texoma.

(a) This subbasin includes all of Lake Texoma and the Red River beginning at Denison Dam and continuing upstream to the Texas-Oklahoma state boundary at longitude 100 degrees west.

(b) The storage of Lake Texoma and flow from the mainstem of the Red River into Lake Texoma is apportioned as follows:

(1) Oklahoma 200,000 acre-feet and Texas 200,000 acre-feet, which quantities shall include existing allocations and uses; and

(2) Additional quantities in a ratio of fifty (50) percent to Oklahoma and fifty (50) percent to Texas.

SECTION 4.05. Special Provisions.

(a) Texas and Oklahoma may construct, jointly or in cooperation with the United States, storage or other facilities for the conservation and use of water; provided that any facilities constructed on the Red River boundary between the two states shall not be inconsistent with the Federal legislation authorizing Denison Dam and Reservoir project.

(b) Texas shall not accept for filing, or grant a permit, for the construction of a dam to impound water solely for irrigation, flood control, soil conservation, mining and recovery of minerals, hydroelectric power, navigation, recreation and pleasure, or for any other purpose other than for domestic, municipal, and industrial water supply, on the mainstem of the North Fork Red River or any of its tributaries within Texas above Lugert-Altus Reservoir until the date that imported water, sufficient to meet the municipal and irrigation needs of Western Oklahoma is provided, or until January 1, 2000, which ever occurs first.

ARTICLE V

APPORTIONMENT OF WATER - REACH II

ARKANSAS OKLAHOMA TEXAS AND LOUISIANA

Subdivision of Reach II and allocation of water therein.

Reach II of the Red River is divided into topographic subbasins, and the water therein is allocated as follows:

SECTION 5.01. Subbasin 1 - Intrastate streams - Oklahoma.

(a) This subbasin includes those streams and their tributaries above existing, authorized or proposed last downstream major damsites, wholly in Oklahoma and flowing into Red River below Denison Dam and above the Oklahoma-Arkansas state boundary. These streams and their tributaries with existing, authorized or proposed last downstream major damsites are as follows:

Stream	Site	Ac-Ft	Location	
			Latitude	Longitude
Island-Bayou	Albany	85,200	33°51.5'N	96°11.4'W
Blue River	Durant	147,000	33°55.5'N	96°04.2'W
Boggy River	Boswell	1,243,800	34°01.6'N	95°45.0'W
Kiamichi River	Hugo	240,700	34°01.0'N	95°22.6'W

(b) Oklahoma is apportioned the water of this subbasin and shall have unrestricted use thereof.

SECTION 5.02. Subbasin 2 - Intrastate streams - Texas.

(a) This subbasin includes those streams and their tributaries above existing authorized or proposed last downstream major damsites, wholly in Texas and flowing into Red River below Denison Dam and above the Texas-Arkansas state boundary.

Stream	Site	Ac-Ft	Location Latitude	Longitude
Shawnee Creek	Randall Lake	5,400	33°48.1'N	96°34.8'W
Brushy Creek	Valley Lake	15,000	33°38.7'N	96°21.5'W
Bois d'Arc Creek	New Bonham Reservoir	130,600	33°42.9'N	95°58.2'W
Coffee Mill Creek	Coffee Mill Lake	8,000	33°44.1'N	95°58.0'W
Sandy Creek	Lake Crockett	3,900	33°44.5'N	95°55.5'W
Sanders Creek	Pat Mayse	124,500	33°51.2'N	95°32.9'W
Pine Creek	Lake Crook	11,011	33°43.7'N	95°34.0'W
Big Pine Creek	Big Pine Lake	138,600	33°52.0'N	95°11.7'W
Pecan Bayou	Pecan Bayou	625,000	33°41.1'N	94°58.7'W
Mud Creek	Liberty Hill	97,700	33°33.0'N	94°29.3'W
Mud Creek	KVW Ranch Lakes (3)	3,440	33°34.8'N	94°27.3'W

(b) Texas is apportioned the water of this subbasin and shall have unrestricted use thereof.

SECTION 5.03. Subbasin 3 - Interstate streams - Oklahoma and Arkansas

(a) This subbasin includes Little River and its tributaries above Millwood Dam.

(b) The States of Oklahoma and Arkansas shall have free and unrestricted use of the water of this subbasin within their respective states, subject, however, to the limitation that Oklahoma shall allow a quantity of water equal to 40 percent of the total runoff originating below the following existing, authorized or proposed last downstream major damsites in Oklahoma to flow into Arkansas.

Stream	Site	Ac-Ft	Location Latitude	Longitude
Little River	Pine Creek	70,500	34°06.8'N	95°04.9'W
Glover Creek	Lukfata	258,600	34°08.5'N	94°55.4'W
Mountain Fork River	Broken Bow	470,100	34°08.9'N	94°41.2'W

(c) Accounting will be on an annual basis unless otherwise deemed necessary by the State of Arkansas and Oklahoma.

SECTION 5.04. Subbasin 4 - Interstate streams - Texas and Arkansas.

(a) This subbasin shall consist of those streams and their tributaries above existing authorized or proposed last downstream major damsites, originating in Texas and crossing the Texas-Arkansas state boundary before flowing into the Red River in Arkansas. These streams and their tributaries with existing, authorized or proposed last downstream major damsites are as follows:

Stream	Site	Ac-Ft	Location	
			Latitude	Longitude
McKinney Bayou Trib.	Bringle Lake	3,052	33°30.6'N	94°06.2'W
Barkman Creek	Barkman Reservoir	15,900	33°29.7'N	94°10.3'W
Mountain Fork River	Texarkana	386,900	33°18.3'N	94°09.6'W

(b) The State of Texas shall have the free and unrestricted use of the water ofthis subbasin.

SECTION 5.05. Subbasin 5 - Mainstem of the Red River and tributaries.

(a) This subbasin includes that portion of the Red River, together with its tributaries, from Denison Dam down to the Arkansas-Louisiana state boundary, excluding all tributaries included in the other four subbasins of Reach II.

(b) Water within this subbasin is allocated as follows:

(1) The Signatory States shall have equal rights to the use of runoff originating in subbasin 5 and undesignated water flowing into subbasin 5, so long as the flow of the Red River at the Arkansas-Louisiana state boundary is 3,000 cubic fee per second or more, provided no state is entitled to more than 25 percent of the water in excess of 3,000 feet per second.

(2) Whenever the flow of the Red River at the Arkansas-Louisiana state boundary is less than 3,000 cubic feet per second, but more than 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow to flow into the Red River for delivery to the State of Louisiana a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 and 40 percent of undesignated water flowing into subbasin 5; provided, however, that this

requirement shall not be interpreted to require any state to release stored water.

(3) Whenever the flow of the Red River at the Arkansas - Louisiana state boundary falls below 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow a quantity of water equal to all the weekly runoff originating in subbasin 5 and all undesignated water flowing into subbasin 5 within their respective states to flow into the Red River as required to maintain a 1,000 cubic foot per second flow at the Arkansas-Louisiana state boundary.

(c) Whenever the flow at Index, Arkansas, is less than 526 c.f.s. the states of Oklahoma and Texas shall each allow a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 within their respective states to flow into the Red River; provided however, this provision shall be invoked only at the request of Arkansas, only after Arkansas has ceased all diversion from the Red River itself in Arkansas above Index, and only if the provisions of Sub-sections 5.05 (b) (2) and (3) have not caused a limitation of diversions in subbasin 5.

(d) No state guarantees to maintain a minimum low flow to a downstream state.

SECTION 5.06. Special Provisions

(a) Reservoirs within the limits of Reach II, subbasin 5, with a conservation storage capacity of 1,000 acre feet or less in existence or authorized on the date of the Compact pursuant to the rights and privileges granted by a Signatory State authorizing such reservoirs, shall be exempt from the provisions of Section 5.05; provided, if any right to store water in, or use water from, an existing exempt reservoir expires or is cancelled after the effective date of the Compact the exemption for such rights provided by this section shall be lost.

(b) A Signatory State may authorize a change in the purpose or place of use of water from a reservoir exempted by subparagraph (a) of this section without losing that exemption, if the quantity of authorized use and storage is not increased.

(c) Additionally, exemptions from the provisions of Section 5.05 shall not apply to direct diversions from Red River to off-channel reservoirs or lands.

ARTICLE VI

APPORTIONMENT OF WATER - REACH III

ARKANSAS, LOUISIANA, AND TEXAS

Subdivision of Reach III and allocation of water therein.

Reach III of the Red River is divided into topographic subbasins, and the water therein allocated, as follows:

SECTION 6.01. Subbasin 1 - Interstate streams - Arkansas and Texas.

(a) This subbasin includes the Texas portion of those streams crossing the Arkansas-Texas state boundary one or more times and flowing through Arkansas into Cypress Creek-Twelve Mile Bayou watershed in Louisiana.

(b) Texas is apportioned sixty (60) percent of the runoff of this subbasin and shall have unrestricted use thereof; Arkansas is entitled to forty (40) percent of the runoff of this subbasin.

SECTION 6.02. Subbasin 2 - Interstate streams - Arkansas and Louisiana.

(a) This subbasin includes the Arkansas portion of those streams flowing from Subbasin 1 into Arkansas, as well as other streams in Arkansas, which cross the Arkansas-Louisiana state boundary one or more times and flow into Cypress Creek-Twelve Mile Bayou watershed in Louisiana.

(b) Arkansas is apportioned sixty (60) percent of the runoff of this subbasin and shall have unrestricted use thereof; Louisiana is entitled to forty (40) percent of the runoff of this subbasin.

SECTION 6.03. Subbasin 3 - Interstate streams - Texas and Louisiana.

(a) This subbasin includes the Texas portion of all tributaries crossing the Texas-Louisiana state boundary one or more times and flowing into Caddo Lake, Cypress Creek-Twelve Mile Bayou or Cross Lake, as well as the Louisiana portion of such tributaries.

(b) Texas and Louisiana within their respective boundaries shall each have the unrestricted use of the water of this subbasin subject to the following allocation:

(1) Texas shall have the unrestricted right to all water above Marshall, Lake O' the Pines, and Black Cypress damsites; however, Texas shall not cause runoff to be

depleted to a quantity less than that which would have occurred with the full operation of Franklin County, Titus County, Ellison Creek, Johnson Creek, Lake O' the Pines, Marshall, and Black Cypress Reservoirs constructed, and those other impoundments and diversions existing on the effective date of this Compact. Any depletions of runoff in excess of the depletions described above shall be charged against Texas' apportionment of the water in Caddo Reservoir.

(2) Texas and Louisiana shall each have the unrestricted right to use fifty (50) percent of the conservation storage capacity in the present Caddo Lake for the impoundment of water for state use, subject to the provision that supplies for existing uses of water from Caddo Lake, on date of Compact, are not reduced.

(3) Texas and Louisiana shall each have the unrestricted right to fifty (50) percent of the conservation storage capacity of any future enlargement of Caddo Lake, provided, the two states may negotiate for the release of each state's share of the storage space on terms mutually agreed upon by the two states after the effective date of this Compact.

(4) Inflow to Caddo Lake from its drainage area downstream from Marshall, Lake O' the Pines, and Black Cypress damsites and downstream from other last downstream dams in existence on the date of the signing of the Compact document by the Compact Commissioners, will be allowed to continue flowing into Caddo Lake except that any manmade depletions to this inflow by Texas will be subtracted from the Texas share of the water in Caddo Lake.

(c) In regard to the water of interstate streams which do not contribute to the inflow to Cross Lake or Caddo Lake, Texas shall have the unrestricted right to divert and use this water on the basis of a division of runoff above the state boundary of sixty (60) percent to Texas and forty (40) percent to Louisiana.

(d) Texas and Louisiana will not construct improvements on the Cross Lake watershed in either state that will affect the yield of Cross Lake; provided, however, this subsection shall be subject to the provisions of Section 2.08.

SECTION 6.04. Subbasin 4 - Intrastate streams - Louisiana.

(a) This subbasin includes that area of Louisiana in Reach III not included within any other subbasin.

(b) Louisiana shall have free and unrestricted use of the water of this subbasin.

ARTICLE VII

APPORTIONMENT OF WATER - REACH IV

ARKANSAS AND LOUISIANA

Subdivision of Reach IV and allocation of water therein.

Reach IV of the Red River is divided into topographic subbasins, and the water therein allocated as follows:

SECTION 7.01. Subbasin 1 - Intrastate streams - Arkansas.

(a) This subbasin includes those streams and their tributaries above last downstream major damsites originating in Arkansas and crossing the Arkansas-Louisiana state boundary before flowing into the Red River in Louisiana. Those major last downstream damsites are as follows:

Stream	Site	Ac-Ft	Location Latitude	Location Longitude
Ouachita River	Lake Catherine	19,000	34°26.6'N	93°01.6'W
Caddo River	DeGray Lake	1,377,000	34°13.2'N	93°06.6'W
Little Missouri River	Lake Greeson	600,000	34°08.9'N	93°42.9'W
Alum Fork, Saline "	Lake Winona	63,264	34°47.8'N	92°51.0'W

(b) Arkansas is apportioned the waters of this subbasin and shall have unrestricted use thereof.

SECTION 7.02. Subbasin 2 - Interstate Streams - Arkansas and Louisiana.

(a) This subbasin shall consist of Reach IV less subbasin 1 as defined in Section 7.01 (a) above.

(b) The State of Arkansas shall have free and unrestricted use of the water of this reach subject to the limitation that Arkansas shall allow a quantity of water equal to forty (40) percent of the weekly runoff originating below or flowing from the last downstream major dam site to flow into Louisiana. Where there are no designated last downstream damsites, Arkansas shall allow a quantity of water equal to forty (40) percent of the total weekly runoff originating above the state boundary to flow into Louisiana. Use of water in this subbasin is subject to low flow provisions of subparagraph 7.02(b).

SECTION 7.03. Special Provisions

(a) Arkansas may use the beds and banks of segments of Reach IV for the purpose of conveying its share of water to designated downstream divisions.

(b) The State of Arkansas does not guarantee to maintain a minimum low flow for Louisiana in Reach IV. However, on the following streams when the use of water in Arkansas reduces the flow at the Arkansas-Louisiana state boundary to the following amounts:

(1) Ouachita - 780 cfs

(2) Bayou Bartholomew - 80 cfs

(3) Boeuf River - 40 cfs

(4) Bayou Macon - 40 cfs

The State of Arkansas pledges to take affirmative steps to regulate the diversions of runoff originating or flowing into Reach IV in such a manner as to permit an equitable apportionment of the runoff as set out herein to flow into the State of Louisiana. In its control and regulation of the water of Reach IV and adjudication or order rendered by the State of Arkansas or any of its instrumentalities or agencies affecting the terms of this Compact shall not be effective against the State of Louisiana nor any of its citizens or inhabitants until approved by the Commission.

ARTICLE VIII

APPORTIONMENT OF WATER - REACH V

Section 8.01. Reach V of the Red River consists of the mainstem Red River and all its tributaries lying wholly within the State of Louisiana. The State of Louisiana shall have free and unrestricted use of the water of this subbasin.

ARTICLE IX

ADMINISTRATION OF THE COMPACT

SECTION 9.01. There is hereby created an interstate administrative agency to be known as the "Red River Compact Commission," hereinafter called the "Commission." The Commission shall be composed of two representatives from each Signatory State who shall be designated or appointed in accordance with the laws of each state, and one Commissioner representing the United States, who shall be appointed by the President. The Federal Commissioner shall be the Chairman of the Commission but shall not have the right to vote. The failure of the President to appoint a Federal Commissioner will not prevent the operation or effect of this Compact, and the eight representatives from the Signatory States will elect a Chairman for the Commission.

SECTION 9.02. The Commission shall meet and organize within 60 days after the effective date of this Compact. Thereafter, meetings shall be held at such times and places, as the Commission shall decide.

SECTION 9.03. Each of the two Commissioners from each state shall have one vote; provided, however, that if only one representative from a state attends he is authorized to vote on behalf of the absent Commissioner from that state. Representatives from three states shall constitute a quorum. Any action concerned with administration of this Compact or any action requiring compliance with specific terms of this Compact shall require six concurring votes. If a proposed action of the Commission affects existing water rights in a state, and that action is not expressly provided for in this Compact, eight concurring votes shall be required.

SECTION 9.04.

(a) The salaries and personal expenses of each state's representative shall be paid by the government that it represents, and the salaries and personal expenses of the Federal Commissioner will be paid for by the United States.

(b) The Commission's expenses for any additional stream flow gauging stations shall be equitably apportioned among the states involved in the reach in which the stream flow gauging stations are located.

(c) All other expenses incurred by the Commission shall be borne equally by the Signatory States and shall be paid by the Commission out of the "Red River Compact Commission Fund." Such Fund shall be initiated and maintained by equal payments of each state into the fund. Disbursement shall be made from the fund in such manner as may be authorized by the Commission. Such fund shall not be subject to audit and accounting procedures of the state; however, all receipts and disbursements of the fund in such

manner as may be authorized by the Commission. Such fund shall not be subject to audit and accounting procedures of the state; however, all receipts and disbursements of the fund by the Commission shall be audited by a qualified independent public accountant at regular intervals, and the report of such audits shall be included in and become a part of the annual report of the Commission. Each state shall have the right to make its own audit of the accounts of the Commission at any reasonable time.

ARTICLE X

POWERS AND DUTIES OF THE COMMISSION

SECTION 10.01. The Commission shall have the power to:

(a) Adopt rules and regulations governing its operation and enforcement of the terms of the Compact.

(b) Establish and maintain an office for the conduct of its affairs and, if desirable, from time to time, change its location;

(c) Employ or contract with such engineering, legal clerical and other personnel as it may determine necessary for the exercise of its functions under this Compact without regard to the Civil Service Laws of any Signatory State; provided that such employees shall be paid by and be responsible to the Commission and shall not be considered employees of any Signatory State;

(d) Acquire, use and dispose of such real and personal property as it may consider necessary;

(e) Enter into contracts with appropriate State or federal agencies for the collection, correlation and presentation of factual data, for the maintenance of records and for the preparation of reports;

(f) Secure from the head of any department or agency of the Federal or State government such information as it may need or deem to be useful for carrying out its functions and as may be available to or procurable by the department or agency to which the request is addressed; provided such information is not privileged and the department or agency is not precluded by law from releasing same.

(g) Make findings, recommendations or reports in connection with carrying out the purposes of this Compact, including, but not limited to, a finding that a Signatory State is or is not in violation of any of the provisions of this Compact. The Commission is authorized to make such investigations and studies, and to hold such hearings as it may deem necessary for said purposes. It is authorized to make and file official certified copies of any of its findings, recommendations or reports with such officers or agencies of any Signatory State, or the United States, as may have any interest in or jurisdiction over the subject matter. The making of findings, recommendations, or reports by the Commission shall not be a condition precedent to the instituting or maintaining of any action or proceeding of any kind by a Signatory State in any court or tribunal, or before any agency or officer, for the

protection of any right under this Compact or for the enforcement of any of its provisions; and

(h) Print or otherwise reproduce and distribute its proceedings and reports.

SECTION 10.02. The Commission shall:

(a) Cause to be established, maintained and operated such stream, reservoir and other gauging stations as are necessary for the proper administration of the Compact.

(b) Cause to be collected, analyzed and reported such information on stream flows, water quality, water storage and such other data as are necessary for the proper administration of the Compact:

(c) Perform all other functions required of it by the Compact and do all things necessary, proper and convenient in the performance of its duties thereunder;

(d) Prepare and submit to the governor of each of the Signatory States a budget covering the anticipated expenses of the Commission for the following fiscal biennium;

(e) Prepare and submit an annual report to the governor of each Signatory State and to the President of the United States covering the activities of the Commission for the preceding fiscal year, together with an accounting of all funds received and expended by it in the conduct of its work;

(f) Make available to the governor or to any official agency of a Signatory State or to any authorized representative of the United States, upon request, any information within its possession;

(g) Not incur any obligation in excess of the unencumbered balance of its funds, nor pledge the credit of any of the Signatory States; and

(h) Make available to a Signatory State or the United States in any action arising under this Compact, without subpoena, the testimony of any officer or employee of the Commission having knowledge of any relevant facts.

ARTICLE XI

POLLUTION

SECTION 11.01. The Signatory states recognize that the increase in population and the growth of industrial, agricultural, mining and other activities combined with natural pollution sources may lead to a diminution of the quality of water in the Red River Basin which may render the water harmful or injurious to the health and welfare of the people and impair the usefulness or public enjoyment of the water for beneficial purposes, thereby resulting in the adverse social, economic, and environmental impacts.

SECTION 11.02. Although affirming the primary duty and responsibility of each Signatory State to take appropriate action under its own laws to prevent, diminish, and regulate all pollution sources within its boundaries which adversely affect the water of the Red River Basin, the states recognize that the control and abatement of the naturally-occurring salinity sources as well, under certain circumstances, the maintenance and enhancement of the quality of water in the Red River Basin may require the cooperative action of all states.

SECTION 11.03. The Signatory States agree to cooperate with agencies of the United States to devise and effectuate means of alleviating the natural deterioration of the water of the Red River Basin.

SECTION 11.04. The Commission shall have the power to cooperate with the United States, the Signatory States and other entities in programs for abating and controlling pollution and natural deterioration of the water of the Red River basin, and to recommend reasonable water quality objectives to the states.

SECTION 11.05. Each Signatory State agrees to maintain current records of waste discharges into the Red River Basin and the type and quality of such discharges, which records shall be furnished to the Commission upon request.

SECTION 11.06. Upon receipt of a complaint from the governor of a Signatory State that the interstate water of the Red River Basin in which it has an interest are being materially and adversely affected by pollution and that the state in which the pollution originates has failed after reasonable notice to take appropriate abatement measures, the Commission shall make such findings as are appropriate and thereafter provide such findings to the governor of the state in which such pollution originates and request appropriate corrective action. The Commission, however, shall not take any action with respect to pollution, which adversely affects only the state in which such pollution originates.

SECTION 11.07. In addition to its other powers set forth under this Article, the Commission shall have the authority, upon receipt of six concurring votes, to utilize applicable Federal statutes to

institute legal action in its own name against the person or entity responsible for interstate pollution problems; provided, however, sixty (60) days before initiating legal action the Commission shall notify the Governor of the state in which the pollution source is located to allow that state an opportunity to initiate action in its own name.

SECTION 11.08. Without prejudice to any other remedy available to the Commission, or any Signatory State, any state which is materially and adversely affected by the pollution of the water of the Red River Basin by pollution originating in another Signatory State may institute a suit against any Signatory State or political or governmental subdivision thereof, or against any officer, agency, department, bureau, district or instrumentality of or in any Signatory State contributing to such pollution in accordance with applicable Federal statutes. Nothing herein shall be construed as depriving any persons of any rights of action relating to pollution which such person would have if this Compact had not been made.

ARTICLE XII

TERMINATION AND AMENDMENT OF COMPACT

SECTION 12.01. This Compact may be terminated at any time by appropriate action of the legislatures of all of the four Signatory States. In the event of such termination, all rights established under it shall continue unimpaired.

SECTION 12.02. This Compact may be amended at any time by appropriate action of the legislatures of all Signatory States that are affected by such amendment. The consent of the United States Congress must be obtained before any such amendment is effective.

ARTICLE XIII

RATIFICATION AND EFFECTIVE DATE OF COMPACT

SECTION 13.01. Notice of ratification of this compact by the legislature of each Signatory State shall be given by the governor thereof to the governors of each of the other Signatory States and to the President of the United States. The President is hereby requested to give notice to the governors of each of the Signatory States of the consent to this Compact by the Congress of the United States.

SECTION 13. 02. This Compact shall become effective, binding and obligatory when, and only when:

(a) It has been duly ratified by each of the Signatory States; and

(b) It has been consented to by an Act of the Congress of the United States, which Act provides that:

> Any other statute of the United States to the contrary notwithstanding, in any case or controversy:
>
> > which involves the construction or application of this Compact;
> >
> > in which one or more of the Signatory States to this Compact is a plaintiff or plaintiffs; and
> >
> > which is within the judicial power of the United States as set forth in the Constitution of the United States;
>
> and without any requirement, limitation or regard as to the sum or value of the matter in controversy, or of the place of residence or citizenship of, or of the nature, character or legal status of, any of the other proper parties plaintiff or defendant in such case or controversy:
>
> > The consent of Congress is given to name and join the United States as a party defendant or otherwise in any such case or controversy in the Supreme Court of the United States if the United States is an indispensable party thereto.

SECTION 13.03. The United States District Courts shall have original jurisdiction (concurrent with that of the Supreme Court of the United States, and concurrent with that of any other Federal or state court, in matters in which the Supreme Court, or other court has original jurisdiction) of any case or controversy involving the application or construction of this Compact; that said jurisdiction shall include, but not be limited to, suits between Signatory States; and that the venue of such case or controversy may be brought in any judicial district in which the acts complained of (or any portion thereof) occur.

RULES FOR THE INTERNAL ORGANIZATION of the RED RIVER COMPACT COMMISSION

(As Amended April 25, 1984, April 30, 1991, May 4, 1993, and March 24, 1994)

ARTICLE I
THE COMMISSION

1.1 The Commission is the "Red River Compact Commission," which is referred to in Article X of the Red River Compact.

1.2 The credentials of each Commissioner shall be filed with both the Chairman and the Secretary of the Commission. When the credentials of a new Commissioner are received, the Secretary shall promptly notify each of the other Commissioners of the name and address of the new Commissioner.

1.3 Each Commissioner shall advise in writing the office of the Commission as to his address at which all official notices and other communications of the Commission shall be sent to him. Any change of address shall be promptly communicated in writing to the office of the Commission.

1.4 Persons designated to substitute for duly appointed Commissioners at meetings of the Compact Commission shall present the Commission with credentials of authority by letter, or other form of appointment acceptable to the Commission, which states the scope or limitations of the appointment, together with a copy of the state or federal law or Attorney General's opinion which authorizes the appointment.

ARTICLE II
OFFICERS

2.1 The officers of the Commission shall be a Chairman, a Vice-Chairman, Secretary and a Treasurer.

2.2 The Commissioner representing the United States shall be the Chairman of the Commission. The Chairman or the designated representative of the Chairman, shall preside at meetings of the Commission. His duties shall be those usually imposed upon such officers and as may be assigned by these rules or by the Commission from time to time.

2.3 The Vice-Chairman shall be elected at the annual meeting from the Commissioners of the host state for the coming year as reflected by the minutes, and shall hold office for a term of one year, beginning on July 1 following the election, or until a successor is elected. The Vice-Chairman shall serve as Chairman in the event the President of the United States fails to appoint a Federal Commissioner, or in the absence of the Federal Commissioner or the designated representative of the Federal Commissioner.

2.4 The Secretary shall be selected at the annual meeting by the Commission from the state designated to host the next annual meeting as reflected in the minutes. The Secretary shall serve for the term of one year, beginning on July 1 following the selection, and perform the duties as the Commission shall direct. In case of a vacancy in the office of the Secretary, the Commission shall select a new Secretary as expeditiously as possible.

2.5 The Treasurer shall be selected by the Commission for a term of one year, beginning on July 1 following the selection. The Treasurer shall furnish a fidelity bond, the cost of which shall be paid by the Commission. The Treasurer shall receive, hold and disburse all funds which come into the his hands of the Treasurer.

2.6 The Secretary and Treasurer may be members of the Commission, and their offices may be combined by the Commission. Any one person may hold both offices.

2.7 Whenever there is a permanent change in the Commander of the Lower Mississippi Valley Division, Department of the Army Corps of Engineers, or its counterpart in any future reorganization of the Corps, the Vice-Chairman shall immediately request the President to appoint the new Commander as the U.S. Commissioner to the Compact Commission.

ARTICLE III
PRINCIPAL OFFICE

3.1 The principal office of the Commission shall be either the office of the Chairman or the Secretary, as the Commission shall direct.

3.2 Official books and records of the Commission shall be kept at the principal office.

ARTICLE IV
MEETINGS

4.1 The annual meeting of the Commission shall be held on the last Tuesday of April of each year.

4.2 Special meetings of the Commission may be called by the Chairman at any time. Upon the written request of each of the Commissioners of two states setting forth the matters to be considered at such meeting, the chairman shall call a special meeting.

4.3 Reasonable notice of all special meetings of the Commission shall be sent by the Chairman, to all members of the Commission by ordinary mail at least ten days in advance of each meeting and notice shall state the purpose thereof.

4.4 Emergency meetings of the Commission may be called by the Chairman at any time upon the concurrence of at least two states and such meetings may be conducted by long-distance telephone conference call or other electronic means. Any such long-distance telephone conference call or other electronic communication shall be recorded and made available for public inspection in accordance with the laws of the respective signatory states. Each of the signatory states shall be represented by at least one Commissioner during such an emergency conference and concur in the action.

An emergency is defined as a situation involving an eminent threat of injury to persons or damage to property or eminent financial loss when the time requirements for public notice and travel to a special meeting would make such procedure and travel impractical and increase the likelihood of injury or damage or eminent financial loss.

4.5 Notice to the public shall be given of all Commission meetings. Except as otherwise provided, the Chairman shall furnish notice of all meetings to the Commissioners of each signatory state, whose responsibility it shall be to give said notice to the public in accordance with the laws of their respective states. In the event of an emergency meeting held by telephone or other electronic communication, no advance notice is required.

All meetings of the Commission shall be held at the principal office unless another place shall be agreed upon by the Commissioners.

4.6 Minutes of the Commission shall be preserved in suitable manner. Minutes, until approved, shall not be official and shall be furnished only to members of the Commission, its employees and committees.

4.7 Commissioners from three of the signatory states shall constitute a quorum. However, if an emergency meeting is conducted as provided for in rule 4.4, or if a proposed action of the Commission affects existing water rights in a state, and that actions is not expressly provided for in the Compact, eight concurring votes shall be required. Any other actions concerned with the administration of the Compact or requiring compliance with specific terms of the Compact shall require six concurring votes.

4.8 At each regular or annual meeting of the Commission, the order of business, unless agreed otherwise, shall be as follows:

Call to order;
Approval of Agenda;
Approval of the minutes;
Report of Chairman;
Report of Secretary;
Report of the Treasurer;
Report of the Commissioners;
Report of Committees;
Unfinished business;
New business;
Adjournment;

4.9 All meetings of the Commission, except executive sessions and except as otherwise provided, shall be open to the public. Executive sessions shall be open only to members of the Commission and such advisers as may be designated by each member and employees as permitted by the Commission; provided, however, that the Commission may call witnesses before it when in such sessions.
The Commission may hold executive sessions only for the purposes of discussing;

(1) The employment, appointment, promotion, demotion, disciplining or resignation of a Commission employee or employees, members, advisers, or committee members.

(2) Pending or contemplated litigation, settlement offers, and matters where the duty of the Commission's counsel to his client, pursuant to the Code of Professional Responsibility, clearly conflicts with the public's right to know.

(3) The report, development, or course of action regarding security, personnel, plans, or devices.

No executive session may be held except on a vote, taken in public by a majority of a quorum of the members present. At least one Commissioner from each of the signatory states must agree to the holding of an executive session.

Any motion or other decision considered or arrived at in executive session shall be voidable unless, following the executive session, the Commission reconvenes in public session and presents and votes on such motion or other decision.

4.10 In the absence of a Chairman and Vice-Chairman, all of the Commissioners from any two (2) states may call an emergency or a special meeting of the Compact Commission.

ARTICLE V
COMMITTEES

5.1 There may be the following standing committees:

(a) Budget Committee;
(b) Engineering Committee;
(c) Environmental and Natural Resources Committee;
(d) Legal Committee.

5.2 The committees shall have the following duties:

(1) The Budget Committee shall prepare the annual budget and shall advise the Commission on all fiscal matters that may be referred to it.

(2) The Engineering Committee shall advise the Commission all engineering matters that may be referred to it.

(3) The Environmental and Natural Resources Committee shall advise the Commission on all environmental and natural resource matters that may be referred to it.

(4) The Legal Committee shall advise the Commission on all legal matters that may be referred to it.

5.3 Commissioners may be members of committees. The number of members of each committee shall be determined from time to time by the Commission. The Commissioners of each state shall designate the member or members on each committee representing the State, and each State shall have one vote.

5.4 The Chairman may appoint a non-voting member of each committee.

5.5 The Chairman of each committee shall be designated by the Commission from members of the committee; however, in the event a Chairman is unable to perform his duties, the committee shall appoint an Interim Chairman.

5.6 The Commission may from time to time create special committees and assign it tasks. The Commission may also determine the composition of the special committees.

5.7 Formal committee reports shall be made in writing and filed with the Commission.

ARTICLE VI
RULES AND REGULATIONS

6.1 So far as is consistent with the Compact, the Commission may adopt rules and regulations and amend them from time to time. Rules and regulations to be adopted shall be presented by resolution and approved by a quorum as set out in Rule 4.7. Copies of proposed resolutions for rule adoption shall be presented in writing to each of the Commissioners at least thirty days before the meeting upon which they are to be voted. However, at its meeting, by unanimous vote, the Commission may waive this notice requirement.

6.2 Rules and regulations of the Commission may be compiled and copies may be prepared for distribution to the public under such terms and conditions as the Commission may prescribe.

ARTICLE VII
FISCAL

7.1 All funds of the Commission shall be deposited in a depository or depositories designated by the Commission under the name of the "Red River Compact Commission Fund".

7.2 Disbursement of funds in the hands of the Treasurer, for items included in the approved budget, shall be made by check signed by him and the Vice-Chairman or by such person as may be designated by the Commission. Disbursement of funds for non-budgeted items shall be made by check signed by the Treasurer and Vice-Chairman upon voucher approved by at least six of the Commissioners, four of whom shall be from different signatory states.

7.3 At the annual meeting of each year, the Commission shall adopt a budget covering an estimate of its expenses for the following two fiscal years.

7.4 The payment of expenses of the Commission and of its employees shall not be subject to the audit and accounting procedures of the states.

7.5 All receipts and disbursements of the Commission shall be audited periodically as determined by the Commission by a qualified independent public accountant to be selected by the Commission and the report of the audit shall be included in and become a part of the annual report of the Commission.

7.6 The fiscal year of Commission shall begin July 1, of each year and end June 30 of the next succeeding year.

ARTICLE VIII
ANNUAL REPORT

8.1 The Commission shall make an annual report and transmit it on or before the last day of May to the governors of the signatory states to the Red River Compact and to the President of the United States.

8.2 The annual report shall contain:

(1) Minutes of all regular, special or emergency meetings held during the year;

(2) All findings of facts made by the Commission during the preceding year;

(3) Recommendations for actions by the signatory states;

(4) Statements as to any cooperative studies made during the preceding year;

(5) All data which the Commission deems pertinent;

(6) The budget for current and future years;

(7) The most recent audit report or current financial statement of the Red River Compact Fund;

(8) Name, address and phone number of each Commissioner and each member of all standing committees;

(9) Such other pertinent matters as the Commission may require.

RED RIVER COMPACT INTERIM RULES AND REGULATIONS
To Compute and Enforce Compact Compliance
REACH II, SUBBASIN 5

(Adopted 4/30/87)

1. These rules and regulations to be used to compute and enforce Compact compliance within Subbasin 5 of Reach II, Red River Compact, are adopted subject to the following conditions and assumptions.
   a. It is fully understood that these rules and regulations should be modified as new or improved gaging stations are constructed, whenever experience or detailed studies demonstrate the need for modification, and if the Commission should modify its interpretation of Compact provisions relating to this Subbasin.
   b. Definitions:
      (1) "Diversion" as used in these rules and regulations, is the net loss to a water source from use by a diverter, and is computed as the diversion from the water source minus the part of the diversion which is returned to the water source. Normally, return flows must be measured to be considered; however, the EAC may consider and recommend exceptions. As used herein, "diversion" is equivalent to "net diversion" from a water source and to "depletion" or "consumptive use" of a water source.

2. **Management of Compact Compliance Computations.**
   a. **Management Using State Centers:**
      (1) State EAC representatives will establish State Computation Control Centers
         (a) State representatives will gather data, exchange data and meet via conference call to check on computation results, if necessary.
         (b) EAC will determine compliance with Compact.

   b. **Management Period for Weekly Flow and Diversions:**
      (1) Next week's State diversions will be allocated based on last week's compliance computations.
      (2) It is each State's responsibility to limit its total State diversion allocation among its State diverters.
      (3) The weekly period for use and flow data will start and end at 8:00 a.m. on Tuesday of each week.
      (4) Data collection and dissemination will be completed on Tuesday of each week.
      (5) Computation of Compliance will be completed on Wednesday of each week.
      (6) Each State can request an update at any time.

   c. **Management Improvement Studies:** The EAC will monitor the effect on accounting management of the following factors and will report thereon to the Commission whenever procedure changes appears desirable.
      (1) Errors caused by travel time.
      (2) Future restrictions computed from past week's data.
      (3) Failure to consider channel loss.
      (4) Failure to consider ungaged return flows.
      (5) Failure to consider flow trends.
      (6) Addition of needed gages.

3. **Enforcement of Compact Compliance Requirements.** Each State will be responsible for insuring that the sum of the diversions by State users does not exceed the total State diversion authorized by the Red River Compact. In this regard, each State will be responsible for establishing clear legal authority within its State for enforcing the restrictions imposed by the Red River Compact.

4. **Data Reporting Procedures.**
   a. **Streamflow Gaging Station Records:** The EAC will make arrangements with the Corps of Engineers, the U.S. Geological Survey and with States as required to collect daily and/or weekly data, as needed, and forward to the State Computation and Control Centers.
   b. **Diversion Records:** Each State will be responsible to collect daily and/or weekly data, as needed, and forward to the State Computation and Control Centers.
   c. **Archived Records:** Records will be archived by Commission Chairman.

5. **General Compliance Requirements of Section 5.05, Red River Compact.**
   a. **Section 5.05 (b)(1):**
      (1) **Compact prescribes:** "The Signatory States shall have equal rights to the use of the runoff originating in subbasin 5 and undesignated water flowing into subbasin 5, so long as the flow of the Red River at the Arkansas-Louisiana state boundary is 3,000 cubic feet per second or more, provided no state is entitled to more than 25 percent of the water in excess of 3,000 cubic feet per second."
      (2) In computing the Subbasin 5 water allocation, when the flow of the Red River at the Arkansas-Louisiana State Boundary is 3,000 cfs or more and the total runoff and undesignated flow of Subbasin 5 is greater than or equal to 7,500 cfs but less than or equal to 12,000 cfs, Louisiana's allocation shall be 3,000 cfs and each of the three upstream states will equally share the runoff and undesignated flow in excess of 3,000 cfs.
      (3) When the total runoff and undesignated flow of Subbasin 5 is 12,000 cfs or more, each of the signatory states shall be entitled to 25% of the total runoff and undesignated flow.
      (4) State compliance with Section 5.05 (b)(1) does not need to be determined except when specifically requested by a Compact State.

   b. **Section 5.05 (b)(2):**
      (1) **The Compact states:** "Whenever the flow of the Red River at the Arkansas-Louisiana state boundary is less than 3,000 cubic feet per second, but more than 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow to flow into the Red River for delivery to the State of Louisiana a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 and 40 percent of undesignated water flowing into subbasin 5; provided, however, that this requirement shall not be interpreted to require any state to release stored water."

(2) In computing the Subbasin 5 water allocation to Louisiana when flow of Red River at the Arkansas-Louisiana State boundary is less than 3,000 cfs but more than 1,000 cfs, the Subbasin 5 runoff for each of the three upstream States and the undesignated water flowing into Subbasin 5 from each upstream State totaled, and the three upstream States should allow to pass to Louisiana 40 percent of the total, or 1,000 cfs, whichever is greater.

(3) When the Subbasin 5 runoff plus undesignated water totals at least 2,500 cfs and not more than 7,500 cfs, each of the three upstream States are allocated 60 percent of its runoff plus undesignated inflow and the other 40 percent is to be allowed to flow into the Red River for delivery to Louisiana.

(4) When the Subbasin 5 runoff plus undesignated water totals at least 1,000 cfs but less than 2,500 cfs, the allocation to Louisiana is 1,000 cfs because of Compact Section 5.05 (b)(3). The total Subbasin 5 runoff plus undesignated water is compared to the Louisiana allocation of 1,000 cfs and a percentage is established. Each of the three upstream States will be entitled to divert and use a quantity computed using (100 percent minus the established percentage) times (the total of runoff from its Subbasin 5 areas plus undesignated water flowing into its Subbasin 5 areas).

(5) This Compact compliance determination should be made whenever the flow of the Red River at the Arkansas-Louisiana State boundary falls below 3,000 cfs and is more than 1,000 cfs.

c. **Section 5.05 (b)(3):**

(1) **The Compact states:** "Whenever the flow of the Red River at the Arkansas-Louisiana state boundary falls below 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow a quantity of water equal to all the weekly runoff originating in Subbasin 5 and all undesignated water flowing into Subbasin 5 within their respective states to flow into the Red River as required to maintain a 1,000 cubic foot per second flow at the Arkansas-Louisiana state boundary."

(2) In computing the Subbasin 5 allocation when the flow of the Red River at the Arkansas-Louisiana State boundary falls below 1,000 cfs, and when the Subbasin 5 runoff and undesignated water flowing into Subbasin 5 total 1,000 cfs or less, all flow must be passed to Louisiana.

(3) When the Subbasin 5 runoff and undesignated water flowing into Subbasin 5 total more than 1,000 cfs but less than 2,500 cfs, Louisiana is allocated 1,000 cfs. This 1,000 cfs Louisiana entitlement is compared to the total runoff plus undesignated water and a percentage is established. Each of the three upstream States will be entitled to divert and use a quantity computed using (100 percent minus the established percentage) times (its total State runoff and undesignated water inflow).

(4) See rules for Compact Section 5.05 (b)(2) when the Subbasin 5 runoff and undesignated water flowing into Subbasin 5 total 2,500 cfs or more up to 7,500 cfs.

(5) This Compact compliance determination should be made whenever the flow of the Red River at the Arkansas-Louisiana State boundary falls below 1,000 cfs.

d. **Section 5.05 (c):**

(1) **The Compact states:** "Whenever the flow at Index, Arkansas, is less than 526 c.f.s., the states of Oklahoma and Texas shall each allow a quantity of water equal to 40 percent of the total weekly runoff originating in Subbasin 5 within their respective states to flow into the Red River; provided however, this provision shall be invoked only at the request of Arkansas, only after Arkansas has ceased all diversions from the Red River itself in Arkansas above Index, and only if the provisions of Sub-sections 5.05 (b)(2) and (3) have not caused a limitation of diversions in subbasin 5."

(2) In computing the Subbasin 5 allocation when flow of Red River at Index Arkansas is less than 256 cfs, the States of Oklahoma and Texas are to pass 40 percent of weekly runoff from respective Subbasin 5 areas.

(3) This Compact compliance determination will be made only when requested by Arkansas, only after Arkansas has ceased all diversions from the Red River, and only if the provisions of subsections 5.05 (b)(2) and (3) have not caused a limitation of diversions in Subbasin 5.

6. **Procedures (Disregarding Designated Flows) to Compute State Runoff, Runoff plus Undesignated Inflows, and Flow of Red River at Arkansas-Louisiana State Boundary.**

a. **Oklahoma.**

(1) **Runoff plus Undesignated Inflows of Denison Dam to DeKalb Gage:**

(a) Kiamichi River near Hugo, OK, Gage flow, plus Muddy Boggy Creek near Unger, OK, Gage flow plus Blue River near Blue, OK Gage flow, plus

(b) Fifty percent of (DeKalb Gage flow, plus Texas and Oklahoma diversions, minus gaged flows at Kiamichi River near Hugo, Ok, Muddy Boggy Creek near Unger, OK, Blue River near Blue, OK, and Sanders Creek near Chicota, Texas, streamflow Gages).

(2) **Runoff plus Undesignated Inflows, DeKalb Gage to Oklahoma-Arkansas State line:** Fifteen and one-half (15.5) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma, Texas and Arkansas diversions downstream from DeKalb Gage).

(3) **Runoff only, Denison Dam to Oklahoma-Arkansas State line.**

(a) Fifty percent of (DeKalb Gage flow, minus Red River at Denison Dam Gage flow, plus Texas and Oklahoma diversions upstream from DeKalb Gage, minus Blue River near Blue, OK, Gage flow, minus Muddy Boggy Creek near Unger-Okla. Gage flow, minus Kiamichi River near Hugo-Okla. Gage flow minus Gage flow), plus

(b) Fifteen and one-half (15.5) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma, Texas and Arkansas diversions between DeKalb and Index Gages).

b. **Texas.**

(1) **Runoff plus Undesignated Inflows, DeKalb Gage to Index Gage:**

(a) Sanders Creek near Chicota Gage flow, plus

(b) Fifty percent of: (DeKalb Gage flow, plus Texas and Oklahoma diversions, minus gaged flows at Kiamichi River near Hugo, OK, Muddy Boggy Creek near Unger, OK, Blue River near Blue, OK, and Sanders Creek near Chicota, TX, streamflow Gages).

(2) **Runoff plus Undesignated Inflows, DeKalb Gage to Index Gage:** Fifty (50) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma, Texas and Arkansas diversions downstream from DeKalb Gage).

(3) **Runoff plus Undesignated Inflows, Sulphur River Gage:** One hundred percent of (Sulphur River near Texarkana Gage flow) minus (Texas diversions from river below gage) plus (Texas diversions below Texarkana Dam).

(4) **Runoff Only, Denison Dam to Index Gage:** Fifty percent of (Index Gage flow, minus Red River at Denison Dam Gage flow, plus Oklahoma and Texas and Arkansas diversions upstream from the Index Gage, minus Blue River near Blue, OK, Gage flow, minus Muddy Boggy Creek near Unger-Okla. Gage flow, minus Kiamichi River near Hugo-Okla. flow, minus Sanders Creek near Chicota-Texas Gage flow).

c. **Arkansas Runoff plus Undesignated Inflows.**

(1) **Oklahoma-Arkansas State Line to Index Gage:** Thirty-four and one-half (34.5) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma and Texas and Arkansas diversions between DeKalb and Index Gages).

(2) **Index Gage to Hosston Gage:**

(a) Hosston Gage flow, plus Louisiana diversions above Hosston Gage, minus Index Gage flow, minus (Sulphur River near Texarkana Gage flow less Texas diversions from river below gage), plus Arkansas diversions downstream from Index Gage.

d. **Louisiana Streamflow at Arkansas-Louisiana State Boundary.**

(1) **Red River flow at Arkansas-Louisiana State boundary** equals (Gage flow) plus (Louisiana diversions from Red River downstream from the State boundary and upstream from gage).

(2) **Data needed to make interim Louisiana calculations**

(a) **For Red River flows up to 5,000 cfs** - Hosston Gage flow, plus Louisiana diversions from Red River upstream from Hosston Gage.

(b) **For Red River flows of 5,000 cfs or larger** - Shreveport Gage flow, plus Louisiana diversions from Red River upstream from Shreveport Gage, minus Twelvemile Bayou near Dixie-La Gage flow, plus Louisiana diversions from Twelvemile Bayou below Twelvemile Bayou near Dixie-La Gage.

(3) **Effect of Flow Trends, Scheduled Change of Reservoir Releases, and Other Events Certain to Significantly Change Flow at Arkansas-Louisiana State Boundary During Coming Week.**
In addition to the Arkansas-Louisiana State boundary flow estimated based on subparagraph (2) (a) or (b) above, the EAC will also advise the Commission of probable significant changes in State boundary flow which should result from flow trends, scheduled change of reservoir releases, and other such known events.

7. **Procedures (Using Designated Flow Data) to Compute State Runoff plus Undesignated Inflows and Flow of Red River at Arkansas-Louisiana State boundary.** Procedures outlined in paragraph 6 above will be followed except that designated inflows, designated outflows and diversion of designated flows will be accounted for whenever appropriate.

RED RIVER COMPACT RULES AND REGULATIONS
To Compute and Enforce Compact Compliance
REACH I, SUBBASIN 1

(Adopted 4/30/87)

1. **General.** These rules and regulations to be used to compute and enforce Compact compliance within Subbasin I of Reach 1, Red River Compact, are adopted subject to the following conditions and assumptions.
   a. It is fully understood that these rules and regulations should be modified as new or improved gaging stations are constructed, whenever experience or detailed studies demonstrate the need for modification, and if the Commission should modify its interpretation of Compact provisions relating to this Subbasin.

2. **Management of Compact Compliance Computations.**
   a. **Management Using State Centers:**
      (1) Texas and Oklahoma representatives will establish State Computation and Control Centers.
         (a) State representatives will gather data, exchange data and meet prior to the annual Commission meeting to check on computation results.
         (b) The EAC will determine compliance with Compact.
   b. **Management Period for Compact Compliance Computations:**
      (1) Computation will be on the calendar year basis.
      (2) Water data for a calendar year should be exchanged prior to March 15 of the following year.
      (3) Compact Compliance Computation for a calendar year should be completed by April 15 of the following year.

3. **Enforcement of Compact Compliance Requirements.** Texas will be responsible for insuring that the sum of Texas uses does not exceed the total Texas water use authorized by the Red River Compact, and Texas will be responsible for establishing clear legal authority within Texas for enforcing the restrictions imposed by the Red River Compact.

4. **Data Reporting Procedures.**
   a. **Streamflow Gaging Station Records:** The EAC will make arrangements with federal and State agencies, as required, to collect calendar year data as needed, and forward to the Texas and Oklahoma Computation Control Centers.
   b. **Archived Records:** Records will be archived by the Commission Chairman.

5. **General Compliance Requirements of Section 4.01 Red River Compact.**
   a. **SECTION 4.01. Subbasin 1 - Interstate Streams - Texas:**
      (1) **The Compact prescribes:**
         "(a) This includes the Texas portion of Buck Creek, Sand (Lebos) Creek, Salt Fork Red River, Elm Creek, North Fork Red River, Sweetwater Creek and Washita River, together with all their tributaries in Texas which lie west of the 100th Meridian."
         "(b) The annual flow within this subbasin is hereby apportioned sixty (60) percent to Texas and forty (40) percent to Oklahoma."

SECTION 4.01 is modified in part by SECTION 4.05. Special Provisions, as follows:

"(b) Texas shall not accept for filing, or grant a permit, for the construction of a dam to impound water solely for irrigation, flood control, soil conservation, mining and recovery of minerals, hydroelectric power, navigation, recreation and pleasure, or for any other purpose other than for domestic, municipal, and industrial water supply, on the mainstem of the North Fork Red River or any of its tributaries within Texas about Lugert-Altus Reservoir until the date that imported water, sufficient to meet the municipal and irrigation needs of Western Oklahoma is provided, or until January 1, 2000, which ever occurs first."

(2) Pertinent extracts from the Supplemental Interpretive Comments of Legal Advisory Committee, as approved by the Red River Compact Commission on the 19th day of September 1978, are as follows:

Pages 9 and 10 " * * * * * The flow of interstate tributaries is generally divided 60 percent to the upstream State and 40 percent to the downstream State. Because flows in Reach I are primarily from flood flows, an annual basis of accounting was adopted"

* * * * *

"Section 4.05(b) reflects the compromise of a long-standing dispute between Oklahoma and Texas over the water of the North Fork of the Red River and Sweetwater Creek. * * * * *"

"Under the Compromise Texas will limit development on North Fork and Sweetwater Creek to projects justified on the basis of municipal, industrial, and domestic needs until the year 2000. However, if sufficient imported water becomes available in Western Oklahoma before 2000, Texas will be free to pursue full development of its 60% of these interstate tributaries. * * * *"

(2) Until January 1, 2000 (assuming that imported water is not provided prior to that date in sufficient amounts to meet municipal and irrigation needs of Western Oklahoma) special restrictions apply to Texas water use in its North Fork Red River watershed upstream from the Lugert-Altus Reservoir. Therefore, some of the Compact compliance rules for the North Fork Red River watershed upstream from the Lugert-Altus Reservoir (para 5.f.(3) & (4) and g.(3) & (4) below) expire on January 1, 2000, if still in effect at that time.

b. **Buck Creek Watershed in Texas:** Buck Creek watershed covers about 300 square miles in Texas. There are no existing gaging stations on Buck Creek in Texas or in Oklahoma. Since neither the Texas nor Oklahoma use of flow from Buck Creek is significant at this time, it is not required to make an annual accounting of the flow in Buck Creek. It also appears that establishing gaging stations and channel loss values so that future annual accountings could be made is not economically justified at this time. Annual accounting procedures for this watershed should be developed to provide a 60:40 apportionment whenever requested by either Oklahoma or Texas.

c. **Sand (Lebos) Creek Watershed in Texas:** Sand Creek watershed covers about 65 square miles in Texas. There are no gaging stations on Sand Creek in Texas or in Oklahoma. Since neither Texas nor Oklahoma makes significant use of flow from Sand Creek, it is not necessary to make an annual accounting of the flow in Sand Creek, and it does not seem to be economically justified **at this time** to establish gaging stations and determine channel loss values so that future annual accountings could be made. Annual accounting procedures for this watershed should be developed to provide a 60:40 apportionment whenever requested by either Oklahoma or Texas.

d. **Salt Fork Red River Watershed in Texas:** Salt Fork Red River watershed in Texas covers about 1,380 square miles, of which 209 are non-contributing.

The USGS streamflow gage number 07300000, Salt Fork Red River near Wellington, Texas, is about 16 miles upstream from the Oklahoma-Texas State line and measures flow from a 1,222 sq. mi. drainage area, of which 209 is probably non-contributing. The average annual discharge (1953-1966) was 52,600 AF/yr, and the average annual discharge since Greenbelt Reservoir was completed (1967-1977) has been 33,250 AF/yr.

The USGS streamflow gage 07300500, Salt Fork Red River at Mangum, Oklahoma, is about 29 miles downstream from the Oklahoma-Texas State line and measures flow from a 1,566 sq. mile drainage area, of which 209 is probably non-contributing. The average annual discharge (1937-1977) has been 62,450 AF/yr.

(1) The actual annual delivery at the Oklahoma State line is computed as follows:
- **(a)** The annual flow at the Wellington gage,
- **(b)** Minus channel losses to Wellington gage flows between gage and State line (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment),
- **(c)** Plus Texas' flow between Wellington gage and the State line. (This flow will be computed based on intervening drainage area between Wellington and Mangum gages adjusted for both Texas and Oklahoma man-made depletions.), and
- **(d)** Minus Texas' man-made depletions downstream from the Wellington gage.

(2) The scheduled annual delivery at the Oklahoma State line is 40 percent of the natural flow at State line without diversions or impoundments, and would be computed as 40 percent of the following:
- **(a)** The actual annual delivery (para 5.d.(1) above),
- **(b)** Plus all man-made depletions in Texas, and
- **(c)** Minus the increased channel losses in Texas which would have incurred had Texas depletions not occurred (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment).

(3) Compact compliance is achieved as long as actual delivery exceeds scheduled delivery.

e. **Elm Creek Watershed in Texas:** Elm Creek watershed covers about 360 square miles in Texas which includes the North Elm Creek tributary. There is no streamflow gage on Elm Creek in Texas. The USGS gage number 07303400, Elm Fork of North Fork Red River near Carl, Oklahoma, is about 6 miles downstream from the Oklahoma-Texas State line, and was used to measure flow from a 416 square mile drainage area but discharge measurements at this site were discontinued in 1980. The average annual discharge (20 years) was 30,280 AF/yr. No Compact compliance accounts can be made until the Gage near Carl has been reestablished.

(1) The actual annual delivery at State line is computed as follows:
   (a) Flow at the State line. (This flow will be computed based on the drainage area and on the flow measured at Carl gage, adjusted for both Texas and Oklahoma depletions.), and
   (b) Minus Texas' man-made depletions.

(2) The scheduled annual delivery at State line is 40 percent of the natural flow at State line without diversions or impoundments and would be computed as 40 percent of the following:
   (a) The actual annual delivery (para 5.e.(1) above),
   (b) Plus man-made depletions in Texas, and
   (c) Minus the increased channel losses in Texas which would have been incurred if Texas had not depleted the flow (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment).

(3) Compact compliance is achieved as long as the actual delivery exceeds the scheduled delivery.

f. **Washita River Watershed in Texas:** There is no streamflow gage on the Washita River in Texas. The USGS streamflow gage number 07316500, Washita River near Cheyenne, Oklahoma, is over 21 miles downstream from the Oklahoma-Texas State line, and measures flow from a 794 square mile drainage area, of which about 441 square miles are in Texas. The average annual discharge at the Cheyenne gage (44 years) has been 20,720 AF/yr.

(1) The actual annual delivery at Oklahoma State line is computed as follows:
   (a) The annual flow at the Cheyenne gage,
   (b) Plus channel losses to the State line flow between the State line and the gage (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment),
   (c) Minus Oklahoma's flow between the State line and Cheyenne gage. (This flow will be computed based on the drainage area upstream from the Cheyenne gage, adjusted for both Texas and Oklahoma man-made depletions.), and
   (d) Minus Texas' man-made depletions.

(2) The annual scheduled delivery at State line is 40 percent of the natural flow at State line without diversions or impoundments, and would be computed as 40 percent of the following:

(a) The actual annual delivery at State line (para 5.h.(1) above),

(b) Plus man-made depletions in Texas, and

(c) Minus the increased channel losses which would have occurred if Texas had not made any diversions (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment).

(3) Compact compliance is achieved as long as the actual delivery exceeds the scheduled delivery.

RED RIVER COMPACT RULES AND REGULATIONS
To Compute and Enforce Compact Compliance
REACH III, SUBBASIN 3

(as amended 4/25/89)

1. These rules and regulations to be used to compute and enforce Compact compliance within Subbasin 3 of Reach III, Red River Compact, are adopted subject to the following conditions and assumptions.
   a. It is fully understood that these rules and regulations should be modified whenever experience or detailed studies demonstrate the need for modification, and if the Commission should modify its interpretation of Compact provisions relating to this Subbasin.
   b. **Definitions:**
      (1) "Diversion", as used in these rules and regulations, is the net loss to a water source from use by a diverter, and is computed as the diversion from the water source minus the part of the diversion which is returned to the water source. Normally, return flows must be measured to be considered; however, the Engineering Committee may consider and recommend exceptions. As used herein, "diversion" is equivalent to "net diversion" from a water source and to "depletion" or "consumptive use" of a water source.
      (2) "Drawdown", as used in these rules and regulations, means that period commencing on the first day water ceases spilling over the existing Caddo Lake spillway (or the raised spillway, if Caddo Lake is enlarged), and continuing so long as the Caddo Lake surface elevation continues to fall, until the day when appreciable inflow reaches Caddo Lake, causing the Caddo Lake surface elevation to rise leading to a spill from Caddo Lake.

2. **Management of Compact Compliance Computations.**
   a. **Management Using State Centers:**
      (1) State Engineering Committee representatives will establish State Computation Control Centers.
         (a) State representatives will gather data, exchange data and meet via conference call to check on computation results, if necessary.
         (b) The Engineering Committee will compute compliance with Compact.
   b. **Management Period for Compact Compliance Computations:**
      (1) Next week's State diversions will be allocated based on last week's compliance computations.
      (2) It is each State's responsibility to limit its total State diversion allocation among its State diverters.
      (3) The weekly period for use and flow data will start and end at 8:00 a.m. on Tuesday of each week.
      (4) Data collection and dissemination will be completed on Tuesday of each week.
      (5) Computation of Compliance will be completed on Wednesday of each week.
      (6) Each State can request an update at any time.

c. **Management Improvements Studies:** The Engineering Committee will monitor the effect on accounting management of the following factors and will report thereon to the Commission whenever procedure changes appear desirable.
   (1) Errors caused by travel time.
   (2) Future restrictions computed from past week's data.
   (3) Failure to consider channel loss.
   (4) Failure to consider ungaged return flows.
   (5) Failure to consider flow trends.
   (6) Addition of needed gages.

3. **Enforcement of Compact Compliance Requirements.** Each State will be responsible for insuring that the sum of the diversions by State users does not exceed the total State diversion authorized by the Red River Compact Commission. In this regard, each State will be responsible for establishing clear legal authority within its State for enforcing the restrictions imposed by the Red River Compact.

4. **Data Reporting Procedures.**
   a. **Streamflow Gaging Station Records:** The Engineering Committee will make arrangements with Corps of Engineers, the U.S. Geological Survey and with States as required to collect daily and/or weekly data, as needed, and forward to the State Computation and Control Centers.
   b. **Diversion Records:** Each State will be responsible to collect weekly data, as needed, and forward to the State Computation and Control Centers.
   c. **Archived Records:** Records will be archived by the Commission Chairman.

5. **General Compliance Requirements of Section 6.03 Red River Compact.**
   a. **Section 6.03 (b)(1):**
      (1) **The Compact states:** "Texas shall have the unrestricted right to all water above Marshall, Lake O' the Pines, and Black Cypress damsites; however, Texas shall not cause runoff to be depleted to a quantity less than that which would have occurred with the full operation of Franklin County, Titus County, Ellison Creek, Johnson Creek, Lake O' the Pines, Marshall, and Black Cypress Reservoirs constructed, and those other impoundments and diversions existing on the effective date of this Compact. Any depletions of runoff in excess of the depletions described above shall be charged against Texas' apportionment of the water in Caddo Reservoir."
      (2) Texas may use the bed and banks of the streams or tributaries available within this Subbasin to convey its developed water downstream from the aforesaid dam sites to specified authorized users. Such water would retain its identity and would not be subject to the Caddo Lake drawdown provisions of Section 5.b. of these rules until passing the designated point of diversion. Appropriate transportation losses will be approved by the Red River Compact Commission.
      (3) Until both Marshall Reservoir (with an estimated capacity of 782,300 acre-feet and yield of 325,000 acre-feet annually) and Black Cypress Reservoir (with estimated capacity of 824,400 acre-feet and yield and 220,000 acre-feed annually) have been constructed, it will be virtually impossible for Texas to deplete runoff in excess of that authorized. In the future, whenever potential Texas depletions above Marshall, Lake O' the Pines, and Black Cypress damsites become a concern to Louisiana, procedures to compute Texas depletion of runoff in excess

of that authorized by Section 6.03 (b)(1) of the Compact should be developed by the Engineering Committee and presented for Commission consideration.

b. **Section 6.03 (b)(2):**

(1) **The Compact states:** "Texas and Louisiana shall each have the unrestricted right to use fifty (50) percent of the conservation storage capacity in the present Caddo Lake for the impoundment of water for state use, subject to the provision that supplies for existing uses of water from Caddo Lake, on date of Compact, are not reduced."

(2) Whenever water is spilling over the existing spillway at 168.5 feet above mean sea level, each state may withdraw or divert water from Caddo Lake without restriction.

(3) Whenever Caddo Lake is not spilling over the existing spillway at 168.5 feet above mean sea level, the total consumptive use by each state shall not exceed 8,400 acre-feet during the drawdown period, provided that neither state shall divert more than 3,600 acre-feet during any one month or 4,800 acre-feet during any two consecutive months.

c. **Section 6.03 (b)(3):**

(1) **The Compact states:** "Texas and Louisiana shall each have the unrestricted right to fifty (50) percent of the conservation storage capacity of any future enlargement of Caddo Lake, provided the two states may negotiate for the release of each state's share of the storage space on terms mutually agreed upon by the two states after the effective date of this Compact."

(2) This Compact provision requires no separate computation procedures but other rules may be changed if enlargement of Caddo Lake occurs. If enlargement of Caddo Lake is authorized in the future, the Engineering Committee should review and modify as necessary Rule 5 (b) and Rule 6.

d. **Section 6.03 (b)(4):**

(1) **The Compact states:** "Inflow to Caddo Lake from its drainage area downstream from Marshall, Lake O' the Pines, and Black Cypress damsites and downstream from other last downstream dams in existence on the date of the signing of the Compact document by the Compact Commissioners, will be allowed to continue flowing into Caddo Lake except that any manmade depletions to this inflow by Texas will be subtracted from the Texas share of the water in Caddo Lake."

(2) As indicated in paragraph 5 a. (2) above, it is virtually impossible for Texas at the present time to reduce inflow to Caddo Lake below that which would occur with both Marshall and Black Cypress Reservoirs constructed and operating. However potential Texas depletions become a concern to Louisiana, procedures to compute excess depletion by Texas of inflow to Caddo Lake should be develop by the Engineering Committee and presented for Commission Consideration.

e. **Section 6.03 (c):**

(1) **The Compact states:** "In regard to the water of interstate streams which do not contribute to the inflow to Cross Lake or Caddo Lake, Texas shall have the unrestricted right to Divert and use this water on the basis of a division of runoff above the state boundary of sixty (60) percent to Texas and forty (40) percent to Louisiana."

(2) The Engineering Committee will review known Texas diversion data for the previous year and report to the Commission any Texas non-compliance with Compact Section 6.03 (c).

f. **Section 6.03 (d):**

(1) **The Compact states:** "Texas and Louisiana will not construct improvements on the Cross Lake watershed in either state that will affect the yield of Cross Lake; provided, however, this subsection shall be subject to the provisions of Section 2.08."

(2) The Engineering Committee will renew any known improvements on the Cross Lake watershed and report to the Commission any non-compliance with Compact Section 6.03 (d).

6. **Caddo Lake Content Accounting Procedure During Drawdown Periods.**

a. Whenever water is spilled from Caddo Lake, both state's accounts are full and no accounting is necessary. Accounting shall start the first day of no-spill following each period of spilling and shall continue until the first day of spill in the next period of spilling. The accounting procedure for computing the quantity of water in Caddo Lake during periods of drawdown belonging to the States of Louisiana and Texas shall be as follows:

(1) At the beginning of the drawdown, the Caddo Lake contents belong 50 percent to each state. Otherwise, begin with water ownership on Caddo Lake as shown in the most recent previous report.

(2) Each State shall be credited with one-half of the inflow to Caddo Lake since the previous report.

(3) Each State's account shall be reduced by its share of Caddo Lake evaporation losses during the period since the previous report.

(4) Each State's account shall be reduced by its diversions from Caddo Lake since the previous report.

(5) A State's account shall not exceed 50 percent of the capacity of Caddo Lake. If these accounting procedures result in a greater State content than 50 percent of the total capacity of Caddo Lake, the excess computed quantity shall be "spilled" into the other State's account as needed to bring the other State's account up, but in no case shall either State's account exceed 50 percent of the total capacity of Caddo Lake.

b. Using a stage-area-capacity relationship concurred in by both States, the content of Caddo Lake at the end of each accounting period shall be determined and inflow for that period shall be computed as follows:

(1) From the present content, as determined above, subtract the content determined at the end of the previous period.

(2) Add to the figure resulting from Step (1) the total Texas and Louisiana diversions since the end of the previous period.

(3) Add to the figure resulting from Step (2) the computed gross evaporation since the end of the previous period as determined in c. (2) below. This results in total inflow.

c. **Evaporation will be computed as follows:**

(1) The Weather Bureau's pan evaporation data shall be used to compute gross lake evaporation using a standard conversion coefficient agreed to by the engineer advisors of each State.

(2) The average lake surface area for the accounting period shall be determined from the stage-area-capacity relationship concurred in by both States and multiplied by the gross lake evaporation as determined in Step (1) to determine the volume of evaporation for the period.

7. **Availability of Diversion Records.** Arrangements shall be made for all Texas and Louisiana diverters, during "drawdown" of Caddo Lake, to maintain daily diversion records open for inspection, and to provide weekly use data as required by Rule 2 b. (3).