Arkansas River Compact Commission 2008 Report

Compact Area

Arkansas River Compact Commission

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October 29, 2009

The President
United States of America

The Honorable Mike Beebe
Governor, State of Arkansas

The Honorable Brad Henry
Governor, State of Oklahoma

Gentlemen:

Pursuant to Article 9B(6) of the Arkansas–Oklahoma Arkansas River Compact (AOARC), submitted herewith is a copy of the report of the AOARC covering the activities of the Commission for 2008. A budget covering the anticipated expenses of the Commission for July 1, 2007 – June 30, 2008 is also included in the report.

The 2008 annual meeting was hosted by the State of Arkansas and held in Ft. Smith, Arkansas. Reports of the Budget, Engineering, Environmental & Natural Resources, and Legal Committees were made along with new committee assignments and appointments.

The State of Oklahoma hosted the 2009 annual meeting at Grove, Oklahoma on October 29, 2009.

Respectfully submitted,

Richard C. Seybolt, Federal Commissioner and Chairman
Arkansas–Oklahoma Arkansas River Compact Commission

RCS/ETS/ch

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2008

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6/1/08

Attachment A

AGENDA
ARKANSAS-OKLAHOMA ARKANSAS RIVER COMPACT COMMISSION ANNUAL MEETING

December 11, 2008
9:00 a.m.

Courtyard by Marriott
900 Rogers Avenue
Fort Smith, Arkansas

A. **Call to Order**
B. **Introductions and Announcements**
C. **Approval of Agenda**
D. **Consideration and Approval of Meeting Minutes of September 13, 2007 Annual Meeting**
E. **Report of the Chairman** –Dick Seybolt, Federal Commissioner
F. **Report of the Treasurer** – Earl Smith, Arkansas
G. **Report of the Commissioners**
1. Arkansas
2. Oklahoma

H. **Committee Reports**
1. Budget Committee, Earl Smith, Chair
2. Engineering Committee, Walid Maher, Chair
3. Environmental and Natural Resources, Ken Brazil
4. Legal Committee, Ed Swaim, Chair

I. **Unfinished Business**
J. **New Business**
1. Appointments/Assignments to Committees and Selection of Chairs
   a. Budget Committee
   b. Engineering Committee
   c. Environmental and Natural Resources Committee
   d. Legal Committee
2. Election of Officers (Secretary and Treasurer)
3. 2009 Annual Meeting

K. **Federal and State Government Representative Reports**
L. **Public Comment**
M. **Adjournment**

MINUTES
of the
ARKANSAS-OKLAHOMA ARKANSAS RIVER COMPACT COMMISSION
Regular Meeting

December 11, 2008
9:30 AM
Courtyard by Marriott
900 Rogers Avenue
Fort Smith, Arkansas

The regular meeting of the Arkansas-Oklahoma Arkansas River Compact Commission (AOARCC) was held 9:30 a.m., Thursday, December 11, 2008, at Courtyard by Marriott, Fort Smith, Arkansas.

Commission members in attendance were, Federal Commissioner and Chairman Richard C. Seybolt; Arkansas Commissioners Mike Carter, Michael Menge and Randy Young; and Oklahoma Commissioners Miles Tolbert and Dave Dillon for Duane Smith. Commissioners not in attendance were Gary Sherrer and Alternate Federal Commissioner, David Vandergriff.

For others in attendance see Attendance Roster (Attachments).

CALL TO ORDER

Chairman Seybolt recognized a quorum of the Commission and called the Arkansas-Oklahoma Arkansas River Compact Commission to order. Next, he welcomed all in attendance.

INTRODUCTIONS AND ANNOUNCEMENTS

Each person in attendance introduced themselves as requested by Chairman Seybolt.

APPROVAL OF AGENDA

Upon motion by Commissioner Carter, second by Commissioner Tolbert, the agenda for the December 11, 2008 Meeting of the Commission was approved.

APPROVAL OF MINUTES: September 13, 2007

Commissioner Tolbert made a motion to approve the minutes with a second by Commissioner Young, the September 13, 2007 minutes of the annual meeting were approved.

REPORT OF THE CHAIRMAN

Chairman Seybolt stated that the report of the Chairman was brief. He apologized for any inconvenience by the necessary change to the meeting date. Next, he stated he was glad everyone could attend and he was looking forward to a very educational meeting.

REPORT OF THE TREASURER

Earl Smith presented the Financial Report, FY 07, (July 1, 2006 – June 30, 2007). Income was $7,160.00; with $7,000 from state assessments and $160 earned interest income. Expenses totaled $4,813.00 and included in the typical annual meeting, printing of the annual report and the contract for the yield computation. The bank balance for June 30, 2008 was $25,634.00; additionally the commission has a $10,000 Certificate of Deposit. The total funding available to the compact is roughly $35,000.

Upon motion by Mr. Dillon, second by commissioner Young, the Treasurer's Report was approved.

REPORT OF THE COMMISSIONERS

Arkansas Commissioners: Commissioner Young advised that the State's Nonpoint Source Management Program continues with 319 funds from EPA matched by the State of Arkansas to address and improve water quality in the Illinois Watershed.

Projects in 2008 include: Illinois River Watershed Partnership to develop a comprehensive Watershed Management Plan for the Illinois River in Arkansas; City of Siloam Springs' project on Sager Creek that will improve in-stream aquatic habitat, reduce water temperature and sediment nutrient loading; and a project to improve Water Quality by Demonstrating Runoff Capture from Poultry Houses at the 12-Digit HUCs of the Illinois River Watershed.

Arkansas' proposal to address the riparian area by means of a Conservation Reserve Enhancement Program (CREP) along the Illinois River in Arkansas is being reviewed in Washington and should be approved in early 2009. It is estimated the $30 million project will cover 10% of the total riparian land area along the Illinois River.

Commissioner Young advised that he was pleased to speak to Mike Thralls with the Conservation Commission about the CREP monitoring program. The monitoring site selected in the upper part of Oklahoma had washed out three times and they found another site in the State of Arkansas. This is good news as Arkansas will likely need a monitoring site at the downstream end and the Conservation Commission pledged to let Arkansas use the site.

The Arkansas Mitigation Bank Program was initially set up to protect, enhance and develop wetland areas. The general assembly adopted legislation which will allow ANRC to purchase, produce and sell stream mitigation credits.

ANRC administers a program that finances all types of waste water infrastructure with the sale of state general obligation bonds. The sale of an additional $300 million in state general obligation bonds was authorized by 65% of the voters in November.

Oklahoma Commissioners: Mr. Dillon apologized that Commissioner Smith could not make the meeting due to an obligation with the Corps of Engineers. Mr. Dillon advised that Oklahoma is divided into different climate divisions and most of the compacted area is in the east central division that has received over 50 inches of precipitation (110% of normal) through 2008. Most areas in Oklahoma have received a good amount of rainfall, particularly in the Arkansas Basin.

The Oklahoma Comprehensive Water Plan is a five-year effort funded by the Oklahoma Legislature through the gross production tax. The process is two tiered with policy development and public (local and regional) input. Local comments were categorized and presented at eleven regional input meetings which were concluded last month. Planning work shops are scheduled for next summer and will be held in Oklahoma City one day each month for three months. The focus will be on subjects (policy considerations) the people want to see in the 50-Year-Plan for Water Development and Protection in the State of Oklahoma. Oklahoma hosted a legal seminar with numerous experts to discuss water law and its implications on water policy in Oklahoma City for one day last summer. It became obvious that the public is not aware of water laws in Oklahoma much less the United States. Over three hundred people attended the seminar with no per-diem or travel expenses paid to the people invited or participating. Rave reviews followed and it seemed to be a success. The planning workshops with subject areas revealed public concerns relative to the technical side, information from engineers and water people as to what is fact and fiction. A technical workshop will be hosted this spring for the public and particularly the participants in the regional workshops. The comprehensive Water Planning Process has gone well and they are pleased with the Water Resources Research Institute contracted work. One of the challenges is to have adequate water supplies with consideration to legal and environmental needs.

Commissioner Smith had appealed for funding to the legislature in 2008 and will again in 2009. The money for water planning began in 2006 and will conclude in five years. Thereafter, no direct funding for water planning is available. He will seek to remove the cap on the end date from the gross production tax fund in an effort to continue future water planning.

Oklahoma gave out approximately $1.8 billion through loans or grant financing for water and sewer projects in Oklahoma with an estimated savings of $571 million to Oklahoma communities.

Additionally, a cooperative study will result in a master plan along the Arkansas River corridor through the Tulsa area.

Mr. Derek Smithee advised that the State of Oklahoma received an EPA Grant a few years earlier to determine chemical, physical and biological integrity without the prejudice of spatial or temporal bias. Fifty-one sites were randomly selected to review the overall holistic health of the Illinois River Watershed.

Floating wetlands will be installed on Wister Lake to assimilate some nutrients (removed them from the reservoir) and aerating the intake structure of the water supply to breakup any stratification and oxidize manganese, etc. that cause taste or odor problems at Porteau Valley Improvement Authority.

Mr. Dillon advised that Mike Thralls with the Conservation Commission had reported that the final analysis and report for the Peach Eater Creek Project was completed and submitted to EPA. Concentrations and loadings for phosphorus and nitrate successfully decreased. The CREP Program has a good start.

Commissioner Young stated that he had received telephone calls in which he was encouraged to engage in a lawsuit between Texas and Oklahoma.

Mr. Dean Couch stated there was concern with potential use of water out of state and impacts to the river water levels in Oklahoma and Arkansas.

Commissioner Young asked if out-of-state sale of water will be addressed in Oklahoma's State Water Plan?

Mr. Smithee advised that it would not be addressed. The state water planning effort is to satisfy the needs of Oklahomans. To the extent that the plan would identify those waters available; that would be a legislative function.

COMMITTEE REPORTS

Budget Committee: Mr. Earl Smith, Chairman of the Budget Committee, advised that the Budget Committee met briefly and their recommendation was to continue the State Assessments at $3,500 over the next year.

Commissioner Young made a motion to approve the Budget Committee's Report and the assessments set as recommended; Mr. Dillon seconded the motion. The motion carried.

Engineering Committee: Mr. Walid Maher, Chief Engineer for the Oklahoma Water Resources Board advised that the Engineering Committee met the day before. The Committee had been assigned to review the Annual Yield and Selected Hydrologic Data for the Arkansas River Basin Compact, Arkansas-Oklahoma, 2006 Water Year Report by Terrance Lamb. A deficiency is shown in the portion entitled to Arkansas through the annual yield of the Arkansas Sub-basin.

Oklahoma agreed that the amount toward the deficiency was mostly from evaporation from reservoir surface; however, the equation used to determine the water balance for the reservoirs for the various Sub-basins rely on the waters originating totally from inside the Sub-basins. He stated that Oklahoma contends that their engineering verification and interpretation of the Compact (Appendix I) is that the reservoirs rely totally on existence from runoff waters originating within each and every Sub-basin and not on water coming into the Sub-basins from outside; such as in the case of the Robert S. Kerr and Webbers Falls reservoirs. The drainage areas of these two reservoirs are almost entirely outside the Compact area. Less

than 2% of the Robert S Kerr Reservoir drainage area is within the Arkansas River Sub-basin. It was determined that Mr. Lamb followed the previously unquestioned interpretation of the Compact in Appendix I. Therefore, Mr. Maher explained that Oklahoma should not be charged with the full amount of evaporation from these two reservoirs.

Mr. Maher asked for more time to discuss with Arkansas and Mr. Lamb, Mr. Lamb's method of calculation and present recommendations and findings at the next Commission meeting. Oklahoma would ask the Committee to propose some clarifications to calculate the annual yields and depletions from each of the Sub-basins.

Mr. Earl Smith stated that the appendix was specific as to how the calculations are to be performed. He understood Oklahoma was intending to propose changes to the rules for the computations that the Compact adopted years ago.

Discussion followed as to data use and method of computations.

Mr. Dillon made a motion to accept the Engineering Committee Report and Recommendation to further review the report interpretations and method of calculations with Terry Lamb for clarification then report back to the Commission at the next Compact meeting. Commissioner Young seconded the motion. There being no further discussion, the motion carried unanimously.

Chairman Seybolt asked how the Corps' regulation of flow applied to Grand Lake.

Mr. Earl Smith stated that the Corps operational manuals regulate the discharge from the lakes. It would be wise to contact the Corps and make them aware of the existence and requirements of the Compact.

Environmental and Natural Resources Committee: Mr. Ken Brazil advised that the Environmental Committee met the day before and the primary discussions were around monitoring and recording data in the annual report. Both Arkansas and Oklahoma trends were down and the five-year rolling average continued to decrease. It was speculated that as stream flows were down the overall loading continued to decrease in the five-year average. Since the current year is a "wet" year, it is anticipated that stream flow will increase and that will transfer into an increase in loading for the five-year average as well. One exception being the Sagar Creek site near Siloam Springs, Arkansas as it held flat with no decrease.

Commissioner Carter asked for consideration of updating the 1980-90 year baseline and Commissioner Tolbert stated he supported that as a next step after the 40% phosphorus reduction was met.

Mr. Smithee presented Oklahoma's report. He focused attention on tables and summaries in the front of the report. He stated improvements were due to below average flows and several waste water treatment plants coming on line. The trend in phosphorus concentration is down and decreasing in the Illinois River Basin with the exception of Flint Creek. Flint Creek still shows an increase in phosphorus concentrations and it is expected that when Siloam Springs' Waste Water Treatment comes online Flint Creek concentrations will decrease. An enlarged report on bacteria sampling in the Illinois River Basin will be included at the next compact meeting.

Discussion followed as to sample collections and holding times. It was explained that the longer a sample is held the lower the bacteria colony count. Mr. Smithee volunteered to address at the next commission meeting the unknown explanation for a wide variation in sample results at this time.

Mr. Smithee advised that monitoring high flow was important as reservoirs are driven by loads, whereas rivers are driven more by concentration, and much of the loading into Lake Tenkiller ultimately comes in two to three storm events yearly. To gauge improvement or non-improvement samples must be collected during the storm flows.

Mr. Earl Smith stated that another problem is that there is not a good understanding of the impact of storm flows on the reservoirs as previous lake studies did not consider storm flows. For example, what happens when the storm surge hits Lake Tenkiller? Does it just blow through? How much of the storm flow resides and contributes to the problems?

Mr. Smithee asked, if it blows through? Does it get in sediment? Does it result in an algae bloom? Is it an algae bloom in the upper realms or lake-wide? Without foundational basic information, it cannot be answered.

Commissioner Tolbert asked what was behind Arkansas' decision to change the monitoring schedule.

Mr. Earl Smith explained that the decision was based on economics. The monitoring is funded through a Section 319 Project. EPA has asked why this data was obtained if it was not used in total overall water quality assessments by Arkansas Department of Environmental Quality. If the goal is equal monitoring on both sides of the state boundary, it would be necessary for Arkansas to lower its intense monitoring sampling schedule in order to be compatible with Oklahoma.

Mr. Earl Smith advised that Arkansas proposed coordinating 319 monitoring requests with the Arkansas Department of Environmental Quality in order to produce compatible data.

Commissioner Tolbert advised that the Commission would support any proposal before EPA that includes the high flow samples.

Mr. Ed Fite stated it would be good to sample the six-storm water events at the same time on both sides of the line; being able to insure that samples are taken coming up on the graph, hitting the crest and falling during some of the storm water events in Oklahoma and Arkansas.

Mr. Reed Green advised this has been done in the past.

Chairman Seybolt asked that the Environmental Committee coordinate with Oklahoma and Arkansas in this task.

Mr. Ken Brazil stated that USGS made a presentation on its national model related to nutrients from the Mississippi River states. The model relates to the issue of Hypoxy in the Gulf of Mexico. The model identified the watersheds which contribute loadings to the Gulf of Mexico Hypoxy issue.

Legal Committee: Mr. Edward Swaim advised that the Legal Committee has been assisting the Engineering Committee with calculation issues and will continue to assist in the coming year.

Unfinished Business: Mr. Earl Smith advised that a suggestion was made to furnish future annual reports in CD format rather than hard copies. A few hard copies will continue to be made for libraries.

Commissioner Tolbert stated it would be a good idea to place the reports online.

New Business: Chairman Seybolt stated that new appointments and chair selections would be rotated to Oklahoma in 2009 and the chairmanships were reversed. The Budget Committee will be chaired by Julie Cunningham; The Environmental Committee will coordinate with Oklahoma and Arkansas in the task of graphing storm water events; the Legal Committee will assist all other committees; Earl Smith will continue as Treasurer and the Secretary will be Mary Schooley. Commissioner Young made a motion to approve the nominations and Commissioner Tolbert seconded the motion. There being no further discussion the motion carried unanimously.

2009 Annual Meeting: The annual meeting is to be held the fourth Thursday in September, which will be September 24, 2009. The host state is Oklahoma and the meeting will be tentatively scheduled for Grand Lake.

FEDERAL AND STATE GOVERNMENT REPRESENTATIVE REPORTS

Mr. Reed Green reviewed and distributed copies of an environmental Science and Technology Report with regard to the Gulf Hypoxy and a separate trends report.

Mr. Robert Blanzs distributed and reviewed the United States Geological Survey Summary Sheet for both the Arkansas and Oklahoma Water Science Centers; 14 significant gages – stream flow and statistical values.

Mr. Rick Strahan with the U.S. Department of the Interior, Bureau of Reclamation, distributed and reviewed "RECLAMATION Managing Water in the West – Reclamation Activity Report."

Commissioner Tolbert inquired as to Siloam Springs' planned improvements.

Mr. Tom Myers with the City of Siloam Springs advised that wastewater plan bids were open. Their NPDES permit requires a one part per million phosphorus limit in December 2009. The plant construction will not be complete but the phosphorus limit will be met. One stream restoration project in town re-establishes riparian areas around Sager Creek. The board is considering an ordinance that will establish restrictions on riparian areas along Sager and its tributaries. There is work being done on City Lake, which is on Flint Creek, to provide additional flows down stream.

Mr. Ed Brocksmith, Commissioner of the Oklahoma Scenic Rivers Commission, asked for a point of clarification. He understood Oklahoma asked the Commission to play a part in the two states phosphorus programs complimenting each other. He asked if the Commission decided to take action on that.

Chairman Seybolt advised that was an assignment to the Environmental Committee.

Commissioner Carter advised that the Environmental Committee is to look into available funding for Arkansas to perform the task.

Mr. Earl Smith explained that little storm sampling had been done until about ten years ago. At that time Arkansas (which totally funded it) sought to understand the fate of phosphorus in the watershed. Arkansas continued this burden solely for five years. Because of the expense of a detailed storm monitoring program ANRC began to utilize the 319 Program. Arkansas originated storm sampling in the watershed and has the data; there is nothing historically similar in Oklahoma. Arkansas is trying to continue the effort at a reasonable cost.

Commissioner Tolbert stated that there was a Commission consensus that storm data is important but that there are also budgetary realities and the commission cannot write Arkansas' monitoring budget. The most that could be expected under these circumstances is that the two states work together through the engineering Committee to coordinate some level of storm water monitoring.

Mr. Ed Fite suggested the Compact Commission go on record as saying that they desired a unified sampling of storm water program in the Illinois River Basin.

Commissioner Young made a motion that the Commission agree to have a compatible monitoring network with respect to storm flows and continue the previous assignment to the Environmental Committee to consider this need and present a plan of action; Mr. Dillon seconded the motion. There being no further discussion, the motion carried.

Commissioner Tolbert stated that the Commission has benefited greatly from Chairman Seybolt's focus on accomplishment, moving forward, developing cooperation between the states; everything he brought to the table in his business approach and BBQ. He thanked Chairman Seybolt for his service.

Chairman Seybolt thanked Commissioner Tolbert for his comments.

ADJOURNMENT

There being no further business, Chairman Seybolt adjourned the meeting at approximately 11:00 AM.

Richard C. Seybolt
Federal Commissioner and Chairman

Laura Brown, Secretary

ARKANSAS-OKLAHOMA
ARKANSAS RIVER COMPACT COMMISSION

LIST OF ATTENDEES
DATE December 11, 2008
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Fort Smith, Arkansas

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Randy Young	501 682 3978 101 E Capitol, S350 LR, AR 72201
Dick Seybolt	56281 E 306 Rd Monkey Island OK 74331
Dave Dillon	3850 N. Lincoln, OKC 405 530-8800
Miles Tolbert	20 N Broadway, Suite 1800 405 235-7700

ARKANSAS-OKLAHOMA
ARKANSAS RIVER COMPACT COMMISSION

LIST OF ATTENDEES
DATE December 11, 2008
Arkansas Oklahoma Arkansas River Compact Commission
Fort Smith, Arkansas

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STEVE DROWN	501-682-0959 ADEQ
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ARKANSAS-OKLAHOMA
ARKANSAS RIVER COMPACT COMMISSION

LIST OF ATTENDEES
DATE December 11, 2008
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Fort Smith, Arkansas

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Khalid T. Maher	" "
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EDWARD SWAIM	ANRC
KEN BRAZIL	ANRC
Aaron Dalton	ANRC
BOB TORTORELLI	USGS, OKLAHOMA CITY, OK ARKWSC
Bob Blazs	USGS - OK City, OK 405 810-4400
Tom Myers	City of Siloam Springs
Trevor Bowman	" 479-238-0927
* Ed Brocksmith	OSRC - STR, INC TAHLEQUAH OK 918 456 3407
ED FITE	OK SCENIC RIVERS COMM 918 456 3251 PO BOX 292 TAHLEQUAH, OK 74465-0292
Dan Smith	ADH - AR DEPT HEALTH - Drinking Water Program Engineering Section

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Report of the Treasurer

Arkansas Oklahoma Arkansas River Compact Commission

December 11, 2008

The 2008 Year-end Financial Report covering July 1, 2007 through June 30, 2008 details income and expenses.

Total Income (FY 07)	$ 7,160.05
Total Expenses (FY 07)	$ 4,813.56
NET TOTAL	$ 2,346.46

Regions Bank Balance on June 30, 2008	$25,634.36
Certificate of Deposit	$10,000.00

Assessments for both states are current.

Income/Expense by Category

7/1/2007 through 6/30/2008

Category Description	7/1/2007-12/31/2007	1/1/2008-6/30/2008	OVERALL TOTAL
INCOME			
Assessment	0.00	7,000.00	7,000.00
Div Income	44.55	115.50	160.05
TOTAL INCOME	**44.55**	**7,115.50**	**7,160.05**
EXPENSES			
Annual Report	813.56	0.00	813.56
Certificate Of Deposit	0.00	10,000.00	10,000.00
Yield Report	4,000.00	0.00	4,000.00
TOTAL EXPENSES	**4,813.56**	**10,000.00**	**14,813.56**
OVERALL TOTAL	**-4,769.01**	**-2,884.50**	**-7,653.51**

Register Report

7/1/2007 through 6/30/2008

12/4/2009

Date	Account	Num	Description	Memo	Category	Clr	Amount
BALANCE 6/30/2007							**33,287.87**
7/31/2007	AOARCC	DEP	Regions Bank	July 2007	Div Income	R	8.49
8/8/2007	AOARCC	1130	Terrance Lamb	2006	Yield Report	R	-4,000.00
8/31/2007	AOARCC	DEP	Regions Bank	August 2007	Div Income	R	7.69
9/28/2007	AOARCC	DEP	Regions Bank	September 2...	Div Income	R	6.54
10/31/2007	AOARCC	DEP	Regions Bank	October 2007	Div Income	R	7.72
11/30/2007	AOARCC	DEP	Regions Bank	November 2...	Div Income	R	7.01
12/5/2007	AOARCC	1131	FedEx Kinko's	2006	Annual Report	R	-813.56
12/6/2007	AOARCC	DEP	Regions Bank	December 2...	Div Income	R	1.40
12/31/2007	AOARCC	DEP	Regions Bank	December 2...	Div Income	R	5.70
1/31/2008	AOARCC	DEP	Regions Bank	January 2008	Div Income	R	7.03
2/29/2008	AOARCC	DEP	Regions Bank	February 2008	Div Income	R	6.58
3/31/2008	AOARCC	DEP	Regions Bank	March 2008	Div Income	R	7.03
4/30/2008	AOARCC	DEP	Regions Bank	April 2008	Div Income	R	31.79
5/23/2008	AOARCC	DEP	Arkansas	2007	Assessment	R	3,500.00
5/23/2008	AOARCC	DEP	Oklahoma	2007	Assessment	R	3,500.00
5/30/2008	AOARCC	DEP	Regions Bank	May 2008	Div Income	R	32.86
5/30/2008	AOARCC	1133	Metropolitan ...	May 2008	Certificate Of ...	R	-10,000.00
6/2/2008	AOARCC	DEP	Regions Bank	June 2008	Div Income	R	30.21
7/1/2007 - 6/30/2008							-7,653.51
BALANCE 6/30/2008							**25,634.36**

TOTAL INFLOWS	**7,160.05**
TOTAL OUTFLOWS	-14,813.56
NET TOTAL	-7,653.51

ARKANSAS - OKLAHOMA
ARKANSAS RIVER COMPACT COMMISSION
Statement of Cash Receipts
and Disbursements
July 1, 2006 through June 30, 2007
and
July 1, 2007 through June 30, 2008

Johnson & Bunch, P.A

Certified Public Accountants

P. O. Box 5665
Jacksonville, AR 72078

Phone (501) 982-1975

Fax (501) 982-8165

Arkansas - Oklahoma Arkansas River Compact Commission
Little Rock, Arkansas

We have audited the accompanying statement of cash receipts and disbursements of the Arkansas - Oklahoma Arkansas River Compact Commission for the period July 1, 2006 through June 30, 2007 and for the period July 1, 2007 through June 30, 2008. The financial statement is the responsibility of the commission's management. Our responsibility is to express an opinion on this financial statement based on our audit.

We conducted our audit in accordance with generally accepted auditing standards for cash basis statements. Those standards require that we 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. We believe that our 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 our opinion, the financial statement referred to above presents fairly, in all material respects, the recorded cash transactions of the Arkansas - Oklahoma Arkansas River Compact Commission for the period ended June 30, 2007 and June 30, 2008 on the basis of accounting described in the preceding paragraph.

Johnson & Bunch, PA

Johnson & Bunch, PA
Certified Public Accounts
July 29, 2008

Arkansas - Oklahoma Arkansas River Compact Commission

Statements of Cash Receipts and Disbursements
For the Period July 1, 2006 through June 30, 2007
and
For the Period July 1, 2007 through June 30, 2008

Cash in bank, checking as of July 1, 2006	$ 30,579
Cash receipts	
Member assessments	7,000
Interest income	84
Total cash receipts	$ 7,084
Cash disbursements	
Accounting	275
Conference expense	500
Yield report	3,600
Total cash disbursements	$ 4,375
Cash in bank, checking as of June 30, 2007	$ 33,288
Cash in bank, checking as of July 1, 2007	$ 33,288
Cash receipts	
Member assessments	7,000
Interest income	160
Total cash receipts	$ 7,160
Cash disbursements	
Printing & reproduction	814
Yield report	4,000
Purchase of certificate of deposit	10,000
Total cash disbursements	$ 14,814
Cash in bank, checking as of June 30, 2008	$ 25,634
Cash in certificate of deposit as of June 30, 2008	10,000
Cash and cash equivalents as of June 30, 2008	$ 35,634

2008
Report of Arkansas Commissioners
To
Arkansas-Oklahoma Arkansas River Compact Commission

Nonpoint Source Management Program

The Arkansas Natural Resources Commission continues to utilize 319(h) program to fund supplemental water quality monitoring in the Illinois and Upper White River Watersheds. Projects of interest funded in 2008 include:

The Illinois River Watershed Partnership (IRWP) – development of a comprehensive Watershed Management Plan this project includes:

- Base watershed management recommendations on a comprehensive and scientifically based evaluation of watershed conditions.
- Develop strategies that lead to a healthy, productive watershed.
- Identify specific implementation actions that are effective and feasible, accommodate local and regional needs.
- Provide support and recommendations to stakeholders and local communities.

Sager Creek in Siloam Springs – Project will improve in-stream aquatic habitat, reduce water temperature and periphyton biomass, improve aesthetics and reduce sediment and nutrient loading this project includes:

- Implementation of stream restoration practices in Sagar Creek in the downtown area.
- 1,920 linear feet of stream will have riparian buffers installed to protect the stream and improve its habitat for aquatic biota.

Demonstrating Runoff Capture from Poultry Houses to Improve Water Quality in 12-Digit HUCs of the Illinois River Watershed; this project includes:

- Demonstrate the water quality benefits of implementing BMPs as part of whole-farm nutrient management planning for impaired streams within nutrient surplus watersheds.
- Collection of runoff from poultry houses in ponds decrease nutrient, sediment and bacterial inputs to receiving streams, and can provide a cost-effective source of water for grazing beef cattle, irrigation for pasture establishment, and summer coolant for poultry houses.

Illinois River CREP

An Illinois River CREP proposal has been sent to Washington DC for review and approval. This program provides federal, state, and private support to landowners who participate in voluntary conservation practices along streams in the Illinois River Basin. A total of $30,000,000 is proposed to support nutrient and sediment reduction measures in the Illinois River Basin.

State Mitigation Banking Program

During the 2007 legislative session, the Arkansas General Assembly approved language in the state mitigation banking act allowing the Commission to purchase, produce, or sell stream mitigation credits in addition to wetland credits.

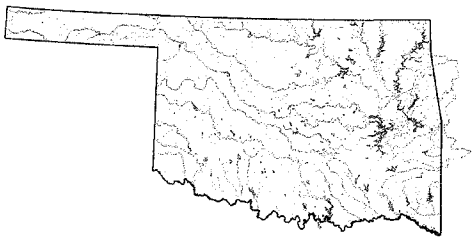
Commission staff is pursuing stream restoration opportunities in northwest Arkansas watersheds as part of the state mitigation banking program. Planning concept is as follows: potential stream restoration corridors are identified on a watershed basis. Over time, individual stream segments are restored based on voluntary landowner participation and mitigation credit demand. This kind of implementation scenario and watershed approach is being explored as a potential way to incorporate state water planning and water quality improvement efforts in northwest Arkansas.

General Obligation Bonds

Arkansas voters approved a referred question in the general election, that allows the Arkansas Natural Resources Commission to issue up to $300 million in state of Arkansas general obligation bonds for the purposes of developing water resources and abating pollution within the state. Up to $100 million in bonds can be utilized for irrigation projects.

OKLAHOMA COMMISSIONERS' REPORT

Arkansas-Oklahoma
Arkansas River Compact Commission

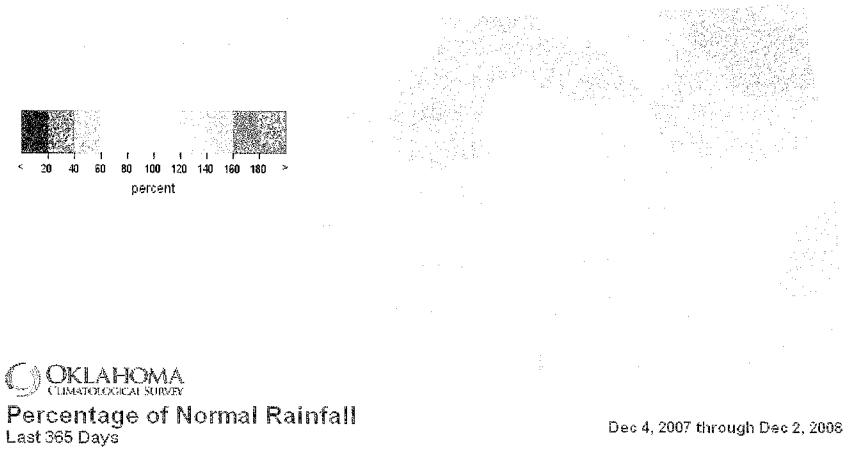


Annual Meeting: Ft. Smith, Arkansas
December 11, 2008

CLIMATE

Recent rainfall has greatly improved drought conditions throughout Oklahoma. The recent statewide drought that has impacted the state over the past few years—drastically reducing river flows and lake and aquifer levels and causing severe impacts to domestic and municipal water supplies—is largely over.

For the past 365 days in the Compact region, Oklahoma's East Central climate division has received more than 50 inches of precipitation, 110 percent of normal rainfall (a surplus of about 4.4 inches). The adjacent Southeast (56 inches, a 5-inch surplus) and Northeast (56 inches, a 14-inch surplus) regions have also benefitted from abundant precipitation.



WATER RESOURCE STUDIES

Surface Water

- A cooperative study underway between the Oklahoma Water Resources Board, Indian Nations Council of Governments and U.S. Army Corps of Engineers will result in creation of a master plan for development along the 42-mile Arkansas River Corridor in the Tulsa vicinity (from Keystone dam to the Tulsa/Wagoner County boundary). Development strategies in this $500,000 cost-shared study will address recreational and ecosystem improvements, flood damage reduction, economic development potential and related issues.

Groundwater

- Now in its last year, researchers involved in the ongoing **Arbuckle-Simpson Hydrology Study** have made considerable progress in obtaining information necessary to understand the aquifer's hydrologic system and assess consequences of groundwater withdrawals on the environment and water users. Accomplishments for the fourth year of the study include developing a river-basin network model to assess the impact of groundwater withdrawals on downstream surface water rights and initiating an instream flow assessment to quantify fish habitat in spring runs of the Blue River and Pennington Creek. Efforts continued in developing models of the geologic framework, stream runoff, and groundwater flow. In addition, several geophysical techniques were used to characterize the subsurface geology and evaluate groundwater flow through the highly-faulted and structurally complex carbonate aquifer. The Arbuckle-Simpson Hydrology Study remains on schedule to be

completed by the end of 2008. This final year of the investigation has been devoted to writing reports, conducting computer simulations, evaluating various water-management options, disseminating information, and soliciting input from stakeholders.

Water Quality

- Shoreline erosion control and revegetation work continues at **Lake Carl Blackwell, Lake Thunderbird, Lake Draper, Grand Lake, and Hudson Lake**. By demonstrating innovative ways to combat erosion and suspended sediment, the OWRB seeks to educate lake managers on the habitat-friendly benefits of establishing aquatic plants to improve water quality and the health of our state's aquatic communities.
- In response to recent ecological impacts to aquatic life resulting from golden algae blooms and other toxic-producing algae, OWRB staff are working with various state and federal agencies to monitor for this organism.
- National Flowing Waters Study – Last summer, the OWRB began participating in the National Flowing Waters Study. Sampling on numerous wadeable and non-wadeable streams will provide data to assess environmental integrity of the waters.
- Additional ongoing OWRB water quality projects include:
    - Probabalistic biological monitoring to assess stream ecosystem integrity throughout Oklahoma;
    - The state level probabalistic monitoring survey for EPA's National Lakes Survey concluded last summer; lake water quality and ecosystem integrity is being asessed throughout Oklahoma;
    - Confirmatory stream and reservoir monitoring to assess Water Quality Standards beneficial use attainment status; and
    - Confirmatory stream and reservoir monitoring to assess Water Quality Standards beneficial use attainment status prior to total maximum daily load (TMDL) completion.

OKLAHOMA WATER QUALITY STANDARDS

New criteria for perchlorate, pending EPA review, will principally affect the Army Ammunition plant in McAlester located on a tributary to Lake Eufaula. Also pending EPA review and approval are phosphorus criteria for the Tulsa water supply lakes, Eucha and Spavinaw. Average total phosphorus concentration will be limited to 16.8 ug/l in Lake Eucha and 14.1 in Spavinaw Lake to help Tulsa with taste and odor problems. The OWRB has adopted revised assessment procedures for metals, toxins, and sediments.

THE 2008 OKLAHOMA LEGISLATIVE SESSION

Last year, appropriation measures amounted to a standstill budget for the OWRB. Some funding relief was provided by the passage of a resolution allowing the OWRB to increase its water rights permitting fees. Legislation also passed directing the OWRB to oversee study and implementation of feasible aquifer recharge pilot projects in the state. However, the OWRB was unsuccessful in its legislative request to remove the existing cap on Gross Production Tax revenues, which would have diverted spillover funding currently going to the General Revenue Fund to the OWRB, which would in turn have provided additional funding to update the Oklahoma Comprehensive Water Plan and for the OWRB's Financial Assistance Program. Another bill that failed would have established a state water portal system website at the OWRB that would serve as the point of access to state/federal government water-related services and information. On a positive note, legislation passed creating a Water Conservation Grant program, administered by the OWRB, to fund innovative statewide competitive proposals from municipalities to implement water conservation projects and plans across Oklahoma.

Priorities for the upcoming legislation session, which begins February 2, 2009, include requests for continuing funding from Gross Production Taxes for FAP and Water Plan implementation and at least a $1 million increase in funding for the Beneficial Use Monitoring Program.

BENEFICIAL USE MONITORING PROGRAM

The OWRB's Water Quality Division continues to monitor water quality conditions and trends statewide through the Beneficial Use Monitoring Program (BUMP) and Oklahoma Water Watch (OWW) Volunteer Monitoring Program. Annual BUMP reports are available on the Board's Web site at www.owrb.ok.gov and on CD.

The BUMP, recognized by EPA as one of the finest state-run monitoring programs in the nation, facilitates science-based decision-making concerning impaired waters. In tandem with Oklahoma's Water Quality Standards and the National Pollutant Discharge Elimination System (NPDES) program, the BUMP has become a cornerstone of state water quality management.

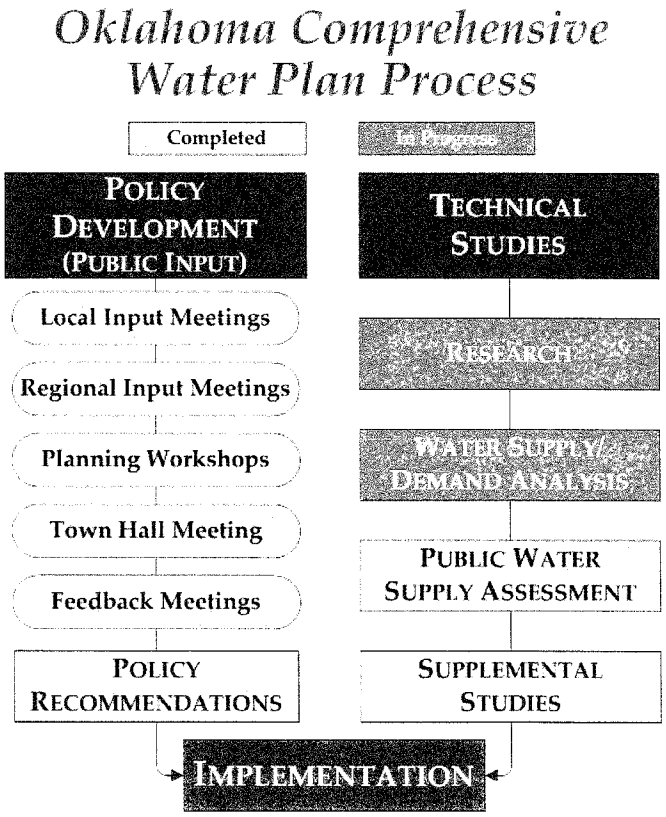
FLOODPLAIN MANAGEMENT ACTIVITIES

Several years ago, the OWRB received two grants from the Federal Emergency Management Agency (FEMA), through Oklahoma's Department of Emergency Management, to field-verify and update FEMA'S database on repetitive loss structures. Staff visited each of the FEMA repetitive loss sites, took digital color photos, acquired the geospatial reference, address, owner and tax values, and prepared a portfolio for each community visited. Staff then processed appropriate documentation for those structures that need to be removed from the repetitive loss list. A "Flood Map Modernization State Business Plan" for Oklahoma has been submitted to FEMA. The OWRB plans to assist FEMA with this new digital mapping process, primarily assisting communities with the map adoption process.

UPDATE OF THE OKLAHOMA COMPREHENSIVE WATER PLAN

The OWRB has begun the second year of the state's update of the Oklahoma Comprehensive Water Plan, planned for completion in 2012. The 42 statewide listening sessions, to facilitate the stakeholder participation and public policy development phase of the update, concluded in November 2007 while 11 regional input meetings to determine priority water issues in each region concluded in November 2008. Priority statewide water issues will be discussed in detail during planning workshops to be held in 2009.

The technical study/engineering phase of the OCWP process—including a statewide assessment of water supply infrastructure—is currently soliciting assistance from various state and federal agencies and organizations, as well as consultants.



WATER RESOURCES FINANCING

The Oklahoma Water Resources Board administers the State *Financial Assistance Program* (FAP), backed by the Statewide Water Development Revolving Fund, which awards loans and grants for the construction and improvement of water and sewer facilities. In all, through the OWRB's five loan and grant programs, more than $1.8 billion in financing has been provided for water and sewer projects in Oklahoma with a total estimated savings of more than $571 million to Oklahoma communities.

The Water Board's Bond Loan Program is the highest rated, uninsured state bond program in Oklahoma. In turn, this enables the OWRB to provide an extremely competitive interest rate on loans for community drinking water projects, leading to even more savings for citizens who rely so much upon dependable water supply. To date, the Board's Bond Loan Program—which provides financing from proceeds of revenue bonds to eligible communities for sewer and water improvements and refinancing—has approved 321 bond loans totaling almost $630 million throughout Oklahoma. The emergency grant program, funded by interest earnings on the Revolving Fund, has approved 544 grants for more than $32 million. These grants have stimulated many millions of dollars more in local water/wastewater projects.

The Board also provides loans through the *Clean Water (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Programs* for various wastewater and water treatment/distribution projects, respectively, which are often required to bring borrowers into compliance with EPA requirements. The CWSRF Loan Program, which provides funds for the construction of new wastewater facilities or the replacement or rehabilitation of existing facilities and nonpoint sorce pollution control, has approved 186 loans for almost $675 million. The DWSRF, a cooperative program administered jointly by the OWRB and Oklahoma Department of Environmental Quality, was created to assist municipalities and rural water districts in constructing drinking water treatment and distribution system improvements required to comply with the federal Safe Drinking Water Act. The program has approved 82 loans for almost $430 million in the state.

The *Rural Economic Action Plan (REAP)* grant program is operated by the Board in a manner very similar to its emergency grant program. REAP gives priority to communities with populations less than 1,500 and rural water districts with less than 450 household taps. The Board has approved 506 REAP grants totaling about $44.6 million in Oklahoma.

OKLAHOMA GOVERNOR'S WATER CONFERENCE & SYMPOSIUM

On October 28-30, the Oklahoma Water Resources Board and Oklahoma Water Resources Research Institute co-hosted the 29th Annual Governor's Water Conference and Water Symposium in Midwest City at the Sheraton-Reed Conference Center. This year's theme was "The Oklahoma Comprehensive Water Plan: Solutions for Oklahoma." Selected presentations from the Conference/Symposium are available on the OWRB's website at http://www.owrb.ok.gov/news/news2/conferences_present.php.

ANNUAL YIELD AND SELECTED HYDROLOGIC DATA FOR THE ARKANSAS RIVER BASIN COMPACT, ARKANSAS-OKLAHOMA, 2007 WATER YEAR

By Terrance E. Lamb

Hydrologic Information Services

Prepared for the
ARKANSAS RIVER COMPACT COMMISSION,
ARKANSAS-OKLAHOMA

Little Rock, Arkansas
2008

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CONVERSION FACTORS

Multiply	By	To obtain
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
acre	4,047	square meter (m^2)
	0.004047	square kilometer (km^2)
square mile (mi^2)	2.590	square kilometer (km^2)
cubic foot (ft^3)	0.02832	cubic meter (m^3)
acre-foot (acre-ft)	1,233	cubic meter (m^3)
	1.233x10-6	cubic kilometer (km^3)
cubic foot per second (ft^3/s)	28.32	liter per second (L/s)
	0.02832	cubic meter per second (m^3/s)
ton per day (ton/d)	0.9072	megagram per day (Mg/d)

Temperature in degrees Celsius (C) can be converted to degrees Fahrenheit (F) as follows:

$$F = 1.8 \times C + 32$$

ABBREVIATIONS

AC-FT	Acre-foot
ACID M.	Acidification method
CHLOR-A	Chlorophyll a
CHROMO FLUOROM	Chromatographic/fluorometric
COLS./100ML	Number of colonies per 100 milliliters
DEG. C	Degrees Celsius
DIS IT	Dissolved incremental titration
E.	Escherichia
FLTRD (other abbreviations sometimes used)	Filtered
Ft	Feet
FT FM L BANK	Feet from left bank
INST	Instantaneous
K	Non-ideal count
MG/L	Milligrams per liter
MM of Hg	Millimeters of mercury
m	Micron
mG/L	Micrograms per liter
ML	Milliliters
MM	Millimeters
NTU	Nephelometric turbidity units
SED.	Sediment
SUSP.	Suspended
T/DAY	Tons per day
TOT IT	Total incremental titration
UM-MF	Micron membrane filter
UNCORR.	Uncorrected
US/CM	Microsiemens per centimeter at 25 degrees
Celsius	C
WAT DIS	Water dissolved
<	Less than
>	Greater than
-- or ---	No data available
%	Percent

:::

ANNUAL YIELD AND SELECTED HYDROLOGIC DATA FOR THE ARKANSAS RIVER BASIN COMPACT, ARKANSAS-OKLAHOMA, 2007 WATER YEAR

By Terrance E. Lamb

ABSTRACT

The computed annual yield and deficiency of the sub-basins as defined in the Arkansas River Basin Compact, Arkansas-Oklahoma, are given in tables for the 2007 water year. Actual runoff from the sub-basins, depletion caused by major reservoirs in the compact area, and depletions due to other water uses also are given in tabular form. Computed monthly mean discharges are shown for the stream-flow stations in the Arkansas River Basin. Water-quality data are shown for water-quality stations sampled in the Arkansas River Basin.

INTRODUCTION

In 1955, the Congress of the United States granted consent to Arkansas and Oklahoma to enter into a compact for the apportionment of the waters of the Arkansas River and its tributaries as they affect the two States. An Arkansas-Oklahoma Arkansas River Compact committee was created with a Federal Representative acting as chairman. After research and deliberate negotiations had been completed, both States approved the Arkansas River Basin Compact, Arkansas-Oklahoma, 1972. To meet the requirements of the Compact, State-line yields of the Arkansas River Basin are determined at the end of each year.

This report was prepared for the Arkansas River Compact Commission, Arkansas-Oklahoma by Hydrologic Information Services. Stream-flow and water-quality data were collected by the U.S. Geological Survey, in cooperation with the Arkansas Natural Resources Commission and the Oklahoma Water Resources Board. The U.S. Army Corps of Engineers, Tulsa District, furnished data from the Webbers Falls, Tenkiller Ferry, Robert S. Kerr, and Wister Lakes.

PURPOSE AND SCOPE

The purpose of this report is to present the annual yields and deficiencies computed for the 2007 water year and to present water quality data for the sub-basins in the Arkansas River Basin as defined in the Arkansas River Compact. The report includes data from stream-flow stations and water-quality stations sampled in the Arkansas River Basin during the 2007 water year. The area included in the Compact is shown on figure 1.

DEFINITION OF TERMS

The following terms used in this report are taken from Article II of the Arkansas River Basin Compact, Arkansas-Oklahoma, 1972.

The term "Arkansas River Basin" means all of the drainage basin of the Arkansas River and its tributaries from a point immediately downstream from the confluence of the Neosho River

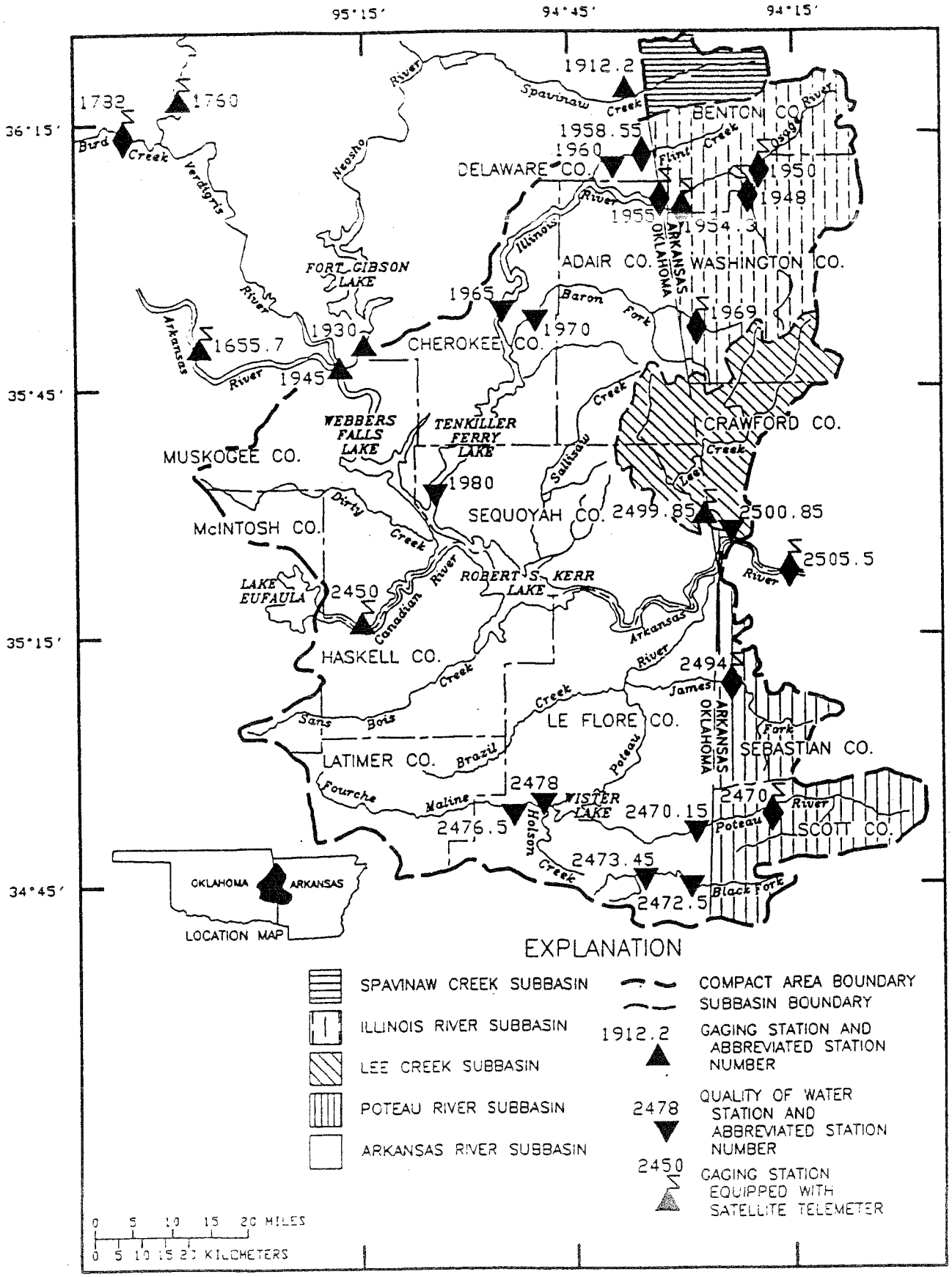


Figure 1.--Arkansas-Oklahoma Arkansas River Basin Compact area and subbasins.

with the Arkansas River (fig. 1) to a point immediately downstream from the confluence of Lee Creek with the Arkansas River, together with the drainage basin of Spavinaw Creek in Arkansas (fig. 1), but excludes that part of the drainage basin of the Canadian River upstream from Lake Eufaula Dam.

The term "Spavinaw Creek Sub-basin" means the drainage area of Spavinaw Creek in the State of Arkansas.

The term "Illinois River Sub-basin" means the drainage area of the Illinois River in the State of Arkansas.

The term "Lee Creek Sub-basin" means the drainage area of Lee Creek in the State of Arkansas upstream from the Oklahoma State line and in the State of Oklahoma.

The term "Poteau River Sub-basin" means the drainage area of the Poteau River in the State of Arkansas.

The term "Arkansas River Sub-basin" means all areas of the Arkansas River Basin in the Compact area except the four sub-basins described previously.

The term "water year" means a 12-month period beginning on October 1 and ending September 30.

The term "annual yield" means the computed annual gross runoff from any specified sub-basin. The runoff would have passed any certain point on a stream and would have originated within any specified area under natural conditions without any manmade depletion or accretion during the water year.

Terms related to stream-flow, water-quality, and other hydrologic data, as used in this report, are defined below.

Acre-foot is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet.

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

Escherichia coli (E. coli) are present in the digestive tract of warm-blooded animals. In the laboratory, E. coli are defined as all organisms that produce orange/yellow colonies when incubated for two hours at 35 °C± 0.2 °C and transferred to 44.5 °C±0.2 ° for 22-24 hours on mTEC agar (nutrient medium for E. coli growth), and stained with phenol red solution. Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are present in the intestines or feces of warm-blooded animals.

They are often used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all the organisms that produce blue colonies within 24 hours when incubated at 44.5 °C ±0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria also are present in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. These bacteria also are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C±0.5 °C on KF-streptococcus agar (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Code numbers have been assigned for agencies collecting and analyzing samples, and are listed in water-quality tables of this report as follows:

1028 Oklahoma District, Water Resources Division (WRD), U.S. Geological Survey
80513 Arkansas District, WRD, U.S. Geological Survey
80020 National Water Quality Laboratory, WRD, U.S. Geological Survey.

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

Cubic foot per second is the rate of discharge representing a volume of 1 cubic foot passing a specified point during 1 second.

Deficiency is the amount the actual runoff is less than the minimum required flow.

Depletion is the difference between the inflow and outflow caused by major reservoirs.

Discharge is the volume of water that passes a given point within a given period.

- **Instantaneous discharge** is the discharge at a particular instant of time.
- **Mean discharge** is the arithmetic average of individual daily mean discharges during a specific period.

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

Dissolved oxygen content of water in equilibrium with air is a function of atmospheric pressure and temperature and the dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved solids, with small temperature changes having the more significant effect. Photosynthesis and respiration may cause diurnal variations in dissolved-oxygen concentration in water of some streams.

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

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

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium

carbonate ($CaCO_3$).

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

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

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

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

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume that passes a section in a given time. It is computed by multiplying discharge by milligrams per liter by 0.0027.

Sodium-absorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Water varies, in respect to sodium hazard, from that which can be used for irrigation on almost all soils to that which generally is unsatisfactory for irrigation.

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

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

STORET parameter codes are codes assigned to specific hydrologic measurement types and constituents for computer storage of data. These five-digit codes (shown in parentheses) are included with the water-quality information in the Hydrologic Station Records section.

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

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

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected

form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating that the sample consists of a water-suspended-sediment mixture and that the analytical method determines all of the constituent in the sample.)

COMPUTATION OF ANNUAL YIELDS

The annual yield and deficiency (table 1) for each sub-basin was computed as defined by the Arkansas River Compact Committee (1972). Actual runoff for the sub-basins (table 2) was computed as defined by the Committee except for the station Lee Creek near Van Buren, which has been moved 3.2 miles upstream near Short, Oklahoma.

Table 1. --Annual yield and deficiency for the sub-basins for the 2007 water year, as defined in the Arkansas River Basin Compact, Arkansas-Oklahoma, 1972

[Flow in cubic feet per second]

Sub-basin	Actual runoff from the Sub-basins	Total depletions or accretions (-)	Annual yield	[a]Percent depletion allowed	Minimum required flow	[b]Deficiency
Spavinaw Creek	62.4	[c]0.001	62.4	50	31.2	0
Illinois River	723	[e]-32.6	690	60	276	0
Lee Creek	804	[c]0.61	805	100	0	0
Poteau River	546	[c]5.04	551	60	221	0
Arkansas River	2,388	[d]162	2,550	60	1,020	0

a Defined in the Arkansas River Basin Compact, Arkansas-Oklahoma, 1972.

b The amount of actual runoff less than the minimum required flow.

c Based on 2000 water year water-use data.

d Based on 2000 water year water-use data and 2007 direct diversions from lake storage.

e Based on 2000 water year water-use data and 37.0 cfs estimated imported from the White River Basin in 2007.

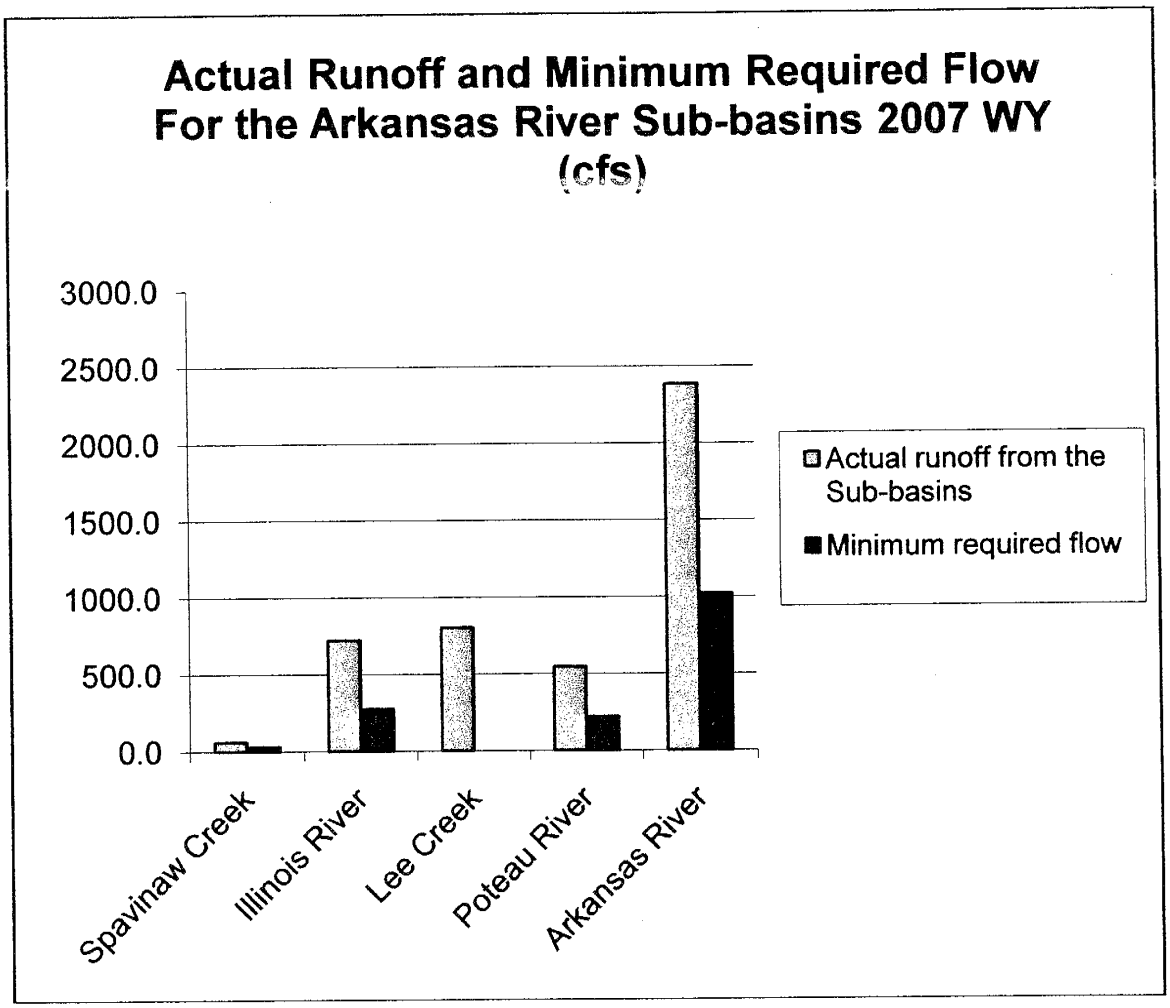

Actual Runoff and Minimum Required Flow For the Arkansas River Sub-basins 2007 WY (cfs)
3000.0
2500.0
2000.0
1500.0
1000.0
500.0
0.0
Spavinaw Creek
Illinois River
Lee Creek
Poteau River
Arkansas River
Actual runoff from the Sub-basins
Minimum required flow

Table 2.--Actual runoff from the sub-basins for the 2007 water year

[In cubic feet per second; D.A. = drainage area; mi^2 = square mile; acre-ft = acre-feet]

Month	Spavinaw Creek [a] D.A.=135 mi^2	Illinois River [b,e] D.A.=744 mi^2	Lee Creek D.A.=426 mi^2	Poteau River [c] D.A.=536 mi^2	Arkansas River [d] D.A.=4,591 mi^2
October	14.7	656	85.9	67.5	-13.8
November	18.1	1,115	1,301	932	2,926
December	89.8	1,347	1,393	1,516	9,620
January	215	2,012	2,305	2,198	13,682
February	81.4	911	996	512	6,068
March	47.6	351	197	67.7	-290
April	47.8	330	469	272	390
May	93.1	406	1,225	171	598
June	40.5	365	295	158	-6,368
July	41.7	657	1,307	541	-3,865
August	13.2	174	26.5	25.9	3,344
September	44.0	342	35.3	66.0	2,592
2007 water year	62.4	723	804	546	2,388
2007 water year (acre-ft)	45,153	523,235	582,422	395,491	1,728,499

a Includes 31 mi^2 ungaged.

b Includes 63 mi^2 ungaged

c Includes 125 mi^2 ungaged.

d Computed by subtracting drainage area at Arkansas River at Muskogee, Canadian River near Whitefield, Illinois River Sub-basin, Lee Creek Sub-basin, and Poteau River Sub-basin from drainage area at Arkansas River near Fort Smith, Arkansas.

e Includes 37.0 cfs discharged from Fayetteville, Rogers, and Springdale sewage treatment plants that was withdrawn from the White River Basin in Arkansas.

Annual depletion caused by major reservoirs was computed for the four major reservoirs in the basin as defined by the Arkansas River Compact Committee (1972). These depletions are shown in table 3 and summarized in table 1.

A compilation of withdrawals and returns of freshwater in the sub-basins was prepared using data from "Water Use In Arkansas, 2000" and "Water Use In Oklahoma, 2000", as well as return flow data for the 2007 water year in the Illinois River basin. These depletions and accretions for each sub-basin are shown in Table 4 and summarized in Table 1. Information on depletions continues to be gathered in order to re-evaluate their present impact.

Stream-flow data used in the computations are given in the Hydrologic Station Records section (p.11 to 66). The station description under "Remarks" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the actual discharge, "good" means within 10 percent, and "fair" means within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Table 3.--Annual depletion caused by major reservoirs for the 2007 water year

[acre-ft = acre-feet; ft^3/s = cubic feet per second]

Reservoir	Year-end contents (acre-feet)	Change in contents in water year (acre-feet)	[a]Precipitation on reservoir surface (inches)	[b]Evaporation from reservoir (inches)	[a]Diversions (acre-feet)	Depletion (acre-feet)	Depletion (ft^3/s)
Webbers Falls	165,445	3,183	46.47	59.34	0	6,301	8.70
Tenkiller Ferry	631,652	-27,429	39.39	45.07	4,781	-23,455	-32.4
Robert S. Kerr	533,359	-16,722	49.95	54.48	0	-26,579	-36.7
Wister	66,260	-16,609	57.28	48.23	11,788	-13,297	-18.4

[a] From U.S. Army Corps of Engineers, Tulsa District.

[b] Adjusted for pan coefficient of 0.70 (from Wisler and Brater, 1949).

Table 4.--Estimates of annual depletion for the sub-basins caused by withdrawals and returns for the 2007 water year

(Data is from 2000 WY water use reports, unless otherwise noted)

Sub-basin	Withdrawals ac/ft	Returns ac/ft	Total Withdrawals or Returns (-) ac/ft	Total Withdrawals or Returns (-) cfs
Spavinaw Creek	1	0	1	0.001
Illinois River	3,229	26,799[2]	-23,570	-32.6
Lee Creek	441	0[1]	441	0.61
Poteau River	3,653	0[1]	3,653	5.04
Arkansas River	79,497[3]	19,076[3]	60,421	83.5

[1] No known returns for these sub-basins

[2] Based on 2007 returned flow transferred from the White River Basin

[3] Not including depletions from the 4 major reservoirs in the sub-basin

WATER QUALITY

Begining in October 1984, water-quality data for the Arkansas-Oklahoma Compact have been published in this report. These data are collected to monitor the water quality in the Arkansas-Oklahoma Compact area. Over the past several years, nutrients, major ions, and sediment data have been collected. Observed concentrations of these constituents are indications of general water quality in the subject area sub-basins. In freshwater, phosphorus is often the nutrient responsible for accelerated eutrophication. To control eutrophication, the Environmental Protection Agency makes the following recommendations:

A) Total phosphates should not exceed 0.05 mg/L (as phosphorus) in a stream at a point where it enters a lake or reservoir, and
B) Total phosphorus should not exceed 0.1 mg/L in streams that do not discharge directly into lakes or reservoirs.

Water-quality data collected at stations in the compact area in the 2007 water year are shown in tables in the Hydrologic Station Records section of this report.

SELECTED REFERENCES

Arkansas River Compact Committee, 1972, Arkansas River Basin Compact Arkansas-Oklahoma, 1972, with Supplemental Interpretive Comments, Supplement No. 1: Austin, Texas, 31 p.
Arkansas Soil and Water Conservation Commission, 1981, Arkansas State Water Plan - Lakes of Arkansas, 157 p.
Wisler, C.D., and Brater, E.F., 1949, Hydrology: New York, John Wiley & Sons, Inc., 150 p.

HYDROLOGIC STATION RECORDS

Daily Discharge records denoted by Q and Quality of Water records by QW.

Station Number	Station Name	Page
07191220	Spavinaw Creek nr Sycamore, OK (Q, QW)	12, 13
07194500	Arkansas River nr Muskogee, OK (Q)	14
07194800	Illinois River at Savoy, AR (Q, QW)	15-18
07195000	Osage Creek nr Elm Springs, AR (Q, QW)	19-21
07195430	Illinois River South of Siloam Springs, AR (Q, QW)	22-25
07195500	Illinois River nr Watts, OK (Q, QW)	26-33
07195855	Flint Creek nr West Siloam Springs, OK (Q)	34
07196900	Baron Fork at Dutch Mills, AR (Q, QW)	35-37
07245000	Canadian River nr Whitefield, OK (Q)	38
07247000	Poteau River at Cauthron, AR (Q, QW)	39-41
07247015	Poteau river nr Loving, OK (Q, QW)	42-44
07247250	Black Fork below Big Creek nr Page, OK (Q, QW)	45,46
07247345	Black Fork at Hodgen, OK (QW)	47,48
07247500	Fourche Maline nr Red Oak, OK (Q)	49
07247650	Fourche Maline nr LeFlore, OK (QW)	50-52
07247800	Holson Creek at Summerfield, OK (QW)	53,54
07249400	James Fork nr Hackett, AR (Q, QW)	55-57
07249455	Arkansas River at Fort Smith, AR (Q, QW)	58-60
07249985	Lee Creek nr Short, OK (Q, QW)	61-63
07250550	Arkansas River at James W. Trimble Lock and Dam nr Van Buren, AR (Q, QW)	64-66

07191220 SPAVINAW CREEK NEAR SYCAMORE, OK

LOCATION.–Lat 36°2005, long 94°3829 referenced to North American Datum of 1983, in NE 1/4 NW 1/4 sec.4, T.21 N., R.25 E., Delaware County, OK, Hydrologic Unit 11070209, on right bank 1.8 mi upstream from Cherokee Creek, 4.8 mi northeast of Row, 6.5 mi southeast of Sycamore, and at mile 35.0.

DRAINAGE AREA.–133 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.–October 1961 to current year

REVISED RECORDS.–WSP 2121: 1965 (M).

GAGE.–Water-stage recorder. Datum of gage is 868.34 ft NAVD of 1988. Prior to Nov. 6, 2001, elevation published as 875 ft above NGVD of 1929, from topographic map.

REMARKS.–Records good except for estimated periods which are poor. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	22	13	336	332	90	64	41	53	32	43	21	19
2	20	12	263	266	84	63	41	51	32	44	20	17
3	17	12	200	207	78	61	41	55	32	42	18	15
4	15	12	151	165	71	58	40	64	31	41	18	14
5	13	13	120	134	65	55	39	76	31	54	17	13
6	13	13	103	113	62	52	39	79	30	63	15	13
7	13	13	92	96	59	51	39	177	29	56	13	20
8	12	12	83	e76	58	51	38	226	29	53	12	38
9	12	13	76	e63	55	50	38	220	29	50	11	103
10	11	13	69	e51	52	50	37	219	28	47	10	161
11	10	14	62	e42	50	50	36	189	38	45	10	126
12	10	13	56	e35	50	47	35	157	50	44	9.9	98
13	10	13	51	196	56	47	36	155	69	44	9.4	80
14	10	13	48	495	108	45	38	136	65	43	8.8	66
15	10	14	45	617	151	45	43	115	57	45	8.3	57
16	11	17	42	493	140	45	57	97	53	49	8.1	50
17	12	22	39	375	124	45	69	86	49	51	8.0	45
18	14	24	36	292	109	43	68	77	45	48	7.7	41
19	15	26	33	233	98	41	64	69	41	47	8.0	37
20	16	25	31	200	90	41	60	63	36	44	8.1	34
21	19	23	29	252	86	40	57	59	33	42	8.4	31
22	20	22	31	302	80	40	54	55	32	38	8.5	30
23	20	20	35	295	74	41	50	51	37	36	8.9	28
24	19	19	39	256	74	41	47	48	36	34	9.7	25
25	17	18	41	215	73	42	45	46	37	30	11	23
26	16	16	41	181	72	42	46	42	42	27	13	22
27	15	15	39	155	70	41	49	39	44	26	16	22
28	15	13	38	133	66	41	54	37	44	23	20	23
29	15	13	37	115	---	41	56	35	44	22	23	23
30	15	67	124	101	---	41	55	33	43	21	23	25
31	14	---	353	95	---	40	---	33	---	22	21	---
Total	451	533	2,743	6,581	2,245	1,454	1,412	2,842	1,198	1,274	403.8	1,299
Mean	14.5	17.8	88.5	212	80.2	46.9	47.1	91.7	39.9	41.1	13.0	43.3
Max	22	67	353	617	151	64	69	226	69	63	23	161
Min	10	12	29	35	50	40	35	33	28	21	7.7	13

WATER-QUALITY RECORDS

PERIOD OF RECORD.–October 1972 to April 1988, December 2001 to current year.

REMARKS.–Samples collected periodically by the U.S. Geological Survey. All water-quality samples were analyzed at the City of Tulsa Quality Assurance Laboratory in Tulsa, Oklahoma. Suspended sediment samples were analyzed by U.S. Geological Survey. Specific conductance, pH, water temperature, air temperature, turbidity, and dissolved oxygen were determined in the field.

COOPERATION.–All analytical records were furnished by City of Tulsa Quality Assurance Laboratory, Tulsa, Oklahoma.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 2

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, IR LED light, det ang 90 deg, FNU (63680)	Barometric pressure, mm Hg (00025)	Carbon dioxide water, unfltrd mg/L (00405)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (90410)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
Jan													
23...	1430	293	13	747	8.8	11.6	105	7.3	292	6.2	10.2	100	<.58
May													
08...	1100	226	13	745	5.6	8.8	90	7.7	313	20.8	15.1	130	<.58
29...	1115	35	–	742	34	7.3	76	6.9	326	22.2	16.4	140	<.58
Jun													
20...	1030	36	5	732	10	7.5	81	7.4	349	23.3	17.4	140	<.58
Jul													
25...	0945	29	5	730	11	7.2	81	7.4	366	28.3	18.8	150	<.58
Sep													
10...	1145	163	6	743	11	8.6	99	7.4	379	28.2	21.3	160	<.58

Part 2 of 2

[Remark codes: <, less than.]

Date	Ammonia water, unfltrd mg/L (71845)	Ammonia water, unfltrd mg/L as N (00610)	Nitrate water unfltrd mg/L as N (00620)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Jan													
23...	--	<.110	6.24	6.24	<.047	.196	.064	.078	.080	.00005	78	2	1.6
May													
08...	--	<.110	3.49	3.50	<.047	.230	.075	.085	.084	.00002	83	3	1.8
29...	--	<.110	3.41	3.41	<.047	.242	.079	.080	.079	.00013	--	--	--
Jun													
20...	--	<.110	--	3.26	--	.236	.077	--	.088	.00004	50	6	.58
Jul													
25...	.97	.750	2.79	2.80	--	.236	.077	--	.084	.00004	42	3	.23
Sep													
10...	--	<.110	3.74	3.75	<.047	.270	.088	.093	.100	.00004	69	9	4.0

07194500 ARKANSAS RIVER NEAR MUSKOGEE, OK

LOCATION.--Lat 35°46' 10", long 95°1 7' 55" referenced to North American Datum of 1927, Muskogee County, OK, Hydrologic Unit 11110102, on downstream side of left pier of bridge on U.S. Highway 62, 1.7 miles downstream from Neosho River, 3.5 miles northeast of Muskogee, and at mile 457.8.
DRAINAGE AREA.--96,674 mi² of which 12,541 mi² probably is noncontributing.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1926 to September 1970, July 2003 to current year. Published as "at Webbers Falls" October 1933 to February 1935. Monthly discharge only for some periods, published in WSP 1311.
REVISED RECORDS.--WSP 1341: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 471.38 ft above NGVD of 1929. See WSP 1921 for history of changes prior to Feb. 21, 1931.
REMARKS.--Records fair except for estimated periods and discharges less than 1000 ft³/s which are poor. Some regulation since 1940 by Grand Lake; further regulation since 1941 by Great Salt Plains Lake, and since 1951 by Hulah Lake. Flow regulated since 1953 by Fort Gibson Lake (station 07193000). Flow regulated since September 1964 by Keystone Lake (station 07164200). Flow regulated by Chouteau Lock and Dam upstream and Webbers Falls Lock and Dam downstream since 1970.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,140	694	4,430	6,430	10,600	17,100	46,600	46,600	54,600	e130,000	81,100	14,200
2	1,220	700	1,330	5,620	9,700	12,900	56,700	46,700	e66,900	e134,000	88,000	13,600
3	611	e300	1,700	5,300	10,300	9,020	64,700	51,200	e93,600	e123,000	87,800	14,100
4	3,230	e300	3,610	7,270	10,300	8,200	69,500	56,000	e99,500	e141,000	84,400	16,700
5	5,000	e300	1,150	8,050	5,940	5,740	68,000	46,300	e86,300	e167,000	74,100	17,200
6	1,110	478	1,940	4,780	4,720	4,330	64,300	42,400	e79,400	e175,000	69,700	19,800
7	e500	571	3,930	4,650	6,240	5,760	51,800	e74,400	70,000	e176,000	60,900	18,300
8	1,090	e300	1,530	6,890	3,380	4,440	45,100	97,100	60,900	e172,000	61,100	24,700
9	687	e300	489	6,150	5,220	8,950	47,800	91,300	62,400	e168,000	65,300	25,300
10	964	e300	e450	5,240	2,590	5,990	41,700	e112,000	62,900	e157,000	65,400	19,400
11	e500	e300	305	7,650	3,340	6,130	33,200	e121,000	e80,700	e149,000	60,100	23,200
12	901	e300	790	e6,580	7,280	7,590	28,200	e115,000	e117,000	e156,000	63,600	29,300
13	1,140	739	1,730	e1,820	9,040	5,980	27,300	e103,000	137,000	137,000	61,100	36,300
14	e500	260	614	e1,500	9,050	5,030	33,300	103,000	e129,000	e125,000	57,000	35,200
15	e500	2,830	1,580	e5,720	8,540	4,380	43,500	95,100	e130,000	e134,000	54,400	27,900
16	1,710	496	e450	e6,660	9,160	6,770	41,100	99,200	e150,000	e145,000	52,300	19,900
17	1,060	861	e450	e5,750	8,470	2,080	60,100	102,000	e143,000	e154,000	51,700	21,800
18	1,180	281	821	e6,100	7,140	5,130	78,600	102,000	e134,000	e156,000	54,700	22,400
19	1,510	e300	509	8,070	8,770	5,450	82,500	85,700	e137,000	e136,000	55,200	18,400
20	915	1,630	9,610	5,330	8,650	7,420	74,900	82,700	e130,000	e122,000	53,200	17,100
21	e500	e300	7,010	15,300	7,020	7,660	59,000	94,400	125,000	e107,000	37,200	15,900
22	e500	e300	5,190	16,800	11,100	26,600	59,100	e99,100	e122,000	e107,000	42,700	7,300
23	506	e300	2,110	14,700	11,500	24,600	59,100	e101,000	e140,000	e106,000	43,100	6,960
24	1,270	e400	1,890	12,700	6,830	41,400	56,900	e99,900	e123,000	e101,000	43,800	11,500
25	e500	e300	709	12,900	7,250	42,300	59,700	91,500	e102,000	e105,000	42,900	11,100
26	e450	e500	2,690	15,500	10,100	34,200	52,700	72,400	e108,000	e106,000	29,300	13,400
27	e450	e300	3,000	15,300	11,400	39,300	47,900	63,400	e113,000	e102,000	18,800	9,510
28	e400	e300	e400	14,400	14,900	47,600	42,500	61,500	e110,000	92,000	19,700	9,330
29	e350	459	530	14,200	---	47,000	41,600	e65,300	e98,600	85,400	17,600	5,420
30	e350	5,380	30,900	13,400	---	47,000	41,700	e67,400	e114,000	80,200	20,400	5,200
31	876	---	13,500	13,800	---	51,900	---	58,300	---	77,600	19,600	---
Total	31,620	20,779	105,347	274,560	228,530	547,950	1,579,100	2,546,900	3,179,800	4,026,200	1,636,200	530,420
Mean	1,020	693	3,398	8,857	8,162	17,680	52,640	82,160	106,000	129,900	52,780	17,680
Max	5,000	5,380	30,900	16,800	14,900	51,900	82,500	121,000	150,000	176,000	88,000	36,300
Min	350	260	305	1,500	2,590	2,080	27,300	42,400	54,600	77,600	17,600	5,200

07194800 ILLINOIS RIVER AT SAVOY, AR

LOCATION.--Lat 36°06'11", long 94°20'40" referenced to North American Datum of 1927, in SE 1/4 sec.36, T.17 N., R.32 W., Washington County, AR, Hydrologic Unit 11110103, on eastern boundary of Ozark National Forest, on left bank downstream end of State Hwy 16 bridge, 0.3 mi downstream from tributary of Lake Weddington, 0.4 mi upstream from Clear Creek, and 0.9 mi southwest of Savoy.

DRAINAGE AREA.--167 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Jul 1979 to Dec 1981, Oct 1985 to Sep 1986, Aug 1995 to current year. Occasional low-flow discharge measurements 1957-63; occasional discharge measurements 1974-78, 1982-85, and 1990-95.

REVISED RECORDS.--WDR Arkansas 2000: 1986 (M)(P), 1997-99 (M)

GAGE.--Water-stage recorder. Datum of gage is 1,017.90 ft above NGVD of 1929.

REMARKS.--Water-discharge records good except estimated daily discharges which are poor. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	64	21	1,590	624	165	133	31	18	50	256	32	8.1
2	51	20	948	483	154	127	29	22	114	473	24	7.8
3	42	18	552	411	139	110	27	84	48	437	19	7.7
4	36	19	398	e371	134	98	25	83	37	242	17	8.1
5	31	73	330	e331	130	92	23	55	29	162	16	10
6	29	462	282	e251	130	87	23	39	25	696	16	12
7	26	284	237	e211	127	83	22	86	22	286	15	12
8	24	184	199	e171	118	77	22	288	65	177	14	16
9	23	136	181	e131	109	76	21	173	70	126	14	83
10	21	108	165	e113	101	77	23	118	37	93	13	71
11	21	86	152	94	96	73	25	123	54	99	13	75
12	20	68	143	100	373	68	25	148	148	161	13	31
13	19	60	127	3,880	1,450	66	25	92	95	324	13	19
14	19	54	115	3,500	618	62	54	73	59	187	12	16
15	20	469	104	1,820	416	58	83	63	41	134	12	14
16	88	632	98	891	329	51	66	114	30	98	12	12
17	140	324	90	538	289	45	54	72	25	73	12	12
18	87	225	82	430	247	44	52	46	22	56	12	11
19	78	171	73	369	229	43	45	34	23	43	13	10
20	81	136	82	388	209	42	36	27	41	35	13	9.8
21	59	114	181	876	186	40	24	22	37	378	13	9.6
22	46	98	162	528	167	38	16	21	29	183	12	9.3
23	37	86	130	411	151	37	13	19	91	105	12	9.2
24	33	77	111	351	153	35	10	22	99	63	12	9.3
25	30	68	124	306	191	35	319	126	62	44	115	10
26	30	61	131	273	160	34	160	126	43	34	22	13
27	31	55	113	249	142	32	80	68	101	27	11	12
28	27	51	102	226	131	36	44	47	270	23	9.2	10
29	25	55	92	202	---	34	28	41	181	21	8.8	9.6
30	23	5,690	1,480	187	---	30	20	46	109	19	8.6	9.2
31	21	---	999	169	---	31	---	42	---	22	8.3	---
Total	1,282	9,905	9,573	18,885	6,844	1,894	1,425	2,338	2,057	5,077	536.9	546.7
Mean	41.4	330	309	609	244	61.1	47.5	75.4	68.6	164	17.3	18.2
Max	140	5,690	1,590	3,880	1,450	133	319	288	270	696	115	83
Min	19	18	73	94	96	30	10	18	22	19	8.3	7.7
Ac-ft	2,540	19,650	18,990	37,460	13,580	3,760	2,830	4,640	4,080	10,070	1,060	1,080

WATER-QUALITY RECORDS

PERIOD OF RECORD.–Apr 1974 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 4

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Color, water, fltrd, Pt-Co units (00080)	Sampling method, code (82398)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)
Oct													
04...	0910	80020	37	12	30	5.6	746	5.9	67	7.6	332	20.7	140
Jan													
17...	0930	80020	549	38	10	15	761	11.3	87	7.2	212	4.3	84
Feb													
13...	1600	80020	1,320	200	10	52	750	11.7	94	7.4	151	5.4	49
Mar													
07...	1245	--	84	15	10	2.8	751	14.3	133	8.3	277	11.4	100
Apr													
10...	1145	--	22	15	10	<2.0	739	10.2	96	8.0	322	11.2	120
25...	1230	--	426	50	10	60	747	9.2	100	7.7	238	18.5	95
Jul													
19...	0815	--	46	15	10	6.4	747	6.2	77	7.9	297	25.4	130
Aug													
31...	1515	--	8.4	--	30	--	743	7.4	98	7.6	327	28.4	140

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 4

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue fixed non-filterable, mg/L (00540)	Residue total non-filterable, mg/L (00530)	Residue volatile, suspended, mg/L (00535)
Oct													
04...	52.0	3.09	3.73	2	8	5.72	9.20	<.10	15.2	195	6	7	1
Jan													
17...	29.5	2.37	2.88	2	9	3.87	6.64	E.07	12.4	131	16	20	4
Feb													
13...	16.7	1.85	2.72	.2	11	2.96	5.52	E.07	11.6	105	59	71	12
Mar													
07...	38.0	2.38	2.00	2	9	4.98	8.62	E.06	16.1	161	5	6	1.5
Apr													
10...	43.8	2.44	2.29	.2	10	5.96	9.50	E.06	12.9	186	2	3	M
25...	34.7	2.06	4.00	5	18	10.4	13.5	.16	18.4	195	70	80	10
Jul													
19...	45.3	3.00	3.34	2	8	5.39	7.69	E.09	11.6	171	8	12	3.2
Aug													
31...	51.6	2.94	4.66	3	10	7.80	11.2	.10	10.9	197	--	--	--

Part 3 of 4

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
Oct													
04...	.30	.03	.021	13.2	2.99	3.00	.037	.011	.28	3.3	.163	.053	.07
Jan													
17...	.42	.04	.030	14.1	3.19	3.19	.018	.006	.39	3.6	.235	.077	.07
Feb													
13...	.84	.07	.053	5.10	1.15	1.16	.023	.007	.79	2.0	.506	.165	.19
Mar													
07...	.21	–	<.020	10.1	2.28	2.29	.034	.010	–	2.5	.027	.009	<.04
Apr													
10...	.30	–	E.016	8.69	1.96	1.97	.031	.009	–	2.3	.051	.017	E.03
25...	1.2	–	E.018	6.88	1.55	1.57	.061	.019	–	2.8	.202	.066	.08
Jul													
19...	.33	.03	.020	6.85	1.55	1.56	.028	.008	.31	1.9	.174	.057	.05
Aug													
31...	.26	–	E.014	4.12	.93	.94	.038	.012	–	1.2	.235	.077	.07

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 4 of 4

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100mL (31633)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Biomass phyto-plank-ton, ashfree drymass mg/L (49953)	Biomass plank-ton, ash wgt mg/L (81353)	Biomass plank-ton, dry wgt mg/L (81354)	Chloro-phyll a phyto-plank-ton, fluoro, µg/L (70953)	Pheo-phytin a, phyto-plank-ton, µg/L (62360)	Suspnd. sedi-ment, sieve diametr percent <.063mm (70331)	Sus-pended sedi-ment concen-tration mg/L (80154)	Sus-pended sedi-ment dis-charge, tons/d (80155)	Sampler type, code (84164)
Oct												
04...	.09	150	110	3.2	145	148	1.7	1.3	87	10	1.0	3070
Jan												
17...	.14	1,100	1,800	7.0	222	229	1.2	1.0	88	26	39	3051
Feb												
13...	.28	1,000	1,200	12.7	511	524	5.5	3.7	82	83	296	3052
Mar												
07...	E.02	21	22	<5.0	225	230	3.7	2.8	74	7	1.6	3070
Apr												
10...	.05	62	76	<4.3	190	193	1.1	1.1	80	6	.36	3070
25...	.25	E23,000	E9,800	15.3	484	499	10.3	16.4	94	86	99	3052
Jul												
19...	.09	320	160	5.0	230	234	3.3	2.5	96	11	1.4	3070
Aug												
31...	.08	160	170	--	--	--	--	--	--	--	--	3070

07195000 OSAGE CREEK NEAR ELM SPRINGS, AR

LOCATION.--Lat 36°1 3·19-, long 94°1 7·18- referenced to North American Datum of 1983, in NE 1/4 sec.21, T.1 8 N., R.31 W., Benton County, AR, Hydrologic Unit 11110103, on left bank 0.7 mi downstream from Little Osage Creek, and 3.2 mi northwest of Elm Springs.

DRAINAGE AREA.--130 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Oct 1950 to Sep 1975, Aug 1995 to current year. Oct 1976 to Sep 1979 a crest-stage partial-record station. Occasional discharge measurements 1977-79 and 1982-95. Monthly discharge only for some periods, published in WSP 1731.

REVISED RECORDS.--WDR Arkansas 1970: Drainage area. WDR Arkansas 1974: 1969.

GAGE.--Water-stage recorder. Prior to Oct 1, 1979 water stage recorder about 400 ft downstream at present datum.

REMARKS.--Water-discharge records good except estimated daily discharges which are poor. Low flow slightly regulated by operation of small lake at Cave Springs, and the City of Rogers sewage treatment plant. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	74	48	510	164	133	123	75	94	93	173	65	71
2	71	48	317	145	127	121	78	170	451	264	63	61
3	70	48	242	137	118	110	82	142	129	374	64	61
4	71	41	202	130	109	101	77	120	112	184	67	73
5	66	70	180	124	111	105	79	107	107	178	52	115
6	64	74	164	110	109	104	80	95	96	194	57	420
7	54	65	146	99	106	102	73	123	86	136	59	384
8	49	60	132	97	108	101	70	141	148	112	57	700
9	53	55	124	94	106	105	73	113	102	107	55	1,050
10	56	52	114	91	95	98	81	107	84	110	56	324
11	56	48	102	90	89	90	89	113	97	114	51	295
12	53	41	106	94	195	93	89	111	108	214	46	204
13	52	50	101	1,120	767	96	109	93	93	246	54	178
14	42	55	94	902	330	94	304	91	86	134	60	163
15	42	237	90	628	260	91	144	113	82	111	66	140
16	191	192	87	353	220	88	123	126	73	106	75	125
17	e127	117	76	283	191	81	115	97	68	101	86	119
18	e82	91	79	252	170	76	114	90	72	96	77	115
19	80	76	80	220	165	80	106	80	75	91	66	e118
20	73	75	92	210	158	85	101	72	72	87	81	e117
21	61	73	119	361	151	85	87	78	71	79	87	e115
22	51	68	97	266	141	84	81	81	70	72	87	e114
23	54	59	84	228	136	83	85	77	158	74	82	e112
24	56	56	76	216	148	77	94	82	126	76	84	e110
25	56	51	73	194	144	70	279	87	94	72	741	102
26	57	46	74	183	130	76	140	80	96	72	168	119
27	55	54	75	172	125	78	120	73	152	69	117	108
28	47	57	74	153	123	97	103	71	204	68	100	98
29	42	80	73	150	---	85	92	83	135	79	93	88
30	46	2,340	291	145	---	83	92	82	113	65	88	82
31	51	---	234	138	---	84	---	83	---	67	81	---
Total	2,002	4,427	4,308	7,549	4,765	2,846	3,235	3,075	3,453	3,925	2,985	5,881
Mean	64.6	148	139	244	170	91.8	108	99.2	115	127	96.3	196
Max	191	2,340	510	1,120	767	123	304	170	451	374	741	1,050
Min	42	41	73	90	89	70	70	71	68	65	46	61
Ac-ft	3,970	8,780	8,540	14,970	9,450	5,650	6,420	6,100	6,850	7,790	5,920	11,660

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 4

[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
Oct													
03...	1100	80020	63	30	740	5.2	59	7.5	480	20.2	120	46.2	1.95
Jan													
17...	0800	80020	278	30	760	10.5	85	7.3	339	6.2	120	45.6	2.21
Mar													
08...	0740	–	94	10	750	8.8	79	7.9	458	9.8	130	46.9	1.98
Apr													
11...	0715	–	86	10	734	7.8	74	8.2	464	11.3	130	50.1	2.04
Jul													
18...	1100	–	92	10	747	8.1	98	8.1	453	23.5	130	47.5	2.14
Aug													
31...	1400	–	78	30	743	6.4	80	7.7	490	24.9	150	54.5	2.20

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)
Oct													
03...	7.83	1.1	31	27.2	30.9	.26	38.6	285	.36	–	E.012	15.8	3.57
Jan													
17...	4.98	.5	18	12.7	15.4	.14	16.8	200	.36	.10	.075	26.3	5.94
Mar													
08...	6.97	1.1	31	27.8	30.9	.24	34.2	268	.44	–	<.020	20.0	4.52
Apr													
11...	9.05	1.3	34	33.8	36.9	.27	30.8	281	.41	–	E.016	16.6	3.75
Jul													
18...	7.21	1.0	30	26.7	28.6	.26	30.5	268	.34	–	E.018	13.8	3.11
Aug													
31...	10.1	1.4	34	37.6	36.4	.29	34.4	290	.30	–	<.020	14.4	3.25

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 3 of 4

[Remark codes: <, less than; E, estimated.]

Date	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Suspnd. sediment, sieve diameter percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
Oct 03...	3.57	.015	.005	--	3.9	.645	.210	.22	.24	140	69	91	27
Jan 17...	5.95	.030	.009	.29	6.3	.564	.184	.17	.21	150	150	84	7
Mar 08...	4.54	.063	.019	--	5.0	.134	.044	.06	.07	43	37	56	4
Apr 11...	3.76	.027	.008	--	4.2	.313	.102	.11	.12	180	170	100	2
Jul 18...	3.12	.026	.008	--	3.5	.464	.151	.14	.15	140	E150	95	9
Aug 31...	3.26	.019	.006	--	3.6	.397	.130	.12	.12	270	E240	--	--

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 4 of 4

[Remark codes: <, less than; E, estimated.]

Date	Suspended sediment discharge, tons/d (80155)	Sampler type, code (84164)
Oct 03...	4.6	3070
Jan 17...	5.3	3070
Mar 08...	1.0	3070
Apr 11...	.46	3070
Jul 18...	2.2	3070
Aug 31	–	3070

07195430 ILLINOIS RIVER SOUTH OF SILOAM SPRINGS, AR

LOCATION.–Lat 36°0631-, long 94°3200- referenced to North American Datum of 1983, in SE 1/4 NE 1/4 sec.31, T.17 N., R.33 W., Benton County, AR, Hydrologic Unit 11110103, at bridge on State Hwy 59, 5.0 mi south of Siloam Springs, and 0.6 mi downstream from mouth of Cincinnati Creek.
DRAINAGE AREA.–575 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.–Aug 1995 to current year. Occasional low-flow measurements in 1971.
REVISED RECORDS.–WDR Arkansas 1997: 1996.
GAGE.–Water-stage recorder.
REMARKS.–Water-discharge records good. No estimated daily discharges. Satellite telemeter at station.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 3, 1990, reached a stage of 25.4 ft, from floodmarks, discharge 66,000 ft3/s from rating curve extended above 23,000 ft3/s on basis of contracted opening of peak flow.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,700 ft3/s, Nov 30, gage height, 15.99 ft; minimum discharge, 137 ft3/s, Aug 24, gage height, 2.90 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	286	154	7,180	1,190	466	407	271	327	252	412	197	160
2	263	152	2,420	873	445	408	240	348	503	804	196	151
3	239	149	1,510	724	423	386	234	424	409	1,770	190	144
4	221	148	1,070	640	403	366	228	432	327	1,150	188	145
5	206	158	850	596	389	352	219	385	284	775	183	228
6	191	369	731	543	382	344	218	351	258	1,300	172	545
7	183	481	631	489	372	335	213	356	236	963	167	622
8	175	323	545	450	362	328	206	649	232	616	165	713
9	169	289	496	423	352	330	202	562	393	459	163	1,910
10	167	260	462	393	345	334	205	478	315	393	160	1,060
11	165	217	431	372	337	324	220	517	458	377	157	759
12	162	194	407	369	351	319	228	513	546	398	152	521
13	158	181	383	3,880	2,830	317	236	444	474	1,050	145	389
14	157	181	358	8,620	1,870	316	385	390	372	698	144	361
15	161	269	333	5,190	1,210	313	420	368	344	488	145	330
16	263	1,330	321	2,530	940	309	340	482	307	393	146	283
17	451	638	314	1,570	794	302	315	405	265	356	143	249
18	312	435	310	1,220	685	285	307	341	245	346	146	233
19	275	368	309	1,000	620	272	304	322	236	334	145	217
20	272	346	315	867	580	272	292	303	229	325	147	204
21	245	328	365	1,710	538	269	269	274	243	480	146	195
22	212	305	414	1,410	496	261	247	262	230	460	144	189
23	191	273	362	1,100	469	260	236	259	259	352	141	178
24	181	245	330	926	461	255	253	249	478	304	138	172
25	178	230	322	805	489	244	661	294	358	263	406	180
26	176	217	330	710	457	235	630	357	312	238	809	209
27	177	206	320	654	433	237	458	340	305	222	311	231
28	170	206	313	593	417	284	393	301	540	210	217	198
29	164	226	311	544	---	292	352	278	625	210	185	182
30	158	8,140	1,570	513	---	255	331	267	404	220	176	181
31	155	---	2,140	482	---	282	---	258	---	200	168	---
Total	6,483	17,018	26,153	41,386	17,916	9,493	9,113	11,536	10,439	16,566	6,092	11,139
Mean	209	567	844	1,335	640	306	304	372	348	534	197	371
Max	451	8,140	7,180	8,620	2,830	408	661	649	625	1,770	809	1,910
Min	155	148	309	369	337	235	202	249	229	200	138	144
Med	181	253	383	724	459	309	261	351	314	393	163	223
Ac-ft	12,860	33,760	51,870	82,090	35,540	18,830	18,080	22,880	20,710	32,860	12,080	22,090

WATER-QUALITY RECORDS

PERIOD OF RECORD.–Jun 1995 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 4

[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Color, water, fltrd, Pt-Co units (00080)	Sampling method, code (82398)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)
Oct													
04...	0810	80020	221	10	30	6.4	744	7.2	82	7.6	370	20.7	130
Jan													
17...	1430	80020	1,490	15	30	12	762	10.4	83	7.3	245	5.5	98
Feb													
13...	1700	80020	3,770	200	10	120	754	10.1	83	7.6	211	6.6	69
Mar													
07...	1045	--	338	10	10	<2.0	767	12.9	113	8.1	334	9.7	110
Apr													
10...	0920	--	202	10	10	<2.0	744	9.3	86	7.9	368	10.8	120
25...	1500	--	1,120	12	10	19	747	12.7	141	7.6	354	19.5	110
Jul													
18...	1000	--	345	12	10	6.3	752	7.4	91	8.1	342	25.2	140
Aug													
30...	1230	--	177	--	30	--	750	7.5	95	8.0	368	26.9	130

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4
[Remark codes: <, less than; E, estimated.]

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium percent of cations (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180deg C wat fit mg/L (70300)	Residue fixed non-filterable, mg/L (00540)	Residue total non-filterable, mg/L (00530)	Residue volatile, suspended, mg/L (00535)
Oct													
04...	49.0	2.32	5.25	.6	19	14.8	17.8	.15	20.3	218	8	10	1
Jan													
17...	35.7	2.11	3.42	3	12	6.53	8.77	E.07	12.1	147	15	18	3
Feb													
13...	24.8	1.73	3.15	3	16	6.53	10.0	.10	12.5	130	149	166	18
Mar													
07...	41.4	2.12	3.62	5	19	12.6	16.0	.12	18.4	190	4	5	1.2
Apr													
10...	45.4	2.08	4.47	6	22	16.1	19.2	.13	17.9	202	1	2	.5
25...	40.7	1.87	4.59	6	22	15.2	18.4	.16	17.4	216	52	57	5.6
Jul													
18...	51.2	2.48	4.98	5	17	13.4	13.7	.15	14.9	193	12	14	2.3
Aug													
30...	49.3	2.27	6.08	7	22	18.0	19.7	.17	18.1	229	--	--	--

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 3 of 4
[Remark codes: <, less than; E, estimated.]

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia + Nitrate water, fltrd, mg/L as N (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
Oct													
04...	.20	--	E.012	12.2	2.75	2.75	.007	.002	--	3.0	.289	.094	.11
Jan													
17...	.36	--	E.016	17.1	3.87	3.87	.014	.004	--	4.2	.248	.081	.07
Feb													
13...	1.2	.08	.061	7.32	1.65	1.67	.034	.010	1.1	2.8	.445	.145	.16
Mar													
07...	.20	--	<.020	13.9	3.13	3.14	.026	.008	--	3.3	.056	.018	<.04
Apr													
10...	.25	--	<.020	11.2	2.53	2.53	.012	.004	--	2.8	.130	.042	.05
25...	.73	--	E.013	9.41	2.13	2.14	.044	.013	--	2.9	.181	.059	.07
Jul													
18...	.28	--	<.020	9.33	2.11	2.11	.013	.004	--	2.4	.246	.080	.09
Aug													
30...	.23	--	<.020	7.06	1.59	1.60	.015	.004	--	1.8	.351	.114	.11

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 4 of 4

[Remark codes: <, less than; E, estimated.]

Date	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Biomass phytoplankton, ashfree drymass mg/L (49953)	Biomass plankton, ash wgt mg/L (81353)	Biomass plankton, dry wgt mg/L (81354)	Chlorophyll a phytoplankton, fluoro, µg/L (70953)	Pheophytin a, phytoplankton, µg/L (62360)	Suspnd. sediment, sieve diameter percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)	Sampler type, code (84164)
Oct												
04...	.22	110	94	3.0	143	146	.8	.9	92	12	7.2	3070
Jan												
17...	.13	290	700	5.4	196	202	1.1	.8	91	22	89	3070
Feb												
13...	.34	E2,200	2,500	22.5	834	856	14.1	9.1	92	201	2,050	3052
Mar												
07...	.04	E14	21	<3.8	168	171	6.2	2.9	79	3	2.7	3070
Apr												
10...	.06	44	48	<4.3	190	193	1.4	1.3	82	3	1.6	3070
25...	.16	710	690	9.2	323	332	13.2	19.1	91	61	184	3052
Jul												
18...	.10	27	63	<5.0	233	238	1.9	2.0	79	15	14	3070
Aug												
30...	.12	500	E34	--	--	--	--	--	92	40	19	3070

07195500 ILLINOIS RIVER NEAR WATTS, OK

LOCATION.–Lat 36°07'48", long 94°34' 19" referenced to North American Datum of 1927, in NW 1/4 NE 1/4 sec.18, T.19 N., R.26 E., Adair County, OK, Hydrologic Unit 11110103, near right bank on downstream side of pier of bridge on U.S. Highway 59, 1.5 mi north of Watts, 4.5 mi downstream from Cincinnati Creek, and at mile 106.2.

DRAINAGE AREA.–635 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.–August 1955 to current year.

GAGE.–Water-stage recorder. Datum of gage is 893.78 ft above NGVD of 1929.

REMARKS.–Records fair. Since July 2, 1957, small diversion for municipal water supply for the city of Siloam Springs, Ark., upstream from station. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, AILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	314	166	8,530	1,630	571	471	253	311	230	432	186	147
2	276	164	2,920	1,150	544	466	233	335	423	888	185	138
3	250	161	1,930	910	513	437	227	436	445	1,680	175	129
4	233	159	1,380	766	484	405	221	467	297	1,140	173	127
5	218	169	1,080	689	466	383	208	410	259	749	168	165
6	202	370	905	602	459	373	208	367	239	1,100	151	419
7	194	669	752	527	445	358	206	363	221	940	147	600
8	185	437	614	475	428	349	198	731	213	594	143	682
9	177	349	542	439	414	347	193	667	367	460	141	1,590
10	173	296	498	403	403	360	195	528	293	397	136	1,050
11	173	253	460	378	389	346	209	568	551	374	135	693
12	168	226	427	372	400	327	218	552	728	381	129	530
13	164	208	400	4,050	3,020	322	216	487	599	887	123	406
14	162	207	371	9,120	2,510	318	344	416	458	687	118	345
15	165	264	342	5,680	1,640	309	486	379	381	490	118	306
16	210	1,600	324	3,140	1,290	299	378	471	334	402	120	270
17	526	944	309	2,110	1,090	285	334	431	298	347	117	243
18	396	613	294	1,670	930	270	317	349	274	312	119	229
19	304	479	288	1,390	822	259	307	308	262	299	124	212
20	288	400	298	1,200	753	259	282	277	258	275	126	203
21	265	355	380	2,160	684	257	263	253	268	491	121	193
22	236	320	470	1,920	606	251	246	243	251	491	119	186
23	211	297	408	1,520	560	247	235	240	274	343	117	177
24	198	275	360	1,290	549	245	237	231	532	279	115	167
25	193	258	346	1,120	595	237	619	265	410	245	170	176
26	191	246	356	980	550	225	767	325	326	223	828	201
27	193	231	340	887	509	229	508	303	315	208	300	228
28	187	230	319	798	486	245	421	268	496	195	210	198
29	180	231	306	710	---	261	368	251	658	198	179	178
30	172	6,400	1,850	648	---	243	327	243	456	208	166	168
31	166	---	2,790	597	---	248	---	235	---	191	156	---
Total	6,970	16,977	30,589	49,331	22,110	9,631	9,224	11,710	11,116	15,906	5,315	10,356
Mean	225	566	987	1,591	790	311	307	378	371	513	171	345
Max	526	6,400	8,530	9,120	3,020	471	767	731	728	1,680	828	1,590
Min	162	159	288	372	389	225	193	231	213	191	115	127
Ac-ft	13,820	33,670	60,670	97,850	43,860	19,100	18,300	23,230	22,050	31,550	10,540	20,540

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1989 to July 1995, July 1996 to current year.

REMARKS.--Samples collected periodically. Specific conductance, pH, water temperature, dissolved oxygen, turbidity, and alkalinity were determined in the field.

WATER-QUALITY DATA

WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Turbidity, IR LED light, det ang 90 deg, FNU (63680)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Noncarb hardness, wat flt field, mg/L as CaCO3 (00904)
Oct													
02...	1315	276	10	11	740	9.1	106	7.8	366	31.7	21.2	140	31
Dec													
07...	1100	757	4.6	7.3	757	11.9	100	7.6	310	-4.5	7.4	130	32
Feb													
07...	1100	446	2.5	3.7	740	13.9	117	7.8	325	2.9	6.6	130	18
Apr													
09...	1200	196	2.9	4.2	739	12.1	112	8.3	353	8.8	10.5	130	8
26...	1020	779	14	15	737	6.7	73	7.6	298	13.4	17.4	120	12
Jun													
04...	1030	298	24	19	753	8.3	96	7.9	302	28.0	21.9	120	32
12...	1220	623	20	24	739	8.1	97	7.7	284	25.3	22.4	120	40
28...	1045	523	6.4	10	743	8.5	102	7.8	347	28.0	23.4	130	34
Jul													
03...	1145	2,200	70	70	750	8.2	99	7.7	264	28.0	23.6	110	8
Aug													
06...	1015	152	7.2	11	740	7.4	97	8.1	372	33.1	27.9	130	20
Sep													
09...	1100	1,730	81	63	740	7.5	90	7.4	289	26.5	23.0	110	2

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover -able, mg/L (00916)	Magnes-ium, water, fltrd, mg/L (00925)	Magnes-ium, water, unfltrd recover -able, mg/L (00927)	Potas-sium, water, fltrd, mg/L (00935)	Potas-sium, water, unfltrd recover -able, mg/L (00937)	Sodium adsorp-tion ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover -able, mg/L (00929)	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicar-bonate, wat flt incrm. titr., field, mg/L (00453)	Carbon-ate, wat flt incrm. titr., field, mg/L (00452)
Oct													
02...	52.4	48.4	2.51	2.43	5.16	4.92	.6	18	15.2	14.6	111	135	<1
Dec													
07...	46.0	44.9	2.52	2.39	3.91	3.76	.4	14	9.77	9.1	94	114	<1
Feb													
07...	46.6	49.5	2.36	2.27	3.61	3.82	.4	16	11.4	10.6	109	132	<1
Apr													
09...	49.8	49.0	2.24	2.22	4.81	4.77	.6	21	16.9	17.2	126	152	<1
26...	43.8	43.1	2.26	2.24	4.47	4.16	.4	16	10.8	10.4	107	130	<1
Jun													
04...	43.9	43.5	2.09	2.06	4.94	4.71	.5	17	12.0	11.8	86	105	<1
12...	43.6	42.7	2.15	2.06	5.12	4.67	.4	15	9.94	9.2	78	95	<1
28...	48.2	50.2	2.17	2.25	5.07	5.28	.6	19	14.5	15.7	96	116	<1
Jul													
03...	39.8	40.5	2.33	2.36	4.93	5.08	.3	14	8.38	8.2	102	123	<1
Aug													
06...	49.0	49.5	2.38	2.17	6.00	5.52	.7	23	18.7	17.8	113	137	<1
Sep													
09...	39.0	42.3	1.86	1.86	5.09	5.03	.5	18	10.9	11.1	104	126	<1

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/acre-ft (70303)	Residue water, dissolved, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71 846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrate water, fltrd, mg/L as N (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L (71856)
Oct													
02...	16.8	20.2	191	.28	152	203	.27	--	E.018	2.82	12.5	2.82	.013
Dec													
07...	12.5	16.3	165	.25	370	181	.26	--	E.012	4.12	18.2	4.12	.010
Feb													
07...	14.4	16.1	178	.24	216	179	.22	--	<.020	4.20	18.5	4.19	.016
Apr													
09...	19.5	18.9	198	.27	105	199	.23	--	<.020	2.50	11.0	2.49	.012
26...	12.1	15.9		.26	399	190	.52	.06	.050	1.62	7.12	1.61	.051
Jun													
04...	12.4	12.6	148	.25	149	185	.36	--	E.014	1.80	7.93	1.79	.019
12...	12.6	11.4	141	.26	328	195	.52	.04	.028	1.91	8.41	1.90	.030
28...	16.3	16.9	169	.28	288	204	.31	--	<.020	1.90	8.41	1.90	.011
Jul													
03...	9.55	11.5	144	.21	935	157	.86	.03	.025	1.48	6.51	1.47	.023
Aug													
06...	20.5	17.8	189	.30	91.2	222	.27	--	E.017	1.54	6.77	1.53	.019
Sep													
09...	12.4	12.6	152	.23	789	169	.64	--	<.020	1.81	7.99	1.81	.020

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 4 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Total nitro-gen, water, unfltrd mg/L (00600)	Ortho-phos-phate, water, fltrd, mg/L (00660)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	Hydro-gen ion, water, fltrd, calcd, mg/L (00191)	Organic carbon, water, unfltrd mg/L (00680)	Alum-inum, water, fltrd, µg/L (01106)	Alum-inum, water, unfltrd recover-able, µg/L (01105)	Anti-mony, water, fltrd, µg/L (01095)	Anti-mony, water, unfltrd µg/L (01097)
Oct													
02...	.004	--	3.1	.264	.086	.092	.115	.00002	2.2	2.5	200	.10	<.2
Dec													
07...	.003	--	4.4	.186	.061	.070	.089	.00002	2.2	E1.3	133	E.05	<.2
Feb													
07...	.005	--	4.4	.102	.033	.042	.052	.00002	1.8	1.7	85	.07	<.2
Apr													
09...	.004	--	2.7	.141	.046	.053	.064		2.0	3.4	74	.09	E.1
26...	.015	.47	2.1	.215	.070	.089	.132	.00003	4.4	11.9	232	.12	E.1
Jun													
04...	.006	--	2.2	.300	.098	.108	.151	.00001	3.4	3.4	310	.12	E.1
12...	.009	.49	2.4	.442	.144	.152	.205	.00002	4.8	4.0	308	.09	E.2
28...	.003	--	2.2	.326	.106	.110	.131	.00002	2.4	4.2	166	.14	E.1
Jul													
03...	.007	.84	2.3	.524	.171	.153	.315	.00002	8.8	6.6	823	.10	E.1
Aug													
06...	.006	--	1.8	.243	.079	.090	.107	.00001	2.4	3.5	181	.13	E.1
Sep													
09...	.006	--	2.5	.406	.132	.151	.265	.00004	6.3	21.8	1,090	.13	E.1

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 5 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Barium, water, fltrd, µg/L (01005)	Barium, water, unfltrd recover -able, µg/L (01007)	Beryll-ium, water, fltrd, µg/L (01010)	Beryll-ium, water, unfltrd recover -able, µg/L (01012)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)	Chrom-ium, water, fltrd, µg/L (01030)	Chrom-ium, water, unfltrd recover -able, µg/L (01034)	Cobalt water, fltrd, µg/L (01035)	Cobalt water, unfltrd recover -able, µg/L (01037)	Copper, water, fltrd, µg/L (01040)
Oct													
02...	.64	.93	57	60.5	<.06	<.06	E.02	.03	<2	<.8	.32	.539	.62
Dec													
07...	.44	.64	52	52.4	<.06	<.06	<.04	E.01	<2	M	.16	.319	.48
Feb													
07...	.34	.54	48	48.0	<.06	<.06	E.02	.02	<2	<.8	.19	.281	.56
Apr													
09...	.48	.57	47	49.9	<.06	<.06	<.04	E.01	<2	<.8	.31	.455	.51
26...	.69	.72	49	51.2	<.06	E.04	E.03	.02	<2	M	.29	.49	--
Jun													
04...	.73	.94	51	56.6	<.06	E.04	<.04	.02	<2	M	.26	.52	.81
12...	.75	.82	54	54.4	<.06	E.04	E.02	.02	<2	M	.23	.51	2.1
28...	.78	.67	58	58.6	<.06	<.06	<.04	E.01	<2	M	.33	.46	3.0
Jul													
03...	1.0	1.7	47	65.8	<.06	.12	E.02	.04	<2	1	.22	1.3	3.3
Aug													
06...	.78	.91	57	60.9	<.06	<.06	E.02	.02	<2	M	.38	.56	2.0
Sep													
09...	.76	1.3	48	67.2	<.06	.13	E.02	.07	<2	2	.30	1.5	1.5

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 6 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Copper, water, unfltrd recover -able, µg/L (01042)	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Lead, water, fltrd, µg/L (01049)	Lead, water, unfltrd recover -able, µg/L (01051)	Manganese, water, fltrd, µg/L (01056)	Manganese, water, unfltrd recover -able, µg/L (01055)	Mercury water, fltrd, µg/L (71890)	Mercury water, unfltrd recover -able, µg/L (71900)	Molybdenum, water, fltrd, µg/L (01060)	Molybdenum, water, unfltrd recover -able, µg/L (01062)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)
Oct													
02...	4.5	E4	300	<.12	.46	27.7	47.5	<.010	<.010	1.0	.9	1.2	1.64
Dec													
07...	E1.0	E5	168	<.12	.21	14.8	24.1	<.010	<.010	.4	.4	.71	1.03
Feb													
07...	E1.1	E5	126	E.06	.15	14.7	18.4	<.010	<.010	.5	.5	.73	1.05
Apr													
09...	E.8	14	119	<.12	.18	17.5	25.5	E.010	<.010	.8	.8	.97	1.33
26...	1.3	15	311	--	.55	14.3	39.5	<.010	<.010	.7	.6	2.0	1.4
Jun													
04...	E1.2	9	387	<.12	.71	10.4	49.5	--	--	.8	.7	.91	1.3
12...	1.6	21	405	.20	.69	24.5	53.4	--	--	.5	.5	1.1	1.4
28...	E.65	E5	175	.20	.46	12.9	34.5	--	--	.8	.7	1.3	1.3
Jul													
03...	2.5	35	1,410	.42	2.31	14.5	160	--	--	.6	.5	1.3	2.7
Aug													
06...	E.73	E4	243	E.11	.43	24.6	61.0	--	--	1.0	1.0	1.6	1.6
Sep													
09...	2.5	14	1,300	.16	2.71	7.0	159	--	--	.7	.5	1.3	2.7

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 7 of 7

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Selenium, water, fltrd, µg/L (01145)	Selenium, water, unfltrd µg/L (01147)	Silver, water, fltrd, µg/L (01075)	Silver, water, unfltrd recover-able, µg/L (01077)	Thallium, water, fltrd, µg/L (01057)	Thallium, water, unfltrd µg/L (01059)	Vanadium, water, fltrd, µg/L (01085)	Vanadium, water, unfltrd µg/L (01087)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover-able, µg/L (01092)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Oct													
02...	.26	.26	<.1	<.02	<.04	<.18	.92	E1	2.4	2	100	15	11
Dec													
07...	.42	.46	<.1	<.02	<.04	<.18	.48	<2	1.2	2	80	11	22
Feb													
07...	.30	.41	<.1	<.02	E.02	<.18	.37	<2	2.9	3	70	11	13
Apr													
09...	.21	.23	<.1	<.02	<.04	<.18	.54	<2	2.7	2	84	39	21
26...	.24	.24	<.1	<.02	<.04	<.18	.68	<2	--	3.1	90	28	59
Jun													
04...	.22	.24	<.1	<.02	<.04	<.18	1.1	3	.86	2.7	95	29	23
12...	.37	.28	<.1	.08	<.04	<.18	1.0	3	4.1	3.1	97	29	49
28...	.17	.16	<.1	<.02	<.04	<.18	1.1	E1	3.2	2.2	82	22	31
Jul													
03...	.27	.28	<.1	.02	<.04	<.18	1.1	3	4.1	7.2	97	121	719
Aug													
06...	.21	.20	<.1	<.02	<.04	<.18	1.3	E1	1.5	2.0	81	19	7.8
Sep													
09...	.21	.23	<.1	E.01	<.04	<.18	1.1	4	3.8	8.4	96	127	593

07195855 FLINT CREEK NEAR WEST SILOAM SPRINGS, OK

LOCATION.--Lat 36°1 258, long 94°3615 referenced to North American Datum of 1927, in NE 1/4 NE 1/4 sec.1 4, T.20 N., R.25 E., Delaware County, OK, Hydrologic Unit 11110103, on left bank 800 ft downstream from county bridge, 1.4 mi upstream from Sagar Creek, 2.5 mi from Arkansas-Oklahoma State line, northwest of West Siloam Springs, Oklahoma.

DRAINAGE AREA.--59.8 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Oct 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 958.00 ft above NGVD of 1929.

REMARKS.--Water-discharge records good except estimated daily discharges which are poor. Flow is partially regulated by Lake Siloam Springs, 4.5 mi upstream, and sewage discharge into Flint Creek from the City of Gentry. Satellite telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 693 ft³/s, May 10, gage height, 6.86 ft; minimum discharge, 1.3 ft³/s, Oct 4, gage height, 3.75 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.0	8.9	143	95	40	29	15	13	9.7	5.3	7.7	3.0
2	2.3	9.1	91	78	37	28	14	17	9.0	7.1	6.1	2.6
3	1.6	9.9	71	67	35	27	13	22	10	7.8	6.9	4.7
4	1.6	11	59	59	33	26	13	22	9.0	6.8	9.3	5.8
5	4.6	13	52	51	32	25	13	21	7.8	6.9	5.2	9.9
6	4.9	13	47	46	31	24	13	20	7.4	9.2	5.0	13
7	3.3	12	43	41	30	24	13	26	6.4	7.1	6.4	12
8	3.0	12	39	37	28	21	13	36	8.0	5.9	6.2	31
9	3.0	11	36	34	28	21	13	35	9.9	5.2	5.8	56
10	3.9	11	33	32	27	20	13	164	9.9	5.1	5.7	33
11	6.6	11	31	30	26	20	14	109	30	5.5	5.4	22
12	7.8	11	30	30	30	19	14	65	26	6.8	5.1	15
13	6.3	12	28	108	53	18	14	49	17	9.0	4.8	12
14	5.1	11	26	216	64	18	19	38	13	7.5	3.6	9.7
15	5.4	21	24	182	60	18	20	30	11	6.0	2.9	8.6
16	11	20	23	135	54	17	18	24	9.6	5.4	3.2	7.4
17	10	17	22	108	50	17	17	20	8.7	4.8	2.8	8.0
18	8.5	15	22	91	45	16	17	17	8.5	4.2	3.1	8.0
19	6.4	13	21	78	41	16	15	15	8.2	3.6	5.1	7.3
20	5.2	11	25	73	39	16	14	13	7.5	3.4	6.6	6.8
21	5.8	11	29	86	36	16	14	12	7.2	3.2	5.1	6.0
22	6.4	11	29	85	34	15	13	12	5.3	3.6	4.8	5.5
23	6.6	12	28	79	33	15	13	12	12	3.6	5.3	5.2
24	6.5	13	27	72	35	15	13	12	14	3.0	4.1	5.0
25	6.5	13	28	64	33	14	18	13	9.8	2.7	8.5	6.8
26	7.0	13	26	58	32	14	18	12	7.6	3.0	7.1	12
27	8.4	14	25	54	30	14	17	12	7.5	3.8	7.9	9.0
28	8.1	14	24	49	29	14	15	11	7.8	3.9	5.8	7.1
29	7.5	15	24	46	---	14	14	10	6.3	6.4	4.8	10
30	7.9	170	117	43	---	14	14	11	5.4	8.2	5.8	11
31	8.1	---	127	41	---	16	---	9.9	---	6.7	4.7	---
Total	182.3	538.9	1,350	2,268	1,045	581	444	882.9	309.5	170.7	170.8	353.4
Mean	5.88	18.0	43.5	73.2	37.3	18.7	14.8	28.5	10.3	5.51	5.51	11.8
Max	11	170	143	216	64	29	20	164	30	9.2	9.3	56
Min	1.6	8.9	21	30	26	14	13	9.9	5.3	2.7	2.8	2.6
Ac-ft	362	1,070	2,680	4,500	2,070	1,150	881	1,750	614	339	339	701

07196900 BARON FORK AT DUTCH MILLS, AR

LOCATION.--Lat 35°52'48", long 94°29'11" referenced to North American Datum of 1927, in NE 1/4 NE 1/4 SE 1/4 sec.21, T.14 N., R.33 W., Washington County, AR, Hydrologic Unit 11110103, near right bank on downstream side of bridge on State Hwy 59 at Dutch Mills, 2.2 mi downstream from Fly Creek, and 2.9 mi upstream from Arkansas-Oklahoma State line.

DRAINAGE AREA.--40.6 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Apr 1958 to current year. Prior to Oct 1969, published as "Barren Fork at Dutch Mills."

REVISED RECORDS.--WDR Arkansas 1970: Drainage area. WDR Arkansas 1993: 1992 (m).

GAGE.--Water-stage recorder. Datum of gage is 986.47 ft above NGVD of 1929.

REMARKS.--Water-discharge records good except estimated daily discharges which are poor. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	117	217	313	177	46	34	11	11	5.7	7.0	11	3.1
2	120	217	213	151	44	31	9.8	13	5.3	188	8.6	3.0
3	124	220	176	138	42	29	9.2	18	5.0	45	7.4	2.8
4	131	221	154	133	41	27	8.6	17	4.3	25	6.5	2.9
5	136	261	142	129	40	26	8.4	14	4.0	711	6.2	3.5
6	139	293	133	120	40	25	8.1	12	3.7	233	5.6	5.2
7	141	177	122	114	40	24	7.9	30	3.8	82	5.1	5.9
8	142	155	115	109	38	23	7.6	39	6.0	52	4.8	7.6
9	143	143	111	105	36	23	7.7	28	6.0	37	4.5	55
10	144	135	108	101	35	23	8.0	23	4.3	32	4.3	16
11	146	126	106	100	34	21	8.4	31	34	31	4.0	12
12	143	123	103	111	104	20	8.1	20	20	75	3.8	8.4
13	142	121	99	1,490	236	19	8.6	15	9.4	73	3.7	6.5
14	143	119	96	630	110	19	15	12	6.3	45	3.5	5.5
15	152	232	94	312	80	18	14	12	4.8	33	3.4	4.8
16	186	212	92	169	70	17	12	14	3.9	27	3.3	4.3
17	170	165	90	128	61	16	10	10	3.5	22	3.3	3.9
18	152	146	88	109	56	15	10	8.6	5.0	18	4.1	3.7
19	165	135	87	107	52	15	9.5	7.6	4.8	15	4.5	3.7
20	160	129	106	117	50	15	8.8	6.8	6.1	39	4.7	4.0
21	157	123	148	163	46	14	8.4	6.2	9.9	71	4.3	3.9
22	153	121	120	124	42	14	8.5	6.1	6.2	27	3.9	3.3
23	153	118	109	107	40	13	8.2	6.1	5.4	19	3.8	3.0
24	155	115	103	98	42	13	17	5.5	6.7	16	3.7	3.3
25	164	115	111	73	43	12	80	7.7	4.8	13	7.7	3.7
26	178	113	107	61	38	12	30	8.5	4.2	11	8.0	4.9
27	175	114	102	59	36	11	21	7.2	4.6	9.8	5.2	4.8
28	171	115	98	55	34	12	17	6.5	6.6	9.1	4.2	4.1
29	172	145	96	52	---	11	14	7.6	6.1	8.3	3.7	3.6
30	190	1,440	638	49	---	10	12	6.6	4.8	13	3.5	3.4
31	211	---	247	47	---	12	---	6.8	---	17	3.2	---
Total	4,775	6,066	4,427	5,438	1,576	574	406.8	416.8	205.2	2,004.2	153.5	199.8
Mean	154	202	143	175	56.3	18.5	13.6	13.4	6.84	64.7	4.95	6.66
Max	211	1,440	638	1,490	236	34	80	39	34	711	11	55
Min	117	113	87	47	34	10	7.6	5.5	3.5	7.0	3.2	2.8
Ac-ft	9,470	12,030	8,780	10,790	3,130	1,140	807	827	407	3,980	304	396

WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1961, 1969 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 4
[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
Oct													
03...	0915	80020	121	30	748	4.8	55	7.2	358	21.1	160	58.3	3.44
Jan													
18...	0700	80020	178	30	762	11.1	88	7.4	267	5.2	120	42.0	2.69
Mar													
07...	0945	–	24	10	750	9.8	86	7.7	304	8.9	120	43.1	2.66
Apr													
10...	0830	–	8.0	10	742	8.4	78	7.8	327	11.1	140	49.2	3.04
Jul													
18...	0915	–	18	10	768	5.7	67	8.0	342	24.3	130	48.2	3.05
Aug													
30...	1115	–	3.6	30	749	9.2	119	7.9	381	27.4	160	56.6	3.40

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4
[Remark codes: <, less than; E, estimated.]

Date	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)
Oct													
03...	3.67	2	7	5.86	8.86	E.08	20.6	208	.27	.05	.042	11.7	2.65
Jan													
18...	2.33	2	7	3.81	6.35	E.09	13.6	170	.16	–	E.011	18.7	4.21
Mar													
07...	1.94	2	7	4.38	7.60	E.10	18.4	168	.22	–	E.011	10.7	2.42
Apr													
10...	2.07	2	8	5.33	8.30	E.09	17.5	177	.21	.04	.030	7.81	1.76
Jul													
18...	3.05	2	7	4.62	6.81	.10	15.4	202	.25	–	E.019	9.81	2.22
Aug													
30...	3.71	2	8	6.61	9.06	.12	17.0	200	.27	–	<.020	2.65	.60

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 4

[Remark codes: <, less than; E, estimated.]

Date	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/100mL (31633)	Fecal coliform, M-FC 0.7u MF col/100 mL (31625)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
Oct 03...	2.66	.050	.015	.23	2.9	.146	.048	.04	.07	140	96	82	4
Jan 18...	4.22	.008	.003	--	4.4	.139	.045	.04	.07	210	390	75	6
Mar 07...	2.43	.056	.017	--	2.7	.038	.012	E.02	.04	E19	27	79	3
Apr 10...	1.78	.039	.012	.18	2.0	.046	.015	E.02	E.03	24	42	67	3
Jul 18...	2.23	.037	.011	--	2.5	.164	.053	.05	.06	E120	E190	67	6
Aug 30...	.61	.027	.008	--	.87	.050	.016	E.03	.05	1,200	90	89	10

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 4 of 4

[Remark codes: <, less than; E, estimated.]

Date	Suspended sediment discharge, tons/d (80155)	Sampler type, code (84164)
Oct 03...	1.3	3070
Jan 18...	2.9	3070
Mar 07...	.19	8010
Apr 10...	.06	3070
Jul 18...	.29	3070
Aug 30...	.10	3070

07245000 CANADIAN RIVER NEAR WHITEFIELD, OK

LOCATION.--Lat 35°1 5'44", long 95°1 4' 13" referenced to North American Datum of 1927, in SW 1/4 SW 1/4 sec.7, T.9 N., R.20 E., Haskell County, OK, Hydrologic Unit 11090204, on right downstream bank at end of bridge on State Highway 2, 0.8 mi north of Whitefield, 5.5 mi upstream from Taloka (Snake) Creek, 8.2 mi downstream from Eufaula Dam, and at mile 18.8.

DRAINAGE AREA.--47,576 mi² of which 9,700 mi² probably is noncontributing.

SURFACE-WATER RECORDS

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

REVISED RECORDS.--WSP 1177: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 473.16 ft above NGVD of 1929. Prior to Jan. 11, 1939, nonrecording gage and Jan. 11, 1939 to Dec. 10, 1941, June 12, 1947 to Sept. 30, 1948, water-stage recorder, all at site 2.1 mi downstream at datum 2.20 ft higher. Dec. 11, 1941 to June 1, 1947, and Oct. 1, 1948 to Sept. 30, 1978, water-stage recorder at site 400 ft upstream and at datum 5.00 ft higher. Oct. 1, 1978 to July 26, 1983, water-stage recorder at site 400 ft upstream at same datum.

REMARKS.-- Records fair. Prior to February 1964, occasional slight regulation by Conchas Lake in New Mexico and, except for 54 mi² of intervening area, completely regulated thereafter by Eufaula Lake (station 07244800). U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	921	17	1,830	4,350	10,800	7,320	13,000	4,010	13,100	42,300	37,300	17,500
2	1,540	650	1,510	13,900	6,300	6,710	10,600	4,000	9,100	30,500	30,600	17,400
3	3,950	1,410	181	14,000	5,090	2,560	8,420	6,830	8,010	26,600	30,400	17,200
4	3,110	1,820	1,490	14,000	4,150	464	8,520	9,600	10,700	35,200	30,300	16,900
5	2,050	190	181	14,000	6,290	3,330	8,510	9,580	10,100	38,400	30,100	16,000
6	153	318	445	4,810	7,070	4,600	8,470	9,670	10,500	38,500	26,600	14,900
7	124	414	1,080	2,700	7,190	4,520	8,390	10,500	5,500	38,100	18,700	13,200
8	115	60	1,540	2,810	7,510	3,230	8,580	6,550	4,740	38,100	18,500	11,300
9	337	34	135	2,620	5,300	2,870	8,300	5,590	5,890	38,000	18,300	11,300
10	509	30	71	2,890	812	1,670	6,840	24,100	3,360	40,200	16,500	11,200
11	521	21	62	2,650	440	439	4,320	28,000	4,960	47,600	11,200	11,100
12	63	22	742	3,060	2,960	1,620	4,200	23,900	5,810	53,600	10,900	11,100
13	43	30	145	6,880	3,540	3,230	4,260	24,100	5,250	54,000	10,300	11,100
14	36	34	60	3,460	3,780	4,200	4,290	27,600	2,730	53,400	7,380	8,190
15	61	217	1,620	6,070	2,990	3,760	4,200	31,600	2,360	53,400	6,110	3,090
16	102	786	155	6,360	2,170	3,590	4,170	34,400	4,350	53,300	6,670	2,900
17	52	3,680	67	7,260	559	4,800	4,180	40,700	4,430	53,300	10,200	4,150
18	40	191	64	8,730	343	2,930	4,180	43,200	4,720	53,200	10,500	4,520
19	48	76	279	9,240	7,490	3,500	4,140	43,200	8,170	52,900	9,250	4,360
20	177	1,690	564	9,720	7,290	4,480	4,130	43,100	12,400	47,300	11,000	4,040
21	85	719	431	9,530	6,470	4,430	4,100	42,600	12,100	40,600	20,300	4,400
22	36	78	158	9,450	6,910	1,590	4,090	40,300	18,400	40,400	20,400	1,790
23	974	50	94	13,200	6,750	899	4,060	37,300	25,800	40,000	20,500	1,750
24	850	42	76	13,100	2,590	277	4,090	28,300	15,800	40,100	21,700	3,180
25	131	38	112	13,200	523	227	4,060	14,200	30,400	39,700	25,100	1,940
26	47	35	88	13,200	5,850	210	4,030	8,880	40,200	40,500	25,100	3,270
27	32	49	65	13,200	8,340	438	4,060	4,110	39,900	41,400	24,800	2,690
28	22	326	59	13,100	10,200	1,100	4,020	11,400	27,900	41,100	24,500	2,480
29	65	68	104	13,100	---	237	3,970	8,310	29,600	40,900	24,100	2,000
30	31	1,440	2,760	13,200	---	190	3,990	13,300	42,100	41,000	23,200	1,310
31	25	---	434	13,200	---	5,030	---	13,200	---	41,200	21,300	---
Total	16,250	14,535	16,602	276,990	139,707	84,451	172,170	652,130	418,380	1,334,800	601,810	236,260
Mean	524	484	536	8,935	4,990	2,724	5,739	21,040	13,950	43,060	19,410	7,875
Max	3,950	3,680	2,760	14,000	10,800	7,320	13,000	43,200	42,100	54,000	37,300	17,500
Min	22	17	59	2,620	343	190	3,970	4,000	2,360	26,600	6,110	1,310
Ac-ft	32,230	28,830	32,930	549,400	277,100	167,500	341,500	1,294,000	829,900	2,648,000	1,194,000	468,600

07247000 POTEAU RIVER AT CAUTHRON, AR

LOCATION.--Lat 34°55'08", long 94°17'58" referenced to North American Datum of 1927, in NW 1/4 SE 1/4 sec.16, T.3 N., R.31 W., Scott County, AR, Hydrologic Unit 11110105, on right bank at downstream side of Scott County Rd No 56 bridge at Cauthron, 200 ft south of junction with State Hwy 28, 2.9 mi downstream from Cross Creek, 7.8 mi downstream from Jones Creek, and at river mile 109.0.

DRAINAGE AREA.--203 mi².

SURFACE-WATER RECORDS

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

REVISED RECORDS.--WSP 1037: 1939(M). WDR Arkansas 1970: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 569.53 ft above NGVD of 1929. Prior to May 2, 1939, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records good except estimated discharges which are poor. As of Sep 1974, flow from 92.2 mi² upstream from this station is controlled by 16 floodwater-detention reservoirs that have a total combined capacity of 39,082 ac-ft below the flood spillway crests, of which 33,524 ac-ft is flood detention capacity, 2,100 ac-ft is water-supply storage, and 3,458 ac-ft is sediment storage capacity. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.54	1.1	e1,860	897	118	65	9.8	112	39	71	14	9.5
2	0.61	1.2	e1,320	584	112	62	7.8	108	20	778	10	8.9
3	0.60	1.7	e930	426	102	51	6.8	102	13	306	8.7	9.0
4	1.1	1.7	e667	383	93	43	6.0	88	10	488	8.3	11
5	1.1	2.9	e475	394	85	36	5.5	76	8.2	211	7.6	11
6	0.58	1,180	368	293	78	33	5.1	65	6.8	318	7.1	9.5
7	0.33	178	287	250	72	31	4.8	61	6.1	186	6.2	11
8	0.20	61	221	219	67	28	4.7	83	7.5	118	5.5	12
9	0.16	33	176	172	61	28	4.7	79	11	78	5.1	108
10	0.22	18	146	141	55	30	4.7	93	25	64	4.6	139
11	0.31	11	130	125	49	30	6.1	238	170	62	4.3	32
12	0.30	7.1	120	118	84	27	12	142	399	171	4.2	14
13	0.28	4.7	104	3,540	1,060	26	16	95	93	1,400	4.4	11
14	0.32	3.7	88	3,860	531	23	13	70	41	940	5.0	8.3
15	0.71	540	76	5,090	327	20	12	54	21	431	6.3	6.6
16	5.1	909	66	1,800	254	19	13	57	14	278	5.9	5.5
17	48	189	60	1,370	221	17	12	44	11	209	6.3	5.2
18	15	99	54	1,140	179	15	17	35	9.9	165	7.9	5.3
19	6.5	77	55	902	151	14	38	28	50	126	8.0	5.6
20	3.9	58	101	708	134	13	30	22	73	92	8.2	5.5
21	4.4	43	714	1,080	118	13	20	17	398	64	9.2	5.6
22	3.4	33	372	748	100	12	15	14	142	43	8.7	5.5
23	e2.4	25	245	522	87	12	12	13	87	31	8.6	6.2
24	1.7	19	192	416	92	11	57	12	55	23	8.0	7.0
25	1.6	15	2,470	336	123	11	1,360	11	34	19	8.2	7.1
26	1.6	13	1,370	282	95	9.8	522	9.8	27	15	8.5	8.3
27	1.3	11	833	241	79	9.3	302	10	234	12	11	12
28	6.8	9.6	501	201	70	9.1	225	9.3	281	11	11	15
29	5.4	8.2	363	168	---	10	173	8.6	152	9.7	11	9.5
30	2.3	2,600	2,240	149	---	10	137	9.0	84	8.9	9.8	6.8
31	1.6	---	1,460	129	---	9.6	---	65	---	14	9.4	---
Total	118.36	6,153.9	18,064	26,684	4,597	727.8	3,052.0	1,830.7	2,522.5	6,742.6	241.0	510.9
Mean	3.82	205	583	861	164	23.5	102	59.1	84.1	218	7.77	17.0
Max	48	2,600	2,470	5,090	1,060	65	1,360	238	399	1,400	14	139
Min	0.16	1.1	54	118	49	9.1	4.7	8.6	6.1	8.9	4.2	5.2
Ac-ft	235	12,210	35,830	52,930	9,120	1,440	6,050	3,630	5,000	13,370	478	1,010

WATER-QUALITY RECORDS

PERIOD OF RECORD.—Jun 1995 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 4
[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
Oct													
02...	1005	80020	.66	30	754	6.4	75	7.8	262	22.3	25	3.79	3.84
Jan													
30...	1050	80020	148	70	762	12.6	96	7.3	61	3.9	13	2.33	1.84
Mar													
06...	1615	–	33	10	766	13.2	124	8.2	96	12.7	16	2.88	2.11
Apr													
09...	1045	–	4.7	10	763	7.8	72	7.2	150	12.1	23	3.99	3.08
Jun													
13...	0930	–	97	10	762	2.4	28	6.8	74	24.8	14	2.93	1.63
Aug													
29...	1120	–	11	30	763	5.2	67	7.7	125	28.7	27	4.39	3.83

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4
[Remark codes: <, less than; E, estimated.]

Date	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)
Oct													
02...	8.82	2.9	67	33.7	30.2	E.07	16.2	144	.54	–	<.020	--	--
Jan													
30...	1.41	6	40	4.70	4.37	E.07	7.25	35	.31	.05	.036	1.30	.29
Mar 06...	2.09	9	50	8.66	7.79	<.10	11.3	56	.49	–	<.020	1.16	.26
Apr 09...	3.69	14	55	15.4	13.0	<.10	14.5	112	.57	.03	.027	--	--
Jun 13...	4.86	5	33	4.58	4.53	E.05	4.59	67	1.3	.20	.153	2.03	.46
Aug 29...	4.09	9	43	11.3	9.66	E.08	5.32	75	.65	–	<.020	--	--

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 4

[Remark codes: <, less than; E, estimated.]

Date	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
Oct 02...	<.06	--	<.002	--	--	--	E.005	E.02	.05	46	42	86	4
Jan 30...	.30	.013	.004	.27	.60	.046	.015	<.04	E.03	24	21	87	8
Mar 06...	.27	.019	.006	--	.76	.040	.013	<.04	.08	E2	E2	79	8
Apr 09...	E.03	--	E.001	.54	--	.025	.008	<.04	.06	E30	37	85	7
Jun 13...	.48	.077	.023	1.1	1.8	.828	.270	.32	.41	140	100	91	46
Aug 29...	<.06	--	E.001	--	--	.034	.011	E.03	.10	70	67	63	9

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 4 of 4

[Remark codes: <, less than; E, estimated.]

Date	Suspended sediment discharge, tons/d (80155)	Sampler type, code (84164)
Oct 02...	.01	3070
Jan 30...	3.2	3070
Mar 06...	.71	3070
Apr 09...	.09	3070
Jun 13	12	3070
Aug 29...	.27	3070

07247015 POTEAU RIVER NEAR LOVING, OK

LOCATION.–Lat 34°5247·, long 94°2902· referenced to North American Datum of 1927, in SW 1/4 NW 1/4 sec.29, T.5 N., R.27 E., Le Flore County, OK, Hydrologic Unit 11110105, on right downstream bank of county road bridge, 0.6 mi northwest of Loving, 1.0 mi above Loving Creek, and at mile 93.6.
DRAINAGE AREA.–269 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.–April 1992 to current year.
REVISED RECORDS.–OK-2000-1: 1999.
GAGE.–Water-stage recorder. Datum of gage is 507.76 ft above NGVD of 1929.
REMARKS.–No estimated daily discharge. Records fair. Some regulation by small flood-retarding structures. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2.3	34	5,650	939	140	73	16	143	48	151	13	5.6
2	1.9	28	1,480	640	132	65	16	134	43	658	15	5.4
3	1.4	26	994	481	120	58	15	130	28	380	13	5.5
4	0.91	23	641	424	107	49	12	116	20	467	11	6.0
5	0.71	51	482	454	100	42	10	98	15	344	9.6	8.5
6	0.57	1,670	407	354	92	37	9.9	87	13	312	8.0	9.2
7	0.44	664	324	285	87	34	8.8	78	10	257	7.0	11
8	0.35	245	247	254	78	32	8.8	120	11	151	6.7	10
9	0.28	144	193	198	73	31	9.1	128	14	97	6.3	108
10	0.25	99	157	158	66	30	10	111	14	83	5.6	112
11	0.21	68	133	133	61	31	18	289	22	83	5.0	74
12	0.14	49	116	123	68	31	16	245	341	68	4.5	17
13	0.11	39	103	3,290	818	30	16	149	158	861	4.2	7.3
14	0.09	30	86	5,610	688	29	29	106	68	1,120	4.2	5.0
15	0.22	213	73	6,300	416	27	23	82	38	468	4.1	3.6
16	61	1,420	64	2,100	312	25	20	68	25	276	3.9	2.8
17	47	564	56	1,400	260	22	21	64	21	189	3.6	2.1
18	45	299	49	1,110	214	21	27	51	18	139	3.2	1.6
19	24	224	48	880	171	19	29	43	19	105	3.3	1.6
20	15	176	61	700	147	18	44	38	40	80	3.2	1.4
21	8.6	140	478	1,000	126	17	38	33	239	61	3.1	1.4
22	4.8	112	458	798	106	17	31	30	185	46	3.3	1.3
23	5.6	92	281	593	89	16	26	27	102	35	3.4	1.6
24	6.2	76	206	487	112	16	68	23	66	28	3.4	1.7
25	6.2	65	1,850	408	169	15	1,530	20	45	23	4.0	1.6
26	7.9	57	1,690	345	132	14	728	20	38	20	4.1	2.0
27	10	49	858	298	97	14	417	18	38	17	4.5	2.4
28	11	45	556	251	81	15	303	16	293	15	5.0	2.8
29	9.8	53	406	212	---	15	230	15	198	13	5.1	4.8
30	27	4,670	2,280	183	---	14	178	15	110	20	5.1	8.3
31	36	---	1,850	159	---	16	---	15	---	20	5.4	---
Total	334.98	11,425	22,277	30,567	5,062	873	3,907.6	2,512	2,280	6,587	180.8	425.5
Mean	10.8	381	719	986	181	28.2	130	81.0	76.0	212	5.83	14.2
Max	61	4,670	5,650	6,300	818	73	1,530	289	341	1,120	15	112
Min	0.09	23	48	123	61	14	8.8	15	10	13	3.1	1.3
Ac-ft	664	22,660	44,190	60,630	10,040	1,730	7,750	4,980	4,520	13,070	359	844

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1991 to current year.

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

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3
[Remark codes: <, less than; E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)
Oct													
10...	1655	.21	3.5	744	7.4	80	6.9	217	19.5	18.3	.55	.03	.021
Dec													
11...	1600	127	8.4	750	12.2	103	7.5	68	17.7	7.4	.40	--	E.014
Feb													
27...	0915	99	13	747	11.0	101	7.1	82	12.2	10.5	.59	--	<.020
May													
01...	1120	141	14	746	5.7	65	7.2	77	20.5	21.0	.42	.03	.023
Jun													
07...	1330	11	7.0	741	6.3	81	6.3	99	30.6	26.8	.39	--	E.019
Aug													
27...	1730	4.6	4.5	746	6.0	79	6.9	164	31.1	28.5	.52	.05	.039

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 3
[Remark codes: <, less than; E, estimated.]

Date	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)
Oct													
10...	.053	--	--	-	E.002	.53	.60	.022	.007	.018	.039	.00013	100
Dec													
11...	.535	2.36	.53	.008	.002	--	.94	.042	.014	.023	.056	.00003	100
Feb													
27...	E.013	--	--	-	E.002	--	--	-	E.004	.011	.073	.00008	95
May													
01...	.198	.856	.19	.015	.005	.40	.62	.052	.017	.037	.106	.00006	88
Jun													
07...	.037	--	--	-	E.002	--	.42	.026	.008	.024	.060	.00055	79
Aug													
27...	.136	.583	.13	.014	.004	.48	.66	.110	.036	.055	.092	.00012	65

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006
TO SEPTEMBER 2007
Part 3 of 3
[Remark codes: <, less than;
E, estimated.]

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Oct		
10...	2	.00
Dec		
11...	7	2.4
Feb		
27...	11	2.9
May		
01...	22	8.4
Jun		
07...	11	.33
Aug		
27...	11	.14

07247250 BLACK FORK BELOW BIG CREEK NEAR PAGE, OK

LOCATION.–Lat 34°46'25", long 94°30'43" referenced to North American Datum of 1927, in NE 1/4 SW 1/4 sec.31, T.4 N., R.27 E., Le Flore County, OK, Hydrologic Unit 11110105, on downstream side of bridge pier of county road bridge, 2.2 mi above Haw Creek, 5.0 mi north of Page, and at mile 24.6.

DRAINAGE AREA.–74.4 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.–March 1992 to current year.

REVISED RECORDS.–WDR OK-96-1: 1993(M), 1995(M).

GAGE.–Water-stage recorder. Datum of gage is 684.00 ft above NGVD of 1929, from topographic map.

REMARKS.–No estimated daily discharge. Records fair. U.S. Army Corps of Engineers' satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.00	3.3	1,480	519	82	98	23	87	37	868	16	1.0
2	0.00	3.8	592	352	77	85	21	191	25	1,320	11	0.91
3	0.00	3.7	359	272	67	73	20	156	19	593	9.3	0.86
4	0.00	4.5	257	258	64	64	18	128	15	499	8.1	0.79
5	0.00	11	205	236	59	59	17	107	12	388	7.3	1.2
6	0.00	1,500	167	185	55	55	16	92	9.6	301	6.0	1.2
7	0.00	294	132	166	51	51	15	74	7.2	202	5.2	1.1
8	0.00	142	110	143	47	48	16	111	11	140	4.5	1.1
9	0.00	90	99	124	44	45	16	105	21	155	3.8	214
10	0.00	67	87	111	42	44	17	555	20	1,210	3.3	80
11	0.00	54	89	104	41	41	115	506	13	1,380	2.9	33
12	0.00	46	88	109	48	39	105	252	11	544	2.7	14
13	0.00	47	76	3,730	382	36	81	160	9.0	1,220	2.6	7.6
14	0.00	46	69	3,550	281	35	82	112	9.0	717	2.7	5.2
15	0.00	1,190	65	2,550	214	33	74	88	7.8	376	2.5	3.8
16	0.00	974	62	830	173	32	62	73	8.1	234	2.2	2.8
17	3.1	362	59	505	154	29	57	54	8.9	175	2.0	2.0
18	1.6	212	54	371	125	28	77	42	9.7	131	1.9	1.6
19	1.0	145	107	286	110	27	77	34	15	96	1.8	1.3
20	0.98	111	351	245	101	26	67	27	312	73	1.6	0.99
21	0.97	91	825	393	91	25	60	21	215	59	1.4	0.81
22	0.89	77	414	294	79	25	53	22	125	48	1.2	0.71
23	0.82	67	274	247	71	25	49	24	83	37	1.1	0.69
24	0.76	60	211	213	124	24	124	20	67	30	0.96	0.70
25	0.82	55	1,180	180	166	23	2,000	16	47	23	1.5	0.65
26	1.2	50	643	154	128	22	547	14	57	19	1.5	0.92
27	1.3	49	395	137	112	22	293	13	228	16	1.3	1.3
28	1.4	54	285	116	102	26	197	12	345	13	1.3	1.2
29	2.0	63	224	102	---	26	137	11	176	12	1.2	0.97
30	2.8	4,650	2,220	93	---	24	103	40	121	15	1.2	0.78
31	2.9	---	1,020	84	---	24	---	76	---	18	1.1	---
Total	22.54	10,522.3	12,199	16,659	3,090	1,214	4,539	3,223	2,044.3	10,912	111.16	383.18
Mean	0.73	351	394	537	110	39.2	151	104	68.1	352	3.59	12.8
Max	3.1	4,650	2,220	3,730	382	98	2,000	555	345	1,380	16	214
Min	0.00	3.3	54	84	41	22	15	11	7.2	12	0.96	0.65
Ac-ft	45	20,870	24,200	33,040	6,130	2,410	9,000	6,390	4,050	21,640	220	760

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2007, BY WATER YEAR (WY)

WATER-QUALITY RECORDS

PERIOD OF RECORD.–December 1991 to current year.

REMARKS.--Samples were collected periodically. Specific conductance, pH, water temperature, and dissolved oxygen were determined in the field. No flow October 1- 16.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 2

[Remark codes: <, less than; E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate + nitrite water fltrd, mg/L as N (00631)
Dec													
11...	1400	90	5.0	746	11.9	103	7.6	37	17.4	8.0	E.06	<.020	.476
Feb													
27...	1130	113	5.0	741	11.7	104	6.6	32	--	9.1	.10		
	<.020	.104											
May													
01...	0935	82	6.2	741	6.3	71	7.5	29	20.3	19.4	.13	<.020	.044
Jun													
06...	1710	9.0	5.7	736	6.3	80	7.7	34	24.0	25.5	.21	<.020	.076
Aug													
28...	1215	13	3.0	744	--	--	6.9	57	30.5	26.6	.34	<.020	<.016

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 2

[Remark codes: <, less than; E, estimated.]

Date	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Dec												
11...	--	--	--	<.002	--	<.006	<.006	.008	.00003	100	2	.49
Feb												
27...	--	--	--	<.002	21	<.006	E.004	E.007	.00024	100	3	.92
May												
01...	--	--	--	<.002	.17	<.006	E.005	.012	.00003	69	7	1.5
Jun												
06...	.327	.07	.007	.002	28	E.003	.006	.018	.00002	90	6	.15
Aug												
28...	--	--	--	<.002	--	E.005	.015	.035	.00014	66	8	.03

07247345 BLACK FORK AT HODGEN, OK

LOCATION.--Lat 34°5035, long 94°3728 referenced to North American Datum of 1927, in SE 1/4 SE 1/4 sec.1, T.4 N., R.25 E., Le Flore County, OK, Hydrologic Unit 11110105, at county road bridge 0.4 mi east of Hodgen, OK.

DRAINAGE AREA.--179 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Discharge measurements only: 1992 to current year.

DISCHARGE MEASUREMENTS

WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Date	Discharge, in ft^3/s
Dec 12, 2006	146
Feb 27, 2007	208
Apr 30, 2007	199
Jun 6, 2007	26.9
Aug 28, 2007	184

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1991 to current year.

REMARKS.--Samples were collected periodically. Specific conductance, pH, water temperature, and dissolved oxygen were determined in the field. No flow October 10.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 2

[Remark codes: <, less than; E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)
Dec													
12...	1145	156	8.9	753	12.5	106	6.4	41	12.8	7.9	.14	–	<.020
Feb													
27...	1330	208	7.3	746	12.1	113	6.8	39	21.5	11.3	.34	–	<.020
Apr													
30...	1810	199	10	746	6.7	71	7.3	34	27.2	16.7	.22	–	E.011
Jun													
06...	1524	27	4.6	743	7.2	94	7.5	43	25.4	27.4	.23	–	<.020
Aug													
28...	1000	18	2.7	749	--	–	6.8	64	24.5	26.1	.36	.03	.021

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 2

[Remark codes: <, less than; E, estimated.]

Date	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Dec											
12...	.440	E.001	--	.58	<.006	E.003	.014	.00040	94	4	1.7
Feb											
27...	.091	E.001	--	.43	E.005	.010	.021	.00018	80	7	3.9
Apr											
30...	.072	E.001	--	.29	E.004	.011	.024	.00005	95	6	3.2
Jun											
06...	.016	E.001	--	.24	E.004	.009	.021	.00003	88	6	.43
Aug											
28...	E.015	<.002	.34	–	E.006	.014	.032	.00015	56	7	.03

07247500 FOURCHE MALINE NEAR RED OAK, OK

LOCATION.–Lat 34°5445, long 95°0920 referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.13, T.5 N., R.20 E., Latimer County, OK, Hydrologic Unit 11110105, on downstream side of left abutment of county road bridge, 0.1 mi downstream from Little Fourche Maline, 5.0 mi southwest of Red Oak, and at mile 41.2.

DRAINAGE AREA.–122 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.–October 1938 to April 1991, October 1991 to current year. Monthly discharges only October 1938 to February 1939.

REVISED RECORDS.–WSP 1117: Drainage area. WSP 1631: 1940.

GAGE.–Water-stage recorder. Datum of gage is 540.80 ft above NGVD of 1929. Prior to April 25, 1939, nonrecording gage at same site and datum.

REMARKS.– Records fair due to occasional debris buildup on control. Some regulation by several flood-retarding structures. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1.4	1.6	1,710	1,030	75	46	85	633	19	1,040	17	20
2	0.93	1.5	959	924	71	41	53	541	16	1,620	16	14
3	0.42	1.5	778	777	64	35	36	380	13	1,160	77	11
4	0.23	1.8	672	618	58	31	27	311	11	784	25	10
5	0.12	63	554	421	53	28	21	196	9.5	661	14	11
6	0.13	1,040	290	193	48	26	17	132	7.7	501	11	174
7	0.17	603	133	139	45	24	15	128	6.6	305	11	71
8	0.12	231	101	111	42	23	14	947	7.4	195	9.8	40
9	0.07	90	85	93	38	22	13	725	17	179	9.0	1,550
10	0.06	37	76	78	35	22	13	429	72	990	8.3	1,870
11	0.04	20	65	69	33	21	81	393	43	864	7.4	978
12	0.01	14	56	67	85	20	100	244	24	525	7.0	811
13	0.00	7.9	46	1,700	788	19	61	149	17	809	6.6	579
14	0.00	4.2	40	2,210	723	18	332	102	15	884	6.5	447
15	3.2	43	36	1,450	423	18	326	77	23	520	6.4	303
16	249	56	33	1,020	211	17	173	73	93	245	6.2	189
17	111	29	30	880	161	16	112	61	53	148	7.2	66
18	36	12	27	710	129	15	237	49	31	107	8.6	47
19	14	5.0	24	485	109	14	244	39	34	83	8.8	38
20	5.9	2.3	132	298	97	15	143	32	224	67	10	33
21	2.7	0.89	569	803	85	15	96	27	792	56	11	28
22	1.6	0.35	317	724	73	16	71	23	322	49	10	23
23	2.0	0.24	161	479	64	17	57	20	252	44	10	20
24	2.0	0.17	110	250	68	16	248	17	249	37	11	20
25	0.98	0.16	147	178	83	15	1,240	17	142	31	40	23
26	1.1	0.19	178	146	70	15	712	20	566	26	140	22
27	1.1	0.38	124	126	58	e14	505	20	1,170	23	48	72
28	0.86	1.2	95	114	51	e14	291	22	1,730	20	26	55
29	0.60	11	135	101	—	e13	167	23	1,220	18	19	33
30	0.83	2,550	2,590	90	—	e13	98	23	878	74	32	23
31	1.4	—	1,770	79	—	46	—	20	—	21	43	---
Total	437.97	4,828.38	12,043	16,363	3,840	665	5,588	5,873	8,057.2	12,086	662.8	7,581
Mean	14.1	161	388	528	137	21.5	186	189	269	390	21.4	253
Max	249	2,550	2,590	2,210	788	46	1,240	947	1,730	1,620	140	1,870
Min	0.00	0.16	24	67	33	13	13	17	6.6	18	6.2	10
Ac-ft	869	9,580	23,890	32,460	7,620	1,320	11,080	11,650	15,980	23,970	1,310	15,040

07247650 FOURCHE MALINE NEAR LEFLORE, OK

LOCATION.–Lat 34°551 1-, long 94°5643 referenced to North American Datum of 1927, in NE 1/4 SE 1/4 sec.1 1, T.5 N., R.22 E., Le Flore County, OK, Hydrologic Unit 11110105, at county road bridge 1.6 mi east of Leflore, OK.

DRAINAGE AREA.–270 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.–Discharge measurements only: 1992 to current year.

DISCHARGE MEASUREMENTS
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Date	Discharge, in ft^3/s
Oct 10, 2006	0.154
Dec 13, 2006	89.6
Feb 26, 2007	125
Apr 30, 2007	253
Jun 7, 2007	13.0
Aug 29, 2007	36.4

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1991 to current year.

REMARKS.--Samples were collected bimonthly. Specific conductance, pH, water temperature, and dissolved oxygen were determined in the field.

WATER-QUALITY DATA

WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

[Remark codes: <, less than; E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)
Oct													
10...	1335	.15	5.3	749	6.2	67	7.1	151	18.1	17.8	.41	--	E.018
Dec													
13...	1120	91	22	755	11.3	95	6.9	87	8.0	7.5	.36	--	E.010
Feb													
26...	1215	125	19	741	10.7	101	7.3	109	19.5	11.3	.33	--	<.020
Apr													
30...	1215	253	41	750	5.9	62	7.1	77	25.6	17.3	.47	.04	.029
Jun													
07...	0933	13	21	741	5.4	68	6.7	146	24.7	25.2	.38	--	<.020
Aug													
29...	1020	36	49	750	--	--	7.3	176	22.6	24.6	.79	.06	.048

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: <, less than; E, estimated.]

Date	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)
Oct													
10...	E.014	--	--	-	<.002	--	--	-	<.006	.008	.028	.00009	100
Dec													
13...	.159	--	--	-	E.002	--	.52	-	E.004	.008	.043	.00014	100
Feb													
26...	.046	--	--	-	E.002	--	.38	-	<.006	.016	.049	.00005	81
Apr													
30...	.090	.376	.09	.016	.005	.44	.56	.038	.012	.027	.089	.00008	90
Jun													
07...	.048	--	--	-	E.002	--	.43	.030	.010	.019	.067	.00021	85
Aug													
29...	.433	1.82	.41	.075	.023	.74	1.2	.045	.015	.028	.125	.00005	91

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 3

[Remark codes: <, less than; E, estimated.]

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Oct		
10...	2	.00
Dec		
13...	10	2.4
Feb		
26...	23	7.8
Apr		
30...	39	27
Jun		
07...	18	.63
Aug		
29...	38	3.7

07247800 HOLSON CREEK AT SUMMERFIELD, OK

LOCATION.–Lat 34°5246-, long 94°51.11- referenced to North American Datum of 1927, in SW 1/4 NW 1/4 sec.26, T.5 N., R.23 E., Le Flore County, OK, Hydrologic Unit 11110105, at county road bridge, 1.4 mi east of Summerfield, OK.

DRAINAGE AREA.–71.6 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.–Discharge measurements only: 1992 to current year.

DISCHARGE MEASUREMENTS
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Date	Discharge, in ft^3/s
Dec 12, 2006	26.4
Feb 26, 2007	19.1
Apr 30, 2007	45.3
Jun 7, 2007	6.33
Aug 28, 2007	0.967

WATER-QUALITY RECORDS

PERIOD OF RECORD.–December 1991 to current year.

REMARKS.--Samples were collected periodically. Specific conductance, pH, water temperature, and dissolved oxygen were determined in the field. No flow October 10.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 2
[Remark codes: <, less than; E, estimated.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate + nitrite water fltrd, mg/L as N (00631)
Dec													
12...	1540	26	6.0	753	11.5	106	6.5	41	13.0	10.9	E.07	<.020	.163
Feb													
26...	1545	19	4.9	741	11.2	108	7.3	44	15.8	12.4	E.09	<.020	E.011
Apr													
30...	1500	45	10	746	7.0	79	7.3	40	30.6	20.1	.12	<.020	E.010
Jun													
07...	1152	63	5.3	740	7.6	97	6.4	48	28.3	26.4	.14	<.020	<.016
Aug													
28...	1520	97	4.6	746	--	--	6.8	61	33.5	30.2	.25	<.020	E.012

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 2
[Remark codes: <, less than; E, estimated.]

Date	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Dec									
12...	<.002	--	<.006	<.006	.009	.00030	67	6	.43
Feb									
26...	<.002	--	<.006	<.006	E.005	.00005	91	3	.15
Apr									
30...	<.002	--	E.004	<.006	.015	.00005	71	8	.98
Jun									
07...	<.002	--	E.003	E.005	.016	.00037	79	6	.10
Aug									
28...	<.002	.096	.031	.014	.020	.00017	98	9	.02

07249400 JAMES FORK NEAR HACKETT, AR

LOCATION.–Lat 35°0945-, long 94°2425- referenced to North American Datum of 1927, in NW 1/4 NW 1/4 sec.34, T.6 N., R.32 W., Sebastian County, AR, Hydrologic Unit 11110105, near left bank on downstream side of bridge on State Hwy 45, 1.7 mi south of Hackett, 2.0 mi downstream from Elder Branch, 2.0 mi upstream from small tributary, and 3.6 mi upstream from Arkansas-Oklahoma State line.

DRAINAGE AREA.–147 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.–Apr 1958 to current year.

REVISED RECORDS.–WDR Arkansas 1970: Drainage area.

GAGE.–Water-stage recorder. Datum of gage is 457.71 ft above NGVD of 1929. Prior to Oct 1, 1990, at datum 2.00 ft higher.

REMARKS.–Water-discharge records good. No estimated daily discharges. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.10	11	4,280	404	95	77	4.9	55	9.8	226	54	9.4
2	0.00	8.9	688	282	95	62	3.7	63	8.5	640	25	8.3
3	0.00	8.0	432	228	89	52	3.1	69	7.3	318	18	8.4
4	0.00	6.4	313	317	86	42	2.6	55	6.3	209	16	9.3
5	0.00	58	253	409	77	35	1.9	43	5.7	104	13	11
6	0.00	1,690	213	255	67	34	1.6	38	4.9	53	11	13
7	0.00	331	172	208	63	30	1.6	68	4.0	37	9.8	14
8	0.00	174	139	184	57	29	1.5	196	3.7	33	8.5	13
9	0.00	117	126	146	48	26	1.6	152	3.9	26	7.6	458
10	0.02	87	116	124	43	30	1.9	104	3.9	22	7.3	103
11	0.00	67	107	117	39	29	5.7	139	3.3	19	7.0	33
12	0.00	53	103	115	168	23	4.7	131	4.9	586	6.7	20
13	0.00	45	89	3,280	1,440	19	2.9	96	14	613	6.2	14
14	0.00	45	79	3,480	535	18	8.8	66	5.9	294	6.1	12
15	0.00	258	74	3,210	295	18	8.3	52	3.7	141	5.9	11
16	652	541	68	728	219	16	5.6	49	3.2	87	5.8	9.6
17	251	192	65	460	201	13	4.0	47	3.3	62	5.7	8.8
18	70	125	60	375	149	12	15	35	4.4	45	6.9	8.1
19	86	92	56	304	129	11	36	28	5.8	35	6.2	7.5
20	100	72	67	270	122	10	17	23	49	29	5.6	7.3
21	51	59	234	677	98	10	9.1	20	44	23	5.6	7.0
22	33	50	154	360	80	10	5.8	18	50	40	5.6	7.0
23	23	45	104	274	70	8.8	4.4	17	17	26	5.6	6.7
24	18	39	85	253	141	7.3	100	18	5.5	18	5.5	6.7
25	16	35	745	214	286	6.4	1,240	16	4.0	14	5.4	6.7
26	17	31	443	187	130	5.6	324	16	4.7	11	5.6	7.2
27	27	28	255	170	97	5.2	177	14	6.4	9.9	5.6	11
28	40	24	195	150	81	5.6	121	12	48	8.8	5.6	7.9
29	27	69	160	128	---	5.6	88	11	25	8.1	5.6	6.6
30	17	9,020	1,830	118	---	5.0	66	10	10	174	10	6.3
31	12	---	817	101	---	4.3	---	11	---	136	9.9	---
Total	1,440.12	13,381.3	12,522	17,528	5,000	659.8	2,267.7	1,672	370.1	4,047.8	302.3	851.8
Mean	46.5	446	404	565	179	21.3	75.6	53.9	12.3	131	9.75	28.4
Max	652	9,020	4,280	3,480	1,440	77	1,240	196	50	640	54	458
Min	0.00	6.4	56	101	39	4.3	1.5	10	3.2	8.1	5.4	6.3
Ac-ft	2,860	26,540	24,840	34,770	9,920	1,310	4,500	3,320	734	8,030	600	1,690

WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1961-1971, 1976, and 1984 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 4
[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
Oct													
02...	1305	80020	.00	30	756	4.8	55	7.6	464	22.3	130	18.1	19.5
Jan													
30...	1300	80020	118	70	762	12.5	96	7.6	239	4.4	73	11.9	10.4
Mar													
06...	1430	–	34	10	768	11.9	107	7.7	267	10.9	66	11.2	9.16
Apr													
09...	1300	–	1.5	10	764	10.2	94	7.7	446	11.9	120	20.7	17.2
Jun													
13...	1240	–	14	10	764	5.3	65	7.1	402	26.6	120	19.6	16.9
Aug													
29...	1315	–	5.6	30	763	5.6	72	7.7	357	28.1	90	13.9	13.4

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4
[Remark codes: <, less than; E, estimated.]

Date	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)
Oct													
02...	3.11	1.7	43	44.1	30.5	.27	40.3	265	.39	.03	.020	--	--
Jan													
30...	1.76	.8	30	15.1	16.9	.11	42.1	138	.28	–	E.013	2.66	.60
Mar													
06...	1.64	.9	34	15.9	20.0	.12	47.1	149	.18	–	<.020	.282	.06
Apr													
09...	2.40	1.4	37	34.4	46.5	.14	69.3	257	.21	–	E.012	--	--
Jun													
13...	2.65	1.2	34	28.9	31.6	.18	61.5	230	.35	–	<.020	--	--
Aug													
29...	3.58	1.6	44	34.7	16.0	.24	36.6	210	.39	.03	.022	--	--

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 3 of 4
[Remark codes: <, less than; E, estimated.]

Date	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Oct													
02...	<.06	--	<.002	.37	--	E.003	<.04	E.03	42	76	87	5	--
Jan													
30...	.61	.016	.005	--	.89	E.005	<.04	E.02	35	32	79	16	5.1
Mar													
06...	.07	.007	.002	--	.24	<.006	<.04	<.04	E8	E16	79	6	.55
Apr													
09...	<.06	--	<.002	--	--	E.003	<.04	E.02	100	120	84	3	.01
Jun													
13...	E.03	--	E.001	--	--	E.003	<.04	E.04	300	130	88	23	.87
Aug													
29...	<.06	.007	.002	.37	--	E.004	<.04	.04	67	70	97	27	.41

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 4 of 4
[Remark codes: <, less than; E, estimated.]

Date	Sampler type, code (84164)
Oct	
02...	3070
Jan	
30...	3070
Mar	
06...	3070
Apr	
09...	3070
Jun	
13...	3070
Aug	
29...	3070

07249455 ARKANSAS RIVER NEAR FORT SMITH, AR

LOCATION.--Lat 35°23'30", long 94°25'56" referenced to North American Datum of 1927, in NW 1/4 SW 1/4 sec.8, T.8 N., R.32 E., Sebastian County, AR, Hydrologic Unit 11110104, at U.S. Highway 64 bridge at Oklahoma and Arkansas state line, .7 mi downstream from Poteau River, 6.6 mi upstream from Lee Creek, 8.0 mi upstream from Arkansas River at Van Buren, and at mile 324.5.

DRAINAGE AREA.--149,977 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May 1997 to current year. Some data collected prior to period of record and are available in the district office.

GAGE.--Water-stage recorder. Datum of gage is 380.24 ft above NGVD of 1929.

REMARKS.--Records fair, except for estimated daily discharges and discharges less than 1000 cfs which are rated poor. Flow regulated by W.D. Mayo Lock and Dam 14 upstream and J.W. Trimble Lock and Dam 13 downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,370	360	43,900	38,800	42,500	36,700	57,600	54,600	69,800	e147,000	e121,000	e37,800
2	6,950	2,390	47,700	17,900	27,100	15,300	60,200	58,400	68,400	e185,000	e119,000	e36,300
3	8,290	2,720	26,300	32,900	16,400	23,300	72,100	69,200	89,100	e195,000	e123,000	e28,700
4	2,680	483	12,200	32,500	35,300	21,800	78,000	77,000	96,600	e185,000	e124,000	e28,200
5	7,150	1,800	9,210	35,200	28,500	5,880	75,200	71,500	108,000	184,000	e116,000	e36,800
6	905	14,900	7,420	28,700	13,100	13,500	73,000	62,000	86,600	197,000	e100,000	e34,300
7	e300	9,130	15,100	18,900	21,700	7,200	67,700	69,300	86,200	207,000	e95,000	e36,900
8	e350	2,200	14,900	18,200	11,600	10,200	50,000	128,000	69,600	204,000	e83,600	e38,200
9	388	4,700	12,800	19,600	23,200	8,360	50,600	129,000	62,300	208,000	e82,200	e62,700
10	1,090	5,490	8,320	14,800	12,100	7,150	52,300	118,000	63,800	204,000	e83,000	e30,800
11	1,630	4,130	11,600	26,800	1,280	9,910	41,400	135,000	63,900	204,000	e76,500	e42,200
12	2,760	2,870	9,800	32,700	14,800	5,990	36,300	140,000	93,600	209,000	e73,800	e43,100
13	4,750	3,150	11,600	46,400	35,100	19,400	31,600	129,000	128,000	e220,000	e67,300	e48,000
14	e300	2,930	10,300	76,100	37,400	6,120	37,200	126,000	136,000	222,000	e67,900	e51,200
15	1,710	21,500	10,200	57,400	24,400	8,700	39,900	126,000	137,000	212,000	e65,000	e37,400
16	2,930	8,360	7,070	39,100	21,500	13,100	41,600	129,000	132,000	193,000	e55,000	e22,700
17	2,440	6,800	4,210	31,000	12,000	3,610	49,900	131,000	135,000	187,000	e56,100	e20,600
18	7,570	3,460	12,200	16,700	21,800	8,330	e78,900	133,000	141,000	e201,000	e62,300	e57,500
19	951	3,950	5,100	39,700	6,860	16,700	e84,700	133,000	137,000	187,000	e65,600	e31,600
20	5,580	5,190	9,290	42,200	34,300	7,150	80,400	127,000	131,000	178,000	e69,300	e27,800
21	1,250	3,690	33,100	44,200	21,000	16,100	69,000	123,000	140,000	e170,000	e81,700	e23,700
22	708	1,920	6,910	42,900	23,800	22,400	59,100	127,000	e147,000	e155,000	e63,900	e9,610
23	1,930	1,410	6,500	50,600	28,900	33,000	59,500	132,000	e147,000	e150,000	e64,700	e7,020
24	597	1,510	6,510	40,900	16,200	31,800	58,900	134,000	e172,000	e149,000	e65,100	e9,580
25	1,970	1,350	16,400	44,900	23,100	38,300	e77,100	124,000	e145,000	e145,000	e70,300	e16,400
26	3,040	1,040	5,950	45,800	14,500	38,500	72,400	98,300	e124,000	e136,000	e65,000	e28,100
27	4,910	2,190	19,600	35,900	13,900	39,100	60,200	71,900	e140,000	e150,000	e43,700	e23,100
28	836	5,650	6,270	44,300	30,400	37,000	52,400	66,500	e148,000	e149,000	e46,300	e11,900
29	802	4,670	4,410	41,800	---	48,000	53,600	68,500	e153,000	e145,000	e44,100	e4,800
30	350	54,100	60,000	41,100	---	43,200	53,200	73,100	e145,000	e131,000	e44,100	e4,650
31	327	---	68,700	36,200	---	50,400	---	78,000	---	e124,000	e46,500	---
Total	76,814	184,043	523,570	1,134,200	612,740	646,200	1,774,000	3,242,300	3,495,900	5,533,000	2,341,000	891,660
Mean	2,478	6,135	16,890	36,590	21,880	20,850	59,130	104,600	116,500	178,500	75,520	29,720
Max	8,290	54,100	68,700	76,100	42,500	50,400	84,700	140,000	172,000	222,000	124,000	62,700
Min	300	360	4,210	14,800	1,280	3,610	31,600	54,600	62,300	124,000	43,700	4,650
Ac-ft	152,400	365,000	1,039,000	2,250,000	1,215,000	1,282,000	3,519,000	6,431,000	6,934,000	10,970,000	4,643,000	1,769,000

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1996 to current year.

REMARKS.--Samples collected periodically. Specific conductance, pH, water temperature, and dissolved oxygen were determined in the field.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Time	Instantaneous discharge, cfs (00061)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)
Oct													
11...	1300	1,170	10	745	8.7	102	8.3	967	23.1	21.9	.52	--	<.020
Dec													
15...	1318	10,400	39	752	12.7	110	7.9	209	22.1	8.5	.55	.05	.037
Feb													
28...	1215	38,800	21	742	12.8	115	7.9	359	--	9.3	.57	--	<.020
Apr													
05...	1245	76,800	50	759	10.6	113	7.4	1,020	17.7	18.1	.77	.06	.048
Jun													
19...	1230	13,800	93	757	7.7	94	7.6	420	29.4	25.3	.67	--	<.020
Sep													
06...	1115	34,000	28	751	7.1	92	7.9	468	--	27.7	.59	.11	.088

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L as P (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Hydrogen ion, water, fltrd, calcd, mg/L (00191)	Suspnd. sediment, sieve diametr percent <.063mm (70331)
Oct													
11...	E.010	--	--	--	<.002	--	--	.252	.082	.094	.145		10
Dec													
15...	.223	.975	.22	.009	.003	.51	.77	.052	.017	.030	.105	.00001	85
Feb													
28...	.420	1.83	.41	.019	.006	--	.99	.086	.028	.044	.104	.00001	77
Apr													
5...	.331	140	.32	.048	.015	.72	1.1	.101	.033	.048	.133	.00004	92
Jun													
19...	.582	2.55	.58	.018	.005	--	1.3	.232	.076	.090	.227	.00002	62
Sep													
6...	.106	.429	.10	.030	.009	.50	.70	.204	.067	.083	.137	.00001	86

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 3

[Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)
Oct		
11...	51	162
Dec		
15...	46	1,290
Feb		
28...	31	3,250
Apr		
5...	70	14,500
Jun		
19...	156	5,810
Sep		
6...	34	3,120

07249985 LEE CREEK NEAR SHORT, OK

LOCATION.--Lat 35°3102-, long 94°2751- referenced to North American Datum of 1927, in NW 1/4 NE 1/4 sec.17, T.12 N., R.27 E., Sequoyah County, OK, Hydrologic Unit 11110104, on left bank 0.5 mi west of Arkansas-Oklahoma State line, 500 ft downstream from Webbers Creek, 4.1 mi south of Short, Oklahoma, and 7.5 mi southwest of Uniontown, and at river mile 11.0.

DRAINAGE AREA.--420 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Oct 1930 to Jun 1937, Oct 1950 to current year. Prior to Oct 1992, published as "07250000 Lee Creek near Van Buren".

REVISED RECORDS.--WSP 1211: 1931(M). WSP 1441: 1935(M). WDR Arkansas 1970: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 429.44 ft above NGVD of 1929. Prior to Oct 1992 recording gage 3.2 mi downstream at datum 21.40 ft lower. Sep 1930 to Jun 1937, nonrecording gage at former site and datum.

REMARKS.--Water-discharge records fair except estimated daily discharges which are poor. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	61	80	6,820	2,980	422	434	96	501	227	3,490	79	13
2	51	70	3,500	1,950	389	399	96	893	193	9,920	80	12
3	42	62	2,270	1,440	351	355	94	3,470	168	3,760	66	10
4	36	57	1,580	1,250	324	319	88	2,310	143	1,700	55	9.8
5	31	97	1,210	1,160	305	291	83	1,500	123	1,750	47	14
6	26	7,130	970	948	289	272	81	1,090	106	3,640	42	14
7	22	2,780	765	784	278	257	76	2,290	91	2,120	36	14
8	20	1,390	603	662	265	243	72	3,840	83	1,100	32	16
9	18	872	512	565	248	235	70	2,520	79	850	28	59
10	16	607	452	488	230	229	71	1,790	78	653	25	137
11	15	441	402	439	217	222	78	3,330	77	546	22	144
12	14	340	360	418	547	209	73	3,020	68	1,410	20	97
13	13	281	318	13,700	7,050	197	79	1,640	61	3,160	17	74
14	12	242	281	14,100	4,110	188	157	1,100	59	1,760	16	60
15	16	1,150	252	7,550	2,410	180	378	870	58	1,030	14	49
16	81	3,480	228	e3,710	e1,830	169	330	1,300	50	680	13	41
17	249	1,690	208	e2,600	1,270	158	270	886	49	483	12	35
18	268	1,060	189	1,910	986	150	267	636	53	356	16	30
19	192	741	175	1,470	829	143	254	504	50	272	17	27
20	178	558	405	1,260	734	139	228	415	1,180	212	18	24
21	162	444	2,150	2,050	638	131	204	348	1,040	174	15	21
22	129	370	1,480	1,820	550	125	183	304	610	146	14	19
23	105	316	1,000	1,410	482	120	171	273	686	130	13	17
24	87	271	768	1,150	513	116	239	250	442	110	12	16
25	85	235	754	958	667	112	4,120	382	370	93	15	15
26	95	208	719	817	593	109	2,400	501	273	80	17	18
27	139	181	609	724	512	108	1,390	403	244	70	17	17
28	140	165	528	635	460	106	947	320	634	62	14	15
29	124	162	471	556	---	102	704	272	795	57	13	14
30	107	13,000	7,080	500	---	98	567	240	627	53	12	12
31	92	---	5,490	450	---	99	---	238	---	81	13	---
Total	2,626	38,480	42,549	70,454	27,499	6,015	13,866	37,436	8,717	39,948	810	1,043.8
Mean	84.7	1,283	1,373	2,273	982	194	462	1,208	291	1,289	26.1	34.8
Max	268	13,000	7,080	14,100	7,050	434	4,120	3,840	1,180	9,920	80	144
Min	12	57	175	418	217	98	70	238	49	53	12	9.8
Ac-ft	5,210	76,330	84,400	139,700	54,540	11,930	27,500	74,250	17,290	79,240	1,610	2,070

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Oct 1992 to current year.

REMARKS.--Water-quality data for this station for water years 1996-1997 published under station number 07250085.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
Oct													
03...	0715	80020	43	30	758	4.7	54	6.9	102	21.9	38	12.4	1.75
Jan													
29...	1315	80020	546	70	770	13.1	99	7.2	74	4.2	14	3.54	1.19
Mar													
07...	0800	--	260	10	767	10.5	89	7.6	78	8.7	27	8.86	1.28
Apr													
10...	0700	--	67	10	759	9.5	90	7.6	102	12.8	32	10.3	1.44
Jun													
13...	1530	--	61	10	765	7.0	89	7.4	97	27.6	37	12.2	1.63
Aug													
30...	0935	--	12	30	762	4.3	57	7.3	103	29.3	41	13.2	2.01

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 3
[Remark codes: <, less than; E, estimated.]

Date	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat f lt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Total nitrogen, water, unfltrd mg/L (00600)
Oct 03...	1.28	.3	16	3.56	4.61	<.10	5.93	55	.14	E.015	.11	<.002	.24
Jan 29...	.81	.3	26	2.35	3.18	<.10	5.18	27	.10	<.020	.29	<.002	.39
Mar 07...	.74	.2	14	2.07	3.09	<.10	5.57	50	<.10	<.020	.08	<.002	--
Apr 10...	.96	.2	16	2.82	4.16	<.10	5.33	48	E.09	<.020	.06	<.002	--
Jun 13...	1.16	.2	14	2.88	3.24	<.10	4.47	68	.12	<.020	<.06	<.002	--
Aug 30...	1.45	.2	14	3.14	3.42	E.07	3.50	72	.15	E.014	E.04	E.001	--

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 3 of 3
[Remark codes: <, less than; E, estimated.]

Date	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Chlorophyll a phytoplankton, fluoro, µg/L (70953)	Pheophytin a, phytoplankton, µg/L (62360)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)	Sampler type, code (84164)
Oct 03...	--	<.006	<.04	E.02	40	56	.9	1.0	77	5	.58	3070
Jan 29...	--	E.005	<.04	<.04	65	60	.2	.1	79	3	4.4	3070
Mar 07...	--	<.006	<.04	E.03	25	41	.4	.3	81	4	2.8	3070
Apr 10...	--	E.003	<.04	<.04	E59	E9	.4	.3	85	3	.54	3070
Jun 13...	--	<.006	<.04	<.04	E4	E4	2.6	1.1	84	6	.99	3070
Aug 30...	.024	.008	<.04	<.04	E470	E31	2.0	1.2	17	21	.68	3070

07250550 ARKANSAS RIVER AT JAMES W. TRIMBLE LOCK AND DAM NEAR VAN BUREN, AR

LOCATION.--Lat 35°20'56", long 94°17'54" referenced to North American Datum of 1927, in NE 1/4 NE 1/4 sec.28, T.8 N., R.31 W., Sebastian County, AR, Hydrologic Unit 11110104, in metal shelter on dam and at river mile 308.9.

DRAINAGE AREA.--150,547 mi², of which 22,241 mi² is probably noncontributing.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Oct 1927 to current year. Prior to Oct 1969, published as "07250500 Arkansas River at Van Buren", and Oct 1969 to Sep 1988, published as "at Dam No. 13", near Van Buren. Gage height records collected from 1879 to Dec 1955 at Fort Smith, 16.3 mi upstream, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1211: 1934-36. WSP 1561: 1554. WDR Arkansas 1970: Drainage area.

GAGE.--Water-stage and gate position recorder. Datum of gage is at NGVD of 1929 (levels by the U.S. Army Corps of Engineers). Prior to Oct 1, 1934, nonrecording gage, and Oct 1, 1934, to Dec 20, 1969, recording gage at site 7.9 mi upstream at datum 372.36 ft higher.

REMARKS.--Water-discharge records fair, except estimated daily discharges which are poor. Beginning Apr 26, 1970, daily discharge computed from relation between discharge, head, and gate openings. Flow regulated upstream by many locks, dams, and reservoirs. On Oct 19, 1988, the Arkansas Electric Cooperative Corporation hydroplant began operation, and discharges at the hydroplant are added to flows from the lock and dam. Satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007, DAILY MEAN VALUES

[e, estimated; x10⁶, million]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,480	e170	47,900	37,500	41,100	35,600	59,600	54,400	70,000	140,000	121,000	37,800
2	1,980	3,100	48,000	19,700	27,500	15,800	61,300	56,800	66,200	176,000	120,000	36,300
3	8,140	2,950	28,600	33,300	13,600	21,400	76,300	73,300	94,400	186,000	123,000	28,700
4	3,060	e170	12,300	32,800	36,400	21,800	82,700	80,100	102,000	174,000	125,000	28,400
5	7,640	3,860	11,100	33,600	27,100	6,960	77,400	73,800	116,000	168,000	116,000	36,800
6	e1,130	22,500	8,540	29,600	14,000	12,600	74,900	61,900	91,000	186,000	105,000	33,900
7	e170	12,900	14,700	18,100	21,600	7,210	67,900	72,600	92,300	197,000	96,800	36,900
8	e708	2,660	16,100	18,900	9,780	10,200	49,500	124,000	67,500	201,000	83,500	38,200
9	e421	5,090	12,200	20,700	21,700	8,260	48,000	132,000	58,600	202,000	82,100	62,900
10	e985	6,640	8,120	15,300	11,400	8,770	51,400	123,000	63,000	200,000	83,100	30,700
11	1,710	3,600	12,000	25,900	1,050	9,390	41,700	131,000	64,900	200,000	76,500	42,200
12	2,330	2,480	9,490	32,900	14,800	5,370	33,100	141,000	97,900	201,000	74,000	43,100
13	4,990	3,360	12,100	62,800	41,300	17,200	32,200	132,000	124,000	206,000	67,400	48,000
14	e170	2,740	10,300	98,700	38,400	7,420	34,800	129,000	131,000	213,000	68,100	51,100
15	1,430	20,000	9,900	64,900	23,600	8,500	38,300	128,000	135,000	207,000	65,000	37,300
16	3,930	12,000	6,510	41,700	23,700	14,000	41,200	129,000	132,000	193,000	55,100	22,800
17	1,850	8,050	5,040	34,400	12,300	3,010	52,500	130,000	132,000	185,000	56,100	18,400
18	8,150	4,780	12,400	17,600	19,500	7,540	85,400	132,000	137,000	189,000	62,900	25,600
19	1,530	4,710	5,040	39,200	8,380	17,600	84,800	133,000	135,000	189,000	65,500	31,700
20	4,930	5,500	8,580	40,900	31,000	5,650	86,800	129,000	131,000	181,000	69,500	27,900
21	e816	4,430	34,600	43,800	21,000	16,100	68,100	123,000	137,000	160,000	81,800	23,800
22	1,150	e580	8,250	43,000	21,900	22,200	59,500	126,000	138,000	145,000	63,800	9,660
23	1,500	1,750	7,360	49,400	27,400	32,900	59,300	130,000	133,000	141,000	65,000	7,040
24	e303	1,680	7,410	41,400	16,500	30,800	59,900	133,000	141,000	140,000	65,400	9,580
25	2,490	1,260	17,900	43,100	23,300	38,200	78,200	129,000	144,000	136,000	70,400	16,400
26	2,390	e170	5,340	45,200	13,600	38,200	75,500	109,000	124,000	136,000	65,000	27,900
27	4,130	3,200	20,200	35,200	14,000	38,800	58,400	69,700	140,000	141,000	43,700	23,100
28	1,280	5,580	5,070	42,900	30,000	38,300	51,200	67,900	148,000	143,000	44,200	12,000
29	1,240	4,460	6,250	40,700	---	47,700	52,700	66,800	146,000	137,000	42,900	4,900
30	e338	73,200	67,200	39,000	---	44,600	52,700	74,100	139,000	123,000	44,100	4,720
31	e170	---	73,500	35,500	---	50,600	---	80,100	---	124,000	46,600	---
Total	72,541	223,570	552,000	1,177,700	605,910	642,680	1,795,300	3,274,500	3,430,800	5,320,000	2,348,500	857,800
Mean	2,340	7,452	17,810	37,990	21,640	20,730	59,840	105,600	114,400	171,600	75,760	28,590
Max	8,150	73,200	73,500	98,700	41,300	50,600	86,800	141,000	148,000	213,000	125,000	62,900
Min	170	170	5,040	15,300	1,050	3,010	32,200	54,400	58,600	123,000	42,900	4,720
Ac-ft	143,900	443,500	1,095,000	2,336,000	1,202,000	1,275,000	3,561,000	6,495,000	6,805,000	10.55×10⁶	4,658,000	1,701,000

WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1928 to current year. Prior to Oct 1969, published as "07250500 Arkansas River at Van Buren", and water years 1970-1988, published as "at Dam No. 13, near Van Buren."

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 1 of 4

[Remark codes: <, less than; E, estimated.]

Date	Time	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)
Oct													
02...	1445	80020	.00	30	758	5.2	61	7.8	830	22.9	130	38.2	9.16
Jan													
29...	1115	80020	40,200	10	770	13.1	102	7.4	245	5.1	66	18.2	4.99
Mar													
06...	1245	–	4,680	10	770	12.4	111	8.0	415	10.7	110	32.4	6.74
Apr													
09...	1445	–	46,400	10	766	11.1	106	8.2	963	13.2	140	40.5	10.5
Jul													
17...	1240	–	185,000	10	759	7.0	90	7.5	382	27.8	87	25.2	5.88
Aug													
29...	0830	–	51,200	30	763	7.4	96	8.2	495	28.6	130	38.4	8.96

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L (71846)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)
Oct													
02...	4.18	3.5	59	93.2	156	.20	48.8	456	.44	.04	.035	--	--
Jan													
29...	2.76	.9	35	17.2	22.0	.16	24.5	143	.51	.07	.053	1.56	.35
Mar													
06...	3.51	1.2	35	28.4	42.3	.19	35.3	230	.52	–	E.017	1.54	.35
Apr													
09...	4.03	4.4	64	122	197	.21	57.7	521	.71	.09	.069	1.84	.42
Jul													
17...	3.69	1.2	38	25.5	40.2	.17	29.8	218	.58	–	<.020	1.50	.34
Aug													
29...	4.53	1.7	42	46.0	64.0	.18	37.8	290	.54	–	E.012	.327	.07

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 3 of 4
[Remark codes: <, less than; E, estimated.]

Date	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Total nitrogen, water, unfltrd mg/L (00600)	Orthophosphate, water, fltrd, mg/L (00660)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Chlorophyll a phytoplankton, fluoro, µg/L (70953)	Pheophytin a, phytoplankton, µg/L (62360)
Oct													
02...	.17	--	E.003	.41	.62	.390	.127	.13	.16	74	96	7.6	6.5
Jan													
29...	.36	.018	.005	.46	.87	.124	.040	E.02	.07	88	80	4.0	2.9
Mar													
06...	.35	.015	.005	--	.87	.069	.022	E.03	.07	E3	E2	17.0	7.5
Apr													
09...	.43	.061	.019	.64	1.1	.152	.050	.06	.12	E14	E14	5.0	2.2
Jul													
17...	.34	.011	.003	--	.92	.263	.086	.08	.18	E100	44	E3.9	E2.9
Aug													
29...	.08	.010	.003	--	.62	.242	.079	.09	.13	100	73	16.1	10.8

WATER-QUALITY DATA
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
Part 4 of 4
[Remark codes: <, less than; E, estimated.]

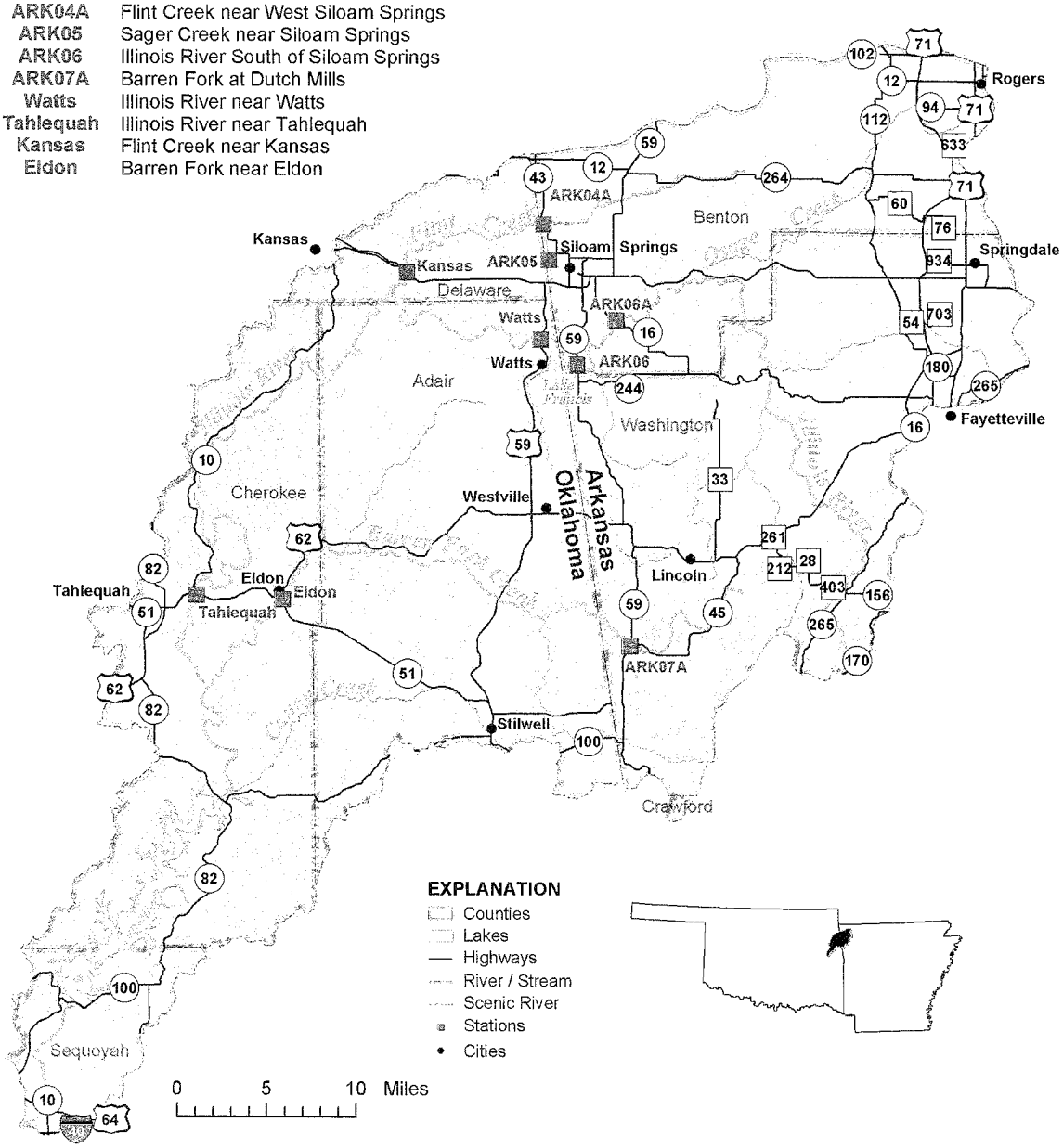
Date	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment discharge, tons/d (80155)	Sampler type, code (84164)
Oct				
02...	64	14	--	3070
Jan				
29...	91	24	2,600	3051
Mar				
06...	38	54	682	3052
Apr				
09...	94	39	4,890	3052
Jul				
17...	50	151	75,400	3055
Aug				
29...	77	22	3,040	3070

Water Quality Monitoring Report

Illinois River Basin

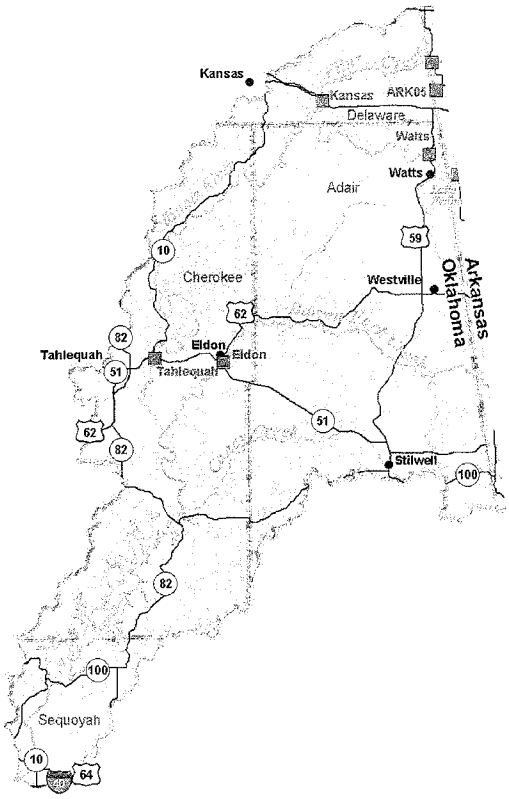
Arkansas – Oklahoma Compact

ARK04A	Flint Creek near West Siloam Springs
ARK05	Sager Creek near Siloam Springs
ARK06	Illinois River South of Siloam Springs
ARK07A	Barren Fork at Dutch Mills
Watts	Illinois River near Watts
Tahlequah	Illinois River near Tahlequah
Kansas	Flint Creek near Kansas
Eldon	Barren Fork near Eldon

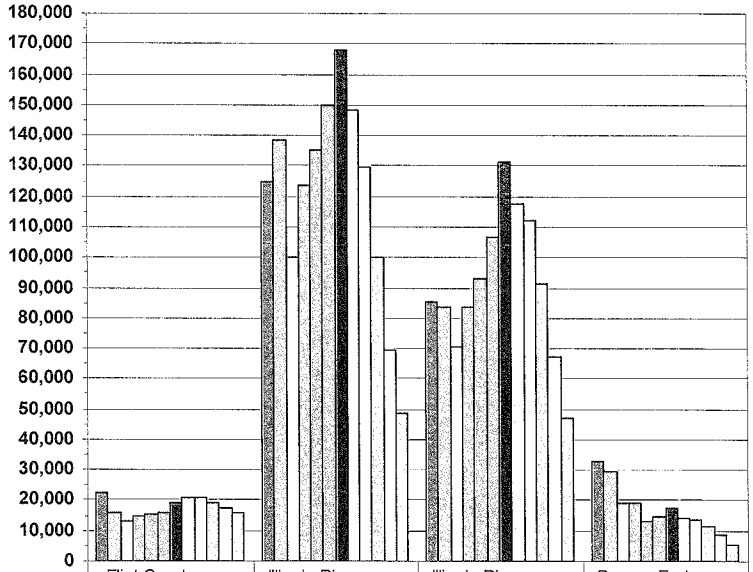


CY 2007

OKLAHOMA



Average Annual Total P Loading in Kilograms per Year



	Flint Creek near Kansas	Illinois River near Watts	Illinois River near Tahlequah	Barren Fork near Eldon
Total P 80-93	22,279	124,832	85,235	33,001
Total P 97-01	15,705	138,508	83,799	29,482
Total P 94-98	12,986	99,898	70,546	19,163
Total P 95-99	14,949	123,581	83,632	19,257
Total P 96-00	15,103	134,986	92,876	13,163
Total P 97-01	15,992	149,927	106,797	14,548
Total P 98-02	19,259	167,987	131,491	17,603
Total P 99-03	20,620	148,151	117,524	14,059
Total P 00-04	21,004	129,533	112,341	13,685
Total P 01-05	19,098	100,347	91,325	11,465
Total P 02-06	17,415	69,482	67,345	8,500
Total P 03-07	15,977	48,448	47,216	5,716

Values represent all available data, which is routinely collected and excludes targeted high flow events.

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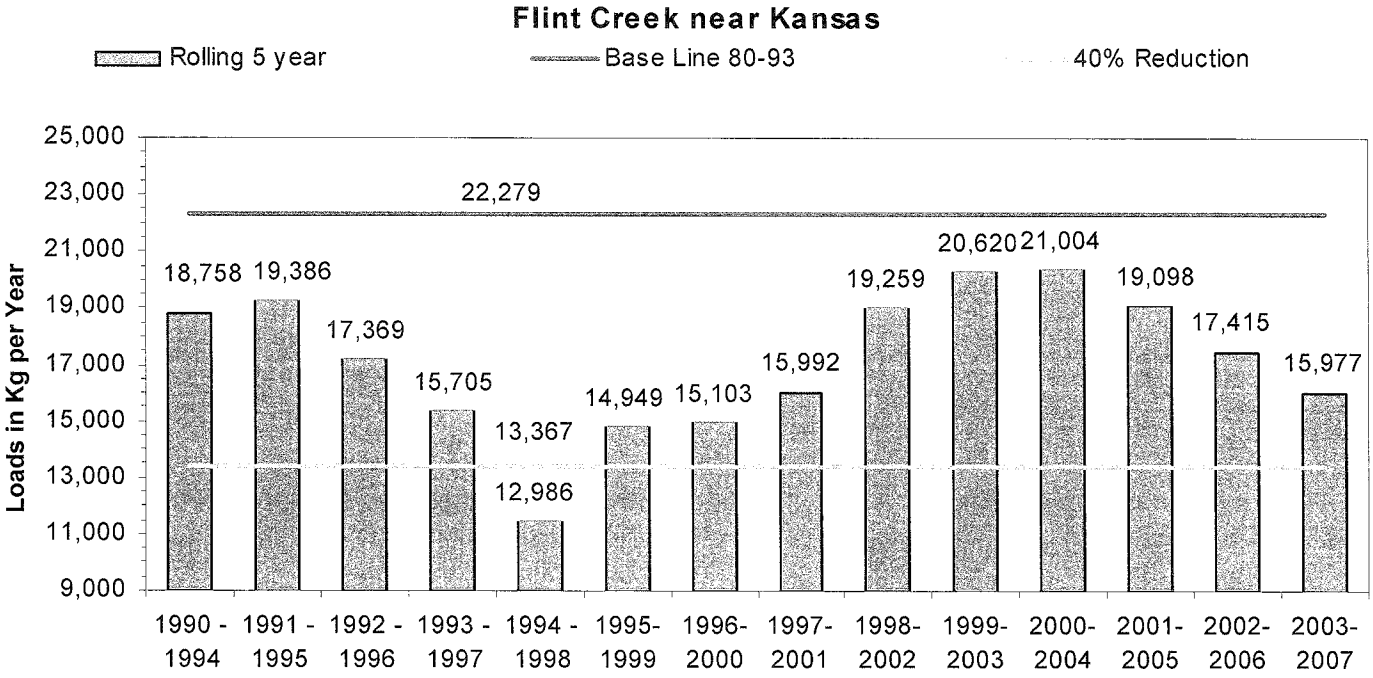
Flint Creek near Kansas
Rolling 5 year
Base Line 80-93
40% Reduction
Loads in Kg per Year
25,000
23,000
21,000
19,000
17,000
15,000
13,000
11,000
9,000
22,279
18,758
19,386
17,369
15,705
13,367
12,986
14,949
15,103
15,992
19,259
20,620
21,004
19,098
17,415
15,977
1990 - 1994
1991 - 1995
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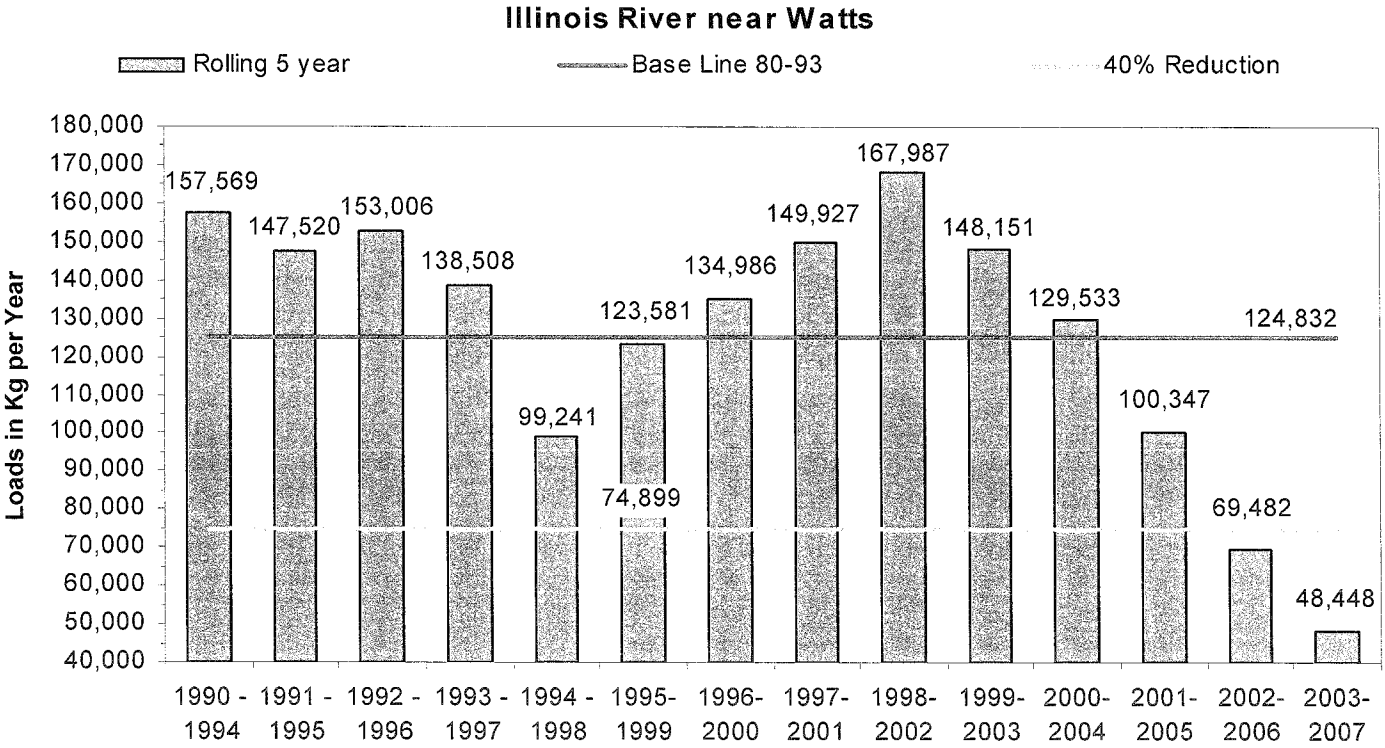
2000- 2004
2001- 2005
2002- 2006
2003- 2007


Illinois River near Watts
Rolling 5 year
Base Line 80-93
40% Reduction
Loads in Kg per Year
180,000
170,000
160,000
150,000
140,000
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
124,832
157,569
147,520
153,006
138,508
99,241
74,899
123,581
134,986
149,927
167,987
148,151
129,533
100,347
69,482
48,448
1990 - 1994
1991 - 1995
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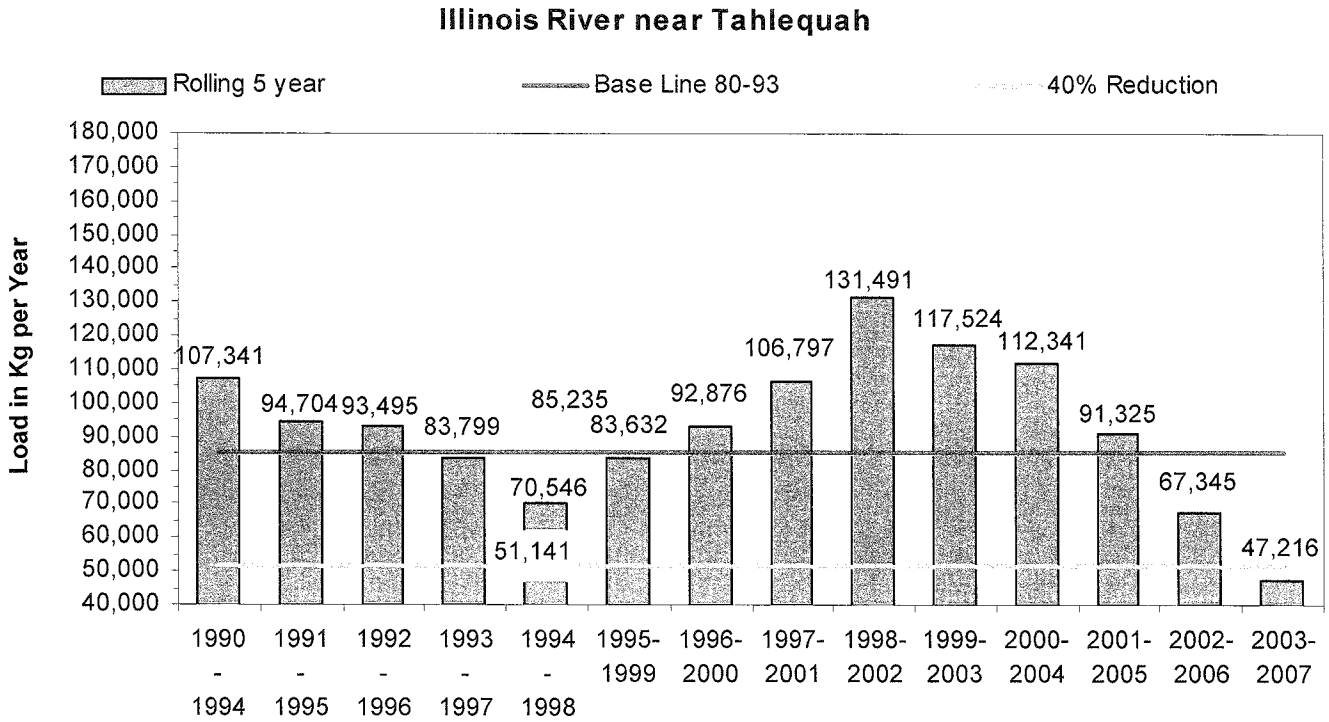
2000- 2004
2001- 2005
2002- 2006
2003- 2007


Illinois River near Tahlequah
Rolling 5 year
Base Line 80-93
40% Reduction
Load in Kg per Year
180,000
170,000
160,000
150,000
140,000
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
107,341
94,704
93,495
83,799
51,141
70,546
85,235
83,632
92,876
106,797
131,491
117,524
112,341
91,325
67,345
47,216
1990 - 1994
1991 - 1995
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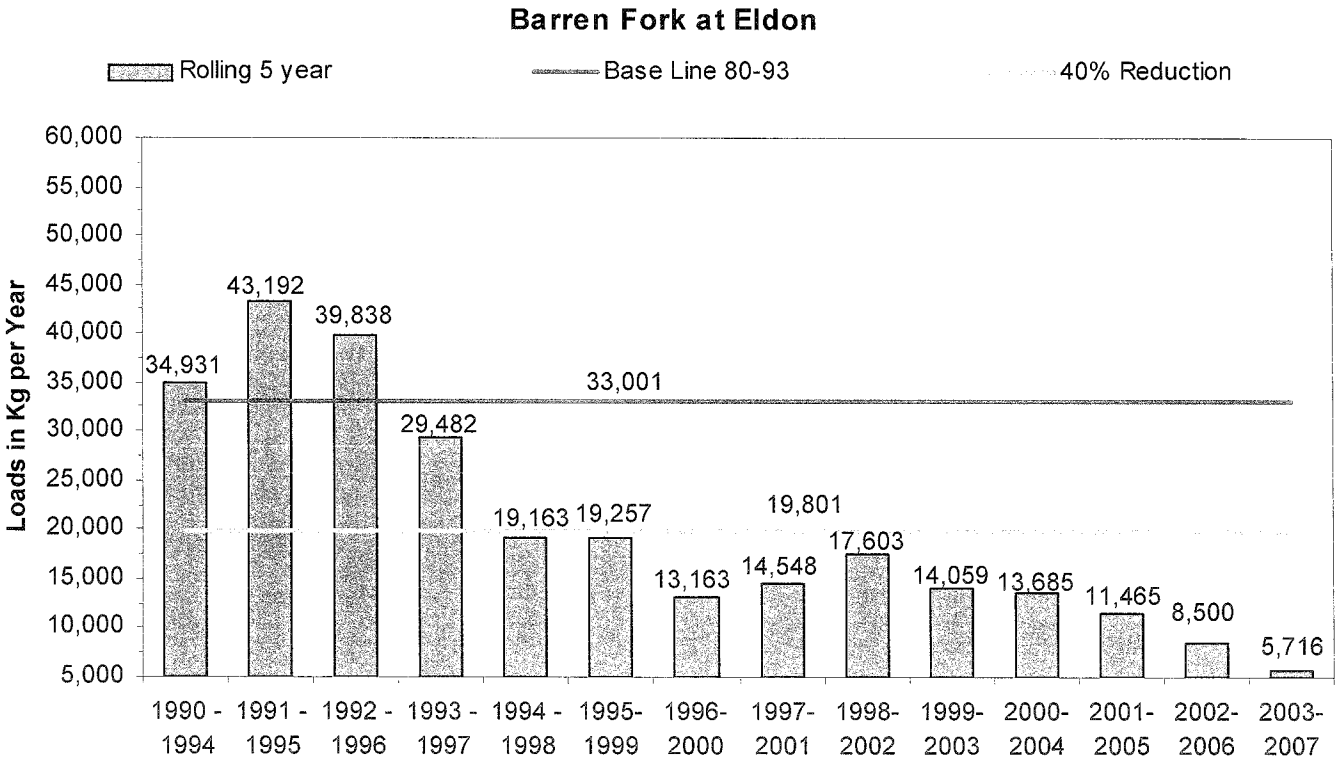
2000- 2004
2001- 2005
2002- 2006
2003- 2007


Barren Fork at Eldon
Rolling 5 year
Base Line 80-93
40% Reduction
Loads in Kg per Year
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
34,931
43,192
39,838
29,482
19,163
19,257
13,163
14,548
19,801
17,603
14,059
13,685
11,465
8,500
5,716
33,001
1990 - 1994
1991 - 1995
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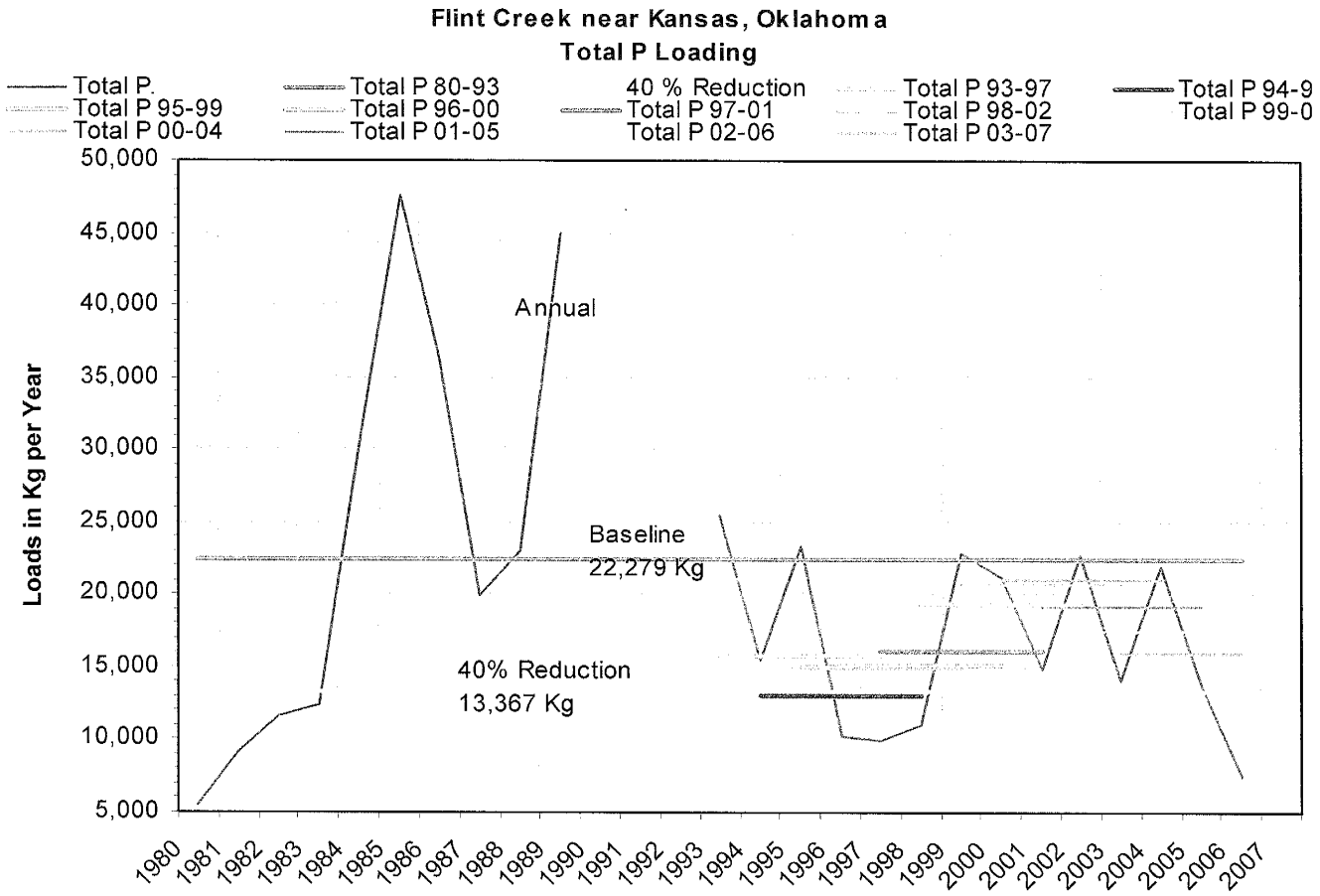
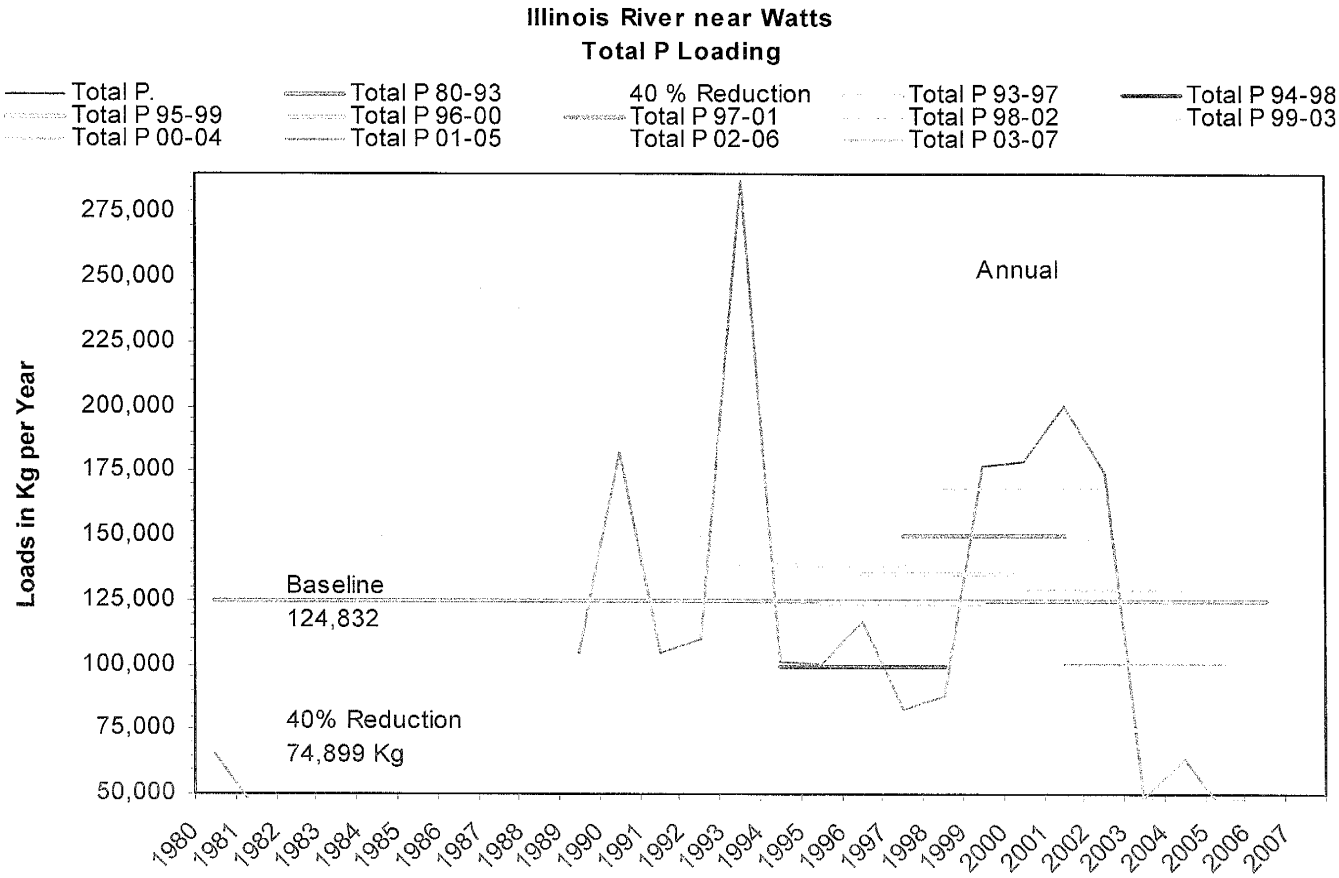
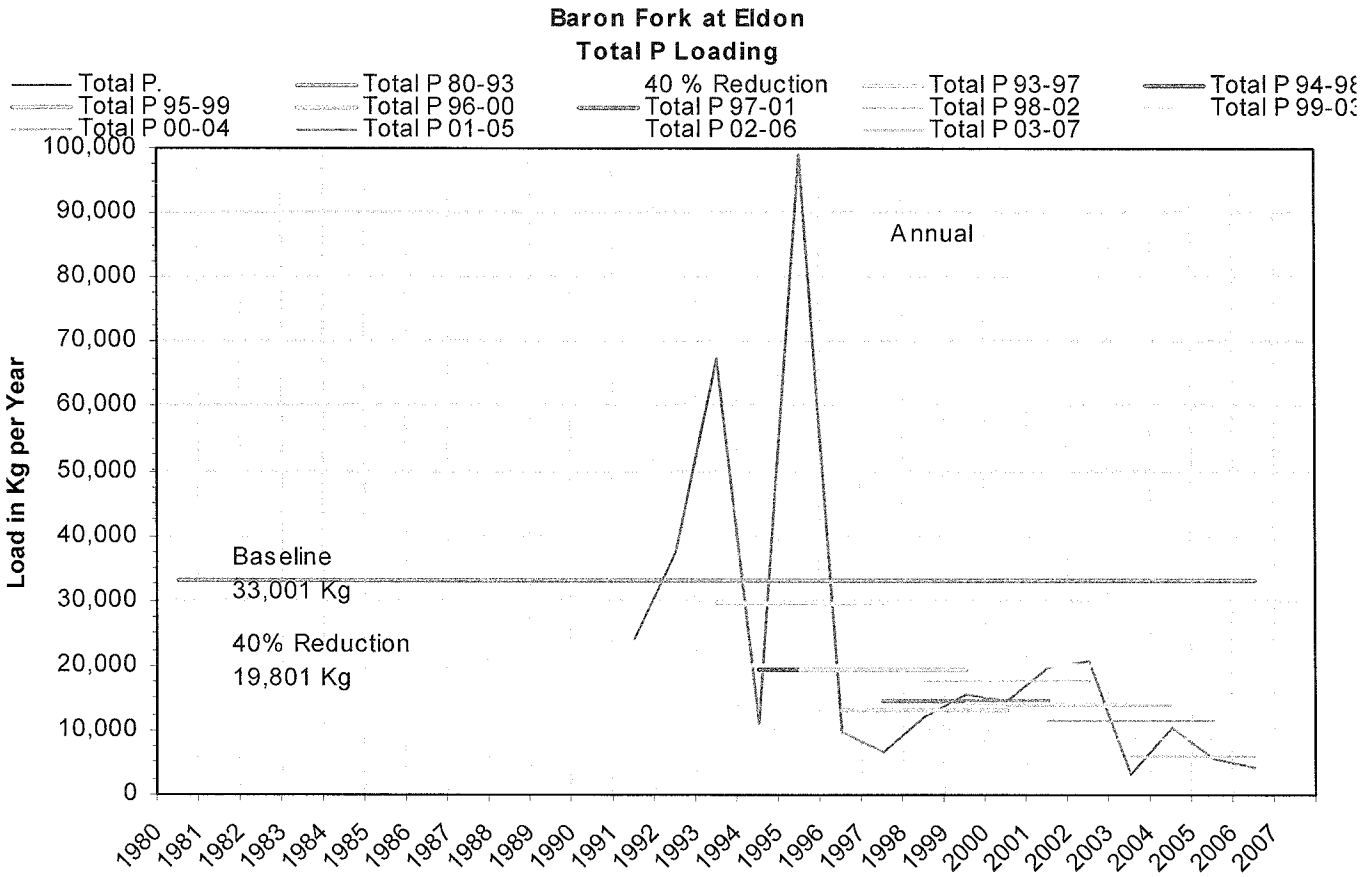
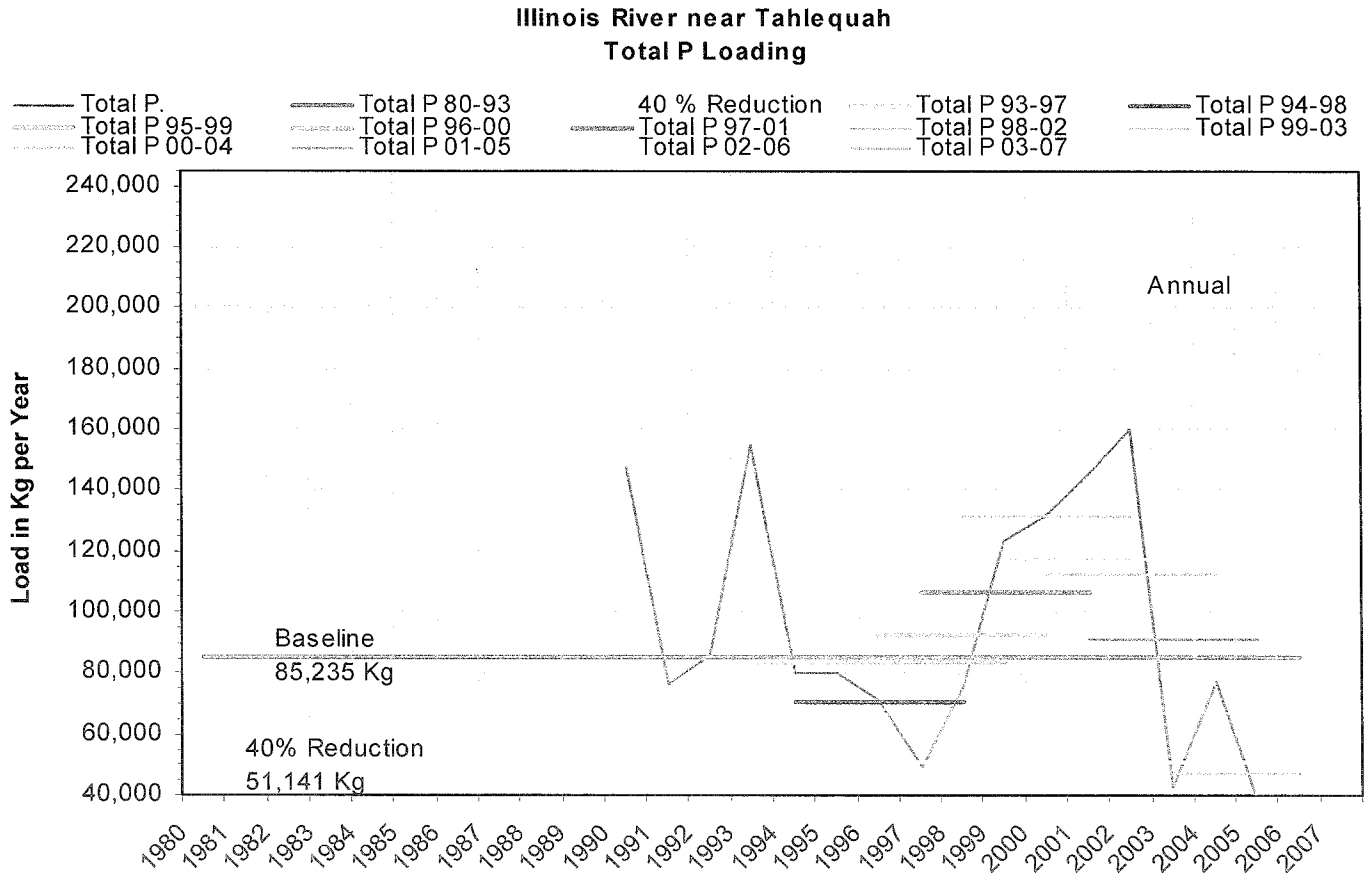
2000- 2004
2001- 2005
2002- 2006
2003- 2007


Flint Creek near Kansas, Oklahoma
Total P Loading
Total P.
Total P 80-93
40 % Reduction
Total P 93-97
Total P 94-9
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-0
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Loads in Kg per Year
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
Annual
Baseline
22,279 Kg
40% Reduction
13,367 Kg
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007


Illinois River near Watts
Total P Loading
Total P.
Total P 80-93
40 % Reduction
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Loads in Kg per Year
275,000
250,000
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
Annual
Baseline
124,832
40% Reduction
74,899 Kg
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007

OKLAHOMA


Baron Fork at Eldon
Total P Loading
Total P.
Total P 80-93
40 % Reduction
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Load in Kg per Year
Annual
Baseline
33,001 Kg
40% Reduction
19,801 Kg


Illinois River near Tahlequah
Total P Loading
Total P.
Total P 80-93
40 % Reduction
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Load in Kg per Year
Annual
Baseline
85,235 Kg
40% Reduction
51,141 Kg

OKLAHOMA

Illinois River near Watts			Loadings
Year	Flow (cfs)	Total P (mg/L)	Total P kg/year
1980	173	0.423	65,279
1981	260	0.190	44,119
1982	591		
1983	352		
1984	706		
1985	947		
1986	879		
1987	815		
1988	531		
1989	558	0.210	104,653
1990	1,127	0.181	182,432
1991	724	0.162	104,534
1992	760	0.161	109,571
1993	1,163	0.277	287,317
1994	674	0.168	101,127
1995	783	0.143	100,233
1996	693	0.188	116,542
1997	573	0.163	83,415
1998	713	0.138	87,876
1999	793	0.250	177,057
2000	648	0.309	178,827
2001	649	0.346	200,549
2002	619	0.316	174,694
2003	347	0.155	48,035
2004	688	0.104	63,903
2005	459	0.106	43,453
2006	349	0.116	36,156
2007	464	0.106	43,926
Average	644	0.201	115,401

Illinois River Near Tahlequah			Loadings
Year	Flow (cfs)	Total P (mg/L)	Total P kg/year
1980	249		
1981	384		
1982	812		
1983	537		
1984	1,157		
1985	1,651		
1986	1,452		
1987	1,218		
1988	820		
1989	808		
1990	1,695	0.098	147,579
1991	1,094	0.079	76,796
1992	1,207	0.080	86,205
1993	1,751	0.099	154,647
1994	1,071	0.084	80,223
1995	1,123	0.080	80,229
1996	938	0.085	71,207
1997	812	0.069	49,797
1998	1,044	0.081	75,524
1999	1,143	0.121	123,518
2000	1,083	0.136	131,543
2001	1,033	0.158	145,766
2002	851	0.211	160,366
2003	478	0.100	42,690
2004	1,157	0.075	77,499
2005	712	0.060	38,148
2006	426	0.074	28,154
2007	736	0.066	43,383
Average	980	0.097	85,319

NOTES : Flow & Water quality data provided by USGS Oklahoma District

* WQ data from 1999 to the present also includes data routinely collected by the OWRB

OKLAHOMA

Flint Creek Near Kansas				Loadings
Year	Flow (cfs)	Total P (mg/L)		Total P kg/year
1980	32	0.189		5,454
1981	57	0.178		9,077
1982	69	0.186		11,537
1983	49	0.284		12,415
1984	143	0.240		30,532
1985	237	0.224		47,591
1986	183	0.223		36,430
1987	141	0.157		19,840
1988	97	0.265		22,946
1989	90	0.557		44,981
1990		0.114		
1991		0.120		
1992		0.118		
1993	182	0.156		25,359
1994	136	0.127		15,418
1995	140	0.185		23,207
1996	76	0.152		10,294
1997	94.8	0.117		9,871
1998	96.5	0.127		10,945
1999	137	0.186		22,758
2000	133	0.178		21,143
2001	101	0.164		14,793
2002	82	0.310		22,703
2003	49.8	0.316		14,055
2004	149.0	0.165		21,957
2005	91.8	0.168		13,774
2006	36.8	0.226		7,428
2007	70.3	0.240		15,068
Average	107	0.203		19,364

Baron Fork at Eldon				Loadings
Year	Flow (cfs)	Total Phos. (mg/L)		Total P kg/year
1980	77			
1981	201			
1982	296			
1983	184			
1984	364			
1985	593			
1986	536			
1987	491			
1988	269			
1989	320			
1990	666			
1991	451	0.060		24,145
1992	440	0.095		37,315
1993	700	0.108		67,234
1994	328	0.037		10,878
1995	422	0.263		98,819
1996	432	0.025		9,645
1997	332	0.023		6,671
1998	409	0.033		12,054
1999	361	0.048		15,476
2000	376	0.043		14,440
2001	343	0.064		19,605
2002	262	0.088		20,591
2003	145	0.025		3,237
2004	403	0.029		10,438
2005	228	0.027		5,498
2006	169	0.027		4,075
2007	254	0.026		5,898
Average	359	0.060		19,231

*1999 TP was modified to include less than detect values (1/2 LTD, n=5)

*2002 TP was modified to include less than detect values (1/2 LTD, n=2)

NOTES : Flow & Water quality data provided by USGS Oklahoma District

* WQ data from 1999 to the present also includes data routinely collected by the OWRB

Five-Year Average Values by Station

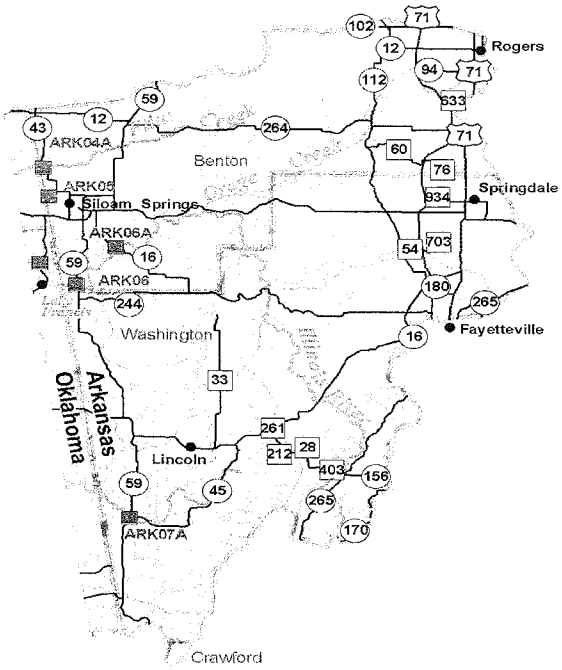
Illinois River at Watts				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.204	685	124,832	0.0%
90-94	0.198	890	157,569	-26.2%
91-95	0.201	821	147,520	-18.2%
92-96	0.210	815	153,006	-22.6%
93-97	0.200	777	138,508	-11.0%
94-98	0.162	687	99,241	20.5%
95-99	0.195	711	123,581	1.0%
96-00	0.221	684	134,986	-8.1%
97-01	0.249	675	149,927	-20.1%
98-02	0.275	684	167,987	-34.6%
99-03	0.271	611	148,151	-18.7%
00-04	0.246	590	129,533	-3.8%
2001-2005	0.203	552	100,347	19.6%
2002-2006	0.158	492	69,482	44.3%
2003-2007	0.118	461	48,448	61.2%

Flint Creek near Kansas				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.214	117	22,279	0.0%
90-94	0.132	159	18,758	15.8%
91-95	0.142	153	19,386	13.0%
92-96	0.146	134	17,369	22.0%
93-97	0.140	126	15,705	29.5%
94-98	0.133	109	12,986	41.7%
95-99	0.154	109	14,949	32.9%
96-00	0.157	107	15,103	32.2%
97-01	0.159	112	15,992	28.2%
98-02	0.196	110	19,259	13.6%
99-03	0.230	101	20,620	7.4%
00-04	0.228	103	21,004	5.7%
2001-2005	0.226	95	19,098	14.3%
2002-2006	0.238	82	17,415	21.8%
2003-2007	0.225	80	15,977	28.3%

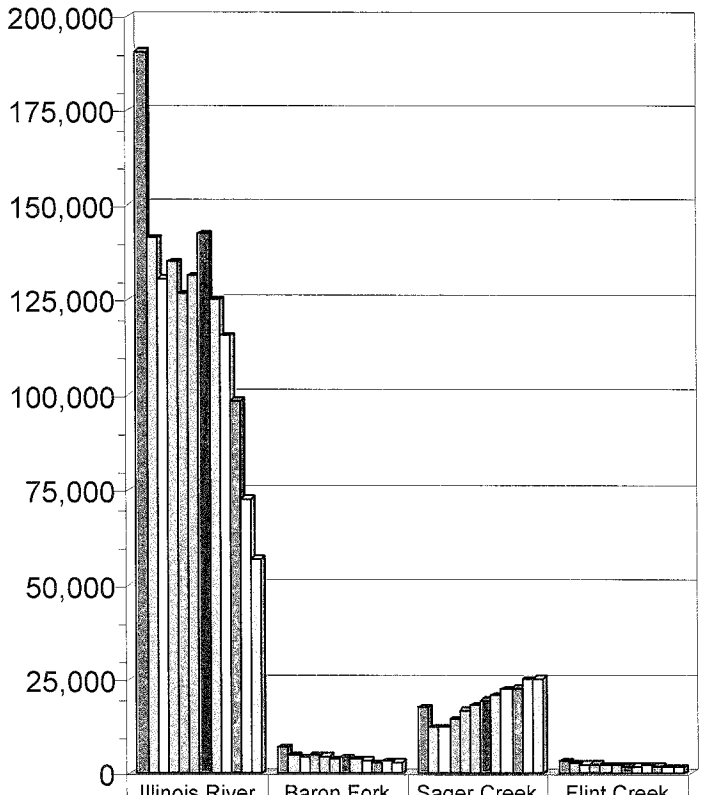
Illinois River near Tahlequah				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.090	1060	85,235	0.0%
90-94	0.088	1364	107,341	-25.9%
91-95	0.085	1249	94,704	-11.1%
92-96	0.086	1218	93,495	-9.7%
93-97	0.082	1139	83,799	1.7%
94-98	0.079	998	70,546	17.2%
95-99	0.093	1012	83,632	1.9%
96-00	0.104	1004	92,876	-9.0%
97-01	0.117	1023	106,797	-25.3%
98-02	0.143	1031	131,491	-54.3%
99-03	0.143	918	117,524	-37.9%
00-04	0.137	920	112,341	-31.8%
2001-2005	0.121	846	91,323	-7.1%
2002-2006	0.104	725	67,345	21.0%
2003-2007	0.075	702	47,216	44.6%

Barren Fork at Eldon				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.093	399	33,001	0.0%
90-94	0.076	517	34,931	-5.8%
91-95	0.103	468	43,192	-30.9%
92-96	0.096	464	39,838	-20.7%
93-97	0.075	443	29,482	10.7%
94-98	0.056	384	19,163	41.9%
95-99	0.055	391	19,257	41.6%
96-00	0.039	382	13,163	60.1%
97-01	0.045	364	14,548	55.9%
98-02	0.056	350	17,603	46.7%
99-03	0.053	297	14,059	57.4%
00-04	0.050	306	13,865	58.0%
2001-2005	0.046	276	11,465	65.3%
2002-2006	0.039	241	8,500	74.2%
2003-2007	0.027	240	5,716	82.7%

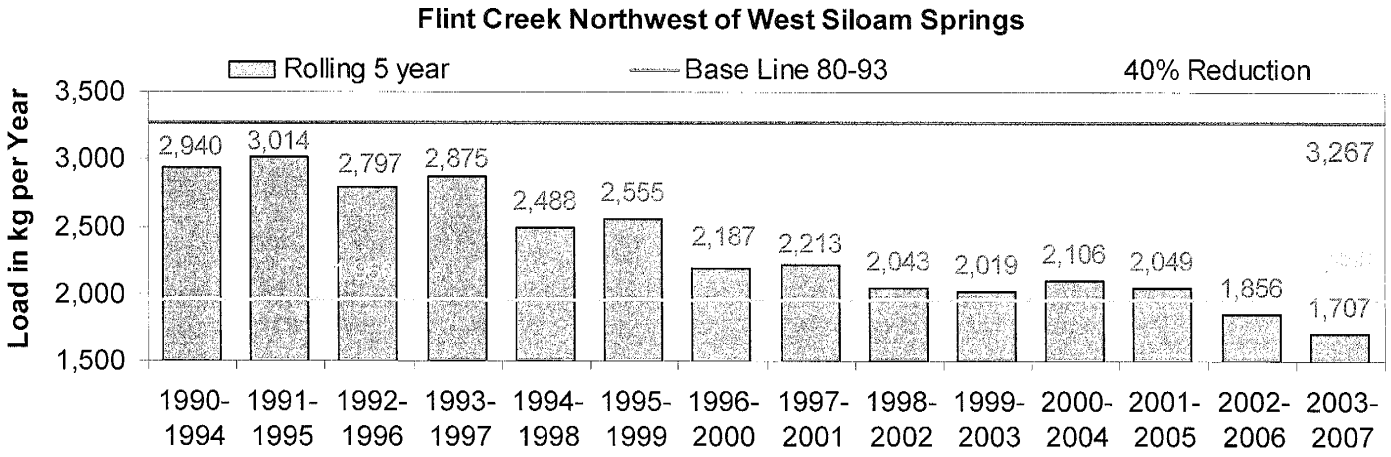
Arkansas

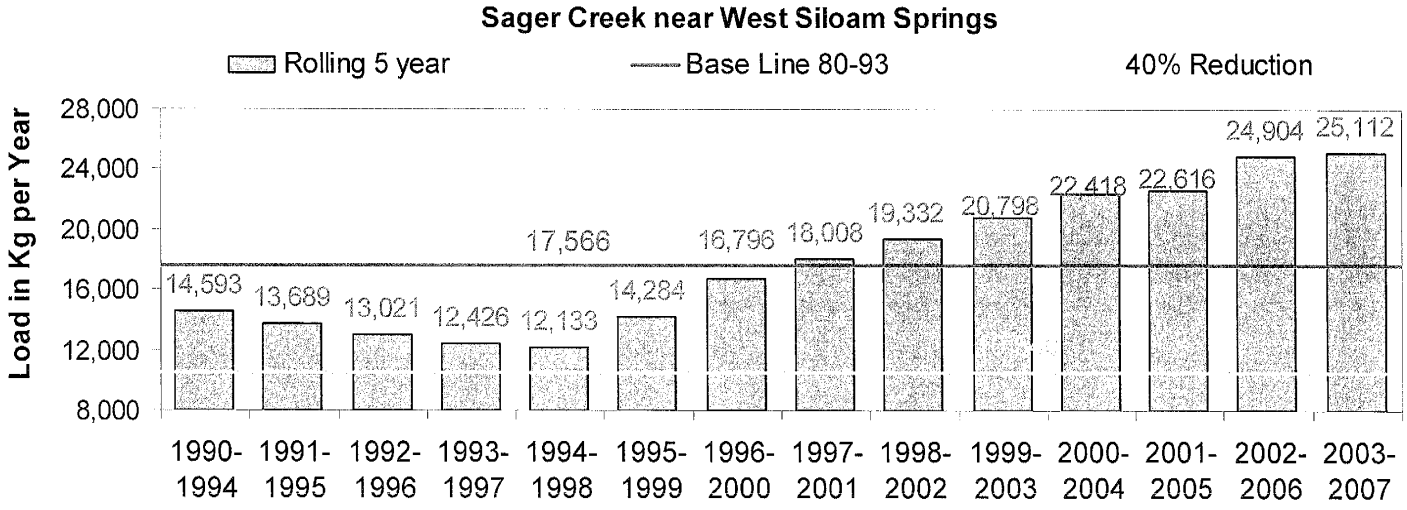


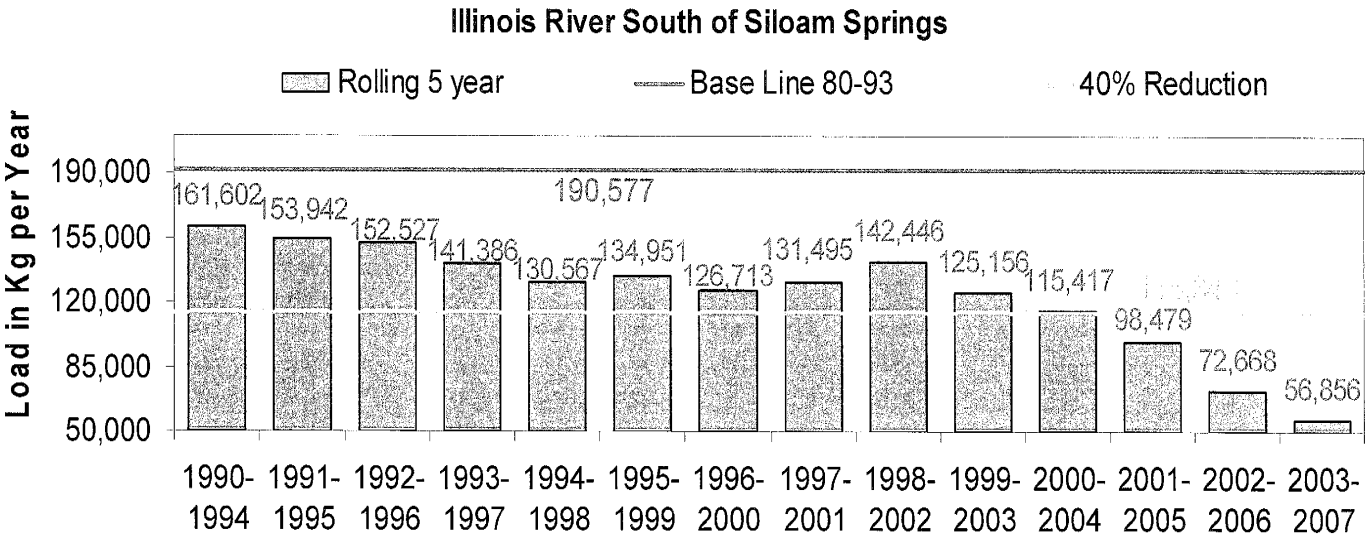
Average Annual Total P Loading
in Kilograms per Year

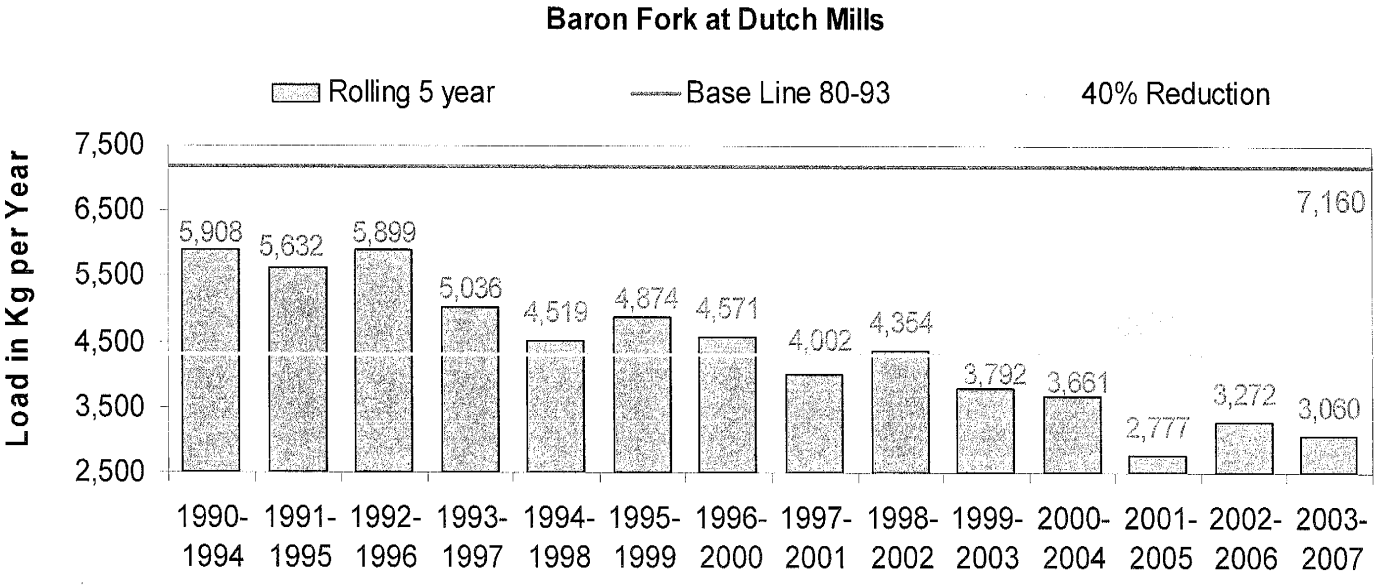


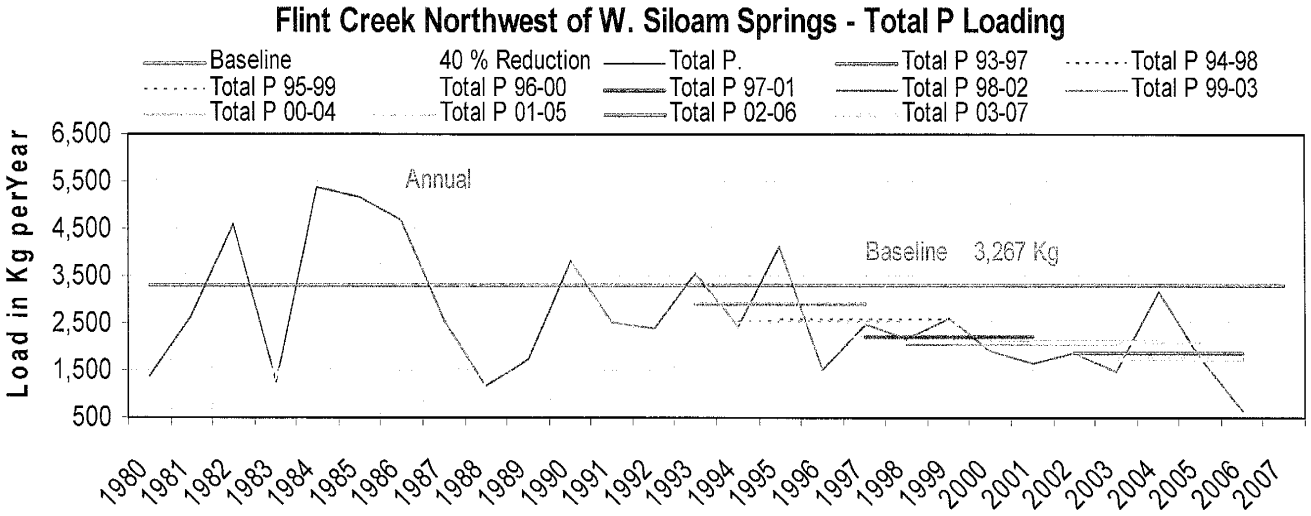
	Illinois River ARK06	Baron Fork ARK07A	Sager Creek ARK05	Flint Creek ARK04A
Total P 80-93	190,577	7,160	17,566	3,267
Total P 93-97	141,386	5,036	12,426	2,875
Total P 94-98	130,567	4,519	12,133	2,488
Total P 95-99	134,951	4,874	14,284	2,555
Total P 96-00	126,713	4,571	16,796	2,187
Total P 97-01	131,495	4,002	18,008	2,213
Total P 98-02	142,446	4,354	19,332	2,043
Total P 99-03	125,156	3,792	20,798	2,019
Total P 00-04	115,417	3,661	22,418	2,106
Total P 01-05	98,479	2,777	22,616	2,049
Total P 02-06	72,668	3,272	24,904	1,856
Total P 03-07	56,856	3,060	25,112	1,707

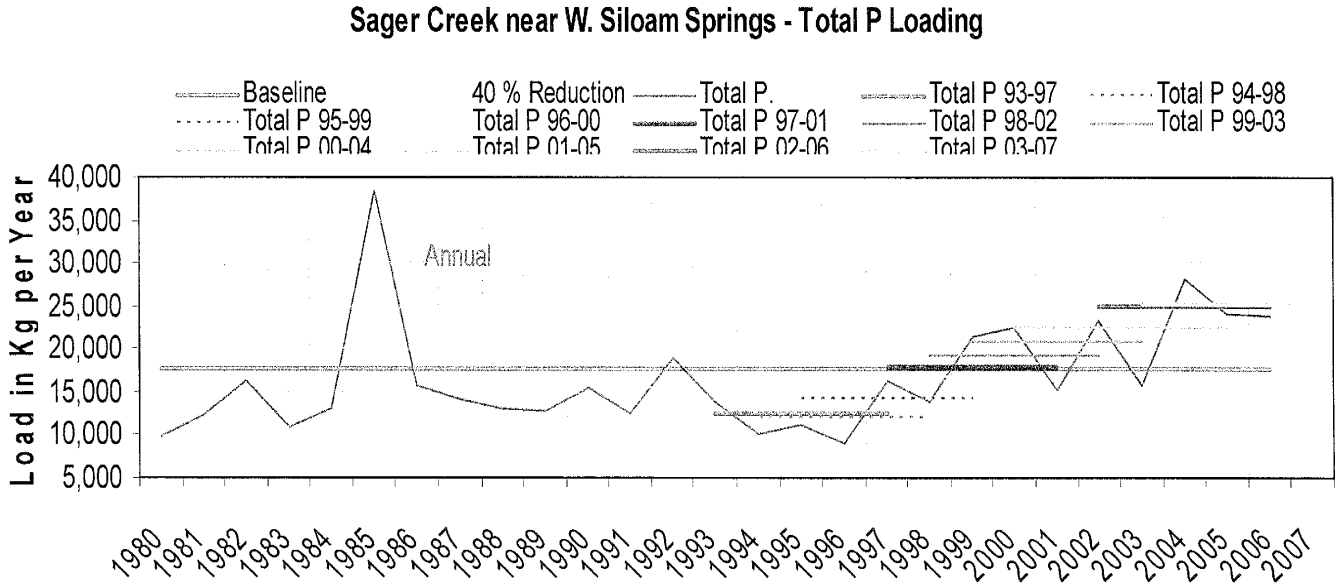

Flint Creek Northwest of West Siloam Springs
Rolling 5 year
Base Line 80-93
40% Reduction
Load in kg per Year
3,500
3,000
2,500
2,000
1,500
2,940
3,014
2,797
2,875
2,488
2,555
2,187
2,213
2,043
2,019
2,106
2,049
1,856
1,707
3,267
1990-1994
1991-1995
1992-1996
1993-1997
1994-1998
1995-1999
1996-2000
1997-2001
1998-2002
1999-2003
2000-2004
2001-2005
2002-2006
2003-2007

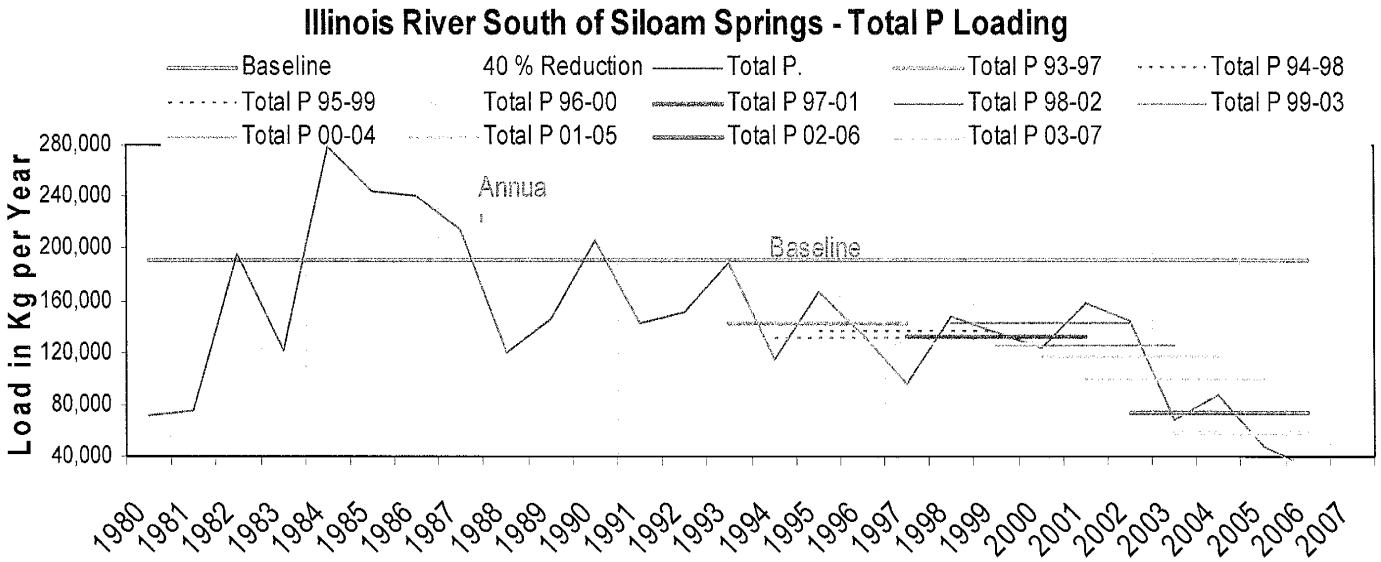

Sager Creek near West Siloam Springs
Rolling 5 year
Base Line 80-93
40% Reduction
Load in Kg per Year
28,000
24,000
20,000
16,000
12,000
8,000
14,593
13,689
13,021
12,426
12,133
14,284
16,796
18,008
19,332
20,798
22,418
22,616
24,904
25,112
17,566
1990-1994
1991-1995
1992-1996
1993-1997
1994-1998
1995-1999
1996-2000
1997-2001
1998-2002
1999-2003
2000-2004
2001-2005
2002-2006
2003-2007


Illinois River South of Siloam Springs
Rolling 5 year
Base Line 80-93
40% Reduction
Load in Kg per Year
190,000
155,000
120,000
85,000
50,000
161,602
153,942
152,527
141,386
130,567
190,577
134,951
126,713
131,495
142,446
125,156
115,417
98,479
72,668
56,856
1990-1994
1991-1995
1992-1996
1993-1997
1994-1998
1995-1999
1996-2000
1997-2001
1998-2002
1999-2003
2000-2004
2001-2005
2002-2006
2003-2007


Baron Fork at Dutch Mills
Rolling 5 year
Base Line 80-93
40% Reduction
Load in Kg per Year
7,500
6,500
5,500
4,500
3,500
2,500
5,908
5,632
5,899
5,036
4,519
4,874
4,571
4,002
4,354
3,792
3,661
2,777
3,272
3,060
7,160
1990-1994
1991-1995
1992-1996
1993-1997
1994-1998
1995-1999
1996-2000
1997-2001
1998-2002
1999-2003
2000-2004
2001-2005
2002-2006
2003-2007


Flint Creek Northwest of W. Siloam Springs - Total P Loading
Baseline
40 % Reduction
Total P.
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Load in Kg perYear
6,500
5,500
4,500
3,500
2,500
1,500
500
Annual
Baseline 3,267 Kg
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007


Sager Creek near W. Siloam Springs - Total P Loading
Baseline
40 % Reduction
Total P.
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Load in Kg per Year
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
Annual
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007


Illinois River South of Siloam Springs - Total P Loading
Baseline
40 % Reduction
Total P.
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Load in Kg per Year
280,000
240,000
200,000
160,000
120,000
80,000
40,000
Annua
Baseline
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
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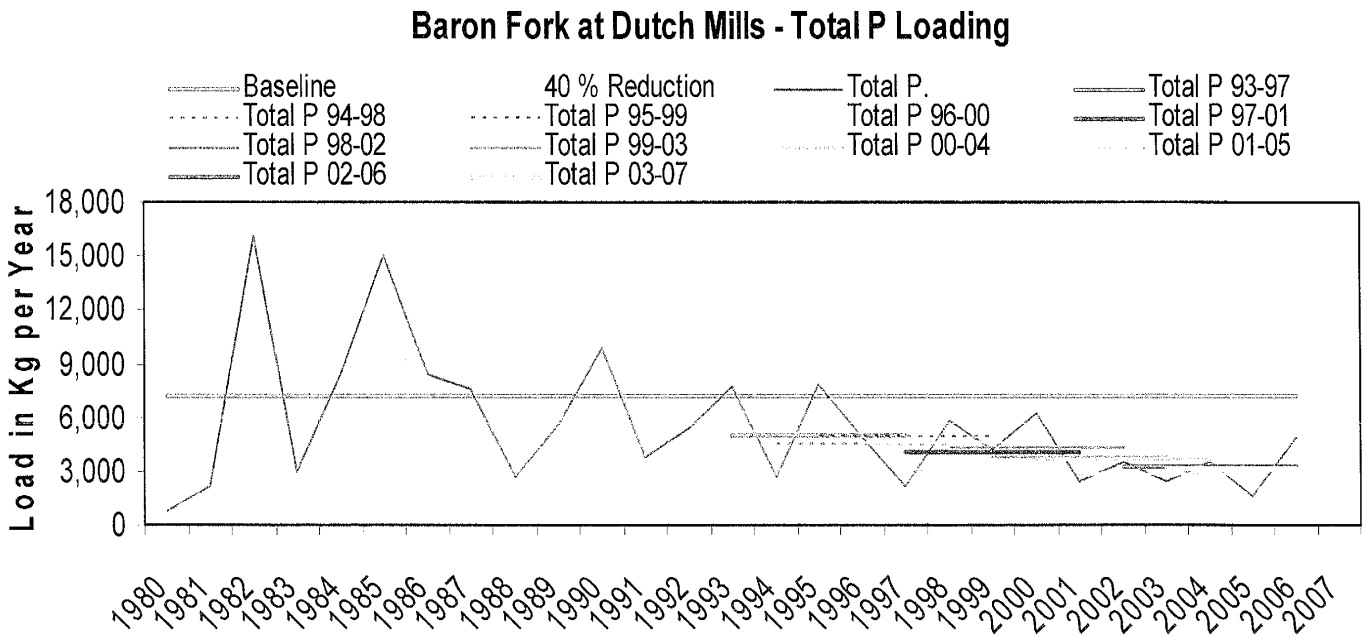
2005
2006
2007


Baron Fork at Dutch Mills - Total P Loading
Baseline
40 % Reduction
Total P.
Total P 93-97
Total P 94-98
Total P 95-99
Total P 96-00
Total P 97-01
Total P 98-02
Total P 99-03
Total P 00-04
Total P 01-05
Total P 02-06
Total P 03-07
Load in Kg per Year
18,000
15,000
12,000
9,000
6,000
3,000
0
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007

Flint Creek Northwest of West Siloam Springs - Loadings			
ARK04A Year	Flow (cfs)	Total P (mg/L)	Total P (kg/yr)
1980	11.9	0.130	1,382
1981	19.8	0.149	2,635
1982	29.9	0.171	4,566
1983	19.0	0.073	1,239
1984	53.5	0.112	5,351
1985	91.3	0.063	5,137
1986	78.4	0.067	4,691
1987	58.3	0.049	2,551
1988	41.8	0.031	1,157
1989	38.0	0.050	1,697
1990	71.3	0.060	3,821
1991	51.6	0.054	2,489
1992	56.1	0.047	2,355
1993	88.2	0.045	3,545
1994	53.0	0.051	2,414
1995	61.3	0.075	4,106
1996	33.5	0.050	1,496
1997	37.3	0.074	2,448
1998	42.9	0.056	2,142
1999	63.5	0.045	2,578
2000	55.6	0.038	1,893
2001	39.4	0.047	1,636
2002	44.6	0.047	1,850
2003	21.4	0.075	1,438
2004	64.6	0.055	3,173
2005	43.0	0.046	1,772
2006	12.6	0.056	632
2007	22.4	0.059	1,176
Avg.	47.5	0.067	2,851

Sager Creek near West Siloam Springs - Loadings			
ARK05 Year	Flow (cfs)	Total P (mg/L)	Total P (kg/yr)
1980	4.5	2.430	9,766
1981	6.5	2.125	12,336
1982	9.0	2.025	16,277
1983	6.3	1.964	11,050
1984	15.4	0.950	13,066
1985	24.8	1.736	38,450
1986	21.1	0.834	15,716
1987	16.7	0.948	14,136
1988	12.6	1.154	12,986
1989	11.7	1.227	12,821
1990	20.2	0.860	15,515
1991	15.5	0.914	12,653
1992	16.5	1.284	18,921
1993	24.6	0.637	13,995
1994	15.7	0.721	10,110
1995	17.8	0.697	11,080
1996	11.0	0.919	9,028
1997	17.8	1.029	16,354
1998	18.1	0.858	13,876
1999	24.5	0.979	21,429
2000	30.7	0.820	22,469
2001	21.2	0.803	15,201
2002	21.8	1.192	23,231
2003	11.7	1.503	15,700
2004	34.5	0.916	28,224
2005	18.5	1.461	24,200
2006	14.9	1.799	23,935
2007	21.0	1.306	24,496
Avg.	17.2	1.214	18,623

NOTES: 1) Flow data provided by USGS Arkansas & Oklahoma 2) P concentrations provided by the ADEQ Technical Services Division

Illinois River South of Siloam Springs - Loadings			
ARK06 Year	Flow (cfs)	Total P (mg/L)	Total P (kg/yr)
1980	169	0.470	70,939
1981	197	0.420	73,895
1982	591	0.370	195,294
1983	352	0.386	121,347
1984	706	0.442	278,693
1985	947	0.289	244,426
1986	879	0.305	239,436
1987	815	0.294	213,996
1988	531	0.253	119,982
1989	558	0.291	145,020
1990	1127	0.204	205,331
1991	724	0.220	142,253
1992	760	0.222	150,684
1993	1163	0.181	188,000
1994	674	0.190	114,370
1995	783	0.237	165,733
1996	667	0.225	134,032
1997	497	0.213	94,504
1998	668	0.246	146,960
1999	737	0.206	135,413
2000	597	0.230	122,831
2001	598	0.293	156,581
2002	570	0.282	143,700
2003	344	0.219	67,422
2004	633	0.153	86,496
2005	436	0.120	46,785
2006	290	0.120	31,091
2007	436	0.131	51,154
Avg.	630	0.262	147,617

Baron Fork at Dutch Mills - Loadings			
ARK07A Year	Flow (cfs)	Total P (mg/L)	Total P (kg/yr)
1980	9.5	0.103	878
1981	18.4	0.135	2,218
1982	37.4	0.484	16,167
1983	27.2	0.125	3,037
1984	51.8	0.183	8,466
1985	79.4	0.211	14,962
1986	64.0	0.147	8,402
1987	63.2	0.134	7,563
1988	31.8	0.097	2,755
1989	50.2	0.124	5,559
1990	102.0	0.109	9,929
1991	49.4	0.086	3,794
1992	47.9	0.127	5,433
1993	104.0	0.083	7,709
1994	37.0	0.081	2,677
1995	54.2	0.162	7,842
1996	64.4	0.084	4,831
1997	35.9	0.067	2,151
1998	61.1	0.107	5,822
1999	45.8	0.102	4,176
2000	52.6	0.133	6,230
2001	41.4	0.065	2,387
2002	38.0	0.104	3,536
2003	20.1	0.133	2,386
2004	44.5	0.087	3,458
2005	26.1	0.069	1,595
2006	62.0	0.088	4,858
2007	32.3	0.087	2,509
Avg.	48.9	0.127	5,541

NOTES: 1) Flow data provided by USGS Arkansas & Oklahoma 2) P concentrations provided by the ADEQ Technical Services Division

Five-Year Average Values by Station

Flint Creek NW of W Siloam Springs				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.079	50.7	3,267	0.0%
90-94	0.051	64.0	2,940	10.0%
91-95	0.054	62.0	3,014	7.7%
92-96	0.054	58.4	2,797	14.4%
93-97	0.059	54.7	2,875	12.0%
94-98	0.061	45.6	2,488	23.9%
95-99	0.060	47.7	2,555	21.8%
96-00	0.053	46.6	2,187	33.1%
97-01	0.052	47.7	2,213	32.3%
98-02	0.046	49.2	2,043	37.5%
99-03	0.050	44.9	2,019	38.2%
00-04	0.052	45.1	2,106	35.5%
01-05	0.054	42.6	2,049	37.3%
02-06	0.056	37.2	1,856	43.2%
03-07	0.058	32.8	1,707	47.8%

Illinois River South of Siloam Springs				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.311	680	190,577	0.0%
90-94	0.203	890	161,602	15.2%
91-95	0.210	821	153,942	19.2%
92-96	0.211	809	152,527	20.0%
93-97	0.209	757	141,386	25.8%
94-98	0.222	658	130,567	31.5%
95-99	0.225	670	134,951	29.2%
96-00	0.224	633	126,713	33.5%
97-01	0.238	619	131,495	31.0%
98-02	0.252	634	142,446	25.3%
99-03	0.246	569	125,156	34.3%
00-04	0.236	548	115,417	39.4%
01-05	0.214	516	98,479	48.3%
02-06	0.179	455	72,668	61.9%
03-07	0.149	428	56,856	70.2%

Sager Creek near W Siloam Springs				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	1.363	14.7	17,566	0.0%
90-94	0.883	18.5	14,593	16.9%
91-95	0.851	18.0	13,689	22.1%
92-96	0.852	17.1	13,021	25.9%
93-97	0.801	17.4	12,426	29.3%
94-98	0.845	16.1	12,133	30.9%
95-99	0.896	17.8	14,284	18.7%
96-00	0.921	20.4	16,796	4.4%
97-01	0.898	22.5	18,008	-2.5%
98-02	0.930	23.3	19,332	-10.1%
99-03	1.059	22.0	20,798	-18.4%
00-04	1.047	24.0	22,418	-27.6%
01-05	1.175	21.6	22,616	-28.7%
02-06	1.374	20.3	24,904	-41.8%
03-07	1.397	20.1	25,112	-43.0%

Baron Fork at Dutch Mills				
Year	Pt (mg/l)	Flow (cfs)	Pt (kg/yr)	% Decrease
80-93	0.153	52.6	7,160	0.0%
90-94	0.097	68.1	5,908	17.5%
91-95	0.108	58.5	5,632	21.3%
92-96	0.107	61.5	5,899	17.6%
93-97	0.095	59.1	5,036	29.7%
94-98	0.100	50.5	4,519	36.9%
95-99	0.104	52.3	4,874	31.9%
96-00	0.099	52.0	4,571	36.2%
97-01	0.095	47.4	4,002	44.1%
98-02	0.102	47.8	4,354	39.2%
99-03	0.107	39.6	3,792	47.0%
00-04	0.104	39.3	3,661	48.9%
01-05	0.091	34.0	2,777	61.2%
02-06	0.096	38.1	3,272	54.3%
03-07	0.093	37.0	3,060	57.3%

ARKANSAS - OKLAHOMA ARKANSAS RIVER COMPACT

1972

ARKANSAS RIVER BASIN COMPACT

ARKANSAS-OKLAHOMA, 1972

Approved

by the

ARKANSAS RIVER COMPACT COMMITTEE

FOR ARKANSAS:

S. Keith Jackson
Committee Member

John Luce
Committee Member
(alternate)

FOR OKLAHOMA:

Glade R. Kirkpatrick
Committee Member

Milton Craig
Committee Member
(alternate)

FOR UNITED STATES OF AMERICA:

Trigg Twichell
Federal Representative and Chairman of Committee

Attest:

Willard B. Mills
Secretary

March 16, 1970
Revised March 3, 1972

Office of Representative, United States 300 E. 8th St., Austin, Tex. 78701

PREFACE

In 1955, the Congress of the United States by Public Law 97, 84th Congress, 1st Session, granted consent to the States of Arkansas and Oklahoma to negotiate and enter into a Compact for the apportionment of the waters of the Arkansas River and its tributaries between the two States. With this authorization and the appointment of a Federal Representative to act as Chairman, the States created the Arkansas-Oklahoma Arkansas River Compact Committee on March 14, 1956, for the purpose of drafting a proposed Compact for the apportionment of the waters of the Arkansas River and its tributaries as they affect those States.

From the beginning the Committee was deliberate in its operations. Two important subcommittees: engineering and legal, were appointed early for the purpose of assembling, analyzing, and interpreting essential engineering and legal data needed by the Compact Committee.

The engineering subcommittee made hydrologic studies which were utilized in determining that portion of the Arkansas River Basin that should be covered by the interstate Compact, analyzed the quantity, quality, and mode of occurrence of the water resources of the area in question and made long-range estimates of the quantities of water that would be needed by the States in future years, recognizing existing water rights and water uses.

The legal committee researched existing interstate water compacts and continuously advised the Compact Committee on legal matters that related to Compact negotiations.

The work of these subcommittees and their reports were invaluable to the Compact committee in reaching its unanimous agreement of the proposed Compact.

The Federal Representative employed a consulting engineer in the field of interstate compacts, and received legal counsel from the U.S. Department of Justice on matters that were of concern to the Federal agencies.

The Arkansas River Compact Committee approved its first formal interstate Compact draft March 16, 1970.

The State of Arkansas ratified this Compact draft through its Act. No. 16, 1971, as passed by the Arkansas General Assembly and signed by Governor Dale Bumpers, January 26, 1971.

The State of Oklahoma ratified the interstate Compact draft through H. B. No. 1326, as passed by the Oklahoma Legislature and signed by Governor David Hall, April 24, 1971. This ratification, however, carried the following amendment:

> "SECTION 2. This ratification is subject to the State of Oklahoma and the State of Arkansas, acting through their duly authorized compact representatives, amending said 'Arkansas River Basin Compact' in the particulars as set forth hereinafter, and further, that ratification of said amendment of said compact by the Legislature of the State of Arkansas. Said amendment being expressed as follows:
>
> "The following language shall be added to Article VI, Section A of said compact, to-wit: 'Provided however that nothing contained in this compact or its ratification by Arkansas or Oklahoma shall be interpreted as granting either State or the parties hereto the right or power of eminent domain in any manner whatsoever outside the borders of its own state.'"

The Arkansas River Compact Committee unanimously approved the Oklahoma amendment as an appropriate clarification statement in the Compact. The Federal member of the Committee was formally advised that the Federal agencies had no objections to this amendment.

The State of Arkansas adopted the State of Oklahoma's amendment to the Arkansas River Compact draft through Act. No. 40 as passed by the Arkansas General Assembly and signed by Governor Dale Bumpers, February 17, 1972.

The Arkansas River Basin Compact, Arkansas-Oklahoma, 1972, as revised March 3, 1972, contains the amendment as approved by both States and corrections of typographical errors found in the March 16, 1970 draft.

ARKANSAS RIVER BASIN COMPACT
ARKANSAS-OKLAHOMA, 1972

The State of Arkansas and the State of Oklahoma, acting through their duly authorized Compact representatives, S. Keith Jackson of Arkansas, and Glade R. Kirkpatrick of Oklahoma, after negotiations participated in by Trigg Twichell, appointed by the President as the representative of the United States of America, pursuant to and in accordance with the consent to such negotiations granted by an Act of Congress of the United States of America (Public Law 97, 84th Congress, 1st session), approved June 28, 1955, have agreed as follows respecting the waters of the Arkansas River and its tributaries:

ARTICLE I

The major purposes of this Compact are:

A. To promote interstate comity between the States of Arkansas and Oklahoma;

B. To provide for an equitable apportionment of the waters of the Arkansas River between the States of Arkansas and Oklahoma and to promote the orderly development thereof;

C. To provide an agency for administering the water apportionment agreed to herein;

D. To encourage the maintenance of an active pollution abatement program in each of the two States and to seek the further reduction of both natural and man-made pollution in the waters of the Arkansas River Basin; and

E. To facilitate the cooperation of the water administration agencies of the States of Arkansas and Oklahoma in the total development and management of the water resources of the Arkansas River Basin.

ARTICLE II

As used in this Compact:

A. The term "State" means either State signatory hereto and shall be construed to include any person or persons, entity or agency of either State who, by reason of official responsibility or by designation of the Governor of that State, is acting as an official representative of that State.

Article II (continued).

B. The term "Arkansas-Oklahoma Arkansas River Compact Commission," or the term "Commission" means the agency created by this Compact for the administration thereof.

C. The term "Arkansas River Basin" means all of the drainage basin of the Arkansas River and its tributaries from a point immediately below the confluence of the Grand-Neosho River with the Arkansas River near Muskogee, Oklahoma, to a point immediately below the confluence of Lee Creek with the Arkansas River near Van Buren, Arkansas, together with the drainage basin of Spavinaw Creek in Arkansas, but excluding that portion of the drainage basin of the Canadian River above Eufaula Dam.

D. The term "Spavinaw Creek Sub-basin" means the drainage area of Spavinaw Creek in the State of Arkansas.

E. The term "Illinois River Sub-basin" means the drainage area of Illinois River in the State of Arkansas.

F. The term "Lee Creek Sub-basin" means the drainage area of Lee Creek in the State of Arkansas and the State of Oklahoma.

G. The term "Poteau River Sub-basin" means the drainage area of Poteau River in the State of Arkansas.

H. The term "Arkansas River Sub-basin" means all areas of the Arkansas River Basin except the four sub-basins described above.

I. The term "water year" means a twelve-month period beginning on October 1, and ending September 30.

J. The term "annual yield" means the computed annual gross runoff from any specified sub-basin which would have passed any certain point on a stream and would have originated within any specified area under natural conditions, without any man-made depletion or accretion during the water year.

K. The term "pollution" means contamination or other alterations of the physical, chemical, biological or radiological properties of water or the discharge of any liquid, gaseous, or solid substances into any waters which creates, or is likely to result in a nuisance, or which renders or is likely to render the waters into which it is discharged harmful, detrimental or injurious to public health, safety, or welfare, or which is harmful, detrimental or injurious to beneficial uses of the water.

ARTICLE III

A. The physical and other conditions peculiar to the Arkansas River Basin constitute the basis of this Compact, and neither of the States hereby, nor the Congress of the United States by its consent hereto, concedes that this Compact establishes any general principle with respect to any other interstate stream.

B. By this Compact, neither State signatory hereto is relinquishing any interest or right it may have with respect to any waters flowing between them which do not originate in the Arkansas River Basin as defined by this Compact.

ARTICLE IV

The States of Arkansas and Oklahoma hereby agree upon the following apportionment of the waters of the Arkansas River Basin:

A. The State of Arkansas shall have the right to develop and use the waters of the Spavinaw Creek Sub-basin subject to the limitation that the annual yield shall not be depleted by more than fifty percent (50%).

B. The State of Arkansas shall have the right to develop and use the waters of the Illinois River Sub-basin subject to the limitation that the annual yield shall not be depleted by more than sixty percent (60%).

C. The State of Arkansas shall have the right to develop and use all waters originating within the Lee Creek Sub-basin in the State of Arkansas, or the equivalent thereof.

D. The State of Oklahoma shall have the right to develop and use all waters originating within the Lee Creek Sub-basin in the State of Oklahoma, or the equivalent thereof.

E. The State of Arkansas shall have the right to develop and use the waters of the Poteau River Sub-basin subject to the limitation that the annual yield shall not be depleted by more than sixty percent (60%).

F. The State of Oklahoma shall have the right to develop and use the waters of the Arkansas River Sub-basin subject to the limitation that the annual yield shall not be depleted by more than sixty percent (60%).

ARTICLE V

A. On or before December 31 of each year, following the effective date of this Compact, the Commission shall determine the stateline yields of the Arkansas River Basin for the previous water year.

B. Any depletion of annual yield in excess of that allowed by the provisions of this Compact shall, subject to the control of the Commission, be delivered to the downstream State, and said delivery shall consist of not less than sixty percent (60%) of the current runoff of the basin.

C. Methods for determining the annual yield of each of the sub-basins shall be those developed and approved by the Commission.

ARTICLE VI

A. Each State may construct, own and operate for its needs water storage reservoirs in the other State; provided, however, that nothing contained in this Compact or its ratification by Arkansas or Oklahoma shall be interpreted as granting either State or the parties hereto the right or power of eminent domain in any manner whatsoever outside the borders of its own State.

B. Depletion in annual yield of any sub-basin of the Arkansas River Basin caused by the operation of any water storage reservoir either heretofore or hereafter constructed by the United States or any of its agencies, instrumentalities or wards, or by a State, political sub-division thereof, or any person or persons shall be charged against the State in which the yield therefrom is utilized.

C. Each State shall have the free and unrestricted right to utilize the natural channel of any stream within the Arkansas River Basin for conveyance through the other State of waters released from any water storage reservoir for an intended downstream point of diversion or use without loss of ownership of such waters; provided, however, that a reduction shall be made in the amount of water which can be withdrawn at point of removal, equal to the transmission losses.

ARTICLE VII

The States of Arkansas and Oklahoma mutually agree to:

A. The principle of individual State effort to abate man-made pollution within each State's respective borders, and the continuing support of both States in an active pollution abatement program;

B. The cooperation of the appropriate State agencies in the States of Arkansas and Oklahoma to investigate and abate sources of alleged interstate pollution within the Arkansas River Basin;

C. Enter into joint programs for the identification and control of sources of pollution of the waters of the Arkansas River and its tributaries which are of interstate significance;

D. The principle that neither State may require the other to provide water for the purpose of water quality control as a substitute for adequate waste treatment;

E. Utilize the provisions of all Federal and State water pollution laws and to recognize such water quality standards as may be now or hereafter established under the Federal Water Pollution Control Act in the resolution of any pollution problems affecting the waters of the Arkansas River Basin.

ARTICLE VIII

A. There is hereby created an interstate administrative agency to be known as the "Arkansas-Oklahoma Arkansas River Compact Commission." The Commission shall be composed of three Commissioners representing the State of Arkansas and three Commissioners representing the State of Oklahoma, selected as provided below; and, if designated by the President or an authorized Federal agency, one Commissioner representing the United States. The President, or the Federal agency authorized to make such appointments, is hereby requested to designate a Commissioner and an alternate representing the United States. The Federal Commissioner, if one be designated, shall be the Chairman and presiding officer of the Commission, but shall not have the right to vote in any of the deliberations of the Commission.

Article VIII (continued)

B. One Arkansas Commissioner shall be the Director of the Arkansas Soil and Water Conservation Commission, or such other agency as may be hereafter responsible for administering water law in the State. The other two Commissioners shall reside in the Arkansas River drainage area in the State of Arkansas and shall be appointed by the Governor, by and with the advice and consent of the Senate, to four-year staggered terms with the first two Commissioners being appointed simultaneously to terms of two (2) and four (4) years, respectively.

C. One Oklahoma Commissioner shall be the Director of the Oklahoma Water Resources Board, or such other agency as may be hereafter responsible for administering water law in the State. The other two Commissioners shall reside within the Arkansas River drainage area in the State of Oklahoma and shall be appointed by the Governor, by and with the advice and consent of the Senate, to four-year staggered terms, with the first two Commissioners being appointed simultaneously to terms of two (2) and four (4) years, respectively.

D. A majority of the Commissioners of each State and the Commissioner or his alternate representing the United States, if they are so designated, must be present to constitute a quorum. In taking any Commission action, each signatory State shall have a single vote representing the majority opinion of the Commissioners of that State.

E. In the case of a tie vote on any of the Commission's determinations, orders, or other actions, a majority of the Commissioners of either State may, upon written request to the Chairman, submit the question to arbitration. Arbitration shall not be compulsory, but on the event of arbitration, there shall be three arbitrators:

(1) One named by resolution duly adopted by the Arkansas Soil and Water Conservation Commission, or such other State agency as may be hereafter responsible for administering water law in the State of Arkansas; and

(2) One named by resolution duly adopted by the Oklahoma Water Resources Board, or such other State agency as may be hereafter responsible for administering water law in the State of Oklahoma; and

(3) The third chosen by the two arbitrators who are selected as provided above.

If the arbitrators fail to select a third within sixty (60) days following their selection, then he shall be chosen by the Chairman of the Commission.

F. The salaries and personal expenses of each Commissioner shall be paid by the Government which he represents. All other expenses which are incurred by the Commission incident to the administration of this Compact shall be borne equally by the two States and shall be paid by the Commission out of the "Arkansas-Oklahoma Arkansas River Compact Fund," initiated and maintained as provided in Article IX(B)(5) below. The States hereby mutually agree to appropriate sums sufficient to cover its share of the expenses incurred in the administration of this Compact, to be paid into said fund. Disbursements shall be made from said fund in such manner as may be authorized by the Commission. Such funds shall not be subject to the audit and accounting procedures of the States; however, all receipts and disbursements of funds handled by the Commission shall be audited by a qualified independent public accountant at regular intervals, and the report of such audit shall be included in and become a part of the annual report of the Commission, provided by Article IX(B)(6) below. The Commission shall not pledge the credit of either State and shall not incur any obligations prior to the availability of funds adequate to meet the same.

ARTICLE IX

A. The Commission shall have the power to:

(1) Employ such engineering, legal, clerical and other personnel as in its judgment may be necessary for the performance of its functions under this Compact;

(2) 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;

(3) Establish and maintain an office for the conduct of its affairs;

Article IX (continued).

(4) Adopt and procure a seal for its official use;

(5) Adopt rules and regulations governing its operations. The procedures employed for the administration of this Compact shall not be subject to any Administrative Procedures Act of either State, but shall be subject to the provisions hereof and to the rules and regulations of the Commission; provided, however, all rules and regulations of the Commission shall be filed with the Secretary of State of the signatory States;

(6) Cooperate with Federal and State agencies and political subdivisions of the signatory States in developing principles, consistent with the provisions of this Compact and with Federal and State policy, for the storage and release of water from reservoirs, both existing and future within the Arkansas River Basin, for the purpose of assuring their operation in the best interests of the States and the United States;

(7) Hold hearings and compel the attendance of witnesses for the purpose of taking testimony and receiving other appropriate and proper evidence and issuing such appropriate orders as it deems necessary for the proper administration of this Compact, which orders shall be enforceable upon the request by the Commission or any other interested party in any court of competent jurisdiction within the county wherein the subject matter to which the order relates is in existence, subject to the right of review through the appellate courts of the State of situs. Any hearing held for the promulgation and issuance of orders shall be in the county and State of the subject matter of said hearing;

(8) Make and file official certified copies of any of its findings, recommendations or reports with such officers or agencies of either State, or the United States, as may have any interest in or jurisdiction over the subject matter. Findings of fact made by the Commission shall be admissible in evidence and shall constitute prima facie evidence of such fact in any court or before any agency of competent jurisdiction. The making of findings, recommendations, or reports by the Commission shall not be

a condition precedent to instituting or maintaining any action or proceeding of any kind by a signatory State in any court, or before any tribunal, agency or officer, for the protection of any right under this Compact or for the enforcement of any of its provisions;

(9) Secure from the head of any department or agency of the Federal or State government such information, suggestions, estimates and statistics as it may need or believe 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;

(10) Print or otherwise reproduce and distribute all of its proceedings and reports; and

(11) Accept, for the purposes of this Compact, any and all private donations and gifts and Federal grants of money.

B. The Commission shall:

(1) Cause to be established, maintained and operated such stream, reservoir or other gaging stations as may be necessary for the proper administration of this Compact;

(2) Collect, analyze and report on data as to stream flows, water quality, annual yields and such other information as is necessary for the proper administration of this Compact;

(3) Continue research for developing methods of determining total basin yields;

(4) Perform all other functions required of it by the Compact and do all things necessary, proper or convenient in the performance of its duties thereunder;

(5) Establish and maintain the "Arkansas-Oklahoma Arkansas River Compact Fund," consisting of any and all funds received by the Commission under the authority of this Compact and deposited in one or more banks qualifying for the deposit of public funds of the signatory States;

Article IX (continued)

(6) 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;

(7) Prepare and submit to the Governor of each of the States of Arkansas and Oklahoma an annual budget covering the anticipated expenses of the Commission for the following fiscal year; and

(8) Make available to the Governor or any State agency of either State or to any authorized representative of the United States, upon request, any information within its possession.

ARTICLE X

A. The provisions hereof shall remain in full force and effect until changed or amended by unanimous action of the States acting through their Commissioners and until such changes are ratified by the legislatures of the respective States and consented to by the Congress of the United States in the same manner as this Compact is required to be ratified to become effective.

B. This Compact may be terminated at any time by the appropriate action of the legislature of both signatory States.

C. In the event of amendment or termination of the Compact, all rights established under the Compact shall continue unimpaired.

ARTICLE XI

Nothing in this Compact shall be deemed:

A. To impair or affect the powers, rights or obligations of the United States, or those claiming under its authority in, over and to the waters of the Arkansas River Basin;

B. To interfere with or impair the right or power of either signatory State to regulate within its boundaries the appropriation, use and control of waters within that State not inconsistent with its obligations under this Compact.

ARTICLE XII

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

ARTICLE XIII

A. This Compact shall become binding and obligatory when it shall have been ratified by the legislature of each State and consented to by the Congress of the United States, and when the Congressional Act consenting to this Compac includes the consent of Congress to name and join the United States as a party in any litigation in the United States Supreme Court, if the United States is an indispensable party, and if the litigation arises out of this Compact or its application, and if a signatory State is a party thereto.

B. The States of Arkansas and Oklahoma mutually agree and consent to be sued in the United States District Court under the provisions of Public Law 87-830 as enacted October 15, 1962, or as may be thereafter amended.

C. Notice of ratification by the legislature of each State shall be given by the Governor of that State to the Governor of the other State, and to the President of the United States, and the President is hereby requested to give notice to the Governor of each State of consent by the Congress of the United States.

IN WITNESS WHEREOF, the authorized representatives have executed three counterparts hereof each of which shall be and constitute an original, one of which shall be deposited with the Administrator of General Services of the United States, and one of which shall be forwarded to the Governor of each State.

DONE at the City of Tulsa, State of Oklahoma, this 3rd day of March, A.D., 1972.

FOR ARKANSAS:

S. Keith Jackson
Committee Member

John Luce
Committee Member
(Alternate)

FOR OKLAHOMA:

Glade R. Kirkpatrick
Committee Member

Milton Craig
Committee Member
(Alternate)

Approved: Trigg Twichell
Trigg Twichell, Representative
United States of America

Attest: Willard B. Mills
Willard B. Mills, Secretary

ARKANSAS RIVER BASIN COMPACT ARKANSAS-OKLAHOMA, 1972, WITH SUPPLEMENTAL INTERPRETIVE COMMENTS

SUPPLEMENT NO. 1

Approved by the

ARKANSAS RIVER COMPACT COMMITTEE

FOR ARKANSAS:

S. Keith Jackson
Committee Member

John Luce
Committee Member
(alternate)

FOR OKLAHOMA:

Glade R. Kirkpatrick
Committee Member

Milton Craig
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(alternate)

FOR UNITED STATES OF AMERICA:

Trigg Twichell
Federal Representative and Chairman of Committee

March 16, 1970
Revised March 3, 1972

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PREFACE

In 1955, the Congress of the United States by Public Law 97, 84th Congress, 1st Session, granted consent to the States of Arkansas and Oklahoma to negotiate and enter into a Compact for the apportionment of the waters of the Arkansas River and its tributaries between the two States. With this authorization and the appointment of a Federal Representative to act as Chairman, the States created the Arkansas-Oklahoma Arkansas River Compact Committee on March 14, 1956, for the purpose of drafting a proposed Compact for the apportionment of the waters of the Arkansas River and its tributaries as they affect those States.

From the beginning the Committee was deliberate in its operations. Two important subcommittees: engineering and legal, were appointed early for the purpose of assembling, analyzing, and interpreting essential engineering and legal data needed by the Compact Committee.

The engineering subcommittee made hydrologic studies which were utilized in determining that portion of the Arkansas River Basin that should be covered by the interstate Compact, analyzed the quantity, quality, and mode of occurrence of the water resources of the area in question and made long-range estimates of the quantities of water that would be needed by the States in future years, recognizing existing water rights and water uses.

The legal committee researched existing Interstate Water Compacts and continuously advised the Compact Committee on legal matters that related to Compact negotiations.

The work of these subcommittees and their reports were invaluable to the Compact committee in reaching its unanimous agreement of the proposed Compact.

The Federal Representative employed a consulting engineer in the field of interstate compacts, and received legal counsel from the U.S. Department of Justice on matters that were of concern to the Federal agencies.

The Arkansas River Compact Committee approved its first formal interstate Compact draft March 16, 1970.

The State of Arkansas ratified this Compact draft through its Act No. 16, 1971, as passed by the Arkansas General Assembly and signed by Governor Dale Bumpers, January 26, 1971.

The State of Oklahoma ratified the interstate Compact draft through H. B. No. 1326, as passed by the Oklahoma Legislature and signed by Governor David Hall, April 24, 1971. This ratification, however, carried the following amendment:

> "SECTION 2. This ratification is subject to the State of Oklahoma and the State of Arkansas, acting through their duly authorized compact representatives, amending said 'Arkansas River Basin Compact' in the particulars as set forth hereinafter, and further, that ratification of said amendment of said compact by the Legislature of the State of Arkansas. Said amendment being expressed as follows:
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> "The following language shall be added to Article VI, Section A of said compact, to-wit: 'Provided however that nothing contained in this compact or its ratification by Arkansas or Oklahoma shall be interpreted as granting either State or the parties hereto the right or power of eminent domain in any manner whatsoever outside the borders of its own state.'"

The Arkansas River Compact Committee unanimously approved the Oklahoma amendment as an appropriate clarification statement in the Compact. The Federal member of the Committee was formally advised that the Federal agencies had no objections to this amendment.

The State of Arkansas adopted the State of Oklahoma's amendment to the Arkansas River Compact draft through Act No. 40, as passed by the Arkansas General Assembly and signed by Governor Dale Bumpers, February 17, 1972.

The Arkansas River Basin Compact, Arkansas-Oklahoma, 1972, as revised March 3, 1972, contains the amendment as approved by both States and corrections of typographical errors found in the March 16, 1970 draft.

ARKANSAS RIVER BASIN COMPACT
ARKANSAS-OKLAHOMA, 1972

with
SUPPLEMENTAL INTERPRETIVE COMMENTS
Prepared by the Compact Committee

Compact

The State of Arkansas and the State of Oklahoma, acting through their duly authorized Compact representatives, S. Keith Jackson of Arkansas and Glade R. Kirkpatrick of Oklahoma, after negotiations participated in by Trigg Twichell, appointed by the President as the representative of the United States of America, pursuant to and in accordance with the consent to such negotations granted by an Act of Congress of the United States of America (Public Law 97, 84th Congress, 1st session), approved June 28, 1955, have agreed as follows respecting the waters of the Arkansas River and its tributaries:

Comment

On November 25, 1969, the authorized representatives of the States of Arkansas and Oklahoma approved the language of a draft of a Compact relating to the apportionment of the waters of the Arkansas River Basin originating in the two States between Muskogee, Oklahoma, and Van Buren, Arkansas; including Spavinaw Creek, a tributary to the Grand River upstream from Muskogee; and except the Canadian River above Eufaula Dam, a tributary to the Arkansas River between Muskogee and Van Buren.

The Compact is the result of negotiations between the parties over a period of years. The Compact Committee had the cooperation and advice of all interested Federal agencies, including the counsel of representatives of the United States Department of Justice. Its activities were supported by the water resources agencies of the States. In addition, extensive studies were conducted for the benefit of the Committee by the engineering departments of the University of Arkansas and Oklahoma State University under the federal Water Resources Research program.

These interpretive comments on the approved draft of November 25, 1969, have been prepared so that members of the respective legislatures, congressional committees, Federal agencies, and subsequent Compact administrators might be fully appraised of the intent of the Compact negotiating Committee with regard to each Article of the Compact.

ARTICLE I

Compact

The major purposes of this Compact are:

A. To promote interstate comity between the States of Arkansas and Oklahoma;

B. To provide for an equitable apportionment of the waters of the Arkansas River between the States of Arkansas and Oklahoma and to promote the orderly development thereof;

C. To provide an agency for administering the water apportionment agreed to herein;

D. To encourage the maintenance of an active pollution abatement program in each of the two States and to seek the further reduction of both natural and man-made pollution in the waters of the Arkansas River Basin; and

E. To facilitate the cooperation of the water administration agencies of the States of Arkansas and Oklahoma in the total development and management of the water resources of the Arkansas River Basin.

Comment

Article I is self-explanatory.

ARTICLE II

Compact

As used in this Compact:

A. The term "State" means either State signatory hereto and shall be construed to include any person or

persons, entity or agency of either State who, by reason of official responsibility or by designation of the Governor of that State, is acting as an official representative of that State.

B. The term "Arkansas-Oklahoma Arkansas River Compact Commission," or the term "Commission" means the agency created by this Compact for the administration thereof.

C. The term "Arkansas River Basin" means all of the drainage basin of the Arkansas River and its tributaries from a point immediately below the confluence of the Grand-Neosho River with the Arkansas River near Muskogee, Oklahoma, to a point immediately below the confluence of Lee Creek with the Arkansas River near Van Buren, Arkansas, together with the drainage basin of Spavinaw Creek in Arkansas, but excluding that portion of the drainage basin of the Canadian River above Eufaula Dam.

D. The term "Spavinaw Creek Sub-basin" means the drainage area of Spavinaw Creek in the State of Arkansas.

E. The term "Illinois River Sub-basin" means the drainage area of Illinois River in the State of Arkansas.

F. The term "Lee Creek Sub-basin" means the drainage area of Lee Creek in the State of Arkansas and the State of Oklahoma.

G. The term "Poteau River Sub-basin" means the drainage area of Poteau River in the State of Arkansas.

H. The term "Arkansas River Sub-basin" means all areas of the Arkansas River Basin except the four sub-basins described above.

I. The term "water year" means a twelve-month period beginning on October 1, and ending September 30.

J. The term "annual yield" means the computed annual gross runoff from any specified sub-basin which would have passed any certain point on a stream and would have originated within any specified area under natural conditions, without any man-made depletion or accretion during the water year.

K. The term "pollution" means contaimination or other alterations of the physical, chemical, biological or radiological properties of water or the discharge of any liquid, gaseous, or solid substances into any waters which creates, or is likely to result in a nuisance, or which renders or

is likely to render the waters into which it is discharged harmful, detrimental or injurious to public health, safety, or welfare, or which is harmful, detrimental or injurious to beneficial uses of the water.

Comment

This is the Article of specific definition of terms as they apply to this Compact.

Subsections A and B are self-explanatory.

Subsection C defines the "Arkansas River Basin" as it pertains to this Compact. (See figure 1). It isolates that portion of the overall Arkansas River drainage basin in which the States of Arkansas and Oklahoma are primarily and mutually concerned. All of the area above the gaging station on the main stem of the Arkansas River near Muskogee, Oklahoma, and the Eufaula Dam in the Canadian River except the Spavinaw Creek Basin in the State of Arkansas, has been excluded from consideration.

The intent of the Committee has been to deal with the water originating within the area delineated by this definition and no attempt has been made to define the rights, if any, of either State in waters originating outside the defined area which might flow into and through the area in the main stem of the Arkansas River or the Canadian River.

Waters of the Arkansas River Basin originating above Muskogee and Eufaula Dam have been allocated in part by Compacts between the States of Kansas and Oklahoma, and in the upper reaches of the basin between the States of Colorado and Kansas. The State of Arkansas was not a party to either of those Compacts, and the State of Oklahoma was not a party to the Colorado-Kansas Compact. Waters originating above

Eufaula Dam have been allocated in part by Compact between the States of New Mexico, Oklahoma and Texas; and the State of Arkansas was not a party to that Compact.

Both States recognize that storage has been constructed in the State of Oklahoma above Muskogee for the impounding and release of water to aid navigation in both the States of Oklahoma and Arkansas; and that such waters will in whole or in part flow through the Compact area. It is recognized also that power releases from reservoirs upstream of Muskogee will flow through the Compact area in the main stem of the Arkansas River, and may be subject to diversions and/or impoundment and use in either State. Flood control releases from upstream reservoirs will fall in the same category as power releases.

The drainage area in the State of Arkansas of Spavinaw Creek, a tributary of the Neosho River, has been included in this Compact area. The portion of Spavinaw Creek Basin lying in the State of Oklahoma was included in the physical delineation of the Grand-Neosho River Basin in the Kansas-Oklahoma Arkansas River Basin Compact. In the Kansas-Oklahoma Compact, Spavinaw Creek was excluded from the conservation storage limitation provisions which were the basis of that Compact.

The Spavinaw Creek Sub-basin has been included in this Compact, even though it is not directly tributary to the rest of the Compact area, because (1) the headwaters are in the State of Arkansas and the stream flows into the State of Oklahoma as is the case with all the other tributaries under consideration; (2) the rights of the State of Arkansas were not considered in the Kansas-Oklahoma Compact; and (3) the State of Oklahoma already has substantial development and interest in water supply of the stream.

The lower cutoff point of the Compact area has been placed immediately below the confluence of Lee Creek with the Arkansas River near Van Buren, Arkansas. Lee Creek is the farthest downstream tributary having headwaters in the State of Arkansas and flowing into the State of Oklahoma. It re-enters the State of Arkansas and flows into the Arkansas River in that State. There is interest in the Van Buren-Fort Smith area in Lee Creek as a source of municipal water supply.

Subsections D through H define the various sub-basins which, for purposes of this Compact, have been designated on Spavinaw Creek, Illinois River, Lee Creek and Poteau River, as well as for the Arkansas River main stem. These sub-basins differ from the sub-basins outlined in the Report of the Engineering Advisory Committee, dated January 1969, except for Lee Creek Sub-basin which remains consistent with the original report. It also differs from the Engineering Committee's original recommendations to the Compact Committee concerning the delineation of sub-basins. (See figure 1).

Subsection I is self-explanatory.

Subsection J defines "annual yield," which is a term basic to the allocations of this Compact. It refers to the runoff originating within any area and which would occur under unaltered natural conditions, i.e., where there would be no artificial man-made depletions of, or additions to, the original supply and no regulation of that supply.

The only time this could be measured absolutely would be before any facilities to utilize, import or impound water were constructed. After the first such facility is introduced, the measurement becomes something of an approximation relative to how accurately depletions can be computed

and their ratio to water yield. An excellent opportunity exists in this Compact area to establish relationship of "annual yield" and runoff at key points or with precipitation, or a combination of runoff and precipitation. This is true since depletions are small in relation to the average yield of this basin.

Subsection K is self-explanatory.

ARTICLE III

Compact

A. The physical and other conditions peculiar to the Arkansas River Basin constitute the basis of this Compact, and neither of the States hereby, nor the Congress of the United States by its consent hereto, concedes that this Compact establishes any general principle with respect to any other interstate stream.

B. By this Compact, neither State signatory hereto is relinquishing any interest or right it may have with respect to any waters flowing between them which do not originate in the Arkansas River Basin as defined by this Compact.

Comment

Subsection A confirms the principle that each Compact area has its own special problems and solutions thereto, and cannot provide per se the solutions for other compacting areas.

Subsection B is an affirmation of the principle of equitable apportionment between States of the water of interstate streams (Kansas v. Colorado, 206 U.S. 46; Colorado v. Kansas, 320 U.S. 383).

ARTICLE IV

Compact

The States of Arkansas and Oklahoma hereby agree upon the following apportionment of the waters of the Arkansas River Basin:

A. The State of Arkansas shall have the right to develop and use the waters of the Spavinaw Creek Sub-basin subject to the limitation that the annual yield shall not be depleted by more than fifty percent (50%).

B. The State of Arkansas shall have the right to develop and use the waters of the Illinois River Sub-basin subject to the limitation that the annual yield shall not be depleted by more than sixty percent (60%).

C. The State of Arkansas shall have the right to develop and use all waters originating within the Lee Creek Sub-basin in the State of Arkansas, or the equivalent thereof.

D. The State of Oklahoma shall have the right to develop and use all waters originating within the Lee Creek Sub-basin in the State of Oklahoma, or the equivalent thereof.

E. The State of Arkansas shall have the right to develop and use the waters of the Poteau River Sub-basin subject to the limitation that the annual yield shall not be depleted by more than sixty percent (60%).

F. The State of Oklahoma shall have the right to develop and use the waters of the Arkansas River Sub-basin subject to the limitation that the annual yield shall not be depleted by more than sixty percent (60%).

Comment

This Article apportions the available water resources of the Basin between the two States. Although large quantities of good quality water are available in the Basin, flows fluctuate widely, and provisions for storage will be essential to any substantial development of water use.

The record of Compact negotiations will show that early consideration was given to the possibility of writing a compact based on allocation of conservation storage. Near the end of negotiations and after careful deliberation and study, the consideration of conservation storage allocations was dropped and it was agreed to make allocations on the basis of percentages of annual yield.

It is realized that problems of deficient low flows presently exist and will no doubt continue in the future. Base flows of tributary streams in the Basin are generally low and most streams recede to no flow during dry periods. It is anticipated that future developments of storage facilities will provide for low flow augmentation but it is considered infeasible to specify minimum flows for any stream system. Release of flows from the system of major reservoirs presently constructed and planned for flood control, hydroelectric power and navigation should assure the maintenance of adequate flows throughout the main stem of the Arkansas River in the Compact area.

The percentages of annual flows apportioned between the States are based on the assumptions that the "upstream" State should generally have first call on available waters. Engineering studies have shown it is generally infeasible to develop over sixty percent (60%) of the long-term yield of any Basin in this area.

The division of water is on the basis that forty percent (40%) of the annual yield would be delivered from the upstream State. Exceptions to this have been made in the cases of Spavinaw and Lee Creek Basins.

The City of Tulsa has developed 96,000 acre-feet of conservation storage on lower Spavinaw Creek in the State of Oklahoma for municipal water supply. These reservoirs collect flows from 386 square miles, of which 120 square miles are in the State of Arkansas. In recognition of these existing developments, it was agreed to limit the State of Arkansas allocation to fifty percent (50%) of the annual yield from the area in that State.

The Lee Creek Basin roughly parallels the Arkansas-Oklahoma stateline. The drainage area is approximately sixty percent (60%) in the State of Arkansas and forty percent (40%) in the State of Oklahoma. The main stem rises in the State of Arkansas, but some small tributaries in the upper reaches rise in the State of Oklahoma and flow into the State of Arkansas. The main stem first crosses the Arkansas-Oklahoma stateline at mile 24.6, and then flows back into the State of Arkansas at mile 9.0, crossing and recrossing the stateline until entering the State of Arkansas for the last time at mile 7.6. This watershed is an excellent source of water for the Fort Smith metropolitan area, including nearby areas in the State of Oklahoma, and for which there is a large potential need for future water supplies. In order to permit the full development of this Basin, it was agreed that waters of this Basin be allocated on the basis of origin. This will permit either State to fully develop, use and consume a quantity of water equal to the total annual yield of the Lee Creek Basin in each State.

Each State recognizes that waters are now being transported from one basin to another and that these transbasin diversions could increase in the future. It is also recognized that such transbasin diversion of water is a charge against the apportionment to the respective States.

ARTICLE V

Compact

A. On or before December 31 of each year, following the effective date of this Compact, the Commission shall determine the stateline yields of the Arkansas River Basin for the previous water year.

B. Any depletion of annual yield in excess of that allowed by the provisions of this Compact shall, subject to the control of the Commission, be delivered to the downstream State, and said delivery shall consist of not less than sixty percent (60%) of the current runoff of the basin.

C. Methods for determining the annual yield of each of the sub-basins shall be those developed and approved by the Commission.

Comments

Subsection A provides for the computation of "annual yield" before the end of the calendar year, while the computation itself is based on data available for the water year ending September 30 of that same calendar year. This means that necessary hydrologic data (such as stream flow, water quality, precipitation, etc.) will be required in less than three months after the end of the water year.

Subsection B provides for adjustment of annual depletions so that a depletion in excess of the allocation to either State during the previous water year shall be delivered (restored to the downstream State) as soon as practicable consistent with proper water management.

It is anticipated that each State should control its water management so that consumptive-use depletions will not exceed its allocation. Excess stream-flow depletions, which would be a withholding of water by any means (consumptive uses or storage) could possibly occur in low yield years, but could be made up in subsequent periods of high runoff.

No provisions are made in this Compact for credits for over-deliveries nor for continuing debits for under-deliveries. As a practical manner the water resources of the area are of such a magnitude, and the physical conditions limiting storage facilities are such that complete utilization of the allocated quantities might never be reached.

The allocations are of such magnitude in relation to these factors that the States essentially will be unrestricted in the control and use of the water resources of the Compact area. The Compact does, however, protect against the possibility of either State encroaching upon the rights of the other at some future time when maximum utilization could be approached. (There is a distinct possibility in this area that such a condition might never occur). Or, in a period of extreme drought, it would provide an equitable distribution of a limited water supply.

Subsection C is intended as a directive for determining annual yield. Appendix I attached to these comments outlines procedures for this purpose. Present depletions are small in relation to the original yield and an opportunity exists to establish correlations of yield at agreed-to points in both States. As developments occur in the future, it may be necessary to refine procedures and make arrangements for the collection of additional basic data. It is anticipated that a technical advisory group will be available to the Commission and will develop adequate procedures and make recommendations for the collection of necessary basic data as required for the proper administration of the Compact.

ARTICLE VI

Compact

A. Each State may construct, own and operate for its needs water storage reservoirs in the other State; provided, however, that nothing contained in this Compact or its ratification by Arkansas or Oklahoma shall be interpreted as granting either State or the parties hereto the right or power of eminent domain in any manner whatsoever outside the borders of its own State.

B. Depletion in annual yield of any sub-basin of the Arkansas River Basin caused by the operation of any water storage reservoir either heretofore or hereafter constructed by the United States or any of its agencies, instrumentalities or wards, or by a State, political sub-division thereof, or any person or persons shall be charged against the State in which the yield therefrom is utilized.

C. Each State shall have the free and unrestricted right to utilize the natural channel of any stream within the Arkansas River Basin for conveyance through the other State of waters released from any water storage reservoir for an intended downstream point of diversion or use without loss of ownership of such waters; provided, however, that a reduction shall be made in the amount of water which can be withdrawn at point of removal, equal to the transmission losses.

Comment

This Article recognizes the possibilities of special problems arising and sets forth general provisions for handling some of these problems.

In Subsection A, the Committee recognizes that storage capacity may be constructed by one State in the other and that the Compact creates no bar to such construction. Each State, either individually or the two States jointly, may construct, own and operate for their needs water storage reservoirs in either State.

Subsection B makes it quite clear that depletions resulting from storage constructed at any point in the Basin by the United States, the States or individuals shall be charged against the State in which the benefits of the depletion are realized. Although the Compact is silent as to what part the Commission might take in the event that storage is constructed in one State for the benefit of the other State, it is the view of the Committee that such matters would be worked out at State level so long as the provisions of the Compact are complied with.

Subsection C allows either State to use the channel as a conveyor to transport water from a structure in one State to a point in the other State where it can be used. The only restriction is that a carriage or transmission loss will be charged against the State utilizing the natural channel in the other State. The amount of such transmission loss will be determined by the Compact Commission whenever the need arises.

ARTICLE VII

Compact

The States of Arkansas and Oklahoma mutually agree to:

A. The principle of individual State effort to abate man-made pollution within each State's respective borders, and the continuing support of both States in an active pollution abatement program;

B. The cooperation of the appropriate State agencies in the States of Arkansas and Oklahoma to investigate and abate sources of alleged interstate pollution within the Arkansas River Basin;

C. Enter into joint programs for the identification and control of sources of pollution of the waters of the Arkansas River and its tributaries which are of interstate significance;

D. The principle that neither State may require the other to provide water for the purpose of water quality control as a substitute for adequate waste treatment;

E. Utilize the provisions of all Federal and State water pollution laws and to recognize such water quality standards as may be now or hereafter established under the Federal Water Pollution Control Act in the resolution of any pollution problems affecting the waters of the Arkansas River Basin.

Comment

The States recognize that there is no serious interstate pollution problem in the Basin at present; and that the States are obligated to maintain adequate water quality in the Arkansas River Basin through

whatever means is available to them. An important provision is that neither State may require the other to provide water for the purpose of water quality control as a substitute for adequate waste treatment.

Through active pollution abatement programs the States hope to avoid the conflict over future problems, but have provided that, if necessary, they may utilize the provisions of the Federal Water Pollution Control Act in cases which cannot be resolved within the provisions of the Compact.

ARTICLE VIII

Compact

A. There is hereby created an interstate administrative agency to be known as the "Arkansas-Oklahoma Arkansas River Compact Commission." The Commission shall be composed of three Commissioners representing the State of Arkansas and three Commissioners representing the State of Oklahoma, selected as provided below; and, if designated by the President or an authorized Federal agency, one Commissioner representing the United States. The President, or the Federal agency authorized to make such appointments, is hereby requested to designate a Commissioner and an alternate representing the United States. The Federal Commissioner, if one be designated, shall be the Chairman and presiding officer of the Commission, but shall not have the right to vote in any of the deliberations of the Commission.

B. One Arkansas Commissioner shall be the Director of the Arkansas Soil and Water Conservation Commission, or such other agency as may be hereafter responsible for administering water law in the State. The other two Commissioners shall reside in the Arkansas River drainage area in the State of Arkansas and shall be appointed by the Governor, by and with the advice and consent of the Senate, to four-year staggered terms with the first two Commissioners being appointed simultaneously to terms of two (2) and four (4) years, respectively.

C. One Oklahoma Commissioner shall be the Director of the Oklahoma Water Resources Board, or such other agency as may be hereafter responsible for administering water law in the State. The other two Commissioners shall reside within the Arkansas River drainage area in the State of Oklahoma and shall be appointed by the Governor, by and with the advice and consent of the Senate, to four-year staggered terms, with the first two Commisioners being appointed simultaneously to terms of two (2) and four (4) years, respectively.

D. A majority of the Commissioners of each State and the Commissioner or his alternate representing the United States, if they are so designated, must be present to constitute a quorum. In taking any Commission action, each signatory State shall have a single vote representing the majority opinion of the Commissioners of that State.

E. In the case of a tie vote on any of the Commission's determinations, orders, or other actions, a majority of the Commissioners of either State may, upon written request to the Chairman, submit the question to arbitration. Arbitration shall not be compulsory, but on the event of arbitration, there shall be three arbitrators:

(1) One named by resolution duly adopted by the Arkansas Soil and Water Conservation Commission, or such other State agency as may be hereafter responsible for administering water law in the State of Arkansas; and

(2) One named by resolution duly adopted by the Oklahoma Water Resources Board, or such other State agency as may be hereafter responsible for administering water law in the State of Oklahoma; and

(3) The third chosen by the two arbitrators who are selected as provided above.

If the arbitrators fail to select a third within sixty (60) days following their selection, then he shall be chosen by the Chairman of the Commission.

F. The salaries and personal expenses of each Commissioner shall be paid by the Government which he represents. All other expenses which are incurred by the Commission incident to the administration of this Compact shall be borne equally by the two States and shall be paid by the

Commission out of the "Arkansas-Oklahoma Arkansas River Compact Fund," initiated and maintained as provided in Article IX(B)(5) below. The States hereby mutually agree to appropriate sums sufficient to cover its share of the expenses incurred in the administration of this Compact, to be paid into said fund. Disbursements shall be made from said fund in such manner as may be authorized by the Commission. Such funds shall not be subject to the audit and accounting procedures of the States; however, all receipts and disbursements of funds handled by the Commission shall be audited by a qualified independent public accountant at regular intervals, and the report of such audit shall be included in and become a part of the annual report of the Commission, provided by Article IX(B)(6) below. The Commission shall not pledge the credit of either State and shall not incur any obligations prior to the availability of funds adequate to meet the same.

Comment

This Article creates the administrative agency which will administer the terms of this Compact after it becomes effective through ratification by the States and approval by the Congress. The provisions are similar to those adopted in a number of other interstate stream compacts.

The Article provides for three members for each of the signatory States as Commission members and staggers the terms of those members in order to insure some degree of continuity in its membership.

Subsection D defines a quorum and provides that each State shall have only one vote which represents the majority decision of each State in conducting the business affairs of the Commission.

Subsection E sets forth arbitration procedures for the Commission in the event of a tie vote on important matters. Arbitration is not to be compulsory but is provided in the event that some matter of extreme concern to one of the States requires such action.

Subsection F sets forth the procedure for paying the salaries and expenses of the Commissioners and costs incurred by the Commission in the administration of the Compact. This subsection together with Article IX(B)(5) creates a Compact fund which is essential to flexibility of operation. It also provides for auditing procedures and the report of such audit.

ARTICLE IX

Compact

A. The Commission shall have the power to:

(1) Employ such engineering, legal, clerical and other personnel as in its judgment may be necessary for the performance of its functions under this Compact;

(2) 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;

(3) Establish and maintain an office for the conduct of its affairs;

(4) Adopt and procure a seal for its official use;

(5) Adopt rules and regulations governing its operations. The procedures employed for the administration of this Compact shall not be subject to any Administrative Procedures Act of either State, but shall be subject to the provisions hereof and to the rules and regulations of the Commission; provided, however, all rules and regulations of the Commission shall be filed with the Secretary of State of the signatory States;

(6) Cooperate with Federal and State agencies and political subdivisions of the signatory States in developing principles, consistent with the provisions of this Compact and with Federal and State policy, for the storage and release of

water from reservoirs, both existing and future within the Arkansas River Basin, for the purpose of assuring their operation in the best interests of the States and the United States;

(7) Hold hearings and compel the attendance of witnesses for the purpose of taking testimony and receiving other appropriate and proper evidence and issuing such appropriate orders as it deems necessary for the proper administration of this Compact, which orders shall be enforceable upon the request by the Commission or any other interested party in any court of competent jurisdiction within the county wherein the subject matter to which the order relates is in existence, subject to the right of review through the appellate courts of the State of situs. Any hearing held for the promulgation and issuance of orders shall be in the county and State of the subject matter of said hearing;

(8) Make and file official certified copies of any of its findings, recommendations or reports with such officers or agencies of either State, or the United States, as may have any interest in or jurisdiction over the subject matter. Findings of fact made by the Commission shall be admissible in evidence and shall constitute prima facie evidence of such fact in any court or before any agency of competent jurisdiction. The making of findings, recommendations, or reports by the Commission shall not be a condition precedent to instituting or maintaining any action or proceeding of any kind by a signatory State in any court, or before any tribunal, agency or officer, for the protection of any right under this Compact or for the enforcement of any of its provisions;

(9) Secure from the head of any department or agency of the Federal or State government such information, suggestions, estimates and statistics as it may need or believe 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;

(10) Print or otherwise reproduce and distribute all of its proceedings and reports; and

(11) Accept, for the purposes of this Compact, any and all private donations and gifts and Federal grants of money.

B. The Commission shall:

(1) Cause to be established, maintained and operated such stream, reservoir or other gaging stations as may be necessary for the proper administration of this Compact;

(2) Collect, analyze and report on data as to stream flows, water quality, annual yields and such other information as is necessary for the proper administration of this Compact;

(3) Continue research for developing methods of determining total basin yields;

(4) Perform all other functions required of it by the Compact and do all things necessary, proper or convenient in the performance of its duties thereunder;

(5) Establish and maintain the "Arkansas-Oklahoma Arkansas River Compact Fund," consisting of any and all funds received by the Commission under the authority of this Compact and deposited in one or more banks qualifying for the deposit of public funds of the signatory States;

(6) 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;

(7) Prepare and submit to the Governor of each of the States of Arkansas and Oklahoma an annual budget covering the anticipated expenses of the Commission for the following fiscal year; and

(8) Make available to the Governor or any State agency of either State or to any authorized representative of the United States, upon request, any information within its possession.

Comment

Article IX sets forth the powers and duties of the administrative Commission. It provides the Commission with the necessary latitude and flexibility for carrying out the provisions and purposes of the Compact.

Subsection A enumerates the powers of the Commission while Subsection B sets out certain specific duties of the Commission. Other duties not specifically stated in Subsection B are implied in the inherent powers granted in Subsection A.

Subsection A(2) enables the Commission to obtain data which is important to the Commission's work and findings. Most of the data useful to the Commission will be gathered by other agencies. However, there could be times when necessary engineering or other data is not gathered by any other agency, and it might be desirable for the Commission to collect the data.

Subsection A(6) gives the Commission the power to cooperate directly and closely with Federal agencies in its administrative activities as they relate to interstate phases of project operation. This subsection deals with all types of storage and release of water whether it is under Federal or State control. Essentially it gives the Commission the power to manage the water resources of the Basin in the best possible manner.

In Subsection A(9) "secure" means that the Commission may obtain information, of whatever nature, by request or purchase if necessary, and is not intended to infer that the Commission will have the power to obtain such information by adverse means from any agency or such information as any agency is prevented by law from releasing. It is not the intent of the subsection that the Commission shall compete with other data collecting agencies of either State or Federal government, but rather that the Commission will utilize these available sources to the extent possible. It is necessary this Commission be given authority to do such work when it is not able to obtain needed information from other agencies due to budget or personnel limitations.

Subsections B(6) and (7) provide for annual reports and annual budgets to be submitted to the respective Governors of the signatory States and to the President of the United States, but sets no date for the submission of these reports. Therefore, it is incumbent upon the Compact Commission to set such a date in the rules and regulations of the Commission. This provides some flexibility in the preparation of the annual report permitting the date to be changed if and when it should become necessary.

All other subsections are self-explanatory.

ARTICLE X

Compact

A. The provisions hereof shall remain in full force and effect until changed or amended by unanimous action of the States acting through their Commissioners and until such changes are ratified by the legislatures of the respective States and consented to by the Congress of the United States in the same manner as this Compact is required to be ratified to become effective.

B. This Compact may be terminated at any time by the appropriate action of the legislature of both signatory States.

C. In the event of amendment or termination of the Compact, all rights established under the Compact shall continue unimpaired.

Comment

This Article affirms the rather obvious fact that no action can be taken to modify the provisions of the Compact without unanimous action of the States and until the changes are ratified by the legislatures and the Congress. It also recognizes the right to terminate by the appropriate action of the States, and the protection of vested rights in the case of such an event.

ARTICLE XI

Compact

Nothing in this Compact shall be deemed:

A. To impair or affect the powers, rights or obligations of the United States, or those claiming under its authority in, over and to the waters of the Arkansas River Basin;

B. To interfere with or impair the right or power of either signatory State to regulate within its boundaries the appropriation, use and control of waters within that State not inconsistent with its obligations under this Compact.

Comment

This Article is a general declaration whereby the States disclaim any intention of impairing or affecting the powers, rights, or obligations of the United States, as they apply to the Arkansas River Basin.

It clearly states that the Compact is not intended to interfere with or impair the rights or powers of either signatory State to regulate the waters within its own boundaries.

ARTICLE XII

Compact

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

Comment

This Article is self-explanatory.

ARTICLE XIII

Compact

A. This Compact shall become binding and obligatory when it shall have been ratified by the legislature of each

State and consented to by the Congress of the United States, and when the Congressional Act consenting to this Compact includes the consent of Congress to name and join the United States as a party in any litigation in the United States Supreme Court, if the United States is an indispensable party, and if the litigation arises out of this Compact or its application, and if a signatory State is a party thereto.

B. The States of Arkansas and Oklahoma mutually agree and consent to be sued in the United States District Court under the provisions of Public Law 87-830 as enacted October 15, 1962, or as may be thereafter amended.

C. Notice of ratification by the legislature of each State shall be given by the Governor of that State to the Governor of the other State, and to the President of the United States, and the President is hereby requested to give notice to the Governor of each State of consent by the Congress of the United States.

IN WITNESS WHEREOF, the authorized representatives have executed three counterparts hereof each of which shall be and constitute an original, one of which shall be deposited with the Administrator of General Services of the United States, and one of which shall be forwarded to the Governor of each State.

DONE at the City of Tulsa, State of Oklahoma, this 3rd day of March, A.D., 1972.

Comment

The Committee wishes to stress the importance of this Article. The utilization of the water resources of this Basin is in large part dependent upon storage facilities. Regulatory works are needed to control and to put the water to use. This area is a single unit within a larger area, the Arkansas-Red-White River Basins in which the pattern of development has been well established. It is now being and must in the future be achieved largely with the assistance and cooperation of the United States government. It is the hope of this Committee that there will be no need to exercise the consent authority which is sought in this Article. As a practical matter, however, should interstate litigation arise out of

the Compact or its application in which the United States is an indispensable party, no satisfactory solution can be reached unless the United States is made a party thereto.

The members of the Arkansas-Oklahoma Arkansas River Compact Committee agree March 3, 1972, that the foregoing statement expresses the intent of the Committee with regard to the draft of the Arkansas-Oklahoma Arkansas River Basin Compact dated November 25, 1969.

FOR ARKANSAS:

S. Keith Jackson
Committee Member

John Luce
Committee Member
(Alternate)

FOR OKLAHOMA:

Glade R. Kirkpatrick
Committee Member

Milton Craig
Committee Member
(Alternate)

Approved: Trigg Twichell
Trigg Twichell, Representative
United States of America

Attest: Willard B. Mills
Willard B. Mills, Secretary

ARKANSAS RIVER BASIN COMPACT

ARKANSAS-OKLAHOMA

APPENDIX I

Computation of Annual Yield

Article II J of the Arkansas River Compact - Arkansas-Oklahoma described "annual yield," which is a term basic to the allocations of this Compact. It refers to the runoff which would occur from any specified area under unaltered natural conditions - i.e., where there would be no artificial man-made depletions of or additions to the original supply and no regulation of that supply.

The only time this could be measured absolutely would be before any facilities to utilize, import or impound water were constructed; and before any of man's activities altered rainfall-runoff relations. Land management practices, while possibly significant for some areas, are difficult to evaluate and will be disregarded, at this time, in the computations to meet the requirements for the administration of this Compact. The accuracy of annual yield determinations will be dependent upon how accurately depletions, and their ratio to total water yield, can be computed. Fortunately, present depletions for most of the compact area are small in relation to the original yield and, until such time that additional developments are made, only reasonable estimates will suffice to assure that terms of the Compact are being met.

Basically, the determinations that are required are as follows: (1) the measurement or computation of the actual runoff from each of the several "sub-basins" as defined by the Compact for each water

year; (2) the computation of the corresponding total depletions and/or accretions in each of the respective sub-basins; (3) the sum of items (1) and (2) to obtain the "annual yield" for each basin; and (4) multiply item (3) by 100 minus the percent depletion allowed in Article IV of the Compact; and (5) compute deficiency, if any, by comparing item (4) with item (1). The following outlines procedures for computing each of these items:

Item 1. Reliable estimates to meet this requirement can be readily made for the several sub-basins on the basis of the existing (1970) stream-gaging stations. (See figure 1 for location of stations). All of the larger streams draining from the State of Arkansas into the State of Oklahoma are gaged in or near the stateline, and acceptable estimates for the total outflow from each sub-basin can be made on the basis of these records plus estimated flows from ungaged areas.

The computation of actual runoff from the Arkansas River Sub-basin will need to take into account both the inflow and outflow from the area. This computation can be made by application of the following equation:

$$Q_A = Q_V - [Q_M + Q_W + Q_2 + Q_3 + Q_4]$$

in which

Q_A = Total annual discharge originating from the Arkansas River Sub-Basin.

Q_V = Total annual discharge of the Arkansas River immediately below the mouth of Lee Creek presently measured at Van Buren gaging station.

Q_M = Total annual discharge of the Arkansas River immediately below the mouth of the Grand Neosho River, presently measured at the Muskogee gaging station.

Q_W = Total annual discharge of the Canadian River at Eufaula Dam, presently measured at Whitefield gaging station.

Q_2 = Total annual outflow from the Illinois River Sub-basin.

Q_3 = Total annual outflow from the Lee Creek Sub-basin.

Q_4 = Total annual outflow from the Poteau River Sub-basin.

Item 2. The total annual depletion in each sub-basin will be the sum of the following:

(a) Total stream diversions minus return flows.
(b) Depletions and/or accretions by major reservoirs.
(c) Evaporation losses from other than major reservoirs.
(d) Pumpage of ground water from alluvium aquifers.

The following comments relate to each of the above:

(a) Reliable data on this item are not generally available at this time but will need to be firmed up as development of the area's resources progresses. The principal items will be diversions for irrigation and for municipal and industrial water supplies. In the case of small irrigation uses, satisfactory estimates of consumption can be made on basis of acres and types of crops irrigated. Withdrawals for municipal and industrial uses are generally available but estimates of return flows may be necessary. So long as these diversions are small in relation to total runoff no high degree of accuracy will be required.

(b) Depletions caused by major reservoirs will probably be most significant. The depletion from such reservoirs for a given period will be the difference between inflow and outflow and can be determined from the following (all terms expressed in acre-feet):

The inflow, I, at damsite that would have occurred if reservoir had not been in place, can be computed by the following:

$$I = O \pm \Delta S + E + D - P + p,$$

in which

O = Outflow as measured at gaging station below dam, or from gate and spillway ratings.

ΔS = Change in storage volume at beginning and end of period.

P = Precipitation on reservoir surface.

p = Runoff that would have occurred from area covered by reservoir, computed by a derived rainfall-runoff factor, c times P, or cP.

E = Evaporation from reservoir surface.

D = Direct diversions from reservoir storage, not included in outflow; seepage from reservoir may also be a factor and, if not included in measured outflow as at gaging station below dam, should be estimated.

As the depletion is inflow minus outflow, this can be written:

$$I - O = -P + p \pm \Delta S + E + D.$$

(c) Evaporation from small lakes, such as those not designed for water supply, including flood-detention structures, farm ponds, and recreation lakes, may be estimated on basis of average water surface area and appropriate data from evaporation-pan records.

(d) Pumpage from stream alluviums may cause appreciable depletions in stream flow. This is not believed to be a factor at the present (1969) time, but could conceivably be in the future for some stream reaches.

CONCLUSION

The Arkansas River Compact Commission, with the assistance of a Technical Advisory Group, should include, as part of their annual

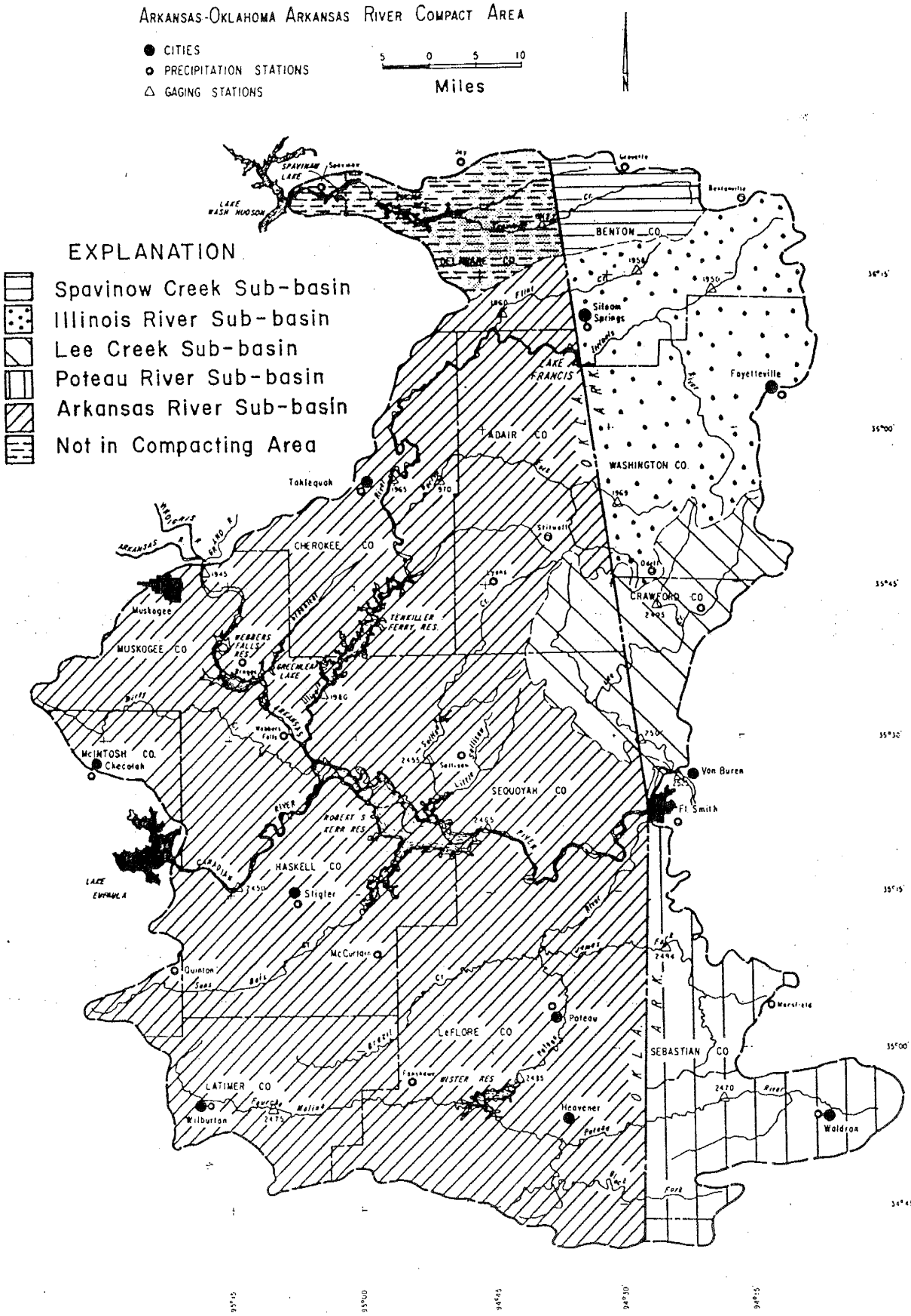
report, information on basin yields and depletions. Until such time as available data reveal that allocations between the States for any of the several sub-basins is in prospect of not being met, only generalized information will be adequate. As additional developments occur, the Commission should take steps to assure that the collection of basic data will be adequate to meet the needs of administration. As a minimum, the Commission should require the installation of instrumentation at such new reservoirs as will permit accurate determination of sub-basin inflow-outflow records.

Although allocations are to be based on annual yields, to be determined by December 31 of each year, current records will be required in the event provisions of Article V(B) need to be met, i.e., the delivery of sixty percent of current runoff to make up a deficiency.

The Commission should make continuing studies of the hydrology of the Basin for improvements or expansions in the collection of basic data as are needed to meet the changing needs for the administration of the Compact.

FIGURE 1

ARKANSAS-OKLAHOMA ARKANSAS RIVER COMPACT AREA



ARKANSAS-OKLAHOMA
ARKANSAS RIVER COMPACT COMMISSION

RULES, REGULATIONS AND MODES OF PROCEDURE

(As Amended September 25, 1985,
September 25, 1991, and September 24, 1993)

ARKANSAS-OKLAHOMA
ARKANSAS RIVER COMPACT COMMISSION

RULES, REGULATIONS AND MODES OF PROCEDURE

(As Amended September 25, 1985,
September 25, 1991, and September 24, 1993)

ARTICLE I
THE COMMISSION

1.1 The "Commission" is the "Arkansas-Oklahoma Arkansas River Compact Commission" referred to in Article VIII of the Arkansas River Basin Compact, Arkansas-Oklahoma.

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 all other Commissioners of the name and address of the new Commissioner.

1.3 Each Commissioner shall advise the Commission in writing of the address to which all official notices and other Commission communications shall be sent for their receipt and shall further promptly advise in writing the office of the Commission of any changes in address.

ARTICLE II
COMMISSION OFFICERS

2.1 The officers of the Commission shall be a Chairman, a Secretary and a Treasurer.

2.2 The Commissioner (or "alternate") representing the United States shall be the Chairman of the Commission. 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 Secretary shall be selected by the Commission. The Secretary shall serve for the term, and shall 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.

2.4 The Treasurer shall be selected by the Commission. The Treasurer shall receive, hold and disperse all funds of the Commission which shall come into his hands, and shall furnish a fidelity bond in an amount satisfactory to the Commission. The cost of the bond shall be paid by the Commission.

2.5 As the Commission may determine and direct, the various Commission officer positions may be joined and simultaneously held by the same person.

ARTICLE III
PRINCIPAL OFFICE

3.1 The principal office of the Commission shall be the office of the Chairman or the Secretary, as the Commission shall direct.

3.2 All official files, books and records of the Commission shall be kept and maintained in the principal office of the Commission. All such files, books and records shall be open to inspection by the public at the principal office of the Commission.

ARTICLE IV
COMMISSION MEETINGS

4.1 The annual meeting of the Commission shall be held on the fourth Thursday in September of each year. By prior agreement of all Commissioners, the Commission may select and designate a different date for holding the annual meeting.

4.2 Special meetings of the Commission may be called by the Chairman at any time. Upon written request of a majority of the Commissioners of either of the signatory states setting forth the matters to be considered at a special meeting, it shall be the duty of the Chairman to call a special meeting. Notice of all special meetings shall be sent by the Secretary to all members of the Commission by ordinary mail at least ten days in advance of the meeting and such notice shall state the purpose thereof.

4.3 Emergency meetings of the Commission may be called by the Chairman at any time upon request of either signatory state. For purposes of this rule, an "emergency" situation, for which an emergency meeting may be called, is understood to mean a situation involving an imminent threat of injury to persons or injury and damage to public or personal property or threat of imminent financial loss when time requirements make prior notice procedures impractical and, if adhered to, would increase the likelihood of injury, damage or financial loss.

4.4 Except as otherwise provided herein, prior notice of all Commission meetings shall be given by the Secretary to all Commissioners. Such notice shall advise of the date, time and place of the meeting and shall include an agenda for the meeting or, as may be applicable, a statement of the purpose of or matters to be considered at the meeting. Upon receipt of such notice, it shall be the responsibility of the signatory state to, in-turn, furnish notice to the public in its state such as may be required or provided under the laws of that state. Except as may be otherwise required under the laws of a signatory state, no advance public notice shall be required for the calling and conducting of emergency meetings. At the earliest possible time following any emergency meeting, the public will be notified of any Commission action taken at the meeting.

4.5 Meetings of the Commission shall be held at such places as shall be agreed upon by the Commissioners.

4.6 Minutes of Commission meetings shall be made and preserved in a suitable manner. Until approved by the Commission, minutes shall not be official and shall be furnished only to members of the Commission, its employees and committees.

4.7 A majority of the Commissioners of each state, and the Commissioner (or alternate) representing the United States, must be present to constitute a quorum.

4.8 In taking any Commission action, each signatory state shall have a single vote representing the majority opinion of the Commissioners of that State. The Commissioner (or alternate) representing the United States shall not have the right to vote in any of the deliberations or actions of the Commission.

4.9 In the case of a tie vote on any of the Commission's determinations, orders, or other actions, a majority of the Commissioners of either state may, upon written request to the Chairman, submit the question to arbitration. Arbitration shall not be compulsory, but, in the event of arbitration, there shall be three arbitrators chosen as follows:

(1) One named by resolution duly adopted by the Arkansas Soil and Water Conservation Commission, or such other State agency as may be hereafter responsible for administering water law in the State of Arkansas; and

(2) One named by resolution duly adopted by the Oklahoma Water Resources Board, or such other State agency as may be hereafter responsible for administering water law in the State of Oklahoma; and

(3) The third chosen by the two arbitrators who are selected as provided above.

If the two arbitrators fail to select a third within sixty (60) days following their selection, then the third arbitrator shall be chosen by the Chairman of the Commission.

4.10 At each annual meeting of the Commission, the order of business, unless agreed otherwise, shall be as follows:

Call to Order;
Introductions and Announcements;
Approval of Agenda;
Reading, Correction and Approval of the Last Meeting;
Report of the Chairman;
Report of Secretary;
Report of Treasurer;
Report of Commissioners;
Report of Committees;
Unfinished Business;

New Business;
Adjournment.

4.11 All meetings of the Commission, except executive sessions, 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 executive session. 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 or litigation settlement offers, and matters where the duty of the Commission's counsel to its 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. 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.

ARTICLE V
COMMITTEES

*** **5.1** There shall 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:
(a) The Budget Committee shall prepare the annual budget and advise the Commission on all fiscal matters that may be referred to it.
(b) The Engineering Committee shall advise the Commission on all engineering matters that may be referred to it.
(c) The Environmental and Natural Resources Committee shall advise the Commission on all environmental and natural resoure matters including: (1) the identification of common areas of environmental concerns and potential solutions to shared environmental and natural resource problems; (2) the promotion of environmental awareness and sustainable economic development; and (3) other environmental and natural resource matters that may be referred to it.
(d) The Legal Committee shall advise the Commission on all legal matters that may be referred to it.

5.3 Members of the standing committees shall be appointed by the Commission. The number of members of each committee shall be determined by the Commission. Each state shall be represented by an equal number of members on each committee with the Chairmanship for each committee alternating annually between the States of Arkansas and Oklahoma. Each state shall nominate the member or members representing the state to serve on each committee.

5.4 Formal committee reports shall be made in writing by the Chairman thereof, and shall be filed with the Commission at least ten days prior to the meeting scheduled for its discussion.

ARTICLE VI
RULES AND REGULATIONS

6.1 So far as is consistent with the Arkansas-Oklahoma Arkansas River Basin Compact, the Commission may adopt rules and regulations and may amend them from time to time. Amendments and/or revisions to the rules, regulations and modes of procedure may be made at any meeting of the Commission.

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 Commission funds shall be deposited in a depository, or depositories, designated by the Commission under the name of the "Arkansas-Oklahoma Arkansas River Compact Fund." Such funds shall be initiated and maintained by equal payments of each state into the fund.

7.2 Disbursements of funds in the hands of the Treasurer shall be made by check signed by him upon voucher approved by and reported to the Commission.

7.3 At each annual meeting of the Commission, the Commission shall adopt and transmit to the Governors of the two states the budget covering an estimate of its expenses for the following fiscal year. For purposes of this rule and requirement, the signatory states may individually assume and carry-out the responsibility of transmitting the Commission's adopted budget to that state's respective Governor.

** **7.4** All Commission receipts and disbursements shall be audited at least once every two years by a qualified independent certified 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.

7.5 An up-to-date inventory of all Commission property shall be kept at the principal office of the Commission.

7.6 The fiscal year of the 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 annually make and transmit as soon as available to the Governors of the signatory states, and to the President of the United States, a report covering the activities of the Commission for the preceding fiscal year.

*** **8.2** The annual report shall include the following:

(a) Minutes of all regular, special or emergency meetings held during the year;

(b) All findings of facts made by the Commission during the preceding year;

(c) Recommendations for actions by the signatory states;

(d) Statements as to any cooperative studies made during the preceding year;

(e) All data which the Commission deems pertinent;

(f) The budget for current and future years;

(g) The most recent audit or financial statement of the Arkansas-Oklahoma Arkansas River Compact Fund;

(h) Name, address and phone number each Commissioner and each member of all standing committees;

(i) Such other pertinent matters as the Commission may require.

ARTICLE IX
MISCELLANEOUS

9.1 The Commission shall on request make available to the Governor of each of the signatory states any information within its possession at any time.

9.2 All contracts or other instruments in writing to be signed for and on behalf of the Commission, except matters related to the receipt or disbursement of funds, shall be signed by the Chairman when authorized by the Commission and attested to by at least one Commissioner from each State.

9.3 The Commission shall have the power to employ such engineering, legal, clerical and other personnel as in its judgment may be necessary for the performance of its functions under the Compact.

ARTICLE X
HEARINGS BEFORE THE COMMISSION

* **10.1(A)** As the Commission may determine and direct, the Commission may hold hearings for the purpose of taking testimony and receiving evidence for the identification of interstate problems within the purposes of this Compact and issuing such appropriate orders as it deems necessary for the proper administration of the Arkansas-Oklahoma Arkansas River Basin Compact. Any interested person or entity may make application to the Commission requesting that a hearing be held on any matter arising under, or otherwise within the purview of, the Compact, provided, such applications must meet the following requirements:

> **(a)** The application must be in writing and filed with the Chairman, with a copy thereof being simultaneously furnished, by the applicant, to all Commissioners.
>
> **(b)** The application must state and describe the identity and address of the applicant(s) and, where appropriate, the applicant's representatives in pursuit of the application; the interest of the applicant(s) in presenting the application and requesting that a hearing be held; the purpose, subject matter, issues, concerns and/or allegations sought to be entertained and considered through the hearing applied for; and, as may be appropriate to the purposes of the hearing sought, the relief or other official Commission action being requested through the hearing.

Unless determined and directed otherwise by the Commission, applications for Commission hearings shall be placed, for Commission review and consideration, on the agenda for the next regularly scheduled annual meeting of the Commission following the filing of the application. Applicant(s) shall be notified, in advance by the Chairman, of the date, time and place of the meeting at which the application will be considered and acted upon by the Commission.

10.1(B) All hearings shall be open to the public and may be scheduled and conducted as part of an annual or special meeting of the Commission or as may be determined otherwise by the Commission. The presiding officers at such hearings shall be one Commissioner from each state designated and appointed to serve as presiding officer by the respective state.

10.2 Orders of the Commission shall be enforceable upon the request of the Commission or any other interested party in any court of competent jurisdiction within the county wherein the subject matter to which the order relates is in existence, subject to the right of review through the appellate courts of the state of situs.

10.3 Any hearing held for the promulgation and issuance of orders shall be in the county and state of the subject matter of said hearing.

10.4 In the event the Commission directs that a hearing be held, all interested parties shall be afforded an opportunity to be heard after reasonable notice. Such notice shall include, among other matters deemed appropriate:

(a) A statement of the date, time, place, and nature of the hearing;

(b) A statement of the legal authority and jurisdiction under which the hearing is to be held;

(c) A reference to any particular matter or any statute and/or rules involved; and

(d) A short and plain statement of the matters asserted or which are the subject or purpose of the hearing.

If the Commission, or any other interested party, is unable to state the matters in detail at the time the notice is served, the initial notice may be limited to a statement of the issues. Thereafter, and upon application, a more definite and detailed statement shall be furnished.

10.5 A record of the hearing shall be kept and maintained and shall include:

(a) All pleadings, motions and intermediate rulings;

(b) Evidence received or considered;

(c) A statement of matters officially noticed;

(d) Questions and offers of proof, objections, and rulings thereon;

(e) Proposed findings and exceptions thereto;

(f) Any decision, opinion or report by the officers presiding at the hearing; and

(g) All staff memoranda or data submitted to the Commission in connection with their consideration of the matter before such hearing.

10.6 Findings of facts shall be based exclusively on the evidence and on the matters officially noticed by the Commission.

10.7 Oral proceedings or any part thereof shall be transcribed on request of any party and the cost of transcription shall be paid by the requesting party.

10.8 At its hearings, the Commission may admit and give probative effect to evidence which possesses probative value commonly accepted by reasonably prudent men in the conduct of their affairs. It shall give effect to the rules of privileged communications recognized by law. No greater exclusionary effect shall be given any such rule or privilege than would be obtained in an action in court. The Commission may exclude incompetent, irrelevant, immaterial and unduly repetitious evidence. Objections to evidentiary offers may be made and shall be noted in the record. Subject to these requirements, when a hearing will be expedited and the interest of the parties will not be prejudiced substantially thereby, any part of the evidence may be received in written form.

* **10.9** Documentary evidence may be received in the form of copies or excerpts if the original is not readily available. Upon request, the parties shall be given an opportunity to compare the copy with the original. The record of hearings may be held open for a reasonable length of time to afford either party time to submit additional written statements and/or evidence.

An original and two copies (or three copies) of each document sought to be introduced into evidence by a party at a Commission hearing must be presented to the officers presiding over the hearing by the party desiring and moving its admission.

10.10 A party may conduct cross-examination required for a full and true disclosure of the facts.

10.11 Notice may be taken of judicially recognized facts. In addition, notice may be taken of generally recognized technical or scientific facts within the Commission's specialized knowledge. Parties shall be notified, either before or during the hearing or be referenced in preliminary reports or otherwise, of the material noticed, including any staff memoranda or data, and they shall be afforded an opportunity to contest the material so noticed. The Commission's experience, technical competence and specialized knowledge may be utilized in the evaluation of the evidence.

10.12 In the case of hearings involving alleged or apparent violations of the Compact, the following procedures shall apply:

(a) If there is an alleged or apparent violation of the Compact, it should be made known to the Commission;

(b) Alleged violators shall submit an explanation for, or response to, the alleged violation to the Commission within thirty days of receipt of written notification of said violation from the Commission;

(c) The Commission shall refer the alleged violation to the Engineering and/or Legal Committee for investigation and review;

(d) After due investigation has been made, the Engineering and/or Legal Committee shall refer the matter to the Commission with recommendations concerning the action to be taken.

10.13 Any party shall at all times have the right to counsel, provided that such counsel must be duly licensed to practice law in one of the signatory States, or associated with an attorney thereof.

ARTICLE XI
PUBLICITY

11.1 Prior to the close of each meeting, the Chairman may draft a press release as directed by the Commission and submit it to the Commission for approval. All approved releases may be made available to the press by any member of the Commission.

11.2 The Commissioners shall not be restricted from participation in a press conference or interview, conducted at the request of a member of the press or other news media, but may not speak on behalf of the Commission without the prior approval of the Commission.

ARTICLE XII
POLLUTION

12.1 The Commission may provide a forum for the identification and discussion of pollution occurring in the Arkansas River Basin to the end that the signatory states will cooperate with each other and jointly encourage the maintenance of an active pollution abatement program in each of the two states.

12.2 The Commission shall encourage each individual state to take positive steps in the abatement of pollution identified by the Commission to exist in the Arkansas River Basin; provided however, neither state may require the other to provide water for the purpose of water quality control as a substitute for adequate waste treatment.

12.3 The Commission shall collect, analyze and report on data pertaining to water quality within the basin. For this purpose the Commission may enter into contracts as provided by Article IX A(2) to be approved at a Commission meeting. Unless formally approved by the Commission, no such report shall be published or have any validity.

*As amended at the annual meeting, September 25, 1985.
**As amended at the annual meeting, September 25, 1991.
***As amended at the annual meeting, September 24, 1993.