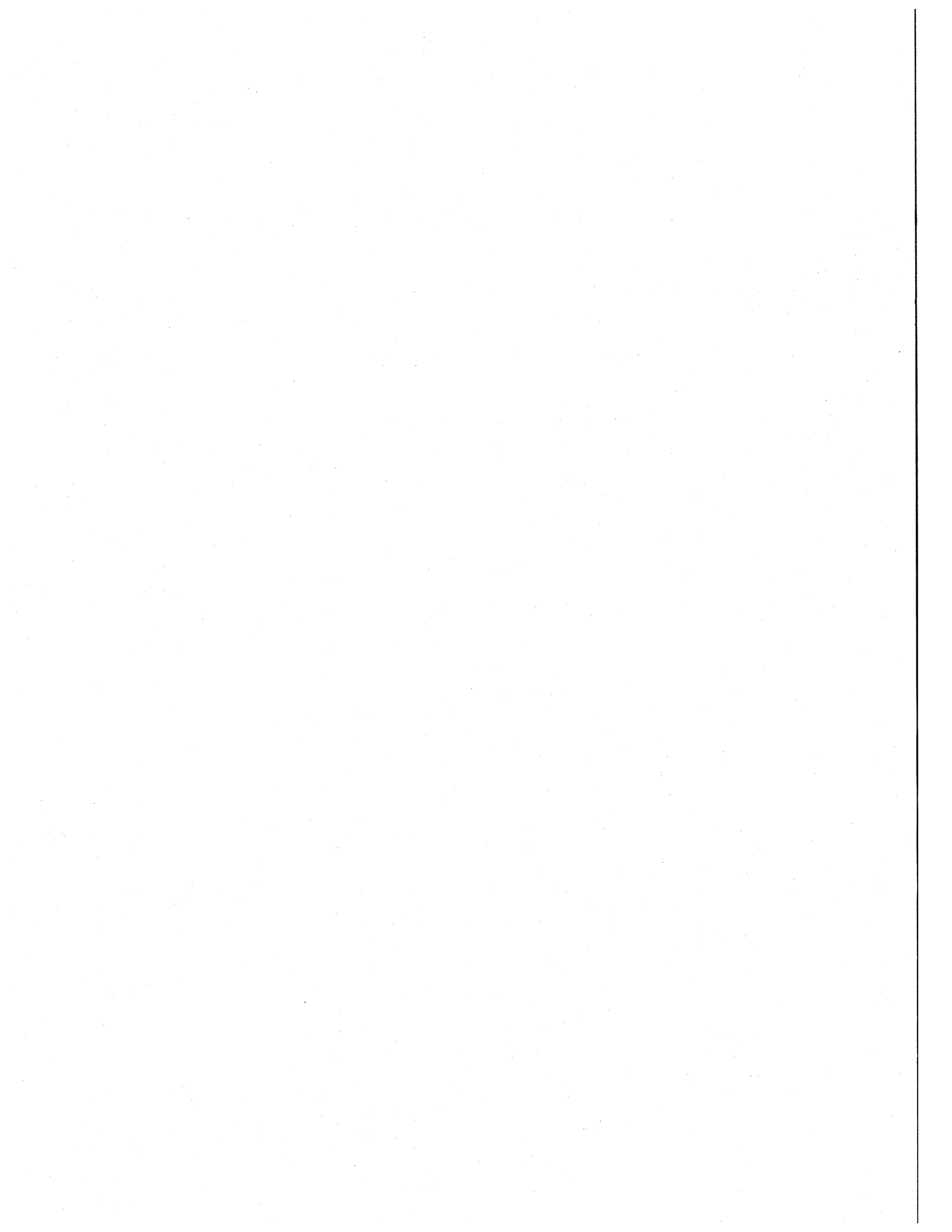


**FLOW DURATION AND LOW-FLOW
CHARACTERISTICS OF SELECTED
ARKANSAS STREAMS**



**U.S. GEOLOGICAL SURVEY
Water-Resources Investigations
Report 92-4026**

**Prepared in cooperation with the
ARKANSAS SOIL AND WATER
CONSERVATION COMMISSION**



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By A.H. Ludwig

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Little Rock, Arkansas

1992

U.S. DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
write to:

District Chief
U.S. Geological Survey
2301 Federal Office Bldg.
700 West Capitol
Little Rock, Arkansas 72201

Copies of this report can
be purchased from:

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CONVERSION FACTORS AND VERTICAL DATUM

<u>Multiply</u>	<u>By</u>	<u>To obtain</u>
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second
mile (mi)	1.609	kilometer
square mile (mi ²)	2.590	square kilometer
acre	0.4047	hectare
million gallon per day (Mgal/d)	0.0438	cubic meter per second

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929-- a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly call Sea Level Datum of 1929.

FLOW DURATION AND LOW-FLOW CHARACTERISTICS

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ABSTRACT

Water-supply characteristics of streams are determined by their low-flow frequency and flow duration. In Arkansas, duration and frequency of low flows have been determined from records at 48 currently active continuous-record gaging stations, 65 discontinued continuous-record gaging stations, and 182 partial-record gaging stations. Low-flow frequency is closely associated with physiographic characteristics. The analyses indicate that streams in the Springfield-Salem Plateau, in the southern Ouachita Mountains, and in parts of the Mississippi Alluvial Plain have dependable water supplies and that streams in the central and southern part of the Coastal Plain, in the Boston Mountains, Arkansas Valley, and northern Ouachita Mountains do not have dependable supplies.

INTRODUCTION

Water use in Arkansas has increased dramatically in recent years. Since 1960, when formal collection of water-use records was initiated in the State, the use of water for all purposes except power generation increased approximately 320 percent. When water use for power generation, which is entirely from surface water, is included, the increase is more than 4,000 percent. Thus competition for a share of the States' water resources is becoming more critical.

Although floods are impressive and often destructive, the low-flow characteristics of a stream ultimately affect its utilization by man. Specific information on the low-flow characteristics of streams is essential to State water-management agencies such as the Arkansas Soil and Water Conservation Commission and the Arkansas Department of Pollution Control and Ecology when dealing with problems related to irrigation, municipal and industrial water supplies, fish and wildlife conservation, and dilution of waste. Flow duration and low-flow frequency data are of particular value to management agencies responsible for the development and management of the State's water resources.

To provide the flow duration and low-flow frequency data needed by the various water-management agencies, the U.S. Geological Survey collects streamflow data at gaging stations throughout the State and periodically analyzes the streamflow characteristics at these stations. Data used in the streamflow analyses presented in this report were collected by the U.S. Geological Survey in cooperation with many State and Federal agencies, principally the Arkansas Geological Commission and the U.S. Army Corps of Engineers. The analysis of the data and the preparation of this report was done in cooperation with the Arkansas Soil and Water Conservation Commission.