

EXPLANATION

- ▲ 6-8900 Continuous-record streamflow gaging station and number
- ▲ 6-8181 Partial-record low-flow streamflow gaging station and number
- 6-8710 Continuous-record spring gaging station and number
- 6-8718 Partial-record spring gaging station and number

NOTE: Station numbers are abbreviated versions of complete numbers given in table 1, sheet 2.

INTRODUCTION

The U.S. Geological Survey began a 5-year study of the Central Midwest regional aquifer system (fig. 1) in October 1961 to (1) describe the hydrologic system, (2) create a region-wide data base, (3) describe the historic, present (1963), and future problems associated with the use of water in the aquifer, and (4) evaluate aquifer-system response to future conditions. This report describes the flow characteristics of selected springs and streams in the Ozark subregion of the Central Midwest regional aquifer system. Flow-characteristic data in the report provide information about the hydrology of the Ozark subregion. The information also is useful in describing the relationship of ground- and surface-water flow in the subregion.

The Ozark subregion is located in parts of Arkansas, Kansas, Missouri, and Oklahoma (fig. 1). The area generally is located between the Kansas and Missouri River valleys on the north, the Mississippi River valley on the east, the Arkansas River valley on the south, and extends about 100 miles west into Kansas and Oklahoma. The land-surface elevation ranges from about 200 feet in the southeast to about 1,000 feet in the northwest. Precipitation ranges from about 30 inches in the northwest to about 56 inches along the southern edge.

The subregion has one of the Nation's greatest concentrations of springs and some of the largest. Two prominent aquifers occur in the subregion. The upper aquifer generally consists of the water-yielding limestone of the Mississippian age. A second aquifer consists of water-yielding carbonate rocks of Ordovician and Cambrian age. The two aquifers are separated at some locations by shales of Mississippian and Devonian age.

Streamflow characteristics commonly are used to calculate the adequacy of streamflow to supply the requirements of water use. Some of these flow characteristics also are useful as indicators of the quantity of ground-water inflow to a stream.

Low-flow characteristics at a continuous-record streamflow-gaging station are described by frequency curves of annual or seasonal minimum flows, by flow-duration curves, and by base-flow recession curves. Estimates of low-flow characteristics at sites without any record of discharge generally are quite inaccurate because low flows are very dependent on the biology and structure of the rock formations that the streams drain and on the quantity of evapotranspiration. However, good estimates of low-flow characteristics can be made if a low discharge measurement of low-flow during one or more low-flow seasons are made in an area with well-sustained streamflow. The Ozark subregion generally has well-sustained streamflow, and many low-flow discharge measurements are available.

Low-flow characteristics have been defined for the Ozark subregion and reported by Hines (1975) for Arkansas, Jordan (1963) for Kansas, Shelton (1976) for Missouri, and Huntington (1970) for Oklahoma. Low-flow frequency and flow-duration data are available in each report; however, flow-duration data are presented only for continuous-record stations.

The accuracy of the low-flow values is related to the variability of the flow, length of record, and recurrence interval for low-flow frequency data. For a detailed discussion of the accuracy of the data within the individual States, the reader is referred to Hines (1975), Jordan (1963), Shelton (1976), and Huntington (1970). Base-flow recession curves were not developed for this study.

CONVERSION FACTORS

Inch-pound units of measurement used in this report may be converted to the International System of Units (SI) using the following factors:

Multiple inch-pound unit	SI unit
inch (in)	25.4 millimeter (mm)
foot (ft)	0.3048 meter (m)
mile (mi)	1.609 kilometer (km)
square mile (mi ²)	2.59 square kilometer (km ²)
cubic foot per second (ft ³ /s)	0.02832 cubic meter per second (m ³ /s)

LOCATION OF GAGING STATIONS FOR SELECTED SPRINGS AND STREAMS

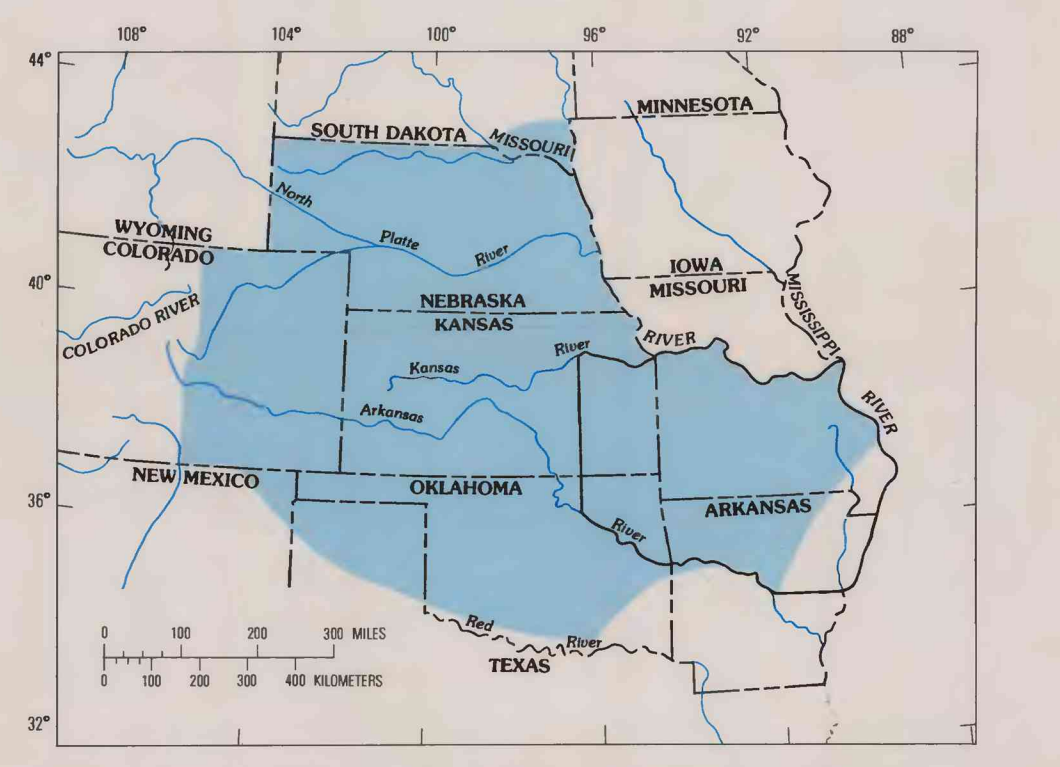


Figure 1.—Boundary of Ozark subregion and location of Central Midwest regional aquifer system.

FLOW CHARACTERISTICS FOR SELECTED SPRINGS AND STREAMS IN THE OZARK SUBREGION, ARKANSAS, KANSAS, MISSOURI, AND OKLAHOMA

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Based on U.S. Geological Survey
Data maps 1:500,000, 1975

For sale by U.S. Geological Survey, Map Distribution
Box 2508, Federal Center, Denver, CO 80225