

EXPLANATION

- Post-Paleozoic sediments
- Western Interior Plains confining system¹
- Springfield Plateaus aquifer²
- Ozark confining unit
- Ozark aquifer
- St. Francis confining unit
- St. Francis aquifer
- Basement confining unit

--- Contact—Dashed where approximately located
--- Approximate boundary of the Ozark Plateaus aquifer system
● Well
⊕ Drill-hole—Shown only in section
A—A' Trace of geologic section showing control points
* Area of higher color tone represents unconsolidated units that are stratigraphically equivalent to the designated geologic units

CONVERSION FACTORS

Multiply inch-pound units by	To obtain SI unit
foot	0.3048
mile	1.609
gallon per minute	0.003785
	liter per second

Scale: 1:750,000. Includes scale bars in miles and kilometers.

INTRODUCTION
An investigation of the geohydrologic systems in the Ozark Plateaus province (index map and text) has been made as part of the Central Midwest Regional Aquifer-System Analysis (Lorenzen and Sigor, 1981) in a more detailed regional aquifer system in parts of 10 States. The study is one of several by the U.S. Geological Survey that are designed to increase knowledge of regional and geohydrologic properties of regional aquifer systems in the United States. Because a large quantity of fresh ground water is available in aquifers underlying the Ozark Plateaus province, a subregional project has been established to study the geohydrologic units of this area in more detail than is available in the regional study. The stratigraphic and geologic relationships among the primary geohydrologic units and adjacent to the Ozark Plateaus are depicted in this atlas (Chapter A). This is the first of a series of chapters (A-F) that includes maps of the altitude of the top, thickness, potentiometric surface, and percentage-of-thale content of individual geohydrologic units.

THE OZARK PLATEAUS PROVINCE
GEOHYDROLOGIC SYSTEM
The geohydrologic system in and adjacent to the Ozark Plateaus province can be divided into eight major regional units on the basis of relative rock permeability and well yields. These geohydrologic units range in age from Precambrian igneous and metamorphic rocks to Quaternary (alluvial deposits). Boundaries between the geohydrologic units do not always conform to geologic time divisions or formation boundaries, but are shown to delineate groups of rocks having similar hydrologic properties. Seven of the geohydrologic units are named on the basis of the physiographic area in which they are most widely used as a source of water or on their stratigraphic relation to other units. Five of the units, the St. Francis aquifer, St. Francis confining unit, Ozark aquifer, Ozark confining unit, and Springfield Plateaus aquifer, collectively comprise the Ozark Plateaus aquifer system (stratigraphic column). The approximate location of the boundary of the mainly freshwater Ozark Plateaus aquifer system has been identified using potentiometric-head and dissolved-solids concentration data from the eastern component geohydrologic units.

Geohydrologic units that comprise the Ozark Plateaus aquifer system crop out in a concentric pattern centered on the St. Francis Mountains (index map). The three lowest geohydrologic units crop out only in the immediate vicinity of the St. Francis Mountains. The Ozark aquifer is the largest aquifer, both in area of outcrop and hydrologic properties, the most important source of freshwater in the Ozark Plateaus. The geohydrologic section, which trends across the Ozark Plateaus province from the St. Francis Mountains through the St. Francis Mountains, depicts the stratigraphic position and relative thickness of the units. A list of the geohydrologic units in and adjacent to the Ozark Plateaus province with brief descriptions of their lithologic and hydrologic properties is given below. One of the geohydrologic units, post-Paleozoic sediments, was not studied as part of this investigation. For information on this unit refer to Chushing and others (1970) and Fenneman and others (1938) and (1970).

1. Basement confining unit (Chapter B)
2. St. Francis aquifer (Chapter C)
3. St. Francis confining unit (Chapter D)
4. Ozark aquifer (Chapter E)
5. Ozark confining unit (Chapter F)
6. Springfield Plateaus aquifer (Chapter G)
7. Western Interior Plains confining system (Chapter H)
8. Post-Paleozoic sediments

Shale and dolomite of Late Cambrian age. Extends throughout most of the Ozark Plateaus province. Shale content ranges from 0 to 40 percent and decreases with distance from St. Francis Mountains.

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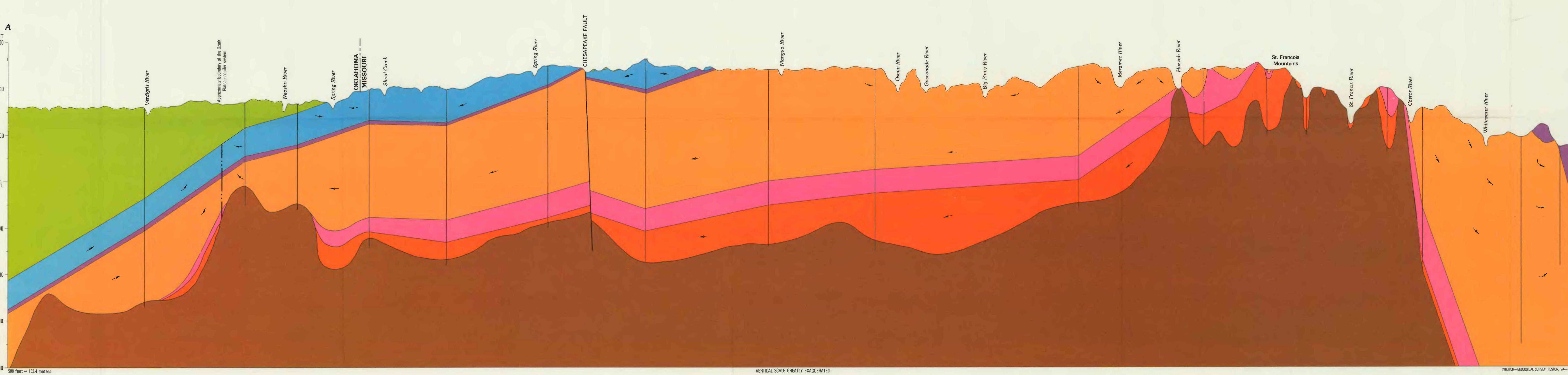
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REFERENCES
Chushing, E. M., and others, 1970. Availability of water in the Mississippi embayment. U.S. Geological Survey Professional Paper 468-A, 13 p.
Fenneman, D. G., and Sigor, D. C., 1981. Plan of study for the Central Midwest Regional Aquifer-System Analysis in parts of Arkansas, Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas. U.S. Geological Survey Water Resources Investigations Open-File Report 81-206, 28 p.

STRATIGRAPHY
Geologic units that underlie the Ozark Plateaus province in the four-State area have been grouped according to their relative regional hydrologic properties. The stratigraphic column identifies the geologic units that underlie the Western Interior Plains confining system and to each major aquifer and confining unit within the Ozark Plateaus aquifer system. Hydrologic divisions do not conform to geologic time lines, and in some instances, a particular geologic unit may be designated to different geohydrologic units in different parts of the province because of regional facies changes.

GENERALIZED STRATIGRAPHIC COLUMN SHOWING GEOLOGIC UNITS THAT COMPRISE GEOHYDROLOGIC UNITS AND SYSTEMS WITHIN THE AREA DEFINED BY THE BOUNDARY OF THE OZARK PLATEAUS AQUIFER SYSTEM.

PROVINCE	SOUTHWESTERN MISSOURI	SOUTHWESTERN MISSOURI	SOUTHWESTERN MISSOURI	MIDDLE MISSOURI	NORTHERN MISSOURI	WESTERN INTERIOR PLAINS	WESTERN INTERIOR PLAINS	WESTERN INTERIOR PLAINS
PENNSYLVANIAN	Pre-Pennsylvanian	Pre-Pennsylvanian	Pre-Pennsylvanian	Pre-Pennsylvanian	Pre-Pennsylvanian	Pre-Pennsylvanian	Pre-Pennsylvanian	Pre-Pennsylvanian
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois	St. Francois
MISSISSIPPIAN	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
DEVONIAN	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
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	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
PALEZOIC	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
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	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
CAMBRIAN	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
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	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis
	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis	St. Louis



MAJOR GEOHYDROLOGIC UNITS IN AND ADJACENT TO THE OZARK PLATEAUS PROVINCE, MISSOURI, ARKANSAS, KANSAS, AND OKLAHOMA

By
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1990

Small-scale map of the Missouri River and Lake Superior. For more information, see the Missouri River and Lake Superior Atlas, U.S. Geological Survey, Denver, Colorado, 1988.