Prepared in cooperation with the
Mississippi Department of Natural Resources
Bureau of Land and Water Resources

INTRODUCTION

The U.S. Geological Survey, in cooperation with the Mississippi Department of Natural Resources, Bureau of Land and Water Resources, has prepared a series of maps of major aquifers in Mississippi to show the availability of ground water for municipal, agricultural, and industrial use, and to document the effects of pumping on these aquifers. This map, the second in the series for the Paleozoic aquifer, follows a map that delineated the potentiometric surface of the aquifers in 1978 (Wasson, 1979).

The Paleozoic aquifer is composed of weathered Paleozoic chert that underlies beds of Cretaceous age. Paleozoic rocks in the area typically consist of dense, hard, consolidated limestone, chert, or sandstone which dip about 30 feet per mile to the southwest. The regional ground-water movement, southwestward into the subsurface from the outcrop area, has been modified by a large pumping center at Corinth. As water moves downdip from the outcrop, mineralization increases.

The Paleozoic is the source of water for most municipal wells and many domestic wells in the study area. This water-level map is based on water-level measurements made in 16 wells in the Paleozoic aquifer in November and December 1982, and on the altitudes of water surfaces in some streams. The contours show altitudes at which water levels would have stood in tightly cased unpumped wells in November and December 1982. Water levels have declined about 1 foot per year in areas that are not heavily pumped (see hydrograph for well K11). In well G57 at Corinth, the water level has recovered since 1974. Well G57 is at the center of a cone of depression. Production wells that were near the center of the cone have been replaced by newer wells located away from the center and the depression is now larger but not as deep as in 1978 (see hydrograph for well G57). The static head at the site of well G57, drilled in 1962, was estimated to be about 60 feet below land surface in 1954, and about 85 feet in 1960 (Wasson, 1979). The lowest levels, about 220 feet below land surface, occurred in 1974. By the end of 1982, the static level recovered about 45 feet.

ADDITIONAL INFORMATION

The map showing the results of the November and December 1982 water-level measurements for the Paleozoic aquifer is the second map showing ground-water levels in the aquifer. These maps are part of a series of maps that show water levels in the major aquifers in Mississippi. Data describing the individual wells used in this study may be obtained from the following:

Charles Branch, Director
Mississippi Department of
Natural Resources
Bureau of Land and Water
Resources
Post Office Box 10631
Jackson, Mississippi 39209
(601) 961-5200

Garald G. Parker, Jr.
District Chief
U.S. Geological Survey
Water Resources Division
Suite 710, Federal Building
100 West Capitol Street
Jackson, Mississippi 39269
(601) 960-4600

Copies of this report can be purchased from:

Open-File Services Section
Western Distribution Branch
U.S. Geological Survey
Box 25425, Federal Center
Denver, Colorado 80225
(303) 234-5888

SELECTED REFERENCES

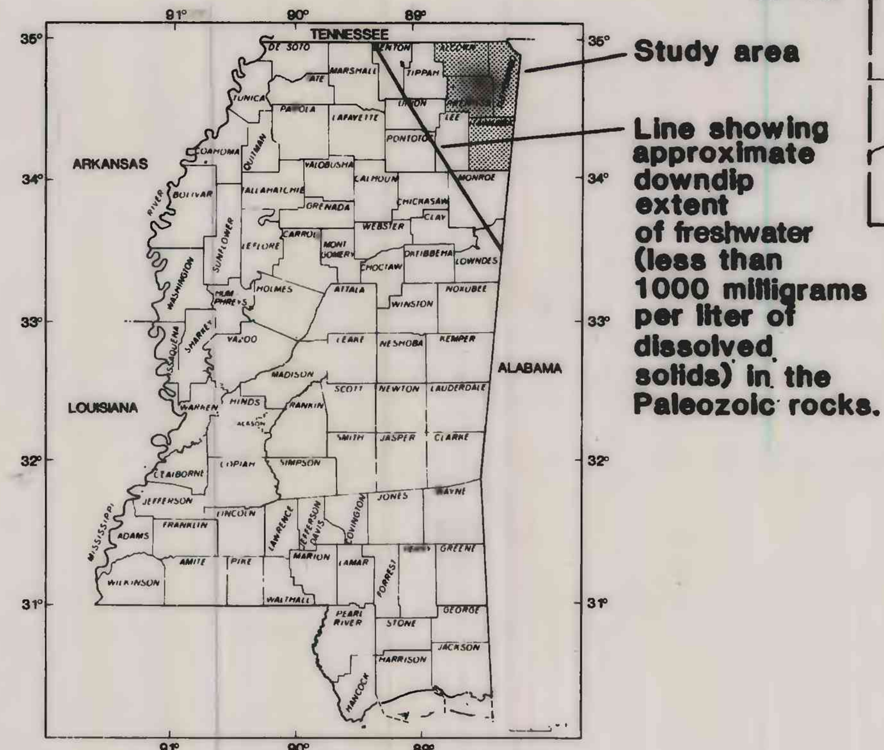
Boswell, E. H., 1963, Cretaceous aquifers of northeastern Mississippi: Mississippi Board of Water Commissioners Bulletin 63-10, 202 p.

Speer, P. R., Golden, H. G., and Patterson, J. F., 1964, Low-flow characteristics of streams in the Mississippi Embayment in Mississippi and Alabama: U.S. Geological Survey Professional Paper 448-I, 47 p.

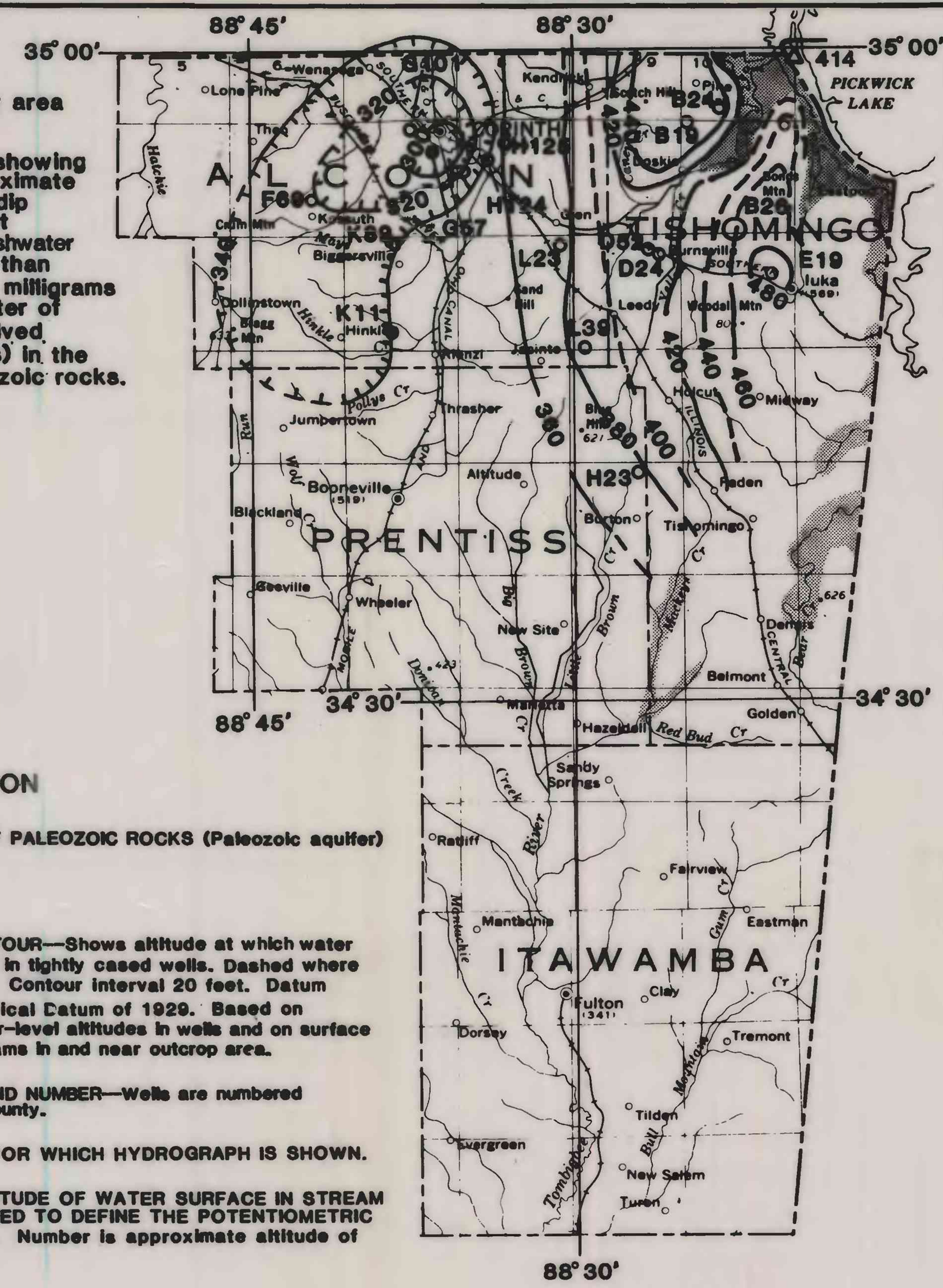
Wasson, B. E., 1979, Potentiometric map of the Paleozoic aquifer in northeastern Mississippi, October and November 1978: U.S. Geological Survey Water-Resources Investigations Report 79-71, 1 sheet.

Wasson, B. E., and Tharpe, E. J., 1975, Water for industrial development in Alcorn, Itawamba, Prentiss, and Tishomingo Counties, Mississippi: Mississippi Research and Development Center Bulletin, 60 p.

Wasson, B. E., and Thompson, F. E., 1970, Water resources of Lee County, Mississippi: U.S. Geological Survey Water-Supply Paper 1899-B, 63 p.



LOCATION OF STUDY AREA IN MISSISSIPPI



EXPLANATION

AREA OF OUTCROP OF PALEOZOIC ROCKS (Paleozoic aquifer)

--- 320 — POTENTIOMETRIC CONTOUR—Shows altitude at which water level would have stood in tightly cased wells. Dashed where approximately located. Contour interval 20 feet. Datum National Geodetic Vertical Datum of 1929. Based on measurements of water-level altitudes in wells and on surface water altitudes of streams in and near outcrop area.

○K11 OBSERVATION WELL AND NUMBER—Wells are numbered alpha-numerically by county.

●G57 OBSERVATION WELL FOR WHICH HYDROGRAPH IS SHOWN.

△414 POINT AT WHICH ALTITUDE OF WATER SURFACE IN STREAM DURING FALL WAS USED TO DEFINE THE POTENTIOMETRIC SURFACE OF AQUIFER. Number is approximate altitude of water surface in feet.

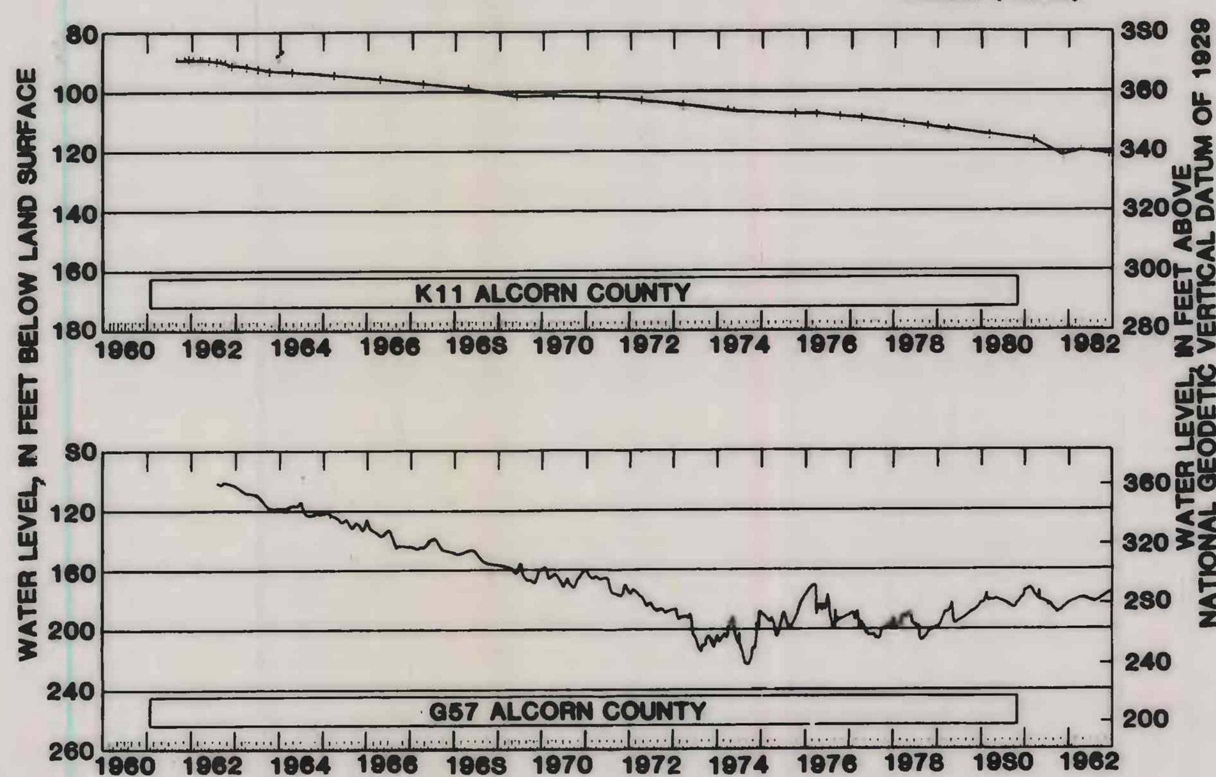
0 10 MILES
0 10 20 KILOMETERS

Base map modified from U.S. Geological Survey Map of Mississippi, 1972

Geology modified from Speer and others (1964)

To convert inch-pound units to metric units:

Multiply	by	To obtain
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)



SELECTED WELLS IN THE PALEOZOIC AQUIFER

POTENTIOMETRIC MAP OF THE PALEOZOIC AQUIFER IN NORTHEASTERN MISSISSIPPI, NOVEMBER AND DECEMBER 1982

DAPHNE DARDEN

1984

JACKSON, MISSISSIPPI