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

by Daphne Darden

The U.S. Geological Survey, in cooperation with the Mississippi Department of Natural Resources, Bureau of Land and Water Resources, has prepared several maps showing the availability of ground water for municipal and industrial use and to show the effects of withdrawals on the aquifer. This map, the second in a series for the Gordo aquifer, follows a map that delineated the potentiometric surface of the aquifer in 1978 (Wasson et al., 1980).

The Gordo aquifer is composed of chert gravel and sand in the lower part of the Gordo Formation of the Tuscaloosa Group of Late Cretaceous age. The aquifer is less than 50 feet in thickness in Prentiss County in northeastern Mississippi and thickens to as much as 200 feet in thickness in the southern part of the area near the downdip limit of freshwater. A thin clay unit overlies the aquifer. The base of the Gordo aquifer dips about 30 feet per mile to the southwest. In the northern part of the study area, Paleozoic rocks underlie the aquifer. In the southern part of the study area, the aquifer is underlain by the Tuscaloosa Formation, which is part of the Tuscaloosa Group. The basal sand of the Tuscaloosa Formation forms the Coker aquifer.

Precipitation recharges the Gordo aquifer in the outcrop area in Monroe, Tallassee, Prentiss, and Issaquena Counties and in adjacent parts of Alabama. The regional groundwater movement, southwestward into the subsurface from the outcrop area, has been modified by large centers of pumping at Tupelo and Columbus. As water moves down the dip from the outcrop, mineralization increases. The approximate downdip extent of freshwater in the Gordo aquifer, about 60 miles southwest of the outcrop area, marks a boundary of this map.

In northeastern Mississippi, the Gordo aquifer is an essentially closed system. Water levels in the Gordo aquifer have been stable for more than 20 years. Levels are approximately 10 feet to 20 feet below the land surface and are separated from the adjacent aquifers by a low-permeability clay layer. The water is of high quality and is used for domestic and industrial purposes. Water levels in the Coker aquifer are a few feet higher than in the Gordo aquifer at any location.

ADDITIONAL INFORMATION

The map showing the results of the November and December 1982 water-level measurements for the Gordo aquifer is the second map showing ground-water levels in the aquifer. The 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 1063
JACKSON, MISSISSIPPI 39205
(601) 961-5000

Copies of this report can be purchased from:
Open-File Services Section
Western Distribution Branch
U.S. Geological Survey
Box 2524
Federal Center, Denver, Colorado 80225
(303) 224-6500

SELECTED REFERENCES


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MILES

KILOMETERS

0 10 20 30

0 10 20 30

JACKSON, MISSISSIPPI

1984

LOCATION OF THE STUDY AREA IN MISSISSIPPI

Study area

Geology modified from Speer, Golden, and Patterson, 1964

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

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