

POTENTIOMETRIC SURFACE MAP OF THE
WINONA-TALLAHATTA AQUIFER IN
NORTHWESTERN MISSISSIPPI, FALL 1983

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 potentiometric surface maps of major aquifers in Mississippi to show the effects of withdrawals on the aquifer. This map, the second in the series for the Winona-Tallahatta aquifer, is similar to a map that delineated the potentiometric surface of the aquifer in 1979 (Wasson, 1980).

The Winona-Tallahatta aquifer consists of the Winona Sand and the Neshoba Sand and the Basic City Shale Members of the Tallahatta Formation. Aquifer thickness ranges from about 100 feet in the southeastern part of the outcrop area to about 400 feet in the subsurface of northwestern Mississippi. The base of the Winona-Tallahatta aquifer dips about 25 to 50 feet per mile to the southwest.

Precipitation recharges the Winona-Tallahatta aquifer in the outcrop area from Lafayette to Leake County. The regional ground-water movement is westward into the subsurface from the outcrop area and has been modified by centers of pumping in northwestern Mississippi. The approximate down-dip extent of freshwater, about 25 to 80 miles southwest of the outcrop area, marks the southern boundary of this map.

In northwestern Mississippi the Winona-Tallahatta aquifer contains freshwater (less than 1,000 milligrams per liter of dissolved solids) in a 27-county area. The aquifer is the source of ground water for small municipalities and industries and for domestic use in the study area.

This map is based on water-level measurements made in about 30 wells in the Winona-Tallahatta aquifer in October, November, and December 1983, and on the altitudes of water surfaces in some streams. The contours show altitudes above sea level at which water levels would have stood in tightly cased unpumped wells.

In and near the outcrop area, water levels in the Winona-Tallahatta aquifer have been stable since 1979. In areas down-dip from the outcrop area, where wells are sparse and withdrawals are small, water levels have declined about 1 to 2 feet per year (see hydrographs). The largest declines since 1979, about 4 feet per year, are found in the Greenwood-Indianola-Moorehead area (see hydrographs). In this area of heavy pumping, the cone of depression has deepened and spread areally since 1979. The smaller cones of depression shown on the map reflect local heavy pumping at small municipalities.

ADDITIONAL INFORMATION

This map showing the potentiometric surface based on results of the fall 1983 water-level measurements made for the Winona-Tallahatta 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:

Director Mississippi Department of Natural Resources Bureau of Land and Water Resources Post Office Box 10631 Jackson, Mississippi 39209 (601) 961-5200	District Chief U.S. Geological Survey Water Resources Division Suite 710, Federal Building 100 West Capitol Street Jackson, Mississippi 39269 (601) 965-4600
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Copies of this report can be purchased from:

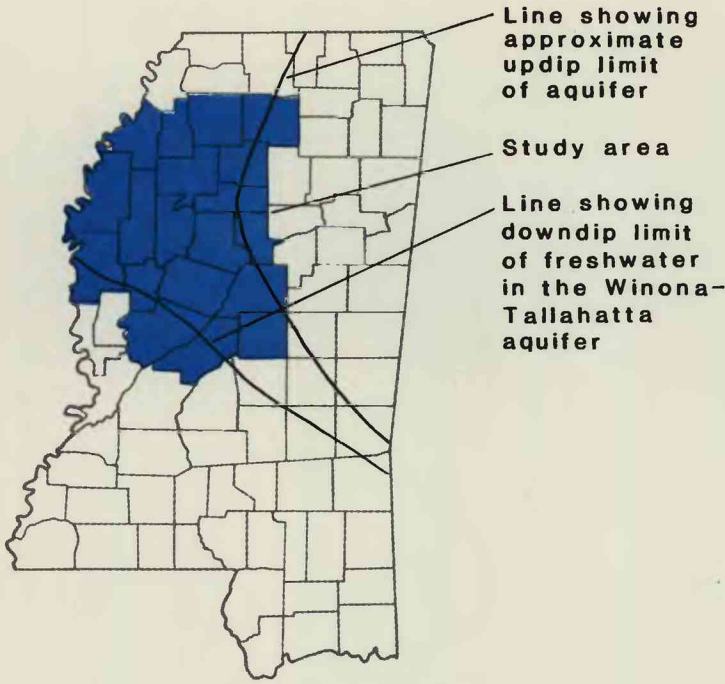
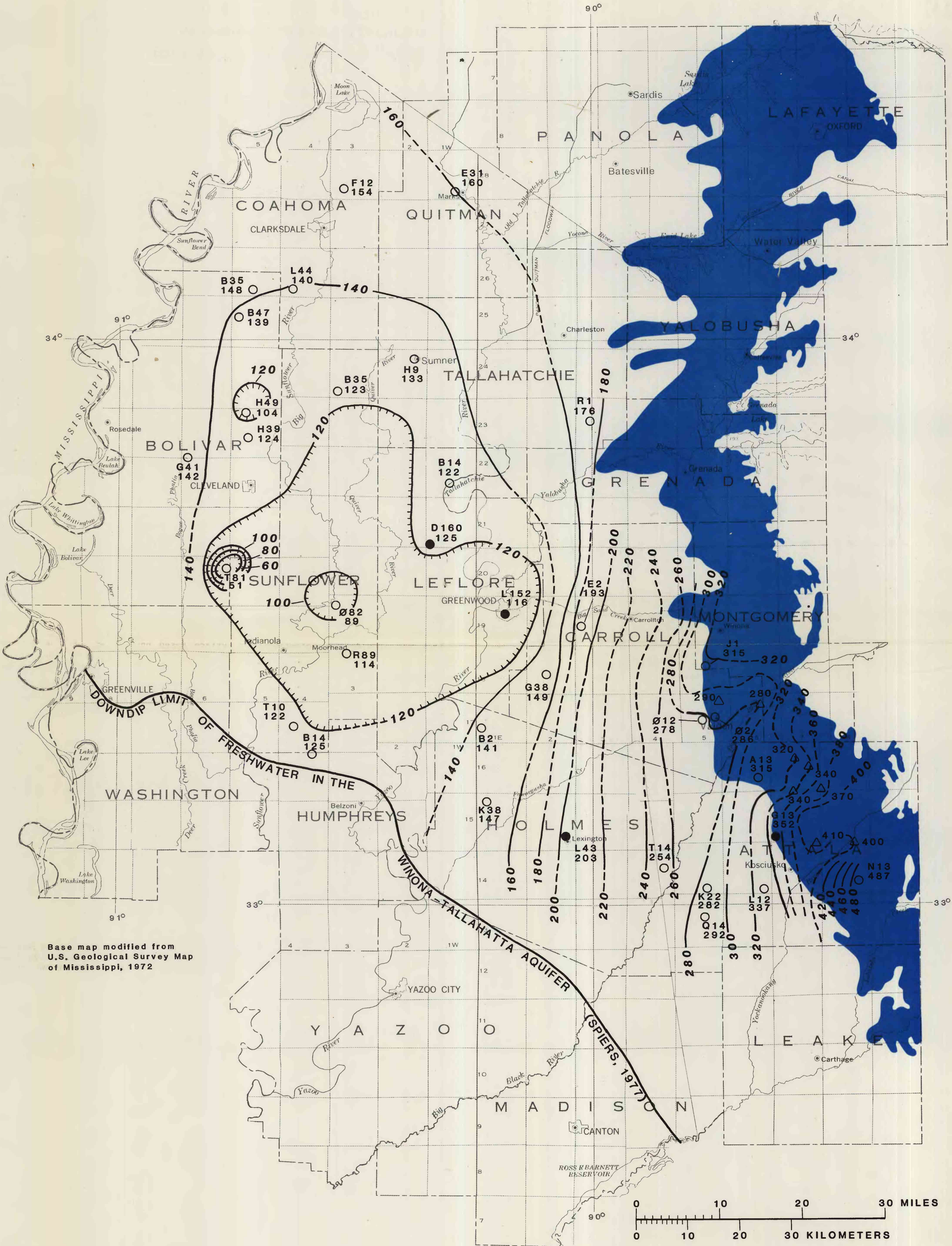
U.S. Geological Survey
Books and Open-File Reports
Box 25425, Federal Center
Building 41
Denver, Colorado 80225

SELECTED REFERENCES

Belt, W. E., and others, 1945, Geologic map of Mississippi: Mississippi Geological Society, Jackson, Mississippi, 1 sheet.

Spiers, C. A., 1977, The Winona-Tallahatta aquifer in Mississippi: U.S. Geological Survey Water-Resources Investigations Open-File Report 77-125, map, 2 sheets.

Wasson, B. E., 1980, Potentiometric map of the Winona-Tallahatta aquifer in northeastern Mississippi, fall 1979: U.S. Geological Survey Water-Resources Investigations Open-File Report 80-598, 1 sheet.



LOCATION OF STUDY AREA
IN MISSISSIPPI

EXPLANATION

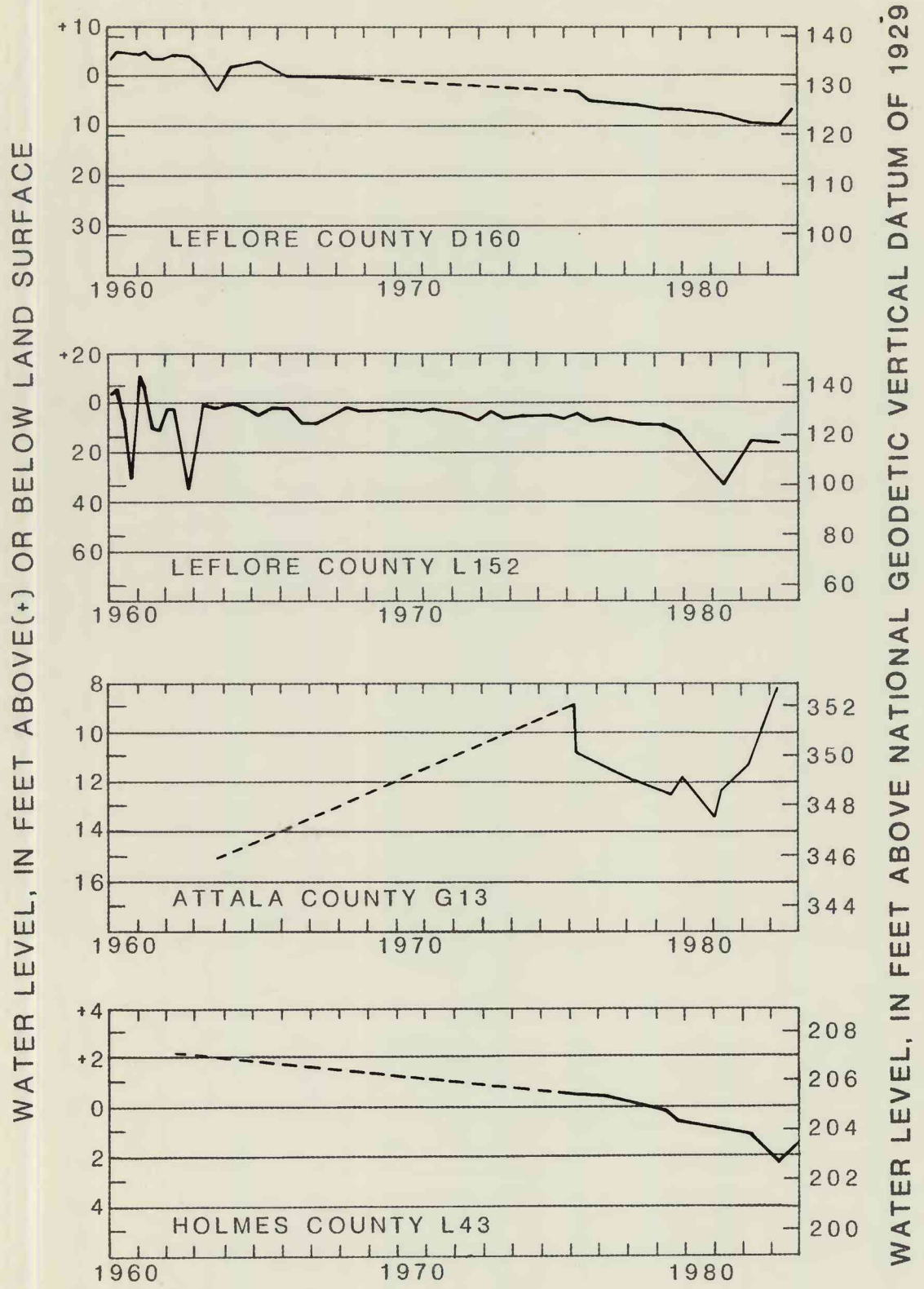
AREA OF OUTCROP OF WINONA-TALLAHATTA AQUIFER--Generalized from Spiers (1977) and Belt and others (1945). Includes Meridian Sand Member of Tallahatta Formation in the eastern edge of outcrop belt.

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

OBSERVATION WELL AND NUMBER--Wells are numbered alpha-numerically by county

OBSERVATION WELL FOR WHICH HYDROGRAPH IS SHOWN

POINT AT WHICH ALTITUDE OF WATER SURFACE WAS USED TO DEFINE THE POTENTIOMETRIC SURFACE OF THE AQUIFER



SELECTED WELLS IN THE WINONA-TALLAHATTA AQUIFER

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