

BACKGROUND

Although Mississippi has large quantities of ground and surface water that are available in nearly all parts of the State, increased demands for water have created a need for accurate, detailed information on current and historical water use. In recognition of this need, the U.S. Geological Survey (USGS), in cooperation with the Mississippi Department of Environmental Quality, Office of Land and Water Resources (OLWR; formerly the Mississippi State Board of Water Commissioners), began the Mississippi Water-Use Program in 1973. In 1978, the USGS initiated the National Water-Use Information Program to establish a nationwide water-use data base. The national and the State programs have similar goals—to collect, store, and disseminate consistent and accurate water-use information.

The Mississippi Water-Use Program collects information on the following categories of water use: public supply, domestic, commercial, industrial, mining, thermoelectric power, livestock, irrigation, sewage treatment, and reservoir evaporation. This information is collected to meet the data needs of hydrologists and water managers at State and local agencies, as well as the requirements of the national program. Detailed information on water use by cities, industries, and commercial establishments is stored in a site-specific data base.

Every 5 years the site-specific data are added to the aggregate water-use data base for the National Water-Use Information Program. National estimates of water use have been compiled and published by the USGS every 5 years since 1955 (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972, 1977; Solley and others, 1983, 1988, 1992). Estimates of the amount of water used in each county for fresh and saline ground and surface water for all water-use

categories are stored in an aggregate water-use data base, as well as the amount of wastewater discharged by sewage-treatment plants.

TOTAL WITHDRAWALS

During 1990, total withdrawals from ground- and surface-water sources in Mississippi were about 3,600 million gallons per day (Mgal/d). The largest withdrawals were concentrated in the Mississippi River alluvial plain of northwestern Mississippi (commonly referred to as the "Delta"; fig. 1). Total withdrawals increased about 600 Mgal/d (about 20 percent) from 1985 to 1990, although the total population of Mississippi decreased about 2 percent (U.S. Bureau of the Census, 1991). Total freshwater withdrawals, about 3,300 Mgal/d, increased 17 percent from 1985; about 80 percent, or 2,700 Mgal/d, was withdrawn from ground-water sources. Total freshwater withdrawals from ground-water sources increased 33

percent from 1985 to 1990, primarily due to an increase in irrigation. Total freshwater withdrawals from surface-water sources decreased about 22 percent, to about 650 Mgal/d during the 5-year period, with the largest withdrawals occurring in the counties with large thermoelectric power withdrawals. Total saline withdrawals were about 320 Mgal/d, an increase of 60 percent from 1985, due to an increase in saline withdrawals for thermoelectric power generation. Total fresh and saline surface-water withdrawals decreased by 6 percent from 1985, due to a decrease in surface-water withdrawals for irrigation.

Since 1960, total withdrawals increased 204 percent (fig. 2). Total ground-water withdrawals have increased 327 percent, and total surface-water withdrawals have increased 70 percent. Withdrawals for irrigation increased 269 percent for the same period, followed by withdrawals for public supply, 178 percent.

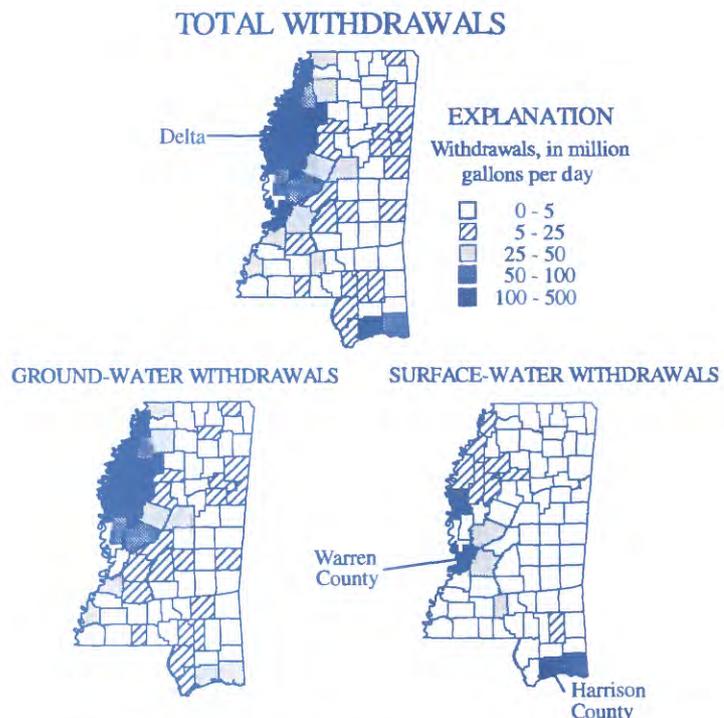


Figure 1. Total withdrawals for all offshore water-use in Mississippi, by county and source, 1990.

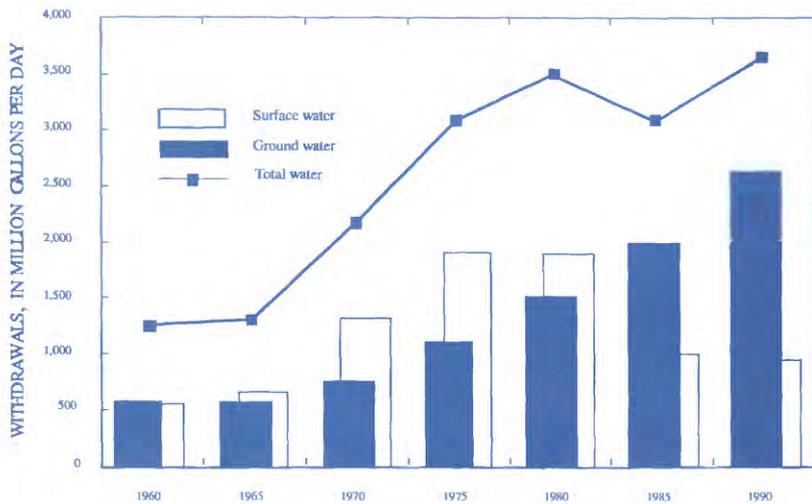


Figure 2. Total withdrawals in Mississippi, by source, 1960-90 (modified from Callahan and Barber, 1990).

WITHDRAWALS BY CATEGORY

As part of the Mississippi Water-Use Program, total water withdrawals for eight categories of water use were compiled by using 1990 data, beginning with the largest total withdrawals: irrigation; thermoelectric power; aquaculture; public supply; industrial and mining; domestic; commercial; and livestock. The mining category is included in the industrial category, and the livestock category is separated into the categories of aquaculture and livestock. These eight categories are discussed below.

- Irrigation withdrawals were estimated to be about 1,900 Mgal/d for 1990. About 95 percent of these withdrawals was in the Delta. Irrigation withdrawals accounted for about 52 percent of all water withdrawn in Mississippi (fig. 3) and 66 percent of all ground-water withdrawals in the State.
- During 1990, about 700 Mgal/d of fresh and saline water was withdrawn for thermoelectric power generation, or about 20 percent of the total withdrawals in Mississippi. Harrison County had the largest surface-water withdrawals in the State, and Warren County had the second largest.
- Total withdrawals for aquaculture were estimated to be about 400 Mgal/d, or about 11 percent of the total withdrawals for 1990. About 96 percent of all catfish farming in Mississippi takes place in the Delta.

- Public-supply withdrawals were estimated to be about 320 Mgal/d, or about 9 percent of the total withdrawals in Mississippi for 1990.
- Industrial and mining users withdrew an estimated 270 Mgal/d, or about 8 percent of the total withdrawals for Mississippi during 1990.
- Domestic withdrawals were estimated to be about 33 Mgal/d for 1990.
- Total commercial withdrawals for Mississippi during 1990 were estimated to be about 16 Mgal/d.
- Total withdrawals for livestock use were estimated to be about 16 Mgal/d for 1990.

SELECTED REFERENCES

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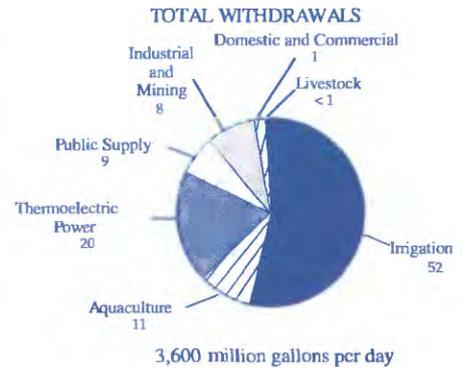


Figure 3. Total withdrawals in Mississippi, by category or use, 1990. (Numbers are in percent and may total to more than 100 due to rounding.)

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Additional information on water withdrawals can be obtained from:

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