INTRODUCTION

The Chicot aquifer system is the principal source of fresh ground water in southwestern Louisiana. Figure 1 shows the extent of the aquifer system. In 2000, approximately 650,000 people were served by ground-water supplies that depend on the Chicot aquifer system. About 550,000 people used water from about 11,000 public wells, and about 150,000 people used ground water from private wells. In 2001, the U.S. Geological Survey (USGS) measured ground-water levels in the Chicot aquifer system at 2,506 observation wells during January, the beginning of the rice-growing season. Ground-water levels averaged about 170 ft above mean sea level. Ground-water levels were measured in about 1,800 public supply wells and about 700 private wells. The ground-water withdrawals in this system were approximately 1.35 billion gallons per day (mgd) in 2000. The highest ground-water withdrawal rate was about 1.5 mgd in 2000 (http://water.usgs.gov/3341). The next highest ground-water withdrawal rate was about 1.25 mgd in 1997 (http://water.usgs.gov/3341).

Additional ground-water supply information is available from the Louisiana State University (LSU) Cooperative Extension Service, Agricultural Water Resources Program, Louisiana Department of Agriculture and Forestry, and the Regional Water Quality Commission (RWQC) of Louisiana. This report is one of a series of reports that present the results of ground-water investigations in Louisiana. This report presents maps that show ground-water withdrawal rates and potentiometric-surface data for southwestern Louisiana for the month of January 2001. These data are available for use in ground-water management and the planning of new water-supply systems. Additional information about ground-water withdrawal rates and associated data are available from the Louisiana State University Cooperative Extension Service, Agricultural Water Resources Program, Louisiana Department of Agriculture and Forestry, and the Regional Water Quality Commission (RWQC) of Louisiana.

In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum called Sea Level Datum of 1929. Figure 2 shows the perspective view of the Chicot aquifer system. The Chicot aquifer system has been divided into three subregions along the time-averaged potentiometric surface (Fig. 2). These subregions are the: (1) the Lake Charles area, (2) the northwestern part of the Lake Charles area, and (3) the southern part of the Lake Charles area.

Additional knowledge about ground-water flow and effects of ground-water withdrawal on potentiometric surfaces is needed to assist in the sustainable development of ground-water supplies. Flow in the Chicot aquifer system is generally away from pumping centers in the southern part of the state. Ground-water flow generally is toward population and industrial centers in the northwestern part of the state. Hydrogeologic data for the southern part of the state are needed to improve the understanding of the hydrogeologic system. A potentiometric-surface map of southwestern Louisiana for the month of January 2001 was completed in this report. This map is intended to provide hydrogeologic data needed for the sustainable development of ground-water supplies in southwestern Louisiana.

The authors gratefully acknowledge the assistance and cooperation of numerous public water suppliers and private well owners and operators. The data used to prepare this report were obtained from water-supply companies, public water-supply companies, and private well owners and operators. The data were not the results of systematic, systematic ground-water investigations. In some instances, data were provided by others. These data were provided without any guarantee of their accuracy or completeness.

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Figure 1. Potentiometric surface of the massive sand and "200-foot" sands of the Chicot aquifer system in southwestern Louisiana, January 2001.
Water-level changes generally were throughout most of the Chicot aquifer system in the study area. Water levels vary from the alluvium near the coast in Evangeline Parish to the swampy areas of the Atchafalaya Basin. The highest water levels occurred in Iberia Parish in June 1999 and January 2001, and the lowest levels occurred in Evangeline Parish in May 1999.

Water levels in Chicot aquifer system from June 1999 to January 2001 are shown in Figure 4. Water levels in these areas are typically lowest in June and highest in January. The water-level changes were mapped by interpolating between the data points and were adjusted for long-term changes in water levels. The data were obtained from the Louisiana Geological Survey.

The water levels shown in Figure 4 represent the approximate amount of water-level accuracy that occurred between the annual low and the annual high water levels in the aquifer prior to the start of seasonal pumping for rice irrigation in 2000.