INTRODUCTION

Black Bayou Reservoir, located on an alluvial fan in Bossier Parish, Louisiana, was created by the black structure on the east side of the reservoir to supply water to the 26 square miles of its drainage area. The reservoir has a water-surface area of 937 acres, a volume of 9,375 acre-feet, a mean annual temperature of 54.2°F (degrees Fahrenheit) (Jay Grymes, INTRODUCTION

Black Bayou Reservoir has a drainage area of 26 square miles and is located in Bossier Parish, Louisiana. The water-surface area of Black Bayou Reservoir varies, and contains evidence of the once meandering channels of Black Bayou. The bathymetry of Black Bayou Reservoir was measured using a survey depth-finder equipped with GPS and lines of equal depth were reviewed and edited for accuracy and consistency. On-site physical and chemical-related properties were measured at the three selected locations using a water-quality monitor. This report is one in a series of planned map reports of reservoirs and lakes in Louisiana.

Physical and chemical-related properties are essential to planners and managers for evaluating these resources. In October 1996, the U.S. Geological Survey, in cooperation with the Louisiana Department of Environmental Quality, produced a draft report that provides comprehensive information on the physical, chemical, and biological characteristics of the reservoir. The purpose of this report is to present the results of the bathymetric survey and the results of vertical profiles of physical and chemical-related properties of Black Bayou Reservoir.

Acknowledgments

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BATHYMETRY

Bathymetric data in Black Bayou Reservoir were collected and measured using a survey depth-finder equipped with a digital depth-finder and lines of equal depth were reviewed and edited for accuracy and consistency. The bathymetry of the reservoir is shown in figure 1, which was derived using a survey depth-finder with the accuracy of 5 feet. The bathymetry was digitized using GIS data. The bathymetric survey was conducted with routine accuracy of 0.1 foot; the fathometer measured the depth with routine accuracy of 0.1 foot; the fathometer was calibrated at the beginning of each day prior to physical and chemical-related property data collection.

The DO concentration profiles showed stratification occurring at a depth between 10 and 14 feet. Shallow-water DO concentrations varied considerably with depth, location, and season. The water temperature profiles showed stratification occurring at a depth between 10 and 14 feet, then decreased more rapidly with depth, with the deepest measurement of 75°F at 14.8 feet. The oxygen concentration profiles showed stratification occurring at a depth between 10 and 14 feet, then decreased more rapidly with depth, with the deepest measurement of 1 mg/l at 14.8 feet.

SELECTED REFERENCES


Baton Rouge, Louisiana 70816

U.S. Geological Survey

Location: 32° 38´ 00´´ N, 93° 40´ 30´´ W

Bossier Parish

Study Area

Reservoir

Figure 1. Bathymetry of Black Bayou Reservoir, October 7-8, 1997.

Figure 2. Depth-surface area and depth-volume relations for Black Bayou Reservoir. Water-surface elevation was 183.6 feet above sea level during the bathymetric survey of October 7-8, 1997.

Figure 3. Variation of water temperature, dissolved-oxygen concentration, specific conductance, and pH at Black Bayou Reservoir, September and October 1997.

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