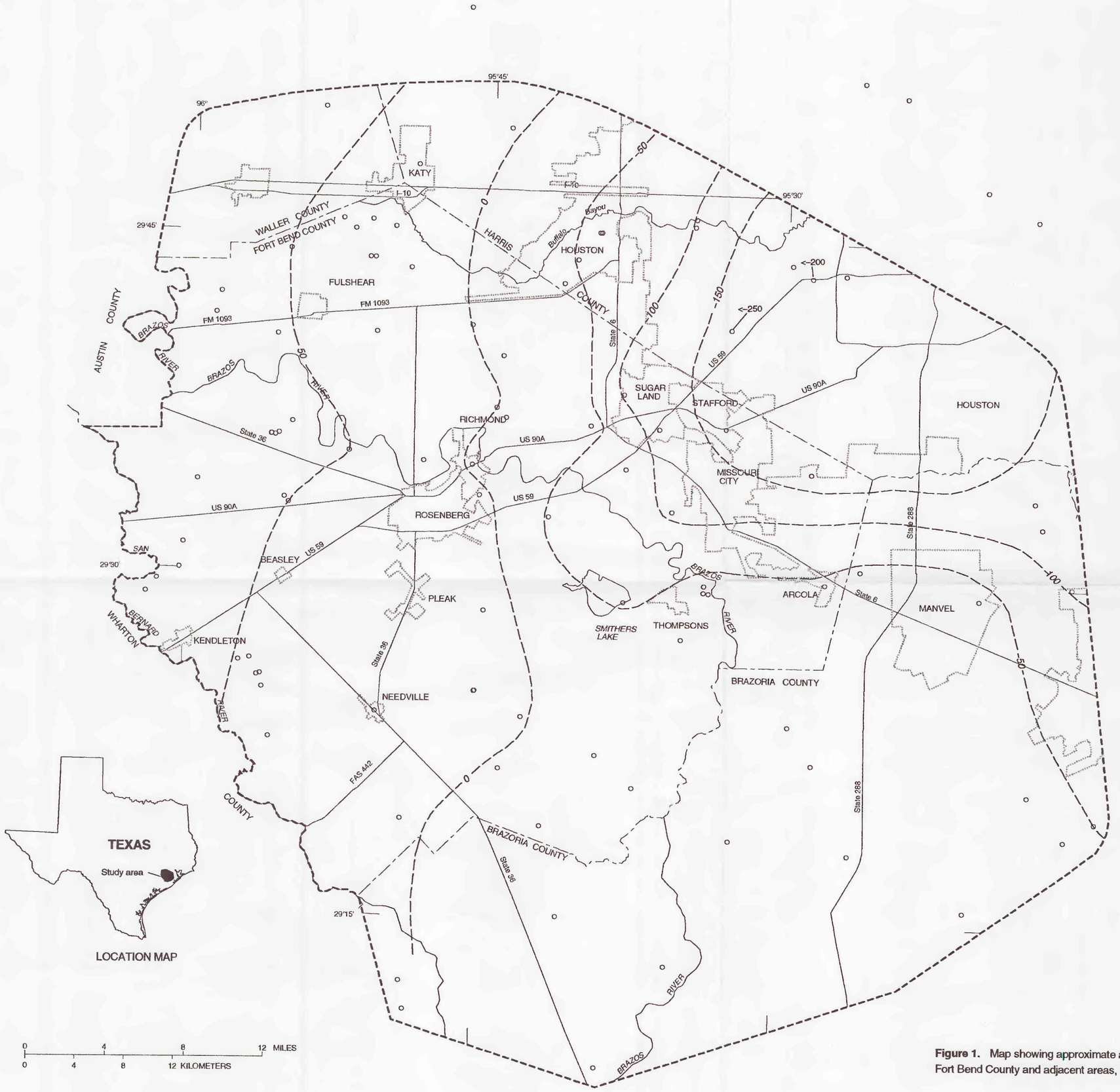
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
FORT BEND SUBSIDENCE DISTRICT

OPEN-FILE REPORT 95–183
Approximate altitudes of water levels, Chicot aquifer, 1995—SHEET 1 OF 6
Coplin, L.S., and others, 1995, Water-level altitudes 1995 and water-level changes 1990–95 and 1994–95 in the Chicot and Evangeline aquifers, Fort Bend County and adjacent areas, Texas







0 4 8 12 MILES
0 4 8 12 KILOMETERS

## INTRODUCTION

This report is one in an annual series of reports that depicts altitudes of water levels and water-level changes since 1990 in the Chicot and Evangeline aquifers in Fort Bend County and adjacent areas, Texas. The report, prepared in cooperation with the Fort Bend Subsidence District, presents the approximate altitude of water levels (figs. 1, 4), January–February 1995, and approximate changes in water levels (figs. 2, 3, 5, 6), 1990–95 and 1994–95, in each of the aquifers. The most recent previously published water-level altitude maps for the aquifers are by Locke (1993), and the most recent previously published water-level change maps for the aquifers are by Coplin and Santos (1994). The earliest water-level altitude maps and the earliest water-level change maps for the Chicot aquifer are by Wesselman (1972). The first maps of water-level altitudes and water-level changes for the Chicot and Evangeline aquifers are by Locke (1990).

## GEOHYDROLOGY

The Chicot aquifer, of Holocene and Pleistocene age, and the underlying Evangeline aquifer, of Pliocene and Miocene age, are composed of discontinuous fluvial-deltaic deposits of sand, silt, and clay that thicken to the southeast (Wesselman, 1972). The Chicot aquifer is separated from the underlying, geologically similar Evangeline aquifer on the basis of differences in hydraulic conductivity. The differences in hydraulic conductivity in part cause differences in water levels in the two aquifers (Carr and others, 1985, p. 10); water levels in the Chicot aquifer are higher than water levels in the Evangeline aquifer. A weak hydraulic connection between land surface and the Chicot aquifer and between the Chicot and Evangeline aquifers allows vertical movement of water into and between the aquifers; the aquifer system thus is characterized as "leaky" (Gabrysch and Coplin, 1990, p. 2).

## WATER-LEVEL MEASUREMENTS

Water-level measurements used to prepare this report were obtained by steel tape, airline, electronic sensor, and from reports by well operators. Most wells are pumped once daily, but some are pumped more frequently. Multiple measurements were made when wells were not being pumped. However, antecedent pumping conditions were not always discernible. Water-level measurements were made in January and February, the months when water levels usually are highest. The wells selected for water-level measurements had comparable depths and screened intervals. Additional wells were measured in 1995 to obtain a better understanding of aquifer water levels along the boundary of the study area. This expanded coverage provides water levels for areas not affected by large rates of ground-water withdrawal, which could increase the accuracy of the maps.

## REFERENCES CITED

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Coplin, L.S., and Santos, H.X., 1994, Approximate changes in water levels in wells completed in the Chicot and Evangeline aquifers, 1990–94 and 1993–94, in Fort Bend County and adjacent areas, Texas: U.S. Geological Survey Open-File Report 94–345, 4 sheets.

Gabrysch, R.K., and Coplin, L.S., 1990, Land-surface subsidence resulting from ground-water withdrawals in the Houston-Galveston region, Texas, through 1987: Harris-Galveston Coastal Subsidence District Report of Investigations 90–01, 53 p.

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_____1993, Approximate altitude of water levels in wells completed in the Chicot and Evangeline aquifers in Fort Bend County and adjacent areas, Texas, January–February 1991: U.S. Geological Survey Open-File Report 93–62, 2 sheets.

Wesselman, J.B., 1972, Ground-water resources of Fort Bend County, Texas: Texas Water Development Board Report 155, 185 p.

## CONVERSION FACTORS AND VERTICAL DATUM

| Multiply | By | To obtain |
|---|---|---|
| foot | 0.3048 | meter |
| mile | 1.609 | kilometer |

**Sea level:** In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

## EXPLANATION

——50—— WATER–LEVEL CONTOUR—Shows altitude at which water level would have stood in tightly cased well. Contour interval 50 feet. Datum is sea level

- - - - - - BOUNDARY OF STUDY AREA

○ DATA POINT—Well in which water–level measurement was made. One point can represent more than one well

**Figure 1.** Map showing approximate altitudes of water levels in the Chicot aquifer, Fort Bend County and adjacent areas, Texas, January–February 1995.

Base from U.S. Geological Survey digital data, 1:100, 000
Universal Transverse Mercator projection
Zone 15

# WATER-LEVEL ALTITUDES 1995 AND WATER-LEVEL CHANGES 1990–95 AND 1994–95 IN THE CHICOT AND EVANGELINE AQUIFERS, FORT BEND COUNTY AND ADJACENT AREAS, TEXAS

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1995

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