DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

OPEN-FILE REPORT 85-482

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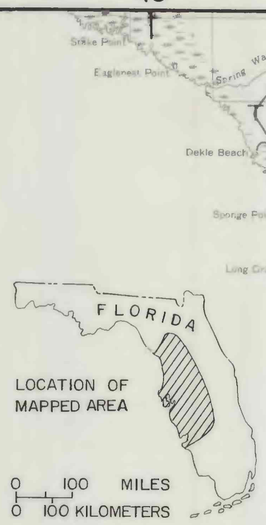

INTRODUCTION

Maps of the potentiometric surface of the Upper Floridan aquifer in west-central Florida are prepared semiannually by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District. Maps for May and September show, respectively, the potentiometric surface of the normally expected annual low and high water-level conditions. Potentiometric surface maps have been prepared for January 1964, May 1969, May 1971 to 1974, and for May and September since 1975.

The potentiometric surface is the level to which water will rise in tightly cased wells that tap the Upper Floridan aquifer. The surface is mapped by determining the altitude of water levels in a network of wells and is represented on maps by contours that connect points of equal altitude.

This report shows the potentiometric surface of the Upper Floridan aquifer for May 1985. Data for the map were collected during May 13-24. Supplemental data were collected by other agencies and companies. The map represents water-level conditions during a drought period and before the beginning of the summer rainy season. Before the rainy season, ground-water withdrawals for irrigation are generally high and the potentiometric surface is near its lowest level for the year.

SUMMARY OF CONDITIONS

Annual and seasonal fluctuations of the potentiometric surface are shown by hydrographs in figure 1. The hydrographs generally indicate that water levels in northern areas, where water use is small, remain fairly uniform from year-to-year and seasonally, whereas water levels in southern areas, where water use is large, show large year-to-year and seasonal fluctuations. Daily maximum water-level values for selected wells from May 1984 to June 1985 are shown in figure 2. In figure 2, a decline of water levels in those areas represented by hydrographs 6a and 8 prevailed from about August 1984 to May 1985. These declines were a result of pumpage and below normal rainfall throughout west-central Florida. Hydrographs 6a and 8 show rises in water levels in late May 1985 that are attributed to reduced irrigation pumping. Hydrograph 2 shows steady water-level declines until about mid-June. Water-level declines in the north and the area represented by hydrograph 2 are attributed to below normal rainfall.

Water levels in most wells measured in May 1985 were lower than those measured in September 1984. Some wells along coastal regions had apparent rises in water levels, about 1 foot or less, which were the result of tidal effects. May 1985 water levels averaged about 5 feet lower than September 1984 levels in areas north of about latitude 28°07' and about 13 feet lower in southern areas. Water-level declines in the north were about 2 feet or less along coastal regions and were about 15 feet or less in inland areas. In the south, declines in water levels were about 5 feet or less along coastal and extreme southern areas and about 5 to 38 feet in other southern areas. The largest declines occurred in southern Hillsborough County where irrigation pumpage contributes to large seasonal water-level fluctuations.

Water levels in May 1985 were generally lower than in May 1984 in individual wells. Water levels in all wells measured in May 1985 averaged about 4 feet lower than May 1984 levels in the north and about 6 feet lower in the south. Declines in water levels in most wells in the north were about 16 feet or less, whereas a few wells had a rise of about 1 foot or less in coastal regions. Declines in water levels in most wells in the south were about 5 feet or less along coastal and extreme southern regions and about 22 feet or less in other southern areas. The largest declines occurred in southeastern Hillsborough, southwestern Polk, northeastern Manatee, and northwestern Hardee Counties.

SELECTED REFERENCES

Barr, G. L., 1984, Potentiometric surface of the Upper Floridan aquifer, Southwest Florida Water Management District, September 1984: U.S. Geological Survey Open-File Report 84-812, 1 sheet.

Barr, G. L., and Schiner, G. R., 1984, Potentiometric surface of the Floridan aquifer, Southwest Florida Water Management District, May 1984: U.S. Geological Survey Open-File Report 84-620, 1 sheet.

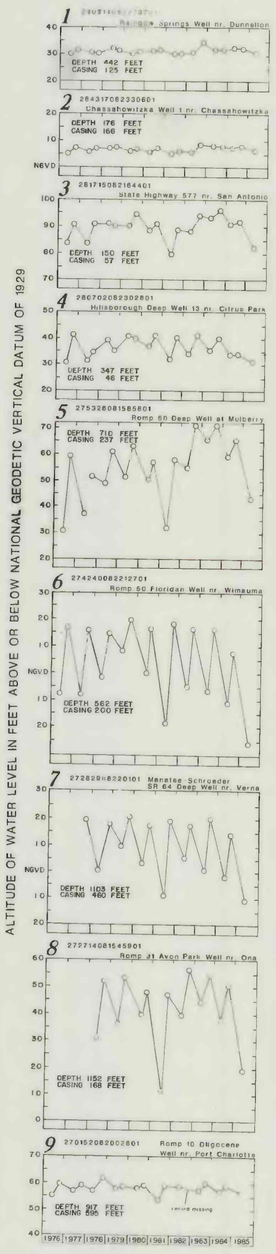

Figure 1.-- Hydrographs showing May and September water levels in selected wells

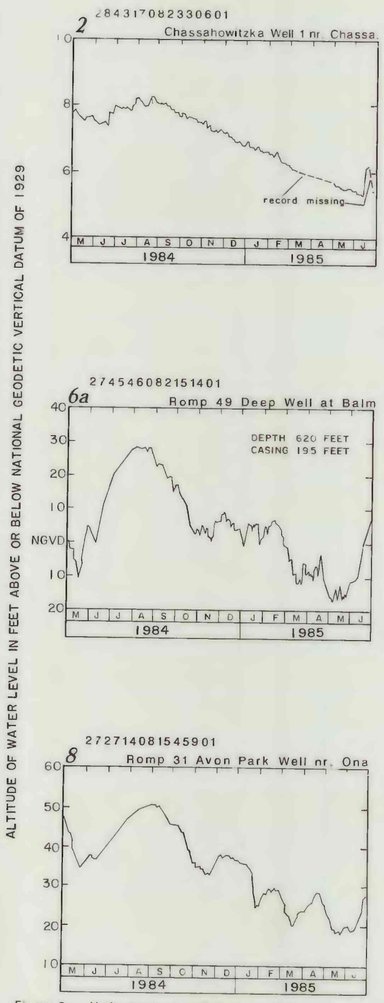

Figure 2.-- Hydrographs showing maximum daily water levels from May 1984 to June 1985 in selected wells

EXPLANATION

—20— POTENTIOMETRIC CONTOUR-- Shows altitude at which water level would have stood in tightly cased wells. Contour interval 5 and 10 feet. National Geodetic Vertical Datum of 1929 (NGVD). Hachures indicate depressions. Dashed where approximated

1●30 ●22 OBSERVATION WELLS-- Large number identifies hydrograph (fig. 1). Small number is altitude of water level in feet above or below (-) NGVD

BOUNDARY OF THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

BOUNDARY OF WATER MANAGEMENT BASIN

NOTE: Potentiometric contours are generalized to show the water level at a point in time in a changing hydrologic system taking into account variations in hydrogeologic conditions. These include different depths of wells, nonsimultaneous measurements of water levels, variable effects of pumping, and changing climate. Potentiometric contours thus may not conform exactly with individual measurements of water levels

SCALE 1:500 000

0 10 20 30 MILES
0 10 20 30 40 KILOMETERS

Base from U. S. Geological Survey
State of Florida map 1967 1:500 000

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA, MAY 1985

By
G.L. Barr

1985

Copies of this map can be purchased from:
Open-File Services Section
U.S. Geological Survey
Box 25425
Denver, Colorado 80225