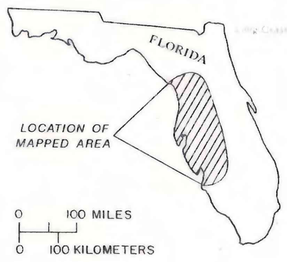
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

OPEN-FILE REPORT 88-730



INTRODUCTION

The potentiometric surface is an imaginary pressure surface represented by the level to which water will rise in tightly cased wells that tap a confined aquifer. The potentiometric surface of the Upper Floridan aquifer 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. 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 the potentiometric surface of the normally expected annual low and high water-level conditions, respectively. Potentiometric-surface maps have been prepared for January 1964, May 1969, May 1971 to 1974, and for each May and September since 1975.

This report shows the potentiometric surface of the Upper Floridan aquifer for September 1988. Most of the water-level data were collected by the U.S. Geological Survey during the period of September 19-23. Supplemental data were collected by other agencies and companies. This map represents water-level conditions near the end of the summer rainy season when ground-water withdrawals for agricultural use are low. Hence, the potentiometric surface is near its highest level for the year.

SUMMARY OF CONDITIONS

Annual and seasonal fluctuations of the potentiometric surface at selected wells are shown by hydrographs in figure 1. The hydrographs generally indicate that water levels in latitudes north of the Hillsborough-Pasco County line (northern area), where ground-water withdrawal is usually moderate, remain fairly uniform from year-to-year and seasonally, whereas water levels south of the county line (southern area), where withdrawal is significantly greater, show large year-to-year and seasonal fluctuations. Daily maximum water levels for selected wells from September 1987 to September 1988 are shown in figure 2.

Water levels in most wells measured in September 1988 were higher than those measured in May 1988 (Lewelling, 1988). September water levels averaged about 2 feet higher than May levels in the northern area; maximum rises in water levels were about 5 feet along coastal regions and 8 feet in inland areas. In the southern area, September water levels averaged about 10 feet higher than May levels; maximum rises were about 17 feet along coastal and extreme southern regions and about 40 feet elsewhere. The largest fluctuation of water levels occurred in southern Hillsborough, Polk, Manatee, and Hardee Counties as a result of seasonal irrigation pumpage in the spring and unusually high rainfall in most parts of the study area in early September.

September 1988 levels averaged about 2 feet higher than September 1987 levels (Lewelling, 1987) throughout the study area. Water levels in individual wells rose as much as 14 feet in scattered parts of the north, and in the south, rises were as much as 19 feet in interior regions and 3 feet in coastal and extreme southern regions.

REFERENCES

Lewelling, B.R., 1987, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, September 1987: U.S. Geological Survey Open-File Report 87-683, 1 sheet.

----- 1988, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 1988: U.S. Geological Survey Open-File Report 88-461, 1 sheet.

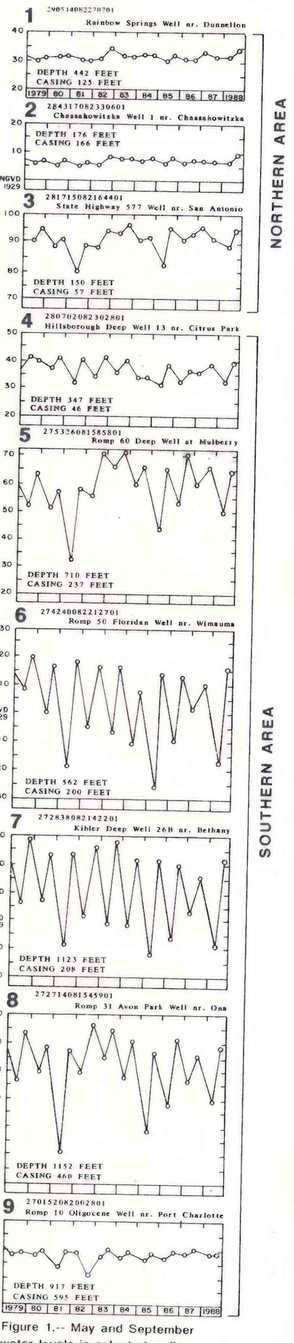


Figure 1.-- May and September water levels in selected wells, 1979-88.

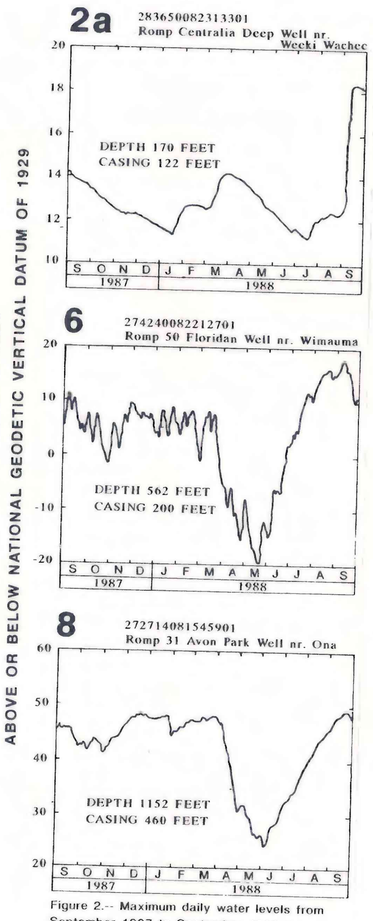


Figure 2.-- Maximum daily water levels from September 1987 to September 1988 in selected wells.

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 of 1929). Hachures indicate depressions. Dashed where approximate

7 22 / 25 OBSERVATION WELLS--Large number and dot identifies hydrograph (fig. 1). Small number is altitude of water level in feet above or below NGVD of 1929

BOUNDARY OF THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

BOUNDARY OF WATER MANAGEMENT BASIN

NOTE: The potentiometric contours are generalized to portray synoptically the head in a dynamic hydrologic system, taking due account of the variations in hydrogeologic conditions, such as differing depths of wells, nonsimultaneous measurements of water levels, variable effects of pumping, and changing climatic influence. The potentiometric contours thus may not conform exactly with individual measurements of water level

SCALE 1:500,000

0 10 20 30 MILES
0 10 20 30 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, SEPTEMBER 1988

By

G.L. BARR

1988

Copies of this map can be purchased from:
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