

**INTRODUCTION**

The Floridan aquifer system consists of the Upper and Lower Floridan aquifers separated by a middle confining unit. The middle confining unit and the Lower Floridan aquifer generally contain highly mineralized water in west-central Florida. In most reports on the hydrology of southwest Florida, the term "Floridan aquifer" has been applied to the water-bearing units herein referred to as the Upper Floridan aquifer. The Upper Floridan aquifer is a productive aquifer and supplies more than 10 times the amount of water pumped from either the surficial aquifer system or the intermediate aquifer system in most of the study area (Duerr and others, 1988).

This map report depicts the potentiometric surface of the Upper Floridan aquifer measured in September 1997. The potentiometric surface represents the level to which water will rise in tightly cased wells that tap a confined aquifer system. The surface is mapped by measuring the altitude of water levels in a network of wells and is represented on maps by contours that connect points of equal altitude. This map represents water-level conditions near the end of the wet season, when ground-water levels are usually at an annual high and withdrawals for agricultural use are usually low. The cumulative rainfall for the study area was 6.51 inches below average for the period from October 1996 through September 1997 (Southwest Florida Water Management District, 1997).

An example of how much water levels fluctuate is shown in the hydrograph for the ROMP 90 well where water levels decreased approximately 15 feet from October to March, but increased approximately 29 feet from March to August. A decrease of approximately 6 feet was observed between August and September. Because water-level measurements were made over a 5-day period in mid-September, the measurements do not absolutely represent a "snapshot" of conditions at a specific time, nor do they necessarily coincide with a seasonal high.

Water levels in most wells measured in September 1997 were higher than the September 1996 water levels (Metz and others, 1997). In 459 wells with paired measurements, the September 1997 levels ranged from 14 feet below to 16 feet above the September 1996 levels and averaged approximately 1 foot above the September 1996 levels. Water levels measured in September 1997 were generally higher than the May 1997 water levels (Metz and others, 1997). In 536 wells with paired measurements, the September 1997 levels ranged from 14 feet above to 5 feet below the May 1997 levels and averaged approximately 2 feet above the May 1997 levels.

**REFERENCES**

Duerr, A.D., Hunn, J.D., Lewelling, B.R., Trommer, J.T., 1988, Geology and 1985 water withdrawals of the aquifer systems in southwest Florida, with emphasis on the intermediate aquifer system: U.S. Geological Survey Water-Resources Investigations Report 87-4259, 115 p.

Metz, P.A., Mattie, J.A., and Corral, M.A., 1997, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, September 1996: U.S. Geological Survey Open-File Report 97-179, 1 sheet.

Metz, P.A., Mattie, J.A., Torres, A.E., and Corral, M.A., 1996, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 1997: U.S. Geological Survey Open File Report 97-643, 1 sheet.

Southwest Florida Water Management District, 1997, Summary of hydrologic conditions, September 1997, 57 p.

**SUMMARY OF GROUND-WATER CONDITIONS**

Annual and seasonal fluctuations of water levels for selected wells are shown by hydrographs in figure 1. Water levels are relatively stable from year-to-year and season-to-season in areas where the aquifer is generally unconfined and pumping is relatively small (hydrograph 1). Water levels also are relatively stable in areas where the confining unit is variable (hydrograph 2). In the southern part of the study area where the confining unit is present and pumping is relatively large, hydrographs 3, 4, and 5, show much larger year-to-year fluctuations. Maximum daily water levels for selected wells from September 1996 through September 1997 are shown in figure 2.

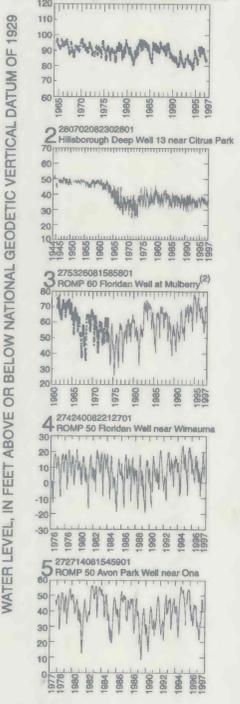


Figure 1. Annual and seasonal fluctuations of water levels for selected wells. (Gaps indicate missing data)

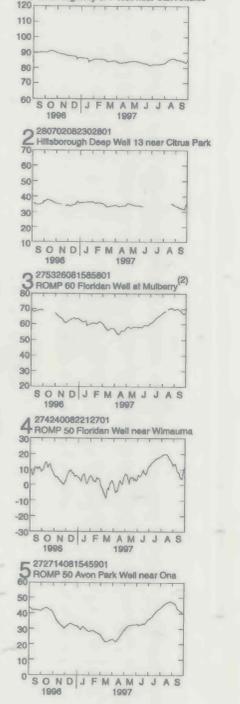


Figure 2. Maximum daily water levels for selected wells from September 1996 to September 1997. (Gaps indicate missing data)

**EXPLANATION**

- MUNICIPAL WELL FIELD
- POTENTIOMETRIC CONTOUR -- Shows altitude at which water would have stood in tightly cased wells. Contour intervals are 5 and 10 feet. National Geodetic Vertical Datum of 1929. Hachures indicate depressions. Dashed where approximately located.
- BOUNDARY OF SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
- OBSERVATION WELLS -- Large number identifies hydrograph (figs. 1 and 2). Small number is altitude of water level in feet above or below National Geodetic Vertical Datum of 1929.
- SPRING -- Number (if shown) is the measured spring-pool altitude, in feet. The altitudes do not necessarily reflect the potentiometric surface at the spring pool.
- CITY OR TOWN

NOTE: The potentiometric contours are generalized to synoptically portray 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 may not conform exactly with the individual measurements of water level.



**POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER,  
WEST-CENTRAL FLORIDA, SEPTEMBER 1997**

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1998

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