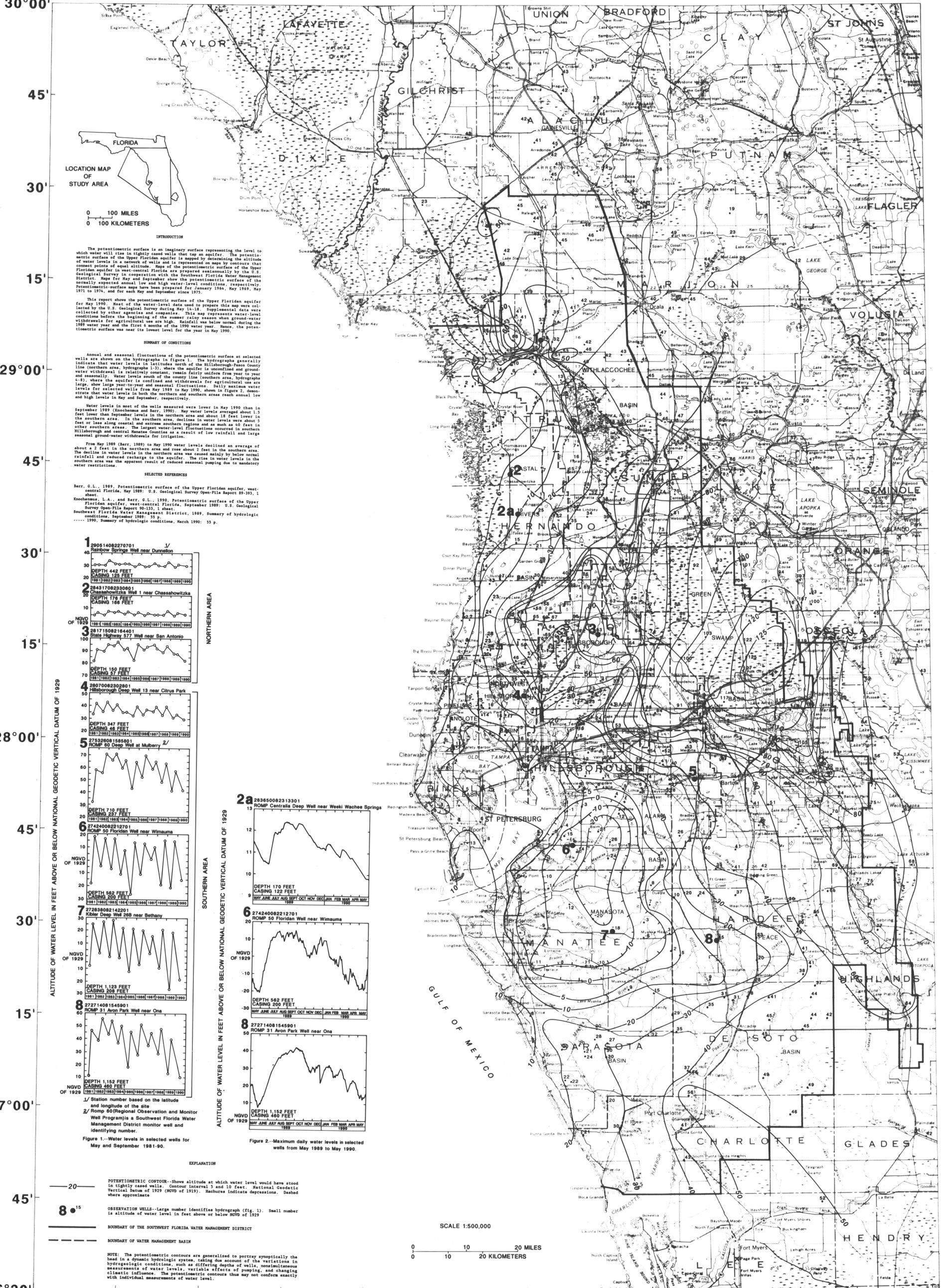


84°00' 45' 30' 15' 83°00' 45' 30' 15' 82°00' 45' 30' 81°15'



**INTRODUCTION**

The potentiometric surface is an imaginary surface representing the level to which water will rise in tightly cased wells that tap an 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 contour lines that connect points of equal altitude. Maps of the potentiometric surface of the Upper Floridan aquifer in west-central Florida are prepared seasonally 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 May 1990. Most of the water-level data used to prepare this map were collected by the U.S. Geological Survey during May 1989. Supplemental data were collected by other agencies and companies. This map represents water-level conditions before the beginning of the summer rainy season when ground-water withdrawals for agricultural use are high. Rainfall was below normal during the 1989 water year and the first 6 months of the 1990 water year. Hence, the potentiometric surface was near its lowest level for the year in May 1990.

**SUMMARY OF CONDITIONS**

Annual and seasonal fluctuations of the potentiometric surface at selected wells are shown on the hydrographs in figure 1. The hydrographs generally indicate that water levels in the northern area of the Hillsborough-Pasco County water withdrawal, in relatively confined and unconfined and ground-water aquifers, respectively, are relatively uniform from year to year and seasonally. Water levels south of the county line (southern area, hydrographs 6-8), where the aquifer is confined and withdrawals for agricultural use are large, show large year-to-year and seasonal fluctuations. Daily maximum water levels for selected wells from May 1989 to May 1990, shown in figure 2, demonstrate that water levels in both the northern and southern areas reach annual low and high levels in May and September, respectively.

Water levels in most of the wells measured were lower in May 1990 than in September 1989 (Knochenmus and Barr, 1990). May water levels averaged about 1.3 feet lower than September levels in the northern area and about 18 feet lower in the southern area. In the southern area, declines in water levels were about 2 feet or less along coastal and extreme southern regions and as much as 40 feet in other southern areas. The largest water-level fluctuations occurred in southern Hillsborough and central Manatee Counties as a result of low rainfall and large seasonal ground-water withdrawals for irrigation.

From May 1989 (Barr, 1989) to May 1990 water levels declined an average of about 2 feet in the northern area and rose about 2 feet in the southern area. The decline in water levels in the northern area was caused mainly by below normal rainfall and reduced recharge to the aquifer. The rise in water levels in the southern area was the apparent result of reduced seasonal pumping due to mandatory water restrictions.

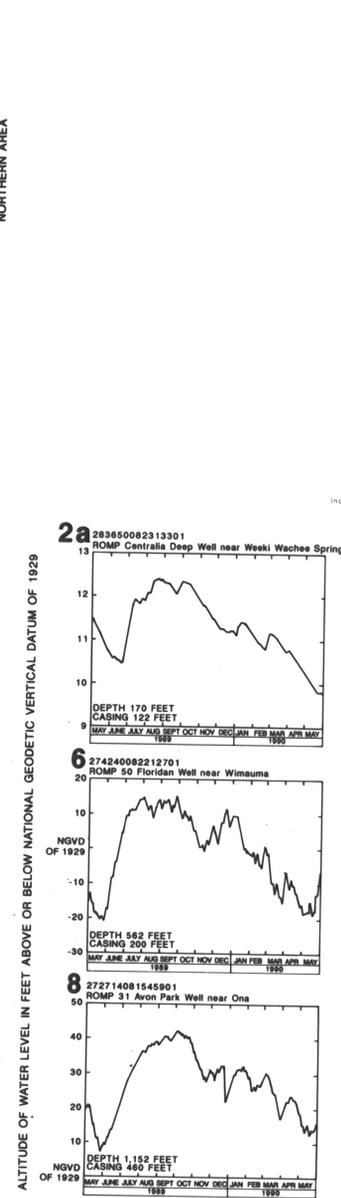
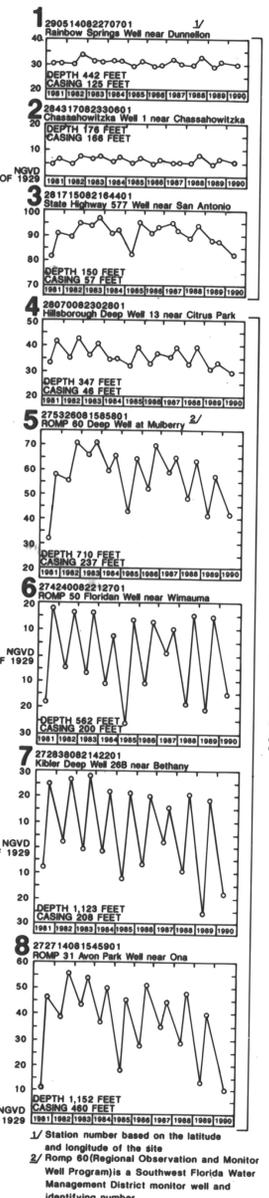
**SELECTED REFERENCES**

Barr, G.L., 1989. Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 1989. U.S. Geological Survey Open-File Report 89-393, 1 sheet.

Knochenmus, L.A., and Barr, G.L., 1990. Potentiometric surface of the Upper Floridan aquifer, west-central Florida, September 1989. U.S. Geological Survey Open-File Report 90-133, 1 sheet.

Southwest Florida Water Management District, 1989. Summary of hydrologic conditions, September 1989. 35 p.

..... 1990. Summary of hydrologic conditions, March 1990. 55 p.



**EXPLANATION**

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). Dashed lines indicate depressions. Dashed where approximate.

OBSERVATION WELLS—Large number 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 systematically the head in a dynamic hydrologic system, taking due account of the variations in hydrogeologic conditions, such as differing depths of wells, nonuniform measurements of water levels, variable effects of pumping, and changing with individual measurements of water level.

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA, MAY 1990