

**HYDROLOGIC CONDITIONS IN WEST-CENTRAL FLORIDA**

The Floridan aquifer system consists of the Upper and Lower Floridan aquifers separated by the middle confining unit. The middle confining unit and the Lower Floridan aquifer in west-central Florida generally contain highly mineralized water. The water-bearing units containing freshwater are herein referred to as the Upper Floridan aquifer. The Upper Floridan aquifer is the principal source of water in the Southwest Florida Water Management District and is used for major public supply, domestic use, irrigation, and brackish water desalination in coastal communities (Southwest Florida Water Management District, 2000).

This map report shows the potentiometric surface of the Upper Floridan aquifer measured in September 2006. The potentiometric surface is an imaginary surface connecting points of equal altitude to which water will rise in tightly cased wells that tap a confined aquifer system (Lohman, 1979). This map represents water-level conditions near the end of the wet season, when ground-water levels usually are at an annual high and withdrawals for agricultural use typically are low. The cumulative average rainfall of 46.06 inches for west-central Florida (from October 2005 through September 2006) was 6.91 inches below the historical cumulative average of 52.97 inches (Southwest Florida Water Management District, 2006). Historical cumulative averages are calculated from regional rainfall summary reports (1915 to most recent complete calendar year) and are updated monthly by the Southwest Florida Water Management District.

This report, prepared by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District, is part of a semi-annual series of Upper Floridan aquifer potentiometric-surface maps for west-central Florida. Potentiometric-surface maps have been prepared for January 1964, May 1969, May 1971, May 1973, May 1974, and for each May and September since 1975. Water-level data are collected in May and September each year to show the approximate annual low and high water-level conditions, respectively. Most of the water-level data for this map were collected by the U.S. Geological Survey during September 18-22, 2006. Supplemental water-level data were collected by other agencies and companies. A corresponding potentiometric-surface map was prepared for areas east and north of the Southwest Florida Water Management District boundary by the U.S. Geological Survey office in Orlando, Florida (Kinnaman, 2007). Most water-level measurements were made during a 5-day period; therefore, measurements do not represent a "snapshot" of conditions at a specific time, nor do they necessarily coincide with the seasonal high water-level condition.

**WATER-LEVEL CHANGES**

Water levels in about 56 percent of the wells measured in September 2006 were lower than the September 2005 water levels (Ortiz, 2006). Data from 401 wells indicate the September 2006 water levels ranged from about 15 feet below to 20 feet above the September 2005 water levels (fig. 1). Significant water-level declines occurred in north-central Pasco County, south-central Hernando County, northeast Hernando County, and east-central Sumter County. The largest water-level rises occurred in southern Hillsborough County, northern Sarasota County, and throughout Manatee County (fig. 1).

Water levels in about 73 percent of the wells measured in September 2006 were higher than the May 2006 water levels (Ortiz, 2007). Data from 410 wells indicate the September 2006 water levels ranged from 14 feet below to about 41 feet above the May 2006 water levels. The largest water level decline was in south-central Hernando County, and the largest rise in water levels was in northeast Manatee County.

**ACKNOWLEDGMENTS**

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**SELECTED REFERENCES**

Kinnaman, S.L., 2007, Potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity, Florida, September 2006. U.S. Geological Survey Open-File Report 2007-1215, 1 sheet.

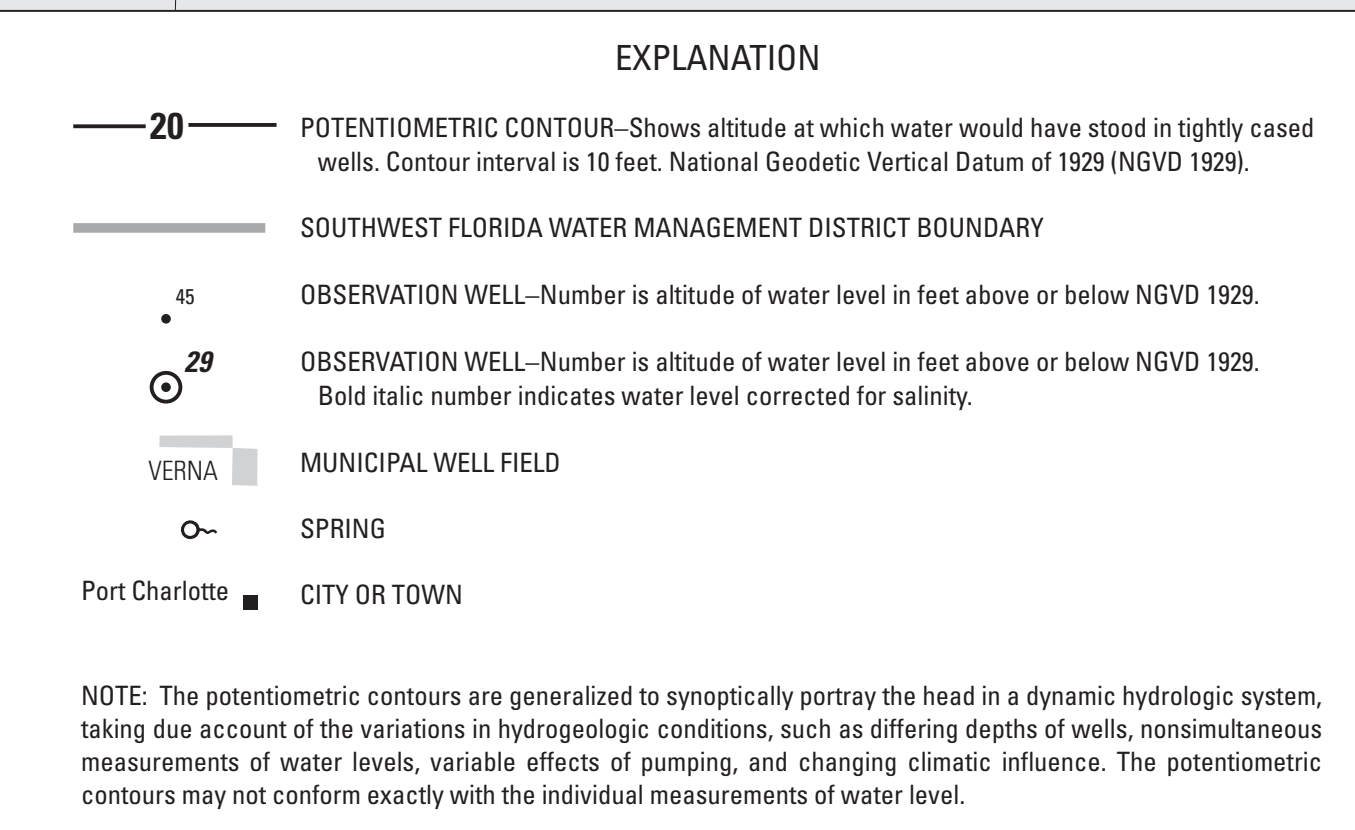
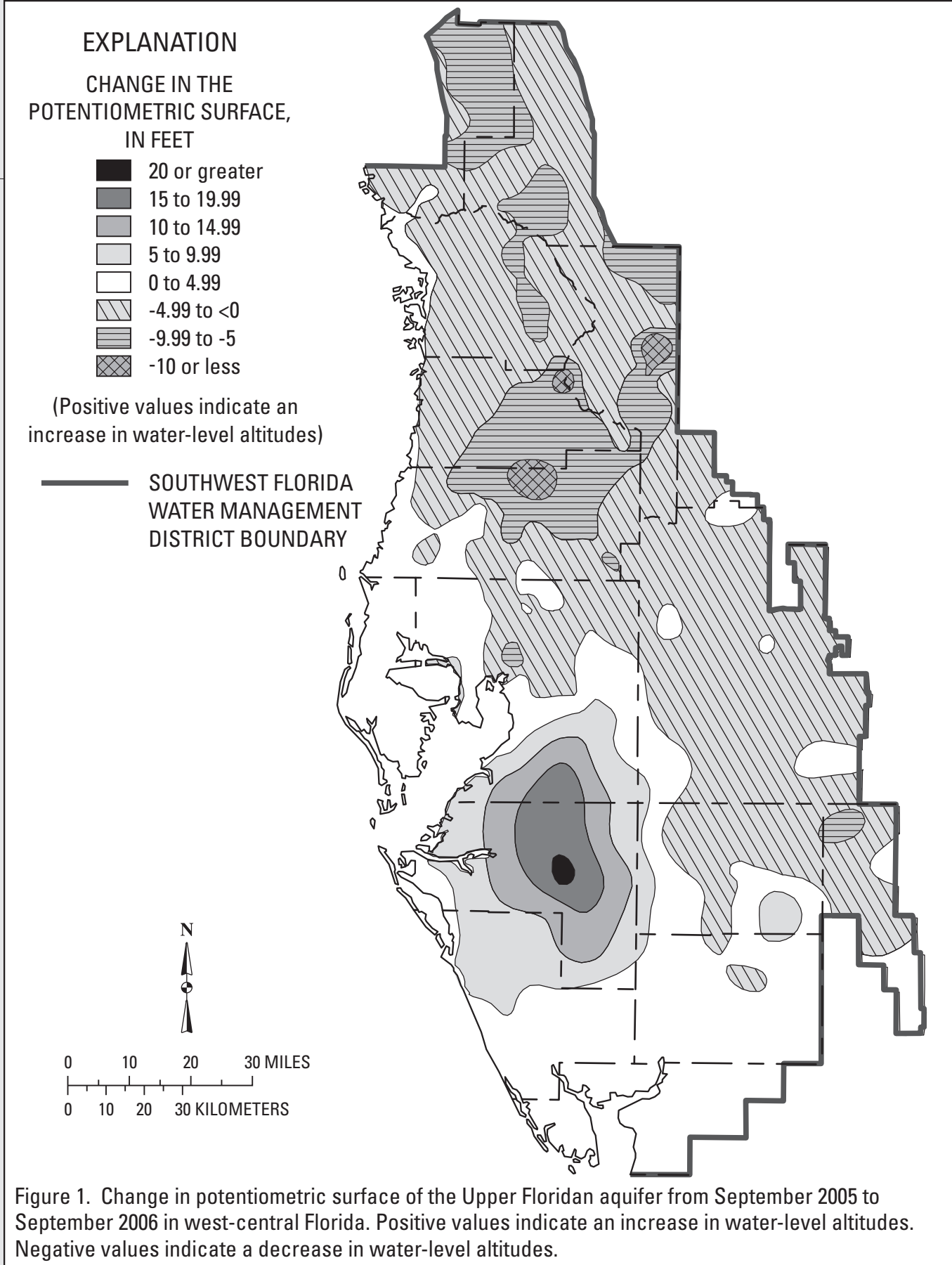
Lohman, S.W., 1979, Ground-water hydraulics. U.S. Geological Survey Professional Paper 78B, 72 p.

Ortiz, A.G., 2006, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, September 2005. U.S. Geological Survey Open-File Report 2006-1128, 1 sheet.

Ortiz, A.G., 2007, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 2006. U.S. Geological Survey Open-File Report 2007-1032, 1 sheet.

Southwest Florida Water Management District, 2000, Aquifer characteristics within the Southwest Florida Water Management District. Brooksville, 123 p.

Southwest Florida Water Management District, 2006, Hydrologic conditions for the month of September 2006. Brooksville, 81 p.



# POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA, SEPTEMBER 2006

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