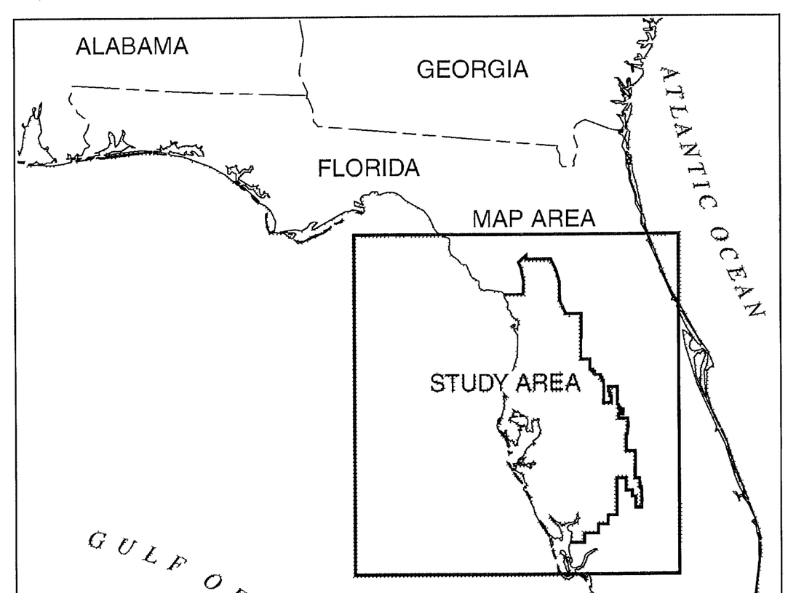
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Open-File Report 2005-1222



HYDROLOGIC CONDITIONS IN WEST-CENTRAL FLORIDA

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 in west-central Florida generally contain highly mineralized water The water-bearing units containing fresh water are herein referred to as the Upper Floridan aquifer The Upper Floridan aquifer is a highly 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 shows the potentiometric surface of the Upper Floridan aquifer measured in September 2004 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 62 62 inches for west-central Florida (from October 2003 through September 2004) was 9 38 inches above the historical cumulative average of 53 24 inches (Southwest Florida Water Management District, 2004) This increase in the average precipitation may be attributed to the active hurricane season for Florida in 2004 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 map reports 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 the period September 20-24, 2004 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 Altamonte Springs, Florida (Kinnaman, S L , 2005) 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 61 percent of the wells measured in September 2004 were higher than the September 2003 water levels (Blanchard and others, 2004a) Data from 412 wells indicate the September 2004 water levels ranged from about 9 feet below to about 8 feet above the September 2003 water levels (fig 1) The largest water-level declines occurred in north-central Citrus County, and eastern Sumter County The largest water-level rise was in north-central Pasco and southern Hernando Counties (fig 1)

Water levels in about 98 percent of the wells measured in September 2004 were higher than in May 2004 water levels (Blanchard and others, 2004b) Data from 413 wells indicate the September 2004 water levels ranged from about 3 feet below to 31 feet above the May 2004 water levels The largest water-level decline was in west-central Hernando County and the largest rise in water levels was in southwest Hardee County

ACKNOWLEDGMENTS

The authors thank the Southwest Florida Water Management District, Tampa Bay Water, and CF Industries for their assistance with the collection of data used to prepare this report

SELECTED REFERENCES

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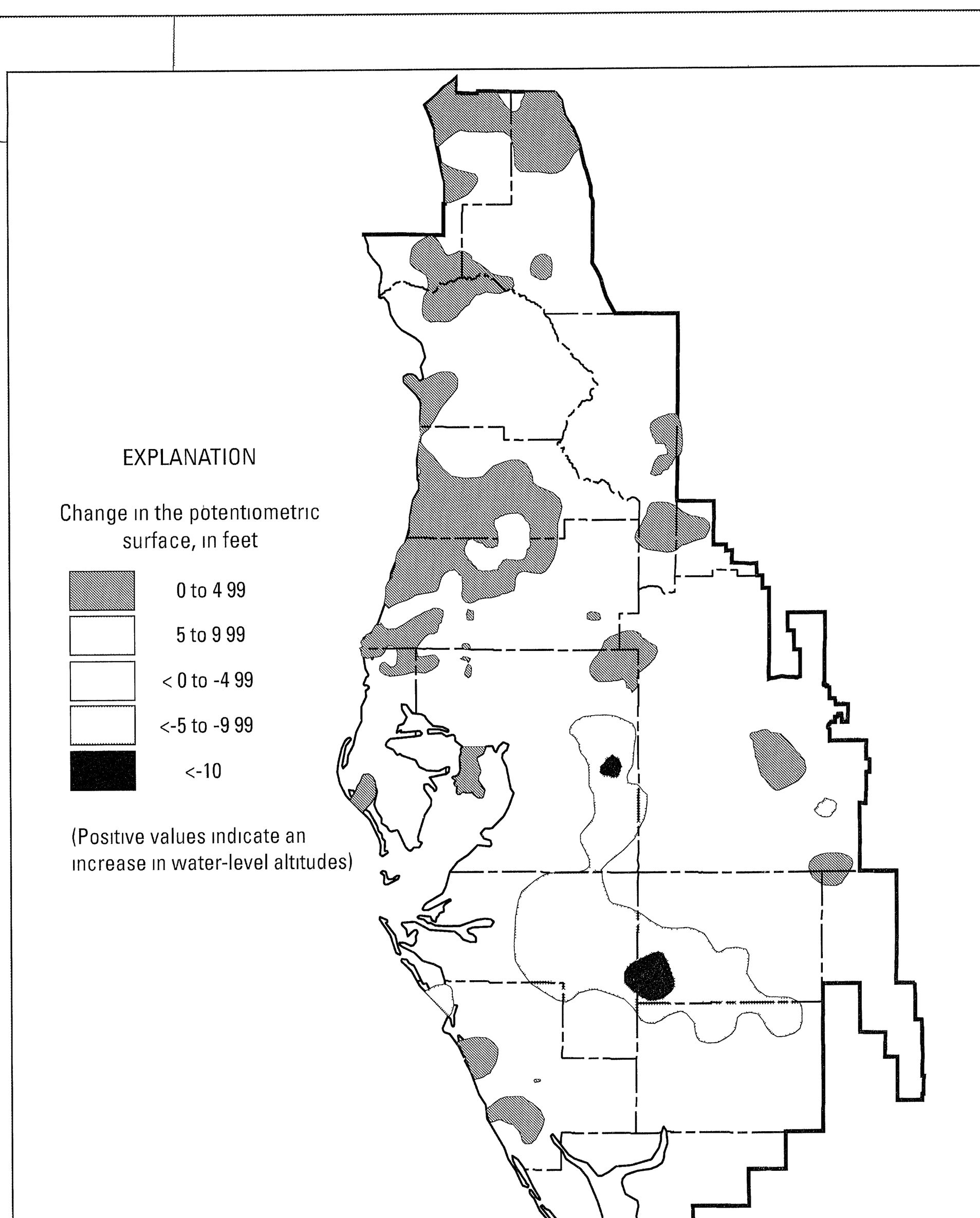
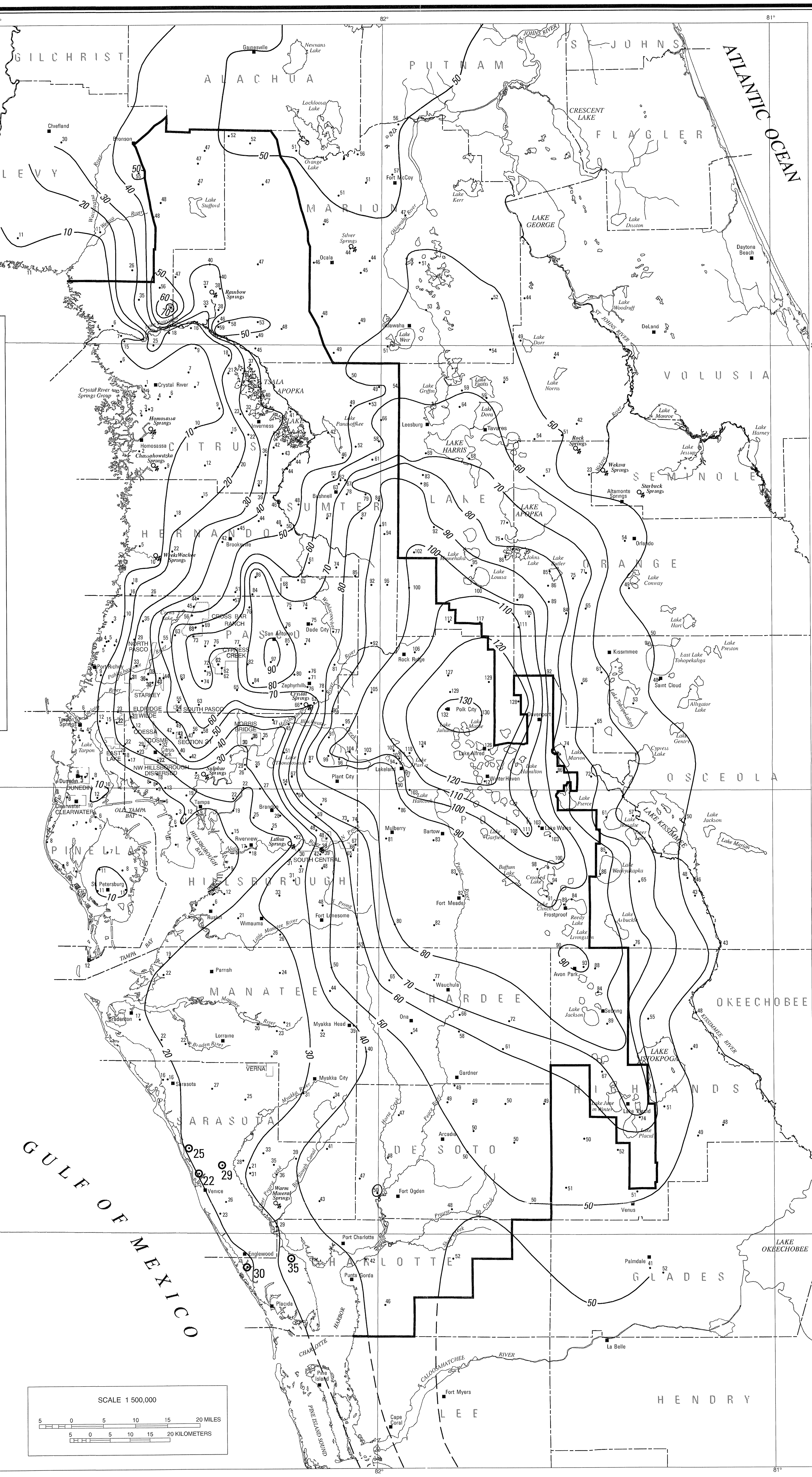


Figure 1 Change in potentiometric surface of the Upper Floridan aquifer from May 2003 to May 2004 in west-central Florida Positive values indicate an increase in water-level altitudes Negative Values indicate a decrease in water-level altitudes.



EXPLANATION

- MUNICIPAL WELL FIELD (VERNA)
- —20– – POTENTIOMETRIC CONTOUR - - Shows altitude at which water would have stood in tightly cased wells Contour interval is 10 feet National Geodetic Vertical Datum (NGVD) of 1929 Hachures indicate depressions Dashed where approximately located
- BOUNDARY OF SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
- 16 OBSERVATION WELL - - Number is altitude of water level in feet above or below NGVD of 1929
- 28 OBSERVATION WELL - - Number is altitude of water level in feet above or below NGVD of 1929 Italic number indicates water levels corrected for salinity
- SPRING
- 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

Base from Southwest Florida Water Management District digital data, 1992
Universal Transverse Mercator projection, Zone 17, Datum NAD27

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA, SEPTEMBER 2004

By R.A. Blanchard, and A.V. Seidenfeld

Copies of this map can be purchased from
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