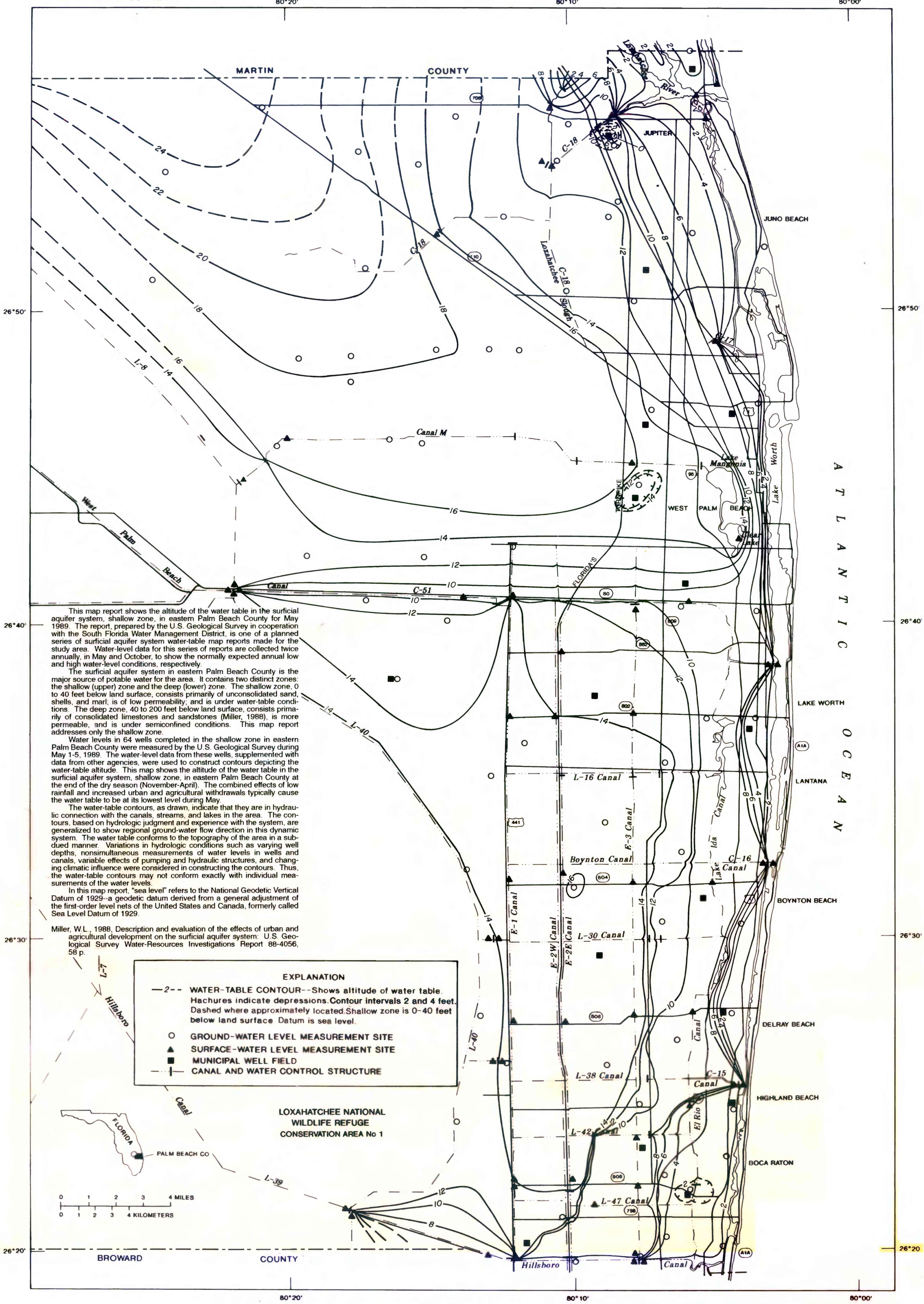
U. S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

OPEN-FILE REPORT 92-86



This map report shows the altitude of the water table in the surficial aquifer system, shallow zone, in eastern Palm Beach County for May 1989. The report, prepared by the U.S. Geological Survey in cooperation with the South Florida Water Management District, is one of a planned series of surficial aquifer system water-table map reports made for the study area. Water-level data for this series of reports are collected twice annually, in May and October, to show the normally expected annual low and high water-level conditions, respectively.

The surficial aquifer system in eastern Palm Beach County is the major source of potable water for the area. It contains two distinct zones: the shallow (upper) zone and the deep (lower) zone. The shallow zone, 0 to 40 feet below land surface, consists primarily of unconsolidated sand, shells, and marl; is of low permeability; and is under water-table conditions. The deep zone, 40 to 200 feet below land surface, consists primarily of consolidated limestones and sandstones (Miller, 1988), is more permeable, and is under semiconfined conditions. This map report addresses only the shallow zone.

Water levels in 64 wells completed in the shallow zone in eastern Palm Beach County were measured by the U.S. Geological Survey during May 1-5, 1989. The water-level data from these wells, supplemented with data from other agencies, were used to construct contours depicting the water-table altitude. This map shows the altitude of the water table in the surficial aquifer system, shallow zone, in eastern Palm Beach County at the end of the dry season (November-April). The combined effects of low rainfall and increased urban and agricultural withdrawals typically cause the water table to be at its lowest level during May.

The water-table contours, as drawn, indicate that they are in hydraulic connection with the canals, streams, and lakes in the area. The contours, based on hydrologic judgment and experience with the system, are generalized to show regional ground-water flow direction in this dynamic system. The water table conforms to the topography of the area in a subdued manner. Variations in hydrologic conditions such as varying well depths, nonsimultaneous measurements of water levels in wells and canals, variable effects of pumping and hydraulic structures, and changing climatic influence were considered in constructing the contours. Thus, the water-table contours may not conform exactly with individual measurements of the water levels.

In this map report, "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Miller, W.L., 1988, Description and evaluation of the effects of urban and agricultural development on the surficial aquifer system: U.S. Geological Survey Water-Resources Investigations Report 88-4056, 58 p.

EXPLANATION

- —2— WATER-TABLE CONTOUR--Shows altitude of water table. Hachures indicate depressions. Contour intervals 2 and 4 feet. Dashed where approximately located. Shallow zone is 0-40 feet below land surface. Datum is sea level.
- GROUND-WATER LEVEL MEASUREMENT SITE
- SURFACE-WATER LEVEL MEASUREMENT SITE
- MUNICIPAL WELL FIELD
- CANAL AND WATER CONTROL STRUCTURE

ALTITUDE OF THE WATER TABLE IN THE SURFICIAL AQUIFER SYSTEM, SHALLOW ZONE, IN EASTERN PALM BEACH COUNTY, FLORIDA, MAY 1-5, 1989

by Richard L.Kane

1992

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