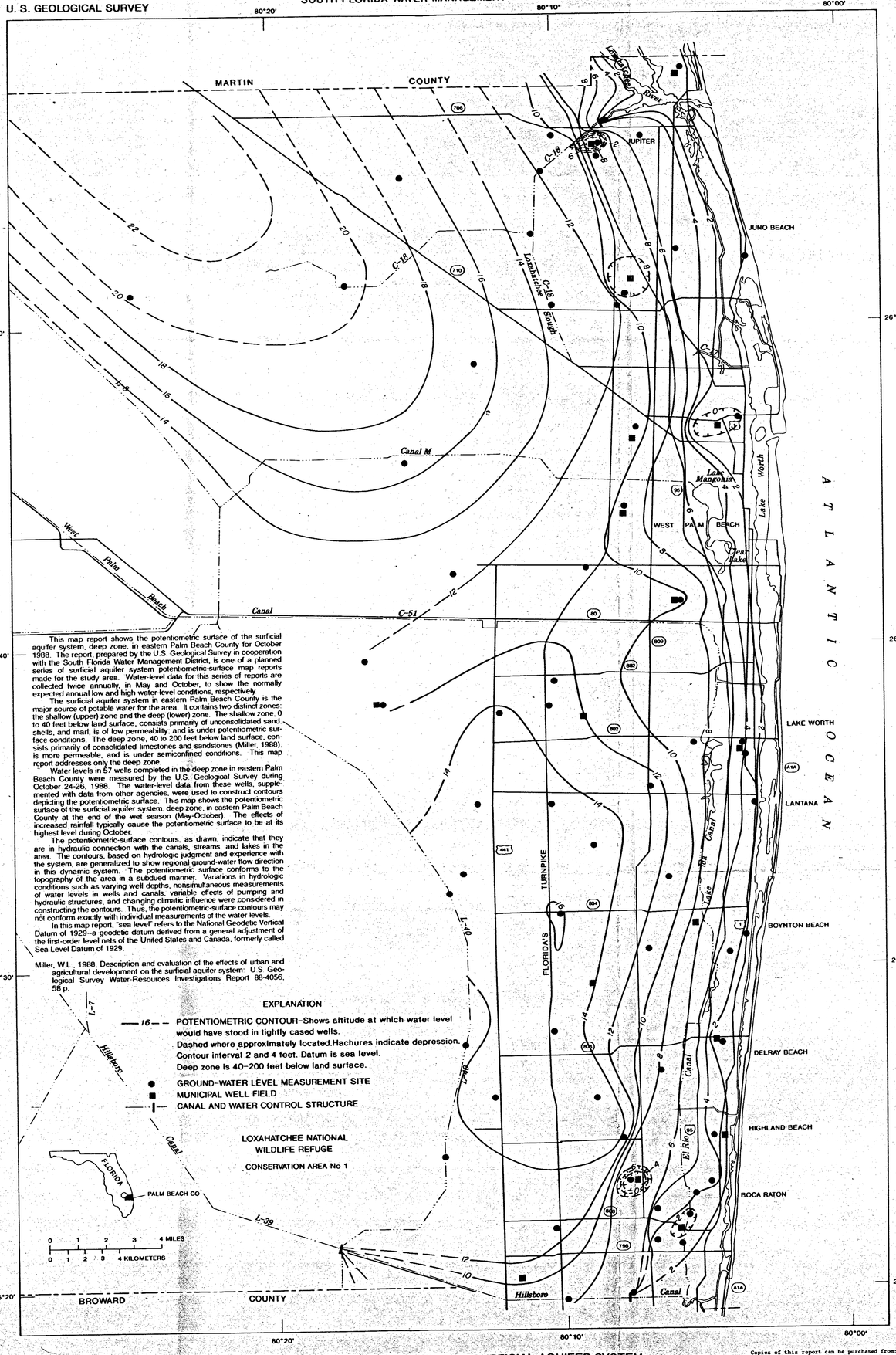
U. S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

OPEN-FILE REPORT 92-103



This map report shows the potentiometric surface of the surficial aquifer system, deep zone, in eastern Palm Beach County for October 1988. 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 potentiometric-surface map reports made for the study area. Water-level data for the 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 potentiometric surface 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 deep zone.

Water levels in 57 wells completed in the deep zone in eastern Palm Beach County were measured by the U.S. Geological Survey during October 24-26, 1988. The water-level data from these wells, supplemented with data from other agencies, were used to construct contours depicting the potentiometric surface. This map shows the potentiometric surface of the surficial aquifer system, deep zone, in eastern Palm Beach County at the end of the wet season (May-October). The effects of increased rainfall typically cause the potentiometric surface to be at its highest level during October.

The potentiometric-surface 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 potentiometric surface 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 potentiometric-surface 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

—16— POTENTIOMETRIC CONTOUR--Shows altitude at which water level would have stood in tightly cased wells. Dashed where approximately located. Hachures indicate depression. Contour interval 2 and 4 feet. Datum is sea level. Deep zone is 40-200 feet below land surface.

● GROUND-WATER LEVEL MEASUREMENT SITE

■ MUNICIPAL WELL FIELD

—|— CANAL AND WATER CONTROL STRUCTURE

LOXAHATCHEE NATIONAL WILDLIFE REFUGE CONSERVATION AREA No 1

POTENTIOMETRIC SURFACE OF THE SURFICIAL AQUIFER SYSTEM, DEEP ZONE, IN EASTERN PALM BEACH COUNTY, FLORIDA, OCTOBER 24-26, 1988

by Richard L.Kane
1992

Copies of this report can be purchased from:
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ATTACHMENT 4