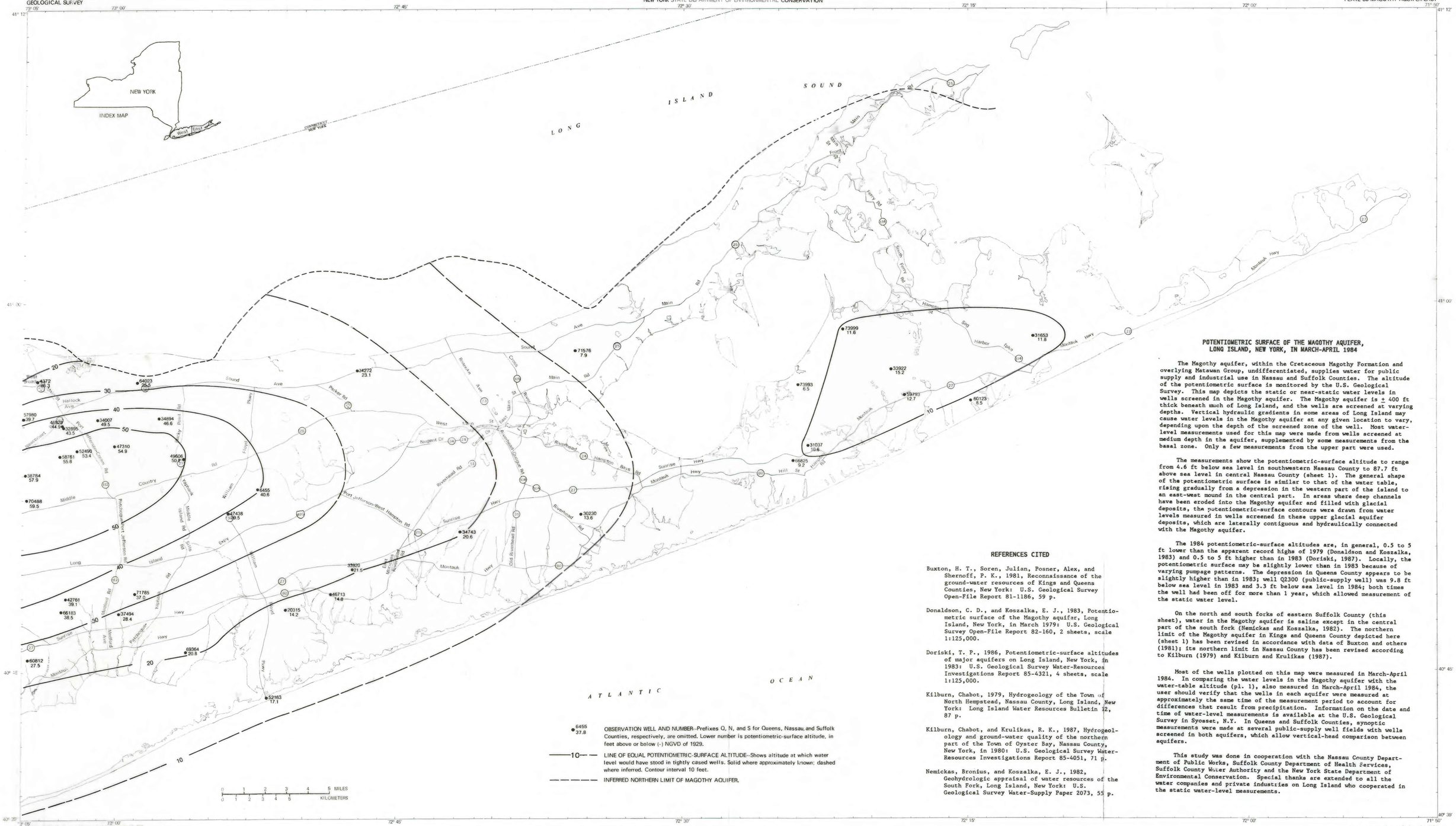
PREPARED IN COOPERATION WITH THE
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
SUFFOLK COUNTY WATER AUTHORITY
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 86-4189
PLATE 3B-MAGOTHY AQUIFER-EAST



Base from U.S. Geological Survey 1:62,500 and 1:24,000 quadrangles. And N.Y.S. Department of Transportation, 1:24,000 quadrangles.

Hydrology by Thomas P. Doriski, 1984

POTENTIOMETRIC SURFACE OF THE MAGOTHY AQUIFER, LONG ISLAND, NEW YORK, MARCH-APRIL 1984

●6455 37.8 — OBSERVATION WELL AND NUMBER--Prefixes Q, N, and S for Queens, Nassau, and Suffolk Counties, respectively, are omitted. Lower number is potentiometric-surface altitude, in feet above or below (-) NGVD of 1929.

——10—— LINE OF EQUAL POTENTIOMETRIC-SURFACE ALTITUDE--Shows altitude at which water level would have stood in tightly cased wells. Solid where approximately known; dashed where inferred. Contour interval 10 feet.

— — — — INFERRED NORTHERN LIMIT OF MAGOTHY AQUIFER.

POTENTIOMETRIC SURFACE OF THE MAGOTHY AQUIFER, LONG ISLAND, NEW YORK, IN MARCH-APRIL 1984

The Magothy aquifer, within the Cretaceous Magothy Formation and overlying Matawan Group, undifferentiated, supplies water for public supply and industrial use in Nassau and Suffolk Counties. The altitude of the potentiometric surface is monitored by the U.S. Geological Survey. This map depicts the static or near-static water levels in wells screened in the Magothy aquifer. The Magothy aquifer is ± 400 ft thick beneath much of Long Island, and the wells are screened at varying depths. Vertical hydraulic gradients in some areas of Long Island may cause water levels in the Magothy aquifer at any given location to vary, depending upon the depth of the screened zone of the well. Most water-level measurements used for this map were made from wells screened at medium depth in the aquifer, supplemented by some measurements from the basal zone. Only a few measurements from the upper part were used.

The measurements show the potentiometric-surface altitude to range from 4.6 ft below sea level in southwestern Nassau County to 87.7 ft above sea level in central Nassau County (sheet 1). The general shape of the potentiometric surface is similar to that of the water table, rising gradually from a depression in the western part of the island to an east-west mound in the central part. In areas where deep channels have been eroded into the Magothy aquifer and filled with glacial deposits, the potentiometric-surface contours were drawn from water levels measured in wells screened in these upper glacial aquifer deposits, which are laterally contiguous and hydraulically connected with the Magothy aquifer.

The 1984 potentiometric-surface altitudes are, in general, 0.5 to 5 ft lower than the apparent record highs of 1979 (Donaldson and Koszalka, 1983) and 0.5 to 5 ft higher than in 1983 (Doriski, 1987). Locally, the potentiometric surface may be slightly lower than in 1983 because of varying pumpage patterns. The depression in Queens County appears to be slightly higher than in 1983; well Q2300 (public-supply well) was 9.8 ft below sea level in 1983 and 3.3 ft below sea level in 1984; both times the well had been off for more than 1 year, which allowed measurement of the static water level.

On the north and south forks of eastern Suffolk County (this sheet), water in the Magothy aquifer is saline except in the central part of the south fork (Nemickas and Koszalka, 1982). The northern limit of the Magothy aquifer in Kings and Queens County depicted here (sheet 1) has been revised in accordance with data of Buxton and others (1981); its northern limit in Nassau County has been revised according to Kilburn (1979) and Kilburn and Krulikas (1987).

Most of the wells plotted on this map were measured in March-April 1984. In comparing the water levels in the Magothy aquifer with the water-table altitude (pl. 1), also measured in March-April 1984, the user should verify that the wells in each aquifer were measured at approximately the same time of the measurement period to account for differences that result from precipitation. Information on the date and time of water-level measurements is available at the U.S. Geological Survey in Syosset, N.Y. In Queens and Suffolk Counties, synoptic measurements were made at several public-supply well fields with wells screened in both aquifers, which allow vertical-head comparison between aquifers.

This study was done in cooperation with the Nassau County Department of Public Works, Suffolk County Department of Health Services, Suffolk County Water Authority and the New York State Department of Environmental Conservation. Special thanks are extended to all the water companies and private industries on Long Island who cooperated in the static water-level measurements.

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