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

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NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
SUFFOLK COUNTY WATER AUTHORITY
TOWN OF EAST HAMPTON
TOWN OF NORTH HEMPSTEAD
TOWN OF SHELTER ISLAND
TOWN OF SOUTHAMPTON
AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY

SCIENTIFIC INVESTIGATIONS MAP 3066
Potentiometric surface in the Magothy and Jameco aquifers—SHEET 2 of 4

Monti, Jack, Jr., and Busciolano, Ronald, 2009,
Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, in March-April 2006

Magothy and Jameco Aquifers

The Magothy aquifer of upper Cretaceous age is the most extensive unit in Long Island's ground-water system. This aquifer underlies most of Long Island and the offshore waters except in parts of western and northern Kings and Queens Counties, northern Nassau County, and northwestern and northeastern Suffolk County, where it has been removed by erosion and glacial scour. The altitude of its upper surface ranges from more than 200 ft above NGVD 29 in parts of north-central Nassau County and west-central Suffolk County to more than 600 ft below NGVD 29 in north-central Suffolk County (Smolensky and others, 1989). Aquifer thickness ranges from zero in northern and western Kings and Queens Counties, northern Nassau County, and parts of northern Suffolk County to more than 1,000 ft in south-central Suffolk County (Soren and Simmons, 1987). The Magothy aquifer has become the principal source of water supply in Nassau and Suffolk Counties during the past 50 years as a result of contamination in the upper glacial aquifer.

This map depicts the non-pumping water levels in March-April 2006 in wells screened in the Magothy aquifer and the hydraulically connected Jameco aquifer (in parts of western Long Island). Most water-level measurements used to prepare this map were made in wells screened near the middle of the aquifer, supplemented by some measurements from the basal zone. Only a few measurements made in the upper part were used. Because vertical hydraulic gradients in the Magothy aquifer can be large, measured potentiometric heads at a given location can vary depending on the depth of the well screen.

The general configuration of the potentiometric surface in the Magothy aquifer is similar to that of the water table, rising gradually from the western part of Long Island to form an east-west-trending mound in Nassau and western Suffolk Counties. The surface of the mound then gradually declines toward the eastern end of Long Island. 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 northern limit of the Magothy aquifer, the extent of the Jameco aquifer, and the aquifer in which each well is screened are indicated on this map.

The altitude of the potentiometric surface in the Magothy aquifer on Long Island in 2006 ranged from about 3 ft below NGVD 29 in extreme southwestern Nassau County to more than 70 ft above NGVD 29 in northeastern Nassau County. In Kings County, 3 measurements ranged from 0.69 to 3.23 ft; in Queens County, 7 measurements ranged from 3.80 to 26.35 ft; in Nassau County, 31 measurements ranged from -3.00 to 79.58 ft; and in Suffolk County, 61 measurements ranged from 5.86 to 77.59 ft above NGVD 29.

EXPLANATION

Inferred extent of the Magothy aquifer

Inferred extent of the Jameco aquifer

—20– – – **Line of equal potentiometric-surface altitude**—Shows altitude at which the water level would have stood in tightly cased wells, March-April 2006. Solid where approximately known; dashed where inferred. Contour interval 10 feet. Datum is NGVD 29

S 58922 ● 2.55 **Observation well**—Red circle indicates the well is screened in the Magothy aquifer; orange circle indicates the well is screened in the Jameco aquifer. Upper number is well number assigned by the New York State Department of Environmental Conservation; lower number is potentiometric-surface altitude, in feet above or below NGVD 29

Base from U.S. Geological Survey digital data 1:100,000 series
Lambert Conformal Conic projection
Standard parallels 40° 40' N and 41° 2' N, central meridian 74° 00' W
North American Datum of 1983

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Hydrology by Jack Monti, Jr., 2007
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