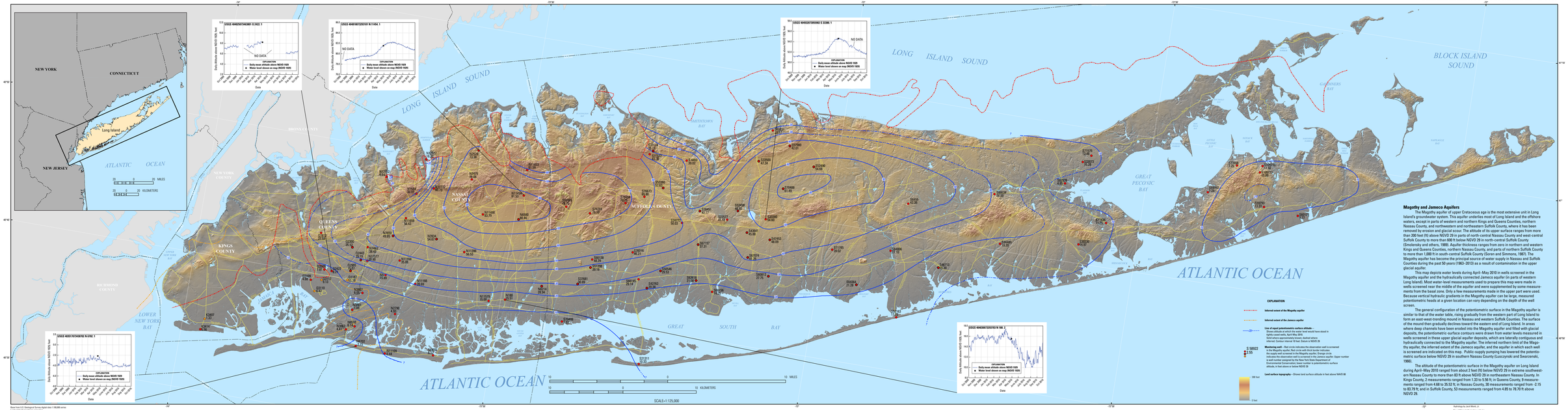
Prepared in cooperation with the
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
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TOWN OF NORTH HEMPSTEAD
TOWN OF SMITHTOWN
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U.S. GEOLOGICAL SURVEY

SCIENTIFIC INVESTIGATIONS MAP 3270
Potentiometric surface in the Magothy and Jameco aquifers—SHEET 2 of 4
Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, April–May 2010



Base from U.S. Geological Survey digital data 1:100,000 series
Universal Transverse Mercator projection
Zone 18 (between 78° and 72° W.), central meridian 74° 30' W.
North American Datum of 1983

Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, April–May 2010

By
Jack Monti, Jr., Michael Como, and Ronald Busciolano

2013

Magothy and Jameco Aquifers

The Magothy aquifer of upper Cretaceous age is the most extensive unit in Long Island's groundwater 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 feet (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 (1963–2012) as a result of contamination in the upper glacial aquifer.

This map depicts water levels during April–May 2010 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 and were 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 to the Magothy aquifer. The inferred northern limit of the Magothy aquifer, the inferred extent of the Jameco aquifer, and the aquifer in which each well is screened are indicated on this map. Public-supply pumping has lowered the potentiometric surface below NGVD 29 in southern Nassau County (Luscynski and Swarzenski, 1966).

The altitude of the potentiometric surface in the Magothy aquifer on Long Island during April–May 2010 ranged from about 2 feet (ft) below NGVD 29 in extreme southwestern Nassau County to more than 83 ft above NGVD 29 in northeastern Nassau County. In Kings County, 2 measurements ranged from 1.33 to 5.56 ft; in Queens County, 9 measurements ranged from 4.66 to 35.52 ft; in Nassau County, 30 measurements ranged from -2.15 to 83.79 ft; and in Suffolk County, 53 measurements ranged from 4.85 to 78.70 ft above NGVD 29.

Publishing by Jack Monti, Jr.
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