



INTRODUCTION

Protection of New York State's aquifers has become an increasingly important issue among water-resource managers at all levels of State and municipal government. Aquifer delineation is necessary as an initial phase in the effective management of the State's ground-water resources.

Many of the State's most heavily used aquifers consist of sand and gravel deposits. In 1985, a comprehensive ground-water-protection plan issued by the New York State Department of Environmental Conservation formally defined the need to delineate the unconsolidated aquifers throughout the State.

Purpose and Scope

As part of an effort to delineate all major unconsolidated aquifers in New York the U.S. Geological Survey and the New York State Department of Environmental Conservation, in 1985, began a cooperative study to compile a ground-water-availability map that would complete the reconnaissance mapping of the mid-Hudson River basin at a scale of 1:250,000. This map delineates the principal unconsolidated aquifers in the mid-Hudson River basin area and the estimated potential yield of properly constructed wells completed in these aquifers.

Previous Studies

The U.S. Geological Survey completed several studies dealing with the hydrology of individual counties in the mid-Hudson River basin area from the mid-1940's to the late 1950's; it also published a series of basinwide water-resource appraisals in the mid-1960's and early 1970's that incorporated data from the previous county studies, along with updated geohydrologic data from each basin. These are cited in the list of references below.

DATA INTERPRETATION

The interpretation of the extent of aquifers and of the potential well yields from these aquifers is based on data from the above-mentioned county reports, site-specific geohydrologic reports by consultants, preliminary surficial geologic maps prepared by the New York State Geological Survey, the U.S. Geological Survey Ground-Water Site Inventory (GWSI) computer data base, and unpublished geologic and hydrologic reports by the U.S. Geological Survey.

Aquifer Delineation

The unconsolidated aquifers depicted on this map generally represent Pleistocene outwash, kame, and lake deposits consisting of sand and (or) gravel. Recent Holocene alluvium in the Hudson River valley and valleys of its larger tributaries is indicated as an aquifer where hydrologic and stratigraphic data were available. Areas covered by Pleistocene lake clay or till are not considered to be principal aquifers and are not represented as such, although they may be hydraulically connected to deposits considered to be principal aquifers. The locations of preglacial buried channels that contain known aquifers are shown because basal deposits at depth may contain significant amounts of water.

Potential Well Yield

Potential well yields from the aquifers were inferred from well-yield data and are categorized into three ranges--less than 10 gallons per minute; 10 to 100 gallons per minute; and more than 100 gallons per minute. These ranges correspond to common well yields for (1) domestic use, (2) small commercial, individual, and public water supplies, and (3) larger commercial and public water supplies, respectively. The yields given on the map are for properly constructed, 6-inch-diameter wells. However, wells drilled in these areas may yield more or less water, depending on a variety of factors, including well diameter, length of screened interval, degree of well development, and the type of material penetrated.

Areas from which no well-yield data were available are indicted to have a range of less than 10 gallons per minute, but wells drilled in these areas may exceed this rate, especially where the material consists of sand and gravel and is saturated or is near a surface-water source, such as a stream or lake, where induced infiltration can take place.

No yield range is given for preglacial buried channels, but large-diameter dug wells potentially can yield up to 10 gallons per minute; where these channels contain a sufficient amount of saturated material, yields to wells may exceed 100 gallons per minute.

SELECTED REFERENCES

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EXPLANATION

ESTIMATED POTENTIAL YIELD TO PROPERLY
CONSTRUCTED, 6-INCH DIAMETER WELL,
in gallons per minute

- 1 Less than 10
2 10-100
3 Greater than 100
BEDROCK AND (OR) TILL
BURIED PREGLACIAL CHANNEL,
approximate course
BASIN BOUNDARY

0 5 10 MILES
0 5 10 KILOMETERS
CONTOUR INTERVAL 100 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929