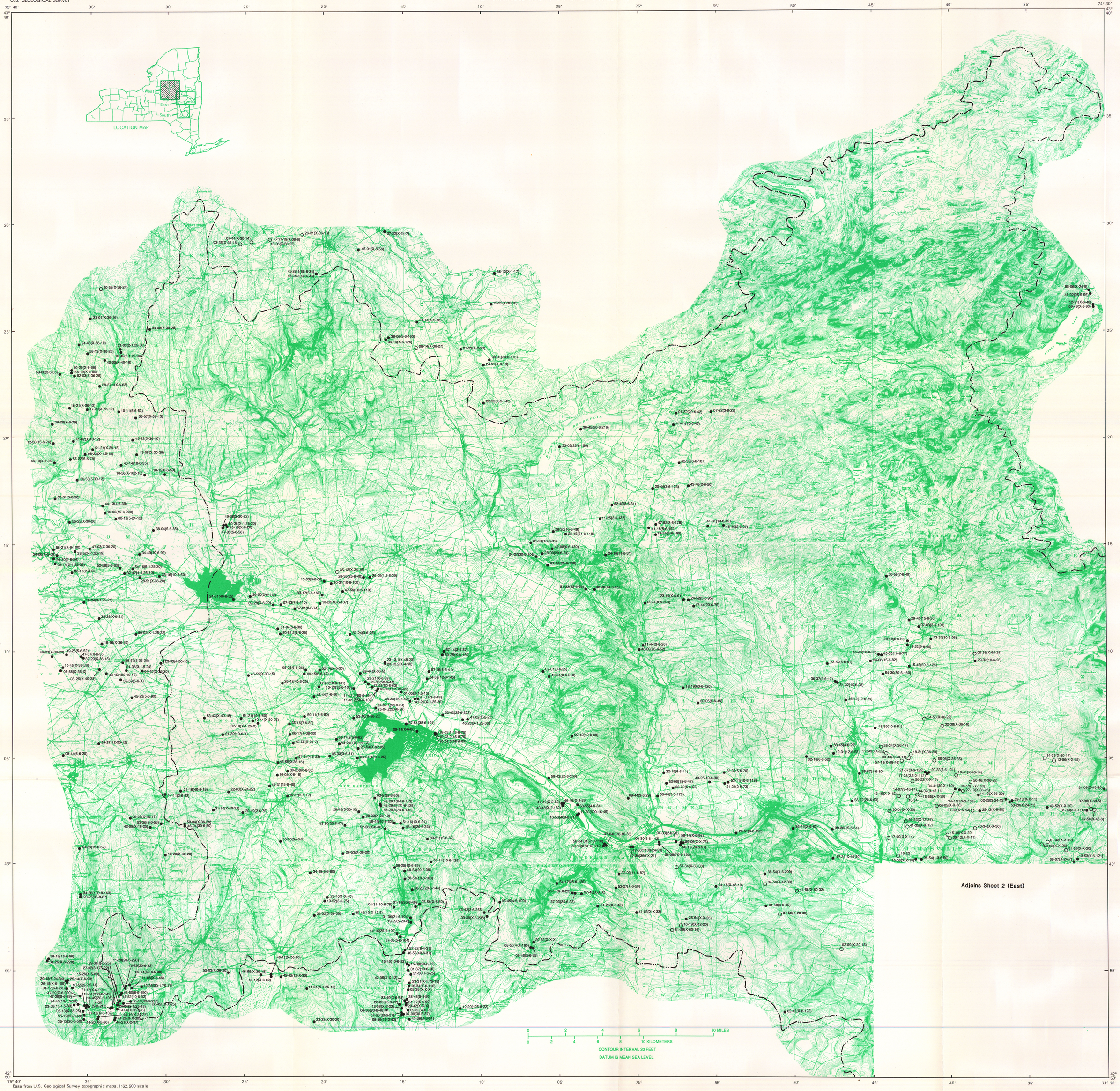
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
HERKIMER-ONEIDA COUNTIES PLANNING COMMISSION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WATER-RESOURCES INVESTIGATIONS REPORT 88-4091
SHEET 1.(WEST)--WELL LOCATIONS



Base from U.S. Geological Survey topographic maps, 1:62,500 scale

AVAILABILITY OF GROUND WATER FROM UNCONSOLIDATED DEPOSITS IN THE MOHAWK RIVER BASIN, NEW YORK

By
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Sheet 1.--Location, yield, diameter, and depth of wells, West

INTRODUCTION

Information on the availability of ground water from unconsolidated deposits has become increasingly important in water-resource planning and management. State, county, and local agencies charged with providing adequate water supplies and safeguarding New York's ground-water quality need to know the location of unconsolidated aquifers that have the potential for water supply. In addition, agencies charged with regulating and approving the siting of landfills, fuel-storage facilities, and other industrial facilities with a potential for contaminant leakage need to know the location and extent not only of aquifers that are currently used for public supply but also of potential aquifers that may be used to serve large populations in the future.

To meet this need, the U.S. Geological Survey, in cooperation with the New York State Department of Environmental Conservation, has undertaken an aquifer-mapping program in upstate New York to provide (1) detailed hydrogeologic mapping of selected aquifers that serve large population centers at a scale of 1:24,000, and (2) reconnaissance-type hydrogeologic information on each major river basin in New York at a scale of 1:125,000 or 1:250,000.

Purpose and Scope

The detailed mapping project was begun in 1980 in cooperation with the New York State Department of Health to define the hydrogeology of 18 selected heavily used aquifers in upstate New York (excluding Long Island). Of those 18 aquifers, 11 were mapped under cooperative agreement with the New York State Department of Health, and the results were published in 11 separate reports and summarized by Waller and Finch (1982). Three more aquifers were mapped by a consultant under contract with the U.S. Environmental Protection Agency (Cosner, 1984); and the remaining four are being studied and mapped under a continuation of this program, in cooperation with the New York State Department of Environmental Conservation.

The reconnaissance mapping of stratified-drift aquifers was begun in 1985 to produce maps that showed the availability of ground water in several major river basins in upstate New York at scales of 1:125,000 or 1:250,000.

This report shows the location of unconsolidated deposits within the Mohawk River basin at 1:125,000 scale and gives the estimated potential yield of wells that are completed in these deposits. The basin is divided into three parts--east, south, and west--each of which is represented by three maps that show, respectively, (1) location, reported yield, diameter, and depth of wells that terminate in unconsolidated deposits; (2) surfical geology; and (3) estimated yields of wells that tap unconsolidated deposits.

Previous Studies

The U.S. Geological Survey conducted reconnaissance ground-water assessments and delineated the stratified-drift aquifers in several major basins in the mid-1960's. These include the Susquehanna River basin (MacNish and Randall, 1982), the eastern Oswego River basin (Kantrowitz, 1970), the western Oswego River basin (Crain, 1974), the Erie-Niagara River basin (LaSala, 1968), the Champlain-Upper Hudson River basins (Giese and Hobba, 1970), and the Delaware River basin (Parker and others, 1964). Recently, the Geological Survey updated and completed three other reports showing ground-water availability in basins in which work was started in the mid-1960's--the Allegany River basin (Frimpter, 1986), Black River basin (Waller, 1986), and the Genesee River basin (Kammerer and Hobba, 1986). Similar maps of the St. Lawrence River basin (Bugliosi, 1988), mid-Hudson basin (Bugliosi, 1988), lower Hudson and Delaware River basins (Wolcott, 1988), together with this report (Mohawk River basin), complete the statewide reconnaissance-mapping effort.

Sources of Data

This report was compiled primarily from data collected during well inventories conducted by the U.S. Geological Survey during 1967-68 in the Mohawk River basin as part of a project to study the ground-water resources of the basin. The surficial geology of the basin (sheets 4,5,6) was compiled by Donald H. Cadwell of the New York State Geological Survey from published maps, field-reconnaissance notes, and unpublished surficial geologic maps at 1:24,000 and 1:62,500 scales on file at the office of the New York State Geological Survey in Albany, N.Y.

MOHAWK RIVER BASIN

The Mohawk River basin, in the east-central part of New York State, has a drainage area of approximately 3,456 square miles. The Mohawk River is the largest tributary to the Hudson River. Its headwaters are in southern Lewis County, where the East Branch Mohawk River begins and flows south 27 mi (miles) to Rome. From Rome, the Mohawk River flows 153 mi eastward to Cohoes, where it joins the Hudson River. The Mohawk River forms a major part of the New York State Barge Canal system, and parts of it are canalized and dredged to a minimum depth of 14 ft (feet). It flows through 20 locks between Rome and Cohoes and drops 406 ft in elevation over this distance. The major tributaries of the Mohawk are West Canada Creek, East Canada Creek, and Schoharie Creek. West Canada and East Canada Creeks both drain the southwestern slopes of the Adirondacks (sheet 1). Schoharie Creek drains the northern slopes of the Catskill Mountains and flows north to the Mohawk River at Tribes Hill (sheets 2,3). The Schoharie Creek basin occupies approximately 26 percent of the Mohawk River basin.

YIELD, DIAMETER, AND DEPTH OF WELLS

Sheets 1, 2, and 3 show the locations of wells and some test borings for which reported yield, diameter, and(or) depth data were available. Most of the data were collected during a well inventory of parts of the Mohawk River basin during 1967-68; other data, particularly those from the Schenectady-Rotterdam area, were collected during detailed studies of the aquifer system in that area by Simpson (1952), Winslow and others (1965), and Brown and others (1981). All well data are stored in the U.S. Geological Survey Ground Water Site Inventory data base or in files at the Geological Survey office at Albany, N.Y. All wells shown terminate in unconsolidated surficial deposits.

The wells shown here include shallow driven wells of as little as 1-1/4-inch diameter; drilled, cased wells ranging from 4 to 12 inches in diameter; and shallow dug wells having a diameter of several feet. Most wells are 6-inch-inside-diameter, drilled domestic wells, however. The data presented here serve as a guide to interpreting the estimated yield to wells from unconsolidated deposits (sheets 7, 8, 9) and to aid in determining the relative depth to and thickness of principal water-bearing zones within these deposits.

Most domestic wells that terminate in sand and gravel deposits within the basin are 6 or 8 inches in inside diameter and are not screened but rather finished with open-ended casing. Thus, the only area through which water can enter the well is through the bottom. Wells of this construction yield only a small fraction of the maximum amount of ground water that could be obtained from properly developed wells finished with screens at the same locations. Accordingly, the type of well construction, specifically the lack of well screens, is the factor that most commonly limits well yield from stratified-drift deposits.

Most of the large-capacity screened wells for municipal or industrial use that yield several hundred gallons per minute are completed in sand and gravel deposits within the Mohawk River valley and its tributaries. Because these large-yield wells commonly are designed to meet only the owner's needs, the reported yields may not represent the maximum yields obtainable if longer screens, larger diameters, greater depths, or larger pumps had been used.

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EXPLANATION

Wells shown here are identified by a four-digit hyphenated number representing the seconds of latitude and longitude. For example, a well with a latitude of 42°46'13" and a longitude of 73°58'18" is identified by the number 13-18 on the map. Wells that are so close as to have virtually the same latitude and longitude are differentiated by a sequence number, shown as a decimal point after the four-digit hyphenated number. For example, wells 11-16.1 and 11-16.2 both have the same latitude and longitude.

● 29-32(10-6-28) WELL--A drilled, driven, or dug well that terminates in stratified drift or ablation till (as described on sheets 4,5,6--surficial geology). Hyphenated number is well location, in seconds of latitude and longitude. First number in brackets is well yield, as reported by driller or owner, in gallons per minute; second number is inside well diameter, in inches; and last number is well depth below land surface, in feet. An X indicates missing data for one or more of these categories.

○ 09-36(X-60-28) WELL--A large-diameter dug well excavated in till, primarily for domestic use. First hyphenated number is well location, in seconds of latitude and longitude. First number in brackets is well yield, as reported by driller or owner, in gallons per minute; second number is well diameter, in inches; last number is well depth below land surface, in feet. An X indicates missing data for one or more of these categories.

—··— BASIN BOUNDARY--Indicates approximate location of the surface-water divide that separates the Mohawk River basin from adjacent river basins.