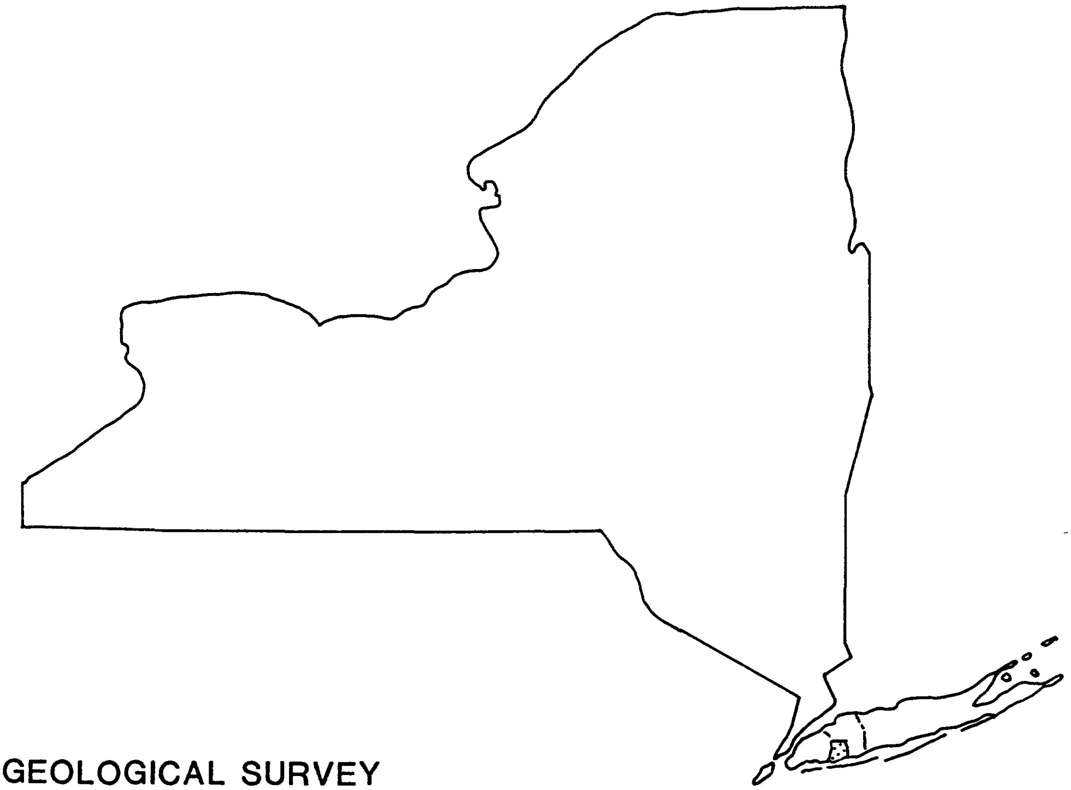
Hydrogeology of the Southwestern Part of the Town of Hempstead, Nassau County, New York



U.S. GEOLOGICAL SURVEY
Water-Resources Investigations
Report 85-4288

REVISED

Prepared in cooperation with the
NASSAU COUNTY DEPARTMENT OF
PUBLIC WORKS

HYDROGEOLOGY OF THE SOUTHWESTERN PART OF THE TOWN OF HEMPSTEAD, NASSAU COUNTY, NEW YORK

by Richard K. Krulikas

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NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS

Syosset, New York

Revised 1989

UNITED STATES DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

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CONVERSION FACTORS AND ABBREVIATIONS

The following conversion factors are given for readers who prefer to use metric (International System) units rather than the inch-pound units used in this report.

Multiply	by	To obtain
inch (in.)	25.40	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)

HYDROGEOLOGY OF THE SOUTHWESTERN PART OF THE TOWN OF HEMPSTEAD, NASSAU COUNTY, NEW YORK

By Richard K. Krulikas

ABSTRACT

The ground-water resources of the southwestern part of the Town of Hempstead, Nassau County, were investigated in 1984. The area studied encompasses 85 square miles, or 68 percent of the town's 125-square-mile area.

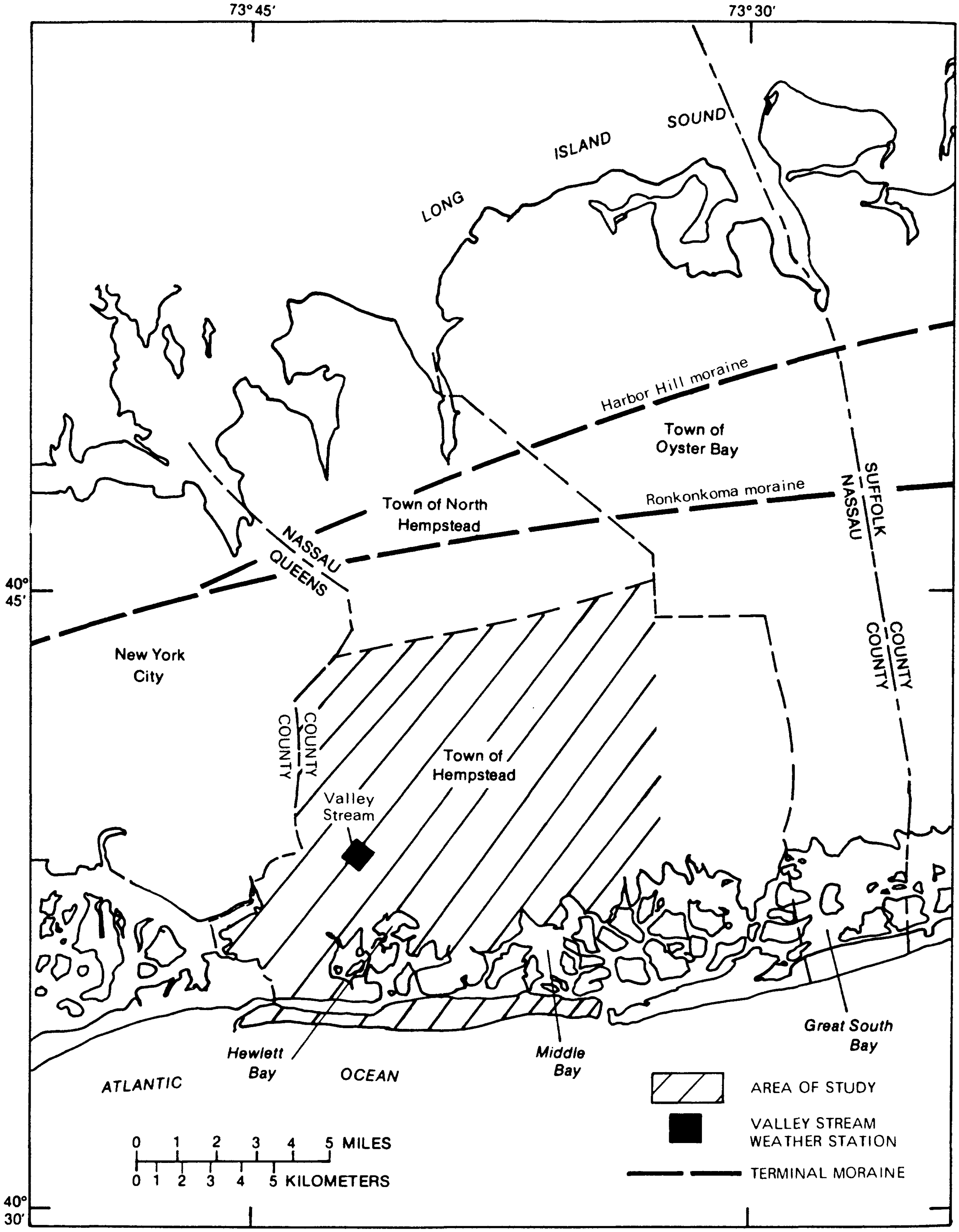
The ground-water reservoir underlying the area consists of deposits of unconsolidated gravel, sand, silt, and clay of Holocene, Pleistocene, and Late Cretaceous age that have been divided into eight geologic units. The maximum total thickness of the unconsolidated deposits is about 1,500 feet. Precipitation is the sole source of ground-water recharge in the area. The long-term average annual precipitation during 1927-83 was 42.62 inches, as recorded at the Valley Stream weather station.

The report presents 10 maps showing altitudes of the tops of the geologic units and the potentiometric surfaces of the three major aquifers. Also included are six geologic sections, four hydrographs, and several graphs presenting the data that were collected.

INTRODUCTION

The increasing use of ground water for public supply, industrial use, and commercial use within Nassau County has brought about a need for detailed knowledge of the hydrogeologic framework of the ground-water system. To facilitate proper development and management decisions for the conservation of the ground-water supply, which is the county's sole source of freshwater, the hydrogeologic characteristics of the aquifers must be thoroughly understood.

As part of a continuing cooperative study between the U.S. Geological Survey and the Nassau County Department of Public Works to document the hydrogeology of Nassau County, the Geological Survey in 1984 compiled data on the geologic framework of the southwestern part of the Town of Hempstead and the hydrogeologic units that form the ground-water reservoir in that area, to provide a basis for future hydrologic studies.



Base from U.S. Geological Survey, New York, 1960.

Figure 1.--Location of southwestern part of Town of Hempstead, Nassau County, N.Y.

Purpose and Scope

This report presents maps and geologic sections that summarize hydrologic and geologic data on the occurrence and movement of ground water in the area of investigation. Included are a water-table map of the upper glacial aquifer, potentiometric-surface maps of the the Magothy and Lloyd aquifers, several generalized structure-contour maps, and six geologic sections with geologic logs. Also included are precipitation graphs and hydrographs of selected wells.

Location and Physiographic Setting

The area studied lies between 73°35' and 73°46' west longitude and between 40°35' and 40°45' north latitude in the southwestern third of Nassau County (fig. 1). It contains approximately 85 mi^2, or 68 percent of the town's 125-mi^2 area. The area lies entirely on an outwash plain, which extends about 10 mi southward from near the Ronkonkoma and Harbor Hill terminal moraines to the south shore of Long Island. The inland area is suburban; the south-shore area is characterized by swamps and lagoons that border Hewlett and Middle Bays, which are contained by the south-shore barrier island (fig. 1). The beaches rise to as much as 20 ft above sea level and range from a few tenths of a mile to 1 mi wide.

Previous Investigations

The geology and ground-water resources of Long Island were described by Veatch and others (1906), Fuller (1914), and Suter and others (1949). These reports are islandwide in scope and contain information on the southwestern part of the Town of Hempstead. Detailed studies of the geology and hydrology of Nassau County were made more recently by Perlmutter and Geraghty (1963), Swarzenski (1963), Isbister (1966), and Ku and others (1975). The most recent water-table maps that include this area are those by Koszalka (1975) for 1974; Nakao and Erlichman (1978) for 1975, Donaldson and Koszalka (1982) for 1979, and Doriski (in press) for 1983.

Additional publications detailing the hydrology of the area are Cohen, Franke and McClymonds (1969), which discusses effects of the 1962-66 drought; and Donaldson and Koszalka (1982), which depicts the 1979 potentiometric surface of both the Magothy and Lloyd aquifers. Some of the streamflow data presented in this report have been published by the U.S. Geological Survey (1981, 1982, 1983).

Methods of Investigation

This report was prepared from information obtained through previous studies and from county and State agencies. All data are on file at the U.S. Geological Survey's Long Island office in Syosset, N.Y.

Data on well construction and geology were obtained from New York State Department of Environmental Conservation in Stony Brook. Water-level data that were used to compile the water-table map were provided by the Division of Sanitation and Water Supply of the Nassau County Department of Public Works;

data that were used to construct the potentiometric-surface maps of the Magothy and Lloyd aquifers were derived from field measurements made by the U.S. Geological Survey.

Acknowledgments

This report was prepared in cooperation with the Nassau County Department of Public Works. Special thanks are extended to Robert J. O'Reilly of the New York State Department of Environmental Conservation, and Ralph Denton of the Nassau County Department of Public Works, Water Supply Unit, for making records of wells and other essential data available.

HYDROGEOLOGY

Well locations are shown on plate 1A, and six geologic sections are shown on plate 6. All wells and test borings used in the sections are listed in table 2 (p. 6), which also gives land-surface altitude, well depth, and hydrogeologic contacts of formation penetrated. The geologic units that form the ground-water reservoir on Long Island and their stratigraphic relationships are summarized in table 1. The following paragraphs describe the composition, extent, and altitude of the units in order of youngest to oldest.

Upper Pleistocene and Holocene Deposits

The upper Pleistocene and Holocene (recent) deposits together form the upper glacial aquifer, which was the major source of public supply in this area before the 1960's. These deposits have a maximum thickness of about 180 ft and lie on top of the Gardiners Clay and, where the Gardiners Clay and Jameco Gravel are missing, on top of the Matawan Group-Magothy Formation. In other areas, the upper Pleistocene and Holocene deposits rest directly upon the Jameco or, as in the southern part of the study area, are separated into an upper and lower part by the "20-foot" clay. (See hydrogeologic sections on pl. 6.)

The upper deposits consist mainly of stratified beds of fine to coarse sand and of sand and gravel; thin beds of silt and clay are interbedded with coarse-grained material. The outwash that constitutes the bulk of the upper Pleistocene deposits is yellow and brown or, in some places, gray. The sand and gravel consist mainly of iron-stained quartz but include particles of biotite, chlorite, hornblende, and igneous and metamorphic rocks.

The Holocene deposits, which form a thin layer in the upper few feet, lie beneath the bays, in marshlands, on barrier beaches, and along streams. They are too thin to be differentiated in the geologic sections on plate 6.

"20-Foot" Clay

The "20-foot" clay is a marine deposit within the upper Pleistocene deposits near the south shore. The clay is lithologically similar to the underlying Gardiners Clay, with the same mineral assemblage and fossils. The

Table 1.--Stratigraphic and correlative hydrologic units underlying the southwestern part of the Town of Hempstead.

[Modified from Doriski and Wilde-Katz, 1983]

System	Series	Age	Stratigraphic Unit		Hydrostratigraphic Unit
QUATERNARY	Holocene	Postglacial	Holocene (recent) deposits		Upper glacial aquifer
	Pleistocene	Wisconsin (upper Pleistocene)	Upper Pleistocene deposits		
			"20-foot" clay		"20-foot" clay
			Upper Pleistocene deposits		Upper glacial aquifer
			unconformity		
		Sangamon	Gardiners Clay		Gardiners Clay
			unconformity		
		Pre-Sangamon	Jameco Gravel[1]		Jameco aquifer[1]
		Pre-Sangamon	Reworked Matawan-Magothy channel deposits		Upper glacial or Magothy aquifer
unconformity					
CRETACEOUS	Upper Cretaceous		Monmouth Group		Monmouth greensand
			unconformity		
			Matawan Group-Magothy Formation, undifferentiated		Magothy aquifer
			unconformity		
			Raritan Formation	Unnamed clay member	Raritan confining unit
				Lloyd Sand Member	Lloyd aquifer
unconformity					
Paleozoic (or) Precambrian			Bedrock		Relatively impermeable bedrock

[1]Present in Nassau County only

Table 2.--Depth, altitude, and geologic formations penetrated at selected wells and test holes in the southwestern part of the Town of Hempstead, Nassau County.

[Well locations are shown in plate 1A; dashes indicate unit not encountered]

Well no.	Latitude/Longitude[1]		Land-surface altitude (ft above level)	Well depth (ft below land surface)	Geologic unit penetrated and altitude of unit surface [feet above (+) or below (-) sea level] 20-foot Clay	Gardiners Clay	Jameco Gravel	Monmouth Group	Matawan Group Magothy Formation undifferentiated	Raritan Formation Clay member	Raritan Formation Lloyd Sand Member	Bedrock
10	404226	0734231.1	49	400	--	--	--	--	- 6	-351	--	--
47	403717	0733916.1	6	182	--	- 52	- 95	--	-130	--	--	--
54	403932	0733749.1	28	101	--	--	--	--	- 36	--	--	--
57	403913	0733717.1	11	150	-19	--	--	--	- 25	--	--	--
83	404306	0733713.1	62	1005	--	--	--	--	+ 2	-527	- 702	- 941
559	403712	0734331.1	25	150	-25	- 69	--	--	-104	--	--	--
1744	403922	0734017.1	20	77	-36	--	--	--	- 50	--	--	--
1927	403520	0733819.1	10	1471	-20	- 89	--	--	-121	--	-1052	-1460
2572	403716	0733842.1	5	100	--	- 48	--	--	- 92	--	--	--
2597	403532	0734034.1	6	1244	--	-108	--	--	-137	-790	- 928	--
3448	403518	0734151.1	7	1250	-47	- 89	--	--	-129	-722	-995	--
3605	404153	0734102.1	48	585	-17	--	--	--	- 44	-443	--	--
3636	404212	0733739.2	50	356	--	--	--	--	- 13	--	--	--
3668	404153	0733733.1	55	566	--	--	--	--	- 30	--	--	--
3734	403711	0734443.2	10	140	-16	--	--	--	-128	--	--	--
3865	403734	0733748.2	4	850	-28	--	--	--	- 56	-707	--	--
3866	403815	0734141.1	6	452	-22	- 85	-130	--	-180	--	--	--
4077	404323	0734138.1	76	538	--	--	--	--	- 39	-351	--	--
4120	404046	0734106.1	35	458	-25	--	--	--	- 40	--	--	--
4405	403515	0734305.1	10	1080	-30	- 79	-115	--	-149	-670	- 865	--
4512	404100	0734122.1	35	522	--	--	--	--	- 28	-466	--	--
4756	404206	0733452.1	61	908	--	--	--	--	- 8	-583	- 756	--
5076	404238	0734203.1	71	488	--	--	--	--	- 1	-398	--	--
5227	403531	0733533.1	10	1288	-29	- 53	--	--	- 87	-827	-1067	--
5233	403522	0733621.1	12	549	-28	- 49	--	--	- 78	--	--	--

5292	403805	0733453.1	5	92	-39	--	--	--	- 46	--	--	--
5486	404416	0733655.1	90	1025	--	--	--	--	+ 29	-472	- 628	--
5768	403520	0733738.2	5	850	--	- 68	--	--	-127	--	--	--
6450	403532	0734010.1	10	1331	--	--	--	--	- 97	-798	- 947	--
6706	403712	0734159.2	6	743	-19	- 68	-125	--	-155	-628	--	--
6769	403712	0734257.1	10	72	-25	--	--	--	--	--	--	--
7114	403753	0733734.1	9	202	-31	--	--	--	-39	--	--	--
7117	404214	0734059.1	54	495	--	--	--	--	-29	-441	--	--
7720	404237	0733952.1	20	563	--	--	--	--	-38	-445	--	--
7764	404221	0733537.1	60	246	--	--	--	--	-5	--	--	--
7776	403537	0733940.1	5	1238	--	--	--	--	-123	-816	-1013	--
7795	404022	0733713.1	40	760	--	--	--	--	-23	-629	--	--
8195	404233	0734106.1	20	704	-31	--	--	--	-52	-584	--	--
8196	403952	0733616.3	24	706	-16	--	--	--	-25	-670	--	--
8217	404004	0733710.1	36	705	--	--	--	--	-62	-664	--	--
8250	404108	0733716.3	45	616	--	--	--	--	-20	-553	--	--
8251	403958	0734103.2	25	685	-35	--	--	--	-49	-529	--	--
8319	403949	0734325.5	15	180	--	--	--	--	-35	--	--	--
8354	403521	0733659.1	5	1275	--	- 61	--	--	-87	-825	1063	--
8466	403803	0734142.1	11	474	-20	- 70	--	--	-129	--	--	--
8557	403536	0733948.1	9	1295	--	- 71	--	-120	-127	-801	-1010	--
8935	403945	0734258.1	15	366	--	--	--	--	-52	--	--	--
9532	403948	0734217.1	10	140	--	- 70	--	--	-88	--	--	--
9534	403927	0733915.1	20	85	--	--	--	--	-44	--	--	--
9535	403724	0733809.1	5	105	-31	- 45	--	--	-53	--	--	--
9536	403746	0733718.1	5	80	-25	--	--	--	-60	--	--	--
9537	403937	0733713.1	28	68	--	--	--	--	-32	--	--	--
9539	403742	0733635.1	6	60	-30	--	--	--	-46	--	--	--
9683	403956	0733516.1	25	65	--	--	--	--	-39	--	--	--
9792	403930	0733829.1	31	562	-23	- 37	--	--	-82	--	--	--

[1] Number after decimal point is a sequential code to identify closely spaced wells within a 1-minute square.

two units are distinguished primarily by stratigraphic position. The "20-foot" clay is separated from the Gardiners Clay by 15 to 40 ft of upper Pleistocene deposits in western Nassau County; eastward the separation is considerably less, which makes the correlations more tentative.

The upper-surface altitude of the clay ranges from 15 to 45 ft below sea level (pl. 1B); thickness ranges from 0 at the northern limit to 30 ft at the barrier islands. (See hydrogeologic sections on pl. 6.) In many places, the unit overlies upper Pleistocene deposits that range in thickness from 0 to 40 ft; it directly overlies the Matawan Group-Magothy Formation or Gardiners Clay at several locations where the underlying Pleistocene deposits have been removed by erosion. The "20-foot" clay is overlain by upper Pleistocene deposits (Perlmutter and Geraghty, 1963; Doriski and Wilde-Katz 1983). (See hydrogeologic sections on pl. 6.)

Gardiners Clay

The Gardiners Clay is a marine deposit beneath the south shore of Long Island. The unit is typically grayish-green to gray and contains a few sand and silt beds. The mineral assemblage contains glauconite, quartz, muscovite, biotite, pyroxene, amphibole, and a complete clay mineral suite of illite, chlorite, mixed-layer clays, and minor kaolinite (Lonnie, 1982). The clay also contains diatoms, foraminifera, shell fragments of pelecypods and gastropods, and peat. A more detailed discussion of the Gardiners Clay is given in Perlmutter and Geraghty (1963, p. A32-A35) and Doriski and Wilde-Katz (1983, p. 6-7). Its upper surface altitude ranges from 40 to 110 ft below sea level (pl. 2A), and thickness ranges from 0 ft at the northern limit to 90 ft at the barrier islands. (See hydrogeologic sections in pl. 6.)

Jameco Gravel

The Jameco Gravel is an irregular body of predominantly coarse sand and gravel deposited on the eroded surface of the Matawan Group-Magothy Formation. It was probably deposited as outwash by glacial meltwater streams during pre-Wisconsin time. The unit is typically a dark-brown and dark-gray granule to cobble gravel. A more detailed lithologic description and depositional history are given in Soren (1978).

The Jameco Gravel is primarily in Queens County but extends into the extreme southwestern part of Nassau County, where its upper surface altitude ranges from 80 to 140 ft below sea level (fig. 2B), and thickness ranges from 0 to 50 ft. (See hydrogeologic sections A-A', B-B', and E-E' in pl. 6.)

Monmouth Group

The Monmouth Group is a marine deposit of Cretaceous age that occurs beneath the barrier islands, primarily in Suffolk County. Only one well along the barrier beach (N8557) penetrates the Monmouth Group. (See pl. 2B and hydrogeologic section A-A' in pl. 6.) The Monmouth Group is typically a greenish-black glauconitic and lignitic clay, silt, or clayey to silty sand. A more detailed lithologic description of the Monmouth Group is given in

Jensen and Soren (1974). Its upper-surface altitude is approximately 120 ft below sea level in the study area but may range from 70 to 165 ft below sea level (Doriski and Wilde-Katz, 1983) farther east along the barrier islands.

Matawan Group-Magothy Formation, Undifferentiated

The Matawan Group-Magothy Formation, undifferentiated, forms the Magothy aquifer of Long Island, the major source of public supply in the area. This unit consists of beds and lenses of light-gray, fine to coarse sand with some clay. Detailed lithologic descriptions are given in Soren (1978); Ku and others (1975); and Jensen and Soren (1974).

The upper surface of the Matawan Group-Magothy Formation, undifferentiated (pl. 3A) is not planar, in contrast to the surfaces of the underlying units. The surface was deeply eroded during Tertiary time and probably also in Pleistocene time. The upper-surface altitude of the unit ranges from as high as 50 ft above sea level in the northeastern part of the study area to as low as 200 ft below sea level in the southwestern part. The unit ranges in thickness from 350 ft in the northern part to as much as 800 ft in the southern part of the barrier islands. (See hydrogeologic sections on pl. 6.)

Raritan Formation

Clay Member

The clay member of the Raritan Formation (commonly referred to as the Raritan clay) overlies the Lloyd Sand Member in the study area. The Raritan clay consists mainly of light to dark-gray, red, white, and yellow clay and varying amounts of silt and clayey and silty fine sand. Sandy beds of varying thicknesses are common. The upper altitude of the unit ranges from about 350 ft below sea level in the northwestern part of the study area to about 850 ft below sea level in the southeastern part on the barrier islands (pl. 3B). The thickness increases to the southeast and ranges from about 150 ft in the northwestern part to about 250 ft in the southeastern part. (See hydrogeologic sections on pl. 6.)

The Raritan clay is significant because it confines water in the underlying Lloyd aquifer. Although the hydraulic conductivity of the Raritan clay is very low, it does not entirely prevent movement of water downward from the Magothy aquifer to the Lloyd aquifer. Some public-supply wells and other wells produce some of their water from sandy zones in the upper part of the Raritan clay.

Lloyd Sand Member

The Lloyd Sand Member of the Raritan Formation of Late Cretaceous age (Cohen and others, 1969, p. 18) is referred to as the Lloyd aquifer on Long Island. This unit consists of discontinuous layers of gravel, sand, sandy clay, silt and clay, and lies roughly parallel to the bedrock surface at depths ranging from about 450 ft below sea level in the northwestern corner of the area to about 1,050 ft below sea level in the southeastern corner of the barrier islands (pl. 4A). The unit's thickness ranges from 250 ft in the northwest to 400 ft in the southeast. (See hydrogeologic sections A-A', D-D', and F-F' on pl. 6.) Seventeen wells have penetrated the unit in the study area, but 10 are on the barrier beach, where the Lloyd aquifer is used as the major source of water by the Long Beach and Lido Beach Water Districts.

Bedrock

Bedrock of early Paleozoic and(or) Precambrian age underlies all of western Long Island (Fisher and others, 1962). The bedrock generally consists of metamorphic and igneous crystalline rocks, and its surface lies at depths of about 700 ft below sea level in the northwestern corner of the area and dips uniformly to about 1,500 ft below sea level in the southeastern part on the barrier islands. (See hydrogeologic sections A-A', D-D', and F-F' in pl. 6.)

HYDROLOGY

Precipitation is the sole source of freshwater in Nassau County. Recharge to the ground-water reservoir results from infiltration of precipitation through the surficial deposits to the water table. The amount of water that reaches the water table varies throughout the year and is controlled by (1) type, frequency, and intensity of precipitation; (2) slope of the land surface; (3) soil-type, soil-moisture content, and the amount and kind of vegetation; and (4) air temperature.

Precipitation

The climate of the southwestern part of the Town of Hempstead is influenced by the Atlantic Ocean and is characterized by a moderate temperature range and mild winters. Precipitation falls in almost the same total amount in the cool season as during the warm season but is more frequent in spring than in fall. Most precipitation on Long Island is in the form of rain; only 5 to 10 percent is in the form of snow or sleet. Long-term precipitation in Nassau County averages 42 inches per year, as determined from 30 years of records collected by the National Weather Service.

The precipitation regime of Long Island for 1951-65 was studied by Miller and Frederick (1969), who calculated the mean annual precipitation in the southwestern part of the Town of Hempstead to be between 41 and 45 inches. This compares closely with the 42 inches per year determined for all of Nassau County. The annual precipitation recorded at Valley Stream by the Long Island Water Corporation during 1927-83 had a maximum of 63.74 inches in 1983 and a minimum of 24.83 inches in 1965 (fig. 2A); the long-term average annual precipitation during 1927-83 is 42.62 inches. Mean monthly precipitation at Valley Stream ranges from a low of 2.96 inches in February to a high of 4.11 inches in August (fig. 2B).

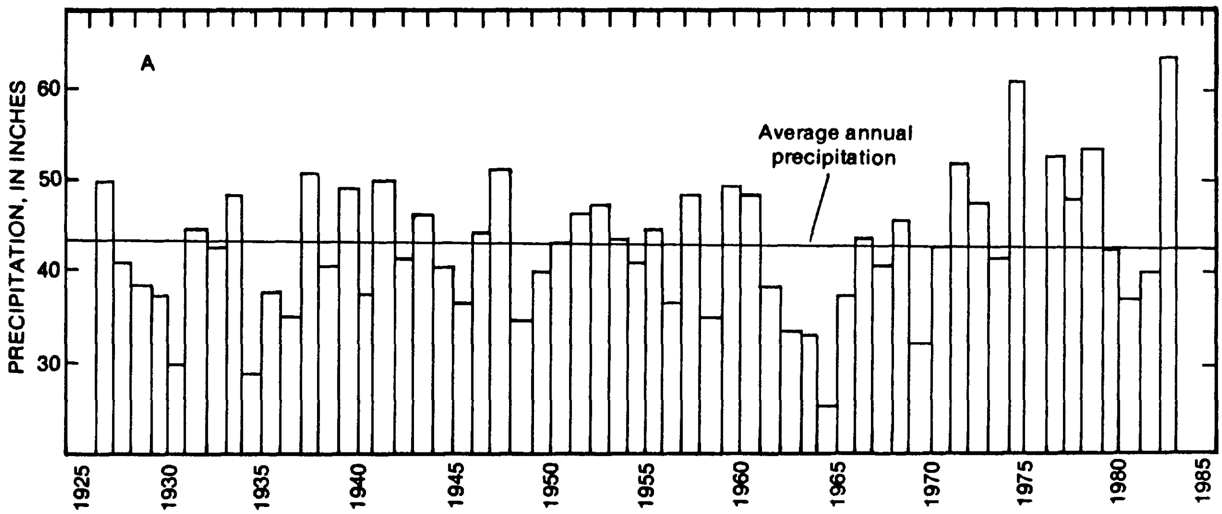
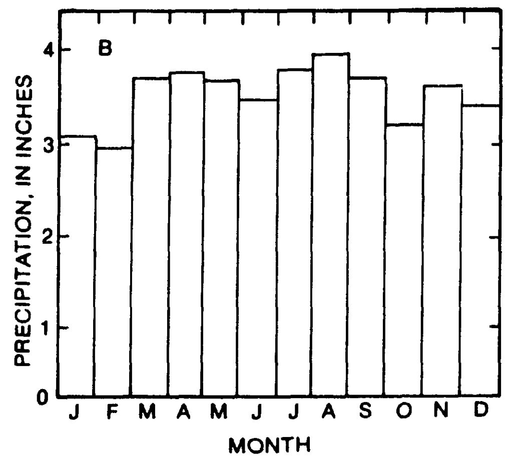


Figure 2.

Precipitation at Valley Stream.

A. Annual precipitation, 1927-83.
B. Average monthly values.



Ground-Water Levels

Water-level measurements made in April 1984 at 114 observation wells in the upper glacial aquifer were used to prepare a water-table map of the southwestern part of the Town of Hempstead (pl. 4B). The water table has a maximum altitude in the northeastern part of the area; the water-table altitude decreases to sea level along the southern shore.

A potentiometric-surface map of the Magothy aquifer was prepared from water-level measurements made at 39 wells in April 1984 (pl. 5A). The potentiometric surface represents the static head. (The static head is the level to which water would rise in a tightly cased well that is screened at a specific depth.) The potentiometric surface of the Magothy aquifer also has its maximum altitude in the northeastern part of the study area; the potentiometric-surface altitude decreases to 5 ft below sea level along the southwestern shore.

A potentiometric-surface map of the Lloyd aquifer was prepared from water-level measurements collected at six wells in January 1984 (pl. 5A) and from data given in Donaldson and Koszalka (1982).

The U.S. Geological Survey has monitored several observation wells in the study area since the early 1930's. Figure 3 depicts hydrographs from four water-table wells (locations shown on pl. 4B). During the 1962-66 drought, water levels declined 10 to 15 ft to the north (well N1141) and 3 to 5 ft to the south and along the southern shore (well N1116). The data are not sufficient to determine any long-term trends in water levels since the 1962-66 drought.

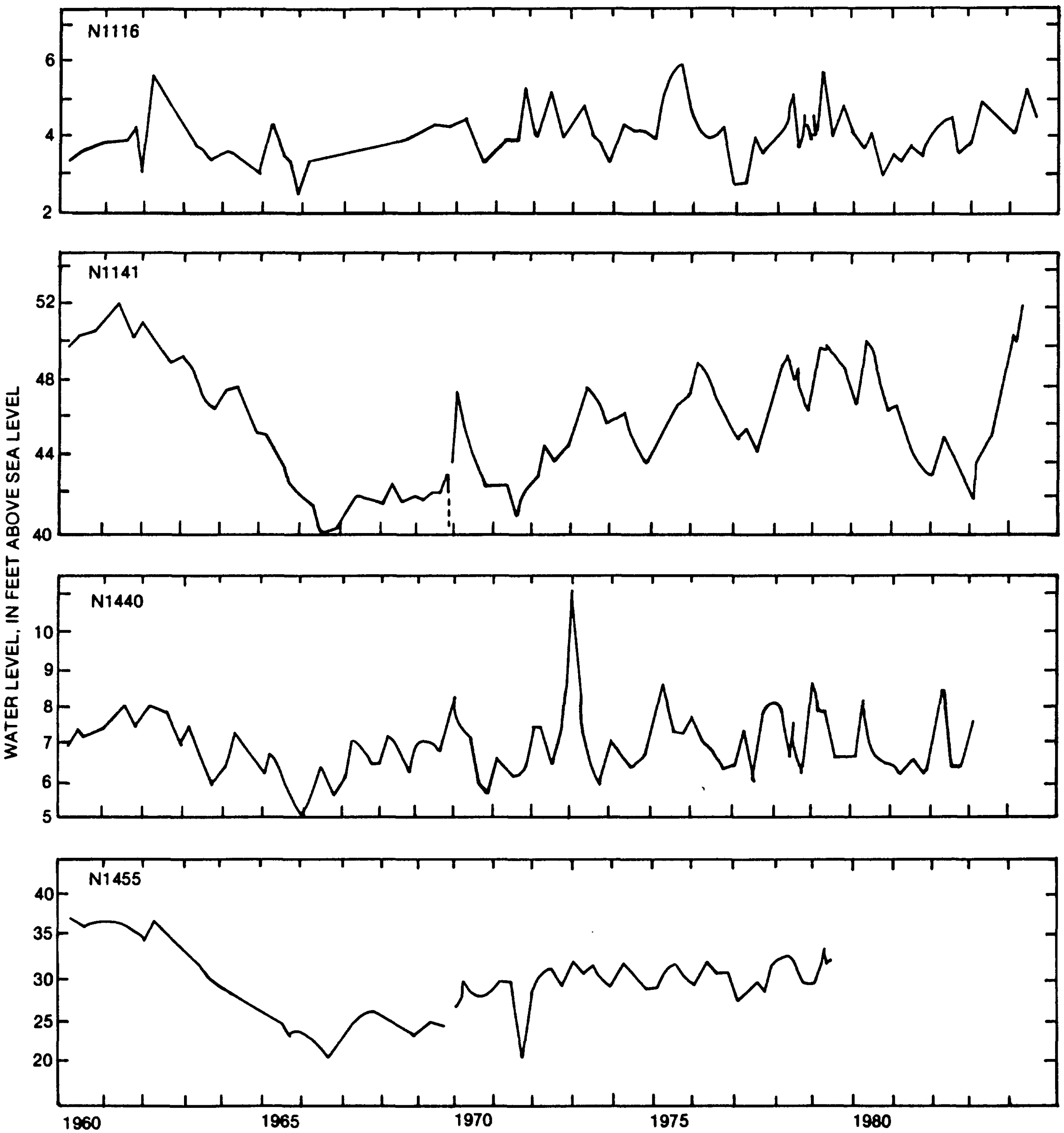


Figure 3.--Hydrographs for wells N1116, N1141, N1440, and N1455, 1960-84. (Locations are shown in pl. 4B.)

Surface Water

All streams within the area studied (table 3) flow southward either into Hewlett Bay or Middle Bay (pl. 1). The area also has several natural lakes and ponds; many are kettleholes that intersect the water table, and some are perched. In addition, several ponds have been created behind small dams in some of the tributaries.

Table 3.--Discharges of selected streams in the southwestern part of the Town of Hempstead, N.Y.

[Locations are shown in pl. 1]

Station no.	Station name	Location	Date	Discharge (ft^3/s)
01310600	Milburn Creek at Baldwin	Lat 40°39'04", long 73°36'13", Nassau County, 50 ft downstream from bridge on State Highway 27A, 0.5 mi east of Baldwin.	12-17-81	6.2
			3- 2-82	6.0
			9-14-82	4.1
			1-25-83	5.4
			4- 5-83	8.1
			7-18-83	5.2
			9-23-83	4.8
01310700	Parsonage Creek at Baldwin	Lat 40°38'48", long 73°36'59", Nassau County, 20 ft downstream from bridge on Foxhurst Road, at Baldwin.	8-17-83	.85
01310800	South Pond Outlet at Rockville Centre	Lat 40°40'00", long 73°39'08" Nassau County, at bridge on Lakeview Ave., 0.75 mi north of Rockville Centre.	12- 1-81	0
			3- 4-82	0
			5- 3-82	0
			9- 8-82	0
			1-25-83	0
			4- 5-83	0
			7-19-83	.11
			9-23-83	0
01311200	Motts Creek at Valley Stream	Lat 40°39'01", long 73°42'45", Nassau County, 50 ft downstream from bridge on Rosedale Road, 1 mi southwest of Valley Stream.	12- 1-81	0
			3- 4-82	0
			5- 3-82	0
			9- 8-82	0
			1-25-83	0
			4- 5-83	1.2
			7-19-83	0
			9-23-83	0
01311700	Valley Stream, below West Branch, at Valley Stream	Lat 40°39'47", long 73°42'21", Nassau County, 200 ft downstream from bridge on West Valley Stream Blvd., at village park in Valley Stream, and 500 ft downstream from gaging station.	12- 1-81	0
			3- 4-82	0
			5- 3-82	0
			9- 8-82	0
			1-25-83	0
			4- 5-83	0
			7-19-83	0
			9-23-83	0

Stream discharge has been measured periodically at five sites in the area since the 1940's; locations of these sites are shown on plate 1A, and the discharge measurements are given in table 3. The U.S. Geological Survey maintains continuous gaging stations at two other sites--Pines Brook at Malverne and Valley Stream at Valley Stream (pl. 1A); daily discharges at these two sites from the 1940's to the present are available from the Survey's Long Island office in Syosset.

SUMMARY

Ground water is the sole source of water supply in the southwestern part of the Town of Hempstead and surrounding areas. Increased use of ground water has brought about the need for detailed knowledge of the underlying hydrogeologic system.

The area is underlain by Holocene, Pleistocene, and Upper Cretaceous deposits that consist of unconsolidated gravel, sand, silt, and clay; the deposits are divided into eight geologic units, which have a total maximum thickness of about 1,500 ft. Underlying these deposits is crystalline bedrock of early Paleozoic and(or) Precambrian age.

Precipitation is the only source of ground water in the area. The long-term average annual precipitation at the Valley Stream weather station during 1927-83 was 42.62 inches.

The water table has a maximum altitude in the northeastern part of the study area; the water-table altitude decreases to sea level along the southern shore. The potentiometric surface of the Magothy aquifer also has its maximum altitude in the northeastern part of the study area; the potentiometric-surface altitude decreases to 5 ft below sea level along the southwestern shore.

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