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DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY
AND SUPPLY



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FACTUAL DATA FOR PUBLIC-SUPPLY WELLS
AND SELECTED IRRIGATION WELLS
IN MONMOUTH COUNTY, NEW JERSEY

Prepared in cooperation with the
United States Department of the Interior
Geological Survey

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AND SELECTED IRRIGATION WELLS
IN MONMOUTH COUNTY, NEW JERSEY**

By

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U.S. Geological Survey

**Prepared by the U.S. Geological Survey
in cooperation with the
State of New Jersey**

State of New Jersey

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FACTUAL DATA FOR PUBLIC-SUPPLY WELLS AND SELECTED IRRIGATION WELLS IN MONMOUTH COUNTY, NEW JERSEY

By Leo A. Jablonski

INTRODUCTION

The investigation of the ground-water resources of Monmouth County is part of a Statewide water-resources program. This study was made by the U. S. Geological Survey in cooperation with the New Jersey Department of Conservation and Economic Development, Division of Water Policy and Supply. It was under the general direction of Philip E. LaMoreaux, Chief of the Ground Water Branch of the U. S. Geological Survey, and under the direct supervision of Allen Sinnott, District Geologist.

Purpose and Scope

This report presents data for most of the public-supply wells and for several irrigation wells in Monmouth County. The data for these wells are believed to be representative of large-capacity wells tapping the major aquifers present in the county. The information is released at this time in advance of an interpretive report because of its value to prospective users of ground water in Monmouth County. An earlier report¹ presented data on small-capacity wells tapping both major and minor aquifers in the county. The data in these two reports form, in part, the basis for a comprehensive interpretive report on the ground-water resources of Monmouth County, now in preparation. Also to be included in the latter report are data for certain large-capacity industrial wells.

Location and Extent

Monmouth County is in the east-central part of New Jersey along the Atlantic coast and south of Raritan Bay (plate 1). It comprises 539 square miles, and has a population of 333,232 according to the 1960 preliminary Federal Census.

Acknowledgments

Grateful acknowledgment is made for the records and logs of the wells that were made available to the Geological Survey from the files of the New Jersey Geological Survey, Bureau of Topography and Geology, Division of Planning and Development, Department of Conservation and Economic Development. The author also wishes to thank those well owners who supplied additional information and water samples.

¹ Jablonski, L. A., 1959, Records of wells and ground-water quality in Monmouth County, N. J.; New Jersey Div. Water Policy and Supply, Water Resources Circ. 2

MAJOR AQUIFERS SUPPLYING LARGE-CAPACITY WELLS IN MONMOUTH COUNTY

General Geology and Hydrology

Monmouth County is underlain chiefly by layers of sand, silt, and clay. The formation names given to these deposits are listed in table 1, which gives their age, thickness, and water-bearing properties. Where the sand beds are continuous and of sufficient thickness and permeability, they are called water-bearing beds, or "aquifers." The formations containing these aquifers are exposed at the surface in bands trending roughly northeast-southwest, and they dip southeast and hence increase in depth in that direction. The chief source of the water in the aquifers is precipitation. A part of the precipitation runs off directly into surface lakes and streams, a part evaporates, a part is used to replenish soil moisture, and a part seeps downward into the openings in the sands and clays to form the zone of saturation – a zone in which all the openings of the rock are filled with water. Water in the zone of saturation is called "ground water."

Development

The total use of ground water and surface water in Monmouth County during 1958 was 44 mgd (million gallons per day). Ground water constituted 49 percent of the total withdrawals or 21.6 mgd. On the basis of population trends and expected industrial expansion, the amount of ground water needed in the year 2000 will be in excess of 63 mgd.

Nearly all the ground water in the county is taken from aquifers in the Raritan and Magothy formations, the Englishtown formation, the Wenonah formation and Mount Laurel sand, and the Kirkwood formation.

Raritan and Magothy formations (undivided)

The Raritan and Magothy formations contain the most important aquifers in Monmouth County. These formations supplied approximately 12.3 mgd or 57 percent of all the ground water used in the county during 1958.

These formations are composed of sand interbedded with clay. The Raritan formation is not exposed in the county, and the Magothy formation crops out only in the vicinity of Cliffwood. The combined thickness of the formations increases from 175 feet near Matawan to more than 580 feet at Asbury Park.

The Magothy formation in outcrop consists of alternating beds of dark gray or black clay and white micaceous fine-grained sand. It dips toward the southeast at an average rate of 46 feet per mile. The Raritan formation consists of clay or medium- to coarse-grained sand, and dips southeastward at about 60 feet per mile.

The water-bearing sands comprising the aquifers in these formations vary in thickness and areal extent, and individual water-bearing zones cannot easily be correlated. Because of this variability, and also because of local hydraulic connection between the sands, the Raritan and Magothy formations are considered to form a single hydrologic unit.

Table 1.--Age, thickness, and water-bearing properties of sedimentary rock units in Monmouth County, N. J.

System	Series	Formation	Penetrated thickness (feet)	Water-bearing properties, with special reference to large-capacity wells
Quaternary	Recent	Beach sand and gravel and alluvium	0-50	A relatively poor aquifer. No drilled wells reported in this material.
	Pleistocene undivided	Cape May formation Pensauken formation Bridgeton formation	0-60	Not tapped by large-capacity wells in the county. Yields up to 6 gpm (gallons per minute) to domestic wells.
Tertiary	Pliocene(?)	Beacon Hill gravel	0-20	No drilled wells reported in this formation.
	Miocene(?)	Cohansey sand	0-30	No large-capacity wells in this formation.
	Miocene	Kirkwood formation	0-100	Yields range from 250 - 1,200 gpm; average yield, 465 gpm.
	Eocene	Manasquan formation and Shark River marl	0-90	Not tapped by large-capacity wells; yields up to 12 gpm to domestic wells.
	Paleocene	Vincentown formation	0-135	Not tapped by large-capacity wells; yields 10-35 gpm to domestic wells.
		Hornerstown sand	0-100	Not tapped by large-capacity wells; yields up to 5 gpm to domestic wells.
Cretaceous	Upper Cretaceous	Red Bank sand (includes the Tinton sand member at top)	0-135	Not tapped by large-capacity wells; yields 3-30 gpm to domestic wells.
		Navesink formation	0-45	Not tapped by large-capacity wells; yields up to 10 gpm to a few domestic wells.
		Mount Laurel sand, underlain by Wenonah formation, undivided	0-85	Yields 250 - 335 gpm to two wells listed in this report.
		Marshalltown formation	0-50	Not considered water bearing.
		Englishtown formation	0-150	Yields range from 90-640 gpm. Average yield, 410 gpm.
		Woodbury clay	0-60	Not considered water bearing.
		Merchantville formation	0-60	Do.
		Magothy formation, underlain by Raritan formation, undivided	175-580+	Yields 100-1,400 gpm; average yield, 699 gpm. The majority of wells are in the Raritan formation.
		Pre-Cretaceous	3,700+	Not tapped by wells in the county.

Englishtown formation

The Englishtown formation has less capacity for storing and transmitting water than the Raritan and Magothy formations, but is an important aquifer because it lies at shallower depths and its water is generally of excellent quality.

The greatest development of this formation as an aquifer has occurred in eastern Monmouth County. Pumpage from this aquifer constituted 20 percent of the total ground-water withdrawals in 1958. From northeast to southwest across the county, the formation grades from a sand 150 feet thick to interbedded clay, silt, and sand layers 50 feet thick. The sand is fine- to medium-grained, white or yellow, and well-sorted.

The Englishtown formation lies at or near the surface between Allentown and Sandy Hook and dips to the southeast at a rate of about 37 feet per mile. Downdip the formation is about 120 feet thick and consists of layers of clay, silt, and sand. The combined thickness of the sand layers ranges from 40 to 80 feet and is generally in excess of 50 feet. In the subsurface, the sand is very fine to fine-grained, gray, and commonly fossiliferous, but otherwise similar to the sand in outcrop.

Wenonah formation and Mount Laurel sand (undivided)

The Wenonah formation and the Mount Laurel sand, although distinct formations, are considered to be hydraulically connected, and thus function as a single aquifer. These formations are exposed at or near the surface between Allentown and Atlantic Highlands; they dip southeastward at an average rate of 33 feet per mile. The formations consist of sand interbedded with silt layers, ranging from 50 to about 100 feet in aggregate thickness.

The aquifer consists of sand ranging from 30 to 75 feet in total thickness. In 1958, ground water was pumped at an average rate of 0.6 mgd from wells tapping this aquifer.

Kirkwood formation

The Kirkwood formation has limited potential as a source of ground water in Monmouth County because it is relatively thin and occurs only in a small area in the southern part of the county. In 1958, ground water was withdrawn at an average rate of more than 1 mgd from wells tapping this aquifer. The formation consists of alternating layers of sand and clay that are chiefly discontinuous. This formation is exposed south of a line extending from Hornerstown to Elberon; it attains a maximum thickness of 100 feet in the county and dips to the southeast at an average rate of 11 feet per mile.

BASIC DATA

Descriptions of 76 public-supply wells and 5 irrigation wells in Monmouth County are given in table 2. The yield of these wells ranges from 90 to 1,400 gpm (gallons per minute) and averages 570 gpm. The locations of these wells are shown on plate 1.

In table 3 are given the logs of 23 large-capacity wells in Monmouth County, N. J.

Table 4 contains the results of chemical analyses of water from 59 public-supply wells. The analyses indicate that the chemical constituents present would not restrict the use of the water for most purposes. For certain uses, treatment may be required for iron removal or for lowering the pH.

Table 2.--Records of selected large-capacity wells in Monmouth County, N. J.

Map no.	Location	Owner's well no.	Owner	N. J. grid number	Driller	Date completed	Altitude above sea level (ft.)	Total depth (ft.)	Diameter (in.)	Principal water-bearing bed		Depth to which well is cased (ft.)	Screen setting (ft.)	Static water level below I. S. (ft.)	Yield (gpm)	Drawdown (ft.)	Specific capacity (gpm/ft of drawdown)	Chemical analysis	Remarks	Map no.
										Character of materials	Aquifer									
1	Allentown	1	Borough	28.22.9.4.9	Stothoff	8/27/52	60	273	10	Dark-gray sand	Raritan and Magothy formations	263	263-273	32	260	135	1.9	No		1
2	Roosevelt	2	do.	28.23.6.6.3	do.	1935	160	444	8	Medium to fine gray sand	do.	--	--	161	285	50	5.7	No		2
3	do.	3	do.	do.	Layne-New York	11/1/56	198	475	12-8	Coarse gray sand	do.	442	442-472	142	524	30	17.5	No		3
4	Freehold	1	do.	29.11.8.7.3	Am. Drilling Co.	6/27/48	120	496	16-8	Fine gray sand	do.	470	470-494	80	540	77	7.0	Yes		4
5	do.	2	do.	do.	do.	10/10/48	130	536	16-8	Fine sand with 10 ft. of clay streaks	do.	507	507-533	92	625	35	17.8	Yes		5
6	Matawan	1	do.	29.2.4.7.2	do.	6/11/44	20	253	12-8	Medium-coarse gray sand	do.	222	222-252	18	580	35	16.6	Yes		6
7	do.	2	do.	do.	Layne-New York	5/25/43	20	269	12-8	do.	do.	228	228-258	17	510	30	17.0	Yes	Layne No. 1	7
8	do.	3	do.	29.1.6.5.3	do.	6/2/56	90	272	16-10	Coarse sand, white at 253'	do.	231	231-271	83	726	25	29.0	Yes	Layne No. 2	8
9	Cliffwood	1	Matawan Twp.	29.1.3.9.7	do.	9/18/56	80	487	16-10	Coarse to fine sand	do.	447	447-487	90	709	48	14.8	No		9
10	Keyport	1	Borough	29.2.2.7.5	---	1927	10	271	10-8	White sand and lignite	do.	211	211-271	22	440	384	11.64	Yes	Redrilled in 1951.	10
11	do.	2	do.	do.	---	1927	10	290	10-8	do.	do.	--	--	7	320	32	10.0	Yes	Reserve well pumped once a month. This well to be abandoned.	11
12	do.	3	do.	do.	---	--	10	240	10-8	Sand	do.	--	--	--	100	--	--	Yes	Reserve well pumped once a month. Redrilled 1942.	12
13	do.	4	do.	do.	Ridpath and Potter	1939	10	289	8	White sand and lignite	do.	229	229-289	32	800	60	13.3	Yes	Redrilled 1951. Test made when other wells were pumping.	13
14	do.	5	do.	do.	do.	12/1/55	10	261	16-10	Fine to coarse sand	do.	204	204-264	30.5	1,060	77.5	13.5	Yes	Other wells pumping during test.	14
15	Union Beach	1	do.	29.2.2.8.3	Layne-New York	9/18/27	10	310	20-12	Coarse sand and gravel	do.	249	249-299	16	600	15	40	Yes		15
16	do.	2	do.	do.	do.	1927	10	311	8	do.	do.	265	265-305	25	400	--	--	No		16
17	Kearnsburg	1	do.	29.3.1.7.1	do.	--	--	--	--	--	--	--	--	--	--	--	--	Yes	Abandoned.	17
18	do.	2A	do.	do.	do.	8/13/54	10	352	26-10	Fine white sand with clay and lignite	Raritan and Magothy formations	290	290-350	46	1,015	48	21	Yes		18
19	do.	3	do.	do.	do.	2/3/42	12	355	24-8	Coarse gray sand	do.	308	308-348	15	740	65	11	Yes		19
20	do.	4	do.	do.	do.	6/2/45	10	351	30-10	Fine white sand	do.	280	280-340	25	1,023	56	18	Yes		20
21	Centerville	1	W. Kearnsburg Water Co.	29.2.6.1.9	do.	1957	60	513	24-10	Gray sand	do.	326	326-366	66	1,001	53	19	Yes		21
22	Atlantic Highlands	1	Borough	29.3.6.6.7	do.	9/14/28	20	593	12-8	Coarse gray sand	do.	551	551-593	1.5	750	46.5	16	Yes		22
23	do.	2	do.	do.	---	1923	20	260	21	--	Englishtown formation	180	180-200	16	300	--	--	Yes	Used June through August only.	23
24	do.	3	do.	do.	Am. Drilling Co.	1946	20	576	10	Sand with 9 feet of clay	Raritan and Magothy formations	547	547-572	5	800	59	13	Yes	do.	24
25	Highlands	4	do.	29.4.5.7.5	Layne-New York	6/16/49	15	714	18-8	Sand with 13 feet of sand and clay	do.	649	649-709	11	524	67	7.8	Yes		25
26	Red Bank	2	do.	29.13.3.5.1	do.	4/21/56	30	300	24-16	Fine to coarse white sand	Englishtown formation	225	230-270	27	525	53	10	Yes	Test data for 1929.	26
27	do.	1-A	do.	29.13.2.6.8	---	1893	32	635	8	--	Raritan and Magothy formations	--	--	35	520	33	16	Yes	Test data for 1943. Standby well.	27
28	do.	1-B	do.	do.	Layne-New York	5/25/50	40	692	16-8	Medium gray sand	do.	637	637-687	32	1,012	29	35	Yes	Only well operating full time.	28
29	do.	3	do.	29.13.2.9.6	do.	6/6/46	35	268	30-10	Fine gray sand	Englishtown formation	228	228-268	25	421	159	2.6	Yes		29
30	West End	1	Monmouth Consolidated Water Co.	29.14.8.7.2	Schultes	5/24/56	10	981	12-8	Sand	Raritan and Magothy formations	931	931-981	12	1,000	54	18	Yes	Gravel-packed.	30
31	Allenhurst	2	Borough	29.24.1.9.7	Layne-New York	7/13/50	10	570	24-12	Fine gray sand	Englishtown formation	525	525-565	45	525	169	3.1	Yes		31
32	do.	4	do.	29.24.1.9.8	do.	7/13/50	10	570	12	Fine gray sand	do.	525	525-565	90	524	123	4.3	Yes	Layne No. 1	32

Table 2.--Records of selected large-capacity wells in Monmouth County, N. J.--Continued

Map no.	Location	Owner's well no.	Owner	N. J. grid number	Driller	Date completed	Altitude above sea level (ft.)	Total depth (ft.)	Diameter (in.)	Principal water-bearing bed		Depth to which well is cased (ft.)	Screen setting (ft.)	Static water level below 1. s. (ft.)	Yield (gpm)	Drawdown (ft.)	Specific capacity (gpm/ft of drawdown)	Chemical analysis	Remarks	Map no.
										Character of materials	Aquifer									
33	Whitesville	2	Monmouth Consolidated Water Co.	29.24.4.1.7	Layne-New York	2/23/24	21	981	18-8	Hard fine gray sand	Raritan and Magothy formations	905	905-981	4	900	--	--	Yes	Redrilled 1950	33
34	do.	3	do.	29.24.4.1.8	A. C. Schultes & Sons Co.	4/9/54	23	566	12-8	Fine sand with lignite	Englishtown formation	498	498-566	50	410	162	2.5	Yes		34
35	do.	4	do.	do.	do.	3/15/56	25	967	12-8	Fine gray sand with mica and glauconite	Raritan and Magothy formations	855	855-957	17	1,000	77	12.9	No		35
36	Jumping Brook	3	do.	29.23.6.7.7	do.	7/16/51	35	1,065	12-8	Coarse sand	do.	1,013	1,013-1,065	15	1,400	92	15.2	No		36
37	do.	4	do.	do.	do.	6/19/56	10	1,072	12-8	Sand	do.	1,000	1,000-1,072	37	1,001	32	31.3	No	Gravel-packed well.	37
38	Neptune City	Am. 2	Asbury Park City	29.24.4.8.2	Am. Drilling Co.	1946	20	1,130	12	Gray sand	do.	--	--	26	1,000	76	20.0	Yes	Test made in 1956.	38
39	do.	Layne #3	do.	do.	Layne-New York	6/18/56	20	1,138	12-8	Coarse sand	do.	1,084	1,084-1,124	15	1,023	57	18.0	Yes	Other nearby wells pumping during test.	39
40	do.	Layne #1	do.	do.	do.	8/3/39	20	637	10-6	Coarse sand and gravel with shells	Englishtown formation	597	597-627	92	275	159	1.7	Yes		40
41	Ocean Grove	10	Monmouth Consolidated Water Co.	29.24.4.8.5	--	1914	20	450	4	Clayey micaceous sand	Wenonah formation and Mount Laurel sand	--	--	74	--	17	4.4	No	Test made in 1950.	41
42	do.	12	do.	do.	--	1914	20	450	4	----	do.	--	--	74	250	17	6.0	No	do.	42
43	do.	15	do.	do.	--	1914	20	450	4	----	do.	--	--	74	--	17	6.0	No	do.	43
44	do.	16	do.	--	--	1914	20	450	4	----	do.	--	--	74	--	17	4.4	No	do.	44
45	do.	20	do.	29.24.4.8.5	Layne-New York	6/23/49	20	605	18-8	Fine gray sand	Englishtown formation	570	570-600	61	300	134	2.2	Yes		45
46	do.	21	do.	29.24.4.8.5	A. C. Schultes & Sons Co.	1/-/54	20	430	12	Glauconitic sand	Wenonah formation and Mount Laurel sand	395	395-430	65	335	110	3.0	Yes		46
47	Avon-by-the-Sea	1	Borough	29.24.7.1.6	--	--	28	506	18	----	do.	426	426-508	--	--	--	--	Yes		47
48	do.	2	do.	do.	--	--	28	503	18	----	do.	423	423-503	--	--	--	--	Yes	Used for peak demands.	48
49	do.	3	do.	do.	Layne-New York	9/17/26	29	1,154	18-6	Gray sand and brown sand with 55 feet of clay	Raritan and Magothy formations	916 & 974-978	916-974-1,078-1,139	19	870	47	18.5	Yes	Used June through August.	49
50	Belmar	11	do.	29.24.7.5.6	do.	7/-/41	15	679	20-12	Dark sand with 5 feet of clay	Englishtown formation	601	601-671	62	640	103	6.4	Yes	do.	50
51	do.	1	do.	29.24.7.7.2	--	about 1900	20	500-600	6	----	do.	--	--	--	--	--	--	Yes		51
52	do.	3	do.	do.	--	do.	20	518	6	----	do.	--	--	--	--	--	--	Yes		52
53	do.	4	do.	do.	--	do.	20	524	6?	----	do.	--	--	--	--	--	--	No		53
54	do.	5	do.	do.	--	do.	20	515	6	----	do.	--	--	--	--	--	--	No		54
55	do.	7	do.	do.	--	do.	20	648	8-6	----	do.	648	--	--	--	--	--	Yes		55
56	do.	8	do.	do.	--	do.	20	640	8-6	----	do.	640	--	--	--	--	--	Yes		56
57	do.	9	do.	do.	--	do.	20	545	8	----	do.	--	--	--	--	--	--	Yes		57
58	do.	10	do.	do.	Ridpath & Potter	1938	20	581	18-8	----	do.	581	--	20	--	--	--	Yes		58
59	do.	12	do.	29.24.7.7.2	Am. Drilling Co.	10/1/49	20	594	20-12	Sand with 17 feet of clay	do.	563	563-594	100	305	162	1.8	Yes		59
60	Spring Lake	3	do.	29.34.1.4.2	Layne-New York	6/4/41	20	707	24-8	Fine gray and black sand	do.	640	640-700	62	545	128	4.2	Yes	Layne No. 2	60
61	do.	1	do.	29.33.3.6.9	do.	8/12/40	15	722	30-10	Fine gray sand with hard streaks	do.	631	631-711	97	600	57	10.5	Yes	Gravel packed in 1949.	61
62	do.	2	do.	do.	do.	7/25/41	15	707	24-8	do.	do.	640	640-700	91	535	103	5.2	Yes	Layne No. 3	62
63	Spring Lake Heights	1	do.	29.33.3.5.4	do.	1953	60	600	--	Sandy clay	do.	--	--	--	200	--	--	No		63
64	do.	2	do.	do.	do.	5/18/53	60	713	20-8	Layers of sand and clay	do.	660	660-711	125	510	118	4.3	Yes		64

Table 2.--Records of selected large-capacity wells in Monmouth County, N. J.--Continued

Map no.	Location	Owner's well no.	Owner	N. J. grid number	Driller	Date completed	Altitude above sea level (ft.)	Total depth (ft.)	Diameter (in.)	Principal water-bearing bed		Depth to which well is cased (ft.)	Screen setting (ft.)	Static water level below l. s. (ft.)	Yield (gpm)	Drawdown (ft.)	Specific capacity (gpm/ft of drawdown)	Chemical analysis	Remarks	Map no.
										Character of materials	Aquifer									
65	Sea Girt	1	Borough	29.33.6.3.1	--	1925	20	159	12	--	Kirkwood formation	129	129-159	19	300	25	12.0	Yes		65
66	do.	2	do.	do.	--	1921	20	160	10	--	do.	130	130-160	20	300	--	--	Yes		66
67	do.	3	do.	do.	--	1921	20	760	8	--	Englishtown formation	730	730-760	47	300	54	5.6	Yes	Reserve well pumped sand in 1940.	67
68	do.	4	do.	do.	Stothoff	7/29/49	20	715	10-8	Sand	do.	685	685-715	103	310	157	2.0	Yes		68
69	Manasquan	1	do.	29.33.6.4.3	Bainbridge	12/31/57	15	116	10	Fine to coarse dirty sand	Kirkwood formation	98	98-116	5	500	71	7.0	No	Replaced old No. 1 well drilled in 1939.	69
70	do.	2	do.	do.	--	1903	15	120	8	Sand and gravel	do.	--	--	--	275	--	--	Yes	All wells flow when none are pumping.	70
71	do.	3	do.	do.	--	1939	20	118	8-6	do.	do.	--	--	13	250	--	--	Yes		71
72	do.	4	do.	do.	--	1903	8	118	6	do.	do.	--	--	--	--	--	--	No		72
73	do.	5	do.	do.	Layne-New York	6/7/54	15	117	30-16	Coarse sand and gravel	do.	97	97-117	7	1,236	66	18.7	Yes	Layne No. 1. Sixth well drilled since 1903.	73
74	Brielle	1	do.	29.33.6.4.8	Artesian Well Drilling Co.	5/28/36	36	150	6-12	Gray sand, clayey	do.	130	130-150	26	400	20	20.0	Yes	Used June through September.	74
75	do.	2	do.	do.	Layne-New York	2/16/50	33	755	16-8	Hard fine sand	Englishtown formation	690	690-750	75	510	110	4.6	Yes		75
76	Farmingdale	1	do.	29.22.8.3.3	Stothoff	1/4/49	80	480	8-6	Fine gray sand with glauconite and lignite	do.	450	450-480	45	90	155	0.6	Yes		76
77	do.	2	do.	do.	--	about 1926	80	480	--	do.	do.	--	--	--	300	--	--	Yes		77
I-1	Robbinsville	1	Noller, J. D. & Sons	28.23.9.3.2	Wm. Stothoff	--	220	737	10-8	Medium fine gray sand	Raritan and Magothy formations	710	707-737	145	480	40	12	No		I-1
I-2	Clarksburg	1	Restine, P. J.	28.24.8.3.2	do.	--	210	697	10-8	Coarse white sand	do.	672	667-697	180	350	110	3.2	No		I-2
I-3	Smithburg	1	Caputo, F.	28.25.4.8.2	A. J. Connolly Inc.	8/2/56	80	706	--	Fine to medium gray sand	do.	--	--	--	--	--	--	No		I-3
I-4	Elton	2	Clayton, Wm. D.	29.21.4.1.2	Wm. Stothoff Inc.	1955	180	333	10	Gray sand	Englishtown formation	304	303-333	56	530	154	3.4	No		I-4
I-5	Freehold	1	do.	29.21.2.5.7	do.	do.	185	612	10-8	Medium coarse sand	Raritan and Magothy formations	584	582-612	165	290	60	4.8	No		I-5

Table 3. — Selected logs of wells in Monmouth County, N. J.

Well 1, Allentown; Allentown Borough
(Log by Wm. Stothoff Co., Inc.)
Altitude, 80 feet

	Thickness (feet)	Depth (feet)
Not reported.	20	20
Clay, dark gray, very silty, micaceous.	162	182
Sand, dark gray, fine, silty	28	210
Sand, fine, silty, and clay layers	20	230
Sand, gray, fine, quartzose	10	240
Clay, gray, silty, micaceous	20	260
Sand, gray, fine medium, lignitic	15	275
Clay, dark gray	5	280
Clay, white, gray, and red	25	305

Well 3, Roosevelt; Roosevelt Borough
(Log by Layne-New York Co., Inc.)
Altitude, 198 feet

Clay, sandy	8	8
Sand, red and gravel	12	20
Gravel	7	27
Sand, gravel, and clay streaks	3	30
Clay, sandy, gray	24	54
Clay, gray	75	129
Sand, fine, with streaks of clay	14	143
Sand, gray, fine	13	156
Sand, gray, and streaks of clay	9	165
Clay, gray	41	206
Clay, with streaks of shale	9	215
Clay, gray, sandy, tough	149	364
Round tubes of sandy clay, with clay streaks and sand	8	372
Sand, with tough clay streaks	26	398
Sand, gray, fine to medium, with clay streaks	16	414
Sand, gray, coarse, with clay streaks	22	436
Sand, gray, coarse	54	490
Clay, white to gray, with sand streaks	20	510

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 4, Freehold; Freehold Borough
(Log by American Drilling Co.)
Altitude, 100 feet

	Thickness (feet)	Depth (feet)
Topsoil.	6	6
Clay, hard.	23	29
Sand, and soft clay	38	67
Sand, black, fine	21	88
Clay	8	96
Sand	12	108
Clay, tough	28	136
Sand.	13	149
Clay	23	172
Sand	18	190
Sand, with some white clay	16	206
Clay, with some sand	13	219
Clay, hard.	96	315
Limestone	2	317
Clay.	96	413
Sand	6	419
Clay	12	431
Lime	1	432
Clay, tough	9	441
Sand, gray, fine	59	500

Well 7, Matawan; Matawan Borough
(Log by Layne-New York Co., Inc.)
Altitude, 20 feet

Topsoil.	3	3
Clay, blue.	67	70
Sand	10	80
Sand, gray, fine, and clay	14	94
Sand, white	22	116
Sand and clay	44	160
Clay	19	179
Gravel	1	180
Clay, dark.	24	204
Sand, gray, fine, with wood	4	208
Sand, medium coarse	45	253
Clay, white	23	276

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 9, Cliffwood; Matawan Township
(Log by Layne-New York Co., Inc.)
Altitude, 80 feet

	Thickness (feet)	Depth (feet)
Clay and gravel	10	10
Clay, gray	32	42
Clay and fine muddy sand	38	80
Clay, gray with hard streaks	104	184
Sand, fine, gray	52	236
Clay, gray	20	256
Sand, gray	5	261
Clay, gray and white, with sand streaks	113	374
Sand, hard	9	383
Clay, red with hard streaks	57	440
Sand, coarse	25	465
Clay with hard streaks	4	469
Sand, coarse and fine	17	486
Clay with hard streaks	12	498

Well 13, Keyport; Keyport Borough
(Log by Ridpath and Potter)
Altitude, 10 feet

Sand and gravel	30	30
Gravel	20	50
Gravel and coarse sand	20	70
Sand, white and clay	20	90
Sand, brown	10	100
Sand, brown, clayey, with lignite	34	134
Sand, and clay	18	152
Sand, clay and wood	48	200
Sand, fine	20	220
Sand and wood	20	240
Sand, white and wood	45	285
Clay		at 285

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 15, Union Beach; Union Beach Borough
(Log by Layne-New York Co., Inc.)
Altitude, 10 feet

	Thickness (feet)	Depth (feet)
Clay, sandy	15	15
Clay, sandy	18	33
Clay, tough	6	39
Sand, brown, fine	37	76
Clay, sandy	56	132
Clay, tough	4	136
Clay, sandy	33	169
Clay, blue, tough	6	175
Sand, fine	12	187
Clay, blue, very tough	21	208
Clay, soft, silty	27	235
Sand, coarse, and gravel	66	301
Clay, blue	9	310

Well 19, Keansburg; Keansburg Borough
(Log by Layne-New York Co., Inc.)
Altitude, 12 feet

Topsoil	4	4
Sand, brown	24	28
Clay, soft, sandy	10	38
Clay, blue, tough	50	88
Clay, blue, with sandy streaks	40	128
Sand, fine, and packed clay	18	146
Clay, sandy	17	163
Sand, with clay streaks	34	197
Sand and gravel	56	253
Clay, hard	10	263
Sand, gray and brown	22	285
Clay, blue, tough	21	306
Sand, coarse, gray	48	354
Clay	5	359
Sand	9	368
Clay, blue, sandy	26	394

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 21, Centerville; West Keansburg Water Co.
(Log by Layne-New York Co., Inc.)
Altitude, 60 feet

	Thickness (feet)	Depth (feet)
Gravel and sand	10	10
Sand, gray	34	44
Sand, gray and clay	26	70
Clay, fine, sandy.	70	140
Clay, sand with hard streaks	10	150
Sand, brown, fine	52	202
Sand, fine	103	305
Sand, gray	61	366
Clay, gray	5	371
Sand, coarse	38	409
Sand, hard to sand and clay.	23	432
Clay	21	453
Clay and sand	16	469
Clay, tough	44	513

Table 3. - Selected logs of wells in Monmouth County, N. J. - Continued

Well 22, Atlantic Highlands; Atlantic Highlands Borough
(Log by American Drilling Co.)
Altitude, 20 feet

	Thickness (feet)	Depth (feet)
Fill	8	8
Clay	14	22
Silt, fine	17	39
Clay, blue	5	44
Sand, gray, fine	22	66
Sand, gray and silt, fine	21	87
Sand, gray, loose	33	120
Clay, blue, tough	17	137
Sand, fine and silt	22	159
Clay, blue, soft	18	177
Clay, blue, tough	94	271
Hardpan	10	281
Clay, sandy	22	303
Clay, blue, tough	44	347
Sand, gray, hard, fine	35	382
Clay, blue, soft	40	422
Clay, blue, tough	38	460
Sand, gray, packed, fine	43	503
Clay, blue, tough	17	520
Sand, gray, coarse	8	528
Clay, blue	4	532
Sand, gray, coarse	29	561
Clay, blue, tough	5	566
Sand, gray, coarse	17	583
Clay, blue, tough	12	595
Sand, soft and silt	22	617
Clay and boulders	45	662

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 25, Highlands; Highlands Borough
(Log by Layne-New York Co., Inc.)
Altitude, 15 feet

	Thickness (feet)	Depth (feet)
Sand, brown	12	12
Sand, black, fine.	14	26
Clay, sand.	29	55
Sand and clay.	31	86
Sand, fine	24	110
Clay.	12	122
Sand, white, fine.	26	148
Clay	4	152
Sand.	13	165
Clay.	15	180
Sand.	36	216
Clay, sandy.	5	221
Sand.	33	254
Clay.	122	376
Sand, very hard.	9	385
Clay.	58	443
Sand, fine	33	476
Clay	18	494
Sand.	10	504
Clay.	85	589
Sand.	2	591
Hard streaks	2	593
Sand	22	615
Clay.	20	635
Sand	34	669
Sand and clay.	13	682
Sand.	32	714
Clay.	28	742

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 28, Red Bank; Red Bank Borough
(Log by Layne-New York Co., Inc.)
Altitude, 40 feet

	Thickness (feet)	Depth (feet)
Sand.	32	32
Clay, soft	47	79
Clay, black, sandy	12	91
Clay and hard streaks	54	145
Clay with sand streaks	50	195
Clay.	21	216
Sand, fine	11	227
Clay	12	239
Sand	22	261
Clay	6	267
Sand.	9	276
Clay, black	24	300
Clay, with hard streaks	118	418
Sand, hard	2	420
Clay, tough	76	496
Clay, sandy and tough streaks	70	566
Sand, gray, fine	19	585
Clay, tough	37	622
Clay.	10	632
Sand, gray, medium	55	687
Clay.	1	688
Sand.	7	695
Clay.	7	702

Table 3. — Selected logs of wells in Monmouth County, N. J., — Continued

Well 30, Long Branch; Monmouth Consolidated Water Co.
 (Log by A. C. Schultes and Sons)
 Altitude, 10 feet

	Thickness (feet)	Depth (feet)
Sand, stones and fill	35	35
Clay.	12	47
Sand	5	52
Clay and marl.	31	84
Sand and marl.	25	109
Clay and marl.	16	125
Sand.	15	140
Clay and marl.	20	160
Sand and marl.	46	206
Clay.	42	248
Marl and clay.	28	276
Sand	6	282
Clay and sand	8	290
Clay.	43	333
Sand and silt	25	358
Sand and clay	10	368
Clay	31	399
Clay, with sand layers	55	454
Sand	5	459
Sand and clay.	9	468
Sand	12	480
Sand and clay	21	501
Clay.	3	504
Clay and sand	21	525
Clay.	10	535
Clay and sand	10	545
Hardpan	15	560
Clay and sand	5	565
Sand.	5	570
Clay and sand	10	580
Sand	7	587
Clay	43	630
Clay and sand	10	640
Clay.	10	650
Sand and clay.	30	680
Clay	50	730
Sand	15	745
Clay	15	760
Sand	70	830
Clay	18	848
Sand, fine	68	916
Clay.	20	936
Sand.	54	989
Clay.	11	1,000

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 32, Allenhurst; Allenhurst Borough
(Log by Layne-New York Co. Inc.)
Altitude, 10 feet

	Thickness (feet)	Depth (feet)
Sand.	13	13
Clay.	17	30
Clay, sandy.	40	70
Clay, sandy, hard	110	180
Clay, hard or ironstone	3	183
Clay, soft	5	188
Clay, sandy.	23	211
Sand, hard.	2	213
Clay, hard, sandy	87	300
Clay, hard, sandy, and tough streaks.	70	370
Clay, black, sandy.	90	460
Clay, tough	20	480
Sand, gray, fine	25	505
Sand, and clay streaks	13	518
Sand, gray, fine	30	548
Sand, gray, fine, dirty	19	567
Clay, sand, and tough streaks	23	590

Table 3. - Selected logs of wells in Monmouth County, N. J. - Continued

Well 49, Avon-by-the-Sea; Avon-by-the-Sea Borough
 (Log by Layne-New York Co., Inc.)
 Altitude, 29 feet

	Thickness (feet)	Depth (feet)
Sand.	10	10
Clay.	38	48
Sand and gravel	18	66
Clay	45	111
Sand, gray, fine, clayey	6	117
Clay.	44	161
Sand, hard.	5	166
Sand, coarse	68	234
Clay, sandy	17	251
Clay.	24	275
Sand.	10	285
Clay, hard	15	300
Clay, soft	33	333
Sand, black	30	363
Clay, black	64	427
Sand, greenish gray, fine to medium coarse.	30	457
Sand, greenish gray, very fine, clayey.	48	505
Sand, gray, very fine, clayey	21	526
Clay, gray.	24	550
Clay, gray, and sand layers	50	600
Sand, gray.	30	630
Sand, coarse and clay layers.	48	678
Clay, soft	41	719
Sand, hard.	6	725
Clay	20	745
Clay, sandy.	20	765
Clay	21	786
Clay, with coarse fragments	34	820
Sand, brown.	25	845
Clay	15	860
Sand, gray.	65	925
Clay.	5	930
Sand, gray.	30	960
Clay, blue.	40	1,000
Sand and gravel	35	1,035
Clay.	22	1,057
Sand, brown.	5	1,062
Clay	14	1,076
Sand, brown.	17	1,093
Sand, gray, coarse	45	1,138
Clay, white	16	1,154

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 59, Belmar; Belmar Borough
(Log by American Drilling Co.)
Altitude, 20 feet

	Thickness (feet)	Depth (feet)
Clay, sandy	10	10
Clay, firm	8	18
Sand	3	21
Clay, soft	49	70
Sand	3	73
Clay, green to gray near bottom, firm.	245	318
Sand	6	324
Sand and clay	3	327
Sand and green clay, with black pebbles	12	339
Clay, soft, with sand streaks	17	356
Sand, with streaks of clay	13	369
Clay, firm	11	380
Clay, firm	75	455
Sand	15	470
Sand, black and clay	14	484
Clay, soft	30	514
Clay, soft	44	558
Sand	18	576
Clay, soft and sand streaks.	40	616
Clay, firm	12	628
Sand and clay	16	644
Sand	3	647
Sand and clay	3	650
Clay, hard	15	665

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 61, Spring Lake; Spring Lake Borough
 (Log by Layne-New York Co., Inc.)
 Altitude, 15 feet

	Thickness (feet)	Depth (feet)
Sand and gravel	10	10
Clay, sandy	20	30
Clay, with gravel	20	50
Clay, sandy	30	80
Sand, brown	12	92
Clay, brown	9	101
Clay, blue, tough	54	155
Clay, blue, sandy	25	180
Clay, blue, tough	32	212
Sand, green and blue	5	217
Shale, green	51	268
Clay, blue, tough	120	388
Clay, sandy	22	410
Clay, sandy, and fine black sand	100	510
Clay, sandy, and fine sand with shells	30	540
Sand, very fine, dirty with shells	45	585
Clay, sandy with shells	38	623
Sand, gray with hard streaks, fine	88	711
Clay, black, tough	18	729
Clay, blue, tough	21	750

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well 74, Brielle; Brielle Borough
(Log by Layne-New York Co., Inc.)
Altitude, 33 feet

	Thickness (feet)	Depth (feet)
Topsoil.	4	4
Sand	14	18
Clay, white	7	25
Sand and gravel	21	46
Clay streaks	7	53
Sand and gravel	17	70
Sand and clay	21	91
Sand and gravel	5	96
Clay and hard streaks	14	110
Sand, dark gray	30	140
Clay, tough	110	250
Clay, streaks, hard	5	255
Clay.	11	266
Hard streaks	2	268
Clay, green and hard streaks.	32	300
Clay, green, very hard	20	320
Clay, gray	50	370
Clay, gray	20	390
Clay, sandy	18	408
Clay, blue	32	440
Clay, hard, sandy	50	490
Sand, black, very fine	45	535
Clay, hard, sandy	23	558
Sand, very fine, clayey.	56	614
Clay, tough	46	660
Sand, very fine, clayey.	20	680
Sand, hard, fine	57	737
Sand, fine, hard with hard streaks.	14	751
Clay, black	41	792

Table 3. - Selected logs of wells in Monmouth County, N. J. - Continued

Well 76, Farmingdale; Farmingdale Borough
 (Log by Wm. Stothoff Co., Inc.)
 Altitude, 100 feet

	Thickness (feet)	Depth (feet)
Topsoil	4	4
Sand, brown, clayey.	6	10
Clay, brown, sandy	10	20
Clay, gray-green	30	50
Sand, green with fossils.	40	90
Sand, greenish gray, medium, with shell fragments.	20	110
Sand, green, fine to medium, and clayey with shell fragments.	40	150
Sand, gray and green, clayey with pebbles	10	160
Sand, gray and green, clayey with shell fragments	20	180
Sand, gray with shell fragments, clayey.	40	220
Clay, gray, sandy, with shell fragments at 250 feet	30	250
Clay, gray, with shell fragments.	30	280
Sand, gray with fossils.	50	330
Clay, gray with lignite, sandy	20	350
Sand, gray with shells and lignite, clayey.	10	360
Sand, gray, fine, clayey	10	370
Sand, gray, clayey, glauconitic	30	400
Clay, gray with little glauconite	30	430
Sand, gray with lignite, clayey	50	480

Table 3. – Selected logs of wells in Monmouth County, N. J. – Continued

Well I-1, Smithburg; John D. Noller & Sons
 (Log by Frank J. Markewicz, principal geologist, New Jersey Geological Survey)
 Altitude, 230 feet

	Thickness (feet)	Depth (feet)
Sand, yellowish brown, fine to coarse	10	10
Sand, dark gray, fine, finely micaceous, slightly clayey, moderately glauconitic	30	40
Sand, dark gray, fine, clayey, finely micaceous, glauconitic	20	60
Sand, greenish gray, fine, slightly clayey, glauconitic, slightly micaceous, moderately oxidized	10	70
Sand, gray, clayey, silty, micaceous, glauconitic, contains flat ironstone pebbles	110	180
Clay, gray, tough, micaceous, lignitic, glauconitic	20	200
Sand, gray, clayey, silty, micaceous, lignitic, glauconitic	30	230
Silt, gray, clayey, micaceous, lignitic	20	250
Clay, gray, tough, micaceous, lignitic, with ironstone nodules	50	300
Clay, gray, micaceous	20	320
Clay, gray, sandy, fossiliferous, glauconitic	15	335
Sand, fine, clayey, micaceous, fossiliferous, glauconitic	45	380
Sand, gray, very fine, silty, micaceous	10	390
Silt, gray, clayey, micaceous, glauconitic	25	415
Sand, light gray, fine, lightly glauconitic, micaceous	37	452
Clay, gray, lignitic, finely micaceous	8	460
Clay, dark gray, silty, lignitic, finely micaceous	10	470
Sand, gray, fine, micaceous, glauconitic	20	490
Clay, gray, silty, lignitic, micaceous	2	492
Sand, light gray, fine, lignitic, slightly glauconitic, finely, micaceous	53	545
Clay, gray, tough, finely micaceous	15	560
Clay, gray, sandy, micaceous, lignitic	10	570
Sand, gray, very fine, silty, micaceous	20	590
Silt, light gray, clayey, micaceous, lignitic	10	600
Sand, gray, fine to medium, clean, micaceous and sideritic	12	612
Clay, light gray, tough, micaceous, lignitic	8	620
Silt, gray, clayey, sandy, micaceous, lignitic	10	630
Sand, fine, some medium to coarse grains, sideritic, micaceous	10	640
Clay, silty, sideritic, pyritic	45	685
Sand, pinkish gray, very fine, slightly micaceous	15	700
Clay, red and gray	12	712
Sand, yellowish gray, fine to medium, sideritic, lignitic and pyritic		at 712

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well I-2, Clarksburg; P. J. Restine
 (Log by Wm. Stothoff Co., Inc.)
 Altitude, 210 feet

	Thickness (feet)	Depth (feet)
Sand and clay, yellow	30	30
Clay, green	12	42
Sand, fine, very dirty	48	90
Clay, green	40	130
Clay and sand, gray	50	180
Clay and sand, gray	35	215
Sand, fine and clay	20	235
Clay	40	275
Clay and sand	13	288
Clay	3	291
Clay and sand	57	348
Clay, gray	132	480
Clay and sand, dirty	80	560
Sand, white, fine	100	660
Sand, white, coarse	37	697

Table 3, - Selected logs of wells in Monmouth County, N. J. - Continued

Well I-3, Smithburg; F. P. Caputo
(Log by Frank J. Markewicz, principal geologist, New Jersey Geological Survey)
Altitude, 160 feet

	Thickness (feet)	Depth (feet)
No sample	5	5
Sand, green, fine to medium, contains a large quantity of glauconite	10	15
No sample	45	60
Sand, green, fine to medium, silty, moderately glauconitic, slightly micaceous	70	130
Sand, greenish gray, with coarse grains, silty, finely micaceous and glauconitic	50	180
Sand, gray, very fine, clayey, micaceous, slightly glauconitic and lignitic	50	230
Clay, greenish gray, sandy, scattered very coarse sand grains, glauconitic, slightly fossiliferous	35	265
Clay, gray, tough, laminated, finely micaceous, slightly lignitic	52	317
Sand, greenish gray, fine to medium, clayey, slightly glauconitic, micaceous	4	321
Clay, gray, tough, with scattered coarse grains, slightly micaceous, lignitic	60	381
Clay, gray, tough, nodules, scattered siderite, micaceous, slightly fossiliferous	34	415
No sample	49	464
Sand, gray, moderately glauconitic, slightly micaceous and fossiliferous	2	466
No sample	88	554
Sand, yellowish gray, fine, clay lumps, slightly glauconitic and micaceous	10	564
Pyrite nodules, gray	1	565
No sample	35	600
Sand, gray, fine to medium, slightly micaceous and lignitic . . .	25	625
No sample	10	635
Sand, light gray, medium	5	640
No sample	15	655
Sand, light gray, medium	5	660
No sample	2	662
Sand, light gray, medium to coarse, lignitic	5	667
No sample	8	675
Sand, light gray, fine to very coarse	31	706

Table 3. — Selected logs of wells in Monmouth County, N. J. — Continued

Well I-4, Elton; William D. Clayton
(Log by Frank J. Markewicz, principal geologist, New Jersey Geological Survey)
Altitude, 185 feet

	Thickness (feet)	Depth (feet)
Marl, green, sandy, clayey, moderately micaceous, highly glauconitic, oxidized	20	20
Marl, green, sandy, and clayey, slightly micaceous, highly glauconitic, greatly oxidized	10	30
Sand, green, fine to medium, some coarse grains, micaceous, glauconitic, oxidized	70	100
Sand, greenish gray, fine, silty, micaceous, glauconitic	20	120
Silt, dark gray, clayey, sand, fine, slightly micaceous, fossiliferous	10	130
Sand, dark gray, fine to medium, glauconitic, fossiliferous . .	20	150
Marl, dark green, sandy, micaceous, slightly fossiliferous . .	10	160
Sand, grayish green, fine to medium, silty, micaceous, glauconitic, some coarse sand and pebbles	20	180
Sand, dark gray, very fine, silty, highly micaceous, slightly glauconitic	50	230
Sand, dark gray, very fine, clayey, silty, micaceous, glauconitic	30	260
Clay, dark gray, silty, micaceous, glauconitic	10	270
Sand, gray, fine, micaceous, glauconitic, fossiliferous	5	275
Clay, dark gray, silty, micaceous, glauconitic	5	280
Sand, dark gray, very fine to coarse, clayey, silty, micaceous, glauconitic	60	340
Clay, gray, silty, micaceous, slightly lignitic		at 340

Table 4.--Chemical analyses of water from public-supply wells in Monmouth Co.
(Analytical results in parts per million. Analyses by the U. S. Geological Survey)

Owner	Map No.	Date of collection	Temperature (°F)	Silica (SiO ₂)	Total iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids		Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH
																Residue on evaporation at 180°C	Sum	Calcium, magnesium	Noncarbonate		
Freehold	4	3/13/57	57	9.5	3	5.4	0.8	1.9	1.0	13	0	8.4	2.0	0.1	0.2	34	36	17	6	48.5	7.5
Do.	5	8/24/49	--	4.0	---	---	---	---	---	10	-	6	2.2	---	.0	--	--	13	-	47.2	5.5
Matawan	6	8/30/50	--	---	6.0	---	---	---	---	4	-	25	2.1	---	.0	--	--	15	-	48.4	5.9
Do.	7	4/14/49	--	---	6.5	---	---	---	---	3	-	15	2.2	---	.0	--	--	15	-	48.4	4.6
Do.	8	8/28/57	--	---	---	---	---	---	---	--	-	---	2.9	---	--	--	--	--	-	---	--
Keyport	10	4/12/50	--	---	10	---	---	---	---	8	-	---	2.5	---	.2	--	--	13	-	37.8	5.6
Do.	11	4/20/49	--	---	5.5	---	---	---	---	10	-	8	2.1	---	.1	--	--	14	-	35.9	5.9
Do.	12	4/20/49	--	---	7.8	---	---	---	---	10	-	8	2.0	---	.0	--	--	15	-	37.6	5.0
Do.	13	4/12/50	--	---	11	---	---	---	---	9	-	7	2.0	---	.1	--	--	17	-	38.3	5.9
Do.	14	4/11/56	--	---	---	---	---	1.7	---	10	0	6.7	1.8	---	--	--	--	14	6	39.3	5.9
Union Beach	15	4/20/49	--	---	6.7	---	---	---	---	9	-	8	2.2	---	.0	--	--	15	-	40.8	5.0
Keansburg	17	4/12/50	--	---	15	---	---	---	---	12	-	8	2.0	---	.1	--	--	17	-	48.4	5.7
Do.	18	9/1/54	60	---	2.4	---	---	5.4	---	12	0	11	2.5	---	1.0	--	--	14	4	48.9	5.8
Do.	19	4/20/49	--	---	8.5	---	---	---	---	12	-	10	2.1	---	.0	--	--	18	-	46.1	6.4
Do.	20	4/12/50	--	---	15	---	---	---	---	13	-	10	1.8	---	.2	--	--	19	-	48.5	5.6
West Keansburg Water Co.	21	1957	--	2.4	6.0	1.4	1.2	---	---	32	-	---	20	---	--	--	--	--	-	---	5.9
Atlantic Highlands	22	8/23/49	--	---	16	---	---	---	---	21	-	9	1.8	---	--	--	--	24	-	211	6.0
Do.	23	2/28/57	56	8.6	8.7	14	1.4	1.7	2.1	47	0	7.9	2.2	0.1	.4	65	62	41	2	101	7.7
Do.	24	8/28/50	--	---	13	---	---	---	---	20	-	22	1.2	---	--	--	--	28	-	63.4	6.6
Highlands	25	2/28/57	--	9.8	1.32	7.1	1.5	1.6	3.0	22	0	12	1.5	.1	.4	50	48	30	6	70.4	7.4
Red Bank	26	4/11/50	--	---	3.4	---	---	---	---	133	-	13	5	---	.3	--	--	128	-	249	7.1
Do.	27	4/21/49	--	---	23	---	---	---	---	34	-	2	2	---	.0	--	--	30	-	65.4	6.2
Do.	28	5/8/58	--	9.9	9.2	8.1	1.9	.9	2.2	28	0	8.4	1.6	.1	.1	52	47	28	6	70	6.2
Do.	29	2/28/57	59	17	2.3	43	2.7	1.8	2.4	131	0	13	3.8	.1	.1	157	148	119	11	248	7.3
Monmouth Consolidated Water Co. West End	30	5/24/56	--	---	8.0	---	---	---	---	36	-	---	1.5	---	--	86	--	30	6	---	6.2
Allenhurst	31	4/11/50	--	---	2.6	---	---	---	---	94	-	21	2	---	.3	--	--	96	-	211	7.2
Do.	32	3/1/57	62	15	1.6	28	4.5	3.1	4.8	88	-	26	1.2	---	.4	125	126	88	16	205	7.8
Monmouth Consolidated Water Co. Whitesville	33	8/25/49	--	---	12	---	---	---	---	30	-	16	2.4	---	.2	--	--	33	-	92.5	6.1
Do.	34	7/24/57	61	14	.97	32	4.5	2.4	5.6	96	0	22	2.2	.1	.9	133	131	99	20	210	7.5

Table 4.--Chemical analyses of water from public-supply wells in Monmouth Co.--Continued

(Analytical results in parts per million. Analyses by the U. S. Geological Survey)

Owner	Map No.	Date of collection	Temperature (°F)	Silica (SiO ₂)	Total iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids		Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH
																Residue on evaporation at 180°C	Sum	Calcium, magnesium	Noncarbonate		
Asbury Park	38	4/8/58	72	9.9	9.5	10	2.2	1.1	2.9	33	0	12	1.6	0.1	0.3	63	57	36	9	88	6.4
Do.	40	7/24/57	65	13	1.6	24	5.1	2.8	5.8	91	0	17	.6	.1	.5	120	114	81	6	188	6.2
Monmouth Consolidated Water Co. Ocean Grove	45	7/24/57	64	10	.99	27	4.3	2	5.6	92	0	21	.9	.3	.6	113	117	86	10	191	7.3
Do.	46	9/2/54	63	---	.3	---	---	9.4	---	101	0	38	1.2	---	.5	---	---	104	21	235	7.7
Avon-by-the-Sea	47	7/24/57	62	15	.26	31	6.0	2.4	7.2	98	0	32	2	.1	1.1	146	145	102	22	233	7.9
Do.	48	4/27/48	---	---	.28	---	---	---	---	106	-	38	2.2	---	.8	---	---	111	-	234	7.4
Do.	49	9/17/26	---	5.6	7.7	13	1.9	2.8	2	38	0	12	2.2	---	---	64	---	40	-	---	---
Belmar	50	7/24/57	66	7.1	1.9	24	4.1	1.1	5.2	91	0	13	1	.2	.6	103	101	77	2	180	6.7
Do.	51	8/28/50	---	---	---	---	---	---	---	104	-	8	.9	---	.1	---	---	192	-	192	7.8
Do.	52	4/6/51	64	---	.6	---	---	---	---	96	-	18	1.2	.2	---	---	---	82	-	192	7.9
Do.	55	4/6/51	64	---	.8	---	---	---	---	95	-	26	1.4	---	1.7	---	---	78	-	181	7.8
Do.	56	8/28/50	66	---	---	---	---	---	---	96	-	11	1.2	---	.1	---	---	80	-	183	7.7
Do.	57	7/24/57	65	12	.75	26	4.1	2.1	4.9	94	0	11	.9	.1	.6	113	108	82	5	179	8.0
Do.	58	8/28/50	---	---	---	---	---	---	---	100	-	7	1.5	---	.9	---	---	88	-	209	7.6
Do.	59	8/28/50	---	---	---	---	---	---	---	94	-	16	1.1	---	---	---	---	81	-	182	7.2
Spring Lake	60	8/29/50	---	---	---	---	---	---	---	96	-	9	---	.0	---	---	---	81	-	175	7.4
Do.	61	3/1/57	60	14	.46	22	5.1	3.2	6.0	100	0	8.1	1.2	.1	.5	114	108	76	0	178	8.0
Do.	62	4/14/49	---	---	---	---	---	---	---	104	-	7	---	.6	---	---	---	76	-	187	7.2
Spring Lake Heights	64	3/1/57	62	12	.47	22	4.5	2.8	4.8	96	0	7.3	1.4	.1	.5	102	103	74	0	174	8.1
Sea Girt	65	8/30/49	---	---	1.6	---	---	---	---	6	-	6	9.1	---	.1	---	---	13	-	65	5.6
Do.	66	8/30/49	---	---	2.7	---	---	---	---	7	-	5	9.8	---	.1	---	---	10	-	59	5.6
Do.	67	8/30/49	---	---	---	---	---	---	---	140	-	2	2.2	---	.9	---	---	92	-	233	7.3
Do.	68	3/1/57	66	14	.45	22	5.2	3.7	6.3	102	0	7.9	1.4	.1	.9	122	113	76	0	185	8.2
Manasquan	70	4/11/47	---	---	.97	---	---	---	---	3	-	7	8.5	.1	---	---	---	10	-	---	5.2
Do.	71	3/28/56	54	---	.28	---	---	6.4	---	1	0	9.4	8.1	---	---	---	---	8	7	63.7	4.8
Do.	73	9/1/54	54	---	.15	---	---	11	---	2.4	0	10	10	---	2.2	---	---	5	3	64.5	5.0
Brielle	74	4/9/58	54	13	10	2.7	.2	4.5	1.8	12	0	2.1	7.8	.1	.6	41	40	11	1	49	6.3
Do.	75	3/1/57	65	11	.31	22	5.7	4	9	104	0	7.3	1.2	.1	.9	109	112	78	0	188	7.8
Farmingdale	76	3/1/57	58	12	.88	38	3.2	2.7	3.9	128	4	4.6	2.7	.1	.2	143	135	108	0	234	8.4
Do.	77	9/5/50	56	---	1.5	---	---	---	---	128	-	8	3	---	---	---	---	104	-	227	7.8

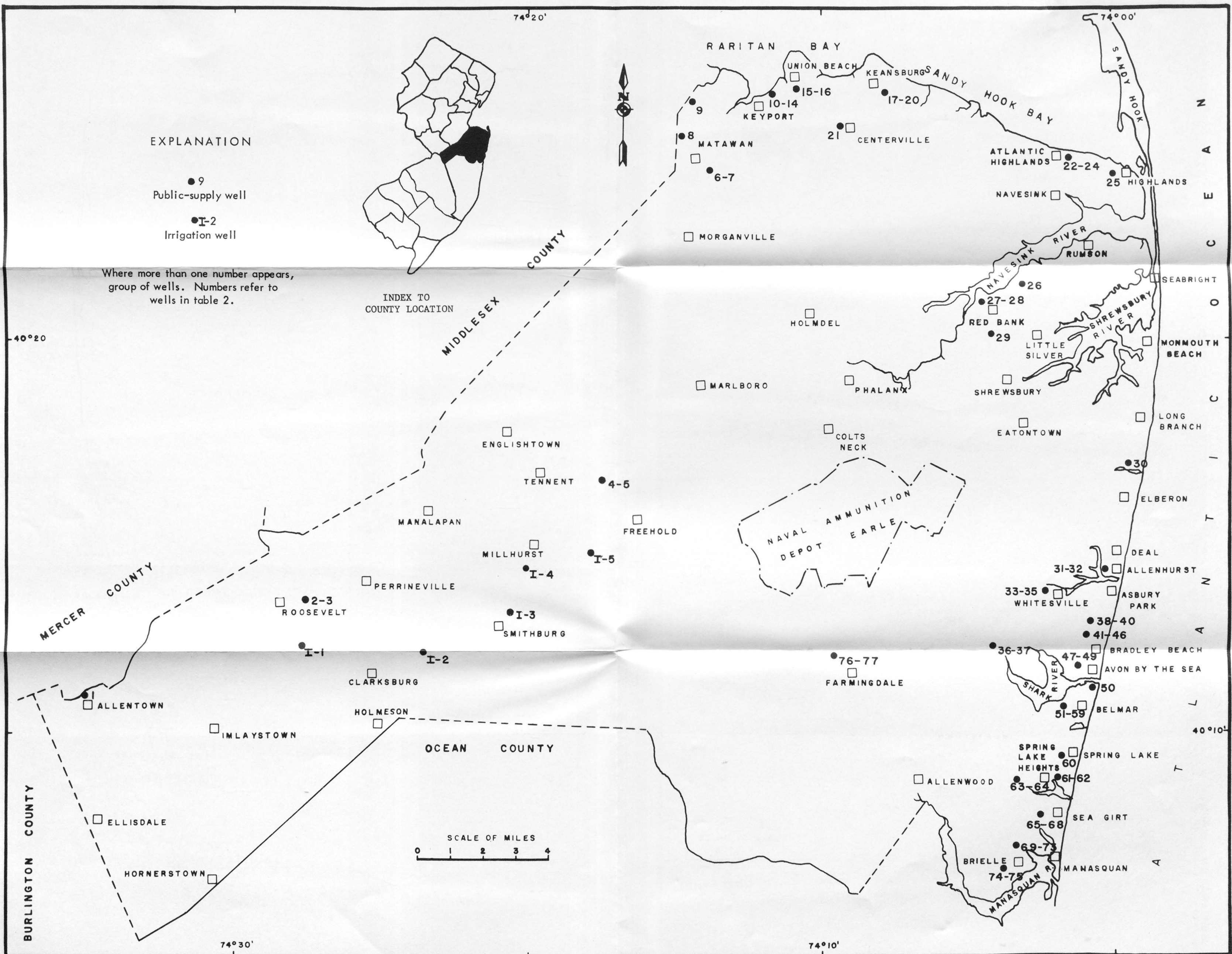


Plate I - Map of Monmouth County, N. J. showing the location of selected large-capacity wells