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HURRICANE FLOODS OF SEPTEMBER 1938

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HURRICANE FLOODS OF SEPTEMBER 1938

ABSTRACT

During the brief interval of 6 hours on September 21, 1938, a West Indian hurricane passed over Long Island and New England. The hurricane as it struck New England was the climax of a 4-day period of rainfall which in itself was of outstanding amount and character and which produced river stages that inundated and damaged nearly everything on the river flood plains. When measured by the appalling loss of life and property by the combined forces of the hurricane winds and the associated ocean storm waves and river floods, these events constituted the greatest catastrophe in New England since its settlement by the white man.

Although the river floods were generally contemporary with the hurricane, their magnitude was a result of the rainfall which began with light showers during the afternoon of September 17 and which continued with but little interruption and with generally increasing intensity until late afternoon of September 21, when it ended abruptly with the passing of the hurricane. Total precipitation exceeded 17 inches locally and averaged 11.5 inches over an area of 10,000 square miles in the central storm area.

The peak stages in many places on the smaller streams in the central storm area greatly exceeded those previously recorded during the outstanding storms of November 1927 and March 1936. Although all streams in the area were above flood stage, the upper Contoocook River in New Hampshire, the western tributaries of the Thames River, the tributaries of the Connecticut River below White River Junction, the upper Housatonic River and many of its tributaries, the tributaries of the Hudson River from the east, and the Raritan River in New Jersey reached flood stages that exceeded any previously recorded.

Rates of discharge of 400 to 500 second-feet per square mile were measured for areas as large as 100 square miles on the smaller tributaries to the Connecticut River in southern Vermont, in the Westfield and Deerfield River Basins, and in the drainage basin of the Chicopee River in central Massachusetts. On these streams many dams and bridges failed, buildings were swept away, and debris was deposited on overflowed lands.

Volumes of direct run-off produced by the storm rainfall of September 17-21 reached as high as 9 and 10 inches in the central storm area, an amount rarely exceeded in the northeastern United States during single storms not associated with snow. The volume of direct run-off was equivalent to 3.7 inches over the Merrimack River Basin and 4.05 inches over the Connecticut River Basin. The absorption of rainfall indicated by the infiltration index ranged from 0.02 inch per hour in central Vermont and New Hampshire to 0.26 inch and more per hour on Long Island. A marked tendency was disclosed for the infiltration index to be greater in the relatively flat coastal areas than in the steep mountainous areas. The general average was 0.10 inch per hour.

All along the coast between New York City and Cape Cod record-breaking ocean levels were recorded. Maximum storm-wave heights were measured in Rhode Island where several heights exceeded 17 feet above mean high water.

The extraordinary amount of rainfall during the period September 17-21 was instrumental in producing an exceptionally high water table on Long Island. In this region where the 4-day rainfall was 11 inches it was computed that the recharge was approximately 7.2 inches. In less permeable and steeper regions on the mainland, the recharge was considerably less, being estimated as generally between 0.5 and 3.0 inches.

This report presents records of stage and discharge for the period including the flood at about 240 stream-gaging stations, records of storage in many reservoirs, a summary of peak discharges with comparative data for other floods at about 530 measurement points, and tables showing crest stages along an aggregate length of stream channel for 1,450 miles, records of daily observations of precipitation during the period September 12-21 at about 745 places, and records of more frequent observations of precipitation at about 110 places of measurement, records of ocean-wave height at about 230 locations along the coast, and records of water level in 31 observation wells on Long Island.

The report also includes basic information in regard to the hurricane and general weather conditions associated with floods, analyses of rainfall and run-off, discussions of storage and ground-water recharge, and many other data pertinent to the floods.

INTRODUCTION

A hurricane, an ocean storm wave, and floods combined their forces of violence in September 1938 to produce destruction of life and property in the North Atlantic States probably exceeding that of any previous single natural disaster in the history of the nation. A tropical hurricane moving northward off the Atlantic Coast suddenly struck inland from the ocean on the afternoon of September 21 and crossed Long Island and the coast of Connecticut and Rhode Island, where gales and ocean inundation caused almost unimaginable damage along the thickly populated shores. Had not many summer residents returned to their homes soon after Labor Day, the loss of lives would have been more appalling. The hurricane continued northward with almost unabated force through Connecticut and Massachusetts, and then gradually diminishing, crossed the Green Mountains in central Vermont, and passed into Canada near Lake Champlain. It left behind a ravaged countryside extending scores of miles eastward from its central path.

New England had been experiencing heavy rainfall on September 18, 19, and 20, and streams were bank full when the rain associated with the hurricane brought the total rainfall during a 4-day period to a maximum of about 17 inches in certain limited areas and to an average of more than 11.5 inches over an area of 10,000 square miles.

Thus the great storm wave that swept inland along the shores of Connecticut and Rhode Island coincident with the passing of the hurricane on the afternoon of September 21 was followed by a wave of floods in all the stream channels on the timbered slopes of the New England hills and in the larger rivers, inundating, destroying, or damaging all within the flood plains. Generally by the evening of September 23 the flood waters had passed into the Atlantic Ocean.

The rates of flood discharge resulting from the heavy precipitation were so much in excess of the capacities of the unobstructed parts of the natural channels that hundreds of bridges were seriously damaged or destroyed. Major damages were inflicted upon many cities and towns, and upon railroads, highways, mills, dams, and other improvements which for convenience and largely of necessity had been constructed within, on, or over natural channels of flow.

It was variously estimated that about 500 or more lives were lost, mainly along the coastal areas where the hurricane and inundation by the record ocean wave were coincident, and estimates fix the direct property

loss and damage in the area as a whole at close to one-third of a billion dollars.

In each of the following primary drainage basins the flood discharges of many of the tributaries closely approached or exceeded--some of them by large amounts--any records of floods previously known in those areas:

Merrimack River	Hudson River
Thames River	Passaic River
Connecticut River	Raritan River
Housatonic River	Lake Champlain

The large area included within these primary drainage basins and the nearby lesser basins or parts of basins that were affected by the floods are shown on figure 1.

The floods of September 1938 coming so shortly after the wide-spread floods of March 1936 and only 11 years after the New England flood of November 1927 have not only impressed upon the inhabitants of the affected regions the magnitude of the problem of controlling and confining the flood waters but have also indicated a prevailing frequency of occurrence that may have an important bearing on the economics of flood control. Each local, State, or Federal organization engaged in formulating plans for protective measures requires sound and adequate basic information relating to the stages, discharges, and other characteristics of all outstanding floods that have affected their particular areas.

The United States Geological Survey operating through several local district offices maintains as a part of the regular nation-wide stream-gaging program about 300 river-measurement stations within the area affected by the floods of September 1938. These stations have been maintained by the Geological Survey largely in cooperation with States and municipalities and generally for periods beginning several years prior to the September floods. By this program the Survey has obtained systematic records of stages and rates and volumes of flow of the streams covering the range from drought to extraordinary floods.

Immediately after the floods of September 1938, action was taken to collect and compile all available basic meteorologic and hydrologic data from official and private sources, and surveys were begun to determine the maximum discharge of streams throughout the flooded area. For the furtherance of this work $24,000 of the funds allotted at the beginning of the fiscal year to the Geological Survey by the Federal Emergency Administration of Public Works in accordance with the National Industrial Recovery Act of 1933 for "surveys of floods and droughts" was used to

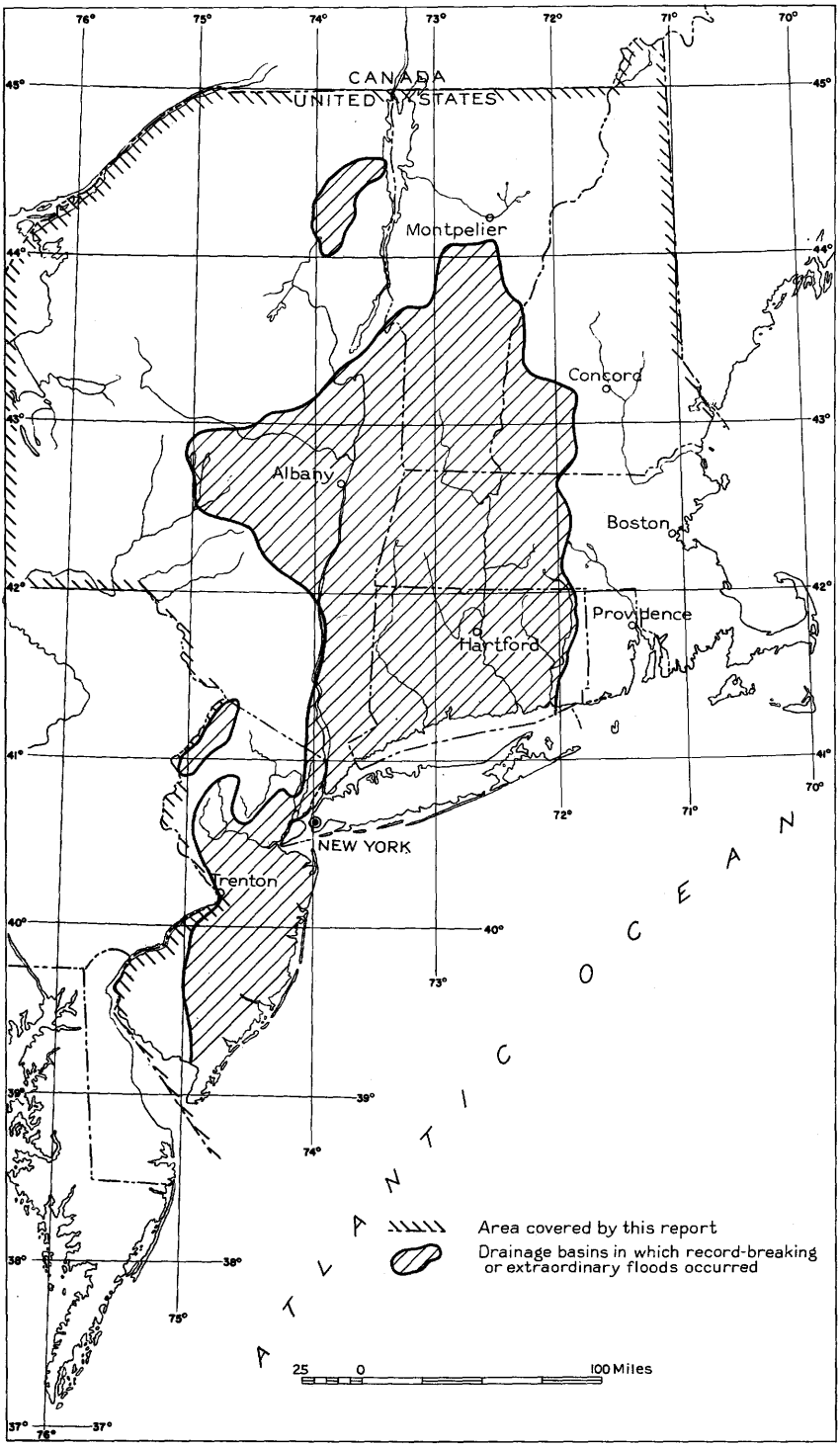

Figure 1.--Map showing location of area covered by this report.

supplement regular and cooperative funds. Prompt inauguration of field work made it possible to obtain pertinent evidence of flood stages and profiles before the area was snow-covered and before evidences of the flood were obliterated by processes of reconstruction which were undertaken promptly in every city, town, and hamlet.

This report contains all the basic information relating to stages and discharges collected at the regular river-measurement stations, the results of flood-flow determinations made at points where regular gaging stations were not being maintained, all basic meteorologic and hydrologic information, and the results of analyses of rainfall, run-off and channel storage.

ADMINISTRATION AND PERSONNEL

The field and office work incident to the preparation of this report were performed by the water-resources branch of the Geological Survey under the general administrative direction of N. C. Grover, chief hydraulic engineer, up to the time of his retirement from the Government service on January 31, 1939, then under C. G. Paulsen, acting chief hydraulic engineer, until October 17, 1939, and G. L. Parker, chief hydraulic engineer thereafter, the major part of the work being performed during Mr. Paulsen's incumbency. The actual field work and collection and tabulation of the basic information for stages and discharges were done by the district engineers and their staffs in the division of surface water, C. G. Paulsen, chief. The district engineers primarily responsible for the collection and preparation of this information were B. L. Bigwood, Hartford, Conn.; A. W. Harrington, Albany, N. Y.; O. W. Hartwell, Trenton, N. J.; and H. B. Kinnison, Boston, Mass. The section entitled "Ground-water recharge on Long Island" was prepared by R. M. Leggette, geologist, of the division of ground water, under the direction of O. E. Meinzer, chief. The compilation of maximum ocean storm-wave heights associated with the hurricane was prepared by B. L. Bigwood, district engineer, Hartford, Conn.

The information on rainfall and other climatological features and the analyses of rainfall and run-off relations and storage were prepared by W. B. Langbein, assistant engineer, division of water utilization, under the direction of R. W. Davenport, chief. The coordination of the collection of data and a major part of the preparation of material for publication were directed by Hollister Johnson, hydraulic engineer, temporarily assigned to the division of water utilization, through the

technical and clerical staff and other facilities of the office of H. B. Kinnison, district engineer, Boston, Mass. W. G. Hoyt, consulting engineer, conservation branch, reviewed the report and assisted in the final phases of preparation. The report was finally reviewed and assembled for publication in the division of water utilization in Washington, D. C. Many other members of the staff of the Geological Survey made valuable contributions to this work. The permanent field and office staff were assisted by temporary employees appointed by the Secretary of the Interior under the provisions of the National Industrial Recovery Act.

ACKNOWLEDGMENTS

The Geological Survey, acting through its district field offices, cooperated with State and municipal agencies in the several districts. Acknowledgment is made to these cooperating agencies for participation in the systematic collection of the records of river discharge that form the broad base for the specific flood information and in the maintenance of field organizations in which engineers trained for investigation of this kind were available for the special studies related to the collection of the field data and the preparation of the report.

Information appearing in this report has been obtained from many sources, including individuals, corporations, and local, State and Federal governmental organizations. Financial cooperation in connection with the regular river-measurement program of the Geological Survey in the areas covered by this report has been received from the following agencies: In Connecticut, the State Water Commission, the City of New Britain Board of Water Commissioners, and the City of Hartford Flood Investigation and Improvement Commission; in Massachusetts, the Department of Public Works, the Department of Public Health, the Metropolitan District Water Supply Commission, and the Metropolitan District Commission; in New Hampshire, the State Water Resources Board; in New Jersey, the State Water Policy Commission, the North Jersey District Water Supply Commission, and the Delaware River Joint Toll Bridge Commission; in New York, the State Water Power and Control Commission, the State Department of Public Works, the State Department of Conservation, the Board of the Hudson River Regulating District, the New York City Board of Water Supply, the City of Albany Department of Water and Water Supply, the County of Nassau Department of Public Works, and the Village of Ossining Board of Water Commissioners; and in Vermont, the State through its Executive Department.

Federal agencies to whom acknowledgments are made for services rendered or data furnished include the Weather Bureau; the Corps of Engineers and the Air Corps of the United States Army; the Soil Conservation Service; the Emergency Administration of Public Works, and the Works Progress Administration.

Special assistance in collecting data and furnishing records was also rendered by the Connecticut State Water Commission, the Massachusetts Department of Public Health, the Massachusetts Geodetic Survey, the New Hampshire Water Resources Board, the Rhode Island Department of Public Works, the City of Pawtucket, the Springfield Board of Water Commissioners, the Water Bureau of the Hartford Metropolitan District, the Connecticut Light & Power Co., Connecticut Power Co., the Hartford Electric Light Co., the city of Waterbury, Conn., Bureau of Engineering, the Collins Co. of Connecticut, the Rockville, Conn., Water & Aqueduct Co., School of Engineering at Yale University, the Belding-Hemingway Co. of Connecticut, the New England Power Co., the New England Power Association, the Proprietors of Locks and Canals on the Merrimack River, the Essex Co., the Holyoke Water Power Co., the Turners Falls Power & Electric Co., Mascoma River Improvement Co., the New Hampshire Public Service Co., Worcester Electric Light Co., New York City Department of Water Supply, Gas & Electricity, System Properties, West Virginia Pulp & Paper Co., New York & Pennsylvania Co., Associated Gas & Electric System, Oswego River Watershed Co., New York Power & Light Corporation, Central Hudson Gas & Electric Corporation, Indian River Co., Streever Construction Co., Blandy Paper Co., Rockland Light & Power Co., Charles H. Tenney Co., Dutchess Bleachery, Inc., Rensselaer Polytechnic Institute, the Society for Establishing Useful Manufactures, Hackensack Water Co., Jersey Central Power & Light Co., Monmouth Consolidated Water Co., Morris Canal & Banking Co. and Taylor-Wharton Iron & Steel Co. In New York the following municipalities also gave assistance: Schenectady, Kingston, and Ilion; in New Jersey, the municipalities of Atlantic City, Jersey City, Morriston, Newark, New Brunswick, and Princeton. So far as practicable, acknowledgments for individual contributions of information are given at appropriate places in the report.

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GENERAL FEATURES OF THE STORMS

Although the time of occurrence of the major floods on the New England streams during September 1938 was coincident with the tropical hurricane that swept northward across New England on September 21, it appears that the magnitude of the floods may have been determined in part by meteorological conditions not intimately associated with the tropical disturbances. It was not until September 16 that the hurricane had been definitely charted as a fully developed hurricane some 1,200 miles east of the south Atlantic coast traveling in the usual course at the moderate speed of about 20 miles an hour. Prior to that time a continental disturbance centered over northern Maine on the afternoon of September 12 and was the cause of appreciable rainfall in the New England area. At the same time a low-pressure area centered over Nebraska moved along the regular paths eastward across the Ohio and St. Lawrence Valleys and by the afternoon of September 15 was over eastern Quebec. These disturbances brought 1 to 4 inches of rain to New England and eastern New York (see fig. 2) during the period September 12 to 16 which in this report has been designated as the time of the first storm. The greatest recorded precipitation on any calendar day was between 1.5 and 2 inches. There was no appreciable flood run-off from the rainfall of the first storm, but a considerable part of the absorptive capacity of the ground had been utilized at the beginning of the second or major storm period with the result that the magnitude and intensity of the flood run-off were correspondingly increased during the subsequent major storm.

The major storm period began with light showers during the afternoon of September 17 after which, on September 18, there ensued a steady accumulation of precipitation generally increasing in intensity. The period closed abruptly with the passing of the hurricane during the afternoon and evening of September 21. (See fig. 3.) The precipitation on September 17, 18, and 19 seems to have been indirectly associated with a rather severe continental disturbance that was situated over Lake Michigan and Lake Superior and with the inflow of polar air from the high-pressure area that centered over Newfoundland. The precipitation during the latter part of this period is shown in figure 4. The weather maps for the mornings of September 18 and 19 show a well-defined front situated slightly to the east but parallel to the belt of maximum rainfall shown in figure 5. The weather map for the morning of September 20 showed material alterations; the continental low-pressure area had diminished in depth and had moved

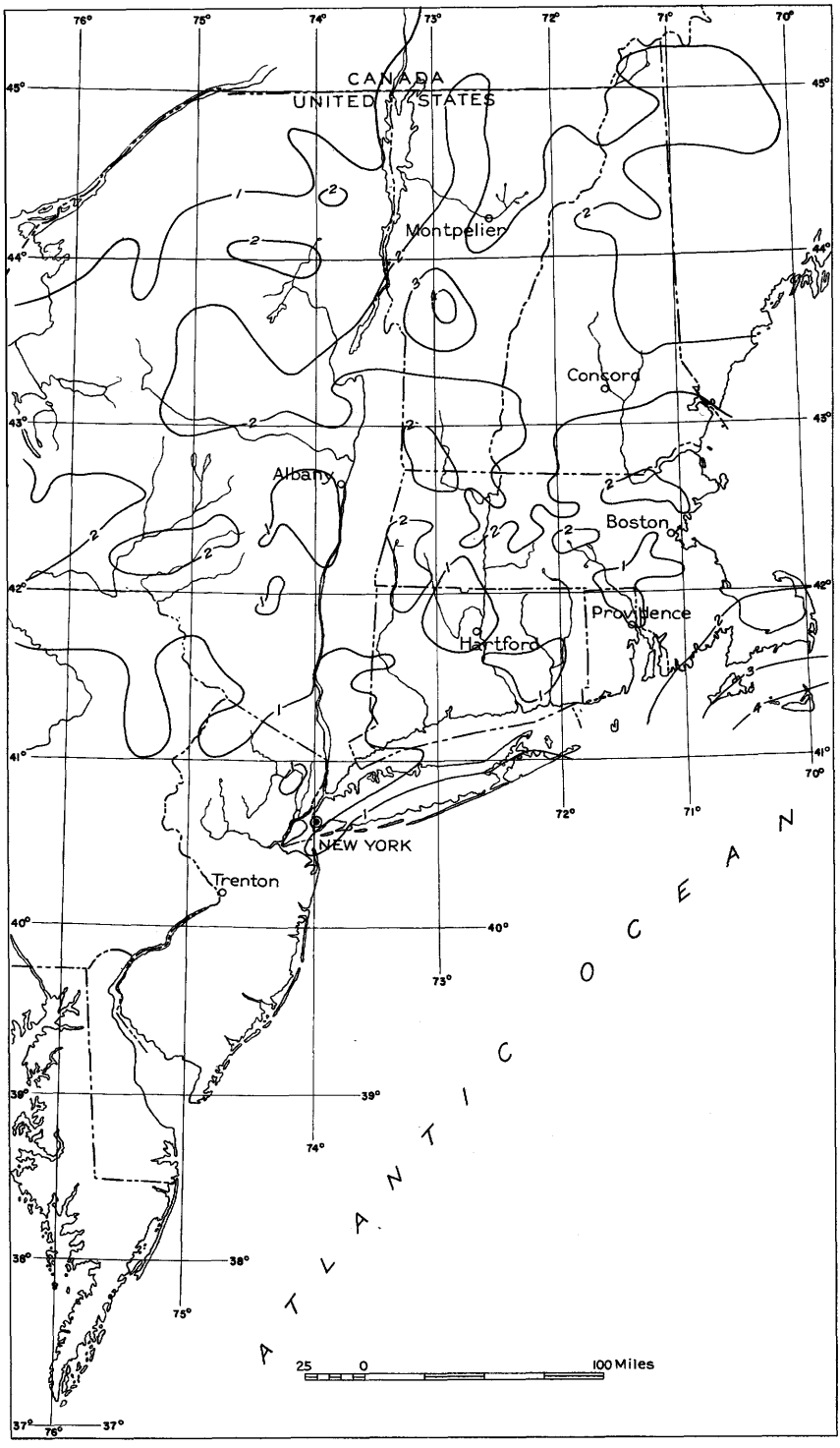

Figure 2.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, September 12-16, 1938.

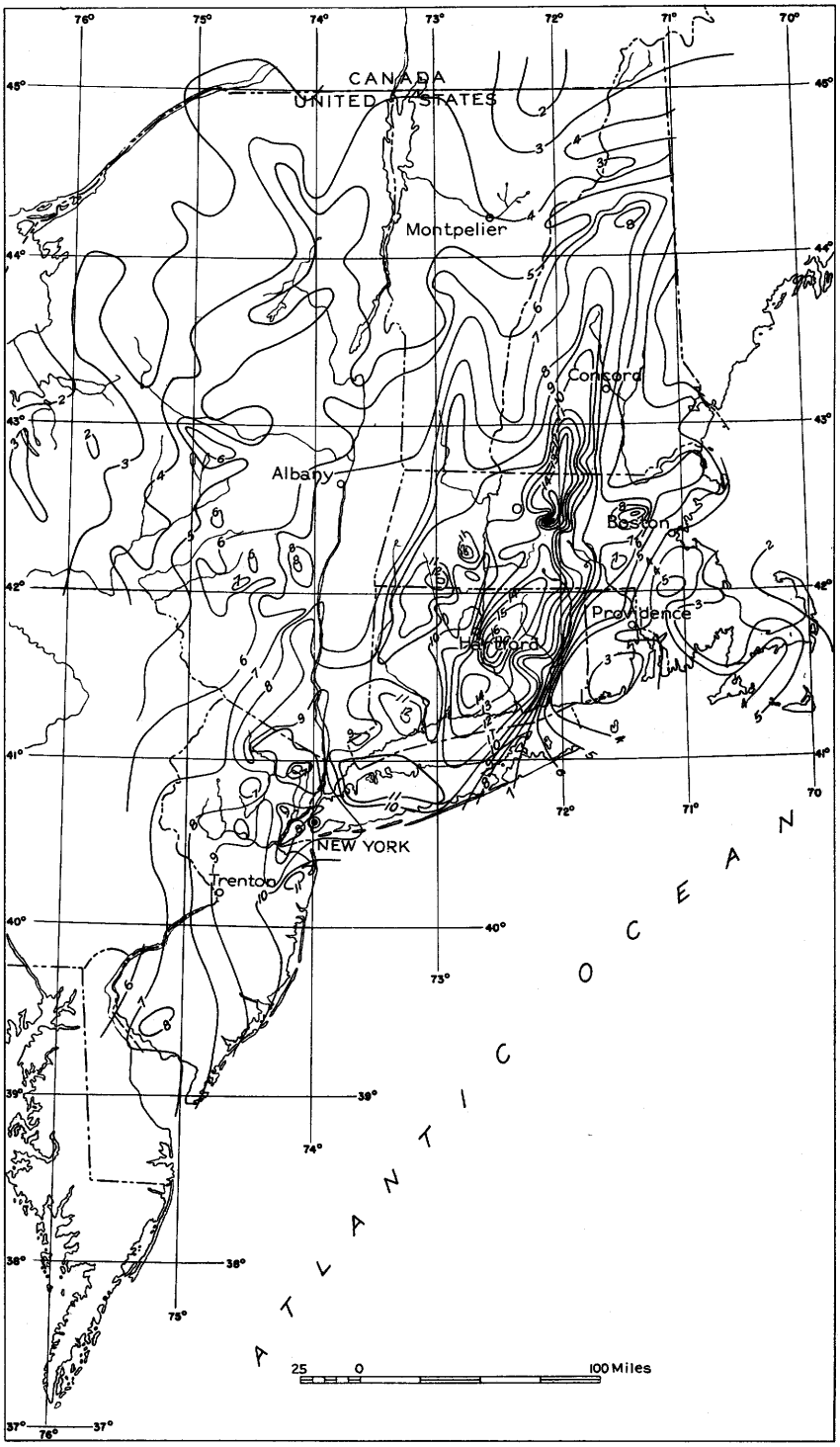

Figure 3.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, September 17-21, 1938.

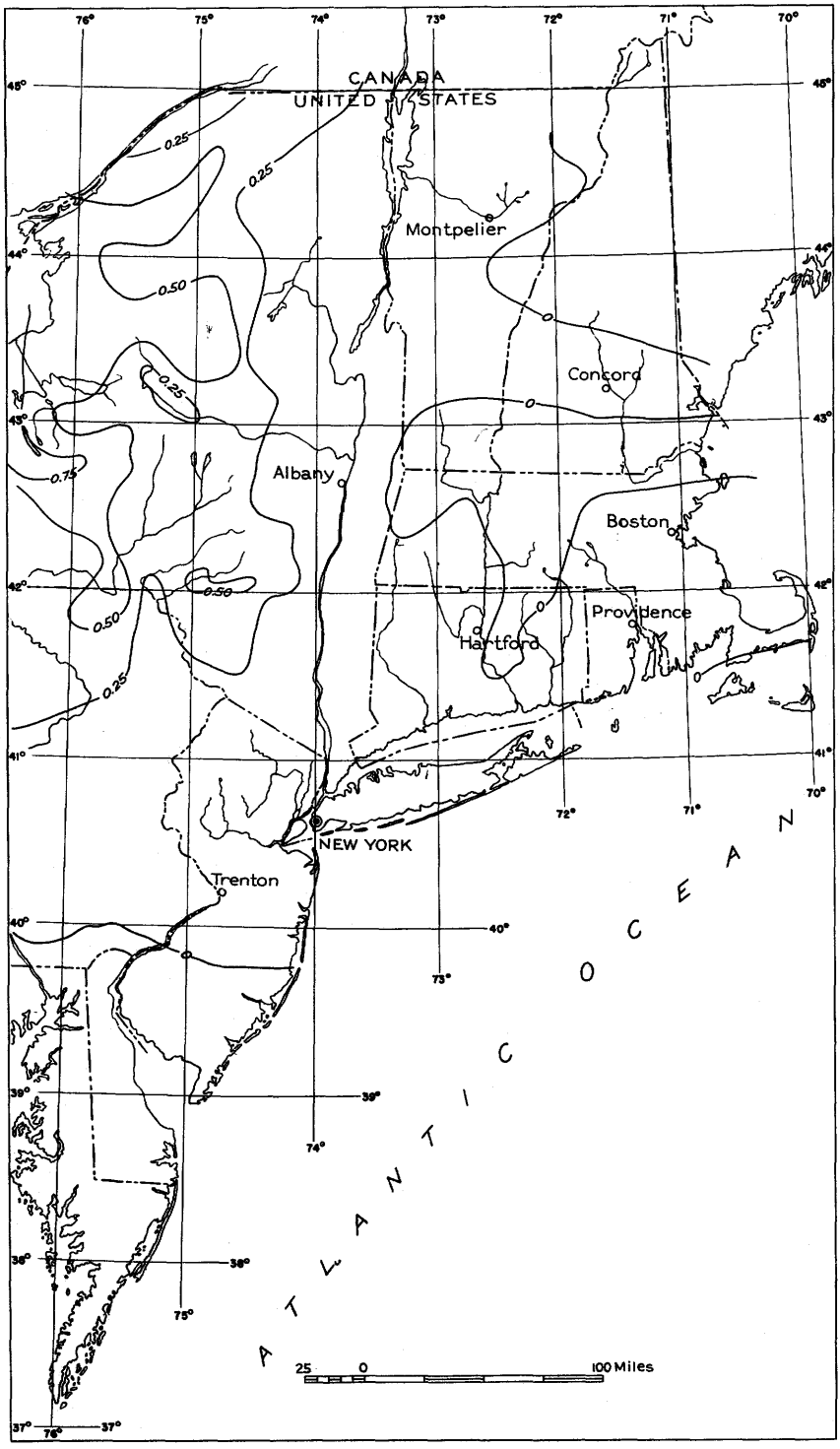

Figure 4.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, September 22-24, 1938.

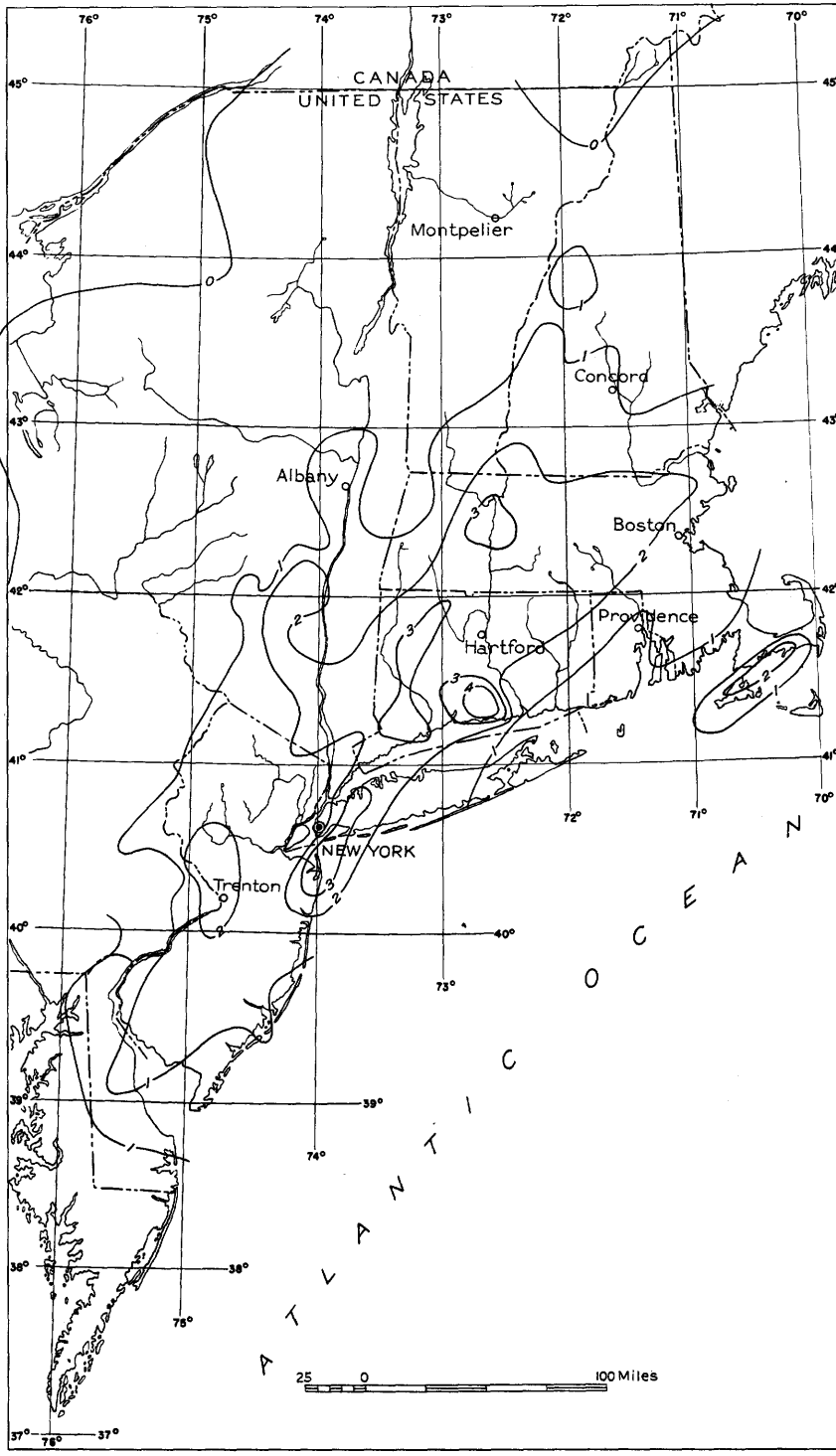

Figure 5.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, for 24 hours ending at 6 p.m., September 19, 1938.

to the northeast over Quebec. It was succeeded by a high-pressure area. An associated trough of low pressure had developed to the east of the coast extending from North Carolina into central New England. This trough was then situated between one high-pressure area over the eastern Great Plains and a second over Newfoundland and the north Atlantic Ocean. Into the trough so formed moist tropical air moved northward and aloft, causing copious rainfall over New England (see fig. 6). Meanwhile the hurricane disturbance was progressing rapidly northward along the Atlantic coast between the nearly stationary high-pressure areas. On the morning of September 21 the low-pressure areas had united and a deep trough of low barometric pressure remained over the coastal area from Cape Hatteras northward and over New England and eastern New York, along the center of which the hurricane was rapidly advancing northward. This sequence of meteorologic conditions produced torrential rains that continued through the afternoon of the 21st, generally culminating in high intensity rates and abruptly terminating with the passing of the central low-pressure area or hurricane. The rainfall during the 24-hour period ending on the afternoon of the 21st is shown in figure 7; the central path of the hurricane is also shown. The isohyetal maps, figures 6 and 7, for the rains of September 20 and 21, and especially plate 1 (in pocket) showing the isohyetals for the full storm period, disclose a sharply defined front in the east, particularly in Connecticut; on the west the front was not so closely defined. Direct run-off was accumulating in all streams on September 19 and 20 and into their well-filled channels came the heavy run-off resulting from the intensive storm precipitation on the 21st.

At 10:30 a.m., September 18, the Weather Bureau forecast center at Jacksonville, Fla., issued the following warning:

> The tropical disturbance, probably of full hurricane intensity, is centered at 7 a.m. E.S.T. in approximately latitude 22°30' north and longitude 62° west, apparently moving west or west-northwestward about 15 to 20 miles per hour. Caution is advised all vessels in path of this dangerous storm.

This warning was followed by 16 bulletins, each giving the location of the hurricane center, its speed, and probable course. Table 1 shows meteorologic data concerning the hurricane for each of a number of places, listed northward from Cape Hatteras, N. C., to Burlington, Vt.

At about 7:30 a.m. on September 21 the storm center was off Cape Hatteras where, as a result of the prevailing barometric conditions previously described, it departed from the usual storm track that projects to the northeast over the Atlantic Ocean, and drove slightly east of

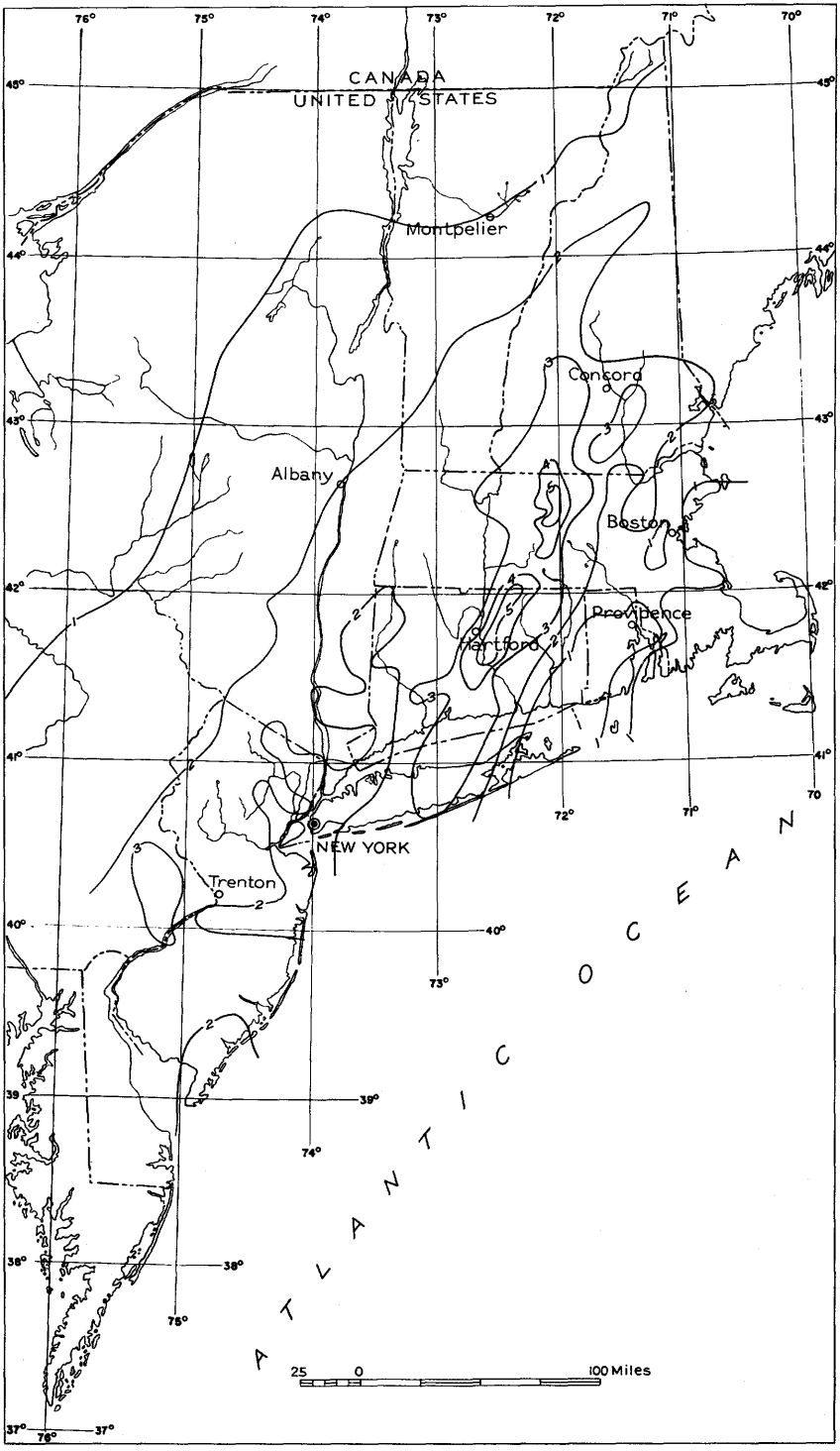

Figure 6.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, for 24 hours ending at 6 p.m., September 20, 1938.

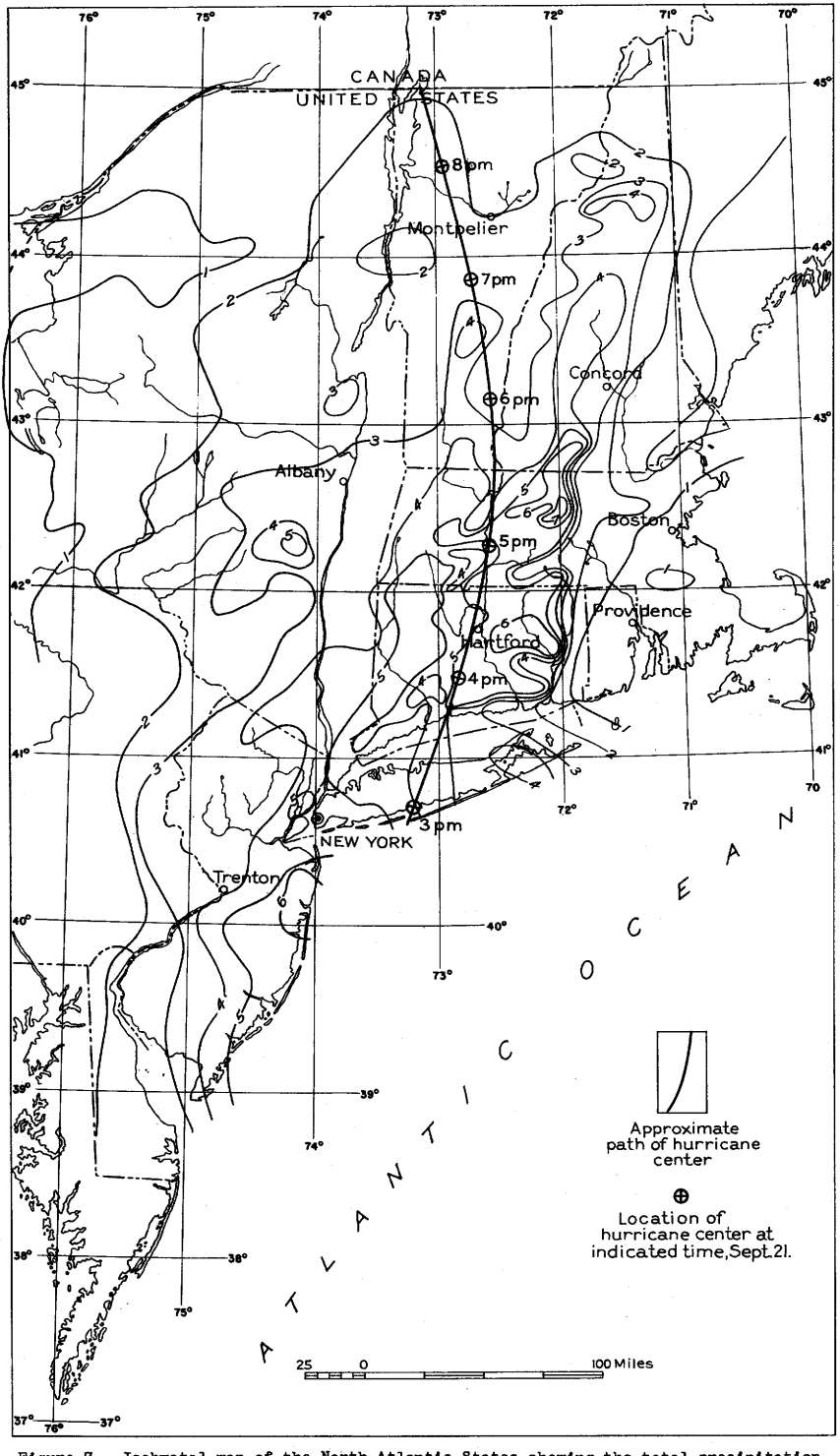

Figure 7.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, for 24 hours ending at 6 p.m., September 21, 1938.

Table 1.--Meteorologic data of the hurricane

Location	Barometer		Wind		Precipitation accompanying minimum pressure (inches)		
	Minimum pressure (inches)	Time Sept. 21	Maximum (miles per hour)	Direction	Hour before	Hour of	Hour after
Cape Hatteras, N. C.	29.30	7:30 a.m.	50	NW.	-	-	-
Atlantic City, N. J.	28.99	1:10 p.m.	61	W.	0.59	0.59	0.15
Sandy Hook, N. J.	28.71	2:00 p.m.	56	N.	a.73	.61	.31
Floyd Bennett Airport, N. Y. b/	28.61	2:51 p.m.	-	-	.62	.40	.18
Babylon, N. Y. c/	28.00	3:00 p.m.	-	-	.26	.34	.11
New York, N. Y.	28.72	2:43 p.m.	70	NW.	a.88	.05	.01
Mitchell Field, N. Y. c/	28.58	2:30 p.m.	52	NE.	.26	.34	.11
Garden City, N. Y. d/	28.31	2:15 p.m.	-	-	.40	a.60	.02
Mineola, N. Y.	28.50	3:00 p.m.	-	-	.40	a.60	.02
Patchogue, N. Y.	28.20	-	-	-	-	-	-
Water Mill, N. Y.	28.44	3-4 p.m.	-	-	-	-	-
Bridgehampton, N. Y.	28.69	3:00 p.m.	-	-	-	-	-
Setauket, N. Y.	28.02	3:14 p.m.	-	-	-	-	-
Block Island, R. I.	28.66	3:15 p.m.	82	SE.	.15	a.74	.10
New Haven, Conn.	28.11	3:50 p.m.	38	NE.	a.63	.31	Tr.
Hartford, Conn.	28.04	4:17 p.m.	46	NE.	.26	a.75	.16
Kingston, N. Y.	28.06	4:30 p.m.	-	-	.44	.21	0
Worcester, Mass.	28.68	5:00 p.m.	-	-	.28	.10	.02
Blue Hill, Mass.	29.01	5:16 p.m.	e121	S.	.05	0	Tr.
Boston, Mass.	29.05	5:30 p.m.	73	S.	.06	Tr.	Tr.
Amherst, Mass.	28.41	5:06 p.m.	58	-	.39	.60	.10
Concord, N. H.	28.91	5:45 p.m.	56	SE.	.05	.01	Tr.
Hanover, N. H.	28.70	6:20 p.m.	46	SE.	.17	.17	.01
Northfield, Vt.	28.77	7:30 p.m.	47	S.	a.58	.40	.01
Whiteface Mountain, N.Y.	f24.35	7:30 p.m.	-	-	-	-	-
Burlington, Vt.	28.68	8:00 p.m.	47	S.	a.51	.19	.04

a Maximum hourly rate for day.
b Precipitation based on record at Brooklyn, N. Y.
c Precipitation based on record at Freeport, N. Y.
d Precipitation based on record at Mineola, N. Y.
e For periods shorter than 5 minutes, 173 to 183 miles an hour.
f Not reduced to sea level; altitude 4,872 feet.

north over Long Island and thence over central New England. The storm center reached the latitude of Atlantic City, N. J., at 1:10 p.m., September 21, when it was moving almost northward at about 56 miles an hour. One hour and 5 minutes later it was east of Sandy Hook, indicating an average speed of 78 miles an hour. About half an hour later the center reached the south Long Island coast between Jones Beach and Saltaire. At Brentwood,[1] near the central part of Long Island, an observer reported that the "eye" of the storm required 50 minutes in passing, during which interval there were light drizzles of rain from no determinable direction. The clouds broke for two or three 5-minute intervals, and the air was very calm. At Setauket, on Long Island Sound north of Brentwood, the Weather Bureau observer reported that the barometer fell rapidly with the approach of the hurricane from 29.37 inches at 1:30 p.m. to a low of 28.02 inches at 3:14 p.m. He further reported that the calm of the center of the storm, which lasted about 20 minutes, was followed by a terrific gale from the west and northwest. During the first half of the storm the wind was mainly due east.

The Weather Bureau reported as follows:[2]

> The storm crossed central Long Island near Brentwood, moving nearly northward, and passed slightly to the west of New Haven at 3:50 p.m.; Hartford was passed, also slightly to the west, at 4:17 p.m. and thence paralleling the Connecticut River, passing Amherst at 5:05 p.m. Thereafter its tract curved more and more northwestward, and the center passed Hanover, N. H., at 6:20 p.m.; Northfield, Vt., at 7:30 p.m., and Burlington at 8 p.m. The storm's forward advance was then retarding rapidly, and the center was diminishing in its depth of gradient. During the night it passed into western Quebec with diminished force and movement.

On the basis of the time of travel of the storm center from New Haven, Conn., to Burlington, Vt., the storm crossed New England at about 55 miles an hour. Also according to the Weather Bureau:

> There has never been a storm of such high speed migration since precision instrumental observations have been possible, nor has one maintained its intensity of gradient and such high speed in combination.

Minimum barometric pressure recorded by the Weather Bureau in the hurricane path in southern New England was 28.04 inches at Hartford, Conn., the lowest ever recorded by the Weather Bureau in this area. The hurricane winds, revolving in a counter-clockwise direction about the center were augmented in their velocity on the east side by the northward movement of the storm, thus producing the extremely destructive wind forces that swept the eastern sector of the storm area. (See pl. 2.) On the west side the

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1/ Kimball, J. H., The history and developments of the Long Island hurricane of September 21, 1938: report in manuscript form prepared for Power Group, New York Sec., Am. Inst. Elec. Eng., Dec. 6, 1938.

2/ U. S. Dept. Agr., Weather Bur., Climatological Data, vol. 25, no. 10, New England sec., p. 53, Sept. 1938.

forward velocity opposed the circulating velocities, and consequently the resultant winds were less devastating on that side. The effect of the passing hurricane in producing the storm wave from the ocean is described in another section of this report. The wind seriously damaged buildings and broke off or uprooted trees in all parts of the area traversed by the hurricane and over a wide zone farther east. (See pl. 3.) Wind damage did not extend far west of the path. In addition to a large number of newspaper accounts, several articles[3/], which supplement those mentioned in other parts of this report, describe the hurricane in further detail, with appropriate reference to its damaging effects.

As shown in table 6 on page 62, the maximum hourly precipitation for the day was recorded at many localities either during the hour of lowest barometric pressure or during the preceding hour. In general, there was almost complete cessation of rain by the second hour after the passing of the storm center except for an area in northern New York where light rains continued for several days. (See fig. 4.)

The major storm period as mentioned previously essentially embraced the rain that fell between the afternoon of September 17 and the evening of September 21. The rain during the 24 hours preceding 6 p.m., September 18, was relatively light and produced but little direct run-off. The precipitation during each of the following 3 days (shown on figs. 5 to 7 previously alluded to and derived by methods explained in the section on meteorologic and hydrologic conditions) was appreciable and was localized over nearly the same area and along nearly the same axis. Figures 8 to 22 show the precipitation during 6-hour intervals through the storm period as determined by the Corps of Engineers, United States Army, in cooperation with the Weather Bureau.

During the 24 hours ending at 6 p.m., September 19, it rained from 1 to 4 inches and more along the front mentioned previously over an area that extended through New Jersey, southeastern New York, western Long Island, Connecticut, Massachusetts, and into the southern part of New Hampshire and Vermont. The area that received more than 3 inches of rain was confined to central Massachusetts, eastern Connecticut, and

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3/ Brooks, C. F., Hurricanes into New England; Meteorology of the storm of September 21, 1938: Geog. Rev., vol. 29, pp. 119-127, January 1939. Tannehill, I. R., Hurricane of September 16 to 22, 1938: Monthly Weather Rev., vol. 66, no. 9, pp. 286-8, Sept. 1938. Knox. J. C., Cyclone storm of September 21, 1938: report in manuscript form prepared for Department of Public Health, Commonwealth of Massachusetts. Pierce, C. H., The meteorological history of the New England hurricane of September 21, 1938: Monthly Weather Rev., vol. 67, no. 8, pp. 237-85, Aug. 1939.

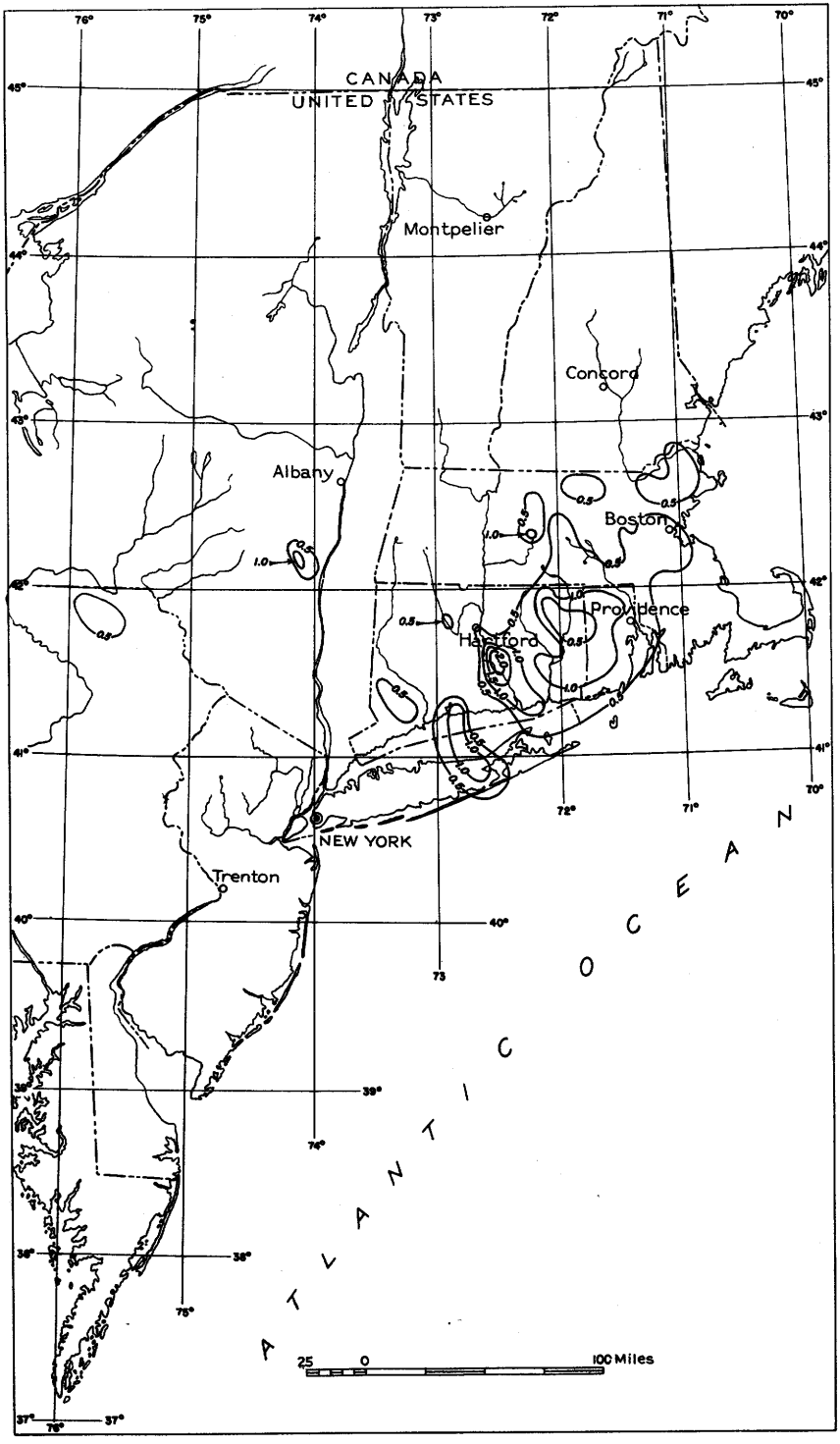


Figure 8.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 p.m., September 17, 1938.

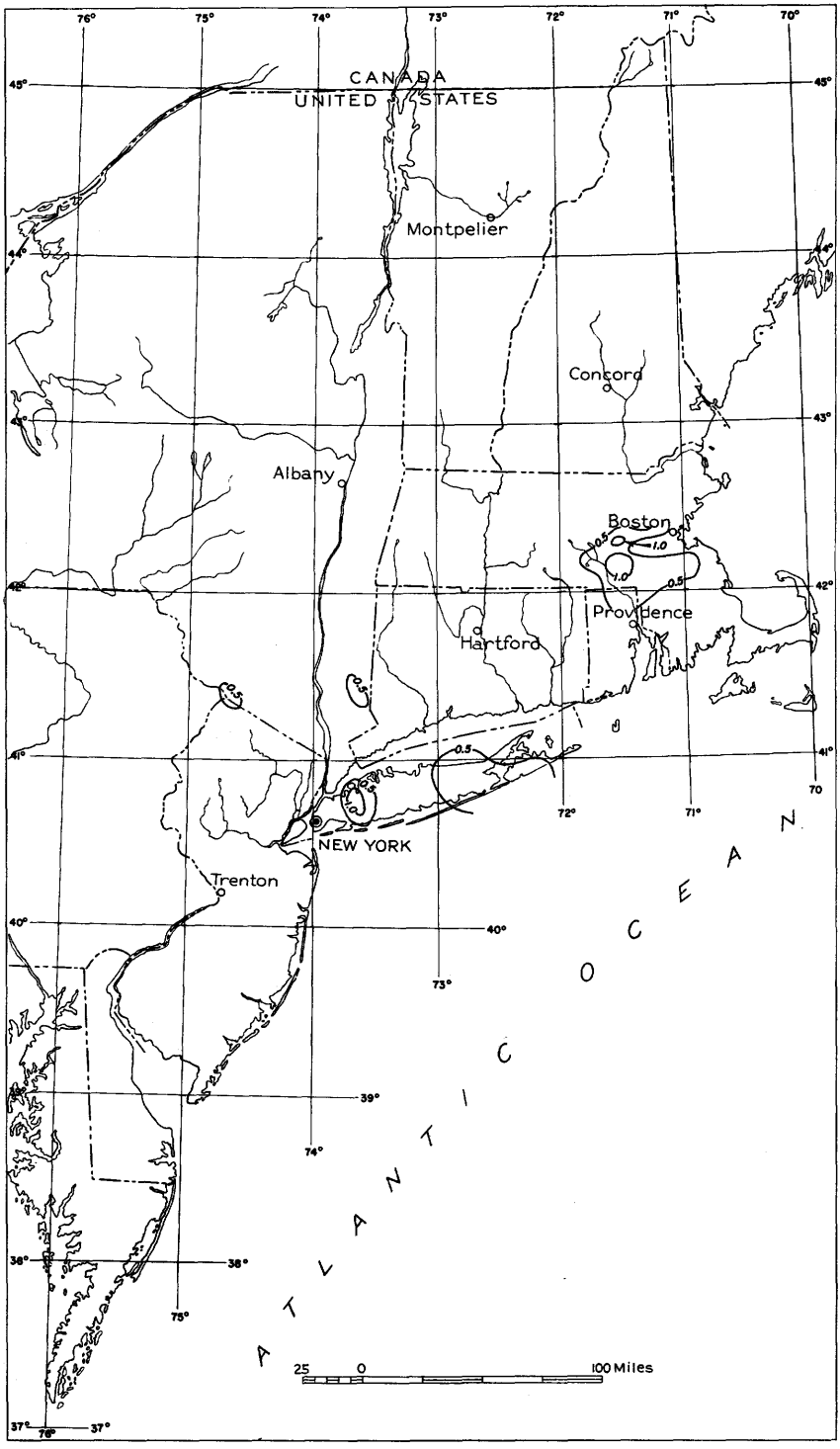


Figure 9.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 a.m. to 5 p.m., September 18, 1938.

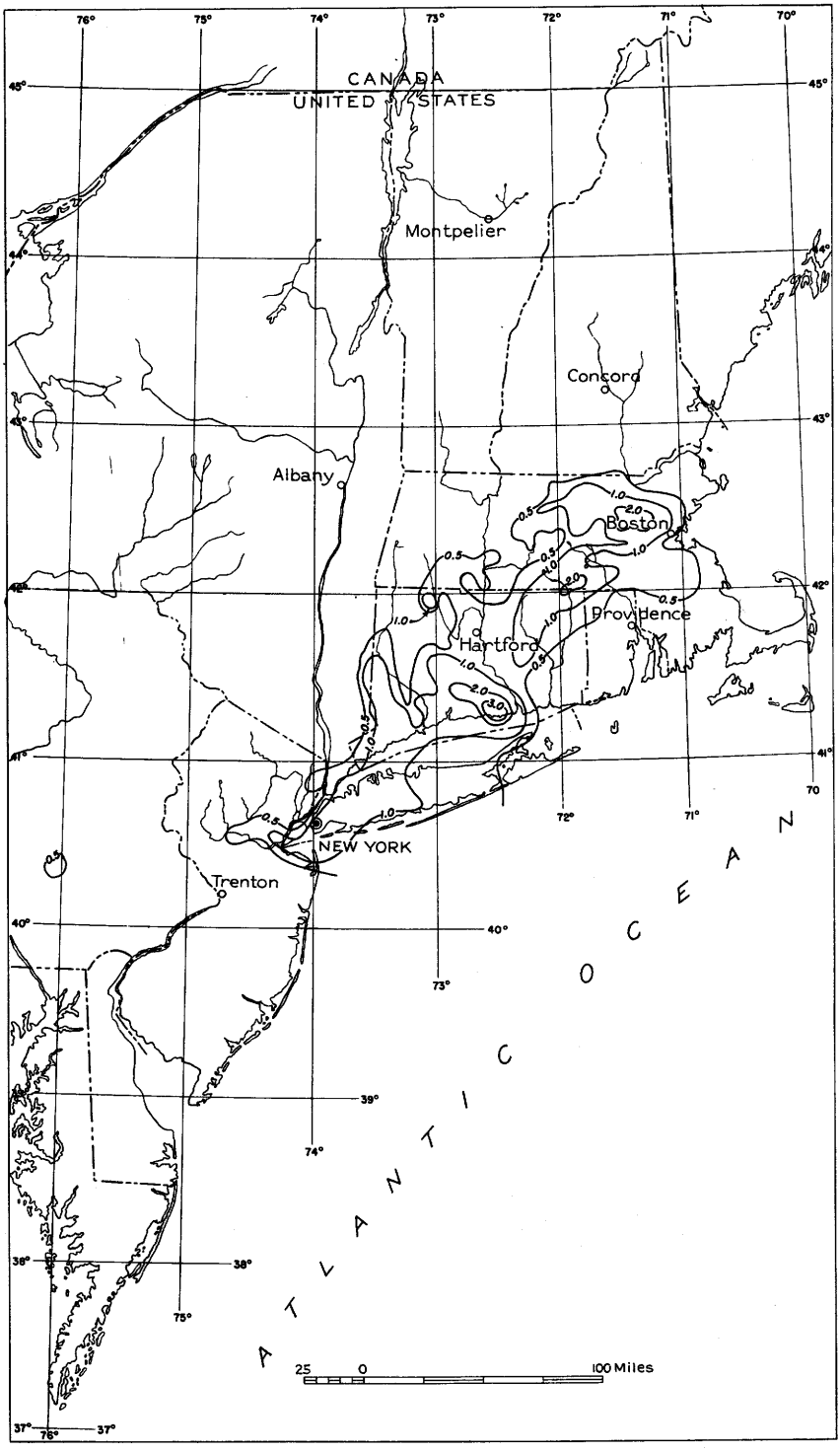


Figure 10.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 p.m., September 18, 1938.

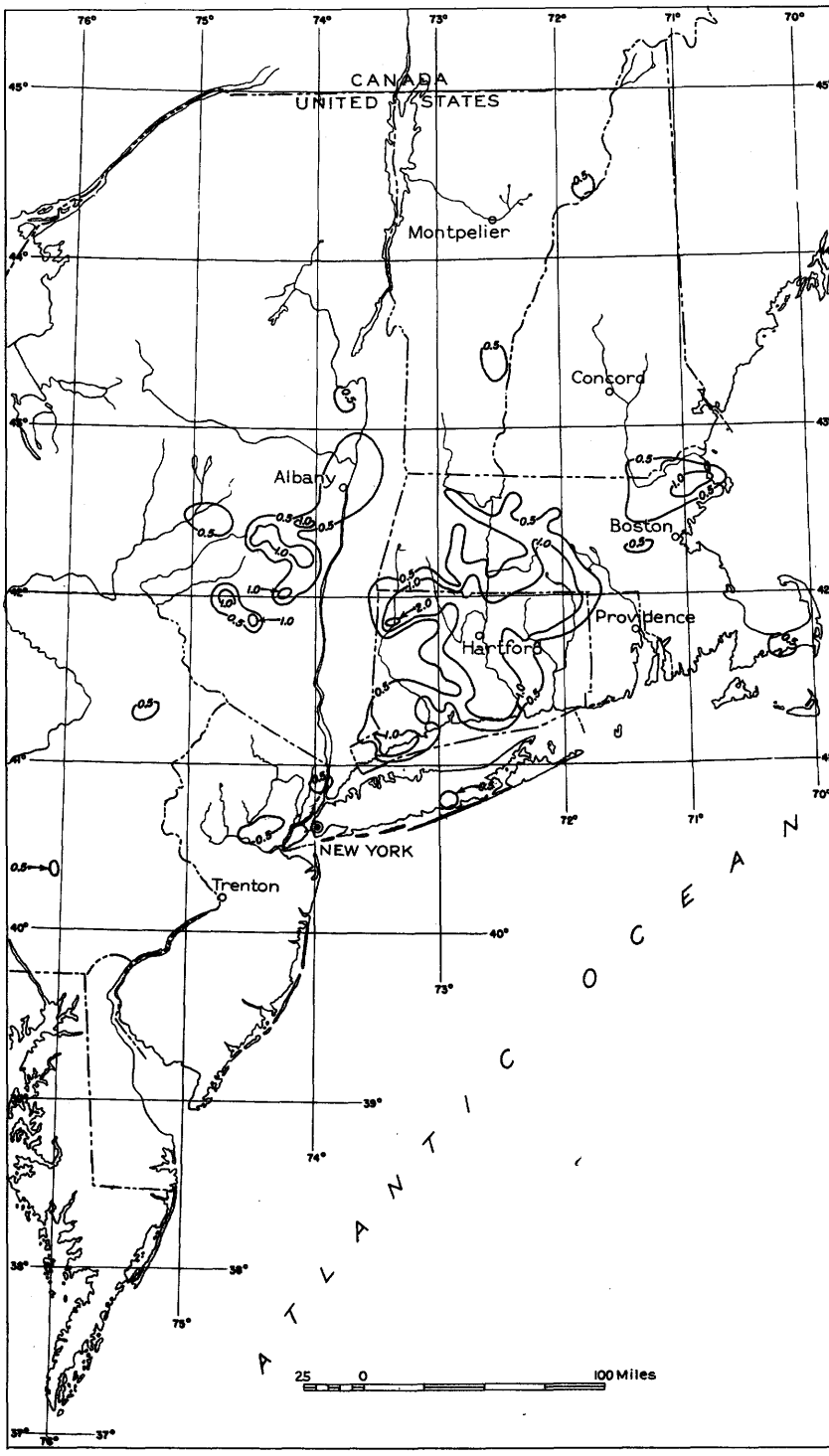
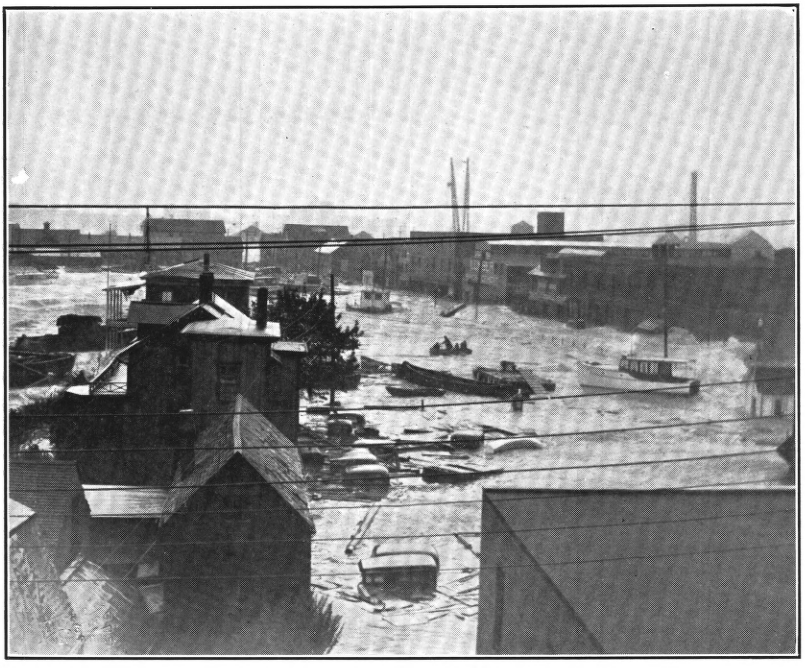


Figure 11.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 p.m., September 18, to 5 a.m., September 19, 1938.



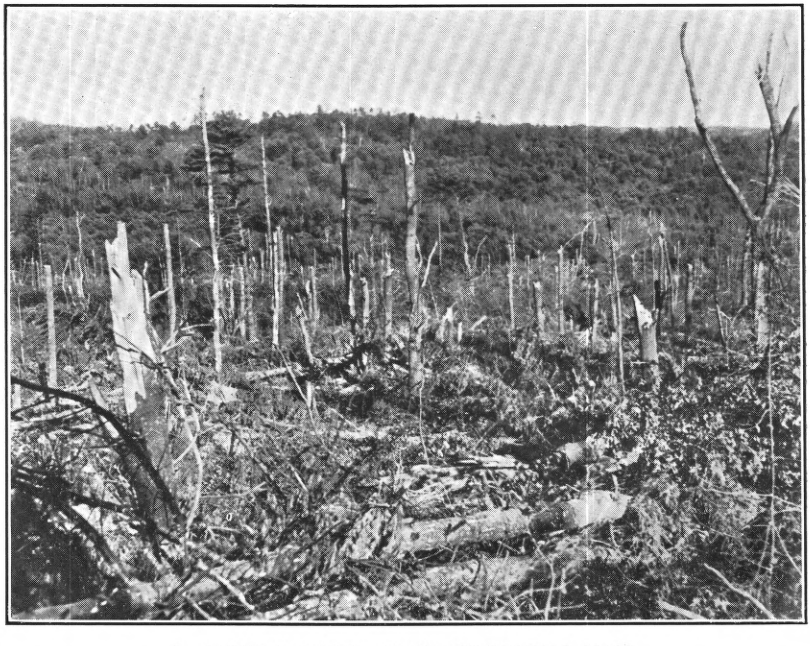
A. WATER FRONT DISTRICT OF NEWPORT, R. I.

Wreckage and small boats being tossed among submerged automobiles and buildings at the height of the storm. Photograph by Christy Petropoulos.

B. SHORE WRECKAGE AT WEEKAPAUGH, R. I.

STORM WRECKAGE IN RHODE ISLAND.

A. SHADE TREES IN METROPOLITAN BOSTON, MASS.



B. HARVARD FOREST NEAR PETERSHAM, MASS.

HURRICANE DAMAGE IN MASSACHUSETTS.

Photographs by Boston Herald Traveler.

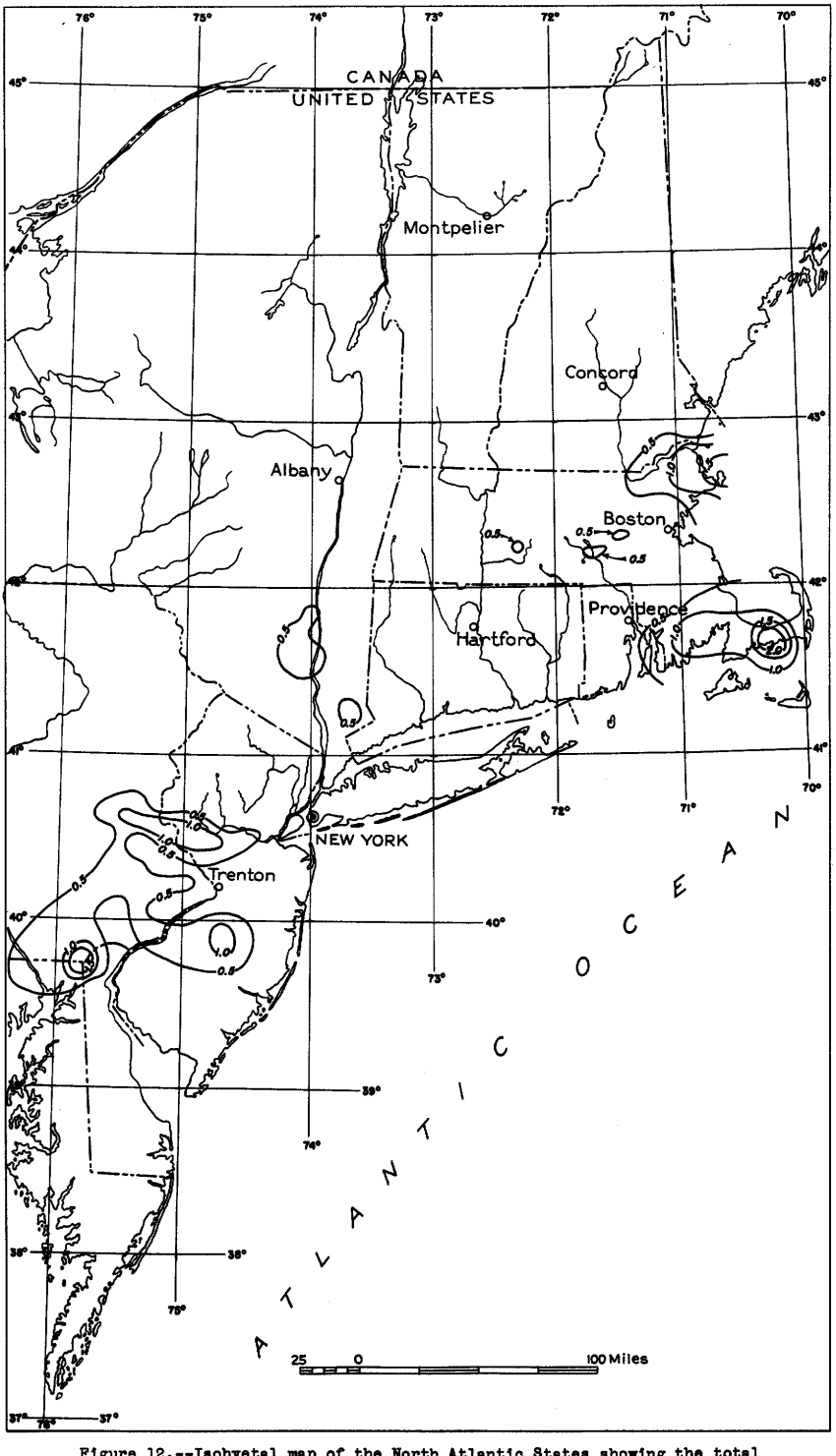


Figure 12.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 a.m., September 19, 1938.

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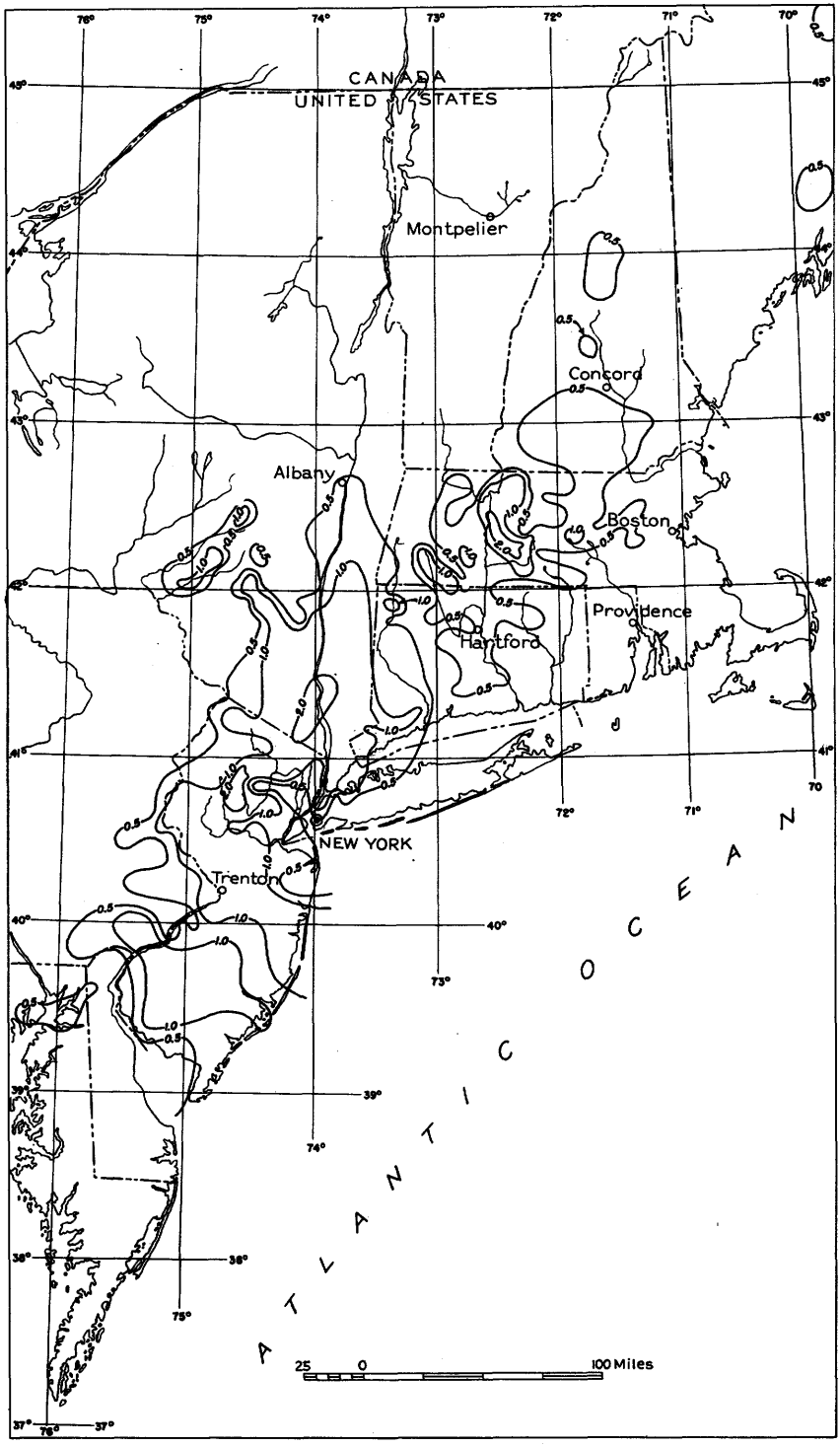

Figure 13.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 a.m. to 5 p.m., September 19, 1938.

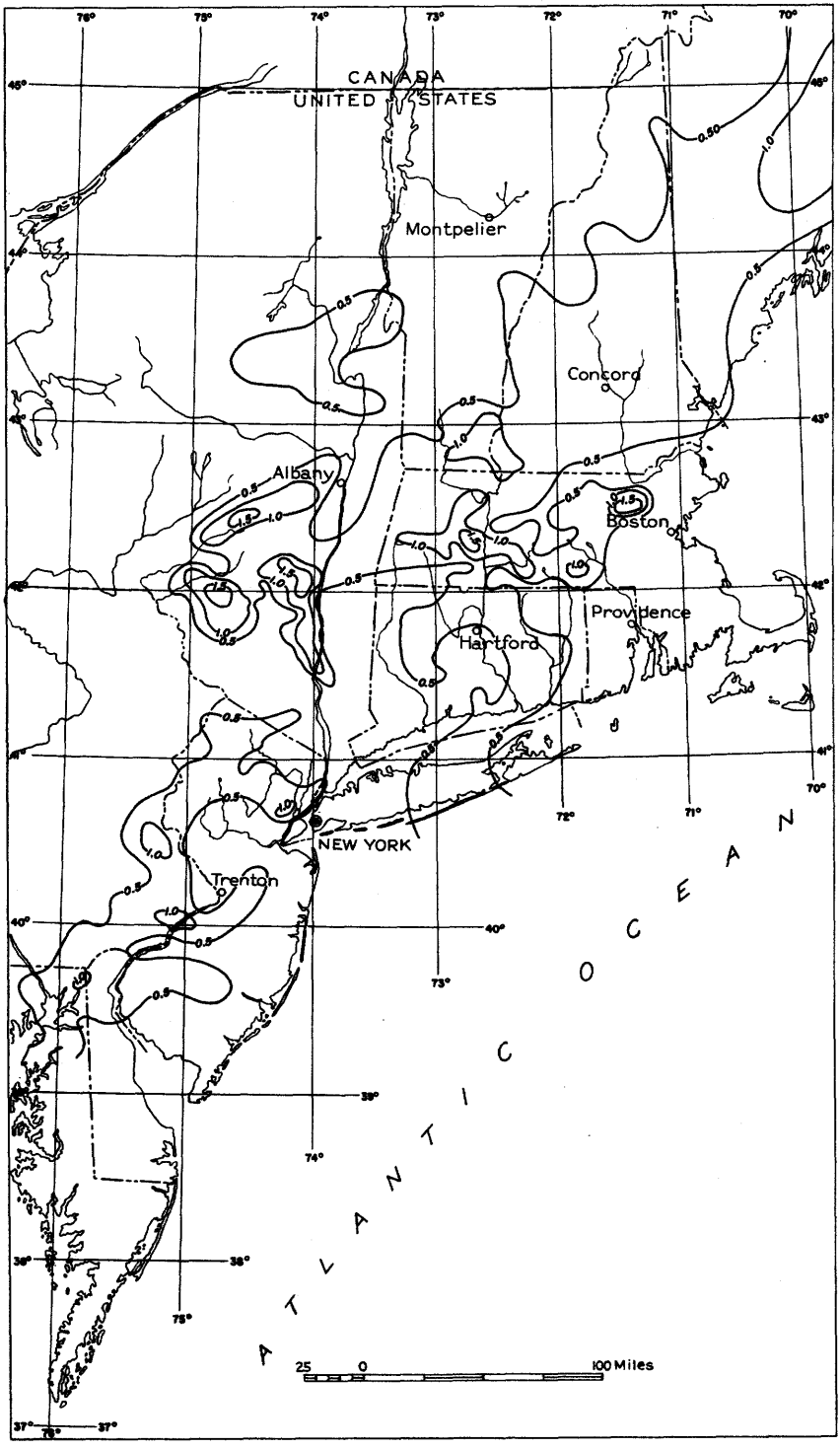

Figure 14.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 p.m., September 19, 1938.

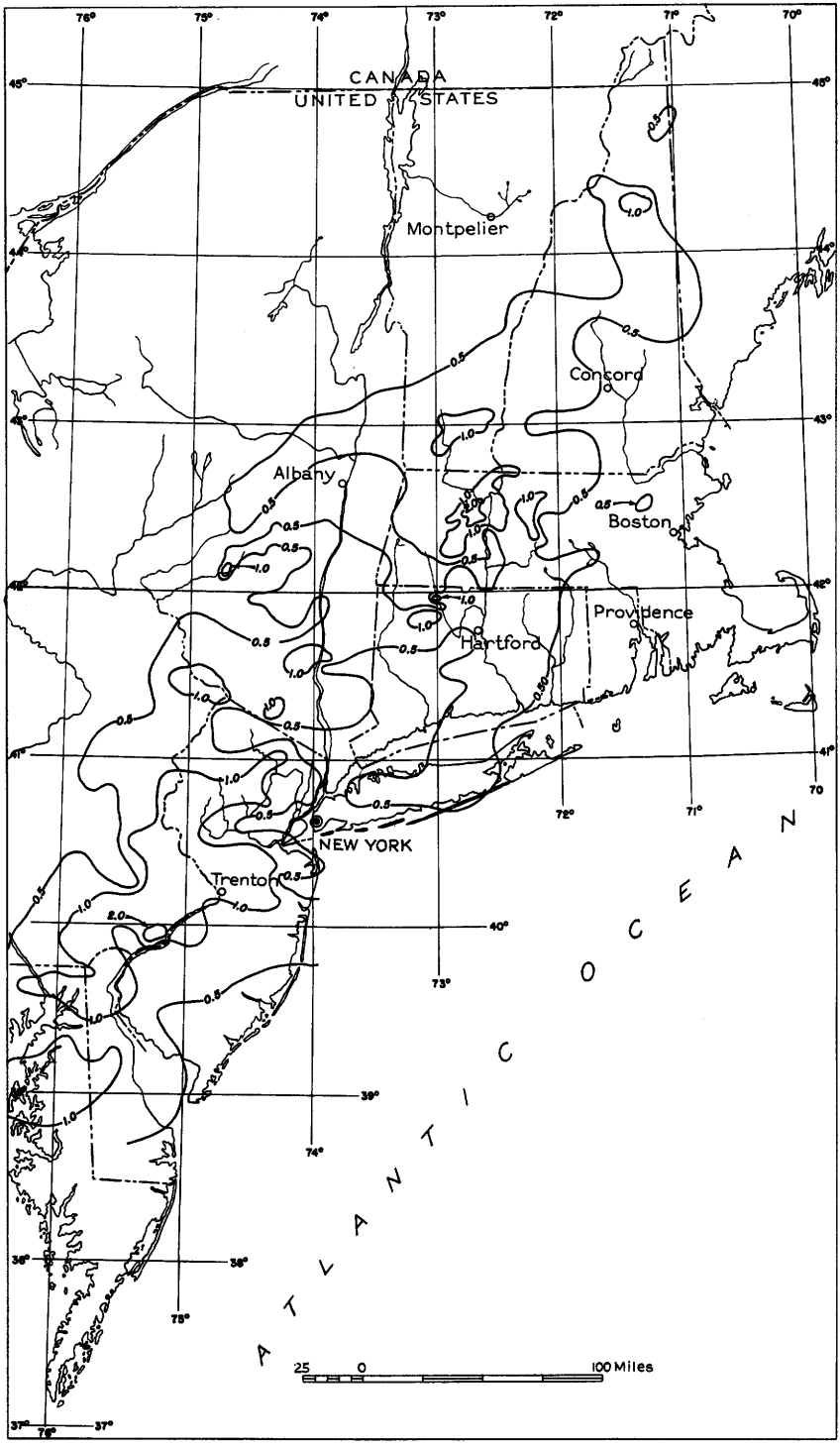

Figure 15.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 p.m., September 19, to 5 a.m., September 20, 1938.

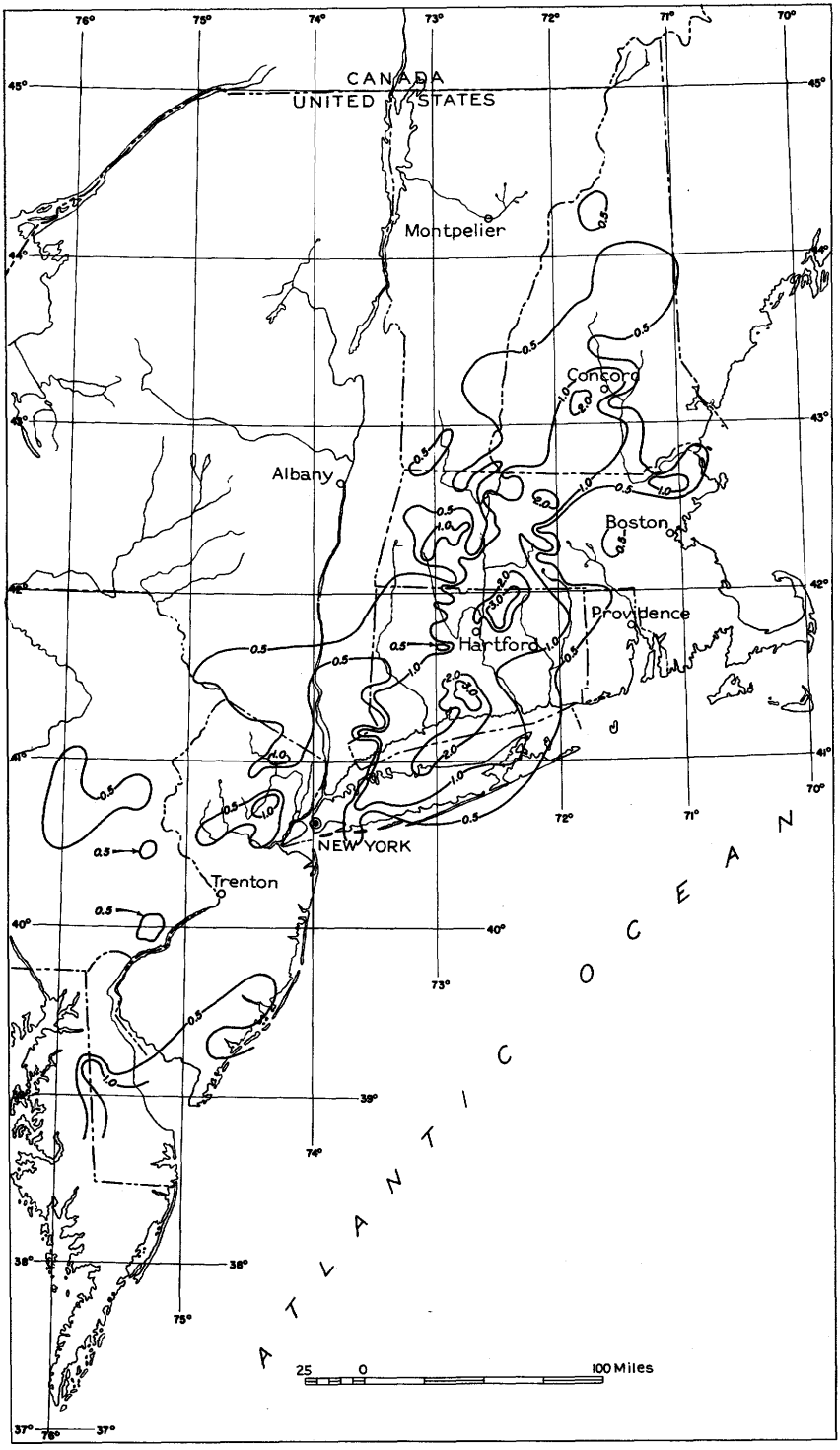

Figure 16.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 a.m., September 20, 1938.

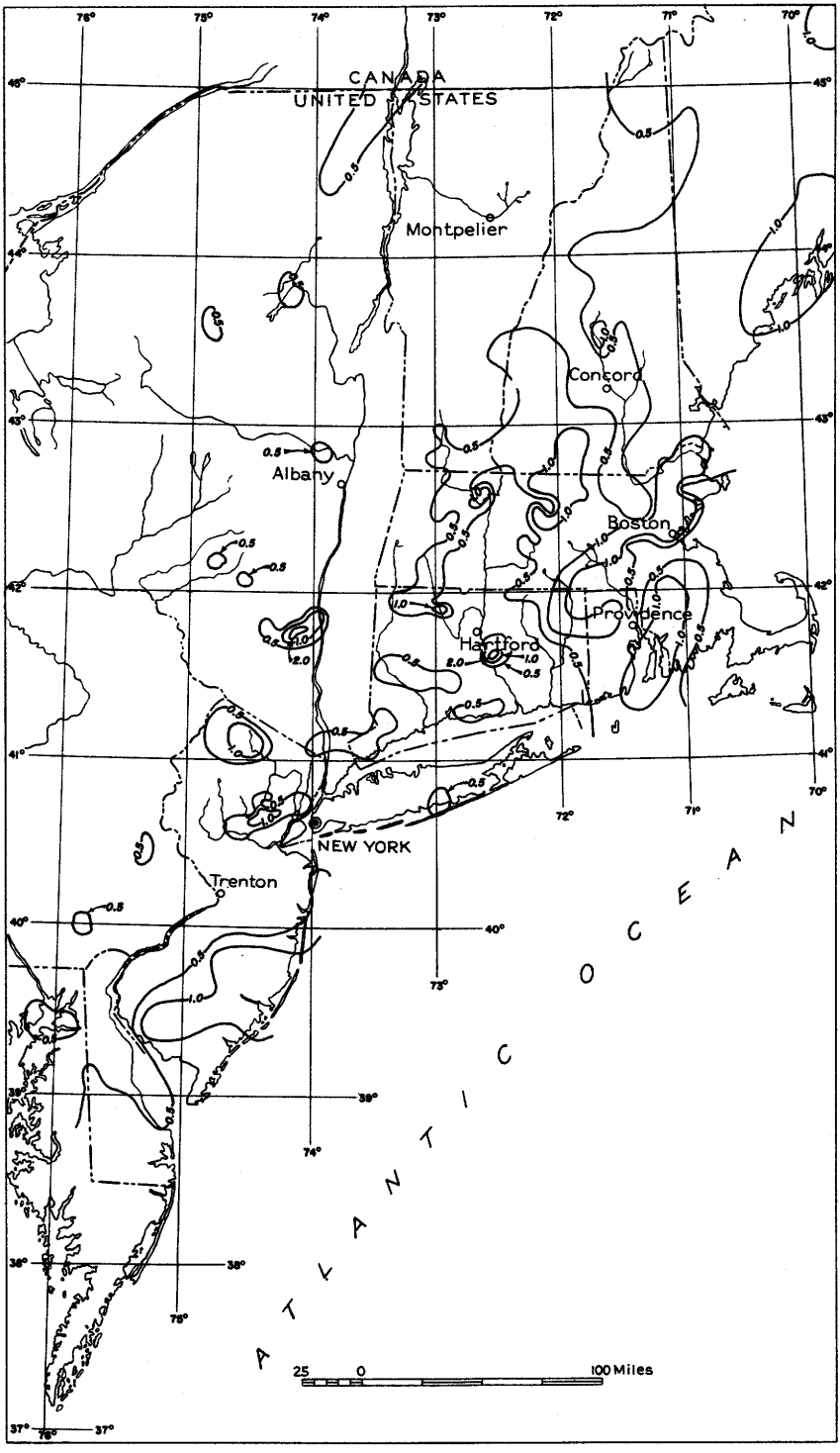

Figure 17.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 a.m. to 5 p.m., September 20, 1938.

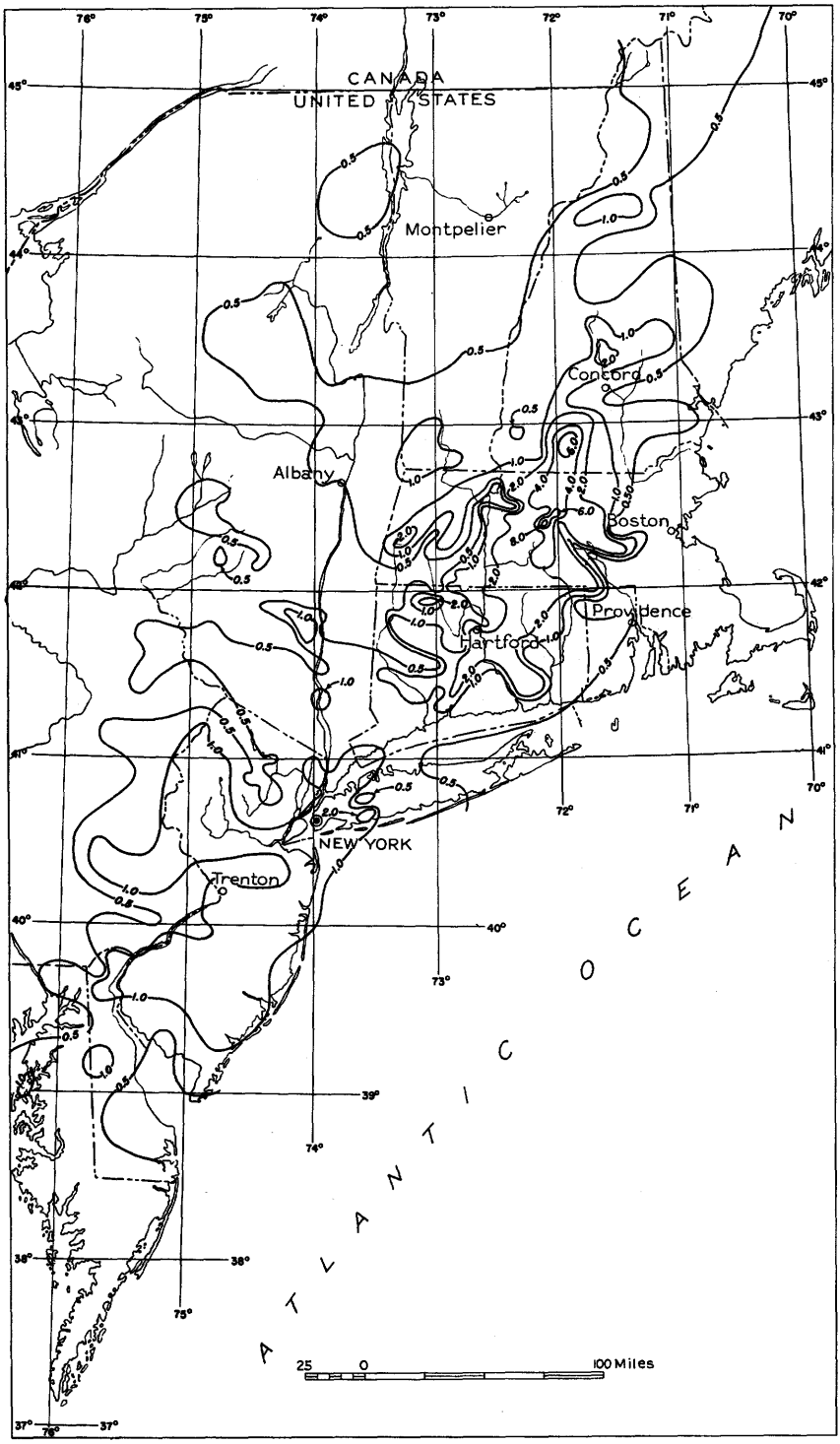

Figure 18.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 p.m., September 20, 1938.

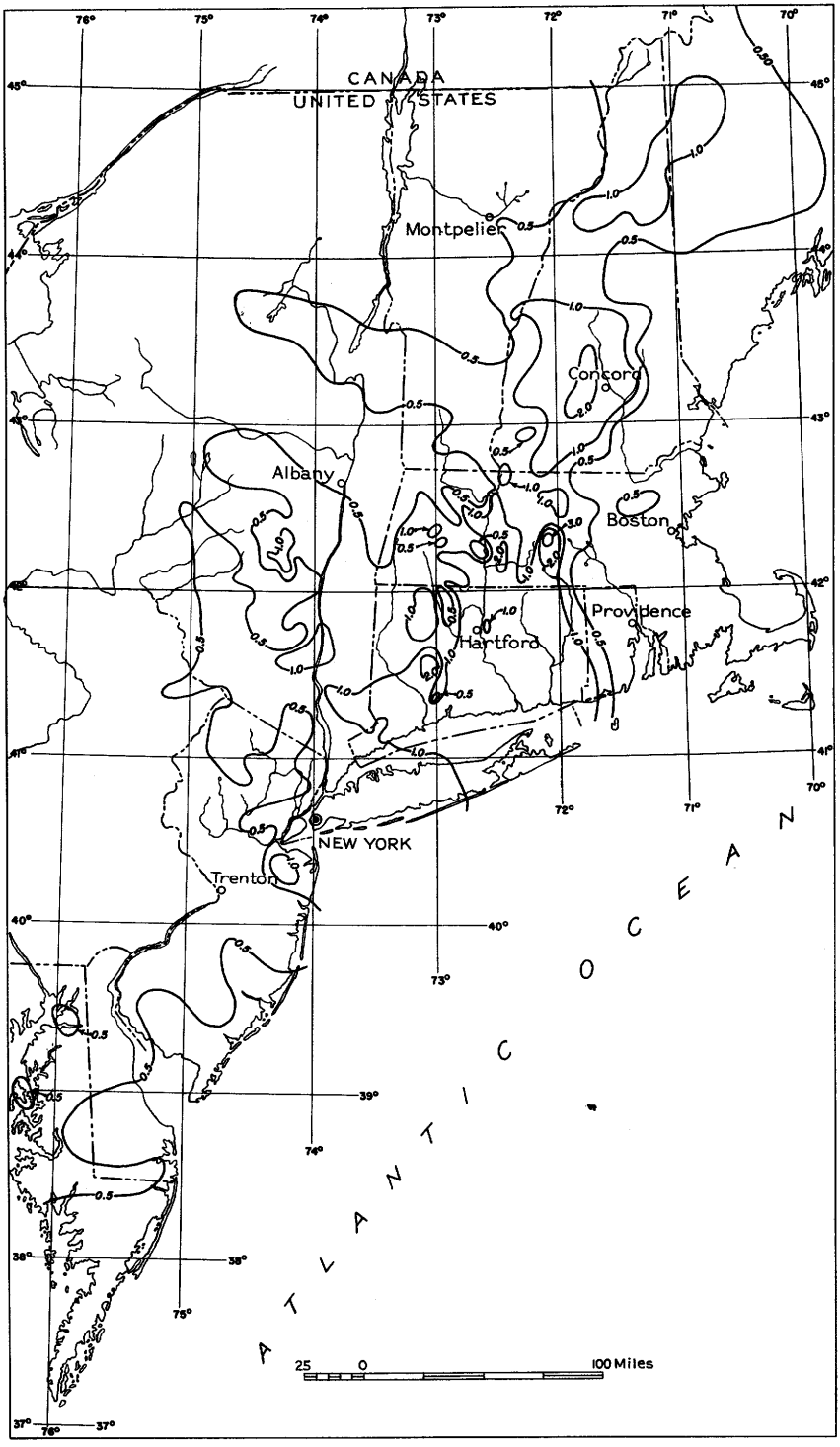

Figure 19.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 p.m., September 20, to 5 a.m., September 21, 1938.

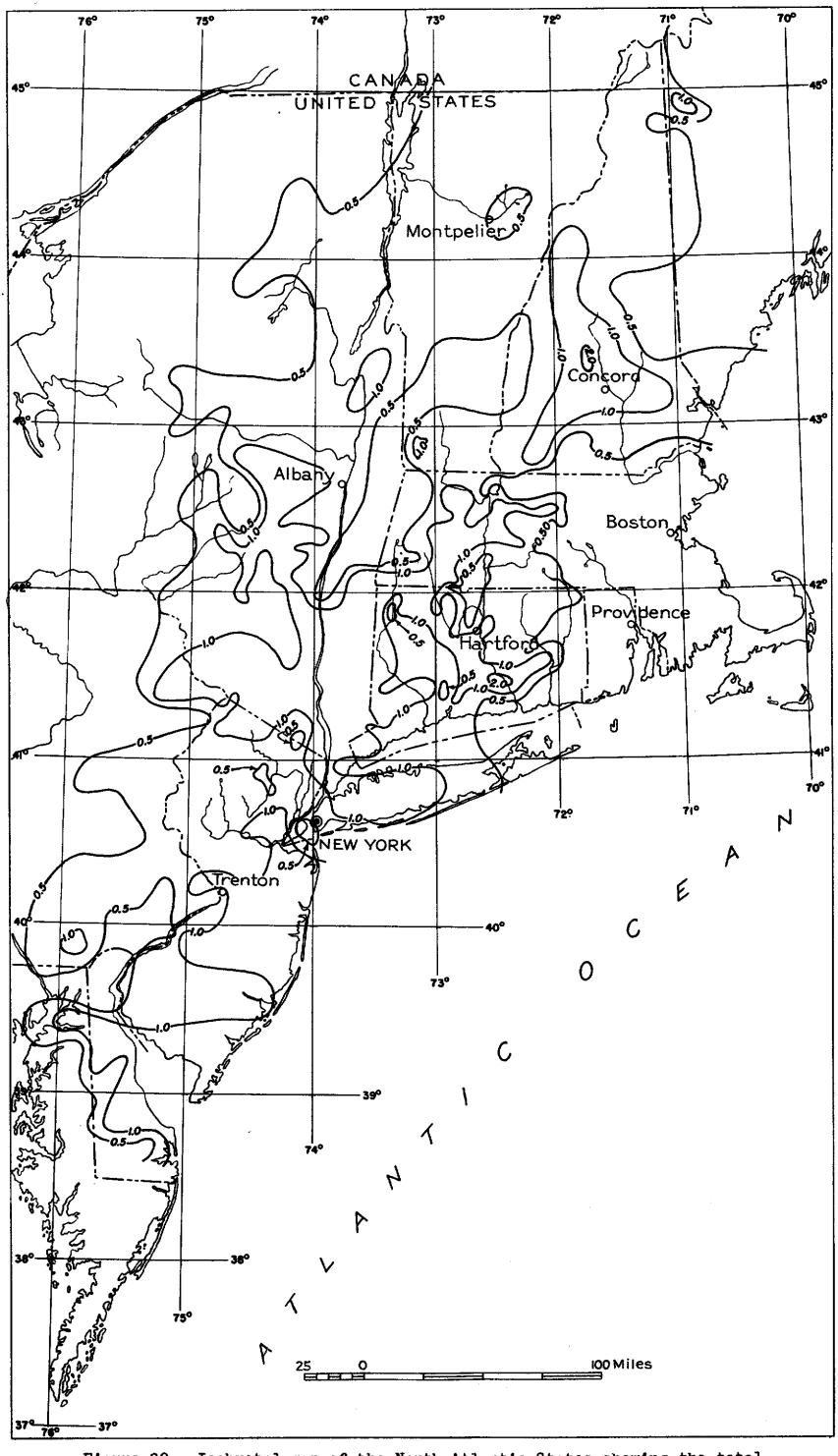

Figure 20.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 a.m., September 21, 1938.

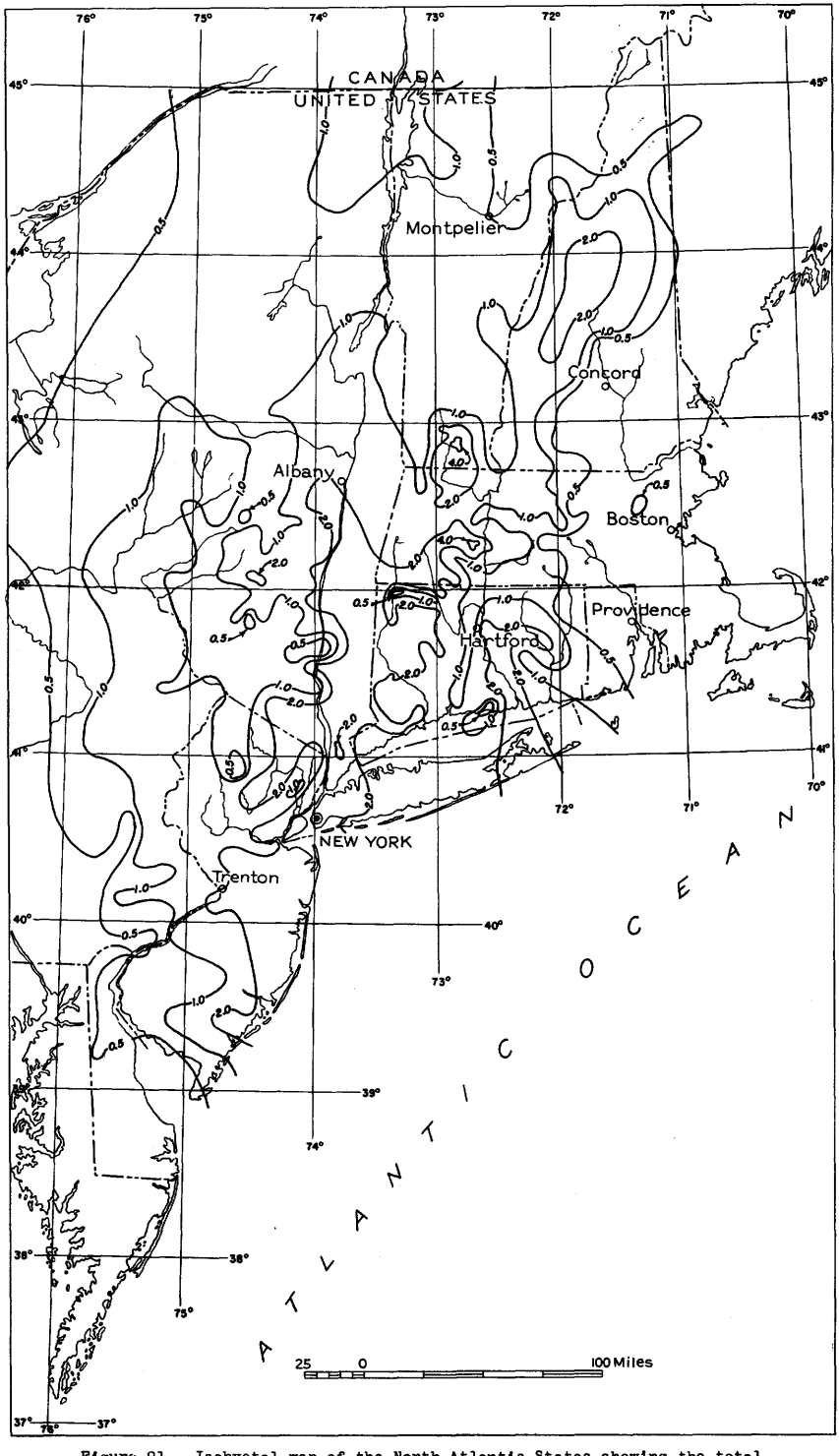

Figure 21.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 11 a.m. to 5 p.m., September 21, 1938.

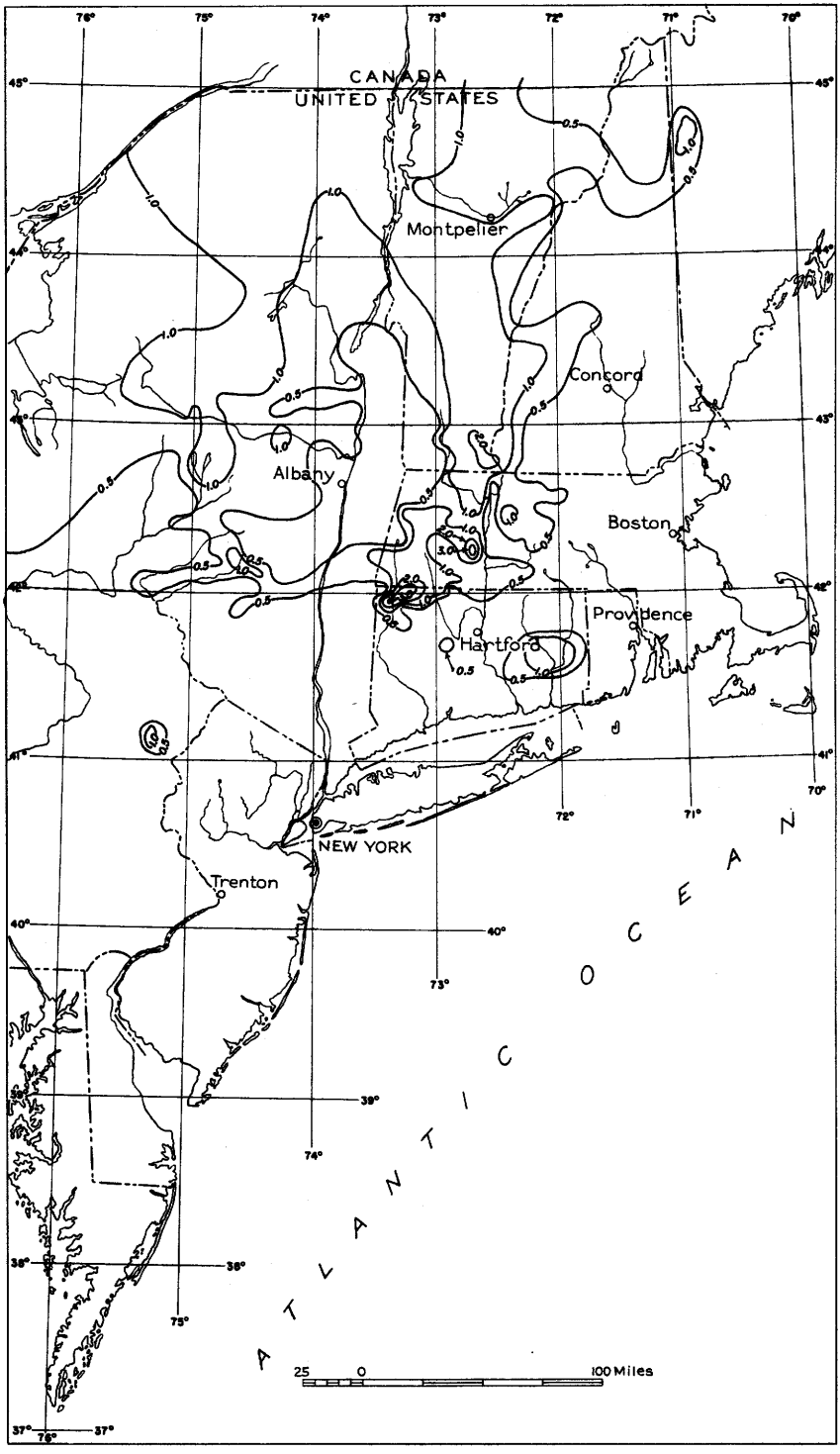

Figure 22.--Isohyetal map of the North Atlantic States showing the total precipitation, in inches, 5 to 11 p.m., September 21, 1938.

the eastern part of Long Island, and the relatively small area in which there was 4 inches and more was confined to the coast along Long Island Sound east of New Haven. Precipitation was generally less than 1 inch over the northern parts of New York, Vermont, and New Hampshire.

Precipitation continued during the 24-hour period ending at 6 p.m., September 20, at rates somewhat exceeding those of the previous 24 hours. As shown in figure 6 the precipitation was general over most of the area but exceeded 3 inches in a long belt extending from central Long Island to central New Hampshire and covering part of the lower Connecticut Valley and much of the divide between the Connecticut and Merrimack Rivers. Precipitation exceeded 6 inches in central Connecticut and Massachusetts and ranged from one-half to 2 inches in central and northern New York and in the northern parts of New Hampshire and Vermont.

An appreciable portion of the precipitation during the 24 hours ending at 6 p.m., September 21, was associated with the passing of the hurricane and in general exceeded the amounts recorded during the preceding 24-hour periods.

Kimball[4] states that "3 inches is probably a fair estimate of the rain due solely to the hurricane". Areas in which the total precipitation during the 24-hour period ending at 6 p.m., September 21, exceeded 4 inches include eastern New Jersey, southeastern New York including Long Island, most of Connecticut and all of central Massachusetts.

In a very considerable part of Connecticut and central Massachusetts, the total storm precipitation of September 17 to 21 exceeded 16 inches, and maxima of more than 17 inches were recorded in central Massachusetts and Connecticut. At Barre, Mass., 11.83 inches was recorded during the 24-hour period ending at 8 a.m. on the morning of September 21, a 24-hour maximum for the storm at any point where observations are available.

GENERAL FEATURES OF THE FLOOD

Only rarely are large areas subjected to such ravages of nature as were New England, eastern New York, and the New Jersey coast from about noon, September 21, when the tropical hurricane turned inland, until the midnight hours of September 23, when the crests of the floods of the Merrimack, Connecticut, and other coastal rivers had swept down their channels into the Atlantic Ocean. From the time the hurricane and ocean storm wave struck the coast during the afternoon of September 21 with such disastrous

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4/ Kimball, J. H., op. cit.

results along the shores of Long Island, Connecticut, and Rhode Island until the flood run-off from the timbered slopes of the Berkshire, White, Green, Adirondack, and Catskill Mountains had inundated all the flood plains of the lower valleys, the north Atlantic States were experiencing a great catastrophe. In New England it was the greatest catastrophe since settlement by the white man.

Although the nearly continuous rain of Sunday, Monday, and Tuesday, September 18-20, had so greatly exceeded the capacity of the soil to absorb and retain water that all rivers on Wednesday morning, September 21, were at bank-full stage, the run-off was being taken care of in an orderly manner. Quite sizeable floods were in sight, but had there been no further rain, little if any damage would have resulted. Advancing northward, however, was the hurricane storm, and the intensity of the torrential rains accompanying it were far in excess of the retentive ability of the basins. In an incredibly short time all tributary stream channels were called upon to carry volumes of water far in excess of their normal capacities. Highways, railways, bridges, mills, and dams largely occupying or encroaching on channels that had not been called upon to carry unusual flood flows for long periods of time were either damaged or washed away. Damage was confined chiefly to the natural stream channels and their flood plains. Most rural homesteads are located above the flood plain, and damage to them was generally small. Villages, towns, and cities, however, which for convenience or necessity have been built in the valleys, suffered damage from submergence. (See pl. 4.) In many places the high water brought debris onto the flood plains, but generally most of the movement of debris was confined to the natural tributary channels and to the main channels below the confluence of the tributary streams. There was in general little widespread deposition of silt on the overflowed flood plain.

There were variations in the phases of the floods determined in part by the direction of the storm movement and the size and storage capacities of the several drainage basins. In many headwater areas in the Thames and Connecticut River Basins in Connecticut and central Massachusetts, peak stages were reached during the morning of September 21 and were incident to the intense rainfall of the preceding evening. However, during the evening of September 21, peak stages were occurring in most of the headwater streams throughout western New England and eastern New York and by the morning of the 22d flood crests were moving down the major streams.

With the destruction of bridges by the flood and the obstruction of highways by timber blown down by the hurricane, auto and railway transportation in the area was seriously crippled. Warnings and forecasts were issued as soon as the seriousness of the flood situation became apparent, and as a result many low-lying areas in major industrial centers were evacuated, and through heroic measures barricades were erected which did much to restrain the flood waters, as shown in plate 5. Areas that had suffered from the floods of November 1927 and March 1936 were again inundated by the floods of September 1938. In many areas, especially in central Massachusetts and Connecticut, the destruction wrought on structures and developments that have been in place since the early days of settlement gives mute evidence of the magnitude of the floods. (See pls. 6, 7, 8, and 9.) Many excellent textual and pictorial records of the floods and hurricane have been prepared and published, some of which are listed below. Doubtless there are many more of equal interest and value.

New England hurricane, a factual, pictorial record, written and compiled by members of the Federal Writers Project of the Works Progress Administration in the New England States, 220 pp., 1938.

Boston & Maine Railroad Employees Magazine, vol. 10, no. 5, 40 pp., fall issue (flood and hurricane souvenir edition).

The devastation and restoration of New England's vital life-line, 48 pp., New York, New Haven & Hartford Railroad.

Hall, C. L., The 1938 hurricane and its effect on Long Island beach-protection structures: Civil Eng., vol. 9, no. 3, pp. 169-172, March 1939.

Freak winds, New Hampshire 1938, 48 pp., Manchester, N. H., Lew A. Cummings Co., September 1938.

The great hurricane and tidal wave, Rhode Island, September 21, 1938, 128 pp., Providence (R.I.) Journal Co., 1938.

Hurricane and flood, New England's greatest disaster, 66 pp., published for the New England Historical Events Committee, Suite 1229, 30 Rockefeller Plaza, New York City, 1938.

Standish, Myles E., Hurricane views, Norwich, Conn., Bulletin Co., 84 pp., 1938.

Photo story of what happened to Athol and Orange, Mass., 16 pp., Athol, Mass., Hames Studio, 1938.

Floods and hurricane ravage New England: Telephone topics, vol. 32, no. 6, pp. 2-30, New England Telephone & Telegraph Co., October 1938.

The Merrimack River Basin marked the northeasterly extent of the area of serious floods. Tributaries of the Merrimack River from the east were generally only in minor flood; the tributaries from the west had floods approaching those of March 1936 in severity, except in the upper Contoocook River Basin, where the 1936 floods were exceeded. The flood on the

main river at Lowell, Mass., was about the magnitude of that of April 1852, was 51,900 second-feet less than the flood of March 1936 and was probably the second largest during the period of record, which extends back almost 100 years. Damages were relatively the greatest in the area of heaviest precipitation in the upper Contoocook River Basin, where many dams were breached, bridges destroyed, and buildings swept away.

In the coastal basins from the Merrimack River to the Thames River the floods were light and damages were generally small.

Streams in the Thames River Basin, with the exception of the lower Quinebaug River and its eastern tributaries, attained very extraordinary stages and flows.

According to data listed in table 10 presented in the section "Summary of flood discharges", gaging stations on the Willimantic, Natchaug, Hop, and Shetucket Rivers had peak discharges about twice as great as those of March 1936, the previous maximum flood of record. Stations on the Yantic River, the Quinebaug River at Quinebaug, Conn., and at Putnam, Conn., attained stages from 2 to 3 feet higher and discharge rates from 20 to 85 percent higher than previously recorded maxima. The lower Quinebaug River, at Jewett City, Conn., peaked at a stage 2.3 feet lower than its record of 1936 and at the crest discharged at a rate 21 percent less; this condition developed from the absence of heavy rains on the east side of its basin, as previously described, and the resultant comparatively low contribution from eastern tributaries such as Five Mile and Moosup Rivers.

The Connecticut River in Massachusetts and Connecticut was visited by its second largest known flood in a period of more than 300 years. This flood was exceeded only by that of March 1936. At Hartford, Conn., the Connecticut River reached a stage of 35.42 feet on September 23, which was only 2.2 feet lower than that reached on March 21, 1936, and it surpassed by 5.6 feet the flood of May 1, 1854, the third highest known flood since settlement. The heavy precipitation over the lower Connecticut Valley did not carry through to its upper reaches. In Vermont and New Hampshire the stages and discharges on the main river were generally less than those recorded in November 1927 and March 1936. In southern Vermont and New Hampshire the floods on the headwaters of streams tributary to the Connecticut River approached or exceeded in magnitude those previously recorded. In Massachusetts and Connecticut the tributary streams, however, showed no conformity to past historical occurrences and, almost

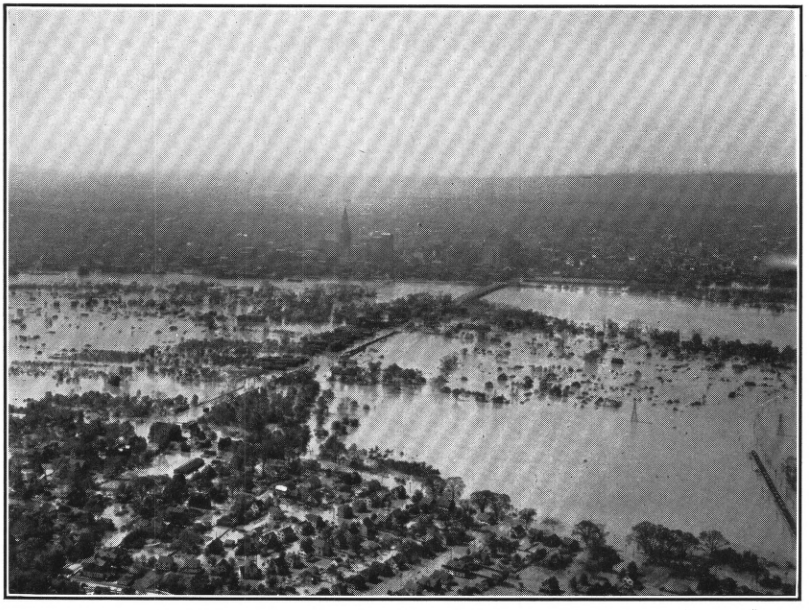
without exception, discharges were greater than those previously recorded. Reference to table 10 on page 382 discloses that stations on the Millers, Deerfield, Ware, Quaboag, Westfield, and Farmington Rivers reached peak rates of discharge of 1½ to 2 or more times the previous maxima recorded during about 25 years of continuous observation. River-measurement stations on Scantic and Hockanum Rivers recorded peak discharges of more than three times those previously recorded. Rates of discharge of 400 to 500 second-feet per square mile were measured for drainage areas as large as 100 square miles. Damage and losses from flood were great, especially in the drainage basins of the Millers, Ware, Swift, Quaboag, West, Williams, Deerfield, Westfield, and Farmington Rivers. On these tributary streams dams failed, bridges were destroyed, buildings were swept away, and debris was deposited on flooded lands adjacent to the normal stream channel. The hurricane, in passing up the Connecticut Valley, flattened many tobacco sheds, wrecked buildings and churches, and uprooted, blew down, and snapped off many millions of board feet of timber, which presented a major salvage problem and created a very serious fire hazard. Cities, towns, communities, farms, transportation lines, and improvements adjacent to the large rivers suffered damage and loss from inundation.

The Quinnipiac River, somewhat west of the area of heaviest precipitation, peaked at Wallingford, Conn., at a flow rate about 60 percent greater than that of March 1936 and attained a crest stage about 1.3 feet higher.

The Housatonic River Basin, particularly the lower portion, did not receive as heavy average precipitation as most other basins in Connecticut. The concentration of rainfall was sufficient, however, to cause record-breaking stages and flows on most of the streams in the basin. At Falls Village, Conn., on the main Housatonic River, where a 26-year record of flow has been collected, the 1938 flood had a maximum discharge 37 percent higher than the previous record flow of March 1936, and the peak stage was 3.3 feet higher. Downstream at Stevenson, Conn., on the main river, the 1938 peak was 2 feet lower than that of March 1936, which was augmented by a breaking ice jam, and the highest flow in 1938 was 14 percent lower than in 1936. Among the tributaries, Tenmile, Still, Shepaug, Pomeraug, and Naugatuck Rivers reached discharges that exceeded the previous maxima by 12 to 46 percent.

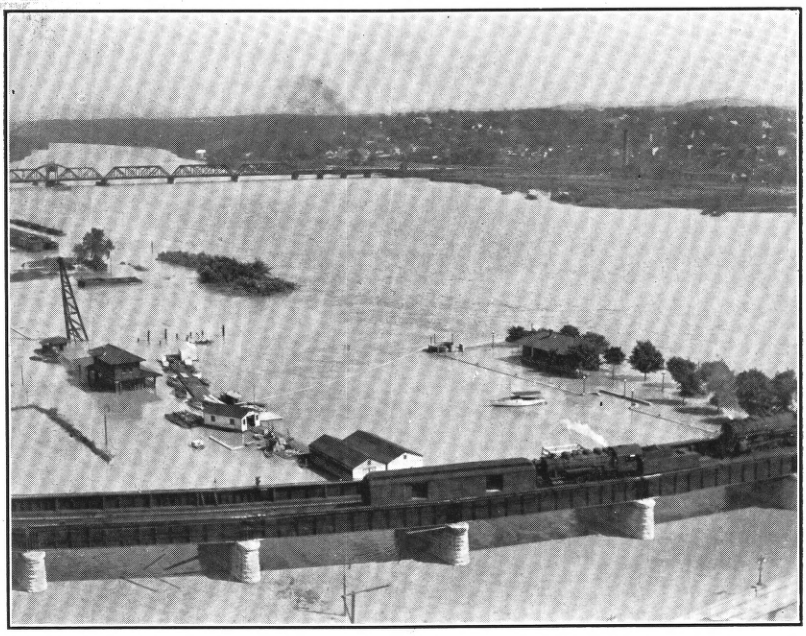
A. RAILROAD YARDS AND RESIDENTIAL AREA OF CONCORD, N. H., FLOODED BY MERRIMACK RIVER.

Photograph by Corps of Engineers, U. S. Army.



B. VIEW OF EAST HARTFORD, CONN.

Shows the large section flooded by Connecticut River. Photograph by 118th Photo Section, Air Corps, Connecticut National Guard.

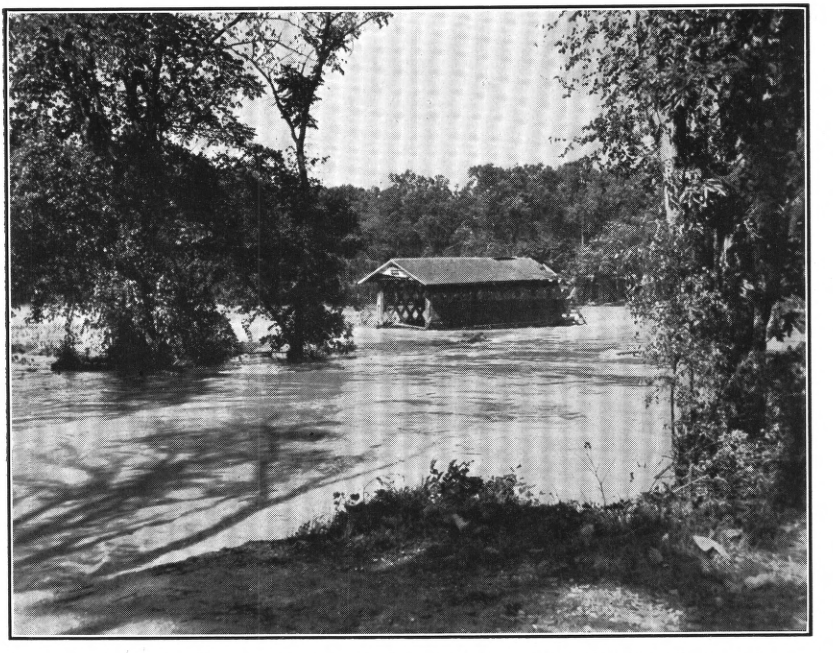


A. FLOODED WATER FRONT AT ALBANY, N. Y.

Courtesy of Knickerbocker News, Albany, N. Y.

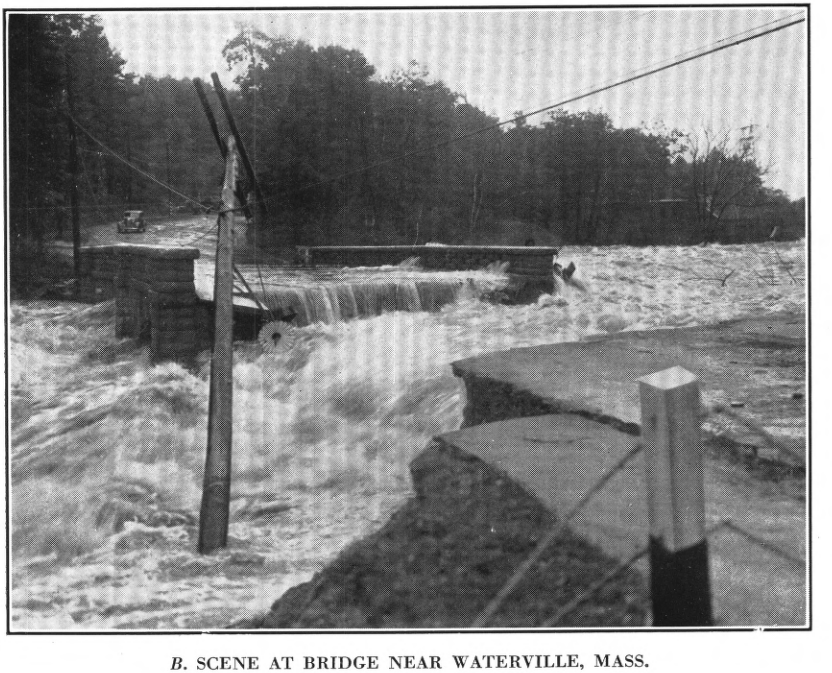
B. SCENE AT WEST SPRINGFIELD, MASS.

Sandbag embankment illustrates effectiveness of adequate flood-warning and flood-fighting organization.



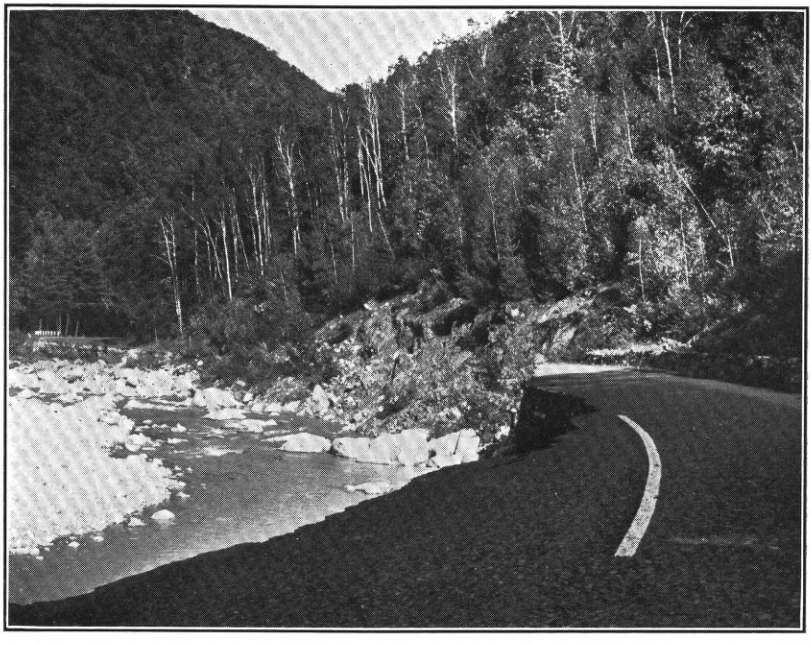
A. OLD COVERED BRIDGE ON ROAD BETWEEN HOOSIC FALLS, N. Y., AND BENNINGTON, VT.

This bridge was washed from original site and carried downstream until becoming lodged as shown in photograph. Courtesy of Knickerbocker News, Albany, N. Y.



B. SCENE AT BRIDGE NEAR WATERVILLE, MASS.

Courtesy of International News Photo.



A. SCENE ON MOHAWK TRAIL (U. S. HIGHWAY 2) NEAR FLORIDA, MASS., ALONG COLD RIVER.

B. SCENE ON THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD AT PUTNAM, CONN.

Courtesy of Worcester Telegram.

WASH-OUTS ON RAILROAD AND HIGHWAY RIGHT-OF-WAYS.

A. DEBRIS IN HYDROELECTRIC PLANT AT WENDELL, MASS.

B. STREET UNDERMINED IN ADAMS, MASS.

FLOOD DAMAGE IN MASSACHUSETTS.

A.

B.

HOUSE IN WARE, MASS., BEFORE AND AFTER DESTRUCTION BY FLOOD.

The Saugatuck River near Westport evidently did not receive a proportionately large amount of precipitation in the 1938 flood and therefore crested at a stage 1 foot below its 1936 record, with a peak flow rate of 17 percent less.

In the Hudson River Basin the stages and discharges were high but generally well below those previously recorded. However, in the drainage basins of the Hoosic River, Kinderhook Creek, Wappinger Creek, Poesten Kill, and streams tributary to the Hudson River from the east, stages and discharges were by far the highest of record. It was reported by Valatie Mills, Valatie, N. Y., that the water was 4 feet higher than ever before over the dam at the outlet of Kinderhook Lake at Niverville, N. Y. J. T. Lampman & Co., Claverack, N. Y., reported that the water was higher than ever seen before by anyone now living there and probably higher than the great flood of 1869. The Ancram Paper Mills, Ancram, N. Y., reported that the water in the Roeliff Jansen Kill rose to the highest level in the memory of the oldest inhabitants. Unharvested crops of fruit and grain were ruined, with serious losses to farmers. Harvey O. Schermerhorn, Commissioner of Canals and Waterways, stated that the flood in the Mohawk Valley during the navigation season was the biggest in 20 years, and between Scotia and Cranesville the flood was the worst ever seen in the navigation season. Traffic on the Barge Canal was at a standstill for several days. At Albany, N. Y., water was about 4 feet deep on the West Shore Railroad tracks on the lower level at the station.

In New Jersey the most serious floods occurred in the Raritan River Basin and on some of the small coastal streams, where stages and discharges were generally greater than previously known. These floods coming so soon after the floods of July 1938 and March 1936 have made the people of New Jersey, especially in the central part of the state, increasingly flood-conscious and have demonstrated the advisability of limiting encroachments on the flood channels and of having the flood plains clear for the passage of flood waters.

In New York in the Delaware and Susquehanna River Basins, the floods were severe only in the headwater areas in the easterly part of the basins where stages and discharges were greater than recently known.

Streams tributary to the St. Lawrence River generally had moderate floods except in the Ausable River Basin on the west side of Lake Champlain, where stages and discharges of the Ausable River at Ausable Forks, N. Y., were the greatest since 1910. Many of the small tributaries

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draining the west slope of the Green Mountains in Vermont had high flood flows that caused considerable damage.

With the passing of the hurricane, fair weather returned and the flooded rivers rapidly receded. Immediately the vast job of clean-up, repair, and restoration began. In the most devastated areas seemingly every able-bodied citizen had a part in the job of restoration. State, Federal, and local governments immediately organized their forces to open the debris-choked or flood-damaged arteries of transportation, to relieve the injured and homeless, and to perform the somber tasks of accounting for the known dead and searching for the missing. Private organizations, particularly the public utilities companies, faced a vast job of untangling trees, poles, and wire in connection with the restoration of telephone, telegraph, and electric lighting and power facilities. The railroads were seriously damaged by flood, wind, and the coastal storm wave. Homes, factories, stores, churches, mills, schools and colleges, cemeteries, summer homes and cottages, wharves and docks, warehouses, dams, some water supplies, ships and other navigation equipment, and all other man-made structures and facilities, felt in greater or lesser degree the destructiveness of the combined flood waters and hurricane winds. The task of restoration after all this devastation was gigantic, and only through the whole-hearted cooperation of every citizen, every agency of government, and every private organization, and the remarkable resourcefulness of all, was the job accomplished, and accomplished in large proportion within a seemingly impossibly short time.

Lessons have been learned, and social and economic problems and problems of control and protection have arisen as a result of the disaster. The lessons must not soon be forgotten, and the problems ought to be studied and analyzed and solutions diligently sought. Steps have already been taken toward these ends, and it seems evident that the extraordinary experiences of this disaster will provide the basis for sound measures of forewarning, control, and protection that will operate to reduce substantially the attendant social and economic crippling should any similar catastrophe strike in the future.

As an aid to the many engineers and hydrologists who are engaged on problems relating to the control of flood run-off and the alleviation of damage therefrom, a special effort has been made to collect and combine in this report all basic information relating to the meteorologic and hydrologic conditions pertinent to the storm and floods of September 1938. These conditions bear principally upon the 4 days of rainfall between September 17 and 21 in the area covered by this flood and the antecedent conditions that affected the rainfall and run-off relations.

Antecedent conditions

To an important extent the foundation of a flood event may be laid during the period that precedes it. This is especially apparent in winter or spring, when the extent and depth of snow accumulated through the preceding months or the presence of frost in the ground become of transcending importance as factors in the production of floods. During other seasons the preceding period affects chiefly the capacity of the soil and vegetation for retaining water and includes as a principal factor the degree to which such capacity has been utilized by the antecedent rains. The rate at which such retained or intercepted water is dissipated through the action of evaporation and transpiration, thus making available storage space for additional water, is largely a function of the temperature. In the humid East the ground reservoir is most drawn upon by these agencies and hence is most nearly in a state of depletion at a time nearly contemporaneous with the season of highest temperatures. Horton[5] shows that normally the maximum infiltration capacity usually occurs during August. Likewise Hoyt[6] indicates that the maximum soil-moisture deficiency generally occurs in August.

The factors that determine climate may, in their seemingly erratic variations from normal, result in corresponding variations in the retentive capacity of the soil. Therefore, a study of the changes in soil moisture and its relative state at the beginning of the storm rains as determined by the rainfall and temperature during the period preceding a flood event is informative of the background of the flood and furnishes a basis for possible studies and forecast of run-off from storm rainfall. Tables 2 and 3 give the total precipitation and the mean

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5/ Horton, R. E., Determination of infiltration capacity for large drainage basins: Am. Geophys. Union Trans., p. 384, 1937.

6/ Hoyt, W. G., Studies of rainfall and run-off in the United States: U. S. Geol. Survey Water-Supply Paper 772, p. 253, 1936.

Table 2.--Monthly total precipitation and departure from normal, in inches, April to September 1938

State	April		May		June		July		August		September 1-16	
	Total	Departure	Total	Departure	Total	Departure	Total	Departure	Total	Departure	Total	Departure
New Hampshire	2.61	-0.42	3.10	-0.02	4.00	+0.45	7.24	+3.56	3.64	+0.05	2.80	+0.94
Vermont	2.73	- .11	2.94	- .21	3.32	- .30	6.84	+3.07	4.15	+ .55	2.86	+1.02
Massachusetts	3.04	- .52	3.92	+ .62	7.39	+3.89	8.97	+5.45	3.21	- .54	2.44	+ .53
Rhode Island	3.12	- .73	4.63	+1.21	7.18	+4.10	4.40	+1.33	3.38	- .31	2.05	+ .23
Connecticut	3.17	- .52	4.05	+ .41	6.92	+3.44	9.57	+5.61	4.20	+ .03	1.90	- .17
Eastern New York	2.73	- .46	3.13	- .30	3.97	+ .10	5.49	+1.74	4.68	+ .61	2.51	+ .01
New Jersey	2.82	- .79	3.52	- .22	7.79	+4.08	8.84	+4.05	3.09	-1.66	1.02	-1.06

Table 3.--Monthly mean temperature and departure from normal, in degrees Fahrenheit, April to September 1938

State	April		May		June		July		August		September 1-16	
	Mean	Departure	Mean	Departure	Mean	Departure	Mean	Departure	Mean	Departure	Mean	Departure
New Hampshire	44.7	+2.7	52.5	-1.5	65.0	+2.0	68.5	+0.5	68.4	+3.0	55.0	-2.7
Vermont	44.8	+3.2	52.8	-1.1	64.9	+1.9	68.3	+ .6	68.5	+3.3	56.0	-1.5
Massachusetts	48.3	+3.1	55.0	-1.4	66.1	+1.0	71.0	+ .7	72.1	+3.7	62.6	+ .2
Rhode Island	47.5	+2.0	54.6	-1.2	64.3	- .3	71.0	+ .9	72.4	+3.3	60.4	+3.5
Connecticut	49.9	+3.3	55.8	-1.7	66.6	+ .5	71.7	+1.0	72.4	+3.4	62.1	- .1
Eastern New York	47.6	+3.5	54.8	- .9	65.5	+1.1	70.6	+1.3	70.9	+3.4	58.6	- .9
New Jersey	53.0	+3.3	59.2	-1.2	67.2	-1.6	74.7	+1.0	75.4	+3.6	65.2	- .4

temperature, respectively, with departures from normal, by months for the period April to September 16, for the affected areas. Precipitation during the months shown in table 2 was such that there was an accumulated surplus of precipitation above normal at the beginning of the September storm. The deficiency of precipitation during April was more than overcome during June and July; August remained about normal, and the first 16 days of September were generally above normal, except in New Jersey, where there was a 1-inch deficiency, and in Connecticut, where the precipitation was only slightly below normal. Temperatures during the months shown in table 3 were generally above normal.

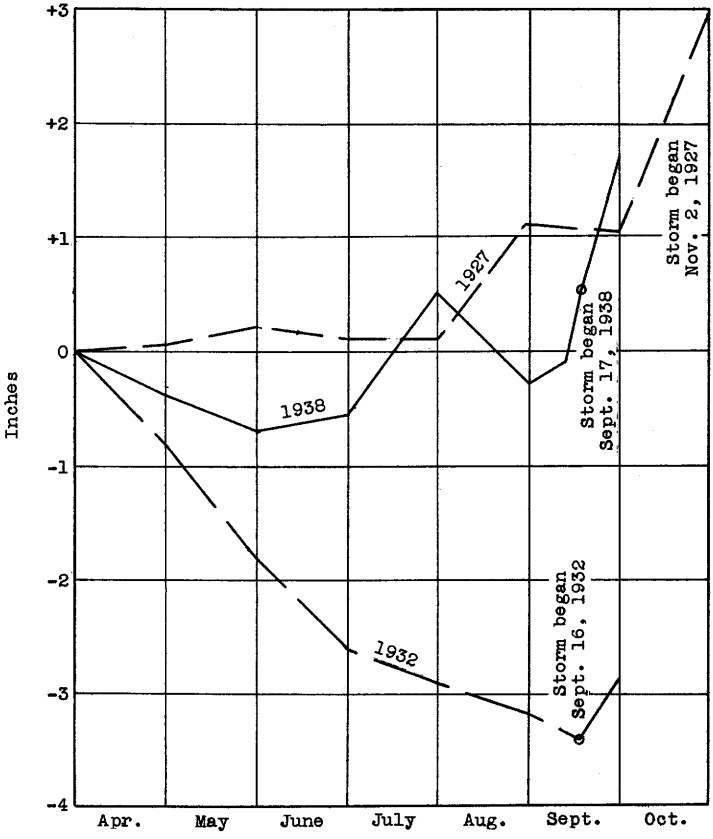

Figure 23.--Cumulative monthly soil moisture, Westfield River Basin above Knightville, Mass., 1927, 1932, 1938.

The amount of antecedent precipitation and the temperature are of direct interest insofar as they affect the soil moisture, which may be taken as a measure of the rain-absorbing capacity of the ground. Figure 23 shows a study of the cumulative soil moisture of the Westfield River Basin beginning on April 1 as computed by methods outlined in Water-Supply

Paper 772, using precipitation, temperature, and stream-flow data for the non-winter seasons of 1927, 1932, and 1938. Each of these years was marked by outstanding storms and wide departure from normal conditions. It may be observed on this figure that the soil moisture during the flood years 1927 and 1938 tended toward stability throughout the summer season, the normal tendency toward depletion being absent. The graph for 1938 shows a sharp increase in soil moisture due to rainfall of September 1 to 16 immediately preceding the flood. The trend of soil moisture during the drought year of 1932 was consistently downward. The outstanding storm of September 1932 brought 7.8 inches of rain in 1 day over 6,000 square miles, virtually all of which was absorbed. The significance of the marked departures from normal is readily apparent.

Precipitation

Precipitation records collected at about 750 stations have been accumulated and used for the construction of the isohyetal maps presented herein and for the study of the relation between rainfall and run-off. These records have been furnished by numerous governmental agencies, public utility power companies, and many individuals whose cooperation is hereby acknowledged.

In some places the catch of rain on September 21 was lost owing to displacement of the rain gage by the hurricane winds. In some of these places estimates of the catch were made by the agency that furnished the record. The records were essentially of three kinds, viz., those in which only one or two readings of the gage were made each day; those in which more than two readings of the gage were made each day (readings were at 2-hour intervals at some places during the heavier parts of the storm); and those in which automatic recording gages were used. A few gages in New York were read twice a day, in the morning and in the evening. In table 4 both sets of readings are published for these gages.

The daily precipitation at all stations from September 12 to 22 inclusive, is reported in tables 4 and 5, with appropriate footnotes indicating the time of measurement and the source of the record. All records were furnished by the Weather Bureau unless otherwise noted. The records at the gages at which more than two readings a day were made are also listed in table 6 which shows the available readings together with the hourly precipitation amounts at the automatic recording gages. All records in the latter table have been adjusted to eastern standard time whenever it was definitely known that the records were kept on daylight

Table 4.--Daily precipitation, in inches, September 12-22, 1938
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Merrimack River Basin												
	New Hampshire:												
1	Allenstown a/	-	1.64	-	0.63	0.11	-	0.27	0.47	3.11	1.35	0.13	5.33
2	Bradford †	-	1.32	-	.74	.42	-	.24	.32	1.67	3.82	3.38	9.43
3	Bristol (Ayers Is.) † b/	-	1.24	0.03	.58	.29	-	.10	.19	1.49	4.48	3.26	9.52
4	Concord **	1.03	.41	-	.75	-	0.23	.09	1.45	2.74	2.79	-	7.30
5	Eastman Falls †	M	M	M	.65	.26	-	.17	.32	1.61	5.22	1.44	8.76
6	Franklin	-	1.32	-	.90	-	-	.20	1.12	1.70	5.80	.07	8.89
7	Franklin Falls † a/	-	1.35	-	.58	.22	-	.15	.56	1.95	5.50	1.77	9.93
8	Garvins Falls † b/	-	1.28	.07	.41	.41	-	.25	.53	1.46	2.95	.57	5.76
9	Gilmanton Iron Works a/	-	1.22	-	.75	-	-	.25	.70	1.75	.10	-	2.80
10	Greenville †	-	.75	-	.59	.20	.01	.48	1.05	1.44	5.32	1.07	9.36
11	Greggs Falls † b/	-	.91	.06	.32	.38	-	.35	.63	1.36	3.42	.80	6.56
12	Hillsboro †	-	1.17	Tr.	.67	.90	-	.24	.45	2.66	5.61	1.75	10.71
13	Jackman Falls Dam † b/	-	.86	.03	.64	.62	-	.20	.44	2.70	4.85	2.39	10.58
14	Jeremy Hill †	-	.88	-	.57	.13	-	.58	1.42	1.29	1.55	M	4.84+
15	Laconia †	-	1.63	.03	.66	.03	Tr.	-	.20	.73	1.92	1.69	4.54
16	Lakeport †	-	.98	.04	.72	.26	-	.17	.40	1.52	4.41	.95	7.45
17	Lakeport	Tr.	.97	Tr.	.66	.23	-	.15	.36	1.42	4.23	.56	6.72
18	Lincoln † c/	-	1.49	-	.92	.18	-	.10	.08	1.32	2.62	3.36	7.48
19	Manchester † b/	-	.93	.02	.19	.54	-	.38	.67	2.66	2.53	.19	6.43
20	Nashua ††	.87	.05	.07	.66	-	.37	1.04	1.45	2.45	.18	-	5.49
21	New Durham †	-	1.24	.02	.50	.31	-	.18	.42	1.52	2.05	.38	4.55
22	New Durham †	-	1.15	-	.81	-	-	.12	.42	1.70	1.82	.32	4.38
23	Peterboro **** d/	-	.75	-	.62	-	-	2.5	3.0	*	9.5	-	15.0
24	Plymouth † b/	-	1.40	-	1.04	-	-	-	.30	1.20	3.60	3.65	8.75
25	Plymouth	-	1.30	-	1.15	Tr.	-	.19	.89	1.88	4.45	.07	7.48
26	South Danbury a/	-	1.59	-	.93	-	-	.13	.67	2.08	4.41	.52	7.81
27	Suncook Pond a/	-	1.60	-	.95	.35	-	.25	.35	2.30	2.10	-	5.00
28	Webster **** a/	-	1.85	-	-	1.22	.28	*	*	2.56	6.85	1.70	11.39
29	West Rumney a/	-	1.58	-	1.17	-	-	-	1.91	2.44	2.40	.30	7.05
30	West Wilton a/	-	.18	-	.81	.35	-	.61	1.12	2.68	6.12	.62	11.15
31	Wolfboro Falls	-	.86	-	.72	.08	-	.07	.63	2.17	1.09	-	3.96
	Massachusetts:												
32	Ashby ** e/	1.34	-	.36	.14	-	.56	1.12	3.09	5.60	1.65	-	12.02
33	Ashland **** f/	-	.85	-	.50	-	-	.75	2.67	1.19	2.02	Tr.	6.63
34	Boylston **** f/	-	.94	-	.81	-	*	*	*	*	7.33	-	7.33
35	Clinton †† f/	-	1.01	-	.76	-	*	*	*	*	7.30	-	7.30
36	Concord	-	1.06	-	.47	.02	.31	1.30	3.66	2.43	2.47	-	10.17
37	Cordaville † f/	-	.93	-	.52	-	*	*	*	*	*	6.71	6.71
38	East Pepperell †† e/	1.03	.15	.23	.17	-	.53	1.28	1.43	2.71	.64	-	6.59
39	Fitchburg	1.03	-	-	.50	.12	.41	1.19	2.81	3.43	.80	-	8.64
40	Framingham **** f/	-	.90	-	.63	-	-	.81	3.26	1.13	2.51	.02	7.71
41	Gates Pond †† e/	1.02	.05	.18	.61	-	.94	2.54	1.58	2.38	.35	-	7.79
42	Groton †† e/	1.52	-	.64	.09	-	.44	1.46	1.10	2.33	.47	-	5.80
43	Haverhill g/	-	.97	-	.45	.30	-	1.25	1.59	1.75	.40	.03	5.02
44	Haverhill (Kenoza L.) ††	.97	.03	.02	.73	-	.85	1.94	.98	1.55	.06	-	5.38
45	Jefferson **** f/	-	1.26	-	.51	-	*	*	*	*	10.12	-	10.12
46	Kendall Reservoir †† e/	1.44	Tr.	.47	.12	Tr.	.40	1.68	2.25	3.50	1.06	-	8.89
47	Lake Cochituate † f/	-	.83	.16	.04	.49	-	.72	2.62	1.26	1.47	.20	6.27
48	Lawrence	-	1.23	-	.76	-	*	*	*	5.13	.69	-	5.82
49	Littleton †† e/	1.14	.03	.26	.66	-	.69	1.63	1.08	2.92	.36	-	6.68
50	Lowell †† h/	1.33	-	.09	.99	-	.91	2.08	1.08	1.95	.21	-	6.23
51	Lowell (Pawtucket Dam) ††	1.34	-	-	.98	-	.80	2.08	1.41	1.88	Tr.	-	6.17
52	Mount Wachusett **** f/	-	1.20	-	.88	-	*	*	*	*	*	9.33	9.33
53	Newburyport †† e/	.87	.03	.05	.68	-	1.06	1.98	.38	2.63	.03	-	6.08
54	North Andover †† e/	-	-	1.62	-	.04	.57	-	.86	3.24	.98	-	5.65
55	Princeton **** f/	-	1.15	-	.75	-	*	*	*	*	8.92	-	8.92
56	Sterling **** f/	-	1.03	-	.53	-	*	*	*	*	8.67	-	8.67
57	Sudbury Dam †† f/	-	.94	-	.50	-	.62	3.09	1.12	2.20	.26	-	7.29

* Included in following measurement.
** Measured at midnight.
**** Measured at irregular times.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
M Record missing.
a Corps of Engineers, U. S. Army.
b Public Service Co. of New Hampshire.
c U. S. Geological Survey.
d Charles L. Whittle.
e Massachusetts Department of Public Health.
f Metropolitan District Commission.
g City Engineer, Haverhill, Mass.
h Proprietors of the Locks and Canals on Merrimack River.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Thames River Basin												
	Massachusetts:												
58	Charlton Depot †† e/	0.95	0.03	0.36	0.23	-	0.46	2.37	1.85	4.99	-	-	9.67
59	Southbridge †† e.	.67	.02	.36	.16	-	.63	2.83	2.00	6.90	1.14	Tr.	13.50
60	Webster †† e/	.50	.11	.06	.67	-	.93	2.70	1.78	3.78	.65	0.05	10.84
	Connecticut:												
61	Baltic ††	-	.40	-	.51	-	-	*	3.13	2.97	4.55	-	10.65
62	Camp Fernow i/	-	1.02	-	.22	-	-	2.00	2.20	3.62	4.20	-	12.02
63	Camp Lonergan i/	M	M	M	M	M	-	.80	1.05	.72	.83	j	3.40+
64	Griswold † k/	M	M	M	M	M	M	.63	1.12	1.00	.88	.12	3.75
65	New London	-	.73	-	.79	Tr.	.58	.82	.82	.91	j	j	3.13+
66	Norwich †† l/	M	.60	M	M	M	*	*	*	4.50	3.20	j	7.70+
67	Putnam	-	.96	-	.60	0.06	.17	1.18	2.60	2.24	2.05	j	8.24+
68	Storrs	-	.85	-	.71	.56	.04	.93	3.62	3.00	6.21	.31	14.11
	Connecticut River Basin												
	New Hampshire:												
69	Bethlehem	-	1.27	-	.81	.18	-	Tr.	.17	1.23	4.05	.24	5.69
70	Dixville Notch	.34	.18	.24	-	.33	.29	.58	.31	1.62	.72	-	3.52
71	First Connecticut Lake	-	1.51	.06	.43	.41	.04	.51	-	.70	1.38	.34	2.97
72	Fitzwilliam †† e/	1.41	-	.54	.29	-	.34	.58	2.23	4.10	1.94	-	9.19
73	Franconia †	M	M	M	M	M	M	.07	.06	.98	3.61	1.34	6.06
74	Glencliff	1.70	-	.85	.10	-	.08	-	1.32	2.55	3.65	-	7.60
75	Hanover	.52	1.15	Tr.	.97	-	.03	.11	.63	1.96	2.68	.02	5.43
76	Keene † b/	-	1.00	.01	.59	.51	-	.14	.35	2.84	3.19	j	6.52+
77	Keene	-	.93	-	.68	.08	.01	.13	1.93	2.36	2.98	.03	7.44
78	Lancaster †	-	1.65	.03	.66	.03	Tr.	-	.20	.73	1.92	-	2.85
79	Minnewawa † b/	-	1.14	.03	.56	.61	-	.18	.33	2.68	4.02	1.99	9.20
80	Mount Washington m/	.04	1.82	-	.88	.25	Tr.	.16	.60	2.08	4.55	.90	8.29
81	Newport †	-	1.69	-	.61	.31	-	.20	.27	1.71	3.28	1.83	7.29
82	North Stratford †	-	1.20	-	.38	.25	-	.30	-	.64	1.60	1.83	4.37
83	Pierce Bridge n/	-	1.36	1.01	.83	.03	-	.04	.05	1.30	4.58	1.60	7.57
84	Randolph o/	M	M	M	M	M	M	M	M	M	6.33	M	6.33+
85	West Lebanon †	-	1.53	-	.71	.34	-	.10	.16	1.37	2.05	1.42	5.60
86	West Stewartstown †	-	1.25	.09	.43	.07	-	.40	-	.55	1.13	.81	2.89
87	York Pond ††	1.05	Tr.	-	.80	.04	.07	.02	.70	2.17	1.34	-	4.30
	Vermont:												
88	Bellows Falls †	-	.80	-	.68	.13	-	.11	.38	1.95	2.65	1.44	6.53
89	Bethel †	-	.84	-	1.28	.65	-	.30	Tr.	.60	1.44	p2.95	5.29
90	Bloomfield	-	1.17	.04	.37	.12	Tr.	.32	-	.67	1.57	1.65	4.22
91	Brattleboro †	-	.40	-	.72	.09	-	.23	.46	2.03	2.84	2.66	8.22
92	Canaan †	-	1.23	.05	.29	.09	-	.39	-	.49	1.10	.83	2.86
93	Cavendish	.01	1.44	Tr.	1.18	Tr.	-	.20	.85	2.11	2.63	1.47	7.26
94	Chelsea	-	1.14	-	1.27	-	-	.40	.18	1.33	2.93	.15	4.99
95	East Barnet †	-	1.06	-	.80	.05	-	.23	.01	.89	1.45	2.01	4.59
96	East Ryegate †	-	1.31	-	.69	.09	-	.17	.01	1.16	2.01	q2.00	5.35
97	Gilman ††	1.30	-	.75	.04	-	.07	.10	1.17	1.57	1.98	-	4.89
98	Mays Mill †	-	.96	-	.85	.18	-	.19	.38	2.28	2.24	3.48	8.57
99	McIndoes Falls †	-	1.40	-	.37	.08	-	.27	.02	.95	1.50	2.11	4.85
100	Newfane ††	.49	-	.68	.11	-	.09	.32	2.06	2.24	3.29	-	8.00
101	Readsboro †	-	1.23	-	.83	.11	-	.11	.33	2.30	2.58	3.57	8.89
102	Rochester †	-	.83	-	1.15	.46	-	.45	.14	.63	1.33	2.93	5.53
103	St. Johnsbury **	.50	.55	.12	.83	-	.30	.02	.22	1.28	2.35	-	4.17
104	Searsburg Mountain †	-	1.43	-	.53	.06	-	.37	.60	2.41	2.12	3.00	8.50
105	Searsburg Station †	-	1.03	-	.70	.07	-	.21	.40	2.56	2.51	3.20	8.88
106	Somerset †	-	.76	-	.74	.20	*	.31	.41	2.40	1.94	3.14	8.20
107	South Newbury †	-	1.15	-	.68	.28	-	.18	Tr.	1.44	1.45	1.76	4.83
108	Vernon †	-	.47	-	.65	.90	-	.15	.54	3.27	3.11	1.73	8.80
109	West Burke †	-	1.42	-	.60	.07	-	.44	-	.70	1.00	1.05	3.19
110	West Hartford †	-	-	-	.84	.22	-	.19	.14	1.52	2.32	1.34	5.51
111	White River Junction †	-	1.40	-	.74	.20	-	.12	.14	1.66	2.16	1.30	5.38

* Included in following measurement.
** Measured at midnight.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
M Record missing.
b Public Service Co. of New Hampshire.
e Massachusetts Department of Public Health.
i Connecticut State Forestry Department.
j No record; gage destroyed during hurricane.
k Jewett City Water Co.
l Norwich Water Department.
m Mount Washington Observatory; average of three gages.
n U. S. Forest Service.
o Blue Hill Observatory.
p Measured on September 24.
q Estimated; gage destroyed during hurricane.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Connecticut River Basin--Continued												
	Vermont-Continued.												
112	White River Junction †	-	1 50	-	0.68	0.25	-	0.15	0.15	1.72	2.00	1.55	5.55
113	Whitingham †	-	.91	-	.73	.13	-	.14	.39	2.29	2.80	3.82	9.44
114	Wilder †	-	1.71	-	.70	.48	-	.12	.12	1.70	1.78	1.76	5.48
115	Wilmington †	-	.61	-	.74	.13	-	.19	.45	2.71	2.45	4.45	10.25
116	Woodstock	Tr.	1.13	-	1.15	-	-	.26	.57	.67	3.20	1.25	5.95
	Massachusetts:												
117	Amherst **	0.33	.60	-	.98	-	0.34	.34	3.44	3.96	3.88	-	11.96
118	Ashley Pond † r/	-	.59	-	.50	.05	-	.43	2.27	2.75	4.15	1.05	10.65
119	Athol †† e/	1.46	-	0.73	.36	-	.43	.73	2.75	6.02	q2.38	-	12.31
120	Baldwinsville †† e/	1.38	-	-	.58	-	.50	1.06	2.63	9.30	1.45	-	14.94
121	Barre †† e/	.50	-	.74	.44	-	.72	1.14	1.67	11.83	1.67	-	17.03
122	Blandford †† e/	.63	.01	.63	.25	-	*	1.30	3.31	2.42	3.31	.02	10.34
123	Bondsville †† e/	1.03	.04	.59	.12	-	-	1.60	2.36	5.17	2.25	-	11.38
124	Borden Brook Res. †† s/	.44	.01	.23	.23	-	.26	1.02	3.08	2.50	4.41	.04	11.27
125	Carmody Reservoir ** r/	-	.93	-	.11	.51	.22	.19	3.72	1.14	7.83	-	13.10
126	Chester †† e/	.75	-	.57	.25	-	.25	.62	3.14	2.65	3.65	-	10.31
127	Chesterfield †† e/	.69	-	.64	.10	-	.26	.74	2.90	2.80	4.17	-	10.87
128	Colrain †† e/	.73	-	.75	-	-	.31	.56	2.36	2.29	3.76	.02	9.28
129	Cummington †† e/	.66	-	.72	.24	-	.25	.89	2.43	2.20	3.14	Tr.	8.91
130	East Northfield †† e/	1.10	-	.60	.56	-	-	.66	4.00	3.46	1.94		10.06
131	Enfield †† f/	1.36	.06	.65	.61	-	.52	1.32	2.42	5.20	2.15	Tr.	11.61
132	Fryville †† e/	1.65	.02	.91	.18	-	.35	.53	2.46	5.95	1.91	-	11.20
133	Gardner †† e/	-	-	.41	.33	-	*	1.75	*	11.14	1.63	-	14.52
134	Greenfield †† e/	.70	Tr.	.64	.29	-	.19	.55	4.34	3.08	2.50	-	10.66
135	Hardwick †† e/	1.40	-	.91	.21	-	.85	1.28	2.03	5.42	1.85	-	11.43
136	Heath †† e/	1.07	Tr.	.84	.11	Tr.	.23	.49	2.28	2.06	4.70	-	9.74
137	Holyoke †	-	.64	-	.53	.03	-	.32	1.06	2.51	4.36	1.52	9.77
138	Hoosac Tunnel †	-	1.63	-	.82	.52	-	.13	.27	2.50	2.75	4.26	9.91
139	Hubbardston †† e/	1.21	-	.58	.30	-	.59	1.19	2.23	10.16	1.43	-	13.60
140	Knightville †† e/	.79	-	.89	.13	-	.19	1.12	3.62	2.64	q2.50	-	10.07
141	Lake Pleasant †† e/	.94	.02	.53	.37	.01	.22	.52	4.00	3.36	2.45	Tr.	10.55
142	Ludlow Reservoir †† s/	.84	.06	.78	.16	-	.48	1.22	3.02	6.19	1.78	.08	12.69
143	Middlefield †† e/	-	.98	-	.90	-	.41	.79	2.80	3.18	3.43	-	10.61
144	Monson †† e/	-	.60	-	.12	.50	.54	1.47	t6.31	t2.07	t2.00	-	12.39
145	Montague City †	-	.82	-	.60	.38	-	.20	.65	4.77	3.11	2.07	10.80
146	Montgomery †† e/	.44	-	.23	.23	-	.25	.91	3.50	2.55	3.12	-	10.33
147	New Braintree †† e/	1.38	.04	.46	.03	-	.43	1.26	1.52	8.05	1.08	-	12.34
148	New Salem †† e/	1.57	-	-	1.10	-	*	u4.44	*	*	5.33	-	9.79
149	North Rutland †† e/	1.40	-	.86	.32	-	.38	1.42	2.00	6.00	4.12	-	13.92
150	Otis Reservoir †† v/	.75	-	-	1.25	-	-	.90	3.10	2.60	4.80	-	11.40
151	Peru †† e/	1.26	-	.64	.15	-	.24	.19	2.28	2.87	3.54	.04	9.12
152	Petersham † f/	-	1.06	-	.54	-	*	*	*	*	*	13.12	13.12
153	Phillipston †† e/	1.60	-	.56	.21	-	.42	.70	3.35	6.40	q2.38	-	13.25
154	Plainfield †† e/	.41	-	.80	.11	-	.31	.57	2.57	2.93	q3.44	-	9.82
155	Provin Mountain Res. †† s/	.40	-	.51	.09	-	.42	1.46	1.86	3.47	1.51	.02	8.72
156	Rutland †† e/	.99	.08	.42	.08	-	.34	1.31	2.46	4.91	3.24	-	12.26
157	Shelburne Falls †	-	1.04	-	.72	.28	-	.23	.84	2.45	2.41	3.38	9.31
158	Shutesbury †† e/	1.50	.02	.65	.58	-	.50	.70	2.33	5.33	2.00	-	10.88
159	South Deerfield †† e/	.83	-	.30	1.15	-	.28	.80	4.48	3.20	1.72	-	10.48
160	Springfield	-	.51	-	.77	-	.14	.63	.73	2.87	5.81	-	10.18
161	Springfield †	-	.44	.02	.47	.22	-	.36	1.03	1.67	5.01	1.97	10.04
162	Springfield ** w/	.04	.42	-	.69	-	.35	.24	1.88	3.68	4.28	-	10.43
163	Turners Falls	.63	.07	.39	.50	-	.19	.51	4.61	2.53	2.89	-	10.73
164	Ware ††	1.26	.03	.50	.10	-	.60	1.14	2.16	4.01	M	M	-
165	Ware Centre †† e/	1.12	-	.61	-	-	.16	1.60	2.68	6.00	2.35	-	12.79
166	Ware River intake †† f/	1.39	.08	.36	.06	-	-	1.70	2.02	q8.55	q1.28	-	13.55
167	Warren †† e/	.91	.24	.41	.21	-	.53	1.33	1.17	6.72	1.29	1.21	12.25
168	Warwick †† e/	1.14	.21	.46	.70	-	.35	.51	4.04	3.63	2.23	-	10.76
169	Wendell †† e/	1.20	-	.83	.25	-	.46	.72	3.10	4.00	2.50	-	10.78
170	West Brookfield †† e/	1.05	-	.09	.56	-	.50	1.60	1.68	9.96	j	j	13.74+

* Included in following measurement.
** Measured at midnight.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
e Massachusetts Department of Public Health.
f Metropolitan District Commission.
j No record; gage destroyed during hurricane.
q Estimated; gage destroyed during hurricane.
r City of Holyoke, Water Department.
s Springfield Water Works.
t Total catch correct; distribution estimated.
u Measured 1:30 p.m., September 19.
v Collins Co., Collinsville, Conn.
w City of Springfield, Department of Streets and Engineering.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Connecticut River Basin--Continued												
	Massachusetts-Continued.												
171	Westfield †† e/	0.38	-	0.51	0.06	-	0.48	1.12	2.40	2.95	2.01	-	8.96
172	Westfield Dam †† e/	.40	-	.39	.04	-	.33	1.07	2.55	2.80	2.57	0.03	9.52
173	Westfield Sanatorium	-	0.40	-	.70	0.08	.42	.54	2.56	2.11	3.63	1.10	10.36
174	West Granville † x/	.44	.01	.23	.31	-	.26	1.02	3.08	2.50	2.10	4.41	13.11
175	Westhamton †† r/	-	.76	-	1.84	-	.05	.21	3.88	2.28	4.89	-	11.31
176	West Otis †† e/	1.00	-	.56	-	.24	.16	.42	3.04	3.28	3.75	.09	10.65
177	West Parish †† s/	.38	.01	.33	.06	-	.36	1.00	2.93	2.79	2.90	.02	9.98
178	West Pelham †† e/	1.36	-	.24	.25	-	.45	1.06	1.91	5.40	2.24	-	11.06
179	West Rutland †† f/	1.29	.08	.70	.07	*	*	1.82	*	*	*	8.02	9.84
180	West Ware †† e/	1.30	-	-	1.34	-	*	*	4.44	q5.46	q2.35	-	12.25
181	Whiting Street Res. † r/	-	.92	-	.30	.06	-	.52	2.36	2.72	4.23	.70	10.53
182	Williamsburg †† e/	.74	.95	-	.10	-	.12	.91	4.56	2.73	2.45	-	10.77
183	Williamsville †† e/	1.43	-	.65	.40	-	.70	1.25	1.60	6.50	1.90	-	11.95
184	Winchendon †† e/	1.38	-	.81	.11	-	.38	.53	2.57	7.85	q1.67	-	13.00
185	Worthington †† e/	-	-	.66	.27	-	.32	.85	2.78	2.72	3.65	.01	10.32
	Connecticut:												
186	Bakersville † x/	-	.31	.06	.29	.04	.01	.34	.99	3.48	3.05	3.04	10.90
187	Barkhamsted ††	.21	-	-	.36	.32	*	1.50	2.65	2.30	3.50	-	9.95
188	Bills Brook † x/	-	.17	-	.36	.19	-	-	1.29	2.34	2.87	3.38	9.88
189	Bloomfield ** y/	.10	.19	-	.46	-	.41	.77	1.84	3.69	3.00	-	9.71
190	Bristol † z/	-	.32	.06	.47	.14	-	.73	1.35	1.74	3.48	3.02	10.32
191	Brown's Corner † x/	-	.30	.08	-	.40	.08	.40	1.05	2.30	3.17	3.01	9.93
192	Burlington †	-	.24	.06	.41	.05	-	.61	1.09	1.70	3.58	2.95	9.93
193	Camp Buck i/	.55	-	.35	-	-	.12	2.10	2.50	6.60	5.75	-	17.07
194	Camp Conner i/	-	.84	-	.51	-	-	.53	2.13	6.09	5.00	-	13.75
195	Camp Filley i/	-	.40	-	.83	-	2.12	2.19	1.45	2.30	5.70	-	13.76
196	Camp Robinson i/	-	.43	-	.40	.12	-	.29	2.95	3.14	3.87	1.20	11.45
197	Camp White i/	-	.22	-	.30	.24	-	.32	3.10	2.35	5.30	.12	11.19
198	Colchester	-	-	-	.67	.13	-	1.35	1.97	2.50	3.10	1.04	9.96
199	Collinsville †	-	.25	-	.40	.05	-	.60	1.02	1.79	2.86	2.71	8.98
200	Collinsville † v/	M	.62	-	.45	-	-	-	1.56	1.44	4.30	2.03	9.33
201	East Granby † aa/	M	M	M	M	M	*	.6	1.4	2.1	3.82	1.8	9.72
202	East Hartland †	-	.44	-	.38	-	-	.51	1.76	2.51	2.65	4.15	11.58
203	Glastonbury ab/	M	M	M	M	1.47	*	2.90	*	6.79	*	6.24	15.93
204	Hartford **	.07	.27	Tr.	.51	-	.60	1.45	1.80	6.10	3.22	-	13.17
205	Hartland Hollow † x/	-	.42	-	.36	.15	-	*	1.60	3.46	2.90	3.45	11.41
206	Manchester †† ac/	-	.33	-	.77	-	-	3.18	2.85	7.66	2.32	-	16.01
207	Middletown ad/	-	.55	-	1.00	.45	-	.72	2.06	4.08	4.71	1.87	13.44
208	New Britain ** ae/	.08	.17	-	.74	-	.32	.49	2.44	5.32	2.84	M	11.41
209	New Hartford † x/	-	.19	.04	.32	.07	-	.32	1.02	2.06	2.91	3.49	9.80
210	Newington ** y/	.10	.21	-	.68	-	.64	1.69	1.57	5.55	2.43	-	11.88
211	North Station † x/	-	.34	-	-	.33	.04	.38	*	2.52	2.87	2.93	8.70
212	Shuttle Meadow † af/	-	.30	.10	.40	.42	-	.56	2.12	2.00	4.58	2.54	11.80
213	South Meadows ** y/	.10	.24	-	.61	-	.33	1.42	1.52	6.93	2.18	-	12.58
214	Thompsonville † ag/	-	.51	-	.45	.06	-	.47	.98	1.45	6.10	2.00	11.00
215	West Hartford † x/	-	.28	.02	.45	.16	-	.52	2.10	1.55	4.92	1.07	10.16
216	West Hartford ** x/	.26	.02	-	.63	-	.43	1.27	2.05	4.15	2.41	-	10.31
217	West Hartford † x/	M	M	M	M	M	M	.44	1.90	1.48	4.74	1.13	9.69
218	West Hartland †	-	.68	*	.42	-	-	*	*	*	*	11.30	11.30
219	West Hill † x/	-	.25	.05	.30	.10	-	.10	1.10	3.15	3.15	3.10	10.60
220	Whigville Res. † af/	-	.37	.03	.40	.17	-	.61	1.85	1.83	3.37	2.54	10.20
221	Windsor † cc/	M	M	M	M	M	M	.52	1.88	1.78	5.99	1.30	11.47

* Included in following measurement.
** Measured at midnight.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
M Record missing.
e Massachusetts Department of Public Health.
f Metropolitan District Commission.
i Connecticut State Forestry Department.
q Estimated; gage destroyed during hurricane.
r City of Holyoke, Water Department.
s Springfield Water Works.
v Collins Co., Collinsville, Conn.
x Hartford Metropolitan Water Bureau.
y Hartford Flood Investigation and Improvement Commission or City Engineer, Hartford, Conn.
z Bristol Water Co., Bristol, Conn.
aa Hartford Electric Light Co.
ab F. H. Parker, Manchester, Conn.
ac Manchester Water Co., Manchester, Conn.
ad City of Middletown; measured at noon.
ae City Engineer, New Britain, Conn. No record after 7 p.m., Sept. 21; pen blew off chart. Weather for Sept. 22 reported clear.
af New Britain Water Co., New Britain, Conn.
ag Connecticut Light & Power Co.
cc Connecticut Agricultural Experiment station.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Housatonic River Basin												
	Massachusetts:												
222	Dalton †† e/	1.00	-	-	0.60	0.08	-	0.25	2.03	1.83	3.45	0.09	7.56
223	Egremont †† e/	.70	-	0.52	.37	-	0.07	.13	2.33	1.70	3.00	.13	7.23
224	Pittsfield ††	1.15	-	.70	.15	-	.05	.20	2.50	1.57	3.00	Tr.	7.32
225	Stockbridge	.18	1.29	Tr.	1.02	-	.08	Tr.	1.00	2.05	4.32	.10	7.55
226	Stockbridge †† e/	1.25	-	.52	.30	-	.10	.02	2.35	2.00	3.50	.15	7.97
	Connecticut:												
227	Ansonia † ah/	-	.55	.03	.93	.18	-	.60	1.95	1.77	4.10	2.13	10.55
228	Bulls Bridge † ag/	-	.38	.08	.32	.45	-	.22	.81	2.41	1.95	2.87	8.26
229	Camp Cross i/	-	.36	-	1.01	-	.06	.10	2.67	1.81	4.75	.14	9.53
230	Camp Toumey † i/	-	.39	-	.32	.44	Tr.	.14	.86	2.51	3.22	3.36	10.09
231	Cream Hill	-	.61	-	1.56	-	.24	Tr.	2.86	1.89	5.15	-	10.14
232	Danbury	-	.62	-	.31	.20	.05	.93	2.92	1.52	5.54	.02	10.98
233	Derby †† ai/	.49	.07	.99	.16	-	.44	2.06	1.48	3.50	2.22	.04	9.70
234	Falls Village	-	.58	.02	1.18	.47	.12	.22	2.66	2.05	2.05	3.51	10.61
235	Naugatuck † aj/	-	.42	Tr.	.57	.25	-	.51	2.52	1.67	3.27	1.65	9.62
236	New-Milford **** ak/	-	-	-	.90	-	-	*	2.96	1.67	5.21	-	9.84
237	Norfolk †† al/	M	M	M	M	M	.21	.70	3.24	3.19	3.79	M	11.13
238	Prospect † am/	-	.39	.05	.94	.12	-	.59	1.71	2.00	4.35	1.86	10.51
239	Rocky River †† ag/	M	M	M	M	M	.13	1.12	2.91	2.75	4.02	M	10.93
240	Salisbury	-	.75	.05	.82	.32	Tr.	.30	1.80	1.38	5.42	-	8.90
241	Squantz Pond i/	-	.62	-	.34	.20	.13	.05	2.53	1.58	5.00	.08	9.37
242	Stevenson Dam ag/	M	M	M	M	M	.67	2.46	1.78	3.65	1.35	M	9.91+
243	Torrington † an/	-	.37	-	.32	.10	-	.30	1.47	3.18	3.21	3.41	11.57
244	Torrington †† ao/	M	M	M	M	M	1.64	1.60	1.50	3.08	3.34	M	11.16
245	Torrington **** ap/	*	*	*	*	*	*	*	*	*	*	12.24	12.24
246	Trap Falls Res. †† aq/	-	.74	-	*	1.14	1.10	.83	2.42	3.53	3.15	-	11.03
247	Waterbury	-	.72	-	.64	.14	.13	.44	1.85	2.40	4.25	.02	9.09
248	Waterbury (City Hall) ar/	-	.69	-	.59	.16	-	.52	1.40	2.38	3.20	1.60	9.10
249	Wigwam Reservoir as/	-	.44	-	.36	.51	.35	-	1.30	2.49	3.08	2.15	9.02
250	Woodville ††† at/	-	.73	-	.26	.42	-	.24	1.11	3.84	3.60	2.22	11.01
	Hudson River Basin												
	Vermont:												
251	Bennington	-	1.36	-	1.03	-	-	.08	.51	2.53	3.09	-	6.21
	Massachusetts:												
252	Adams †	-	.82	-	.79	.31	-	.07	.34	2.09	1.81	2.94	7.25
253	Hopkins Memorial Forest n	-	1.30	.02	.76	.04	.02	.19	.94	2.44	2.54	.93	7.06
254	Williamstown	.21	.71	.01	.79	-	-	.07	.98	2.58	3.32	.07	7.02
	New York:												
255	Albany **	.65	.24	.15	.63	-	.14	Tr.	2.09	1.35	3.91	-	7.49
256	Albany (Airport) **	.45	.24	.23	.26	-	.25	.01	1.78	1.25	3.25	-	6.54
257	Amsterdam † au/	-	.89	-	.69	.09	-	.34	.02	.96	1.41	2.48	5.21
258	Bedford Hills	-	.48	-	.25	.05	.05	.18	2.00	1.35	6.00	.25	9.83
259	Big Indian †† av/	.92	.03	.33	.20	-	.14	.15	1.63	1.06	3.24	.23	6.22
260	Blue Ridge † au/	-	.60	.75	-	.05	-	.08	.26	.65	1.36	2.63	4.98
261	Boyds Corner ††	.52	.12	.34	.02	-	.10	.54	2.57	2.06	4.50	.16	9.77
262	Brown Station †† av/	.15	.09	.80	-	-	.40	.65	2.92	1.31	2.20	.08	7.48
263	Cairo	-	.52	-	.21	-	-	.32	.86	2.04	3.81	.41	7.44
264	Canajoharie † aw/	-	.93	-	.65	.23	-	.23	.03	.83	1.60	1.75	4.44
265	Carmel ††	.62	.04	.36	.07	-	.11	.83	2.90	2.27	3.77	.13	9.88
266	Coldbrook †† ax/	.27	.06	.80	.15	-	.35	.97	2.41	1.24	2.22	.08	7.19

* Included in following measurement.
** Measured at midnight.
**** Measured at irregular times.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
††† Measured at 11 a.m.
M Record missing.
e Massachusetts Department of Public Health.
i Connecticut State Forestry Department.
n U. S. Forest Service.
ag Connecticut Light & Power Co.
ah Ansonia Water Co., Ansonia, Conn.
ai Birmingham Water Co., Shelton, Conn.
aj Naugatuck Water Co., Naugatuck, Conn.
ak J. H. Nettleton, New Milford, Conn.
al Edward C. Childs.
am New Haven Water Co., New Haven, Conn.
an Torrington Register.
ao General S. H. Wadhams.
ap Torrington Water Co., Torrington, Conn.
aq Bridgeport Hydraulic Co.
ar City of Waterbury; measured at noon.
as Waterbury Water Co., Waterbury, Conn.; measured at noon.
at City of Waterbury, Bureau of Engineering.
au New York Power & Light Corporation.
av New York City, Department Water Supply, Gas, and Electricity.
aw New York State Department of Public Works.
ax New York City Board of Water Supply.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Hudson River Basin--Continued												
	New York--Continued.												
267	Conklingville †† av/	0.62	-	1.08	0.42	-	0.17	-	0.18	1.09	3.84	-	5.28
268	Conklingville † au/	-	0.56	-	1.02	0.48	-	0.17	.15	.99	1.70	1.98	4.99
269	Croton Lake †† av/	.46	.01	.25	.15	-	.11	1.00	2.26	2.11	3.68	.07	9.16
270	Delta † aw/	-	.85	-	.55	.06	-	.11	.07	.06	.36	1.85	2.45
271	Dolgeville †	.82	-	-	1.37	.36	-	.36	.05	.71	1.40	1.25	3.77
272	East Jewett †† av/	.76	-	.26	.14	.01	.23	.58	1.49	1.60	4.39	.11	8.29
273	Edgewood †† av/	.65	-	.40	.12	-	.25	.73	1.86	1.45	3.30	.30	7.59
274	Elka Park †† av/	.69	.01	.64	-	-	.46	1.43	2.25	1.59	3.28	.30	9.01
275	Ephratah † au/	-	.92	-	.79	.31	-	.22	.01	.91	1.24	2.06	4.44
276	Frankfort † aw/	-	.85	-	.95	.38	-	.15	.02	.26	.82	3.10	4.35
277	Glenham †	-	.46	Tr.	.31	.05	-	.10	.27	3.99	1.56	3.63	9.55
278	Glens Falls † au/	-	.61	-	.63	.17	-	.16	.18	.89	1.32	1.87	4.42
279	Gloversville	.28	.40	.03	1.15	-	.20	.08	.58	1.11	2.93	.18	5.08
280	Grahamsville †† ax/	.24	-	.95	-	-	.22	.23	2.10	1.32	1.40	.25	5.27
281	Grand Gorge †† av/	.68	-	.26	.28	-	.27	.08	1.23	1.29	3.40	.24	6.27
282	Greenfield Center	.25	.25	-	1.65	-	.15	.20	.80	1.55	3.50	-	6.20
283	High Falls	.03	.20	.01	.83	-	.27	.07	.65	2.75	2.63	-	6.37
284	Hinckley † aw/	-	1.52	-	.90	.10	-	.20	.07	.23	.63	2.43	3.56
285	Hoffmeister †	Tr.	1.38	-	.75	.21	-	.20	.07	.89	1.28	2.25	4.69
286	Honk Falls	.03	.28	.13	.75	-	.24	.04	2.20	1.48	2.56	-	6.52
287	Hope	-	.67	-	1.15	.15	-	.27	.13	.84	1.72	2.13	5.09
288	Ilion †† as	.24	.87	.98	.16	-	.88	1.00	.22	.90	3.19	2.40	6.19
289	Indian Lake	-	.47	-	1.04	.10	-	.21	.17	.43	1.99	2.40	5.20
290	Inghams † au/	-	.80	-	1.15	.38	-	.37	.02	.71	1.39	2.58	5.07
291	Jacksonburgh † aw/	-	.80	-	1.03	.26	-	.35	.16	.47	1.26	2.35	4.59
292	Johnsonville † au/	-	.85	-	.59	.33	-	.25	.33	1.49	1.17	2.79	6.01
293	Kingston † ax/	.35	-	.75	.18	-	-	.25	.65	3.20	1.55	2.10	7.75
294	Kingston ** ba/	.02	.21	.04	.76	.02	.22	.51	2.41	2.01	2.99	-	8.14
295	Lackawack †† ax/	.40	-	1.12	-	-	.32	1.20	1.32	1.15	2.18	.23	6.17
296	Lake Hill †† av/	.47	.02	.62	.13	-	.42	.90	2.66	1.27	2.22	.24	7.46
297	Lexington †† av/	.66	-	.31	.25	.01	.16	.11	1.42	1.33	3.55	.16	6.57
298	Little Falls No. 1	.28	.48	.03	1.21	-	.21	.09	.45	1.05	1.85	1.65	5.30
299	Little Falls No. 2 †	-	.87	-	1.10	.40	-	.34	.01	.75	1.38	2.83	5.31
300	Manor Kill †† av/	.96	-	.10	.42	-	.23	.10	1.14	1.33	2.77	.29	5.57
301	Mechanicville †	-	.85	-	.70	.32	-	.21	.61	1.24	1.38	2.55	5.99
302	Mohonk Lake	-	.18	-	.83	-	.10	.26	1.72	3.75	3.80	-	9.63
303	Morgans Mills ay/	.32	.36	-	1.37	-	.19	.11	.51	1.19	2.56	.59	5.15
304	Mount McGregor	-	.59	-	1.30	-	Tr	.30	.25	1.48	3.01	.78	5.82
305	Newcomb † au/	-	1.74	-	.74	-	-	-	-	.80	1.66	1.63	4.09
306	North Creek † au/	-	.40	-	.71	.14	-	.16	.11	.73	1.50	2.22	4.72
307	North Settlement †† av/	.80	.01	.22	-	.01	.15	.10	1.39	1.35	4.18	.33	7.17
308	Northville †	-	.62	-	.98	.80	-	.28	.14	1.36	1.58	2.00	5.36
309	Oak Hill †† ax/	.64	-	25	.02	-	.35	.13	1.46	1.66	2.78	.07	6.38
310	Pecks Pond † au/	-	.73	-	.96	.46	-	-	.33	1.10	1.50	2.12	5.05
311	Peekamoose †† ax/	.17	-	.82	-	-	.48	.75	3.10	1.30	2.30	.10	7.93
312	Phoenicia †† av/	.45	-	.36	.12	-	.31	.52	1.75	1.08	2.30	.19	5.96
313	Pine Hill †† av/	.79	-	.24	-	-	.13	.17	1.39	1.10	3.11	.12	5.90
314	Poughkeepsie **	Tr.	.25	-	.90	-	.20	.11	1.84	1.97	3.37	.50	7.49
315	Prattsville †† av/	.57	-	.24	.06	-	.34	.11	1.28	1.24	3.65	.17	6.62
316	Preston Hollow †† ax/	.51	-	.20	.10	-	.25	.10	1.40	1.42	2.80	.10	5.97
317	Rifton ***	.03	.20	.01	.90	-	.29	.07	3.00	2.50	3.80	-	9.66
318	Salisbury	.41	.61	-	1.33	-	.34	-	.66	1.10	2.28	.94	5.32
319	Schaghticoke † au/	-	.90	-	.64	.44	-	.20	.55	1.43	1.47	2.73	6.38
320	Schenectady ** bb/	.24	.42	.20	.92	-	.26	-	.70	1.31	2.86	-	5.13
321	Schroon Lake †	-	.68	Tr.	.76	.10	Tr.	.12	-	.80	1.60	2.68	5.20
322	Schuylerville *** aw/	.35	.30	.17	.70	-	.37	.03	1.38	2.10	2.11	.02	6.01
323	Scotia †† aw/	-	.69	-	.83	-	.41	.08	1.30	1.90	1.90	.11	5.59
324	Sharon Springs No. 1	.14	.40	.04	.92	-	.10	.12	.20	1.14	3.75	.30	5.81
325	Sharon Springs No. 2	.11	.44	.05	.94	-	.09	.10	.36	.70	2.80	.42	4.47
326	Slide Mountain †† av/	.51	-	.64	.16	-	.18	.42	.60	1.04	3.33	.43	5.77

** Measured at midnight.
*** Measured at 11 p.m.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
††† Measured at 11 a.m.
au New York Power & Light Corporation.
av New York City, Department Water Supply, Gas, and Electricity.
aw New York State Department of Public Works.
ax New York City Board of Water Supply.
ay Hudson River Regulating District.
as City Engineer, Ilion, N. Y.
ba City Engineer, Kingston, N. Y.
bb City of Schenectady.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Hudson River Basin--Continued												
	New York--Continued.												
327	Southeast Reservoir ††	0.51	0.02	0.26	0.18	-	0.21	1.34	2.49	2.44	3.64	0.07	10.12
328	Speculator † au/	1.08	-	.62	-	0.08	-	.16	.28	.60	1.80	2.00	4.84
329	Spier Falls	.02	.38	-	.98	-	.05	.19	.38	1.42	3.10	.62	5.76
330	Sprite Creek † au/	-	.87	-	1.14	.29	-	.41	.09	.68	1.49	2.56	5.23
331	Stewart's Landing † au/	-	1.10	-	1.30	.28	-	.49	.19	.71	1.68	2.75	5.82
332	Sundown †† ax/	.40	-	.32	-	-	.57	.90	2.18	1.17	1.89	-	6.71
333	Tannersville †† av/	.33	-	.35	.18	-	.23	.78	1.98	1.42	3.66	.19	8.07
334	Trenton Falls ††	1.19	-	.81	.11	-	.20	.21	.24	.62	2.79	.45	4.06
335	Tribes Hill †	-	.79	-	1.09	.03	-	.32	-	1.20	1.30	2.60	5.42
336	Utica †	-	.64	-	.82	.38	-	.18	.03	.22	.73	3.02	4.18
337	Voorheesville ** bc/	.45	.23	.03	.21	-	.32	-	1.85	1.46	4.02	-	7.65
338	Walden	.03	.31	-	.98	-	.17	.07	2.30	2.52	3.35	-	8.41
339	Wappingers Falls	-	.32	Tr.	.64	-	.07	.03	1.98	2.16	4.18	.07	8.49
340	Warrensburg † au/	-	.80	-	.95	.40	-	.20	.25	1.10	1.70	2.80	6.05
341	Warwick	-	.31	-	.71	-	.15	.12	1.15	2.73	4.75	.07	8.97
342	Westerlo †† ax/	.75	-	.32	.10	-	.30	.25	1.59	1.45	3.30	.12	6.89
343	West Hurley †† av/	.41	-	.70	.02	-	.35	.60	3.35	1.28	1.98	.14	7.56
344	West Kill †† av/	.91	-	.44	.17	.02	.16	.13	1.41	1.23	3.37	.31	6.30
345	West Point **	.03	.47	-	.49	-	.03	.21	2.79	1.95	3.95	-	8.93
346	West Shokan †† av/	.22	-	.97	-	-	.49	1.03	2.05	1.22	2.00	.23	6.79
347	Windham †† av/	.76	-	.31	.11	.01	.25	.15	1.27	1.48	4.07	.27	7.22
	Hackensack, Passaic, and Raritan River Basins												
	New York:												
348	Palisades Park *** a/	-	.39	-	.44	-	.10	.07	2.47	2.36	3.94	-	8.94
349	Southfield ** a/	-	.30	-	.48	.07	.19	.06	2.80	2.10	4.28	-	9.43
	New Jersey:												
350	Boonton †	-	.01	.04	.29	Tr.	-	.10	.15	3.88	1.21	2.34	7.68
351	Bowling Green *** a/	-	.06	-	.55	.01	.10	-	2.24	2.00	3.88	.06	8.22
352	Brook Valley *** a/	-	.08	-	.24	-	.11	.05	2.40	2.57	3.41	-	8.54
353	Canistear Reservoir bd/	-	.20	-	-	.50	-	.50	1.20	2.90	4.60	.10	9.30
354	Canoe Brook †	-	.12	-	.11	.02	-	.15	.20	3.95	1.82	2.97	9.09
355	Cedar Grove Res. † bd/	-	.25	.02	.43	.77	-	.15	.35	2.86	1.84	3.09	8.29
356	Charlotteburg bd/	-	.02	-	.60	.03	.18	.10	.58	2.36	3.51	.28	7.01
357	Chatham †	-	.03	.11	.16	.02	-	.18	.24	4.48	1.42	3.41	9.73
358	Dover	-	.10	.02	.28	-	.32	.14	4.50	.56	2.20	.06	7.78
359	Flemington	-	.40	Tr.	.08	-	.14	.08	2.68	2.34	3.66	-	8.90
360	Freehold	-	.15	-	.44	-	.19	.28	1.38	.90	3.68	-	8.43
361	Freehold No. R-1 ** be/	M	M	M	M	M	.15	.52	1.05	1.89	3.00	-	8.61
362	Freehold No. R-2 ** be/	M	M	M	M	M	.15	.38	.75	2.28	4.01	-	7.57
363	Freehold No. R-3 ** be/	M	M	M	M	M	.10	.41	.72	2.11	4.19	-	7.53
364	Freehold No. R-4 ** be/	M	M	M	M	M	.17	.52	1.08	1.93	4.56	-	8.26
365	Freehold No. R-5 ** be/	M	M	M	M	M	.15	.48	.99	1.98	4.86	-	8.46
366	Freehold No. R-6 ** be/	M	M	M	M	M	.07	.24	.83	2.49	4.79	-	8.42
367	Freehold No. R-7 ** be/	M	M	M	M	M	.12	.19	.82	2.42	4.74	-	8.29
368	Greenwood Lake † bf/	.14	-	.45	.04	-	.18	.20	3.11	1.21	2.83	.07	7.60
369	Hightstown	-	.26	-	.40	.22	.22	.10	1.73	2.92	4.35	-	9.32
370	Little Falls †	-	.09	.01	.29	.52	-	.18	.28	2.86	1.68	2.53	7.53
371	Long Valley	-	.12	-	.53	-	.05	.13	1.05	2.40	3.80	.05	7.48
372	Macopin intake † bd/	-	.03	-	.56	-	-	.21	.34	4.00	1.15	2.72	8.42
373	Mahwah *** a/	-	-	-	.25	-	.12	.07	2.75	2.10	3.02	-	8.06
374	Millington *** a/	-	.12	-	-	-	.02	.13	2.59	2.23	3.39	-	8.36
375	Milton † bg/	-	.05	-	.54	.07	-	.24	.14	4.56	1.04	3.56	9.54
376	Morristown ** bh/	-	-	-	.21	-	.03	.02	2.10	1.82	2.20	-	6.17
377	Morristown Res. *** a/	-	.14	-	.16	-	.28	.08	.75	2.34	3.70	.05	7.15
378	New Brunswick	-	.12	-	.07	.12	.25	.10	1.82	2.18	4.81	-	9.16
379	New Milford **	-	.05	-	.76	-	.09	.22	1.13	1.96	3.61	-	7.01

** Measured at midnight.
*** Measured at 11 p.m.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
M Record missing.
a Corps of Engineers, U. S. Army.
au New York Power & Light Corporation.
av New York City, Department Water Supply, Gas, and Electricity.
ax New York City Board of Water Supply.
bc Robert E. Horton.
bd City of Newark, N. J., Department of Public Affairs.
be U. S. Department of Agriculture, Soil Conservation Service.
bf North Jersey District Water Supply Commission.
bg Department of Public Works, Jersey City, N. J.
bh Town Engineer, Morristown, N. J.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Hackensack, Passaic, and Raritan River Basins--Continued												
	New Jersey--Continued.												
380	Oak Ridge Reservoir bd/	-	0.06	-	0.52	-	0.20	0.26	1.38	2.98	2.12	1.09	8.03
381	Paterson	Tr.	.21	Tr.	1.01	-	.42	.24	1.24	1.85	2.20	Tr.	5.95
382	Paterson † bi/	M	M	M	.37	-	.11	.29	3.00	1.84	1.58	.02	6.84
383	Plainfield	-	.14	-	.24	-	.20	.40	2.10	3.47	3.60	-	9.77
384	Raymond Dam † bf/	-	.22	-	.01	-	.11	.33	3.56	1.40	2.22	.04	7.66
385	Ridgefield **	-	.21	Tr.	.15	Tr.	.14	.39	1.02	1.56	4.50	-	7.61
386	Ringwood † bf/	-	.11	-	.34	0.02	-	.58	3.56	1.28	2.54	.03	7.99
387	Rockaway ** a/	-	-	-	.08	-	.27	.10	2.31	2.02	2.40	-	7.10
388	Somerville	-	.12	0.01	.11	.31	.14	.08	1.33	2.06	3.84	.04	7.69
389	Splitrock Pond † bg/	-	.12	.32	.08	-	-	-	2.00	2.43	1.60	2.80	8.83
390	Woodcliff Lake ** bj/	-	-	-	.65	-	.09	.29	1.61	2.12	3.59	-	7.70
	Delaware River Basin												
	New York:												
391	Andes †† ax/	1.21	-	.37	.40	-	.28	.04	1.36	1.48	2.75	.37	5.91
392	Arena †† ax/	.88	-	.23	-	.22	.38	.07	1.21	1.80	2.51	.30	5.97
393	Arkville †† ax/	1.10	-	-	.61	-	.34	.40	1.20	1.55	2.91	.23	6.40
394	Balsam Lake † ax/	.95	-	.15	-	-	-	.36	.55	1.79	1.17	1 45	5.32
395	Beerston a/	.17	.84	.88	.70	.02	.05	.04	.78	1.27	2.75	.29	5.18
396	Bovina †† ax/	1.27	-	.38	.50	.01	.30	.11	1.30	1.56	3.08	.36	6.35
397	Butternut Brook †† ax/	.55	-	.55	.18	-	.30	.41	1.74	1.32	2.00	.37	5.77
398	China ** c/	.10	.77	.39	1.26	-	.20	.01	.20	.98	2.47	.09	3.86
399	Claryville ** ax/	.18	.32	.10	.56	.05	.09	.39	1.96	1.29	2.01	.38	5.74
400	Craigie Clair †† ax/	.67	-	.56	.04	-	.32	.13	1.69	1.56	2.30	.45	6.00
401	Delhi	.08	1.27	-	.67	-	.12	.21	.27	1.75	2.37	.70	5.42
402	Downsville †† ax/	.86	-	.50	.23	-	.35	.11	1.19	1.55	2.60	.33	5.80
403	East Delhi †† ax/	1.30	-	.40	.30	-	.34	.11	1.00	1.58	2.16	.28	5.19
404	Frost Valley †† ax/	.68	-	.72	-	-	.35	.31	1.80	1.12	2.58	.40	6.16
405	Halcott Centre †† ax/	1.09	-	.45	.21	-	.36	.08	1.38	1.25	2.90	.33	5.97
406	Hale Eddy a/	.21	.51	.06	.77	-	.11	.11	.15	1.25	2.41	.29	4.32
407	Harvard ** ax/	.24	.54	.27	.39	-	.32	.10	.60	1.60	2.29	.03	4.91
408	Jeffersonville	.08	.42	.02	.52	-	.32	.07	.47	1.38	2.71	.16	5.11
409	Kortright Station †† ax/	.47	-	.46	1.01	.57	.41	.11	1.22	1.53	2.96	.47	6.23
410	Lake Delaware †† ax/	1.33	-	.07	.41	.11	.16	.21	1.00	1.62	2.23	.62	5.22
411	Lewbeach †† ax/	1.28	-	-	-	-	.27	.19	1.69	1.98	2.33	.36	6.46
412	Mary Smith †† ax/	.66	-	.50	.36	-	.40	.05	1.48	1.64	2.55	.30	6.12
413	Neversink †† ax/	.47	-	.77	.03	-	-	.63	1.81	1.27	2.09	.27	5.80
414	New Kingston †† ax/	1.09	-	.33	.45	.01	.40	.15	1.39	1.67	2.78	.42	6.39
415	Oakland Valley ** c/	.03	.37	.07	.66	-	.17	.33	1.55	1.52	2.36	.05	5.93
416	Parkston †† ax/	1.42	-	.42	.21	-	.38	.21	1.67	1.61	2.33	.30	6.20
417	Port Jervis	.20	-	.04	.57	-	.22	.68	1.05	2.16	2.57	-	6.68
418	Relay †† ax/	1.10	-	.15	.69	-	-	-	1.25	1.75	3.38	-	6.38
419	Roxbury	.07	.94	.02	.55	Tr.	.28	.05	.48	1.32	3.80	.23	6.16
420	Roxbury †† ax/	1.01	-	.37	.20	-	.33	.02	1.46	1.37	2.98	.33	6.16
421	Seager †† ax/	.84	-	-	.33	-	.28	.32	1.68	1.36	3.50	.50	7.14
422	South Kortright a/	-	1.23	-	.51	.35	-	.35	.02	1.02	1.70	2.73	5.82
423	Stamford †† ax/	.84	-	.24	.23	-	.14	.05	1.20	2.80	1.10	.25	5.29
424	Terry Clove †† ax/	1.00	-	.46	-	-	.30	.05	1.31	1.71	2.72	.37	6.09
	New Jersey:												
425	Belvidere	-	.15	Tr.	.40	-	.06	.04	1.31	2.25	3.60	-	7.26
426	Bridgeton	-	-	-	.03	.03	.49	.21	1.78	2.83	2.88	-	8.19
427	Burlington	-	.06	-	.40	.01	.18	.17	2.18	1.76	4.64	-	8.93
428	Camden **	.03	.04	Tr.	Tr.	Tr.	.31	.14	2.35	2.15	2.14	-	7.09
429	Camden (Airport) bk/	Tr.	.02	Tr.	.21	Tr.	.29	.07	1.91	2.83	2.73	-	7.83
430	Culvers Lake	-	.24	-	1.00	-	-	.20	.92	1.90	3.50	.30	6.82
431	Lambertville	-	.09	-	.05	.60	.25	.70	2.65	.85	3.55	.02	8.02

** Measured at midnight.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
M Record missing.
a Corps of Engineers, U. S. Army.
c U. S. Geological Survey.
ax New York City Board of Water Supply.
bd City of Newark, N. J., Department of Public Affairs.
bf North Jersey District Water Supply Commission.
bg Department of Public Works, Jersey City, N. J
bi Society for the Establishment of Useful Manufactures.
bj Hackensack Water Co., Weehawken, N. J.
bk Measured at 1:30 a.m. and credited to preceding day.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Delaware River Basin--Continued												
	New Jersey--Continued.												
432	Layton	-	0.26	-	1.02	-	0.10	0.02	1.34	1.73	3.34	0.02	6.55
433	Moorestown †	0.01	.04	-	.19	0.03	-	.26	.27	3.45	1.42	2.60	8.00
434	Newton	-	.11	-	1.20	Tr.	.17	.10	.60	2.12	3.05	.03	6.07
435	North Merchantville	Tr.	.05	Tr.	.32	Tr.	.35	.05	1.66	2.53	3.16	-	7.75
436	Pemberton	-	.09	-	.06	-	.08	.11	1.91	2.01	5.21	-	9.32
437	Phillipsburg	Tr.	.38	0.04	.30	-	.02	.07	1.79	2.85	2.49	-	7.22
438	Trenton No. 1 **	-	.02	Tr.	.54	Tr.	.34	.38	2.46	2.27	2.67	-	8.12
439	Trenton No. 2 **	-	.04	Tr.	.31	Tr.	.40	.38	2.54	3.01	3.22	-	9.55
	Susquehanna River Basin												
	New York:												
440	Bainbridge	.09	1.29	.11	.51	-	.22	.05	.30	.89	1.79	.39	3.64
440	Bainbridge †	Tr.	1.38	-	.49	.13	-	.27	.18	.58	.85	1.78	3.64
441	Beaver Meadows ** a/ bl/	.48	.52	.90	.20	-	.24	.11	*	*	*	*	3.2±
442	Berkshire a/	.76	-	1.80	.02	-	.04	.01	-	.50	-	.39	.94
443	Binghamton **	.04	.73	.41	.29	Tr.	.33	.13	.06	1.06	1.62	.15	3.20
444	Bridgewater a/	.69	-	-	1.03	-	.16	.28	.29	.50	1.37	.70	3.30
445	Chenango Forks a/	-	-	-	.68	-	.30	.29	-	-	-	.10	.69
446	Cherry Valley a/	.20	.60	.08	.72	-	.12	.20	.25	1.15	2.65	1.95	6.32
447	Cincinnatus †	-	1.26	-	1.33	.12	.02	.25	-	.24	.69	1.64	2.82
448	Cooperstown	.12	.67	.04	.73	-	.06	.07	.11	1.33	2.10	1.27	4.96
448	Cooperstown †	-	.79	-	.65	.08	-	.13	-	.85	1.36	2.51	4.85
449	Cortland	.07	1.06	.40	.56	-	.20	.12	Tr.	.30	.90	.52	2.04
450	Coventry a/	.10	1.30	.06	.15	-	.33	.09	-	-	-	.34	.76
451	DeRuyter † aw/	-	.61	-	.48	-	-	-	-	.29	.71	1.84	2.84
452	East Newark Valley a/	.04	-	.01	.01	-	-	.04	-	.02	.60	-	.66
453	Franklin †	-	1.18	-	.58	.28	-	.15	.02	.80	1.21	2.34	4.52
454	Gee Brook Hills †	-	1.80	-	1.29	.09	-	.28	-	.04	.73	1.33	2.40
455	Greene †	-	1.18	-	.63	.08	-	.41	.08	.40	.85	1.58	3.32
456	Hamilton	-	.20	.34	.65	.08	.17	.07	.15	.65	.99	.68	2.71
457	Harpursville a/	.10	.68	.15	1.18	-	-	.39	.06	.85	2.34	.48	4.12
458	Hunts Corner ** a/	1.00	1.00	1.70	.04	-	.32	.04	-	.63	1.30	.31	2.29
459	Leonardsville †	-	.87	.01	.74	.09	-	.31	.06	.44	.80	1.85	3.46
460	Lisle a/	.04	.76	.61	.90	-	.26	.02	.10	.63	.82	.64	2.47
461	Morrisville †	-	-	.01	.57	.15	Tr.	.22	.26	.10	.64	1.33	2.75
462	Newark Valley a/	.13	.96	.68	.38	.03	.10	.04	-	.68	.80	.63	2.25
463	New Berlin †	-	.88	-	.70	.34	Tr.	.40	.40	.38	1.00	2.06	4.24
464	North Edmeston ** a/	.36	.47	.62	.26	.03	.27	.02	.34	.93	2.03	.09	3.59
465	Norwich	.10	.89	.18	1.05	.02	.25	.21	.15	.73	1.67	.33	3.34
466	Oneonta	.08	.90	.02	.84	.03	.16	Tr.	.57	1.09	2.98	.10	4.90
466	Oneonta †	-	.98	-	.31	.58	-	.16	-	.94	1.29	2.51	4.90
467	Otego ** a/	.52	.54	.42	.11	M	M	M	.25	1.14	2.61	M	4.00
468	Oxford a/	.52	-	1.04	.29	-	.48	.19	.22	.77	1.35	.35	3.36
469	Richford ** a/	.50	.68	1.62	.05	-	.29	.06	.05	.72	1.83	.32	2.95
470	Sherburne †	-	.68	-	.84	.33	-	.28	.11	.28	.81	1.77	3.25
471	Smithville Flats ** a/	.33	1.06	1.10	.18	-	.28	.06	.30	.74	1.47	.20	2.85
472	Smyrna ** bm/	.32	.58	.76	.19	.01	.28	.15	.14	.74	1.70	.20	3.01
473	South New Berlin ** c/	.31	.82	.47	.32	-	.33	.08	.31	.81	2.44	.14	3.97
474	Straits Corners be/	-	1.47	-	2.10	.06	.02	.27	.11	.01	.92	.88	2.21
475	Truxton No. 1 ** c/	.29	.29	.47	.24	.01	.18	-	-	.49	1.65	.39	2.32
476	Truxton No. 2 ** c/	.30	.30	.54	.27	-	.10	-	-	.48	1.88	.12	2.46
477	Upper Lisle a/	.36	1.40	.35	.85	-	.36	-	-	.03	1.35	.11	1.85
478	Whitney Point †	-	1.85	-	1.50	-	Tr.	.35	.05	Tr.	.90	1.55	2.85
479	Worcester ** a/	.25	.51	.47	.11	-	.19	.06	.28	1.83	3.29	.06	5.65

* Included in following measurement.
** Measured at midnight.
† Measured in morning of day indicated.
a Corps of Engineers, U. S. Army.
c U. S. Geological Survey.
aw New York State Department of Public Works.
be U. S. Department of Agriculture, Soil Conservation Service.
bl 5.00 inches measured Sept. 26.
bm Chenango Experimental Forest.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	St. Lawrence River Basin												
	Vermont:												
480	Barre † bn/	-	1.05	0.01	0.73	0.07	-	*	0.52	0.52	1.26	1.94	4.24
481	Burlington **	0.69	.46	.13	.11	Tr.	0.04	Tr.	.38	.83	2.85	-	4.10
482	Cornwall	-	1.65	-	.72	-	-	-	.20	1.08	1.88	1.12	4.28
483	Craftsbury Common	.10	.95	-	.67	Tr.	.03	0.07	.12	.87	1.60	.30	2.99
484	Enosburg Falls	Tr.	1.93	Tr.	.24	-	.08	.09	.12	.55	1.89	.88	3.61
485	Essex † bn/	-	1.23	-	.24	.02	-	.04	.45	.27	1.20	2.80	4.76
486	Marshfield † bn/	-	1.02	-	.86	.13	-	.45	-	.56	1.03	1.48	3.52
487	Middlesex † bn/	-	.98	-	.78	.39	-	.07	.16	.61	1.07	2.20	4.11
488	Montpelier † bn/	-	.88	.02	.66	.05	-	.25	.04	.56	1.05	1.47	3.37
489	Newport	Tr.	1.00	-	.60	-	.01	.10	Tr.	.57	1.19	-	1.87
490	Northfield **	.54	.61	.25	.47	-	.20	.03	.51	.90	2.95	-	4.59
491	Rutland	.16	2.37	-	1.08	-	-	.25	.32	1.00	2.09	.84	4.50
492	Waterbury Dam ** a/	.78	.39	.25	.66	-	.15	-	.47	.69	3.12	-	4.43
	New York:												
493	Alexandria Bay	.08	.28	.02	.30	-	-	-	-	.04	2.35	.40	2.79
494	Ashley **** au/	-	1.41	-	.68	.37	-	-	.42	1.10	2.05	1.23	4.80
495	Ausable Forks †† bo/	.77	-	.37	-	-	-	-	-	.49	1.47	2.95	4.91
496	Baldwinsville † aw/	-	.50	-	.93	.08	-	.08	-	.08	.16	1.45	1.77
497	Beaver Falls †	-	.67	-	.17	.01	-	-	.06	.20	.58	1.87	2.71
498	Big Moose	-	.90	-	.73	-	.15	-	-	.67	1.75	.52	3.09
499	Bloomingdale †	-	.86	-	.12	Tr.	Tr.	Tr.	.10	.12	1.00	2.10	3.32
500	Boonville †	-	1.01	-	.95	.02	-	.21	.13	.06	.52	1.83	2.75
501	Bonaparte	-	.62	.24	-	-	-	-	-	-	.45	2.04	2.49
502	Brewerton † aw/	-	.27	-	.88	-	.12	.08	-	-	.28	1.38	1.74
503	Cadyville † bp/	-	.70	-	.22	.01	-	.04	.13	.26	1.51	2.16	4.10
504	Canastota †† bq/	.66	-	.37	.06	Tr.	.27	-	.05	.48	1.69	.21	2.49
505	Canton **	.45	.11	.03	.10	Tr.	Tr.	Tr.	.14	.13	2.44	.27	2.71
506	Chasm Falls **	.50	.25	.05	.15	.06	-	-	.05	.50	2.97	.05	3.52
507	Chazy	1.10	-	.12	-	-	.10	-	.12	.93	1.97	1.09	4.21
508	Cleveland † aw/	-	.46	-	.85	.11	-	.18	-	.02	.45	1.75	2.40
509	Colton †	-	.70	-	.10	.10	Tr.	.02	Tr.	.12	.50	2.15	2.79
510	Copenhagen	.30	.60	-	.19	-	-	-	-	-	1.00	2.20	3.20
511	Dannemora	-	.60	-	.30	.06	-	.08	.02	.49	1.90	1.50	3.99
512	Eagle Falls †	-	1.06	-	.17	.09	Tr.	.10	.12	.07	.63	2.40	3.32
513	Forestport † aw/	-	.97	-	.76	.20	-	.11	.03	.06	.62	2.44	3.26
514	Fulton † aw/	-	.58	-	.78	.09	-	.03	-	.03	.07	1.56	1.69
515	Gabriels	-	.84	-	.02	-	.26	.36	.06	1.20	1.80	1.90	5.58
516	Gouverneur	.02	.48	Tr.	.09	Tr.	-	-	.03	.19	.48	1.83	2.53
517	Herring †	-	1.43	.01	.07	.03	-	.01	-	.11	.22	2.48	2.82
518	High Market †	-	1.10	-	.77	.04	-	.15	.08	.02	.55	1.70	2.50
519	Hooker † br/	-	1.20	-	.50	.03	-	-	-	.20	.80	1.30	2.30
520	Ithaca **	.79	1.01	1.13	.06	.14	.23	Tr.	.03	.50	1.43	.27	2.19
521	Ithaca	-	1.83	.01	1.15	.16	.01	.21	-	.13	.48	1.22	2.05
522	Lake Placid (Airport) †	-	1.13	Tr.	.27	.01	Tr.	.19	.11	.27	1.64	3.40	5.61
523	Lake Placid Club ††	1.03	-	.29	.12	-	.14	.09	.25	1.45	2.95	.04	4.88
524	Lawrenceville	.14	.50	-	.09	-	Tr.	-	.03	.21	1.47	1.78	3.49
525	Locke † bq/	-	1.25	-	.95	.20	-	.21	Tr.	.40	1.20	1.53	3.54
526	Lowville †	Tr.	.54	Tr.	.39	.02	Tr.	.05	Tr.	.03	.62	1.86	2.56
527	Lyons Falls † br/	-	.79	-	.55	.08	-	.25	.37	.62	1.40	.12	2.76
528	McKeever †	-	1.38	-	.76	.07	.01	.10	.02	.11	.59	2.50	3.32
529	New London † aw/	-	.51	-	.78	.29	-	.48	.06	.07	.59	2.51	3.51
530	North Lake	.86	1.00	-	.97	-	.13	-	.12	.79	2.15	1.60	4.79
531	Nubia a/	.10	-	.50	.47	.03	.22	.07	.04	.62	.77	.66	2.38
532	Ogdensburg	.16	.14	-	.47	-	Tr.	-	-	.23	.80	1.50	2.33
533	Oswego **	.87	Tr.	.53	.04	.01	Tr.	-	.07	.05	1.15	.83	1.27
534	Peru	.09	.62	-	.10	-	.06	-	-	.70	2.54	1.05	4.35
535	Port Henry *** au/	-	.90	.48	.04	-	-	-	.14	.46	1.38	2.72	4.70
536	Raquette Lake †	-	.75	.10	.48	.15	.12	-	.06	.30	1.14	2.12	3.62
537	Sabattis	-	1.79	Tr.	.18	.11	Tr.	.02	.11	.11	.87	2.01	3.12

* Included in following measurement.
** Measured at midnight.
*** Measured at 11 p.m.
**** Measured at irregular times.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
a Corps of Engineers, U. S. Army.

au New York Power & Light Corporation.
aw New York State Department of Public Works.
bn Green Mountain Power Co.
bo E. C. D. Cameron.
bp System Properties, Inc.
bq Oswego River Watershed Corporation.
br Black River Regulating District.

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Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	St. Lawrence River Basin--Continued												
	New York--Continued.												
538	Sempronius a/	0.09	0.75	0.38	0.59	0.02	0.17	0.04	0.07	0.40	0.80	0.90	2.38
539	Sheds be/	-	.80	-	.40	.05	-	-	.21	.14	-	1.55	1.90
540	Skaneateles	.38	-	.69	.24	.01	.18	-	.22	.23	1.64	.73	3.00
541	Smiths Basin ††† aw/	-	1.21	-	.65	.36	-	.25	.44	1.30	1.88	1.25	5.12
542	South Edwards ††	.80	-	.04	.08	Tr.	.02	.11	.18	.42	2.31	.39	3.04
543	Sperryville	.20	.80	.06	.30	.03	-	-	.23	.08	.74	2.24	3.29
544	Stillwater Reservoir †	1.06	.02	.35	.10	.03	.10	.03	.15	.52	2.20	.47	3.37
545	Syracuse **	.61	.21	.54	.22	Tr.	.19	Tr.	.01	.37	1.57	.30	2.14
546	Syracuse (Airport) †	-	.69	-	.66	.22	-	.19	.01	.04	.37	1.58	2.19
547	Tupper Lake **	1.12	.23	.13	.12	.02	.05	-	.15	.79	2.16	.06	3.21
548	Virgil a/	.48	1.30	.40	.88	-	.36	-	.07	.59	.93	.56	2.51
549	Wanakena	.31	1.36	Tr.	.17	.07	.08	.01	-	.43	1.06	1.44	3.02
550	Watertown	.69	-	.06	.01	-	Tr.	-	Tr.	.08	.40	2.55	3.03
551	Whiteface Mountain †	-	1.91	.02	.32	.43	.04	.17	-	.25	1.35	2.34	4.11
552	Whitehall	.59	1.07	.01	1.17	Tr.	.03	-	.52	1.23	2.60	.14	4.52
553	Whitehall *** aw/	.78	.45	.28	.78	.02	.11	-	.95	1.10	2.25	-	4.41
554	Williamstown † bq/	-	1.20	.02	.94	.03	-	.18	Tr.	.50	2.00	.95	3.63
	Canada:												
-	Brome † bs/	1.13	-	-	.28	.51	.05	.13	.64	.21	.79	1.66	3.43
-	Cedars † bs/	.20	-	.31	Tr.	-	-	.04	-	.58	1.46	.02	2.10
-	East Angus † bs/	-	1.05	-	.39	.18	-	.12	-	.19	1.09	.70	2.10
-	Farnham bs/	.81	-	.25	.05	-	-	.11	.21	.88	2.04	-	3.24
-	Lac Megantic bs/	-	1.02	-	.57	-	-	.20	-	.40	.71	.05	1.36
-	Lacolle bs/	.73	.07	.25	-	-	.05	.15	.25	1.35	1.95	-	3.75
-	Lennoxville bs/	1.22	-	.35	.13	-	.08	-	.17	1.06	.69	-	2.00
-	Montreal †† bs/	.38	.01	.37	.01	-	.04	.08	.08	.84	1.49	.05	2.58
-	Ottawa †† bs/	.20	-	.41	-	-	-	.02	Tr.	.07	1.77	.50	2.36
	Minor basins												
	New Hampshire:												
555	Bartlett n/	-	.62	-	1.04	.01	-	.09	.21	1.65	3.30	.86	6.11
556	Berlin †	-	1.10	.02	.72	.05	Tr.	.04	.05	.82	2.74	1.17	4.82
557	Durham	-	1.20	-	.67	.03	-	.65	1.45	2.21	1.31	-	5.62
558	Errol †	-	1.36	.02	.67	.09	-	.11	.08	1.79	2.24	.19	4.41
559	Gorham **** bt/	-	1.00	-	.82	.09	-	.07	.01	.74	2.73	1.60	5.15
560	Great Falls † b/	-	1.44	.19	.12	.94	-	-	-	-	2.81	-	2.81
561	Hampton	-	.72	-	.44	.05	-	1.32	1.68	1.77	.05	-	4.82
562	Milan ****	-	1.19	-	.72	-	-	-	.12	.85	2.34	-	3.31
563	Pinkham Notch	.06	.82	-	1.24	Tr.	-	.11	.54	1.74	4.09	.17	6.65
	Massachusetts:												
564	Accord Pond †† e/	.57	.19	.02	.38	-	.82	1.98	.22	1.12	.16	.03	4.30
565	Attleboro †† e/	.41	.14	.04	.50	-	.98	1.20	.35	.93	.28	.02	3.74
566	Beechwood †† e/	.68	.20	.01	.46	-	.81	1.84	.26	.88	.19	.01	3.98
567	Blue Hill o/	-	.92	-	.37	-	.23	1.00	1.04	1.47	.26	.01	4.01
568	Boston **	.27	.65	-	.36	-	.56	1.19	.67	1.50	.10	-	4.02
569	Brockton	-	.45	-	.37	Tr.	-	1.53	1.04	1.28	.19	Tr.	4.04
570	Brockton †† e/	.56	.11	.01	.49	-	.83	1.94	.28	1.80	.15	.02	5.00
571	Chatham †† e/	-	1.04	-	1.28	-	.96	.42	.90	.16	.10	-	2.54
572	Chestnut Hill †† f/	.96	.16	.04	.40	-	.74	1.94	.48	1.27	.10	.01	4.53
573	East Walpole †† e/	.57	.06	.01	.32	-	-	1.84	.33	1.02	.20	Tr.	3.39
574	East Wareham †	-	.52	.19	.25	1.24	-	.88	1.24	.31	.01	.13	2.44
575	Everett †† e/	.92	.02	-	-	-	.76	1.58	.62	1.00	.14	.01	4.10
576	Fall River	-	.54	-	1.13	-	.47	.52	1.21	1.74	.31	-	4.25
577	Falmouth †† e/	.39	.40	.28	.90	-	.49	1.10	.51	.14	.02	-	2.26
578	Franklin †† e/	.35	.09	-	.50	-	.79	2.06	.96	.64	.24	.03	4.69

** Measured at midnight.
*** Measured at 11 p.m.
**** Measured at irregular times.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
††† Measured at 11 a.m.
a Corps of Engineers, U. S. Army.
b Public Service Co. of New Hampshire.
e Massachusetts Department of Public Health.
f Metropolitan District Commission.
n U. S. Forest Service.
o Blue Hill Observatory.
aw New York State Department of Public Works.
be U. S. Department of Agriculture, Soil Conservation Service.
bq Oswego River Watershed Corporation.
bs Meteorological Service of Canada.
bt Union Water Power Co., Lewiston, Maine.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Minor basins—Continued												
	Massachusetts—Continued.												
579	Gloucester	-	1.49	-	0.28	-	0.21	1.78	2.76	1.20	0.02	-	5.97
580	Greenbush †† e/	0.55	.16	0.03	.34	-	.58	1.26	.65	.42	.05	-	2.96
581	Hyannis	-	.80	-	.54	0.75	-	.93	2.93	.40	.25	0.02	4.53
582	Ipswich †† e/	1.42	.06	.06	.32	-	.64	3.20	.76	1.65	q.05	Tr.	6.30
583	Jamaica Plain †† e/	1.06	.05	.04	.42	Tr.	.54	1.50	.47	1.15	.12	Tr.	3.78
584	Lakeville †† e/	.42	.25	.16	.93	-	.55	1.14	.54	.48	.11	.15	2.82
585	Lynn †† e/	1.08	.13	.06	.25	.75	-	1.72	1.00	1.30	.02	.07	4.04
586	Manchester †† e/	1.21	.25	.04	.26	-	.98	1.78	.30	1.98	.04	.01	5.08
587	Mansfield †† e/	.50	.10	.04	.51	-	.70	2.01	.17	1.64	.19	.03	4.71
588	Marston's Mills	-	1.10	.10	.25	.95	-	.80	.80	1.30	.30	-	3.20
589	Middleboro †† e/	.49	.22	.12	1.12	-	.54	1.04	.55	.34	.11	.09	2.58
590	Middleton ††	1.50	.03	.07	.38	-	.80	3.20	.38	2.21	.11	Tr.	6.70
591	Milford †† e/	.50	.09	.05	.49	-	.63	3.18	1.53	1.49	.35	-	7.18
592	Millbury †	-	.66	.03	.53	.25	-	.82	3.70	2.31	2.19	q.15	9.17
593	Millis †† e/	.57	.08	-	.17	-	1.01	2.05	1.00	.66	.16	-	4.88
594	Nantucket **	-	.79	-	4.05	Tr.	.06	2.19	.05	-	.04	-	2.34
595	Needham †† e/	.73	.09	.02	-	-	.97	2.14	1.20	.55	.13	-	4.99
596	New Bedford ***	-	.63	-	.95	-	.13	1.04	.65	.37	-	.06	2.19
597	New Bedford †† e/	.38	.29	.14	1.17	-	.68	1.13	.53	.31	.08	.09	2.73
598	New Bedford †† e/	.44	.20	.10	1.33	-	.70	1.28	.98	.03	q.06	q.08	3.05
599	Newton †† e/	.91	.20	.03	.39	-	.64	2.30	.61	1.10	.12	.01	4.77
600	Northbridge †† e/	.48	-	.25	.41	-	.75	2.45	1.54	1.42	q.50	-	6.66
601	Norton †	-	.60	.18	.03	.47	-	1.23	2.00	.41	1.58	.10	5.32
602	Norwood †† e/	.80	.10	.02	.30	-	.71	1.29	.35	1.13	.16	.01	3.64
603	Onset †† e/	.45	.28	.32	1.39	-	.93	1.38	.34	Tr.	.09	.03	2.74
604	Peabody †† e/	1.14	.03	.05	.29	-	.72	1.69	.83	1.21	.07	Tr.	4.52
605	Pembroke †† e/	.53	.14	.04	.68	-	.80	1.11	.70	.25	.10	.02	2.96
606	Plymouth	-	.71	-	1.25	-	.10	1.16	1.10	.56	.08	-	3.00
607	Plymouth †† e/	.33	.18	.10	.98	-	.58	1.03	1.08	.01	Tr.	.04	2.70
608	Provincetown	-	.69	-	.95	.13	-	.20	.12	.40	.35	-	1.07
609	Rockport	-	1.29	-	.29	-	-	1.30	1.32	.93	.15	-	3.70
610	Salem †† e/	1.18	.15	.04	.33	-	.79	1.95	.39	1.47	.02	Tr.	4.62
611	South Carver	-	.58	.11	.12	.96	-	.64	1.13	.77	.01	.07	2.62
612	Spot Pond †† f/	1.04	.20	.02	.40	-	.57	1.96	.64	1.88	.05	.01	5.10
613	State Farm †† e/	.45	.10	.07	.74	-	*	2.07	.71	1.10	.08	-	3.96
614	Swampscott	-	1.05	-	.30	-	.23	.92	1.21	1.52	.19	Tr.	4.07
615	Taunton †† e/	.62	.20	.06	.54	-	1.04	1.39	.22	.91	.15	Tr.	3.71
616	Tisbury †† e	-	.50	.40	2.15	-	.55	1.50	2.05	-	.25	-	4.35
617	Uxbridge †† e/	Tr.	.37	-	.38	-	.46	1.60	2.56	1.77	.49	.02	6.68
618	Waltham †† e/	.98	-	.15	.45	-	.67	2.10	1.02	.62	.22	.01	4.63
619	Wenham Lake †† e/	1.20	.40	.08	.31	-	.46	1.92	.71	1.47	.02	-	4.58
620	Weston	-	1.05	Tr.	.55	-	-	1.43	2.34	2.02	.25	-	6.04
621	West Roxbury †† e/	.92	.11	.02	.37	-	.82	1.68	.50	1.03	.10	.01	4.13
622	Wilmington †† e/	1.52	.02	.07	.59	-	.65	3.14	.70	.95	.19	.01	5.63
623	Winchester †† e/	1.15	.07	.03	-	-	.74	2.32	.65	1.95	.15	Tr.	5.81
624	Wollaston †† e/	.96	.11	Tr.	.31	-	*	2.64	.20	.76	.13	.02	3.73
625	Worcester bu/	Tr.	1.25	-	.68	Tr.	.20	.58	2.45	1.70	3.44	.02	8.39
626	Wrentham †† e/	.50	-	.11	.40	-	.75	1.72	.30	.23	.25	-	3.25
	Rhode Island:												
627	Block Island **	-	.74	-	1.16	-	.44	.42	.37	1.25	1.00	-	3.46
628	Diamond Hill Res. **** bv/	M	M	M	M	M	*	*	*	*	4.00	M	4.00
629	Greenville	-	.70	-	.37	.01	.01	1.98	1.10	1.88	.62	.04	5.63
630	Kingston	-	.56	-	1.32	-	.07	.93	.53	1.08	.18	.01	2.80
631	North Smithfield † bw/	-	.40	-	-	.30	-	.85	2.15	2.00	.36	-	5.36
632	Pawtucket **** bv/	M	M	M	M	M	*	*	*	*	3.10	M	3.10
633	Pawtucket **** bv/	M	M	M	M	M	*	*	*	*	3.38	M	3.38
634	Portsmouth	-	.53	Tr.	.87	Tr.	.16	.80	1.05	.90	.50	-	3.41
635	Providence **	Tr.	.39	Tr.	.42	-	.64	.75	.49	1.04	.17	-	3.09
636	Slocum	-	.47	-	1.10	-	.12	.79	.45	1.13	q.16	-	2.65
637	Wood River Junction	-	.54	-	.96	-	-	*	1.95	.50	.27	-	2.72
638	Woonsocket † bx/	.54	-	-	.29	-	-	.80	1.76	1.54	.95	-	5.05

* Included in following measurement.
** Measured at midnight.
*** Measured at 11 p.m.
**** Measured at irregular times.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
M Record missing.

e Massachusetts Department of Public Health.
f Metropolitan District Commission.
q Estimated; gage destroyed during hurricane.
bu Winter Hill Meteorological Observatory.
bv City Engineer, Pawtucket, R. I.
bw Woonsocket, R. I., Water Department.
bx Woonsocket, R. I., Sewage Works.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Minor basins--Continued												
	Connecticut:												
639	Bridgeport aq/	-	0.73	-	0.68	0.03	0.55	0.09	3.08	2.36	5.08	-	11.16
640	Camp Hadley i/	-	.85	-	.61	.02	-	*	6.18	3.95	2.08	-	12.21
641	Cannondale by/	-	.69	-	.82	.05	-	.32	3.04	1.66	1.92	-	6.94
642	Easton Lake † aq/	-	.92	-	*	.96	*	*	4.09	2.42	3.53	2.15	12.19
643	Greenwich † bz/	-	.39	-	.49	.05	-	.17	1.21	1.70	2.75	2.65	8.48
644	Groton †††† ca/	-	.76	-	.92	-	.76	.38	.97	.11	1.02	-	3.24
645	Hemlocks Res. †† aq/	-	.78	-	.86	*	*	*	*	*	11.45	-	11.45
646	Lake Dawson † am/	-	.56	0.05	.90	.20	-	.59	2.35	1.76	2.67	1.85	9.22
647	Lake Konomoc	-	.60	-	.07	-	.07	1.50	.97	2.33	6.50	-	11.87
648	Lake Saltonstall † am/	-	.39	-	.95	.06	-	1.33	1.31	4.64	4.35	1.01	12.64
649	Lake Whitney † am/	-	.56	.10	.90	.03	-	.62	2.09	.96	6.39	1.52	11.58
650	Laurel Reservoir † cb/	-	.32	.04	.85	.06	-	.24	1.86	1.59	3.05	2.56	9.30
651	Mead Pond † cb/	-	.42	.04	.82	.04	-	.25	1.65	1.91	3.13	3.63	10.57
652	Milford † am/	-	.66	-	.83	.04	-	.71	2.04	.78	4.33	1.63	9.54
653	Mount Carmel †††† cc/	Tr.	.55	Tr.	1.03	.38	-	.70	2.58	3.30	3.89	1.18	11.65
654	New Haven **	0.08	.54	Tr.	.79	Tr.	.60	1.62	1.04	5.36	3.02	-	11.64
655	North Branford † am/	-	.51	.17	.80	.04	-	.41	3.32	2.20	6.49	2.12	14.54
656	North Guilford † am/	-	.53	.17	.80	.03	-	.39	3.31	2.90	6.10	1.71	14.41
657	North Stamford †† cb/	.36	.04	.62	.05	-	.22	1.37	2.07	2.88	2.13	.04	8.67
658	Norwalk	-	.50	-	.69	-	.40	*	3.84	*	6.42	-	10.66
659	Wallingford cd/	-	.45	-	1.21	-	*	*	*	7.00	5.90	-	12.90
660	Wepawaug Reservoir † am/	-	.45	.18	.75	.09	-	.60	2.30	.96	4.25	1.75	9.86
661	Wilton (Norwalk) ††	-	.50	-	.67	-	.31	-	1.83	2.20	5.72	-	10.06
662	Wolcott Reservoir † af/	-	.31	.08	.61	.25	-	.64	2.32	1.55	3.76	2.76	11.03
	New York:												
663	Babylon †	-	.07	-	.58	-	*	1.40	-	1.02	5.80	1.42	9.64
664	Bridgehampton	-	.42	-	.44	-	.98	.65	.43	.60	4.32	-	6.98
665	Brooklyn ** ce/	-	.11	.01	.70	-	.11	1.43	1.08	1.94	4.08	-	8.69
666	Brooklyn Eagle **	-	.20	.01	.46	-	.19	.62	1.51	1.78	3.82	-	7.92
667	Cutchogue	-	.41	-	.65	-	.41	.69	.50	1.95	4.20	-	7.75
668	Flushing **	-	.19	Tr.	.46	-	.18	1.58	.76	1.88	4.27	-	8.67
669	Freeport ** cf/	-	.13	-	.27	-	.39	1.86	.48	3.25	3.97	-	9.93
670	Garden City cg/	-	.17	-	.92	.04	.19	3.33	1.27	3.56	3.31	-	11.68
671	Long Beach ** ch/	M	.14	Tr.	.33	-	.22	1.72	.67	2.95	3.21	-	8.77
672	Manhasset ** cf/	-	.17	-	.44	-	.19	2.77	1.64	2.74	4.45	.03	11.79
673	Mineola ** cf/	-	.17	-	.77	-	.14	3.10	1.02	2.34	4.40	-	11.00
674	Mitchell Field ** ci/	-	Tr.	.16	.86	-	.19	3.00	.56	3.00	2.42	-	9.17
675	Mount Vernon **	-	.12	-	.56	-	.15	.65	1.60	1.60	5.28	-	9.28
676	New York ** ci/	Tr.	.13	Tr.	.66	Tr.	.12	.39	1.80	1.75	3.71	-	7.75
677	New York ** ck/	-	.17	Tr.	.29	-	.19	.44	1.76	1.69	4.05	-	8.13
678	Patchogue	-	.18	-	.33	-	.88	.52	2.00	3.69	4.22	Tr.	11.31
679	Riverhead	-	.39	-	.66	-	-	2.02	.90	2.82	3.69	.05	9.48
680	Scarsdale	-	.18	-	.50	-	.21	.04	1.85	2.15	6.55	-	10.80
681	Setauket	-	.50	-	.53	-	.48	.55	1.65	3.98	4.25	-	10.91
682	Westerleigh **	-	.14	.01	.46	-	.19	.54	1.20	2.13	3.69	-	7.75

* Included in following measurement.
** Measured at midnight.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
†††† Measured at noon.
M Record missing.
i Connecticut State Forestry Department.
af New Britain Water Co., New Britain, Conn.
am New Haven Water Co., New Haven, Conn.
aq Bridgeport Hydraulic Co.
by D. Henry Miller, Cannondale, Conn.
bz Greenwich, Conn., Water Co.
ca Water and Electric Department, Groton, Conn.
cb Stamford, Conn., Water Co.
cc Connecticut Agricultural Experimental Station.
cd Wallingford, Conn., Water Department.
ce Gravesend-Ave. V; City of New York, Department of Sewers.
cf Nassau County Department of Public Works, Hydrological Bureau.
cg Oliver H. West, Garden City, N. Y.
ch City of Long Beach, N. Y.
ci U. S. Army, Air Corps.
cj Battery Place.
ck Central Park.

Table 4.--Daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Minor basins--Continued												
	New Jersey:												
683	Atlantic City **	-	Tr.	0.07	0.03	-	0.79	0.22	1.31	3.22	4.50	-	10.04
684	Belleplain	-	-	-	.05	-	.15	.22	.82	1.77	4.32	0.04	7.32
685	Clayton	-	0.06	-	.05	-	-	.22	1.80	2.23	3.10	-	7.35
686	Colts Neck No. R-8 ** be/	M	M	M	M	M	.11	2.22	1.22	2.69	4.76	-	11.00
687	Elizabeth	-	.09	Tr.	.13	0.20	.05	.10	1.53	1.65	4.96	Tr.	8.29
688	Elizabethport *** cl/	-	.10	-	.15	-	.09	.23	.92	1.80	4.34	-	7.38
689	Hammonton	-	-	-	.08	.11	-	.05	1.80	3.00	2.88	-	7.73
690	Indian Mills	-	.09	Tr.	.01	Tr.	.20	.10	1.63	2.37	4.26	-	8.56
691	Irvington ** cl/	0.08	-	-	.24	-	.06	.23	*	*	6.17	-	6.46
692	Jersey City	Tr.	.17	-	.24	.18	.02	.34	.42	2.13	5.16	.03	8.10
693	Lakewood	-	.17	-	.05	Tr.	.17	.12	1.90	1.75	6.35	-	10.29
694	Long Branch **	-	.24	.03	.02	Tr.	.16	2.91	.37	2.38	4.54	-	10.36
695	Marlboro ** be/ cm/	M	M	M	M	M	.13	.74	1.13	2.00	4.86	-	8.86
696	Marlboro ** be/ cn/	M	M	M	M	M	.13	.73	1.10	1.92	4.75	-	8.63
697	Marlboro ** be/ co/	M	M	M	M	M	.12	.76	1.13	2.07	4.85	-	8.93
698	Newark ** cp/	M	M	M	M	M	.20	.30	1.89	2.10	3.98	-	8.47
699	Northfield	-	Tr.	-	.04	-	.28	.20	.84	1.66	5.92	-	8.90
700	Pleasantville †	-	.01	Tr.	.06	-	-	.38	.29	1.24	3.89	2.85	8.65
701	Runyon	-	.15	-	.16	.29	.11	.25	1.21	1.41	4.90	-	7.88
702	Sandy Hook **	-	.17	.02	.89	Tr.	.13	2.56	.73	2.24	3.85	-	9.51
703	Tuckerton	-	.04	-	.02	.01	.33	.41	.92	2.96	5.16	-	9.78

* Included in following measurement.
** Measured at midnight.
*** Measured at 11 p.m.
† Measured in morning of day indicated.
M Record missing.
be U. S. Department of Agriculture, Soil Conservation Service.
cl Joint Meeting Maintenance.
cm Instrumental area.
cn Plot No. 1.
co Plot No. 24.
cp Kresge Department Store, William Wiener, Meteorologist.

Table 5.--Supplemental records of daily precipitation, in inches, September 12-22, 1938
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Merrimack River Basin												
	New Hampshire:	-											
704	Milford † a/	-	0.73	Tr.	0.49	0.20	Tr.	0.31	0.90	2.06	3.10	0.33	6.70
	Thames River Basin												
	Connecticut:												
705	No. Grosvenordale †† b/	-	.65	-	.61	-	0.87	3.83	2.37	3.29	.44	-	10.80
	Connecticut River Basin												
	New Hampshire:												
706	Claremont † c/	-	1.87	-	.75	.44	-	.07	-	2.27	2.27	2.19	6.80
707	Franconia d/	-	1.30	-	.58	-	-	.06	-	1.41	2.35	.65	4.47
708	Marlow d/	0.10	1.20	-	.95	-	-	.20	1.20	2.95	3.40	-	7.75
709	North Grantham d/	-	1.80	-	.98	-	-	.15	1.33	2.85	2.00	1.10	7.43
710	Twin Mountain d/	-	1.28	-	.22	.03	-	.02	.18	1.56	3.05	1.20	6.01
711	West Canaan d/	.57	1.43	-	.69	.10	.10	.20	.90	1.90	3.44	.10	6.64
	Vermont:												
712	East Haven d/	Tr.	1.6	-	.59	-	-	.59	Tr.	1.16	2.34	-	4.09
713	Gallup Mills d/	.10	1.69	-	.70	.40	-	.26	.10	1.96	1.62	-	3.94
714	North Tunbridge d/	.26	.78	0.01	1.74	-	.02	.37	.31	1.30	2.84	-	4.84
715	Plymouth d/	.42	1.20	-	1.39	-	Tr.	.47	.55	2.09	4.40	-	7.51
716	Ricker Mills d/	-	1.25	-	1.08	-	-	.36	.06	1.13	2.42	-	3.97
717	Wheelock d/	-	1.41	.57	-	-	-	.35	.10	.86	2.38	-	3.69
718	Windsor † e/	-	1.35	-	.90	.20	-	.15	.20	1.95	2.40	2.10	6.80
	Hudson River Basin												
	New York:												
719	Amawalk †† f/	.78	.01	.32	.23	-	.33	1.10	2.48	2.30	3.56	.10	9.77
720	Cross River †† f/	.77	.01	.50	.19	-	.18	.82	2.65	2.76	4.18	.08	10.59
721	Croton Falls †† f/	.63	.03	.31	.17	-	.20	1.29	2.60	3.10	4.40	.11	11.59
722	East Branch †† f/	.54	.02	.42	.12	-	.13	1.13	2.38	2.46	4.28	.13	10.38
723	Mechanicville † g/	M	M	M	M	M	M	.24	.61	1.21	1.46	2.96	6.48
724	Spier Falls † g/	M	M	M	M	M	M	.23	.25	.97	1.82	2.20	5.47
725	Titicus †† f/	.61	.01	.30	.23	-	.20	.88	2.44	2.55	3.71	.08	9.78
726	White Pond †† f/	.66	.03	.38	.15	-	.08	.35	2.74	2.22	4.74	.18	10.13
	St. Lawrence River Basin												
	Vermont:												
727	Chittenden † e/	-	2.35	-	1.70	1.30	-	-	.12	.79	1.38	2.75	5.04
728	Goshen † e/	-	2.21	-	.73	.62	-	.09	.28	.79	1.20	3.96	6.32
729	Highgate Falls †††† h/	M	M	M	M	M	M	-	.2	.4	1.8	1.9	4.3
730	Hydeville † e/	-	1.76	.79	-	.66	-	-	.28	.74	1.42	2.55	4.99
731	Middlebury † e/	-	1.95	.04	.52	.10	-	.04	.18	.58	1.40	1.89	4.09
	Minor Basins												
	New Hampshire:												
732	Exeter †† i/	.5	*	*	.5	-	*	*	2.25	*	2.0	-	4.25
	Massachusetts:												
733	Holden No. 2 †† j/	1.39	.02	.43	.23	-	.46	1.93	1.49	3.47	.56	-	7.91
734	Kettle Brook No. 3 †† j/	1.57	-	.66	.01	-	.40	1.69	2.01	4.08	1.04	-	9.22
735	Lynde Brook †† j/	1.21	-	.46	.21	-	.56	2.31	1.34	3.52	.66	-	8.39
736	Worcester ** j/	.18	.78	-	.69	-	.78	1.07	3.18	2.02	1.98	-	9.03

* Included in following measurement.
** Measured at midnight.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
†††† Measured at noon.
M Record missing.
a Town of Milford.
b Grosvenordale Co.
c Claremont Water Works.
d Corps of Engineers, U. S. Army.
e Central Vermont Public Service Corporation.
f New York City Department of Water Supply, Gas, and Electricity.
g New York Power & Light Corporation.
h Village of Swanton.
i Exeter Water Works.
j City Water Department, Worcester, Mass.

Table 5.--Supplemental records of daily precipitation, in inches, September 12-22, 1938--Continued
(Measured in the afternoon except as noted)

No. on pl.1	Station	12	13	14	15	16	17	18	19	20	21	22	Total, storm 17-22
	Minor Basins—Continued												
	Rhode Island:												
737	Hopkins Mills †† k/	0.78	0.07	0.29	0.04	-	0.78	1.84	1.32	0.93	0.47	0.07	5.34
738	Kent †† k/	.37	.05	.03	.60	-	.72	1.02	.50	.62	.54	.05	3.40
739	Neutaconkanut Hill †† k/	.27	.16	.10	.52	-	.84	1.10	.40	.46	m	.03	2.80+
740	North Scituate †† k/	.46	.29	.06	.43	-	.85	1.65	1.53	.39	.38	.03	4.80
741	Providence †† k/	-	.48	-	.57	-	-	*	2.02	.70	.51	-	3.28
742	Rocky Hill †† k/	.54	.17	.11	.17	-	.79	2.12	1.50	.65	n.44	.04	5.50
743	Warren † o/	*	*	*	1.14	-	-	.94	.73	2.25	.26	-	4.18
744	Westcott †† k/	.46	.18	.06	.40	-	.78	1.55	1.60	.40	.39	.04	4.72
745	Westerly p/	-	.60	-	1.30	-	-	-	2.15	.95	-	-	3.10

* Included in following measurement.
† Measured in morning of day indicated.
†† Measured in morning after day indicated.
k Department of Public Works, Providence, R. I.
m No record; gage destroyed during hurricane.
n Estimated on September 21.
o Bristol County Water Co.
p Board of Water Commissioners.

Table 6.—Precipitation, in inches, for period ending at indicated time, September 1938

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Merrimack River Basin																										
4	Concord, N. H.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	0.02	0.04	0.02	0.10	0.05	Tr.	0.23
	U. S. Weather Bureau	18	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.06	Tr.	Tr.	0.03	.09
		19	0.07	0.10	0.04	0.10	0.11	Tr.	0.01	Tr.	Tr.	Tr.	Tr.	0.01	0.01	Tr.	0.01	0.15	0.10	0.22	.40	.03	.04	.05	Tr.	Tr.	1.45
		20	.04	Tr.	.15	.23	.04	0.06	-	Tr.	0.17	0.43	1.02	.08	Tr.	-	.01	.01	.01	Tr.	.28	.08	.11	.01	.01	Tr.	2.74
		21	.31	.58	.12	.08	.21	.09	-	0.09	1.18	Tr.	.01	Tr.	Tr.	Tr.	Tr.	.06	.05	.01	Tr.	Tr.	Tr.	Tr.	Tr.	-	2.79
19	Manchester, N. H.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	.04	.01	.03	.20	.04	.02	.36
	Public Service Co. of New Hampshire	18	-	-	-	.01	.01	-	-	-	-	-	.01	-	-	-	-	.01	-	.02	-	.02	.01	.02	.02	.10	.23
		19	.11	.07	.02	.13	.10	.03	-	-	-	-	-	.01	.06	0.05	.24	.13	.05	.10	.52	.10	.05	.04	.01	.02	1.84
		20	.01	-	.10	.55	.58	.04	-	.06	.03	.13	.46	.36	.08	.03	.02	.03	.01	.05	.02	-	-	-	-	-	2.56
		21	-	.64	.17	.28	.09	.07	-	-	-	-	.01	-	-	-	-	.04	.14	-	-	-	-	-	-	-	1.44
50	Lowell, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.19	.08	.08	.39	.11	.06	-	-	.91
	Proprietors of Locks and Canals on Merrimack River	18	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	-
		19	M	M	M	M	M	M	M	.08	-	-	-	.26	-	-	-	.01	-	.28	.01	.17	.07	.03	.01	-	.92
		20	.01	-	.01	.01	.09	.02	.02	.12	.01	.04	.12	.57	.02	.06	.42	.01	-	-	-	-	.02	-	-	.06	1.61
		21	-	.12	.17	.17	.04	-	-	-	-	.03	.01	-	-	-	.01	.02	.14	-	-	-	-	-	-	-	.71
	Connecticut River Basin																										
75	Hanover, N. H.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	.06	.01	.01	.02	.13
	Dartmouth College	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	-	-	-	-	-	-	-	-	.01
		19	-	.01	.03	.05	.03	-	-	-	-	-	.01	-	-	-	.07	.11	.24	.04	.03	.01	-	.02	.05	.35	1.05
		20	.24	.34	.04	.02	.01	.10	-	.03	.06	.08	.24	.09	-	.07	.09	.01	.09	.03	-	-	.01	.03	.13	.16	1.87
		21	.03	.05	.02	.12	.09	.11	.48	.18	.13	.20	.10	.01	.05	-	.02	.06	.36	.17	.17	.01	-	-	.01	-	2.37
80	Mount Washington, N. H.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	*	*	*	*	*	Tr.
	Mount Washington Observatory	18	*	*	*	*	*	*	.16	*	*	*	*	*	*	*	*	*	*	*	Tr.	*	*	*	*	*	.16
		19	.11	*	*	*	*	*	.15	*	*	*	*	*	*	*	*	*	*	*	.34	*	*	*	*	*	.60
		20	*	*	*	*	*	*	1.22	*	*	*	*	*	.53	*	*	*	*	*	.33	*	*	*	*	*	2.08
		21	*	*	*	*	*	*	2.81	*	*	*	*	*	.70	*	*	*	*	*	1.00	-	-	-	-	-	4.51
88	Bellows Falls, Vt.	17	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*	*	*	*	*	*	.06	*	.04	-	.10
		18	-	-	-	-	-	-	.01	-	-	-	-	-	-	*	Tr.	*	*	*	*	*	.01	*	.01	*	.03
		19	.05	*	.03	*	.26	*	.02	*	Tr.	*	.01	*	.01	*	.10	*	.58	*	.10	-	.04	*	.09	*	1.29
		20	.17	*	.65	*	.16	*	.04	*	.19	*	.61	*	.04	*	.06	*	.04	*	.04	*	.02	*	.32	*	2.34
		21	.27	*	.06	*	.35	*	.65	*	.35	*	.25	*	*	*	*	*	*	*	*	*	*	*	*	*	1.93
		22	*	*	*	*	*	*	.84																		.84
95	East Barnet, Vt.	17	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*	*	.01	*	.01	*	*	*	.16	*	.18
	Comerford Plant-Fifteenmile Falls	18	.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05
		19	-	-	-	*	Tr.	*	.01	*	Tr.	-	-	*	*	*	*	*	.02	*	.15	*	.03	*	.03	*	.24
		20	.22	*	.33	*	.03	*	.08	*	.12	*	.09	*	.18	*	.02	*	.09	*	.19	-	-	*	.05	*	1.40
		21	.28	*	.10	*	.13	*	.20	*	1.05	*	.22	*	.21	*	*	*	.16	*	.22	*	.14	*	.01	-	2.72

99	McIndoes Falls, Vt.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	*	*	*	*	*	.18	*	.18
		18	.06	*	.02	*	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.09
		19	-	-	-	*	Tr.	*	.02	*	.01	-	-	*	*	*	*	*	.08	*	.11	*	.02	*	.05	*	.29
		20	.25	*	.36	*	.03	*	.04	*	.05	*	.11	*	.17	*	.03	*	.07	*	.25	*	.01	*	.09	*	1.46
		21	.34	*	.08	*	.18	*	.12	*	1.21	*	.27	*	.05	*	*	*	*	*	*	*	*	*	*	*	2.25
		22	*	*	*	*	*	*	.58																		.58
101	Readsboro, Vt.	17	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*	*	.01	*	.03	*	.02	*	.05	-	.11
		18	-	-	-	-	-	-	-	*	.01	*	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	.02
		19	-	*	.18	*	.12	*	.01	*	.03	*	.01	*	.07	*	.32	*	.48	*	.04	*	.04	*	.47	*	1.77
		20	.54	*	.10	*	.10	*	.10	*	.12	*	.28	*	.03	*	.07	*	.64	*	.05	*	.35	*	.19	*	2.57
		21	.26	*	.16	*	.10	*	.33	*	.50	*	.39	*	.12	*	.30	*	1.49	*	.75	*	.02	-	-	-	4.42
103	St. Johnsbury, Vt. Fairbanks Museum	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.08	.16	.06	.30
		18	-	-	-	-	-	-	-	-	.01	.01	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	.02
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	.06	.01	.01	.02	.02	.02	.02	.22
		20	.22	.14	.10	.03	.01	-	.02	.03	.03	.03	.06	.10	.02	-	.02	.08	.02	.20	-	-	-	-	.02	.15	1.28
		21	.17	.02	.04	.05	.10	.06	.06	.10	.50	.40	.06	.06	.17	.07	.01	-	.01	.12	.24	.10	.01	-	-	-	2.35
106	Somerset, Vt.	19	*	*	*	*	*	*	.41	*	*	*	*	*	.05	*	.23	*	.45	*	.08	*	.03	*	.65	*	1.90
		20	.51	*	.01	-	-	*	.39	*	.10	*	.25	*	.12	*	.08	*	.41	*	.01	*	.29	*	.11	*	2.28
		21	*	*	.23	*	.10	*	.24	*	.41	*	.37	*	.08	*	*	*	*	*	*	*	*	*	*	*	1.43
		22	*	*	*	*	*	*	2.28																		2.28
108	Vernon, Vt.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	*	.03	*	.04	*	.06	*	.13
		18	.02	-	-	-	-	-	-	*	*	*	.01	*	.01	-	-	*	*	*	*	*	.01	-	-	*	.05
		19	.26	*	.10	*	.05	*	.10	*	.04	*	.02	*	.13	*	.41	*	1.23	*	.10	*	.05	*	.02	*	2.51
		20	.12	*	.84	*	.30	*	.01	*	.28	*	.66	-	-	*	.15	*	.03	*	.04	*	.03	*	.26	*	2.72
		21	.39	*	.31	*	.52	*	.44	*	.31	*	.28	*	.01	*	.06	*	.79	*	.25	*	.02	-	-	-	3.38
117	Amherst, Mass. Massachusetts State College	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	.18	.07	.03	-	-	.34
		18	-	-	-	-	-	-	-	-	-	-	-	.01	-	-	-	-	-	-	.01	-	-	.01	.07	.24	.34
		19	.14	.02	.02	.01	.08	.01	.07	-	-	.01	.07	.14	1.05	.11	.50	.38	.52	.07	.01	.05	.02	-	.01	.15	3.44
		20	.02	.99	.01	.28	.06	-	-	.04	.40	.33	.17	.01	.01	.07	.03	.13	.05	.04	-	-	.04	.98	.14	.16	3.96
		21	.30	.11	.28	.25	.37	.33	.16	.07	.33	.03	.08	-	.16	.02	.27	.39	.60	.10	-	-	.03	-	-	-	3.88
138	Hoosac Tunnel, Mass.	17	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*	*	.02	*	.03	*	.04	*	.03	-	.12
		18	-	-	-	-	-	-	.01	-	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01
		19	.05	*	.14	*	.03	*	.05	*	.01	*	.01	*	.06	*	.29	*	.39	*	.03	*	.06	*	.41	*	1.53
		20	.81	*	.21	*	.14	*	.08	*	.10	*	.28	*	.04	*	.07	*	.76	*	.01	*	.34	*	.22	*	3.06
		21	.29	*	.13	*	.17	*	.34	*	.56	*	.38	*	.09	*	.25	*	2.00	*	.97	*	.01	-	-	-	5.19
157	Shelburne Falls, Mass.	17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	.02	*	.09	*	.08	*	.03	*	.22
		18	.01	-	-	-	-	-	-	*	Tr.	*	.01	*	*	*	*	*	*	*	*	*	*	*	.05	*	.07
		19	.28	*	.10	*	.37	*	.04	*	.02	-	-	*	.11	*	.87	*	.56	*	.02	*	.04	*	.04	*	2.45
		20	.34	*	.10	*	.35	-	-	*	.31	*	.49	-	-	*	.02	*	.10	*	.04	*	.04	*	.22	*	2.01
		21	.28	*	.29	*	.35	*	.27	*	.50	*	.26	*	.32	*	.09	*	.48	*	.70	*	*	*	.03	-	3.57

* Included in following measurement.

M Record missing.

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Connecticut River Basin--Continued																										
162	Springfield, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.02	0.08	0.19	0.04	-	-	0.35
	City of Springfield, Department of Streets and Engineering	18	-	-	-	-	-	0.01	0.02	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18	.24
		19	0.22	0.08	0.02	0.16	0.14	.01	.04	.13	0.01	-	0.10	0.28	-	0.01	0.01	0.25	0.11	.13	.04	.04	.10	-	-	-	1.88
		20	.13	-	.14	.13	.07	.07	-	.02	.12	0.44	.20	.11	0.01	.01	-	.01	.10	.07	.09	.07	.01	.72	0.92	.24	3.68
		21	.80	.26	.22	.23	.17	.33	.18	.12	.23	.25	.32	.01	.01	-	.07	.33	.39	.36	-	-	-	-	-	-	4.28
188	Bills Brook (Marek House), Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	.01	.05	.17	.06	-	-	-	.01	.33
	Metropolitan District Water Bureau of Hartford, Conn.	18	-	-	-	-	-	-	-	-	-	-	.01	-	-	-	-	.01	.01	-	-	-	.01	.09	.29	.11	.54
		19	.01	.08	.05	.02	.01	.26	-	.01	.01	.28	.11	.20	.13	.41	.08	.22	-	.02	.02	.01	.01	.23	.18	.03	2.38
	(See no. 188, table 4, for daily precipitation measured in nonrecording gage.)	20	.08	-	.16	.10	-	.01	.13	.19	.30	.14	.03	.02	.03	-	-	.17	.16	.11	.02	-	.05	.07	.31	.31	2.39
		21	.08	.18	.12	.12	.16	.14	.23	.30	.12	.38	.05	.01	.07	.32	.51	.97	.88	-	-	-	-	-	-	-	4.64
189	Bloomfield, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	.03	.10	.10	.14	-	-	-	-	.01	.41
	Hartford Flood Investigation and Improvement Commission.	18	-	-	-	.01	-	-	-	-	-	.01	-	-	-	-	-	.01	-	.02	-	-	-	.28	.40	.04	.77
		19	.06	.40	.28	.01	.01	-	.01	.01	-	-	-	-	.08	.14	.07	.16	.34	.10	.10	.01	-	-	.04	.02	1.84
		20	.08	.04	.24	.08	.01	.01	.09	.19	.40	.36	.10	.01	.02	.01	.04	.02	.23	.06	-	-	.44	.50	.34	.42	3.69
		21	.16	.23	.07	.25	.30	.07	.29	.31	.04	.08	.01	-	-	.25	.30	.60	.04	-	-	-	-	-	-	-	3.00
192	Burlington, Conn. (Phelps Brook Dam)	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	-	.05	.28	.07	-	-	-	.01	.46
	Metropolitan District Water Bureau of Hartford, Conn.	18	-	-	-	.01	-	-	-	-	-	-	-	-	-	.01	.01	.01	-	.02	-	-	.02	.18	.22	.03	.51
		19	.01	.22	.13	.05	.04	.03	-	-	.01	.12	-	.18	-	.04	.07	.12	.16	.01	.04	.05	.01	-	.13	.04	1.46
	(See no. 192, table 4, for daily precipitation measured in nonrecording gage.)	20	.11	-	.23	.13	-	.01	.15	.29	.18	.17	.04	.03	.04	.01	-	.21	.20	.13	.03	-	.06	.09	.36	.35	2.82
		21	.10	.22	.14	.15	.20	.19	.26	.28	.22	.38	-	.01	.05	.33	.48	.84	.85	-	-	-	-	-	-	-	4.70
204	Hartford, Conn	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	.06	.08	.07	.21	.18	Tr.	Tr.	Tr.	Tr.	.60
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	.01	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.01	.02	.01	.01	Tr.	.01	Tr.	Tr.	Tr.	.12	.62	.64
		19	.07	.23	.21	.02	.01	Tr.	Tr.	.01	Tr.	Tr.	Tr.	Tr.	Tr.	.02	.08	.23	.56	.08	.13	.11	Tr.	Tr.	.04	Tr.	1.80
		20	.01	.85	.03	.01	Tr.	Tr.	.12	.11	.88	.72	.12	.01	.01	Tr.	.05	.09	.01	.18	Tr.	.13	1.33	.29	.58	.57	6.10
		21	.19	.33	.10	.10	.24	.26	.16	.35	.16	.04	Tr.	-	Tr.	.12	.26	.75	.16	Tr.	Tr.	Tr.	Tr.	-	-	-	3.22
205	Hartland Hollow, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	-	.06	.01	.14	.01	.01	.01	.01	.27
	Metropolitan District Water Bureau of Hartford, Conn.	18	-	-	-	.01	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	-	.30	.20	.53
		19	.07	.03	.01	.31	.01	.17	.01	.02	.03	.06	.16	.11	.28	.17	.67	.12	.17	-	-	-	.01	.04	.07	.03	2.55
	(See no. 205, table 4, for daily precipitation measured in nonrecording gage.)	20	.61	.02	.02	.29	-	-	.10	.27	.08	.30	.09	-	-	.16	-	.05	.11	.06	-	-	.03	.13	.14	.26	2.72
		21	.20	.07	.15	.10	.17	.20	.13	.43	.06	.31	.11	-	.18	.19	.61	.55	1.90	.10	-	-	-	-	-	-	5.46
208	New Britain, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	.15	.05	.06	-	-	-	-	.32
	City Engineer, New Britain, Conn.	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.26	.01	-	-	-	-	.14	.08	.49
		19	.07	.10	.09	.08	.08	.07	.08	.10	.07	.10	.05	.10	.07	.04	.03	.13	.50	.38	.09	.13	.05	.01	.01	.01	2.44
		20	.01	.19	.23	.08	.10	.10	*	*	*	*	2.77	-	-	.03	-	.08	-	.17	.05	.01	.28	.85	.12	.25	5.32
		21	.44	.07	.07	.03	.07	.07	.10	.08	.01	-	-	-	-	-	.87	.31	.49	.23	-	M	M	M	M	M	2.84

210 Newington, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.07	.12	.09	.19	.17	-	-	-	-	.64
Hartford Flood Investigation and Improvement Commission.	18	-	.01	-	-	-	-	-	-	-	.01	-	-	-	.02	.03	.01	-	.01	.01	-	-	.14	.36	1.09	1.69
	19	.02	.29	.22	.01	-	.03	-	-	-	-	-	-	-	-	.02	.30	.30	.10	.12	.11	.01	-	.04	-	1.57
	20	-	.64	.06	.02	.02	.01	.04	.09	.27	1.44	.32	.01	-	.01	.04	.14	.01	.11	-	.05	.10	1.18	.42	.57	5.55
	21	.22	.26	.08	.10	.28	.08	.20	.28	.15	.05	-	.02	-	.01	.39	.31	-	-	-	-	-	-	-	-	2.43
213 South Meadows, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	.05	.09	.10	.21	.06	-	-	-	-	.53
City Engineer, Hartford, Conn.	18	-	-	.02	-	-	-	.01	-	-	-	-	-	-	.01	.03	-	.01	.02	.01	.03	-	.18	.58	.52	1.42
	19	.04	.18	.05	.03	.02	.01	.01	-	-	-	-	-	-	-	.01	.43	.26	.13	.17	.10	-	-	.06	.02	1.52
	20	.04	.04	.12	.07	.06	.03	.31	.41	1.28	.80	.03	-	.02	-	.03	.04	.03	.30	.03	.14	1.89	.46	.34	.46	6.93
	21	.17	.31	.15	.10	.33	.16	.06	.40	.25	-	-	-	-	.07	.18	-	-	-	-	-	-	-	-	-	2.18
217 West Hartford, Conn. (filtration plant)	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	.04	.10	.10	.12	.01	-	-	-	.43
Metropolitan District Water Bureau of Hartford, Conn.	18	-	-	.01	-	-	-	-	-	-	.01	-	-	-	.01	.01	.01	.01	-	-	-	.01	.05	.24	.66	1.02
(See no. 217, table 4, for daily precipitation measured in nonrecording gage.)	19	.02	.13	.66	.06	-	.02	-	-	-	-	-	-	.01	.11	.05	.27	.30	.07	.12	.04	-	-	.03	.01	1.90
	20	.03	.06	.21	.07	.01	.02	.07	.05	.39	.55	.07	.03	.02	.01	.04	.03	.06	.17	.14	.01	.43	.47	.34	.86	4.14
	21	.16	.26	.13	.09	.17	.10	.16	.35	.12	.05	-	-	.01	.13	.37	.09	.01	-	-	-	-	-	-	-	2.20
216 West Hartford, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	.04	.10	.10	.12	.01	-	-	-	.43
Hartford Flood Investigation and Improvement Commission	18	-	-	.01	-	-	-	-	-	-	.01	-	-	-	.01	.01	.01	.01	-	.01	-	-	.15	.42	.63	1.27
	19	.03	.14	.76	.07	-	.02	-	-	-	-	-	-	.01	.11	.05	.28	.30	.08	.12	.04	-	-	.03	.01	2.05
	20	.03	.06	.22	.07	.01	.02	.06	.06	.39	.55	.07	.04	.01	.01	.04	.03	.06	.17	.14	.01	.43	.47	.34	.86	4.15
	21	.16	.26	.13	.09	.17	.10	.16	.42	.14	.06	-	-	.01	.15	.44	.11	.01	-	-	-	-	-	-	-	2.41
Housatonic River Basin																										
250 Woodville, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	.02	.06	.13	-	-	-	-	-	.23
City of Waterbury, Bureau of Engineering	18	-	-	-	-	-	-	-	-	-	.01	-	-	-	-	-	-	-	-	-	.01	-	.13	.21	.03	.39
	19	.01	.01	.16	.01	.27	.05	-	.02	.03	.05	.12	.12	.20	1.36	.24	.28	.01	-	.01	.03	.01	.13	.02	.33	3.47
	20	.17	-	.19	.14	.03	-	-	.11	.24	.21	.01	-	.01	.07	.31	.04	.03	.01	.21	.08	.02	.10	.16	.18	2.32
	21	.01	.08	.12	.20	.25	.20	.25	.27	.36	.34	.30	.12	.15	.49	.52	.67	.19	.04	.02	.01	-	-	-	-	4.59
	22	-	-	-	-	-	-	-	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01
Hudson River Basin																										
252 Adams, Mass.	19	*	*	*	*	*	*	a.34	*	*	*	*	*	*	*	.33	*	*	*	*	.35	*	*	*	*	a.34
	20	1.08	*	*	*	*	*	.33	*	*	*	*	*	*	*	.59	*	*	*	*	*	*	*	*	*	a2.09
	21	*	*	*	*	.90	*	.32	*	*	*	.77	*	*	.11	*	*	*	*	*	*	*	*	*	*	a1.81
	22	*	*	*	*	*	*	2.06																		a2.94
255 Albany, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	.01	.04	.04	.02	.02	Tr.	.01	.14
U. S. Weather Bureau	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.
	19	.07	.50	.07	.01	-	-	-	-	-	-	Tr.	.01	.03	.06	.08	.16	.06	.03	.02	.02	.02	.11	.67	.17	2.09
	20	.04	.04	.04	.03	.05	.05	.10	.11	Tr.	.01	Tr.	.02	.03	.09	.03	.15	.02	.04	.13	.10	.14	.01	.05	.07	1.35
	21	.06	.02	.03	.06	.08	.14	.04	.10	.21	.25	.25	.40	.14	.26	.20	.37	.51	.39	.17	Tr.	.15	.08	-	-	3.91

* Included in following measurement. M Record missing. a Total for 24 hours preceding 7 a.m. of indicated day.

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Hudson River Basin--Continued																										
256	Albany, N. Y. (airport)	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	0.02	0.08	0.08	0.03	0.04	Tr.	Tr.	0.25
	U. S. Weather Bureau	18	Tr.	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	-	Tr.	Tr.	-	-	Tr.	.01
		19	0.06	.64	0.19	0.01	-	-	-	-	-	-	Tr.	0.01	0.04	0.05	0.04	0.09	0.08	.03	.01	.03	.02	.22	0.15	0.11	1.78
		20	.05	.01	.01	.01	0.04	0.06	0.06	0.07	0.03	0.02	0.06	.02	.04	.05	.04	.03	.04	.05	.19	.08	.13	.02	.04	.10	1.25
		21	.04	.02	.01	.05	.08	.17	.05	.08	.23	.21	.23	.35	.18	.16	.14	.42	.36	.15	.11	Tr.	.13	.07	.01	-	3.25
257	Amsterdam, N. Y.	19	*	*	*	*	*	*	.02	*	*	*	*	*	*	*	*	*	*	*	*	.24	*	.05	*	*	a.02
	New York Power & Light Co.	20	.34	*	*	*	*	*	.33	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	a.96
		21	*	1.11	*	*	*	*	.30	*	*	*	.46	*	*	*	.81	*	*	.83	*	*	*	*	*	*	a1.41
		22	*	*	*	*	*	*	.38																		a2.48
268	Conklingville, N. Y.	19	*	*	*	*	*	*	.15	*	*	*	*	*	*	*	*	.09	*	b.36	*	*	*	b.22	*	*	a.15
	New York Power & Light Co.	20	b.09	*	*	*	c.18	*	.05	*	*	*	.21	*	*	d.14	*	*	.25	*	*	.48	*	.09	*	*	a.99
		21	*	.17	*	*	d.15	*	.21	*	b.26	c.25	c.15	*	.32	.20	.01	.16	.25	.25	.08	*	*	*	*	*	a1.70
		22	*	*	*	*	*	*	.05																		a1.98
275	Ephratah, N. Y.	19	*	*	*	*	*	*	.01	*	*	*	*	*	*	*	*	*	.35	*	*	.28	*	*	*	*	a.01
	New York Power & Light Co.	20	.08	*	*	*	*	*	.20	*	.11	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	a.91
		21	*	.98	*	*	.08	*	.07	*	*	.13	.11	*	.33	*	*	.83	*	*	*	*	*	*	*	*	a1.24
		22	*	*	*	*	*	*	.66																		a2.06
278	Glens Falls, N. Y. (feeder dam)	19	*	*	*	*	*	*	.18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	.60	*	*	a.18
	New York Power & Light Co.	20	.11	*	*	*	*	*	.18	*	*	*	*	*	*	*	.63	*	*	*	*	*	*	*	*	*	a.89
		21	*	*	*	*	.54	*	.15	*	*	*	*	.83	.15	*	*	*	*	*	*	*	*	*	*	*	a1.32
		22	*	*	*	*	*	*	.89																		a1.87
290	Inghams, N. Y.	19	*	*	*	*	*	*	.02	-	-	-	-	-	-	*	*	*	.12	.28	*	.07	*	c.04	*	.10	a.02
	New York Power & Light Co.	20	*	*	*	*	*	*	.10	*	.11	*	.14	*	.13	*	*	.07	*	.22	*	.19	*	.22	*	*	a.71
		21	*	.15	*	*	c.16	-	-	*	*	c.14	.12	*	.30	*	b.43	*	.74	*	.47	*	.33	*	*	*	a1.39
		22	*	*	*	*	*	*	.05																		a2.58
292	Johnsonville, N. Y.	19	*	*	*	*	*	*	.33	*	*	*	*	*	*	*	*	*	*	*	*	.54	*	*	*	*	a.33
	New York Power & Light Co.	20	.66	*	*	*	*	.15	.14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	a1.49
		21	*	.90	*	*	*	*	.27	*	*	*	.54	.46	.19	*	*	*	*	*	*	*	*	*	*	*	a1.17
		22	*	*	*	*	*	*	1.60																		a2.79
294	Kingston, N. Y.	17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	.22	.22
	City Engineer, Kingston, N. Y.	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.47	.04	.51
		19	.10	-	-	-	-	-	.04	.02	.09	.02	.01	.10	.16	.22	.25	.07	.03	.04	.06	.20	.09	.06	.71	.14	2.41
		20	.18	.08	.17	.10	.08	.26	.17	-	-	-	-	.07	.10	.03	.08	.10	.04	.08	.08	.08	.04	.03	.12	.12	2.01
		21	.02	.04	.05	.08	.16	.09	.05	.08	.14	.25	.18	.15	.33	.19	.50	.44	.21	-	-	-	.03	-	-	-	2.99

723	Mechanicville, N. Y.	19	*	*	*	*	*	*	.61	*	*	*	*	*	*	*	.15	*	*	*	*	.51	*	*	*	*	a.61
	New York Power & Light Co.	20	.34	*	*	*	*	*	.21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	a1.21
		21	*	*	*	*	*	*	1.46	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	a1.46
		22	*	*	*	*	*	*	2.96																		a2.96
319	Schaghticoke, N. Y.	19	*	*	*	*	*	*	.55	*	*	*	*	*	*	*	*	*	.37	*	*	.09	*	c.36	*	*	a.55
	New York Power & Light Co.	20	.36	*	*	*	*	.14	.11	*	*	*	*	*	*	.33	*	*	.21	*	.17	*	.24	c.05	*	*	a1.43
		21	.13	*	*	*	*	d.23	.11	*	.25	*	.37	.49	c.12	*	.07	*	.49	*	.57	*	.22	*	*	*	a1.47
		22	*	*	*	*	*	*	.15																		a2.73
320	Schenectady, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	.06	-	.06	.04	.04	.01	.03	.01	.26
	City of Schenectady, Sewage Treatment Plant	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	.03	.08	.01	-	-	-	-	-	-	-	-	-	.05	.04	.05	.08	.08	.08	.01	.05	.02	.05	.07	.70
		20	.10	.04	-	.01	.03	.04	.05	.06	.06	.07	.03	.03	.03	.02	.03	.06	.04	.07	.09	.19	.13	.06	.02	.05	1.31
		21	.11	.02	.01	.01	.05	.12	.09	.07	.09	.16	.16	.18	.29	.14	.23	.14	.37	.31	.16	.13	.01	-	.01	-	2.86
724	Spier Falls, N. Y.	19	*	*	*	*	*	*	.25	*	*	*	*	*	*	*	*	*	*	*	*	.58	*	*	*	.14	a.25
	New York Power & Light Co.	20	*	*	*	*	*	*	.25	*	*	*	*	*	*	*	*	.60	*	*	*	.59	*	.14	*	.13	a.97
		21	*	*	*	*	*	.23	.13	*	*	*	.73	*	.48	*	.21	*	*	*	*	*	.73	*	*	*	a1.82
		22	*	*	*	*	*	*	.05																		a2.20
330	Sprite Creek, N. Y.	19	*	*	*	*	*	*	.09	*	*	*	*	*	*	*	*	*	.31	*	*	*	.05	*	*	*	a.09
	New York Power & Light Co.	20	*	*	*	*	*	*	.32	*	*	*	*	*	*	*	.56	*	*	*	*	*	*	*	*	*	a.68
		21	*	*	*	*	*	*	.93	*	*	*	.31	*	.58	*	.10	*	*	*	*	*	*	.74	*	*	a1.49
		22	*	*	*	*	*	*	.83																		a2.56
337	Voorheesville, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.07	.12	.05	.03	.05	-	-	.32
	Horton Hydrologic Laboratory	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	.04	.89	.01	-	-	-	-	-	-	-	-	.01	.05	.05	.05	.13	.07	.04	.01	.05	-	.30	.15	1.85
		20	.16	.09	.01	.02	.01	.06	.08	.08	.06	.02	.05	.03	.04	.01	.04	.10	.02	.03	.07	.18	.15	.07	.03	.05	1.46
		21	.15	.03	.01	.02	.04	.13	.16	.07	.08	.14	.22	.19	.30	.15	.33	.42	.47	.52	.44	.13	.02	-	-	-	4.02
345	West Point, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	.01	-	-	-	-	-	-	.03
	U. S. Military Academy	18	-	-	-	-	-	-	-	-	-	-	-	-	.02	-	-	-	-	-	-	-	-	.02	-	.17	.21
		19	.01	-	.01	-	.01	-	.01	-	-	.02	.01	.04	.33	1.32	.61	.04	.01	.01	-	.01	.01	.02	.25	.07	2.79
		20	.04	-	.07	.35	.03	.24	.25	.03	-	-	.05	.03	.03	-	.10	-	-	.14	.11	.03	.07	.12	.19	.07	1.95
		21	.03	.02	.06	.12	.16	.06	.09	.09	.24	.28	.19	.04	.30	.75	.46	.57	.34	.14	-	.01	-	-	-	-	3.95
	Hackensack, Raritan, and Passaic River Basins																										
348	Palisades Park, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	.05	.03	-	-	-	.01	-	.10
	Corps of Engineers, U. S. Army	18	-	-	-	.01	-	-	-	.01	-	-	-	-	-	.01	.02	-	-	-	-	-	-	.01	-	.01	.07
		19	.03	.01	.01	-	.01	.01	-	-	.01	-	-	.01	.01	.36	.80	.44	.01	.01	-	.02	.06	.13	.27	.27	2.47
		20	.01	.01	.01	.34	.03	.06	.32	.09	.01	.01	-	-	-	.01	.28	.08	.04	.12	.15	.10	.12	.28	.14	.15	2.36
		21	.02	.02	.01	.08	.10	.10	.07	.02	.15	.13	.18	.14	.36	.39	.83	.46	.48	.24	.10	.02	.03	.01	-	-	3.94

* Included in following measurement.
a Total for 24 hours preceding 7 a.m. of indicated day.
b Gage read 15 minutes after indicated time.
c Gage read 30 minutes after indicated time.
d Gage read 45 minutes after indicated time.

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Hackensack, Raritan and Passaic River Basins--Continued																										
349	Southfield, N. Y.	17	0.01	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-	-	0.04	0.04	0.02	0.02	0.02	0.02	-	-	-	-	0.20
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	.01	0.01	0.01	0.01	0.01	.06
		19	-	.15	.20	-	-	0.05	-	-	-	-	-	-	-	1.30	.10	.10	-	-	.02	.03	-	.05	.50	.20	2.70
		20	.10	.10	.10	.10	0.15	.15	0.30	0.05	-	-	0.03	0.04	0.03	.05	.15	.09	.04	.12	.08	.07	.15	.08	.10	.07	2.15
		21	.05	-	.05	.05	.10	.10	.10	.05	0.15	0.25	.15	.38	.32	.70	.60	.90	.20	.13	.02	.03	-	-	-	-	4.33
351	Bowling Green, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.04	.05	.01	-	-	-	-	-	-	.10
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	-	.02	.01	.02	.02	.02	.03	.01	.02	.10	.06	.25	.44	.14	.14	.11	.02	.01	.01	.17	.39	.15	.10	2.24
		20	.10	.11	.20	.18	.12	.09	.46	.47	.04	.01	.01	.02	-	-	.02	.02	-	.01	.03	.02	.04	.04	.01	-	2.00
		21	-	.01	.05	.08	.13	.09	.03	.01	.05	.05	.10	.14	.20	.55	.71	.54	.51	.50	.12	-	.01	-	-	-	3.88
352	Brook Valley, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	.03	.01	.01	.01	-	-	-	-	-	.11
	Corps of Engineers, U. S. Army	18	-	-	-	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.03	.01	-	-	-	-	.01	-	-	-	-	.05
		19	-	.05	.22	.01	.01	.01	-	.01	-	.02	.01	.01	-	.50	.65	.05	.03	.02	.01	.01	.02	.02	.39	.35	2.40
		20	.20	.05	.10	.20	.10	.20	.80	.15	.02	.01	.01	.01	.02	.02	.03	.03	.05	.05	.05	.05	.15	.13	.07	.07	2.57
		21	.03	-	.02	.03	.15	.12	.05	.03	.05	.22	.08	.10	.20	.45	.75	.60	.30	.18	.05	-	-	-	-	-	3.41
362	Freehold, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	.06	.01	.08	-	-	-	-	-	-	-	-	-	.15
	U. S. Department of Agriculture, Soil Conservation Service, gage R-2	18	-	-	-	-	-	-	-	-	-	-	.04	.02	-	-	.02	-	-	.02	.10	.14	.02	.02	-	-	.38
		19	-	-	-	-	-	-	-	-	-	-	-	-	.03	.46	.04	-	-	.03	-	.03	.01	.02	.12	.01	.75
		20	.01	.01	.03	-	.01	.48	.03	-	.04	.03	.02	-	-	-	.05	.22	.07	.14	.12	.54	.30	.13	.05	-	2.28
		21	.01	.02	.20	.22	.17	.11	.09	.06	.31	.11	.13	.43	.86	.72	.29	.24	.04	-	-	-	-	-	-	-	4.01
373	Mahwah, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	.03	.02	.02	-	-	-	-	-	-	.12
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	-	-	-	-	-	-	.01	.01	.01	.01	.07
		19	.01	.04	-	-	-	-	-	-	-	-	-	.20	.30	1.50	.10	.05	.02	.02	-	.01	.01	.34	.05	.10	2.75
		20	-	-	.27	.13	.05	.35	.25	-	-	-	.04	.01	-	-	.20	.05	.15	.05	.05	.10	.15	.10	.10	.05	2.10
		21	-	-	.05	.15	.05	.05	.05	.05	.20	.10	.20	.30	.40	.60	.35	.35	.05	.05	-	-	-	.02	-	-	3.02
374	Millington, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	Tr.	Tr.	Tr.	.01	.02
	Corps of Engineers, U. S. Army	18	-	-	-	-	.01	.01	-	.01	-	-	-	-	.05	-	-	-	-	-	-	-	.02	.02	-	.01	.13
		19	-	.03	-	-	-	-	.01	.01	.01	.01	.02	.02	.55	1.05	.20	.05	-	-	-	-	.05	.30	.10	.18	2.59
		20	.02	.10	.20	.08	.42	.53	.05	.02	.01	-	-	.01	.01	.01	-	-	.09	.07	.10	.25	.10	.13	.02	.01	2.23
		21	.01	.01	.04	.11	.04	.06	.02	.06	.07	.30	.17	.20	.60	.60	.40	.40	.25	.03	-	.01	-	.01	-	-	3.39
376	Morristown, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	-	.01	.01	-	-	-	-	-	-	.03
	Town Engineer, Morristown, N. J.	18	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	-	-	-	-	-	-	-	-	-	-	.02
		19	-	-	-	-	-	-	-	-	-	.02	.02	-	.48	1.00	.12	.04	.04	Tr.	Tr.	Tr.	Tr.	.03	.03	.32	2.10
		20	.04	.03	.02	.03	.03	.03	.03	.71	.05	.05	.03	.03	.02	.02	.03	.03	.03	.08	.05	.11	.15	.09	.11	.02	1.82
		21	-	-	.02	.01	.08	.08	.05	-	.04	.17	.18	.10	.27	.40	.70	.12	Tr.	Tr.	Tr.	Tr.	Tr.	-	-	-	2.20

377	Morristown, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	.18	-	.01	.01	.01	.01	-	-	.28
	Morristown Reservoir	18	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	-	-	-	-	-	-	-	-	-	.03	.08
	Corps of Engineers, U. S. Army	19	-	.01	-	-	-	-	-	.01	-	.05	-	.02	.05	.03	.04	.05	.02	.02	.02	.06	.07	.09	.10	.11	.75
		20	.11	.02	.30	.50	.60	.04	.01	.01	-	-	-	-	.01	.01	.01	.02	.05	.12	.17	.13	.11	.06	.04	.02	2.34
		21	.01	.02	.03	.03	.11	.08	.04	.03	.17	.19	.18	.15	.40	.55	.90	.50	.20	.08	.02	.01	-	-	-	-	3.70
379	New Milford, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	*	*	*	*	*	*	.03	.09
	Hackensack Water Co., Weehawken, N. J.	18	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*	.03	.10	.01	.08	.22
		19	*	*	.05	.16	.04	*	*	*	*	*	*	*	.08	.08	.38	.19	*	*	*	*	.05	.02	.02	.06	1.13
		20	.06	*	.02	.10	.09	.02	.08	.29	*	*	*	.06	*	*	.03	.09	-	.05	.09	.17	.03	.36	.28	.14	1.96
		21	.04	*	.02	.06	.16	.20	.08	.03	.14	.29	.44	.08	.18	.66	.68	.39	.07	*	.09	-	-	-	-	-	3.61
387	Rockaway, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.07	.12	.01	-	-	.05	.01	-	.01	.27
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	.03	-	-	-	-	-	-	-	-	.02	.02	.03	.10
		19	-	.03	-	-	-	.01	-	-	.05	.02	.01	.01	1.00	.25	.05	.05	.03	.02	.05	.05	.05	.35	.10	.18	2.31
		20	.03	.29	.30	.05	.30	.30	.05	-	-	.05	-	-	.03	-	-	-	-	.07	.10	.13	.12	.05	.13	.02	2.02
		21	-	-	.01	.04	.07	.06	.02	.02	.08	.20	.10	.20	.20	.15	.65	.25	.20	.10	.05	-	-	-	-	-	2.40
390	Woodcliff Lake, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.07	*	*	*	*	*	*	.02	.09
	Hackensack Water Co., Weehawken, N. J.	18	*	*	*	*	*	*	*	*	*	*	*	.01	*	*	*	*	*	*	*	*	.02	.09	.01	.15	.28
		19	*	*	.04	.03	.14	*	*	*	*	*	*	*	.04	.13	.75	.18	*	*	*	*	.06	.03	.07	.15	1.62
		20	.07	*	.01	.23	.29	.02	.18	.21	*	*	*	.05	*	*	.02	.08	-	.09	.10	.10	.01	.29	.23	.13	2.11
		21	.02	*	.04	.06	.16	.18	.07	.01	.15	.29	.32	.05	.45	.54	.52	.49	.14	*	.10	-	-	-	-	-	3.59
	Delaware River Basin																										
398	China, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	.01	.03	.02	-	.05	-	-	-	.04	.02	-	.03	-	.20
	U. S. Geological Survey	18	-	-	-	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	.03	.03	.02	.02	-	.02	.07	-	-	.20
		20	.02	-	.02	.04	.12	.06	.02	.03	.06	.06	.04	.05	.05	.07	.01	.01	.01	.08	.08	.03	.06	.01	.02	.03	.98
		21	.01	.02	.01	.10	.04	.04	.01	.04	.04	.08	.04	.05	.07	.11	.12	.16	.74	.20	.12	.20	.16	.08	.02	.01	2.47
407	Harvard, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.08	-	.10	.02	.08	.01	.01	-	.01	.01	.32
	New York City Board of Water Supply	18	-	-	-	-	-	-	.01	-	-	-	-	.01	-	-	-	-	-	.02	-	-	-	-	.06	-	.10
		19	.03	-	.07	.04	-	-	-	-	-	-	-	-	.01	.01	.17	.10	.02	.01	.02	.02	.01	.03	.06	-	.60
		20	-	.06	.10	.12	.10	.10	.04	.06	.02	.04	.03	.01	.02	-	.02	.04	.04	.20	.10	.14	.14	.14	.04	.04	1.60
		21	-	.03	.01	.08	.06	.06	.03	.01	.04	.10	.16	.12	.12	.24	.30	.32	.20	.14	.04	.12	.08	-	.03	-	2.29
415	Oakland Valley, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	.01	-	.01	.01	.08	.03	.03	-	-	-	-	-	.17
	U. S. Geological Survey	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.10	.23	.33
		19	.10	.01	-	-	-	.01	.01	-	.04	.08	.03	.09	.11	.17	.02	.02	.05	.07	.09	.07	.15	.35	.02	.06	1.55
		20	.05	.12	.16	.04	.06	.17	.05	.01	.08	.01	.01	.01	.01	-	.01	-	.02	.11	.18	.12	.13	.10	.07	-	1.52
		21	-	.01	.01	.03	.05	.01	.01	.03	.15	.20	.05	.27	.23	.35	.48	.29	.15	.01	.01	.01	.01	-	-	-	2.36
429	Camden, N. J.	17	-	-	-	-	-	-	-	*	*	*	*	*	.16	*	*	*	*	*	.13	*	*	*	*	*	e.29
	U. S. Weather Bureau	18	Tr.	*	*	*	*	*	Tr.	*	*	*	*	*	.04	*	*	*	*	*	.03	*	*	*	*	*	e.07
	(Measured at 1:30 a.m., 7:30 a.m.,	19	.05	*	*	*	*	*	.08	*	*	*	*	*	1.51	*	*	*	*	*	.27	*	*	*	*	*	e1.91
	1:30 p.m., 7:30 p.m.)	20	1.27	*	*	*	*	*	.90	*	*	*	*	*	Tr.	*	*	*	*	*	.66	*	*	*	*	*	e2.83
		21	.50	*	*	*	*	*	.09	*	*	*	*	*	1.51	*	*	*	*	*	.63	-	-	-	-	-	e2.73

* Included in following measurement. e Total for 24 hours preceding 1:30 a.m. of following day.

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Delaware River Basin--Continued																										
438	Trenton, N. J.	17	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	0.02	0.06	0.25	Tr.	Tr.	Tr.	0.01	Tr.	-	-	-	-	0.34
	U. S. Weather Bureau	18	-	-	Tr.	Tr.	-	-	Tr.	Tr.	Tr.	Tr.	0.18	0.02	.01	Tr.	-	-	-	0.01	.04	0.08	0.04	-	-	-	.38
		19	0.01	Tr.	-	-	0.07	0.01	0.02	0.02	0.01	0.01	.02	1.33	.17	.18	.11	0.01	0.01	Tr.	Tr.	.04	.06	0.14	0.10	0.14	2.46
		20	.15	0.10	0.17	0.31	.25	.24	Tr.	Tr.	.01	Tr.	-	.01	Tr.	-	Tr.	.01	.03	.23	.24	.20	.25	.05	.02	Tr.	2.27
		21	.02	Tr.	.02	.08	.04	Tr.	.04	.08	.09	.29	.27	.26	.44	.46	.46	.11	.01	-	-	Tr.	-	-	-	-	2.67
	Susquehanna River Basin																										
443	Binghamton, N. Y.	17	-	-	-	-	-	-	-	-	-	Tr.	.06	.13	.04	Tr.	.01	.01	.01	Tr.	.05	.01	Tr.	.01	Tr.	Tr.	.33
	U. S. Weather Bureau	18	.04	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.08	Tr.	-	-	.01	Tr.	Tr.	.13
		19	.01	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	.03	.01	Tr.	Tr.	.01	Tr.	-	-	-	-	Tr.	.06
		20	.04	-	-	Tr.	.07	.04	.05	.01	.07	.06	.19	.08	.03	.05	.06	.10	.05	.02	.05	.03	.03	.01	.01	.01	1.06
		21	.02	.02	.01	Tr.	.01	.01	.06	.02	.03	.04	.07	.08	.12	.17	.24	.19	.20	.05	.12	.09	.05	.01	.01	-	1.62
458	Hunts Corners, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	.06	.04	.04	.08	.06	-	-	.04	-	-	-	-	-	.32
	Corps of Engineers, U. S. Army	18	-	-	-	-	.02	-	-	-	-	-	-	-	-	-	-	-	.02	-	-	-	-	-	-	-	.04
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		20	-	-	-	-	-	-	-	-	.10	.06	.04	.08	.02	.02	.04	.06	.08	.06	.02	.05	-	-	-	-	.63
		21	-	-	-	.02	-	-	-	-	.04	.02	.04	.04	.07	.05	.12	.18	.10	.10	.10	.14	.16	.10	.02	-	1.30
464	North Edmeston, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	.05	.09	.01	.01	.02	.02	.01	-	.06	-	-	-	.27
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	-	-	-	-	-	-	-	-	-	-	.02
		19	-	.24	.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.04	.02	-	-	-	.02	-	.34
		20	-	-	-	.02	.05	.05	.06	.04	.04	.04	.06	.06	.05	.05	.04	.04	.02	.02	.15	.02	.02	.02	.04	.04	.93
		21	.02	.01	.01	.04	.06	.02	.04	.05	.02	.02	.08	.07	.10	.07	.14	.17	.28	.20	.17	.17	.07	.07	.09	.06	2.03
467	Otego, N. Y.	19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	.16	.02	.02	-	-	-	.05	-	-	.25
	Corps of Engineers, U. S. Army	20	-	.02	.02	.02	.10	.06	.03	.03	.05	.05	.05	.05	.08	.04	.02	.04	.10	.12	.06	.06	.03	.03	.04	.04	1.14
		21	.02	.02	.07	.07	.04	.04	.02	.02	.10	.10	.14	.16	.18	.30	.17	.17	.44	.20	.28	.07	-	-	-	-	2.61
469	Richford, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	.05	.04	.04	.02	.06	.02	.02	-	-	-	-	-	.04	.29
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	-	-	-	-	-	-	-	-	-	.06
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	-	-	-	-	-	-	-	-	.05
		20	-	-	-	-	-	-	-	.15	.05	.05	.08	.02	.04	.04	.06	.06	.08	.01	.07	.01	-	-	-	-	.72
		21	-	-	-	-	-	.02	-	-	.02	.08	.15	.15	.10	.10	.15	.15	.06	.06	.23	.23	.23	.05	.05	-	1.83
471	Smithville Flats, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	.03	.08	.02	.03	.05	-	.02	-	.02	-	.28
	Corps of Engineers, U. S. Army	18	-	-	-	-	.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	-	-	.06
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.27	-	-	.03	-	-	-	-	-	-	.30
		20	-	-	-	-	-	-	-	.02	-	.08	.05	.15	.10	.02	.06	.02	.05	.05	.04	.04	-	.02	-	.04	.74
		21	-	.02	-	.02	-	.01	.01	-	.05	.01	.01	.02	.02	.05	.05	.10	.15	.20	.15	.15	.15	.10	.10	.10	1.47

Susquehanna River Basin--Continued

472	Smyrna, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	.02	.07	.03	.04	.04	.02	.01	-	.02	.01	-	-	-	.26
	Chenango Experimental Forest	18	.01	-	-	.01	-	-	-	-	-	-	-	.01	-	-	.01	-	-	-	.10	-	-	-	-	-	.14
		19	-	-	-	-	-	-	-	.01	-	-	-	-	-	-	-	.10	-	.02	-	-	-	-	-	-	.13
		20	-	-	-	-	-	.04	.01	.01	-	.05	.09	.14	.06	.02	.07	.04	.09	.03	.07	-	-	-	.01	.01	.74
		21	-	-	.01	.02	.01	.01	.01	.04	.02	.02	.04	.04	.04	.14	.14	.18	.17	.18	.11	.15	.08	.10	.06	.13	1.70
473	South New Berlin, N. Y.	17	-	-	-	-	-	-	-	-	-	-	.02	.05	.09	.03	.01	.01	.02	.02	.02	.04	.01	-	.01	-	.33
	U. S. Geological Survey	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	.06	.01	-	-	-	-	.08
		19	-	.09	.04	.03	.02	.04	-	-	-	.01	-	-	-	-	.02	.02	.01	.01	-	-	-	.02	-	-	.31
		20	-	-	-	.06	.08	.06	.03	.05	.04	.07	.04	.08	.03	.06	.05	.01	-	.05	.04	.01	.01	.02	.01	.01	.81
		21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2.44
475	Shackham Brook near Truxton, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	.03	.04	.01	.01	-	.06	.01	-	.01	-	-	-	.01	.18
	U. S. Geological Survey, gage No. 1	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		20	*	*	*	*	*	*	*	*	*	*	*	.03	.02	.01	.04	.02	.04	.01	.01	.07	-	-	-	-	.49
		21	-	-	-	-	.01	.02	.03	-	.03	.02	-	.02	.05	.08	.16	.23	.20	.16	.16	.16	.16	.09	.06	.01	1.65
476	Shackham Brook near Truxton, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	.01	-	-	-	.04	.03	-	-	-	-	-	.01	.01	.10
	U. S. Geological Survey, gage No. 2	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		20	-	-	-	-	-	-	-	.05	.13	.05	.03	.04	-	.02	.04	.05	.01	.02	.03	.01	-	-	-	-	.48
		21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.88
479	Worcester, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.07	-	.02	.02	.06	.02	-	-	-	.19
	Corps of Engineers, U. S. Army	18	-	.01	-	-	-	-	-	-	-	-	-	.01	-	-	-	-	-	-	-	-	-	-	-	.04	.06
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	.11	.04	-	-	-	-	.02	.06	.02	.30
		20	.08	.12	.12	.06	.06	.06	.04	.04	.04	.04	.02	.02	.02	.02	.02	.05	.10	.15	.10	.12	.26	.16	.10	.03	1.83
		21	.01	.06	.04	.04	.05	.05	.03	.03	.03	.08	.22	.12	.32	.26	.34	.30	.50	.60	.12	.04	.05	-	-	-	3.29

St. Lawrence River Basin

480	Barre, Vt.	19	*	*	*	*	*	*	.52	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	.52
		20	*	*	*	*	*	*	.52	*	.10	*	.05	*	.12	*	.03	*	.17	*	.16	*	.03	*	*	*	1.18
		21	*	*	*	*	*	*	.59	*	.19	*	.21	*	.26	*	.09	*	.18	*	.97	*	.04	-	-	-	2.53
481	Burlington, Vt.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	.01	.03	Tr.	Tr.	Tr.	Tr.	-	.04
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.
		19	-	-	Tr.	.03	.23	Tr.	-	Tr.	Tr.	-	-	-	-	-	Tr.	Tr.	.01	.02	.02	.01	.01	.02	.01	.02	.38
		20	.01	.03	.01	.04	.05	.01	.07	.05	.04	.03	.04	.03	.02	.03	.02	.03	.03	.06	.06	.06	.06	.03	.01	.01	.83
		21	.02	.05	Tr.	.04	.08	.27	.14	.08	.11	.16	.05	.22	.27	.13	.01	.08	.11	.27	.51	.19	.04	.01	Tr.	.01	2.85
485	Essex, Vt.	19	*	*	*	*	*	*	.45	*	*	*	*	*	*	*	*	*	Tr.	*	.05	*	.01	*	.02	*	.53
		20	.04	*	.04	*	.05	*	.06	*	.08	*	.07	*	.05	*	.05	*	.09	*	.09	*	.15	*	.05	*	.82
		21	.01	*	.07	*	.09	*	.40	*	.21	*	.21	*	.61	-	-	*	.18	*	.67	*	.62	*	.30	-	3.37

* Included in following measurement. M Record missing.

227007 O—10——6

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	St. Lawrence River Basin--Continued																										
487	Middlesex, Vt.	19	*	*	*	*	*	*	0.16	*	*	*	*	*	*	*	*	*	0.07	*	0.05	*	0.09	*	0.19	*	0.56
		20	0.11	*	0.03	*	0.03	*	.04	*	0.07	*	0.13	*	0.08	*	0.02	*	.03	*	.10	*	.05	*	.07	*	.76
		21	.13	*	.12	*	.10	*	.17	*	.19	*	.18	*	.33	*	.38	*	.27	*	.55	*	.30	-	-	-	2.72
490	Northfield, Vt.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	0.01	.01	0.05	.06	0.04	.03	Tr.	.20
	U. S. Weather Bureau	18	Tr.	0.02	Tr.	Tr.	.01	Tr.	Tr.	Tr.	Tr.	-	-	-	-	-	-	-	-	Tr.	Tr.	-	-	-	-	-	.03
		19	-	-	-	0.01	.03	Tr.	.01	Tr.	-	Tr.	Tr.	-	-	-	Tr.	0.02	.06	.05	.01	.01	.13	.08	.06	0.04	.51
		20	.02	.02	.02	.03	Tr.	0.01	.04	0.04	.04	0.03	.09	0.06	.02	0.03	.01	.02	.11	.08	.01	.01	.02	.07	.09	.03	.90
		21	.04	.05	.04	.04	.04	.10	.11	.10	.07	.09	.05	.25	.07	.10	.09	.01	.39	.32	.58	.40	.01	Tr.	-	-	2.95
492	Waterbury, Vt. (Waterbury Dam)	17	-	-	-	-	-	-	.04	-	-	.08	.03	-	-	-	-	-	-	-	-	-	-	-	-	-	.15
	Corps of Engineers, U. S. Army	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	-	-	.01	.09	.04	.02	-	-	-	-	-	-	-	-	.04	-	.04	.02	.01	.09	.06	.04	.01	.47
		20	.01	-	-	.04	-	.02	.03	.05	.04	.01	.01	.09	.01	.01	.01	-	.09	.04	.06	.03	.03	.04	.05	.02	.69
		21	.03	.02	.04	.06	.09	.24	.23	.11	.08	.09	-	.19	.32	.13	.01	.04	.14	.27	.28	.45	.08	.22	-	-	3.12
505	Canton, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	-	Tr.	-	-	-	Tr.
	U. S. Weather Bureau	18	-	-	-	-	-	-	-	-	-	Tr.	-	-	-	-	-	-	-	-	-	-	-	Tr.	-	-	Tr.
		19	-	-	-	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	-	-	.14	Tr.	.14
		20	-	-	-	-	.02	-	-	-	-	-	Tr.	.04	Tr.	Tr.	.01	Tr.	.01	.01	.01	.01	.01	.01	Tr.	Tr.	.13
		21	Tr.	Tr.	.05	.04	.01	.02	.02	.01	.01	Tr.	.01	.05	.05	.03	.08	.15	.18	.25	.48	.37	.28	.22	.08	.05	2.44
		22	.01	.01	Tr.	.01	.02	-	-	-	-	Tr.	-	Tr.	Tr.	Tr.	.02	.11	.02	.02	.01	.02	.02	Tr.	Tr.	-	.27
520	Ithaca, N. Y.	17	-	-	-	-	-	-	-	-	-	Tr.	.05	.03	Tr.	.01	.01	.06	.01	.01	.01	Tr.	.01	.02	Tr.	.01	.23
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	-	-	Tr.	-	Tr.	-	-	-	Tr.
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	-	-	-	-	.02	Tr.	.01	.03
		20	-	-	-	-	-	Tr.	Tr.	.13	.07	.01	.02	.02	Tr.	.02	.02	.07	.05	.03	.03	.01	Tr.	.01	.01	Tr.	.50
		21	Tr.	Tr.	Tr.	Tr.	Tr.	.01	.02	.01	Tr.	Tr.	.02	.04	.04	.13	.14	.15	.12	.16	.19	.15	.14	.09	.02	Tr.	1.43
		22	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.01	.01	.02	.02	.01	.02	.07	.08	.03	.27
533	Oswego, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	-	-	-	-	-	Tr.	Tr.	-	-	Tr.
	U. S. Weather Bureau	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06	Tr.	Tr.	.01	Tr.	.07
		20	.01	.01	Tr.	-	-	-	-	-	-	Tr.	.01	.01	Tr.	-	-	-	-	-	-	-	-	-	.01	Tr.	.05
		21	.01	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	-	Tr.	.03	.03	.02	.05	.09	.10	.09	.10	.15	.10	.10	.17	.11	1.15
		22	.05	.02	.01	.01	-	-	-	-	-	Tr.	.02	.06	.08	.07	.04	.03	.05	.05	.06	.03	.01	.04	.14	.06	.83
545	Syracuse, N. Y.	17	-	-	-	-	-	-	-	-	-	-	Tr.	.05	.01	.01	Tr.	.02	.02	.01	.02	.01	.01	.01	.01	.01	.19
	U. S. Weather Bureau	18	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	-	-	-	-	-	Tr.
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	-	Tr.	Tr.	-	.01	.01
		20	Tr.	Tr.	Tr.	-	-	-	Tr.	.08	.16	.01	.01	.01	Tr.	Tr.	.02	Tr.	Tr.	Tr.	.01	.02	.05	Tr.	-	-	.37
		21	Tr.	Tr.	.01	.01	.01	Tr.	.05	.01	.01	Tr.	Tr.	.02	.06	.08	.12	.15	.18	.12	.18	.19	.13	.09	.11	.04	1.57
		22	Tr.	Tr.	-	Tr.	-	-	-	-	-	-	-	Tr.	.01	.01	.03	.02	.02	.01	Tr.	.02	.05	.07	.01	.05	.30

551	Whiteface Mountain	17	-	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	*	c.12	*	*	*	*	*	e.17
	U. S. Weather Bureau	18	c.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	*	c.02	*	*	*	*	*	e.08
		20	c.06	*	*	*	*	*	c.17	*	*	*	*	*	c.23	*	*	*	*	*	c.39	*	*	*	*	*	e1.29
		21	c.50	*	*	*	*	*	c.23	*	*	*	*	*	c.96	*	*	*	*	*	c.92	*	*	*	*	*	e2.57
		22	c.46	*	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*	c.03						e.05
	Coastal and minor basins																										
567	Blue Hill, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.08	.15	.06	.06	.18	.01	.01	.55
	Blue Hill Observatory	18	.01	.01	-	-	-	.02	.06	.09	.08	.01	.01	.01	.01	.02	.08	.12	.08	.02	.03	.06	.03	.11	.06	.11	1.03
		19	Tr.	.01	.01	.02	.07	.05	.36	.03	-	-	-	.04	-	-	-	.01	.01	.03	.03	-	.02	.01	.01	Tr.	.71
		20	Tr.	.01	.02	.01	.01	.02	.10	Tr.	-	-	.09	.23	.70	.08	.03	.09	.06	-	-	.01	.01	.01	.02	.03	1.53
		21	.01	.01	Tr.	.01	.01	.02	-	-	Tr.	Tr.	-	-	-	Tr.	Tr.	.07	.05	-	Tr.	.01	-	-	-	-	.19
568	Boston, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	.03	.15	.12	.10	.09	.07	Tr.	.56
	U. S. Weather Bureau	18	.01	Tr.	Tr.	Tr.	Tr.	Tr.	.04	.02	.10	.01	Tr.	Tr.	.01	.04	.12	.09	.05	.05	.01	.16	Tr.	.26	.08	.14	1.19
		19	.01	-	.02	.04	.07	.07	Tr.	.17	.01	-	Tr.	.01	Tr.	Tr.	Tr.	.04	.01	.11	Tr.	.01	.01	.07	.01	.01	.67
		20	-	Tr.	Tr.	Tr.	-	-	.22	.01	Tr.	-	-	Tr.	.25	.84	.04	.03	.01	.01	Tr.	Tr.	.01	Tr.	Tr.	.08	1.50
		21	.01	-	-	Tr.	Tr.	-	Tr.	Tr.	-	-	-	-	-	-	Tr.	.03	.06	Tr.	Tr.	Tr.	-	-	-	-	.10
594	Nantucket, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	-	Tr.	Tr.	.01	.03	.01	.01	Tr.	-	-	-	.06
	U. S. Weather Bureau	18	.04	.54	Tr.	.04	.13	.11	.10	.20	.30	.21	.41	.11	Tr.	-	-	-	-	-	-	-	-	-	-	-	2.19
		19	-	-	-	-	-	-	-	Tr.	.01	.01	Tr.	.03	-	-	-	-	-	-	-	-	-	-	-	-	.05
		20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
		21	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	.04	-	-	Tr.	-	-	-	-	-	.04
596	New Bedford, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	-	-	.01	.03	-	.06	.01	.14
	Engineering Division, Department of Public Works	18	-	.03	.02	.05	.01	.10	.15	.11	.04	.04	.09	.01	-	.01	.09	.01	.24	.03	-	-	-	-	-	-	1.03
		19	.03	.05	.03	-	.10	.23	.01	-	-	.11	.06	-	-	.01	.02	-	-	-	-	-	-	-	-	.29	.94
		20	-	-	-	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	-	-	-	.02	-	-	.04
		21	-	-	-	.03	.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.04
625	Worcester, Mass.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.07	.06	.11	.10	.13	.02	.02	.01	.52
	Winter Hill Meteorological Observatory	18	-	-	-	-	-	.01	-	-	-	-	-	-	-	.09	.06	.01	.01	-	.09	.15	.13	.01	.09	.13	.78
		19	.43	.22	.23	.32	.09	.01	.13	.01	-	-	-	-	-	-	-	-	.12	.13	.32	.08	.14	-	.04	-	2.27
		20	-	.01	-	.03	.07	.03	.02	.04	.06	.07	.65	.26	.07	.12	.01	-	-	-	-	.04	-	.01	.01	.16	1.66
		21	.68	.09	.73	.40	.09	.05	.06	.18	.14	-	-	-	-	-	.14	.28	.10	.02	-	-	-	-	-	-	2.96
736	Worcester, Mass. (sewage-treatment plant)	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01	.06	.14	.11	.13	.08	.25	-	.78
	Water Department, City of Worcester	18	.02	-	-	-	-	-	-	-	-	-	-	-	-	.03	.20	.03	.01	-	.06	.13	.24	.20	.03	.12	1.07
		19	.15	.10	.15	.34	.81	.09	.16	.15	-	-	-	.02	-	-	-	-	-	.23	.08	.51	.13	.15	.08	.03	3.18
		20	.02	-	-	-	-	-	-	.24	.11	.04	.16	.83	.17	.29	-	-	-	.11	.02	-	-	.01	-	.02	2.02
		21	.05	.13	.32	.65	.10	.03	.11	.04	.10	-	-	-	-	-	.05	.23	.17	-	-	-	-	-	-	-	1.98
627	Block Island, R. I.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	.15	.01	.09	.03	Tr.	.04	.08	.04	Tr.	.44
	U. S. Weather Bureau	18	Tr.	.03	.08	.08	.02	.03	.02	.02	.01	.03	Tr.	Tr.	.03	Tr.	.02	.02	.02	Tr.	-	-	-	-	.01	Tr.	.42
		19	.03	.09	Tr.	.02	.04	.01	-	Tr.	.06	.11	.01	Tr.	Tr.	-	-	-	-	-	-	-	-	-	-	-	.37
		20	-	-	-	-	-	.05	.22	.02	-	-	-	.01	.21	.33	.35	-	-	Tr.	.04	-	-	-	-	-	1.23
		21	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	.15	.74	.10	.01	Tr.	-	-	-	-	-	1.00

* Included in following measurement. c Gage read 30 minutes after indicated time. e Total for 24 hours preceding 1:30 a.m. of following day.

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Coastal and minor basins--Continued																										
635	Providence, R. I.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	0.11	0.10	0.13	0.08	0.08	0.13	0.01	Tr.	0.64
	U. S. Weather Bureau	18	Tr.	-	-	-	-	0.03	Tr.	0.13	Tr.	-	-	0.03	0.14	0.01	0.12	0.01	Tr.	Tr.	.05	.05	.14	.01	.02	0.01	.75
		19	Tr.	0.02	0.06	0.03	0.11	Tr.	0.09	-	-	-	0.02	Tr.	-	Tr.	.02	.01	.11	-	-	Tr.	.01	Tr.	Tr.	.01	.49
		20	Tr.	-	-	-	.02	.01	-	Tr.	-	-	.01	.12	.30	.04	.01	.02	-	Tr.	Tr.	.06	.23	-	.22	Tr.	1.04
		21	-	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.07	.10	Tr.	Tr.	-	-	-	-	-	.17
654	New Haven, Conn.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	.14	.19	.06	.14	.02	Tr.	Tr.	Tr.	Tr.	.60
	U. S. Weather Bureau	18	-	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.01	.11	.01	.01	.01	.01	Tr.	Tr.	.02	.02	1.09	.32	.01	1.62
		19	0.17	.17	Tr.	Tr.	.01	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.05	.01	.09	.07	.07	.23	.08	.03	.01	.04	.01	Tr.	1.04
		20	.11	.10	.01	.01	Tr.	.01	.02	.86	1.29	0.44	.05	.03	Tr.	.04	.09	.05	.19	.06	.01	.21	.20	.06	1.03	.49	5.36
		21	.17	.13	.06	.19	.32	.18	.24	.05	.22	.25	Tr.	Tr.	.08	.18	.63	.31	Tr.	Tr.	.01	Tr.	Tr.	-	-	-	3.02
666	Brooklyn, N. Y. (Brooklyn Eagle)	17	-	-	-	-	-	-	-	-	-	-	-	Tr.	.01	.07	.01	.06	Tr.	Tr.	-	-	-	.04	Tr.	Tr.	.19
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.02	.01	Tr.	.01	Tr.	-	-	Tr.	.18	.28	.06	.02	.04	.62
		19	.03	Tr.	Tr.	Tr.	Tr.	Tr.	.01	Tr.	.01	Tr.	-	Tr.	.03	.47	.51	.01	Tr.	.01	.01	.03	.03	.01	.33	.02	1.51
		20	.02	.02	.20	.03	Tr.	Tr.	.12	-	.02	Tr.	.02	.01	Tr.	.14	.08	Tr.	.21	.18	.04	.07	.26	.23	.11	.02	1.78
		21	.07	.07	.10	.29	.18	.09	.10	.38	.04	.08	.20	.31	.89	.94	.05	.01	.02	-	-	-	-	-	-	-	3.82
665	Brooklyn, N. Y. (Gravesend, Avenue V)	17	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.03	.04	.04	Tr.	Tr.	-	-	-	Tr.	Tr.	Tr.	.11
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.04	Tr.	Tr.	Tr.	-	-	-	.04	.59	.27	.02	.16	.36	1.48
		19	.01	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.02	.01	-	Tr.	.01	.39	.54	Tr.	Tr.	.03	Tr.	.02	Tr.	.03	.02	Tr.	1.08
		20	.01	.01	.30	.11	.01	Tr.	.14	-	.01	Tr.	Tr.	Tr.	Tr.	.13	.05	Tr.	.18	.16	.01	.18	.26	.16	.16	.06	1.94
		21	.13	.09	.18	.22	.22	.22	.25	.22	.09	.14	.08	.14	.65	.62	.40	.18	.25	-	-	-	-	-	-	-	4.08
668	Flushing, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.08	.05	.05	Tr.	-	-	-	-	-	-	-	.18
	U. S. Weather Bureau	18	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	.02	Tr.	.01	Tr.	-	-	-	Tr.	.17	.82	.14	.07	.35	1.58
		19	.09	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.03	Tr.	.02	.04	.04	.44	.01	Tr.	Tr.	.02	Tr.	.01	.03	.01	.02	.76
		20	.01	.02	.20	Tr.	Tr.	Tr.	.08	.01	.09	Tr.	Tr.	Tr.	Tr.	.08	.05	Tr.	.17	.14	.30	.17	.09	.27	.19	.01	1.88
		21	.09	.06	.19	.20	.25	.29	.10	.20	.28	.09	.03	.18	.84	.71	.68	.08	Tr.	-	-	-	-	-	-	-	4.27
669	Freeport, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	.05	.16	.06	.12	-	-	-	-	-	-	-	.39
	Nassau County, Department of Public Works, Hydrological Bureau	18	-	-	-	-	-	-	-	-	-	.01	-	.07	.02	-	.01	.01	-	-	.06	.43	.44	.19	.21	.41	1.86
		19	.01	.01	-	-	.01	-	-	-	-	-	-	-	-	.02	.17	.01	.10	.06	-	-	.01	-	.01	.07	.48
		20	-	.16	.01	.02	-	.02	.48	.73	.18	.04	-	.02	-	.01	.12	.18	.11	.25	.13	.01	.01	.58	.15	.02	3.23
		21	.09	.12	.20	.36	.23	.19	.40	.34	.44	.17	.17	.09	.35	.26	.34	.11	.11	-	-	-	-	-	-	-	3.97
671	Long Beach, N. Y.	17	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	.08	.06	.03	.04	.01	-	-	-	-	-	-	.22
	U. S. Weather Bureau	18	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	Tr.	.09	.04	Tr.	Tr.	-	-	.01	.08	.27	1.01	.02	.20	1.72
		19	.03	.02	Tr.	.01	.01	Tr.	Tr.	.01	Tr.	Tr.	Tr.	Tr.	.01	.34	.02	.04	.04	.01	Tr.	Tr.	.01	.01	.05	.06	.67
		20	.10	.03	.05	Tr.	.01	.42	.59	.21	.07	Tr.	.02	.01	Tr.	.04	.24	Tr.	.11	.12	.26	.02	.18	.35	.12	Tr.	2.95
		21	.07	.17	.18	.19	.21	.22	.07	.02	.08	.25	.05	.09	.43	.14	.34	.57	.13	Tr.	-	-	-	-	-	-	3.21

672	Manhasset, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	.08	.05	.01	.05	-	-	-	-	-	-	-	.19
	Nassau County, Department of Public Works,	18	-	-	-	-	-	-	-	-	-	-	-	-	.05	.01	-	-	.01	-	-	-	1.14	1.28	.08	.20	2.77
	Hydrological Bureau	19	.76	-	-	-	-	-	.01	-	.02	-	-	-	.01	.03	.70	.02	-	.01	-	-	.01	.03	.01	.03	1.64
		20	-	.08	.69	-	-	-	.11	.13	.26	-	.03	-	.01	.04	.08	.13	-	.06	.37	.05	.05	.39	.17	.09	2.74
		21	.07	.09	.17	.18	.32	.26	.17	.18	.29	.16	.30	.16	.56	.55	.35	.54	.02	.08	-	-	-	-	-	-	4.45
673	Mineola, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	.03	.01	.05	.05	-	-	-	-	-	-	-	.14
	Nassau County, Department of Public Works,	18	-	-	-	-	-	-	-	-	-	-	-	-	.08	.01	-	.03	-	-	-	.34	.76	.66	.90	.32	3.10
	Hydrological Bureau	19	.11	-	-	.03	.01	.01	-	-	-	.01	.02	.02	-	.03	.62	.01	.01	.03	-	-	-	.02	.01	.08	1.02
		20	.01	.09	.15	.03	-	-	.25	.25	.22	.01	-	.02	-	.03	.08	.07	-	.07	.31	.04	.04	.29	.30	.08	2.34
		21	.04	.12	.21	.31	.25	.22	.31	.46	.30	.26	.13	.15	.54	.40	.60	.02	.08	-	-	-	-	-	-	-	4.40
676	New York, N. Y. (Battery Place)	17	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.04	Tr.	.05	Tr.	.01	-	-	-	.02	Tr.	Tr.	.12
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.05	.02	Tr.	.01	Tr.	-	-	Tr.	.12	.14	.04	.01	Tr.	.39
		19	.05	Tr.	.01	Tr.	Tr.	Tr.	.01	Tr.	Tr.	Tr.	-	.25	.04	.54	.34	.02	Tr.	Tr.	Tr.	.08	.05	.01	.38	.02	1.80
		20	Tr.	.04	.09	.01	Tr.	.01	.10	-	.01	Tr.	.04	Tr.	Tr.	.07	.07	.01	.11	.26	.13	.17	.23	.21	.15	.02	1.73
		21	.04	.05	.08	.26	.21	.11	.13	.20	.11	.06	.31	.36	.83	.88	.05	.01	.02	-	-	-	-	-	-	-	3.71
677	New York, N. Y. (Central Park)	17	-	-	-	-	-	-	-	-	-	-	-	-	Tr.	.03	Tr.	.10	Tr.	.01	-	-	-	.04	.01	Tr.	.19
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.02	Tr.	.02	Tr.	Tr.	-	-	Tr.	.09	.24	.05	.01	.01	.44
		19	.07	.01	.03	Tr.	Tr.	.02	.02	Tr.	Tr.	Tr.	-	.09	.05	.42	.41	.02	-	.01	Tr.	.07	.08	.02	.43	.01	1.76
		20	Tr.	.04	.23	.03	Tr.	.02	.09	-	.01	Tr.	.05	Tr.	Tr.	.11	.09	-	.16	.20	.03	.02	.20	.27	.12	.02	1.69
		21	.07	.05	.10	.24	.19	.11	.05	.31	.12	.10	.23	.19	.59	.87	.59	.10	.12	.02	-	-	-	-	-	-	4.05
682	Westerleigh, N. Y.	17	-	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	.04	.01	.07	Tr.	Tr.	-	-	-	.07	Tr.	Tr.	.19
	U. S. Weather Bureau	18	Tr.	Tr.	Tr.	Tr.	.01	.01	Tr.	Tr.	Tr.	Tr.	Tr.	.06	.02	.01	.01	Tr.	-	-	Tr.	.15	.04	.04	.01	.18	.54
		19	Tr.	.01	.01	.01	.01	.02	.02	Tr.	Tr.	Tr.	-	Tr.	.01	.46	.37	.01	Tr.	.01	Tr.	.07	.02	.01	.13	.03	1.20
		20	.02	.01	.20	.01	Tr.	.11	.23	-	.02	Tr.	.02	.02	Tr.	.11	.02	.02	.11	.25	.30	.11	.29	.21	.06	.01	2.13
		21	.01	.06	.12	.27	.16	.07	.02	.04	.12	.04	.23	.58	.71	.87	.19	.06	.14	Tr.	-	-	-	-	-	-	3.69
683	Atlantic City, N. J.	17	-	-	-	-	-	-	-	-	Tr.	.08	.31	.02	.34	.01	.02	.01	-	-	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.	.79
	U. S. Weather Bureau	18	Tr.	.01	Tr.	.03	Tr.	.01	-	Tr.	Tr.	.03	.04	.02	.01	.01	Tr.	-	Tr.	Tr.	.01	.03	.02	-	-	-	.22
		19	-	-	.06	.02	Tr.	Tr.	-	-	-	Tr.	.12	.11	.19	.26	.08	.24	.11	-	-	.01	Tr.	.09	.02	Tr.	1.31
		20	.06	-	.05	.05	.19	.27	.03	.06	.06	.01	Tr.	.09	.34	.09	.72	.11	.07	.04	.13	.42	.16	.20	.03	.04	3.22
		21	.09	.16	.26	.19	.18	.04	.12	.17	.26	.10	.59	1.01	.59	.59	.15	Tr.	-	-	-	-	-	-	-	-	4.50
686	Colts Neck, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	.04	.01	.06	-	-	-	-	-	-	-	-	-	.11
	U. S. Department of Agriculture, Soil	18	-	-	-	-	-	-	-	-	-	-	.04	.04	-	-	.04	-	-	.05	.07	1.03	.02	.01	.92	-	2.22
	Conservation Service	19	-	-	-	-	-	-	-	-	.01	-	.02	.01	.01	.90	.13	.01	-	.02	-	-	.01	.02	.05	.03	1.22
		20	-	-	.24	-	.03	.15	.06	-	.03	.01	.03	-	.01	.18	-	.16	.18	.20	.60	.18	.32	.23	.05	.03	2.69
		21	.02	.11	.23	.29	.16	.10	.08	.29	.29	.10	.16	.51	1.03	.68	.36	.29	.07	-	-	-	-	-	-	-	4.76
688	Elizabethport, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	*	.01	*	.06	-	-	-	-	*	.01	*	.01	-	.09
	Chief engineer, Joint Meeting Maintenance,	18	-	-	-	-	-	-	-	-	-	*	.02	*	.03	-	-	-	-	-	-	*	.16	*	.02	-	.23
	Irvington, N. J.	19	-	*	.03	-	-	*	.03	*	.06	-	-	*	.24	*	.38	-	-	*	.02	*	.05	*	.11	-	.92
		20	-	*	.16	*	.06	*	.38	-	-	*	.02	-	-	*	.04	*	.24	*	.28	*	.46	*	.16	*	1.80
		21	.08	*	.06	*	.34	*	.16	*	.60	*	.30	*	1.60	*	.80	*	.39	*	.01	-	-	-	-	-	4.34

* Included in following measurement.

Table 6.--Precipitation, in inches, for period ending at indicated time, September 1938--Continued

No. on pl.1	Station	Day	A.M. 1	2	3	4	5	6	7	8	9	10	11	12	P.M. 1	2	3	4	5	6	7	8	9	10	11	12	Total
	Coastal and minor basins--Continued																										
694	Long Branch, N. J.	17	-	-	-	-	-	-	-	-	-	-	Tr.	-	Tr.	0.04	0.12	Tr.	-	-	-	-	-	-	Tr.	Tr.	0.16
	U. S. Weather Bureau	18	Tr.	Tr.	-	-	-	-	Tr.	Tr.	0.01	0.02	0.02	0.06	0.02	Tr.	.02	0.01	Tr.	Tr.	0.02	1.76	0.62	0.02	0.30	0.03	2.91
		19	-	-	-	0.01	Tr.	Tr.	-	-	-	-	-	.02	.01	.05	.15	Tr.	Tr.	0.01	Tr.	Tr.	.06	.01	.04	.01	.37
		20	Tr.	0.28	0.08	.05	Tr.	0.05	0.10	0.04	.04	Tr.	Tr.	Tr.	.14	.22	.03	.02	0.19	.23	Tr.	.25	.28	.23	.10	.05	2.38
		21	0.08	.10	.21	.35	0.18	.10	.05	.08	.35	.08	.28	.43	.89	.72	.27	.35	.02	-	-	-	-	-	-	-	4.54
695 to 697	Marlboro, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	.06	.03	.04	-	-	-	-	-	-	-	-	-	.13
	U. S. Department of Agriculture, Soil Conservation Service (Average of 3 records)	18	-	-	-	-	-	-	-	-	-	-	.05	.03	-	-	.01	-	-	.01	.01	.57	.03	.02	.01	-	.74
		19	-	-	-	-	-	-	-	-	-	-	-	-	-	.83	.07	-	-	-	-	.01	.01	.13	.05	.02	1.12
		20	.01	.01	.07	.01	.06	.21	.02	.01	.03	.01	.02	-	.01	.10	.01	.12	.15	.22	.15	.24	.29	.18	.03	.01	1.97
		21	.02	.09	.21	.31	.14	.07	.12	.39	.39	.15	.17	.47	.96	.71	.33	.24	.04	-	-	-	-	-	-	-	4.81
698	Newark, N. J.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.12	.04	-	-	-	.03	.01	-	.20
	Kresge's Department Store, William Wiener, meteorologist	18	-	-	-	-	-	-	-	-	-	-	.01	.01	.04	.04	.01	.01	.01	.01	.01	.01	.01	.04	.05	.04	.30
		19	.01	.02	.01	.07	.05	.01	.14	.01	.02	.01	.01	.01	.02	.17	.50	.40	.01	.01	.06	.05	.09	.06	.10	.07	1.91
		20	.09	.01	.38	-	-	-	-	.01	.01	.01	.01	.01	.12	.15	.32	.20	.14	.09	.12	.18	.09	.10	.04	.02	2.10
		21	.14	.12	.20	.08	.08	.06	.07	.04	.14	.18	.23	.24	1.20	.35	.30	.10	.10	.20	.15	-	-	-	-	-	3.98
702	Sandy Hook, N. J.	17	-	-	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	.02	.11	Tr.	Tr.	-	-	-	-	-	-	-	.13
	U. S. Weather Bureau	18	-	-	-	-	-	-	-	-	Tr.	Tr.	Tr.	.05	Tr.	-	.01	Tr.	-	-	.07	.53	.75	.02	.28	.85	2.56
		19	Tr.	-	-	-	-	-	-	-	-	-	-	.01	Tr.	.14	.48	Tr.	Tr.	.03	Tr.	-	Tr.	.03	.02	.02	.73
		20	Tr.	.15	.33	.03	Tr.	Tr.	.15	.01	.03	Tr.	Tr.	Tr.	.02	.12	.03	Tr.	.30	.21	Tr.	.27	.26	.21	.11	.01	2.24
		21	.07	.09	.11	.34	.16	.08	.10	.11	.10	.04	.34	.30	.73	.61	.31	.28	.08	Tr.	-	-	-	-	-	-	3.85

saving time. Some confusion was introduced by the change from daylight saving time to eastern standard time. The change would normally have been made on September 25 but the Governors of Massachusetts, Rhode Island, and Connecticut deferred the change to October 2. It is not known to what extent their orders were observed. Some rain-gage charts were placed in the recording instrument according to daylight saving time and removed according to eastern standard time. Moreover, for a few records it was difficult to ascertain the standard of time that was used, so no adjustment was made, thus leaving some uncertainty with respect to time for such records.

The last column of tables 4 and 5 lists the total storm precipitation during the period between noon of September 17 and midnight of September 21, which embraces the major storm. There was generally no rain on September 16 or during the morning of September 17, and except in northern New York the storm ended before midnight of September 21, after which there were no further rains until some light rains occurred in northern and western New York on the afternoon of September 22. Figures 24 and 25 show the hourly distribution of precipitation at several selected places in the area. The observations listed in table 6 were generally read and recorded at one of four different times during the day as indicated. After inspection of the hourly rainfall records, the following rules were adopted for combining the several daily readings so as to include the total rainfall during the interval from noon September 17 to midnight September 21 and to exclude as closely as possible both the antecedent and subsequent rainfall:

1. For gages read in the afternoon, the precipitation records for September 17, 18, 19, 20, 21, and 22 were added.
2. For gages read at midnight, the records for September 17, 18, 19, 20, and 21 were totaled.
3. For gages read in the morning and recorded as of the day read, the records for September 18, 19, 20, 21, and 22 were combined.
4. For gages read in the morning and recorded as of the preceding day, the record for September 17, 18, 19, 20, and 21 were combined.

Figures 26 and 27 show daily precipitation at various representative precipitation stations from August 1 to October 31, 1938, in the area covered by this report.

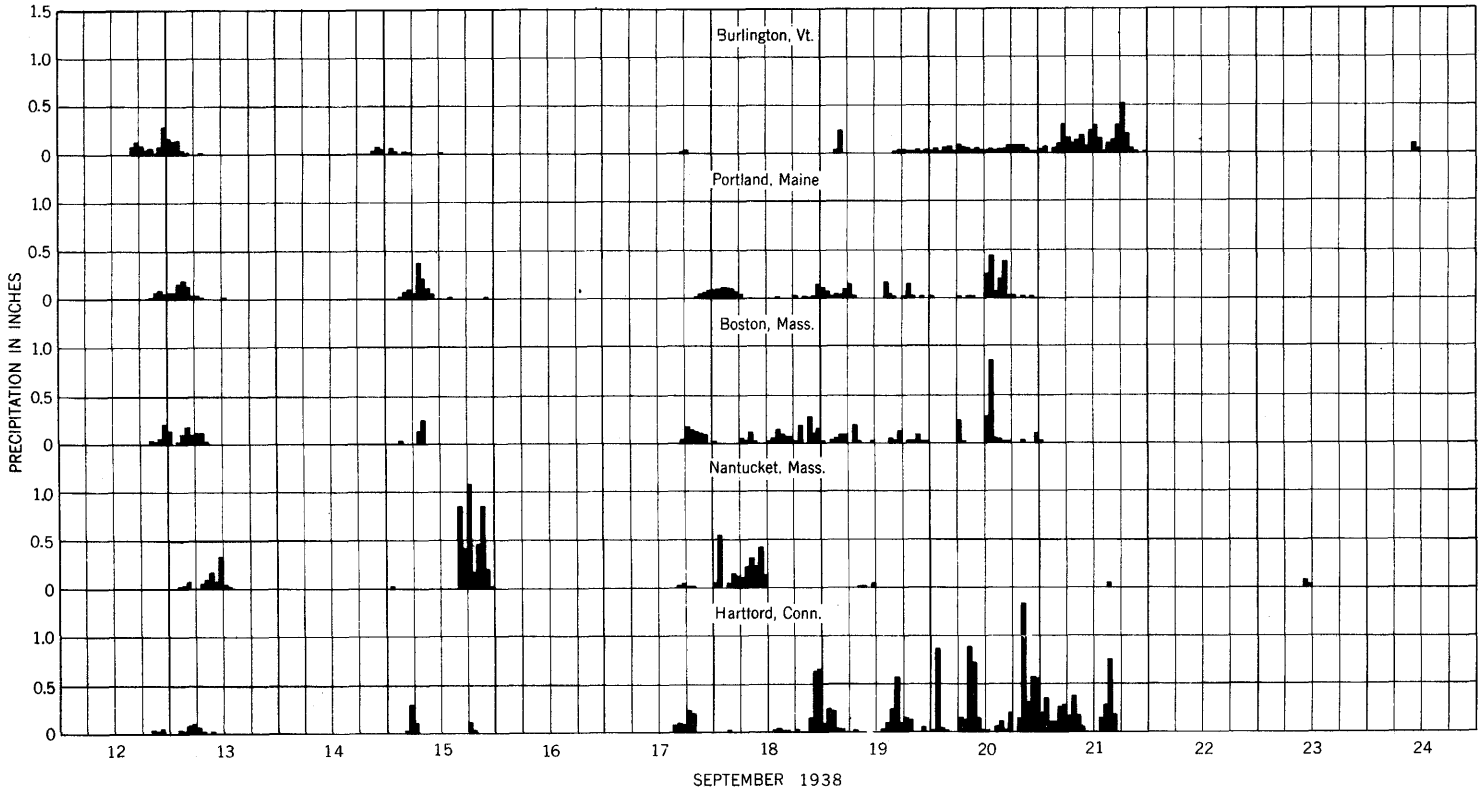


Figure 24.--Hourly precipitation, in inches, at various precipitation stations.

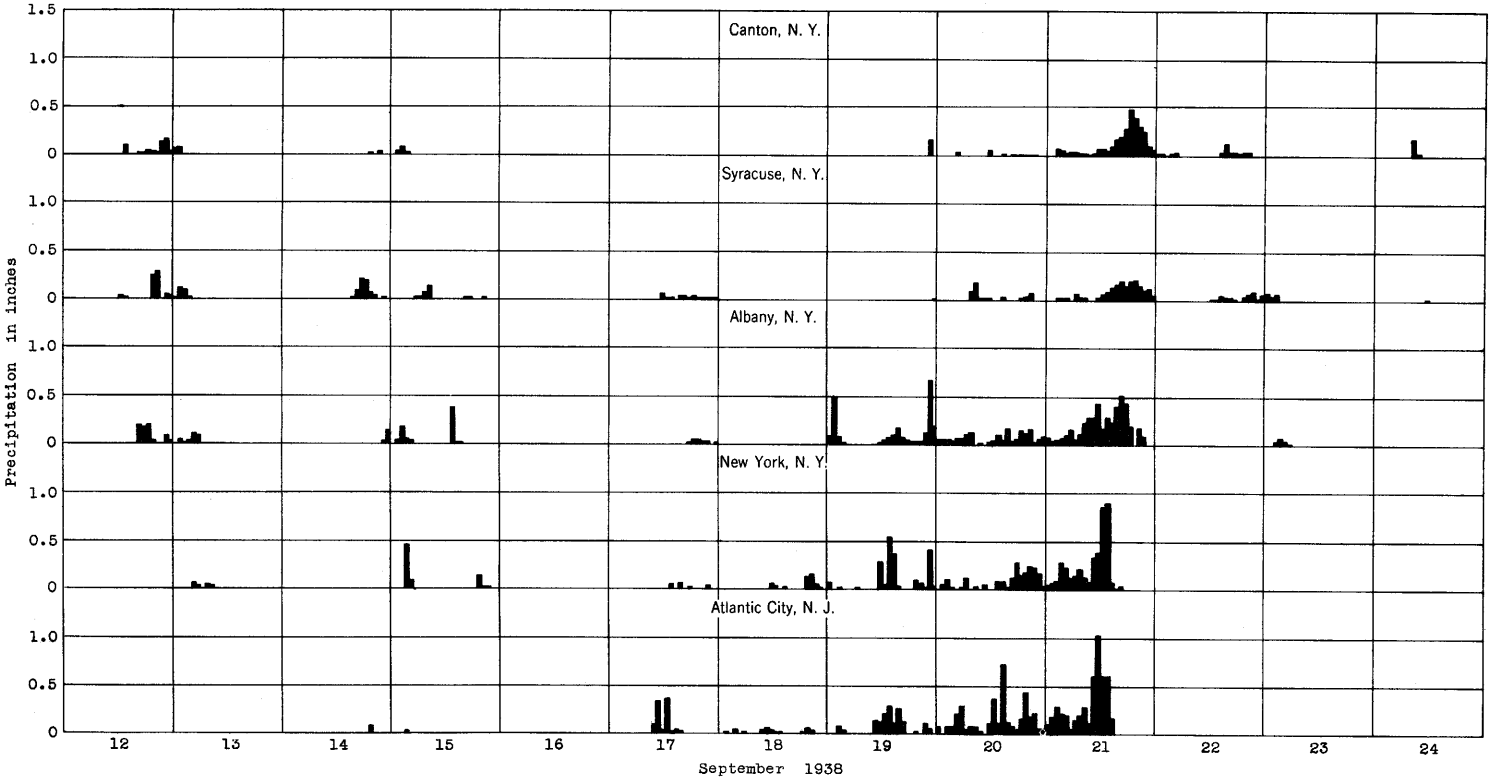


Figure 25.--Hourly precipitation, in inches, at various precipitation stations.

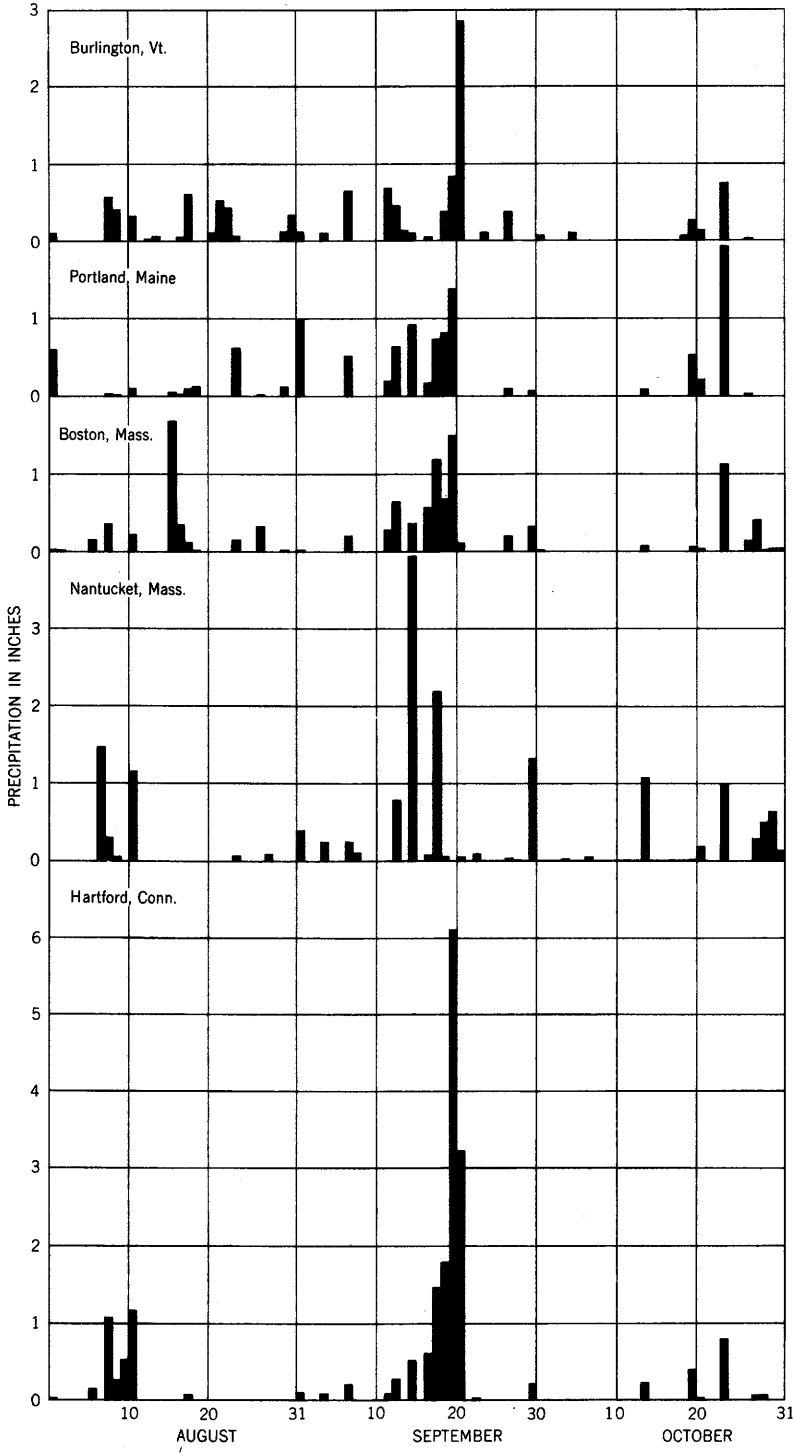


Figure 26.--Daily precipitation at various precipitation stations, August 1 to October 31, 1938.

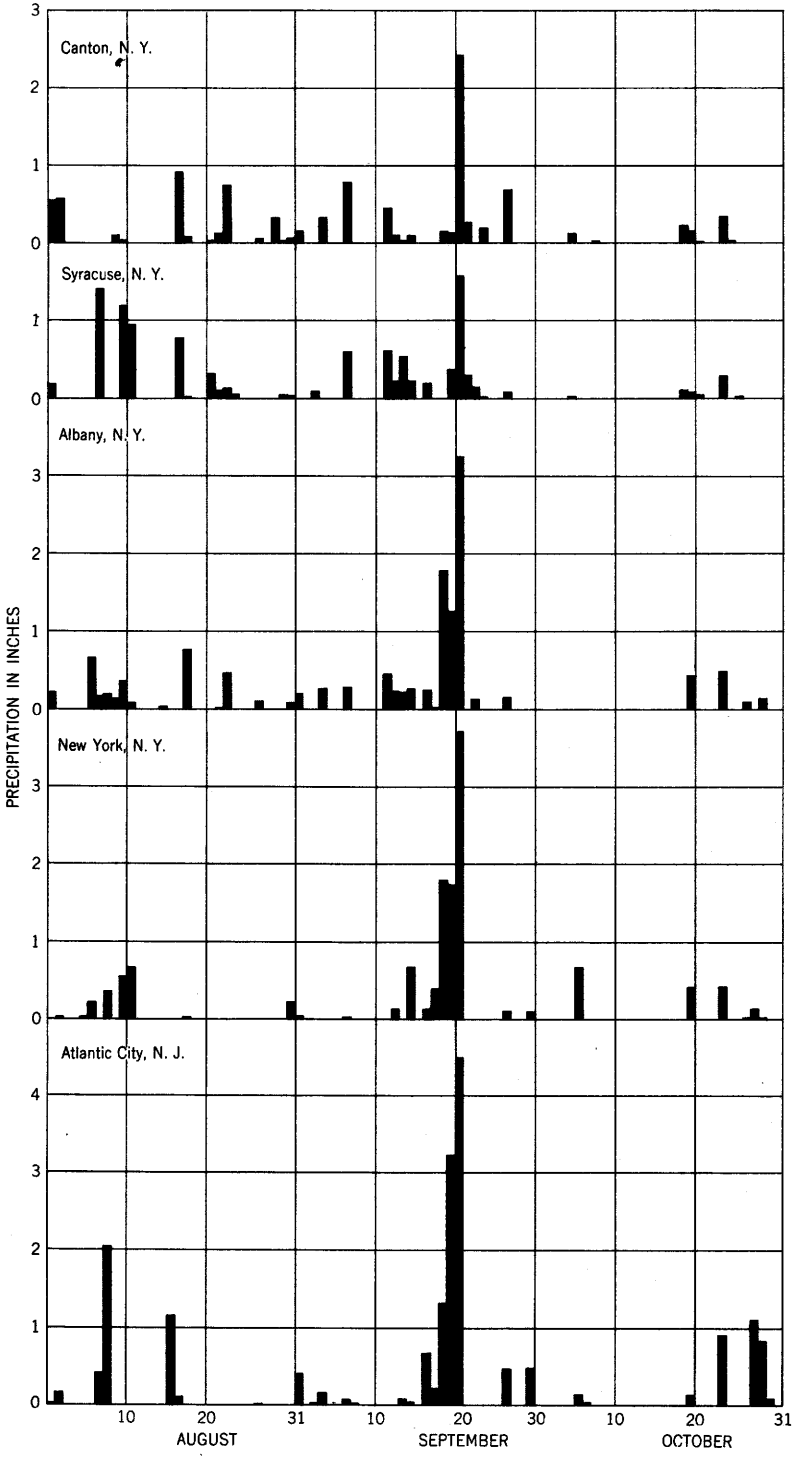


Figure 27.--Daily precipitation at various precipitation stations, August 1 to October 31, 1938.

Distribution

Figure 2 on page 9 presents an isohyetal map for the antecedent period September 12-16. Measurable precipitation fell everywhere over the area shown on the map, and the rainfall reached a maximum of more than 4 inches in west-central Vermont and at Nantucket, Mass. Over the greater part of the area the rainfall was between 1 and 2 inches, somewhat irregularly distributed, and most of the rain fell during the 24-hour periods ending on the evenings of September 12 and 15, respectively, although there were other scattered light rains.

The total precipitation during the period September 17-21, based on data listed in tables 4 and 5, is shown in figure 3 and plate 1. The ridge of maximum precipitation may be observed to occupy a well defined position across New England from Long Island Sound to New Hampshire in an axial direction about N. 20° E. The recorded maximum precipitation along this ridge exceeded 17 inches at one station in Connecticut and one in Massachusetts. Inspection of figures 5, 6, and 7, showing precipitation for three 24-hour periods respectively between September 18 and 21 as previously described indicates that the storm remained fairly fixed in position during the entire period. The steeper precipitation gradient on the easterly side of the ridge of maximum precipitation as shown on plate 1 seems to indicate that the easterly storm front was more sharply defined than the westerly.

Figures 5, 6, and 7 show the precipitation during each of the 24-hour periods ending at 6 p.m., September 19, 20, and 21. These maps were prepared by (1) plotting the measured catch at those stations where the reading was reported to have been made in the afternoon, generally between 5 and 7 p.m., (2) plotting the 6 p.m. to 6 p.m. catch at recording raingage stations, and (3) plotting the computed 6 p.m. to 6 p.m. catch at those stations read in the morning. The 6 p.m. to 6 p.m. catch at the latter stations was computed on the basis of the distribution of rainfall at nearby recording rain gages. These maps show the distribution of precipitation during the storm period and are discussed, together with other meteorologic characteristics of the storm in the preceding section of this report.

The Weather Bureau and the Corps of Engineers, United States Army, have prepared a series of maps to show the precipitation for 6-hour intervals during the storm. These maps are included in this report as figures 8 to 22 on pages 19 to 33. The precipitation from 11 a.m. to 5 p.m., September 17, and from 11 p.m., September 17, to 11 a.m., September 18,

was limited in area and was generally less than 0.50 inch, and maps showing it are therefore not included. These maps are included to make possible a more detailed study of the morphology of the storm or correlation of rainfall and run-off.

Additional light rain fell in the western and northern parts of New York between September 22 and 24 as a result of a shallow low-pressure area that developed on September 22 after the hurricane had passed northward. On the morning of September 23 this area centered over the New York-Vermont line and induced rainfall on its western side as shown in figure 4.

Area-depth relations

The area within the various isohyetal lines shown on plate 1 (in pocket) and on figures 3, 5, 6, and 7 have been planimetered and the results have been used to compute the mean areal rainfall within each of the indicated isohyetal lines. Table 7 gives the results of such computations for selected isohyetals.

Table 7.--Area-depth data for rainfall of September 17-21, 1938

Isohyetal (rainfall, in inches)	Area (square miles)	Rainfall (mean depth, in inches)
Noon Sept. 17 to 12 p.m. Sept. 21		
16	100	16.8
14	835	15.0
12	2,670	13.6
10	9,020	11.7
8	20,300	10.2
6	36,000	8.85
4	58,600	7.35
24-hour period ending 6 p.m. Sept. 19		
4	135	4.50
3	2,010	3.55
2	12,580	2.65
24-hour period ending 6 p.m. Sept. 20		
4	990	4.75
3	5,450	3.75
2	27,200	2.75
24-hour period ending 6 p.m. Sept. 21		
6	1,020	6.55
4	16,000	5.02
2	52,400	3.55

Comparison of these results with those of previous storms in the region as reported by the Miami Conservancy District (see table 8) indicate that in respect to depth of rainfall and area covered the 4-day storm of September 17-21, 1938, has not been surpassed by any storm of like duration of which there is record.

Table 8.--Depth of average rainfall in relation to areal extent for notable storms

Date of storm	Center of storm	Average rainfall, in inches, over indicated area, in square miles						Duration (days)
		1	500	1,000	2,000	4,000	6,000	
1869 Oct. 3-4 a/	Conn.	12.4	10.4	9.7	8.9	8.1	7.8	2
1897 July 12-14 a/	do	10.3	9.5	9.1	8.5	7.5	6.9	2
1903 Oct. 8-9 a/	N. J.	15.0	11.9	10.9	9.9	9.0	8.4	2
1919 July 19-23 a/	do	12.8	10.7	9.7	8.5	7.5	7.0	5
1919 Aug. 13-17 a/	do	10.2	9.9	9.6	9.2	8.4	7.7	5
1927 Nov. 3-4 a/	Vt.	9.4	9.1	8.9	8.6	8.1	7.7	2
1932 Sept. 16-17 b/	R. I.	12.2	11.2	10.4	9.4	8.3	7.8	1
1936 Mar. 9-13	New England	9.2	7.9	7.3	6.6	5.9	5.45	4
1936 Mar. 16-19	do	9.0	8.0	7.7	7.4	7.0	6.8	3
1938 Sept. 17-21	do	18.0	15.5	14.8	14.0	13.0	12.3	4

a Data given in Storm rainfall of eastern United States, part 5, Tech. Repts. Miami Conservancy District, p. 278, 1936

b Based on data of Geo. V. White, Great storm of September 16 and 17, 1932: New England Water Works Assoc. Jour., vol. 47, no. 2, pp. 164-183, 1933.

That the storm remained localized in position during the 3 days of heaviest rainfall, September 19, 20, and 21, is illustrated by table 9, which shows the average rainfall, in inches, over the indicated areas during each of the 3 days, their sum over areas of corresponding magnitude, and for comparison, the average rainfall during the storm of September 17-21, also over areas of corresponding magnitude.

It should be noted that the depths of rainfall during each of the selected storm periods, listed in columns 2 to 5, represent the average over the areas of maximum rainfall indicated in column 1. These areas of maximum rainfall were not necessarily in the same geographical position during each of the periods tabulated. The extent to which the figures in column 5 agree with those in column 6 indicates the degree of geographical coincidence of areas of maximum rainfall during the selected storm periods.

Although the total of the three separate 1-day rainfall amounts on an areal basis omits the light rainfall between the afternoon of Septembe 17 and September 18, which reached a maximum of more than 2 inches but averaged only about 0.7 inch over the entire area, table 9 nevertheless emphasizes the fact that the areas of heaviest rainfall during each of the 3 days were nearly coincident.

Table 9.--Depth of average rainfall, in inches, for indicated area and period

Area (square miles)	24-hour period ending 6 p.m.			Sum of Column 2 to Column 4	Storm of Sept. 17-21
	Sept. 19	Sept. 20	Sept. 21		
1	2	3	4	5	6
1	4.9	6.3	8.5	19.7	18.0
500	4.05	5.15	6.8	16.0	15.5
1,000	3.8	4.8	6.55	15.15	14.8
2,000	3.55	4.4	6.2	14.15	14.0
4,000	3.2	3.95	5.9	13.05	13.0
6,000	3.0	3.7	5.75	12.45	12.3
10,000	2.75	3.4	5.45	11.6	11.5

DETERMINATION OF FLOOD DISCHARGES

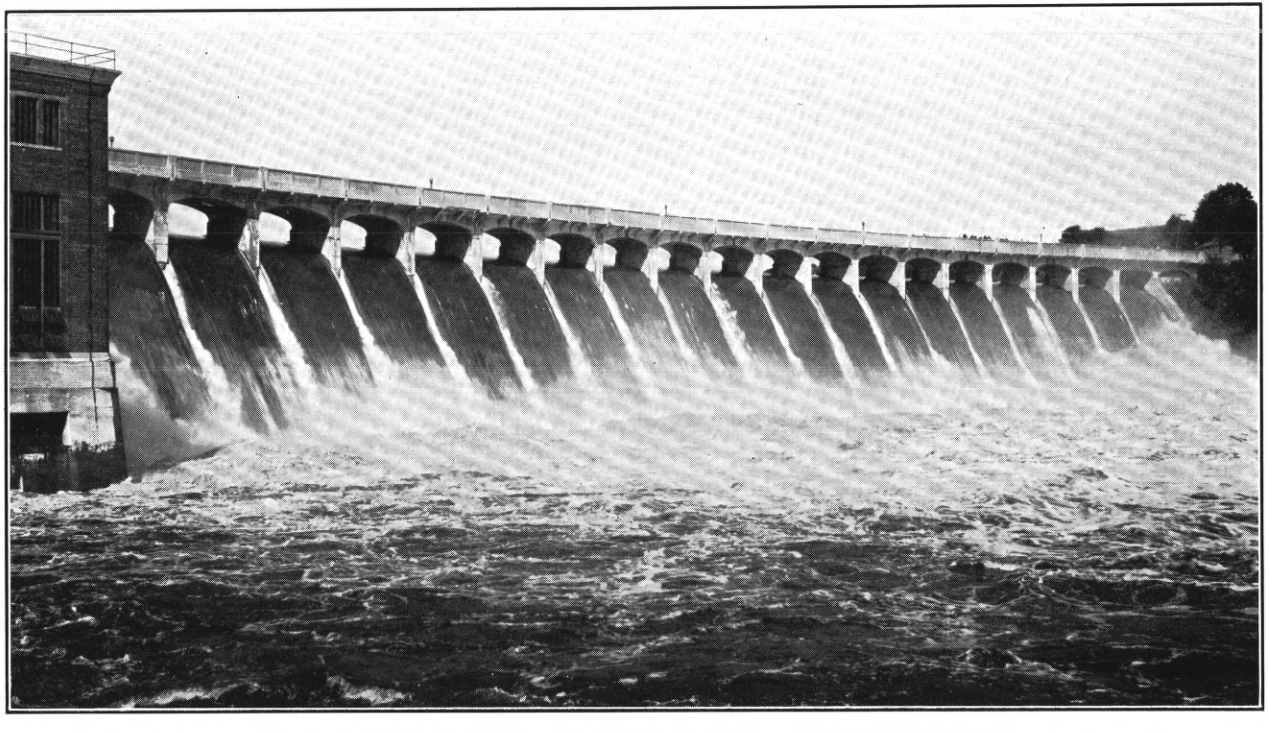
The general methods employed by the Geological Survey in the determination of maximum flood discharges at regular river-measurement stations and at locations where regular river-measurement stations are not maintained have been described in detail in several recent water-supply papers relating to floods, and repetition of the description in this volumn is deemed unnecessary.

At the regular river-measurement stations operations consist principally of the determination of a stage-discharge relation from which, under normal conditions, and from a known stage the discharge can be determined. At other places or for stages in excess of those defined by the stage-discharge relation, determinations of maximum flow have been based chiefly on (1) computation of flow over dams such as that shown on plate 10, (2) computation of flow from slope-area observations and (3) computation of flow through contracted openings. Examples and general information in regard to the use of these methods with special references to the conditions experienced by the Geological Survey in ap plying them to various severe floods are given in Water-Supply Papers 773-E, 796-G, 798, 800, and 816.

STAGES AND DISCHARGES AT STREAM-GAGING STATIONS

One of the foremost purposes of this report is the publication of useful detailed information regarding the stages and discharges of streams during the floods of September 1938 that will not be available in the summarized records of river discharge published annually in the water-supply papers of the Geological Survey. The justification for making available such detailed information rests upon the recognized need for records of flood behavior that will show not only the mean daily discharge and the maximum rates of discharge during a flood as usually published for a gaging station but also the stages and rates of discharge at frequent times throughout the flood period and will make possible a definition of conditions of stage and discharge at all stations in a basin at a given time during the progress of the flood. This detail is essential for intensive and comprehensive studies of the characteristics of floods and promotes the formulation of appropriate plans for flood protection and control. It furnishes basic information for studying the behavior of flood crests, including the incidence of crests from different tributaries of a stream, the progress of flood crests throughout a river system, and other features useful in deriving the elements necessary for forecasting flood heights and for appraising the characteristics of different basins in the shedding of flood waters. It furnishes basic information for the consideration of the feasibility of detention reservoirs, channel improvement, forest management, soil treatment, flood forecasting, and other measures with respect to their merits for ameliorating damage and losses caused by floods. Moreover, in view of the exceptional record-setting character of the floods of September 1938, it is important that full and authentic information concerning them be available for reference and guidance in connection with future urban and industrial development, with highway and bridge construction, and especially with the design of hydraulic structures in their relation to flood channels of streams.

In general, records of gaging stations published in this report relate to streams on which floods occurred or which are situated adjacent to the margins of the flooded regions and so serve to define the areal extent of the floods.



FLOOD PASSING OVER DAM ON HOUSATONIC RIVER AT STEVENSON, CONN.

Courtesy of Connecticut Light & Power Co.

Explanation of data

The basic data systematically collected at stream-gaging stations consist of records of stage, measurements of discharge, and general information useful in determining the daily flow from the records of gage heights and discharge measurements. The records of stage are obtained either by periodic direct readings on a nonrecording gage or by a water-stage recorder which provides a continuous graph of stage. Measurements of discharge are generally made by a current meter, the methods of use of which are outlined in standard textbooks. Occasionally determination of extraordinary peak flows must be made by auxiliary methods referred to in the preceding section of this report. A typical stream-gaging station is usually equipped with a water-stage recorder and cableway and a suspended car from which discharge measurements are made. Rating tables showing the discharges for indicated stages are prepared from the results of discharge measurements. At some river stations other or auxiliary devices are used in the determination of discharge, such as artificial controls, turbines, venturi meters, and gates, so calibrated as to indicate rates of discharge.

The data presented in the following tables comprise, in general, for each stream-gaging station a description of the station, a table showing the daily discharges throughout the 2-month period September and October 1938, and a table showing the stage and discharge at the indicated time during the period of major flood flow, generally September 18 to 29 inclusive, which is sufficiently detailed to permit the delineation of reasonably accurate graphs of the instantaneous stage and discharge for the flood period. The data are intended to be reasonably complete and explicit with respect to essential information, although they are presented in concise form.

The description of the station gives information concerning the type, location, and datum of the gage, the area of the drainage basin, and the record of gage heights. The information regarding gage heights describes the method of determining the stage during the flood and is of special technical significance, because the flood conditions at some localities prevented the use of the usual method of obtaining records of stage and discharge. A statement regarding the stage-discharge relation explains briefly the methods used in the definition of the rating curve over the ranges of stage occurring in the floods of September 1938 as well as of the previous maximum flood of record and gives information on conditions that affected the stage-discharge relation. The description

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also includes information with respect to other auxiliary methods used in obtaining the discharge, such as by flow through turbines or gates, or by venturi meters. The maximum stage and discharge at the gaging station are given for the floods of September 1938 and for the indicated period of record prior thereto, also at some stations for floods antedating such period of record. Miscellaneous notes and comments essential or helpful to an understanding of the record are included as remarks.

The table of mean daily discharge presents the data generally for September and October, which cover not only the period of the flood but also a time of sufficient length before and after the peak to show the relation of the flood discharges to the prevalent discharges of the late summer, thus giving a general perspective of the stream-flow conditions prior to, throughout, and subsequent to the flood rise. The table shows the mean monthly discharge for the 2 months and the volume of run-off expressed in depth in inches over the drainage area, adjusted for diversions and artificial storage when appropriate and if the information needed therefor was available. Figure 28 shows hydrographs of mean daily discharge at 10 selected stream-gaging stations for this 2-month period.

The tables showing stage and discharge at indicated times are designed to present the rise and recession of the flood in detail. In general each table begins on September 18, well before the beginning of the major flood rise, and continues through September 29, when the flood had largely passed out of the river systems. Generally, unless otherwise explained, standard time is used. This table is accompanied by supplemental records of stage and discharge when necessary to afford an adequate record for the given river-measurement station. Hydrographs of discharge showing characteristics of the flood peaks and conditions of stream flow during the flood period are shown for stream-gaging stations in the Merrimack, Thames, Connecticut, Housatonic, Hudson, Passaic, Raritan, Upper Delaware, Neversink, and Ausable River Basins in figures 29 to 39 inclusive, and on streams in Vermont tributary to Lake Champlain in figure 40.

The stages at the indicated times were obtained from the records of continuous water-stage recorders, so far as such records were available. For stations at which the records of stage were intermittent, consisting of a few gage readings a day, or for which the records were broken because of some failure in the recording system, stage graphs have been

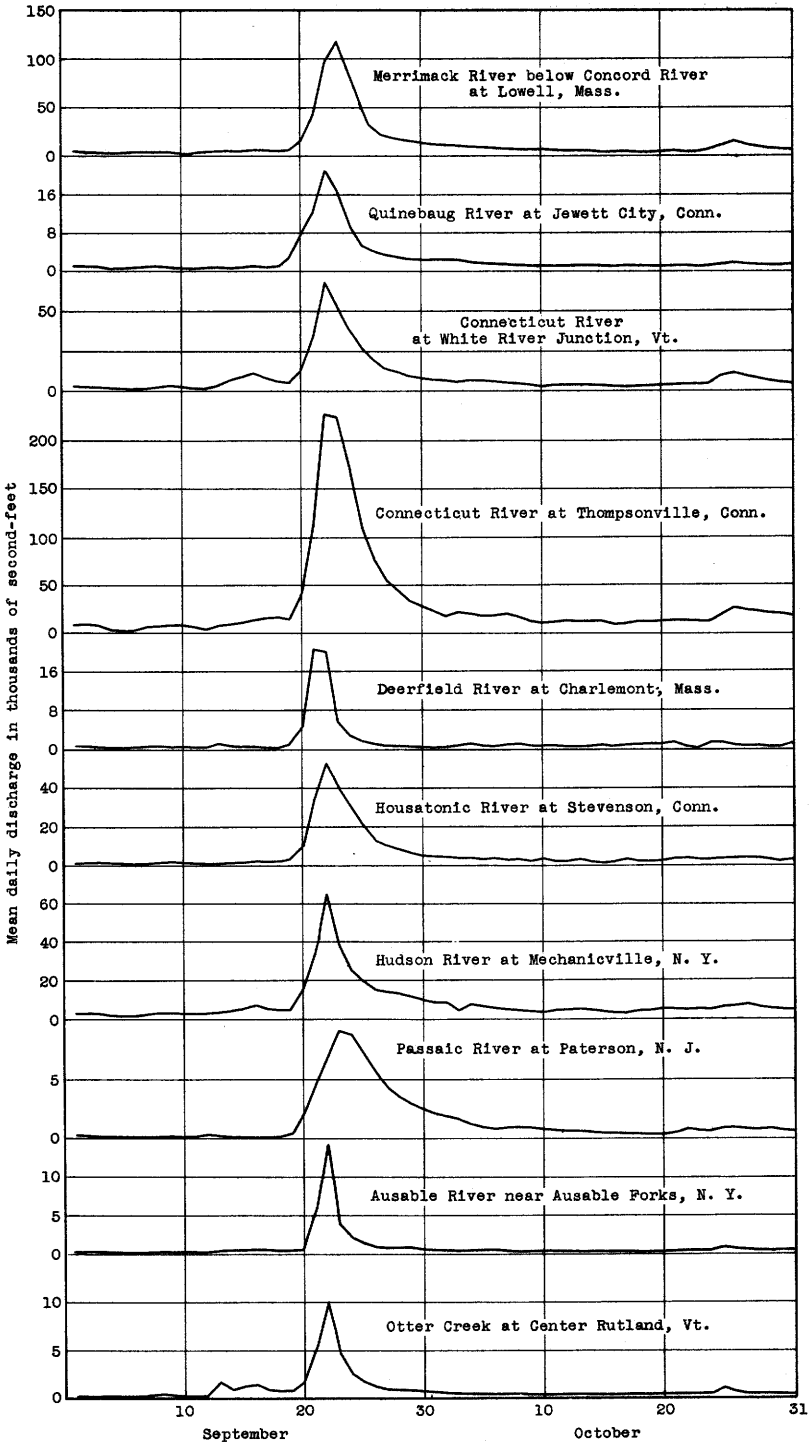

Figure 28.--Graphs of mean daily discharges at various stream-gaging stations for the period September 1 to October 31, 1938.

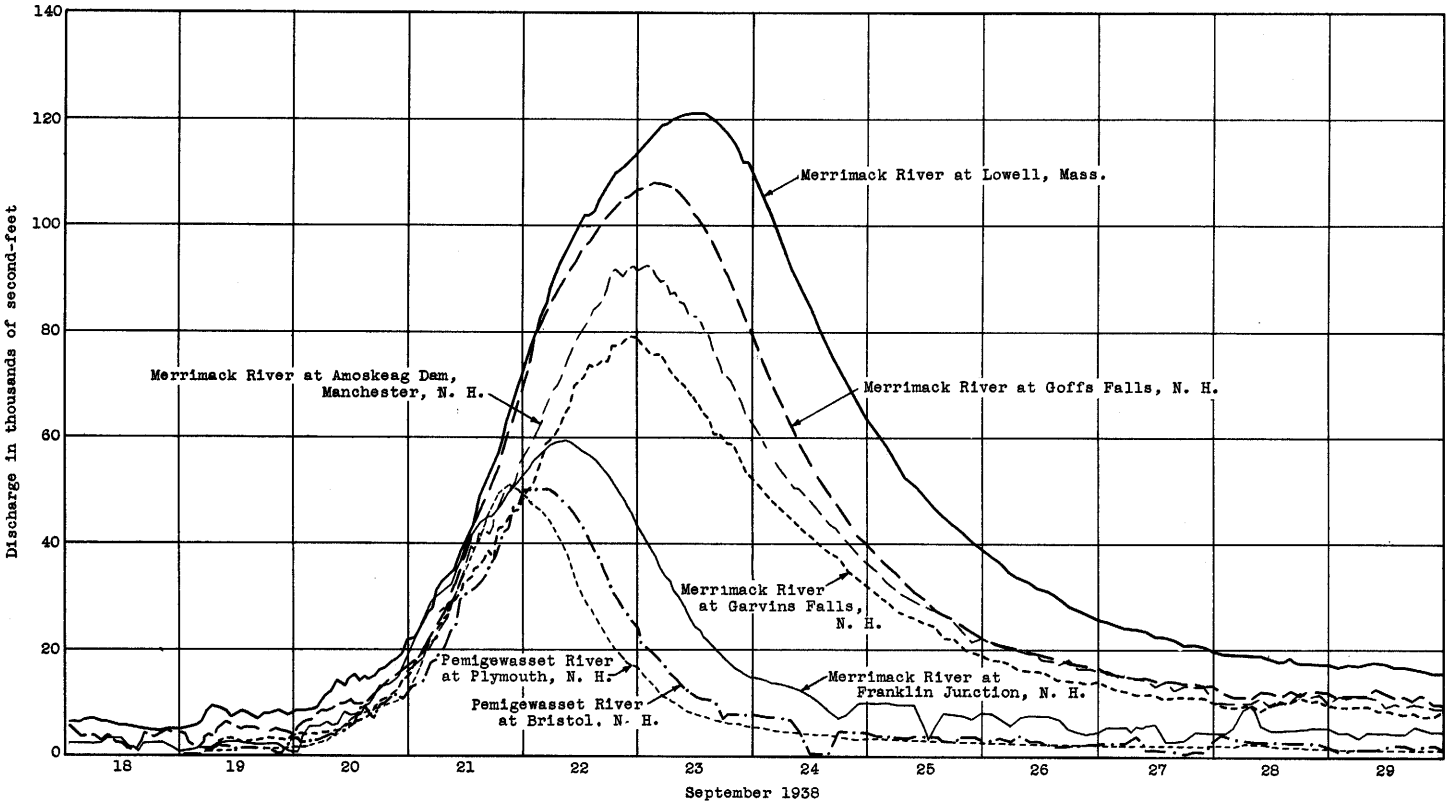

Figure 29.--Graphs of discharge at various stream-gaging stations in the Merrimack River Basin.

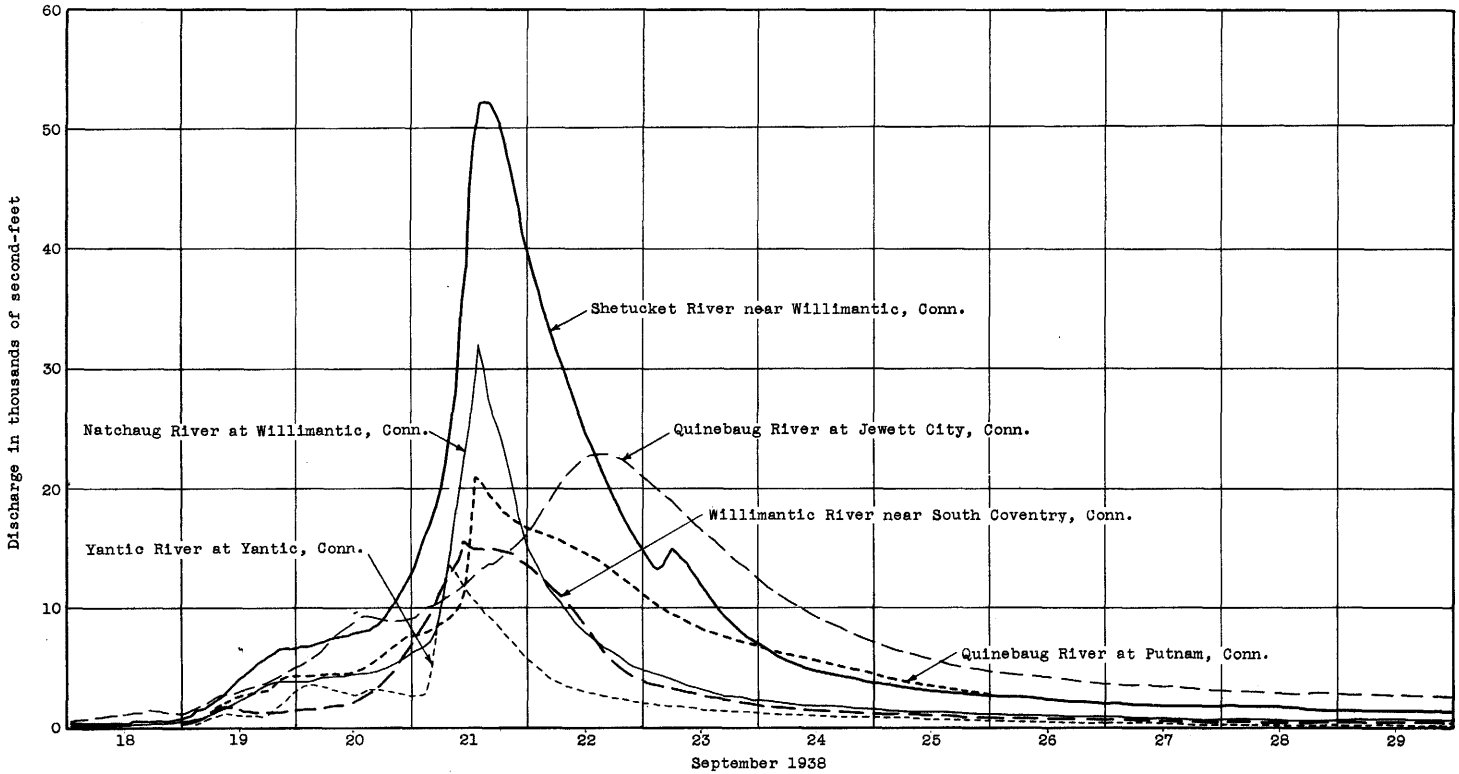

Figure 30.--Graphs of discharge at various stream-gaging stations in the Thames River Basin.

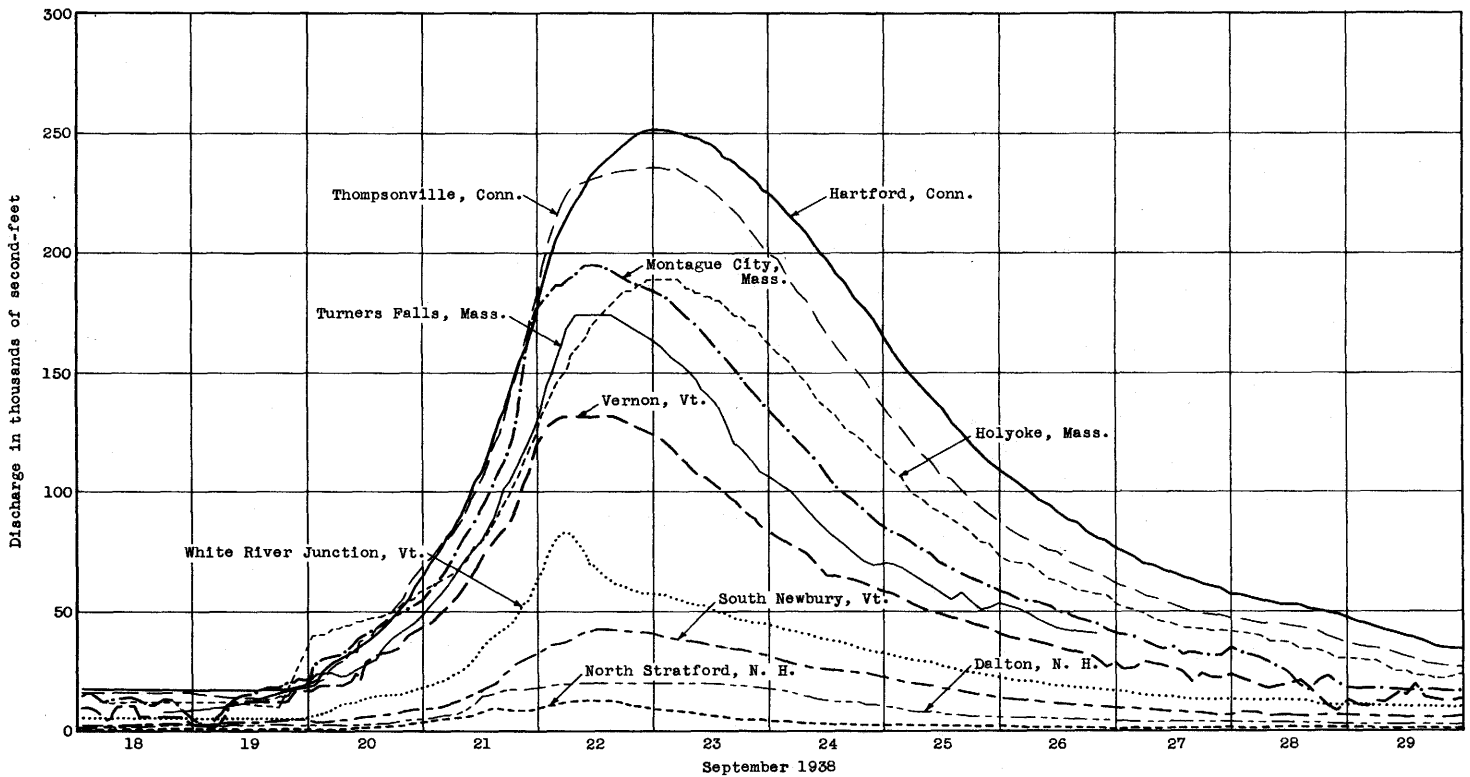

Figure 31.--Graphs of discharge at various stream-gaging stations on the Connecticut River.

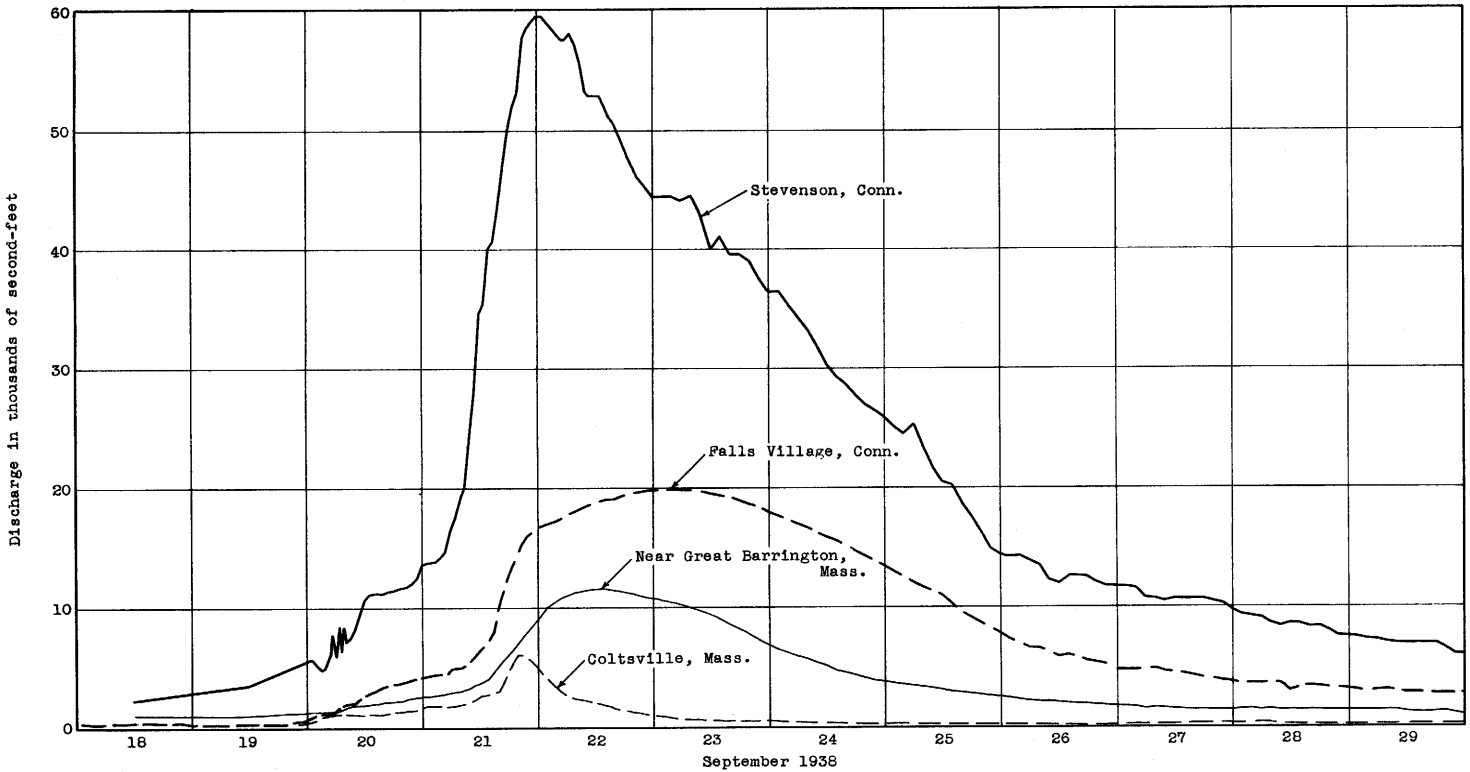

Figure 32.--Graphs of discharge at various stream-gaging stations on the Housatonic River.

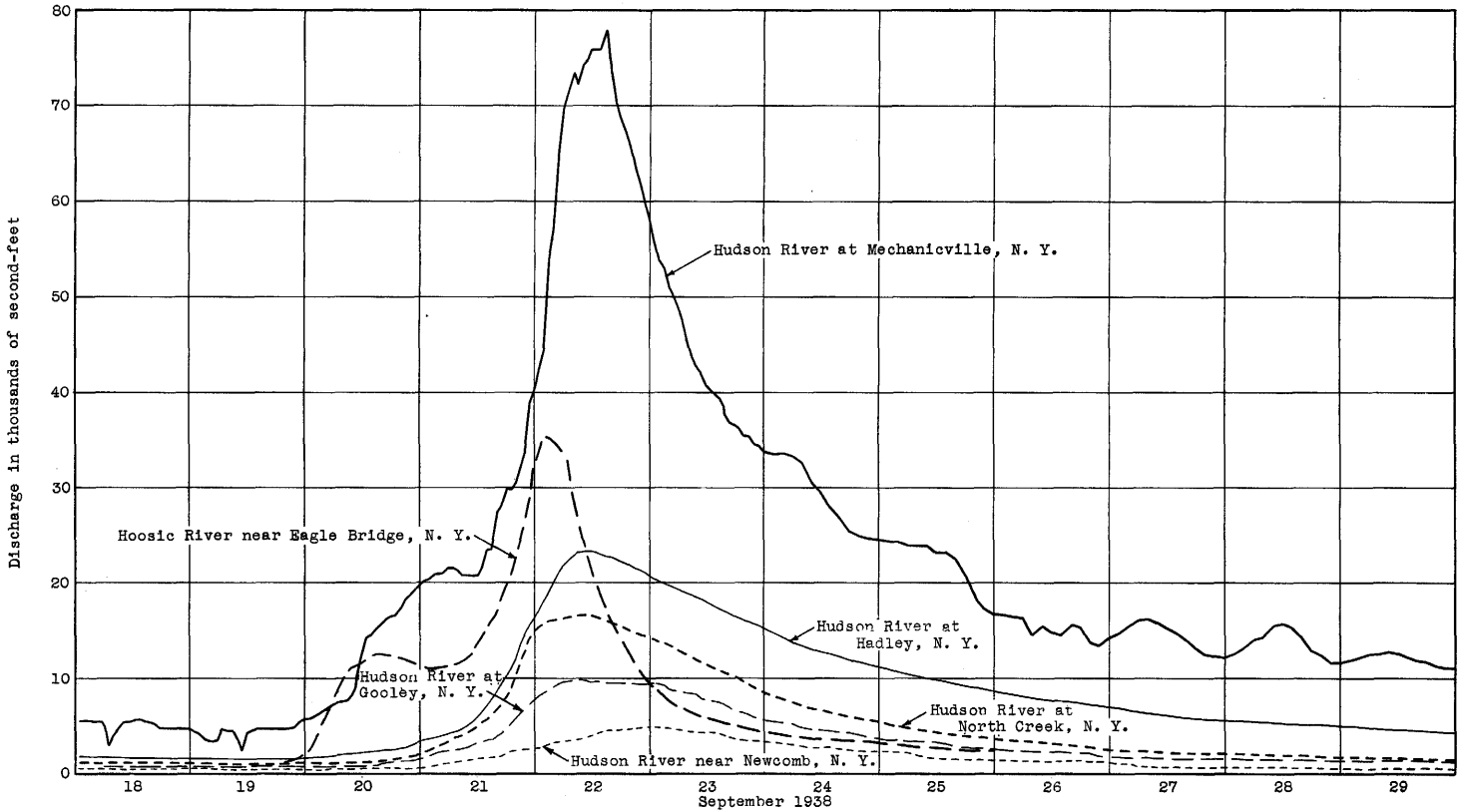

Figure 33.--Graphs of discharge at various stream-gaging stations in the Hudson River Basin.

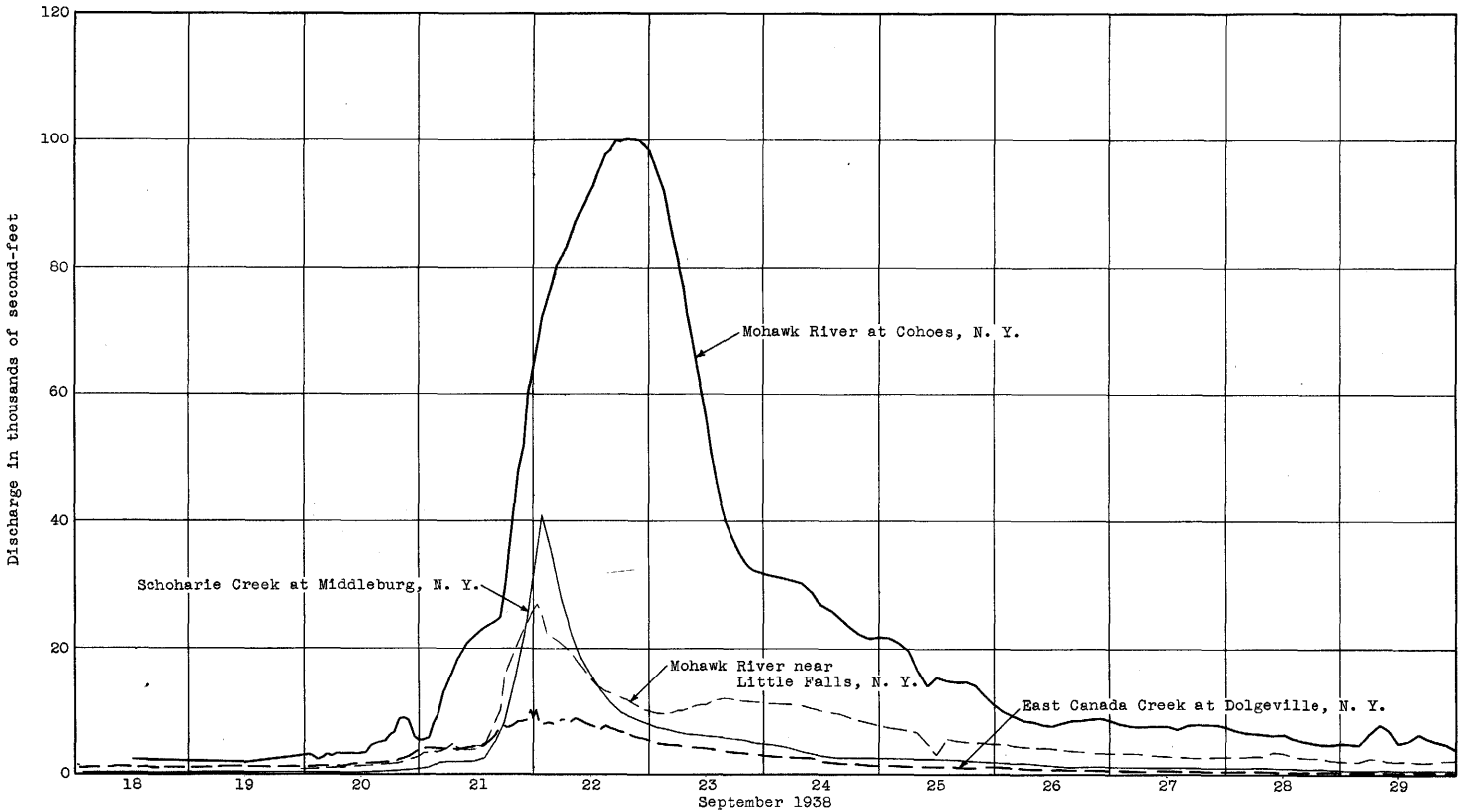

Figure 34.--Graphs of discharge at various stream-gaging stations in the Mohawk River Basin.

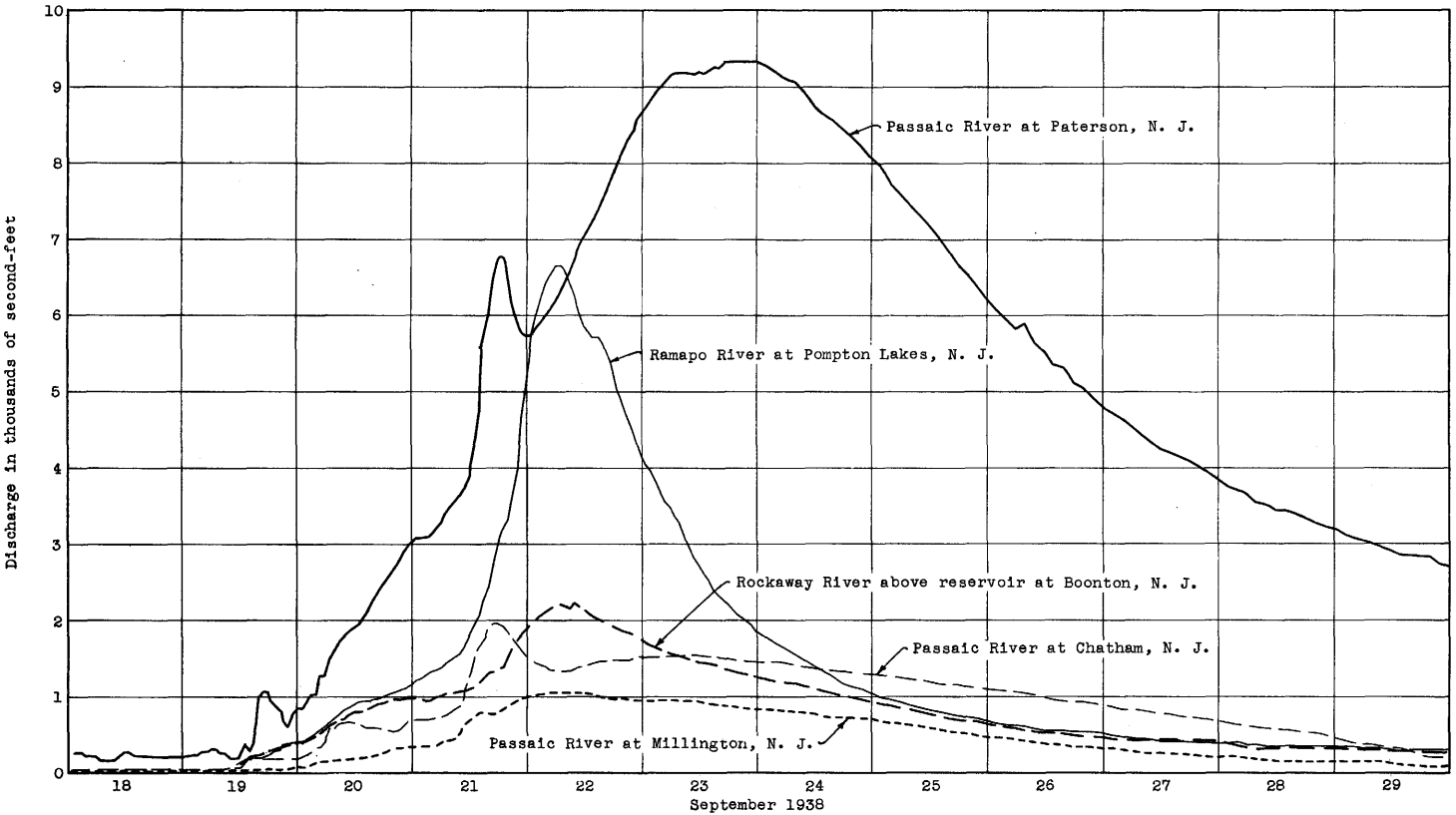

Figure 35.--Graphs of discharge at various stream-gaging stations in the Passaic River Basin.

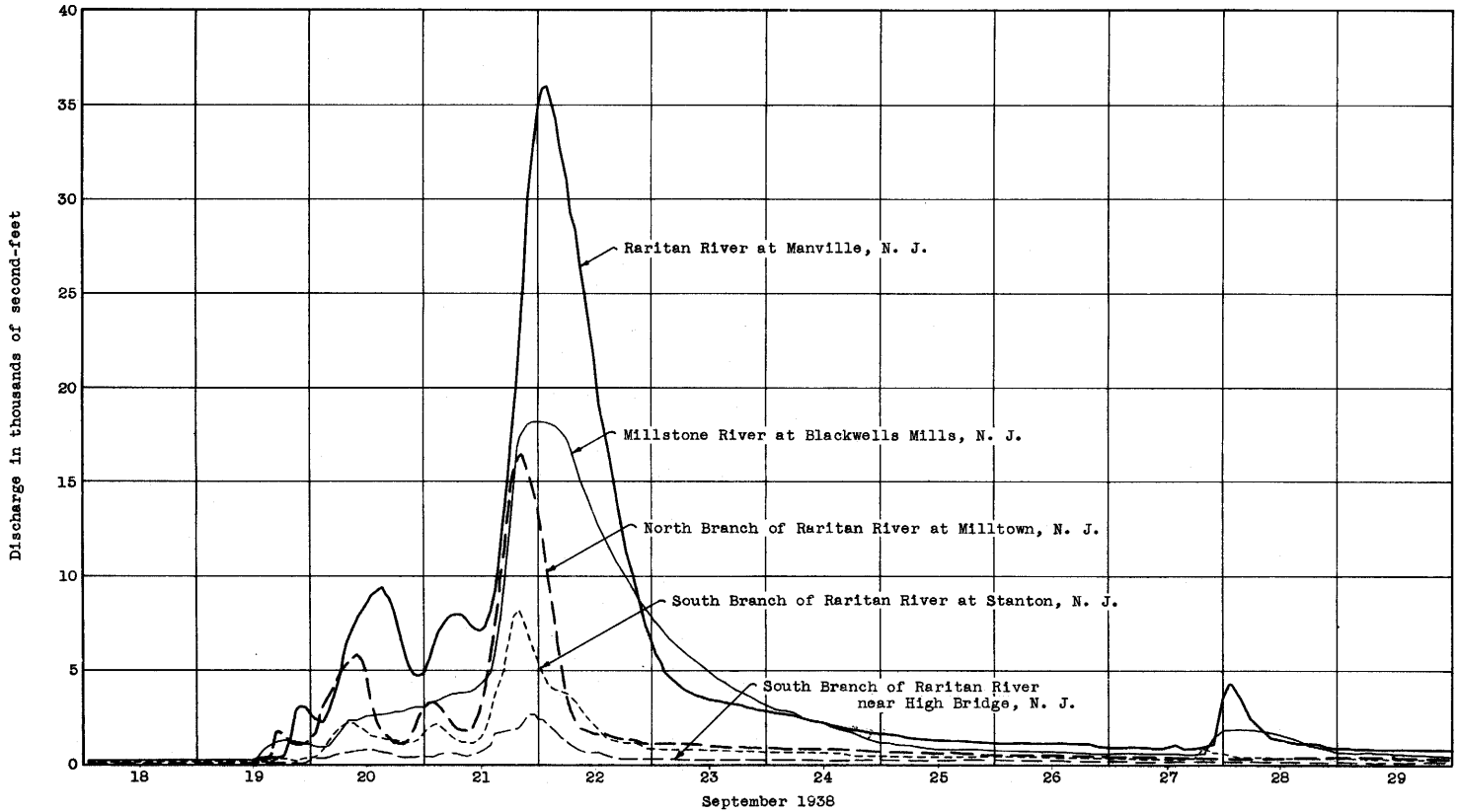

Figure 36.--Graphs of discharge at various stream-gaging stations in the Raritan River Basin.

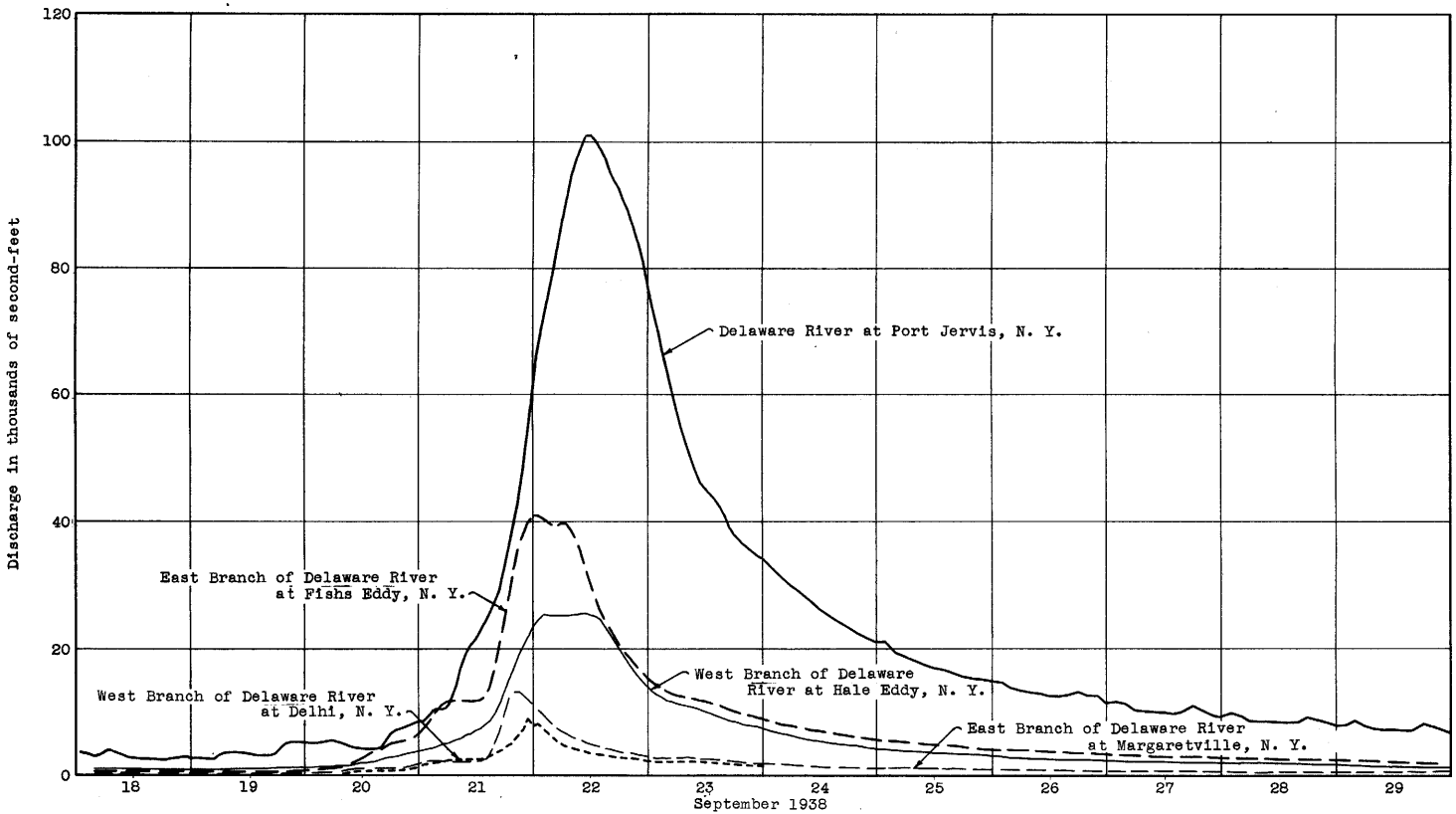

Figure 37.--Graphs of discharge at various stream-gaging stations in the Delaware River Basin.

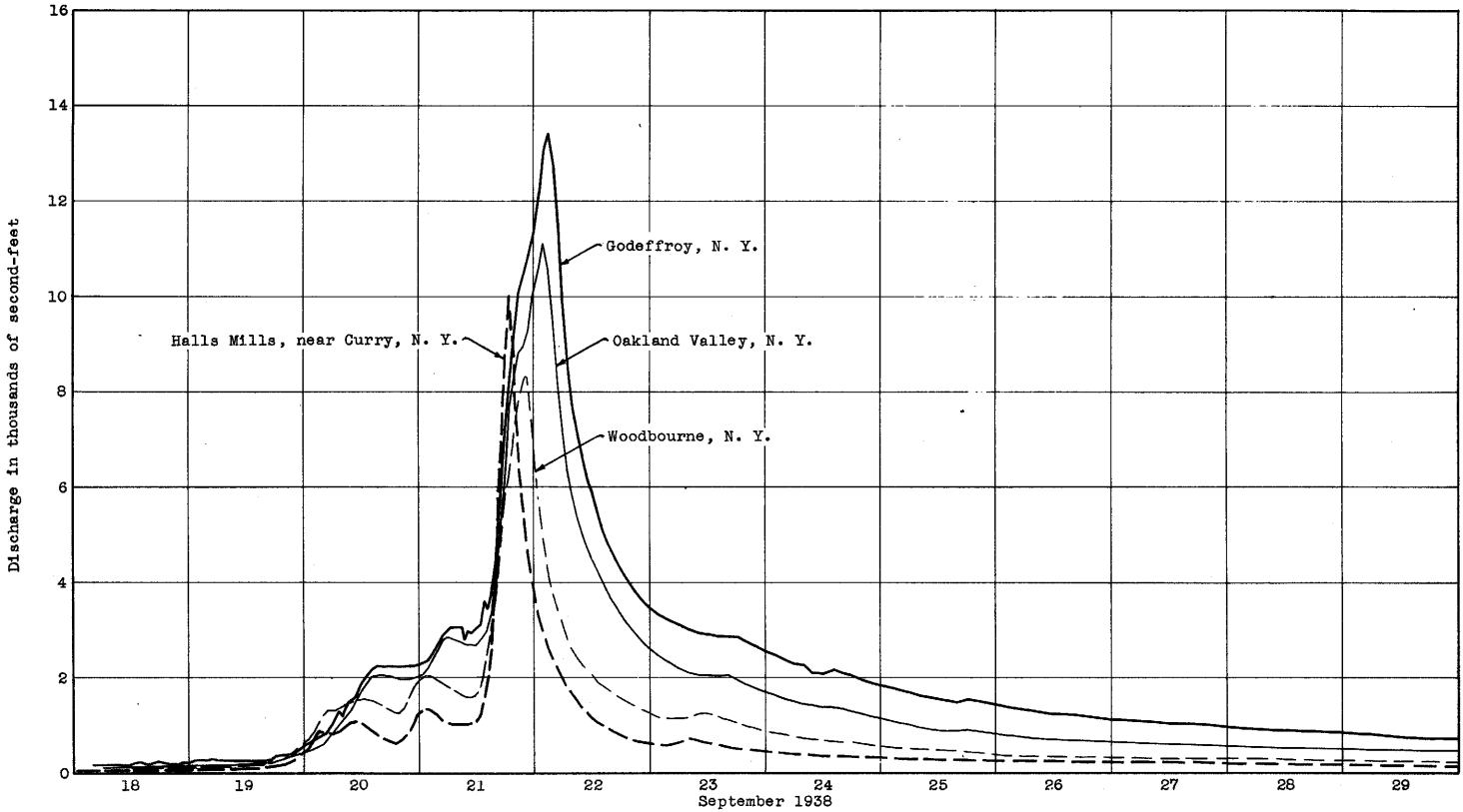

Figure 38.--Graphs of discharge at various stream-gaging stations on the Neversink River.

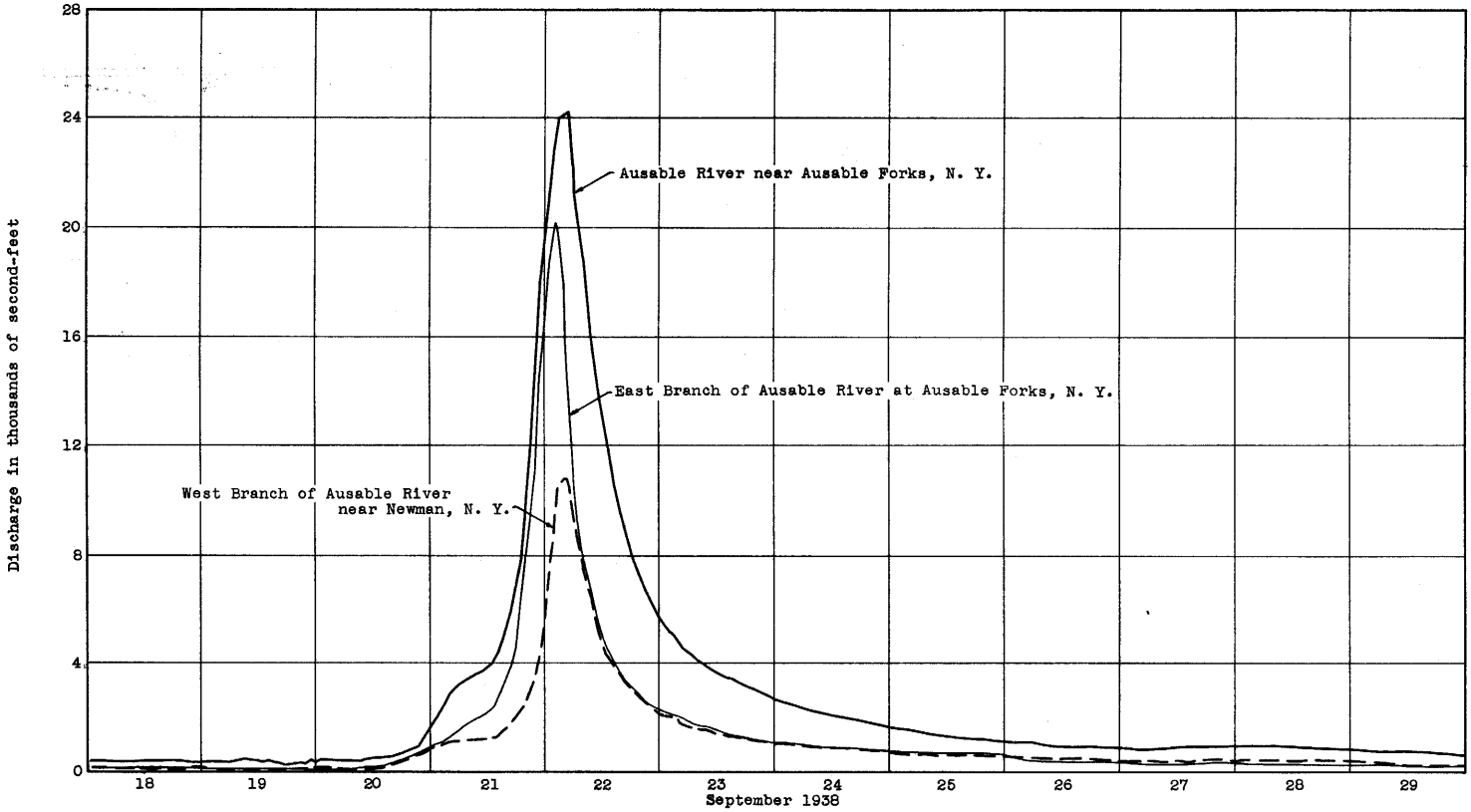

Figure 39.--Graphs of discharge at various stream-gaging stations in the Ausable River Basin.

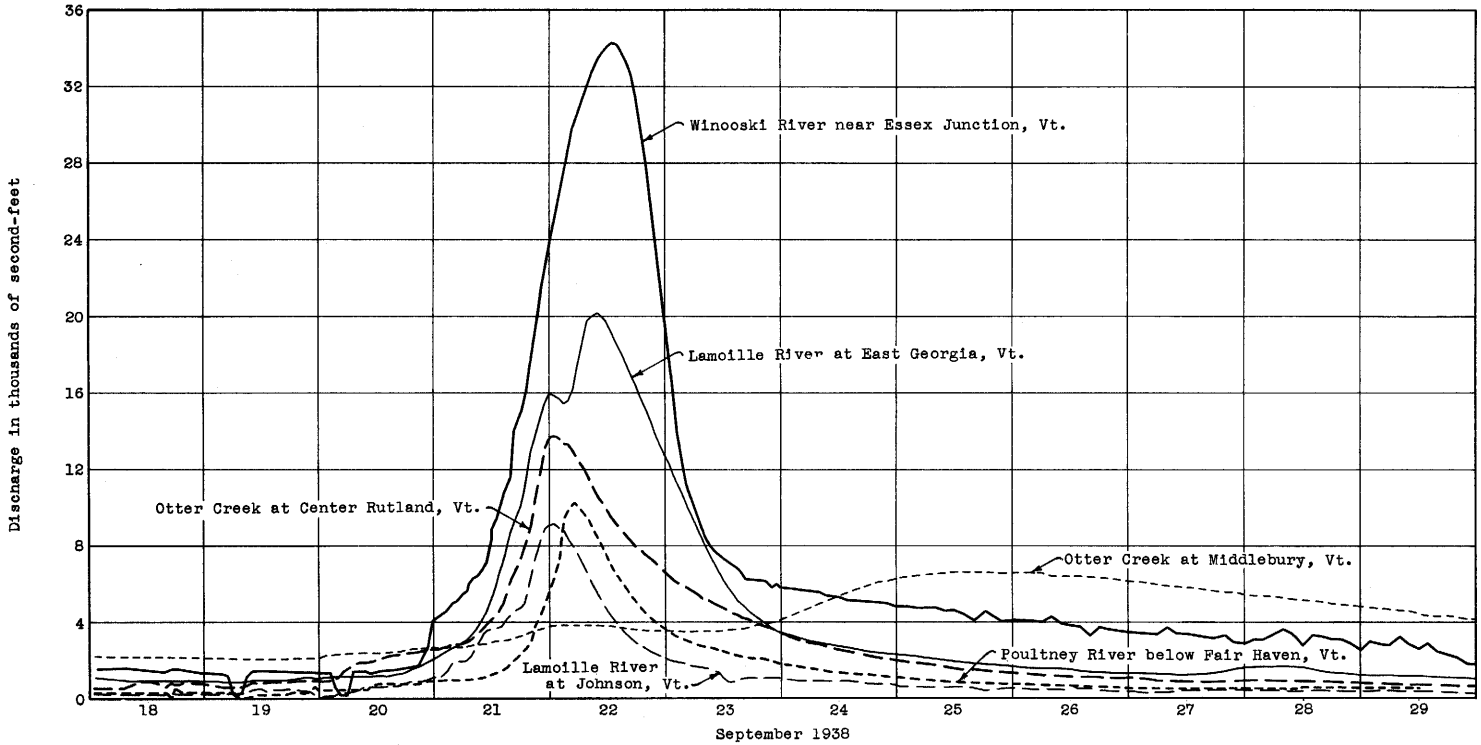

Figure 40.--Graphs of discharge at various stream-gaging stations on streams in Vermont tributary to Lake Champlain.

developed on the basis of the available information, and the stages at indicated times have been obtained from those graphs.

The discharge at indicated times is related in general to the corresponding stage in accordance with a stable stage-discharge relation, as previously discussed, but where the normal stage-discharge relation was affected by backwater or other abnormal conditions, these factors were taken into consideration in the determination of discharge. In accordance with the usual Geological Survey practice, discharge is generally shown to three significant figures.

On certain streams affected by diversions or by storage in reservoirs above the place of measurement the usual form is varied as necessary for presentation of records of discharge. On such streams the records of observed discharge are adjusted for diversions and gain or loss in storage as explained in the description accompanying the tables. The records of observed and adjusted discharges at the gage are published in the tables with appropriate reference to the source of the data on diversions and gain or loss in storage used in arriving at the adjusted discharges. The following tables present, for several reservoirs, records of stages and storage content through the flood period in a form similar to the data for the stream-gaging stations. These records are of special value in showing the influence of storage reservoirs on flood flows, in relation both to the appraisal of their effect on flood flows and to the extending of information on the natural characteristics of drainage basins in the shedding of flood waters. However, it should be understood that adjustment for the effect of artificial storage has generally been made in the following tables only to a moderate extent and only for stations situated within such distance below storage reservoirs as to make the adjustment readily determinable. For many stations the determination and application of complete adjustments would involve analyses and studies beyond the scope of the present report. The descriptive and tabular matter relating to the records is intended to define clearly the status of the modifications and adjustments introduced by storage. Further consideration of storage reservoirs as a factor influencing the September floods is presented elsewhere in this report.

The records are presented in the order regularly used by the Geological Survey in its water-supply papers. The major drainage basins are treated from north to south in order of their discharge into the Atlantic Ocean except the St. Lawrence River Basin, which follows the other basins.

In each of the major drainage basins gaging stations on the main streams are treated first, in downstream order, and then stations on tributaries in similar order beginning with the uppermost. The table of contents presents the stations in the order in which they appear herein; the index presents them alphabetically by stream and place names.

The maximum discharges at these stream-gaging stations and at other places on these streams, with other related information, are listed in table 10 on pages 382 to 410. The stations are identified on plate 11 (in pocket) by means of the index numbers shown in the first column of the table.

Reference should be made to the water-supply papers of the Geological Survey for other available published records of flow of the streams discussed in this report. The records of flow published here are based on all the information available at this time. Accelerated erosion and deposition in the river channels due to the floods has changed the stage-discharge relation at some stream-gaging stations, particularly at medium and low discharges, and all these changes may not have been fully defined in the period available for observations since the floods.

Since the publication of Water-Supply Paper 798, "The floods of March 1936, Part 1, New England Rivers", further information indicates that some records of discharge previously published should be revised. Insofar as practicable, such revisions have been included in this volume with the records for September 1938. Any additional revisions found necessary in the light of future information will be published in subsequent water-supply papers.

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Pemigewasset River at Plymouth, N. H.

Location.- Water-stage recorder, lat. 43°45'35", long. 71°41'10", just below bridge in Plymouth, Grafton County, and a third of a mile below mouth of Bakers River.
Drainage area.- 622 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 32,500 second-feet; extended to peak stage on basis of determinations of flood flow over dam. Discharges adjusted for rate of change of stage during period 11 a.m. Sept. 20 to 11 p.m. Sept. 23. Shifting-control method used for period Oct. 24-31.
Maxima.- September 1938: Maximum discharge, 50,900 second-feet 9 p.m. Sept. 21 (gage height, 23.00 feet); maximum gage height, 23.62 feet 12 p.m. Sept. 21.
1903 to August 1938: Discharge, 65,400 second-feet Mar. 19, 1936 (gage height, 29.0 feet, from floodmarks).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	464	1,270	9	416	710	17	1,360	582	25	2,910	5,040
2	736	1,150	10	342	700	18	1,040	573	26	2,240	2,300
3	460	1,020	11	328	672	19	1,010	564	27	1,900	1,660
4	399	940	12	298	672	20	6,090	555	28	1,960	1,390
5	350	890	13	1,230	645	21	34,800	800	29	1,620	1,200
6	335	830	14	1,250	627	22	33,200	990	30	1,400	1,080
7	328	790	15	1,900	627	23	8,920	800	31		980
8	460	740	16	2,360	609	24	4,280	1,100			
Mean monthly discharge, in second-feet										3,813	1,049
Run-off, in inches										6.84	1.94

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	1.90	1,360	9.42	13,300	23.61	48,500	11.60	15,500
2	1.69	1,110	1.54	931	2.02	1,520	10.00	14,900	23.52	47,500	11.05	14,500
3	-	-	-	-	2.22	1,780	10.98	17,800	23.38	46,900	10.40	13,400
4	1.68	1,100	1.56	954	2.36	1,960	11.95	20,400	23.25	46,300	10.00	12,600
5	-	-	-	-	2.55	2,200	13.00	23,400	23.02	45,000	9.40	11,600
6	1.68	1,100	1.57	965	2.74	2,450	13.80	25,600	22.76	43,700	8.93	10,900
7	-	-	-	-	3.00	2,790	14.50	27,000	22.40	42,100	8.50	10,300
8	1.68	1,100	1.57	965	3.45	3,380	15.05	28,400	22.00	40,300	8.10	9,710
9	-	-	-	-	4.10	4,260	15.60	29,700	21.50	38,600	7.73	9,150
10	1.67	1,080	1.57	965	4.72	5,130	16.10	31,100	21.00	36,400	7.40	8,660
11	-	-	-	-	5.30	5,990	16.62	32,800	20.30	34,000	7.13	8,250
N	1.64	1,050	1.57	965	5.80	6,740	17.20	34,800	19.65	32,800	6.88	7,890
1	-	-	-	-	6.20	7,310	17.80	36,800	19.05	31,200	6.68	7,580
2	1.61	1,010	1.58	977	6.45	7,650	18.45	39,000	18.40	29,500	6.45	7,240
3	-	-	-	-	6.68	7,990	19.10	40,700	17.82	28,100	6.30	7,020
4	1.60	1,000	1.60	1,000	6.88	8,300	19.70	43,100	17.20	26,500	6.15	6,790
5	-	-	-	-	7.10	8,660	20.50	46,000	16.60	25,000	6.00	6,560
6	1.59	988	1.66	1,070	7.35	9,060	21.20	47,700	16.00	23,500	5.85	6,340
7	-	-	-	-	7.60	9,440	21.90	49,400	15.40	22,200	5.73	6,170
8	1.58	977	1.68	1,100	7.78	9,710	22.50	50,500	14.80	20,600	5.63	6,020
9	-	-	-	-	7.98	10,100	23.00	50,900	14.15	19,600	5.50	5,830
10	1.56	954	1.71	1,130	8.22	10,600	23.35	50,600	13.55	18,500	5.40	5,690
11	-	-	-	-	8.52	11,200	23.55	50,000	12.90	17,500	5.30	5,540
M	1.55	942	1.79	1,230	8.85	11,900	23.62	49,200	12.25	16,500	5.20	5,400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.03	5,140	3.75	3,350	3.08	2,450	2.75	2,020	2.70	1,960	2.54	1,750
4	4.88	4,930	3.66	3,220	3.02	2,380	2.71	1,970	2.72	1,990	2.52	1,730
6	4.74	4,740	3.60	3,140	2.99	2,340	2.69	1,950	2.75	2,020	2.50	1,700
8	4.59	4,530	3.53	3,040	2.95	2,280	2.67	1,920	2.78	2,060	2.46	1,650
10	4.48	4,370	3.45	2,940	2.91	2,230	2.65	1,900	2.77	2,050	2.44	1,630
N	4.37	4,220	3.40	2,870	2.89	2,210	2.63	1,870	2.75	2,020	2.43	1,620
2	4.28	4,090	3.33	2,780	2.87	2,180	2.61	1,840	2.72	1,990	2.42	1,600
4	4.18	3,950	3.29	2,730	2.84	2,140	2.59	1,820	2.70	1,960	2.40	1,580
6	4.05	3,770	3.26	2,690	2.81	2,100	2.59	1,820	2.67	1,920	2.38	1,560
8	3.97	3,660	3.22	2,640	2.84	2,140	2.59	1,820	2.63	1,870	2.36	1,530
10	3.88	3,530	3.17	2,570	2.83	2,130	2.62	1,860	2.61	1,840	2.34	1,510
M	3.80	3,420	3.12	2,510	2.79	2,080	2.68	1,930	2.58	1,800	2.32	1,480

Pemigewasset River at Bristol, N. H.

Location.- Staff-gage, lat. 43°35'50", long. 71°43'05", at dam of Public Service Co., half a mile above mouth of Danforth Brook and 1 mile northeast of Bristol, Grafton County.
Drainage area.- 746 square miles.
Gage-height record.- Gage-height graph constructed from hourly observed gage readings. Gage heights given to tenths.
Stage-discharge relation.- Affected by flashboards on dam prior to 10 a.m. Sept. 21 and after 4 p.m. Sept. 23. Discharge ascertained from flow over dam and through wheels and gates.
Maxima.- September 1938: Discharge, 49,700 second-feet 5 a.m. Sept. 22 (gage height, 11.8 feet).
Maximum discharge known, 71,400 second-feet Mar. 19, 1936.
Remarks.- Flood run-off affected by storage in Squam Lake. Records furnished by Public Service Co. of New Hampshire.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	488	1,590	9	448	934	17	1,460	636	25	3,580	4,270
2	451	1,360	10	437	794	18	1,350	641	26	2,940	2,740
3	519	1,200	11	292	842	19	1,150	667	27	1,870	1,730
4	461	1,080	12	341	1,300	20	6,340	677	28	2,900	1,480
5	417	1,070	13	1,100	786	21	29,400	962	29	1,840	1,220
6	322	964	14	1,420	717	22	40,900	1,100	30	1,580	1,160
7	367	957	15	1,750	737	23	12,600	798	31		1,040
8	593	886	16	2,470	832	24	4,340	1,280			
Mean monthly discharge, in second-feet										4,148	1,176
Run-off, in inches										6.20	1.82

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	8.3	1,830	7.9	639	7.5	3,150	5.5	12,600	11.8	49,600	6.5	21,600
2	8.3	1,830	8.0	575	7.3	2,840	5.8	13,300	11.8	49,600	6.2	20,400
3	8.2	1,760	8.0	575	7.2	2,740	6.0	13,800	11.8	49,600	6.0	19,500
4	8.2	1,760	8.1	603	7.0	2,760	6.0	16,000	11.8	49,600	5.8	18,600
5	8.1	1,700	8.1	797	7.0	2,870	5.9	17,400	11.8	49,700	5.6	17,800
6	8.0	1,910	8.1	1,340	6.9	3,090	6.0	18,000	11.8	49,600	5.3	16,500
7	8.0	1,510	8.0	1,870	6.8	3,620	6.3	19,500	11.7	49,100	5.0	15,300
8	7.9	1,630	7.9	2,180	6.7	3,990	6.7	21,200	11.6	48,400	4.8	14,600
9	7.9	1,610	7.8	1,970	6.6	3,770	7.3	23,700	11.4	47,400	4.5	13,500
10	7.8	1,540	7.6	1,810	6.6	3,840	7.5	25,300	11.2	46,100	4.3	12,700
11	7.8	1,550	7.5	1,540	6.6	5,030	7.8	29,200	11.0	45,000	4.1	12,000
N	7.7	1,570	7.5	891	6.6	5,440	8.1	30,500	10.8	44,000	3.9	11,300
1	7.7	1,590	7.5	1,240	6.5	6,110	8.3	31,700	10.5	42,300	3.7	10,800
2	7.6	1,700	7.6	1,280	6.1	9,080	8.5	32,800	10.2	40,700	3.6	10,400
3	7.6	1,220	7.6	1,100	5.8	9,340	8.7	33,800	9.9	38,900	3.5	10,110
4	7.6	1,430	7.6	956	5.7	7,700	9.1	35,900	9.6	37,400	3.5	10,080
5	7.5	1,390	7.6	1,320	5.8	6,980	9.6	37,800	9.2	35,200	3.6	8,360
6	7.5	1,160	7.6	1,160	5.7	9,380	10.0	39,500	8.8	33,000	3.8	6,660
7	7.5	897	7.6	1,010	5.5	9,800	10.3	41,200	8.4	31,000	4.1	7,150
8	7.5	750	7.7	740	5.0	10,900	10.5	42,200	8.1	29,500	4.2	7,300
9	7.6	569	7.7	512	4.8	11,500	10.8	44,000	7.8	28,000	4.3	7,450
10	7.7	274	7.8	438	4.6	10,600	11.3	46,800	7.6	26,900	4.3	7,270
11	7.7	240	7.9	1,390	4.6	10,500	11.5	48,000	7.3	25,500	4.3	7,370
M	7.8	316	7.8	3,100	5.0	11,400	11.7	49,100	7.0	24,100	4.3	7,340
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.1	7,050	7.6	3,830	7.2	3,180	6.9	2,490	8.4	3,910	7.5	1,500
4	4.0	6,900	7.5	3,670	7.2	3,350	6.9	2,520	8.2	3,660	7.7	1,630
6	3.9	6,870	7.4	3,600	7.0	3,200	7.0	2,515	8.0	3,540	7.9	1,710
8	3.6	6,450	7.5	3,350	7.0	3,830	6.9	3,940	7.9	2,740	8.0	1,600
10	3.9	4,560	7.5	3,720	6.8	3,240	7.0	1,332	7.8	2,730	8.1	1,660
N	5.3	416	7.5	3,690	6.6	3,220	7.2	1,333	7.8	2,620	8.1	2,120
2	6.3	461	7.5	3,700	6.6	2,440	7.4	1,390	7.7	2,640	8.1	2,180
4	7.5	770	7.5	3,030	6.7	2,090	7.6	1,260	7.6	2,610	8.0	2,100
6	7.8	4,350	7.6	3,150	6.9	2,120	8.0	443	7.5	2,620	8.1	1,720
8	7.7	4,280	7.5	3,810	6.9	2,840	8.2	1,310	7.5	2,690	8.0	2,123
10	7.7	4,190	7.4	3,680	6.9	2,660	8.4	1,230	7.4	2,710	7.9	2,124
M	7.7	4,120	7.3	3,370	6.9	2,760	8.5	2,650	7.4	1,930	8.0	1,280

Pemigewasset River at Franklin, N. H.

Location.- Staff gage, lat. 43°26'50", long. 71°39'35", at dam of Public Service Co., in Franklin, Merrimack County, 0.9 mile above confluence with Winnipesaukee River.
Drainage area.- 1,000 square miles.
Gage-height record.- Graph constructed from hourly observed gage readings. Gage heights given to tenths.
Stage-discharge relation.- Affected by flashboards on dam prior to 5 a.m. Sept. 21 and after 10 a.m. Sept. 25. Discharge ascertained from flow over dam and through wheels and gates.
Maxima.- September 1938: Discharge, 54,400 second-feet 4 to 9 a.m. Sept. 22 (gage height, 11.4 feet).
Remarks.- Flood run-off affected by storage in Squam and Newfound Lakes. Records furnished by Public Service Co. of New Hampshire.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	726	1,530	9	822	887	17	1,580	1,180	25	5,440	6,450
2	850	1,730	10	209	1,250	18	1,650	869	26	4,570	2,640
3	669	1,560	11	435	1,260	19	1,370	868	27	3,180	2,520
4	576	1,410	12	675	891	20	6,940	863	28	3,770	1,800
5	457	1,180	13	1,010	1,450	21	32,200	981	29	2,840	1,140
6	430	1,400	14	1,530	1,320	22	49,100	1,130	30	2,370	1,790
7	617	1,180	15	2,040	1,270	23	18,900	1,500	31		1,420
8	731	969	16	3,590	780	24	7,320	2,210			
Mean monthly discharge, in second-feet										5,220	1,530
Run-off, in inches										5.82	1.76

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.9	1,720	6.0	884	6.2	467	5.9	16,500	10.8	50,000	8.0	32,200
2	5.8	1,710	6.0	884	6.4	2,710	6.5	18,800	11.0	51,400	7.7	30,600
3	5.8	1,710	5.9	881	6.4	3,180	6.9	20,400	11.3	53,600	7.5	29,400
4	5.8	1,710	5.8	1,290	6.4	4,470	7.0	20,900	11.4	54,400	7.2	27,800
5	6.0	1,720	5.7	1,160	6.2	4,490	6.9	20,600	11.4	54,400	6.8	25,900
6	6.1	1,730	5.7	430	6.1	4,610	6.4	23,200	11.4	54,400	6.5	24,200
7	6.1	1,730	5.7	830	5.8	5,370	6.2	24,100	11.4	54,400	6.4	23,900
8	6.1	1,910	5.8	1,380	5.6	4,700	6.2	24,000	11.4	54,400	6.1	22,500
9	6.0	2,760	5.9	1,590	5.6	4,760	6.6	26,200	11.4	54,400	5.8	21,100
10	5.9	2,750	6.0	1,830	5.6	4,700	7.0	28,200	11.3	53,600	5.5	19,900
11	5.7	2,730	6.0	2,220	5.3	6,080	7.7	31,200	11.3	53,600	5.7	18,400
N	5.5	2,560	6.0	2,230	5.1	6,140	8.1	34,300	11.2	52,800	5.6	17,000
1	5.6	1,560	5.9	2,230	4.9	6,780	8.4	36,000	11.2	52,800	5.4	16,300
2	5.7	830	5.8	1,880	5.1	5,810	8.6	37,200	11.0	51,400	5.3	15,900
3	5.9	820	5.7	1,640	5.7	6,320	8.7	37,600	11.0	51,400	5.1	15,000
4	6.0	1,100	5.7	1,640	6.2	7,690	8.8	38,200	10.6	48,600	5.2	13,500
5	6.0	1,610	5.7	1,700	6.2	10,100	9.0	39,000	10.3	46,900	5.2	13,300
6	6.0	1,640	5.7	1,640	5.5	11,400	9.2	39,500	10.0	44,900	5.2	12,300
7	6.0	1,640	5.7	1,590	5.2	11,500	9.5	41,400	9.8	43,500	4.9	11,400
8	6.0	1,690	5.7	1,590	5.2	11,600	9.7	43,100	9.6	42,400	4.7	10,500
9	5.9	1,630	5.7	1,640	5.4	11,900	10.0	44,700	9.2	39,400	4.7	10,500
10	5.8	1,120	5.7	1,320	5.8	12,700	10.3	46,700	8.9	37,600	4.6	10,100
11	5.9	425	5.7	400	5.7	11,500	10.6	48,600	8.6	35,800	4.6	9,890
M	6.0	74	5.9	0	5.6	15,300	10.7	49,400	8.4	34,600	4.6	10,100
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.6	10,100	3.7	6,970	6.0	5,310	5.8	4,290	5.9	2,631	6.0	3,120
4	4.5	9,550	3.8	7,280	5.8	5,060	5.7	4,310	6.0	2,633	5.8	3,010
6	4.5	9,550	3.8	7,280	5.9	3,700	5.6	4,260	6.3	5,050	6.0	2,020
8	4.3	9,100	3.6	6,670	6.1	5,390	5.6	4,100	5.4	6,470	6.1	2,680
10	4.2	8,780	3.3	6,330	6.1	5,580	5.7	4,230	5.5	3,950	6.0	2,700
N	3.9	7,820	4.8	2,210	6.0	5,560	5.4	3,970	5.6	3,218	6.0	2,680
2	3.1	5,490	5.9	2,100	5.8	5,510	5.5	1,480	5.8	3,221	6.0	2,700
4	2.6	4,220	5.9	5,370	5.5	4,880	6.0	1,515	6.0	3,230	6.1	2,650
6	2.3	3,520	5.7	5,320	5.4	3,110	6.1	1,525	6.1	3,840	6.0	3,690
8	2.8	5,050	5.7	4,780	5.5	3,120	6.0	2,643	6.1	3,990	5.8	3,140
10	3.2	6,100	6.0	4,810	5.8	3,080	6.0	2,638	6.1	3,780	5.9	2,640
M	3.7	6,970	6.0	5,310	6.0	3,680	5.9	2,630	6.0	3,790	6.0	2,430

Merrimack River at Franklin Junction, N. H.

Location.- Water-stage recorder, lat. 43°25'25", long. 71°39'10", at railroad bridge 1 mile below confluence of Pemigewasset and Winnipesaukee Rivers, at Franklin Junction, Merrimack County. Zero of gage is 250.4 feet above mean sea level.
Drainage area.- 1,507 square miles.
Gage-height record.- Water-stage recorder graph except for period 4:30 a.m. to 1 p.m. Sept. 22, when it was based on flood marks and shape of recorded graph.
Stage-discharge relation.- Defined by current-meter measurements below 30,000 second-feet; extended to peak stage on basis of velocity-area study at control section, verified by determinations of flood flow over dam and by slope-area method.
Maxima.- September 1938: Discharge, 59,200 second-feet 9 a.m. Sept. 22 (gage height, 29.5 feet, from flood marks).
1903 to August 1938: Discharge, 83,000 second-feet Mar. 19, 1936 (gage height, 36.4 feet, from flood marks).
Remarks.- Flood run-off affected by storage in Winnipesaukee, Squam, Newfound and other lakes. For information on storage see record for Lake Winnipesaukee at The Weirs, N. H.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,350	3,120	9	1,420	1,740	17	2,340	2,200	25	8,100	7,820
2	1,470	3,020	10	820	2,030	18	2,280	1,710	26	6,520	3,890
3	1,220	2,950	11	970	2,040	19	2,170	1,620	27	4,670	3,620
4	1,050	2,820	12	1,220	1,640	20	8,600	1,670	28	5,780	3,020
5	1,020	1,770	13	1,670	2,120	21	37,500	1,960	29	4,650	2,680
6	940	2,740	14	2,360	2,080	22	54,800	2,010	30	4,040	2,740
7	1,210	2,660	15	2,470	1,860	23	26,500	2,170	31		2,330
8	1,330	2,370	16	4,630	1,120	24	11,200	3,240			
Mean monthly discharge, in second-feet										6,810	2,541
Run-off, in inches										5.04	1.95

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.75	2,280	4.82	1,330	4.43	1,020	15.10	20,800	27.70	54,000	23.35	42,000
2	5.75	2,280	5.00	1,470	6.50	3,320	16.00	22,900	28.10	55,200	22.80	40,500
3	5.75	2,280	5.01	1,480	7.50	4,910	16.80	24,800	28.40	56,100	22.20	38,800
4	5.76	2,290	5.39	1,850	7.73	5,320	17.35	26,200	28.70	56,900	21.65	37,400
5	5.77	2,300	5.40	1,860	7.80	5,450	18.30	28,600	29.00	57,800	21.00	35,600
6	5.78	2,320	4.67	1,210	7.88	5,590	18.85	30,000	29.20	58,400	20.40	34,000
7	5.78	2,320	5.10	1,560	8.34	6,480	19.05	30,600	29.40	59,000	19.80	32,500
8	5.79	2,330	5.70	2,220	8.05	5,900	19.25	31,100	29.47	59,170	19.25	31,000
9	6.45	3,240	5.79	2,330	8.03	5,870	19.65	32,100	29.50	59,200	18.65	29,500
10	6.47	3,280	6.00	2,600	8.07	5,940	20.30	33,800	29.46	59,160	18.10	28,100
11	6.46	3,260	6.20	2,880	9.22	8,240	21.20	36,100	29.30	58,700	17.25	25,900
N	6.40	3,170	6.22	2,910	8.98	7,760	22.20	38,800	29.10	58,100	16.75	24,700
1	5.88	2,440	6.25	2,950	9.40	8,600	23.00	41,000	28.85	57,400	16.35	23,800
2	5.25	1,700	6.00	2,600	9.10	8,000	23.50	42,400	28.70	56,900	15.90	22,700
3	5.14	1,600	5.89	2,460	8.95	7,700	24.00	43,700	28.40	56,100	15.55	21,900
4	5.13	1,590	5.91	2,480	9.90	9,600	24.25	44,400	28.10	55,200	14.90	20,400
5	5.63	2,140	5.96	2,550	10.55	10,900	24.50	45,000	27.70	54,000	14.55	19,600
6	5.77	2,300	5.97	2,560	11.50	13,000	24.70	45,600	27.30	52,900	14.00	18,400
7	5.77	2,300	6.00	2,600	11.62	13,200	25.10	46,700	26.80	51,400	13.65	17,600
8	5.77	2,300	6.03	2,640	11.70	13,400	25.55	48,000	26.30	50,000	13.20	16,600
9	5.77	2,300	6.04	2,660	11.95	13,900	26.00	49,200	25.75	48,500	12.90	16,000
10	5.40	1,860	5.75	2,280	12.45	15,000	26.40	50,300	25.15	46,800	12.70	15,500
11	4.75	1,270	5.08	1,540	13.40	17,100	26.80	51,400	24.55	45,200	12.50	15,100
M	4.30	925	4.65	1,190	14.20	18,800	27.25	52,800	23.95	43,600	12.42	14,900
	September 24		September 25		September 26		September 27		September 28		September 29	
2	12.25	14,600	10.03	9,860	9.11	8,020	7.94	5,700	7.12	4,280	7.45	4,820
4	12.00	14,000	10.10	10,000	8.63	7,060	7.90	5,630	7.64	5,160	7.42	4,770
6	11.75	13,500	10.07	9,950	8.00	5,810	7.86	5,560	9.35	8,500	6.78	3,740
8	11.50	13,000	10.00	9,800	8.67	7,140	7.85	5,540	9.76	9,320	7.20	4,410
10	11.30	12,500	9.87	9,540	8.85	7,500	7.95	5,720	7.90	5,630	7.27	4,520
N	10.80	11,500	7.55	5,000	8.83	7,460	7.90	5,630	7.52	4,950	7.25	4,490
2	10.10	10,000	7.60	5,090	8.83	7,460	6.44	3,220	7.54	4,980	7.28	4,540
4	9.25	8,300	9.00	7,800	8.60	7,000	6.30	3,020	7.55	5,000	7.28	4,540
6	8.70	7,000	9.05	7,900	7.56	5,020	6.47	3,270	7.80	5,450	7.83	5,500
8	9.10	8,000	8.75	7,300	7.45	4,820	7.14	4,310	7.87	5,580	7.55	5,000
10	9.82	9,440	8.65	7,100	7.28	4,540	7.12	4,280	7.87	5,580	7.22	4,440
M	10.05	9,900	9.13	8,060	7.43	4,790	7.10	4,250	7.87	5,580	7.22	4,440

Supplemental records.- Sept. 25, 1 p.m., 6.14 ft., 2,800 sec.-ft. Sept. 27, 7 a.m., 7.42 ft., 4,770 sec.-ft. (effects of regulation).

Merrimack River at Garvins Falls, N. H.

Location.- Staff-gage, lat. 43°10'00", long. 71°30'35", at dam of Public Service Co., 0.8 mile below mouth of Turkey River, and 4 3/4 miles below upper highway bridge at Concord, Merrimack County.
Drainage area.- 2,427 square miles.
Gage-height record.- Gage-height graph constructed from hourly observed gage readings. Gage heights given to half tenths.
Stage-discharge relation.- Affected by flashboards prior to 8 a.m. Sept. 20. Discharge ascertained from flow over dam and through wheels and gates.
Maxima.- September 1938: Discharge, 86,900 second-feet 11 p.m. Sept. 22 (gage height, 11.75 feet).
Maximum discharge known, 122,000 second-feet Mar. 20, 1936.
Remarks.- Flood run-off affected by artificial and natural storage in Winnipesaukee, Squam, Newfound, and other lakes. For information on storage see record for Lake Winnipesaukee at The Weirs, N. H. Records furnished by Public Service Co. of New Hampshire.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,610	6,120	9	1,620	3,460	17	3,580	2,630	25	26,000	8,810
2	1,320	5,460	10	1,280	2,330	18	2,950	2,600	26	16,700	8,220
3	1,400	4,790	11	989	3,200	19	2,950	2,240	27	12,400	6,500
4	1,300	4,300	12	1,160	2,920	20	7,410	2,340	28	10,600	5,300
5	1,650	4,310	13	1,620	2,720	21	33,200	2,570	29	9,170	4,800
6	813	3,980	14	2,560	2,870	22	73,300	3,040	30	7,420	4,390
7	1,110	3,840	15	2,820	2,790	23	72,700	3,020	31		3,890
8	1,570	3,650	16	4,560	2,390	24	44,200	3,300			
Mean monthly discharge, in second-feet										11,670	3,961
Run-off, in inches										5.37	1.88

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.7	2,620	2.8	2,540	1.1	4,150	4.0	17,700	8.7	53,500	11.6	85,100
2	1.6	3,020	2.8	2,540	1.0	4,170	4.2	19,100	8.8	54,400	11.55	84,400
3	1.4	3,440	2.9	2,510	.9	4,040	4.4	20,400	9.05	56,900	11.5	83,800
4	1.5	3,350	2.9	2,510	.9	4,100	4.6	21,800	9.3	59,500	11.5	83,800
5	1.6	3,320	2.9	2,550	.9	4,080	4.7	22,600	9.6	62,500	11.5	83,800
6	1.7	2,690	2.9	2,510	.9	4,150	4.9	24,600	9.7	63,600	11.3	81,400
7	2.3	2,430	2.8	2,610	.8	4,350	4.9	26,600	9.9	65,800	11.1	79,100
8	2.4	2,480	2.8	2,680	.7	4,690	5.1	27,000	10.1	68,100	11.0	78,000
9	2.1	3,250	2.5	3,230	.5	4,560	5.4	29,400	10.3	70,300	10.9	76,900
10	1.95	3,540	2.2	3,520	.7	4,950	5.6	30,200	10.5	72,500	10.8	75,800
11	2.3	3,060	1.9	3,590	.7	5,540	5.8	31,600	10.8	75,800	10.7	74,600
N	2.2	2,610	2.25	2,460	1.4	6,130	6.1	33,900	10.9	76,900	10.6	73,500
1	2.5	2,680	2.2	2,620	1.4	6,580	6.1	34,000	11.0	78,100	10.5	72,300
2	2.5	2,640	2.1	2,620	1.55	7,070	6.3	35,700	11.2	80,300	10.3	70,100
3	2.5	2,620	2.1	2,640	1.7	7,200	6.4	36,500	11.2	80,200	10.2	69,000
4	2.6	2,730	2.1	2,680	1.9	8,060	6.55	37,800	11.25	80,800	10.0	66,800
5	2.65	2,610	1.85	3,200	2.5	9,400	6.75	39,600	11.3	81,500	9.9	65,700
6	2.65	2,980	1.6	3,500	2.7	10,300	7.0	38,700	11.3	81,500	9.85	65,100
7	2.5	3,530	1.5	3,060	2.8	10,900	7.75	45,400	11.6	85,100	9.7	63,500
8	2.4	3,520	1.5	3,530	3.0	12,000	7.9	45,700	11.6	85,100	9.7	63,500
9	2.3	3,550	1.5	3,500	3.1	12,500	8.0	46,800	11.65	85,700	9.4	60,400
10	2.6	2,850	1.5	3,430	3.3	13,500	8.2	48,700	11.7	86,200	9.2	58,400
11	2.7	2,610	1.6	3,380	3.6	15,100	8.3	49,600	11.75	86,900	9.1	57,400
M	2.7	2,600	1.3	4,080	3.8	16,400	8.5	51,400	11.7	86,300	9.0	56,400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.7	53,600	6.25	31,500	4.4	19,000	3.5	14,100	2.9	10,300	2.9	10,100
4	8.5	51,500	6.1	30,200	4.4	19,100	3.4	13,400	2.8	9,910	2.9	10,000
6	8.3	49,600	5.85	28,300	4.3	18,400	3.35	13,200	2.8	9,950	2.9	10,000
8	8.1	47,700	5.8	27,900	4.0	17,000	3.10	12,400	2.6	9,920	2.6	9,920
10	7.9	45,900	5.7	27,200	3.9	16,800	3.1	12,300	2.5	9,480	2.5	9,490
N	7.7	44,000	5.6	26,400	3.9	16,800	3.1	12,300	2.7	10,400	2.5	9,480
2	7.5	42,200	5.5	25,600	3.8	16,100	3.0	11,800	2.9	11,300	2.4	8,980
4	7.3	40,400	5.05	23,000	3.7	15,500	3.0	11,800	2.85	11,200	2.3	8,510
6	7.15	39,000	4.95	22,900	3.65	15,200	3.2	12,000	3.0	11,600	2.3	8,290
8	6.8	36,000	4.8	21,800	3.6	15,000	3.2	12,000	2.85	10,900	2.2	7,920
10	6.7	35,100	4.6	20,500	3.55	14,600	3.1	11,300	2.9	11,100	2.2	7,880
M	6.5	33,500	4.5	19,800	3.6	14,700	3.1	10,800	2.8	10,600	2.3	8,230

Merrimack River at Amoskeag Dam, at Manchester, N. H.

Location.- Staff gage, lat. 43°00'10", long. 71°28'10", at Amoskeag Dam in Manchester, Hillsborough County, 2 miles above Piscataquog River and 9½ miles below Suncook River.
Drainage area.- 2,854 square miles.
Gage-height record.- Graph constructed from hourly gage readings.
Stage-discharge relation.- Affected by flashboards on dam. Discharge ascertained from flow over dam and through wheels and gates.
Maxima.- September 1938: Discharge 97,600 second-feet 2 a.m. Sept. 23 (gage height, 13.7 feet).
1924 to August 1938: Discharge, 144,000 second-feet Mar. 20, 1936 (gage height, 17.1 feet).
Remarks.- Flood run-off affected by storage in Winnipesaukee, Squam, Newfound, and other lakes. For information on storage see record for Lake Winnipesaukee at The Weirs, N. H. Basic data furnished by Public Service Co. of New Hampshire.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,760	6,670	9	2,100	3,930	17	4,580	2,530	25	29,200	7,870
2	2,120	6,560	10	2,000	4,170	18	3,110	2,940	26	19,000	9,920
3	2,070	6,560	11	678	3,640	19	3,840	2,770	27	14,000	7,040
4	1,980	5,600	12	1,570	3,320	20	8,240	2,900	28	10,600	6,480
5	1,070	5,420	13	2,200	3,360	21	35,500	3,050	29	10,300	5,880
6	1,560	4,530	14	2,710	3,600	22	81,000	3,600	30	9,060	4,850
7	1,630	4,680	15	3,460	3,460	23	84,700	3,260	31		5,000
8	1,400	4,340	16	4,460	2,870	24	50,300	4,380			
Mean monthly discharge, in second-feet										13,210	4,683
Run-off, in inches										5.16	1.89

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.9	3,430	4.2	910	3.4	4,760	4.6	16,700	10.1	60,000	13.6	96,900
2	2.9	3,220	4.4	1,360	3.4	5,000	4.8	17,700	10.3	61,600	13.7	97,600
3	2.95	3,100	4.5	2,670	3.35	5,400	5.0	18,400	10.4	63,300	13.65	96,600
4	2.95	3,280	4.4	3,300	3.2	5,860	5.2	19,400	10.6	65,400	13.55	95,200
5	3.	3,380	4.4	2,760	3.1	6,200	5.4	21,400	10.85	68,100	13.45	94,200
6	3.	3,030	4.4	4,090	2.8	6,260	5.5	22,500	11.15	70,800	13.35	93,400
7	3.05	3,440	4.4	4,880	2.6	6,300	5.6	24,200	11.2	71,900	13.2	91,500
8	3.	3,320	4.2	4,780	2.3	6,720	5.9	26,000	11.4	73,900	13.2	91,700
9	3.1	2,200	3.9	4,780	1.8	7,430	6.9	29,000	11.6	76,400	13.1	90,200
10	3.25	2,260	3.9	4,500	1.6	7,430	6.9	31,200	11.8	78,800	12.9	89,300
11	3.4	2,320	3.8	4,820	1.4	6,090	7.2	34,800	12.1	81,100	12.75	87,400
N	3.8	440	3.7	4,040	1.7	6,580	7.6	37,900	12.3	82,800	12.75	86,900
1	4.2	1,600	3.6	4,330	1.8	6,780	7.7	40,600	12.5	84,700	12.8	86,700
2	4.25	2,800	3.5	4,100	2.1	6,990	7.75	40,400	12.6	86,100	12.5	84,500
3	4.25	3,150	3.4	4,100	2.3	8,120	8.0	42,800	12.8	87,800	12.5	83,000
4	4.1	3,150	3.35	4,100	2.7	8,340	8.1	43,700	12.85	88,600	12.2	80,100
5	4.15	3,150	3.3	4,050	2.95	9,430	8.45	43,600	13.15	90,800	12.0	77,500
6	4.15	3,270	3.2	4,050	3.05	9,190	8.6	45,400	13.3	93,300	11.7	75,300
7	4.2	3,770	3.2	4,050	3.25	10,900	8.9	48,400	13.35	96,100	11.6	74,100
8	4.15	4,250	3.3	4,050	3.5	11,800	9.2	51,300	13.35	96,200	11.5	72,900
9	4.15	4,250	3.35	4,240	3.75	13,400	9.3	51,800	13.4	94,700	11.3	71,000
10	4.1	4,250	3.5	3,880	4.	14,100	9.4	52,700	13.6	96,400	11.2	69,500
11	4.1	4,190	3.6	4,920	4.2	14,500	9.7	56,200	13.7	96,900	10.9	66,800
M	3.9	1,880	3.5	4,760	4.4	15,700	9.9	57,900	13.6	96,300	10.7	65,500
	September 24		September 25		September 26		September 27		September 28		September 29	
2	10.4	62,700	7.3	35,200	5.45	22,000	4.6	16,100	3.8	10,200	4.2	11,200
4	10.0	58,900	7.2	33,900	5.4	21,300	4.5	15,000	3.8	10,100	4.15	11,000
6	9.7	55,800	6.9	32,600	5.25	20,400	4.35	15,000	3.65	10,200	4.1	11,200
8	9.4	54,100	6.75	31,300	4.9	19,700	4.2	14,900	3.6	10,100	3.9	11,500
10	9.1	51,900	6.6	30,100	4.85	19,500	4.0	14,100	3.5	10,800	3.7	10,900
N	8.9	49,700	6.5	29,100	4.8	18,600	4.0	13,100	3.5	9,460	3.85	9,440
2	8.7	47,500	6.45	27,900	4.65	18,400	3.95	14,100	3.65	10,300	3.95	10,200
4	8.5	45,400	6.2	26,900	4.6	17,400	3.85	12,500	3.8	10,300	3.9	9,710
6	8.3	44,300	6.0	26,400	4.6	18,200	3.9	13,500	3.95	12,000	3.5	9,840
8	7.95	41,700	5.8	24,100	4.6	16,700	3.95	13,200	4.1	11,400	3.6	9,680
10	7.85	39,700	5.65	22,400	4.6	16,600	3.9	13,300	4.2	11,800	3.65	9,360
M	7.6	37,700	5.55	22,800	4.6	16,200	3.8	10,400	4.15	10,300	3.75	9,010

Merrimack River near Goffs Falls, below Manchester, N. H.

Location.- Water-stage recorder, lat. 42°56'55", long. 71°27'45", 0.8 mile below mouth of Bowman Brook, 1.3 miles north of Goffs Falls, Hillsboro County, and 2.3 miles below mouth of Piscataquog River.
Drainage area.- 3,092 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 51,000 second-feet; extended to peak stage on basis of determinations of flood flow over dam.
Maxima.- September 1938: Discharge, 102,500 second-feet 4 a.m. Sept. 23 (gage height, 25.87 feet).
November 1936 to August 1938: Discharge, 35,500 second-feet May 16, 1937 (gage height, 11.52 feet).
Maximum discharge known, 150,000 second-feet Mar. 20, 1936 (gage height, 35.19 feet).
Remarks.- Flood run-off affected by storage in Winnipesaukee, Squam, Newfound, and other lakes. For information on storage see record for Lake Winnipesaukee at The Weirs, N. H.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	2,050	7,950	9	2,260	4,530	17	5,840	2,820	25	29,500	9,540
2	3,410	6,850	10	2,670	4,880	18	3,740	3,520	26	18,400	11,400
3	2,620	7,020	11	1,040	3,290	19	4,730	2,850	27	13,900	8,130
4	1,540	6,000	12	1,500	3,850	20	9,890	3,740	28	11,500	6,930
5	580	5,950	13	2,640	4,200	21	38,600	3,090	29	10,900	6,350
6	2,060	5,310	14	2,910	3,830	22	89,200	4,370	30	9,590	5,280
7	2,040	5,370	15	4,040	3,920	23	94,800	3,970	31		5,470
8	1,430	4,870	16	5,310	3,650	24	56,200	5,320			
Mean monthly discharge, in second-feet										14,500	5,302
Run-off, in inches										5.23	1.97

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.30	6,150	4.60	4,100	5.10	5,500	8.00	17,000	19.30	71,000	25.75	102,000
2	4.98	5,140	4.12	2,990	5.35	6,320	8.20	17,900	20.00	74,400	25.80	102,200
3	4.60	4,100	3.64	2,110	5.36	6,350	8.55	19,500	20.60	77,300	25.85	102,400
4	4.44	3,710	3.42	1,770	5.41	6,420	8.80	20,700	21.05	79,400	25.87	102,500
5	4.45	3,730	4.10	2,950	5.78	7,840	9.12	22,200	21.45	81,400	25.85	102,400
6	4.49	3,830	4.57	4,020	5.95	8,460	9.43	23,700	21.75	82,800	25.80	102,200
7	4.40	3,610	4.43	3,680	5.95	8,460	9.80	25,400	22.05	84,200	25.70	101,800
8	4.32	3,430	4.93	5,000	5.98	8,580	10.20	27,400	22.35	85,700	25.60	101,300
9	4.52	3,900	5.23	5,920	6.10	9,020	10.70	29,800	22.65	87,100	25.45	100,500
10	4.33	3,450	5.38	6,420	6.24	9,550	11.10	31,700	22.90	88,300	25.25	99,600
11	4.08	2,910	5.25	5,980	6.25	9,590	11.75	34,800	23.15	89,500	25.05	98,600
N	3.97	2,690	5.20	5,820	6.40	10,200	12.35	37,700	23.40	90,700	24.80	97,400
1	3.80	2,380	5.08	5,440	6.21	9,440	13.05	41,000	23.65	91,900	24.55	96,200
2	3.32	1,620	5.12	5,560	6.18	9,320	13.65	43,900	23.80	92,600	24.25	94,800
3	3.07	1,280	5.12	5,560	6.24	9,550	14.10	46,100	24.05	93,800	23.95	93,400
4	4.05	2,850	5.13	5,600	6.38	10,100	14.50	48,000	24.30	95,000	23.70	92,200
5	4.60	4,100	5.06	5,380	6.58	10,900	14.95	50,200	24.50	96,000	23.30	90,200
6	4.58	4,050	4.92	4,960	6.80	11,800	15.30	51,800	24.70	97,000	23.00	88,800
7	4.44	3,710	4.85	4,770	6.98	12,500	15.80	54,200	24.90	97,900	22.65	87,100
8	4.55	3,980	5.03	5,290	7.15	13,200	16.35	56,900	25.10	98,900	22.25	85,200
9	4.76	4,520	5.06	5,380	7.32	14,000	16.85	59,300	25.25	99,600	21.85	83,300
10	4.81	4,660	4.98	5,140	7.45	14,500	17.35	61,700	25.40	100,000	21.45	81,400
11	4.78	4,580	4.92	4,970	7.62	15,300	17.90	64,300	25.55	101,000	21.05	79,400
M	4.75	4,500	4.86	4,800	7.80	16,100	18.60	67,700	25.65	101,500	20.65	77,500
	September 24		September 25		September 26		September 27		September 28		September 29	
2	19.80	73,400	12.30	37,400	8.83	20,800	7.57	15,100	6.74	11,500	6.65	11,200
4	18.90	69,100	11.90	35,500	8.70	20,200	7.46	14,600	6.65	11,200	6.64	11,120
6	18.10	65,300	11.60	34,100	8.58	19,700	7.40	14,300	6.61	11,000	6.63	10,180
8	17.40	61,900	11.20	32,200	8.54	19,500	7.32	14,000	6.54	10,700	6.66	11,200
10	16.70	58,600	10.80	30,200	8.37	18,700	7.35	14,100	6.78	11,700	6.87	12,100
N	15.90	54,700	10.50	28,800	8.30	18,400	7.31	13,900	6.74	11,500	6.75	11,600
2	15.30	51,800	10.10	26,900	8.22	18,000	7.25	13,700	6.70	11,400	6.55	10,800
4	14.70	49,000	9.90	25,900	8.12	17,600	7.25	13,700	6.80	11,800	6.58	10,900
6	14.25	46,800	9.77	25,300	8.00	17,000	7.13	13,100	6.70	11,400	6.48	10,500
8	13.65	43,900	9.52	24,100	7.88	16,400	7.09	13,000	6.86	12,000	6.60	11,000
10	13.10	41,300	9.24	22,800	7.83	16,200	7.00	12,600	6.82	11,840	6.26	9,630
M	12.80	39,800	9.00	21,600	7.70	15,600	7.03	12,700	6.80	11,760	6.22	9,480

Merrimack River below Concord River, at Lowell, Mass.

Location.- Water-stage recorder, lat. 42°38'50", long. 71°18'05", at Lowell, Middlesex County, 1,100 feet below mouth of Concord River. Zero of gage is 5.18 feet above mean sea level.
Drainage area.- 4,635 square miles; 210 square miles affected by storage and large diversions on parts of Nashua and Sudbury Rivers and Lake Cochituate Basins.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements.
Maxima.- September 1938: Discharge, 121,100 second-feet 11 to 12 a.m. Sept. 23 (gage height, 60.57 feet).
1848 to August 1938: Discharge, 173,000 second-feet Mar. 20, 1936 (gage height, 68.4 feet).
Remarks.- Flood run-off affected by storage in Winnipesaukee, Squam, Newfound, and other lakes and by diversions and storage above Wachusett Dam on South Branch of Nashua River (117 square miles); at and above Framingham Reservoir No. 1 on Sudbury River (75.2 square miles) and above Lake Cochituate (17.4 square miles). For information on storage and diversion see records for Lake Winnipesaukee at The Weirs, N. H., Wachusett Reservoir on South Branch of Nashua River at Clinton, Mass., Sudbury River at Framingham Center, Mass., and for Lake Cochituate outlet at Cochituate, Mass.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	3,870	12,500	9	3,650	6,820	17	6,980	5,770	25	49,800	10,700
2	3,790	10,700	10	2,080	7,560	18	5,860	5,070	26	31,900	15,300
3	3,510	10,700	11	1,700	6,700	19	7,570	5,040	27	23,100	12,000
4	3,040	9,900	12	3,430	5,630	20	13,700	5,000	28	18,500	9,700
5	2,460	9,300	13	3,580	6,640	21	42,800	5,580	29	16,900	8,900
6	3,920	8,500	14	4,490	6,130	22	97,300	5,080	30	13,600	8,310
7	3,760	7,930	15	4,970	5,080	23	118,000	5,740	31		8,310
8	3,640	7,190	16	6,180	5,080	24	85,400	7,560			
Mean monthly discharge, in second-feet										19,650	7,885
Run-off, in inches										4.95	2.05

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	43.87	6,480	43.48	5,220	44.36	8,340	47.18	22,200	55.20	74,600	59.92	115,000
2	43.87	6,480	43.52	5,340	44.37	8,380	47.45	23,800	55.54	77,300	60.00	116,000
3	43.90	6,590	43.60	5,580	44.38	8,420	47.70	25,200	55.89	80,100	60.10	117,000
4	43.96	6,810	43.75	6,060	44.41	8,540	47.99	26,800	56.25	83,000	60.20	118,000
5	44.00	6,960	43.83	6,340	44.50	8,900	48.15	27,800	56.55	85,400	60.28	119,000
6	44.00	6,960	44.36	8,340	44.90	10,600	48.77	31,300	56.88	88,000	60.36	119,200
7	43.97	6,850	44.58	9,220	45.15	11,800	49.03	32,800	57.25	91,200	60.44	120,000
8	43.91	6,630	44.57	9,180	45.27	12,300	49.19	33,700	57.48	93,300	60.50	120,500
9	43.85	6,410	44.47	8,780	45.68	14,200	49.35	34,700	57.68	95,100	60.53	120,800
10	43.80	6,230	44.39	8,460	45.63	14,000	49.65	36,500	57.83	96,500	60.55	121,000
11	43.74	6,030	44.08	7,260	45.45	13,100	49.96	38,400	58.00	98,000	60.57	121,100
N	43.69	5,870	44.21	7,740	45.81	14,800	50.30	40,500	58.16	99,400	60.57	121,100
1	43.65	5,740	44.38	8,420	45.96	15,600	50.62	42,400	58.35	102,000	60.56	121,000
2	43.61	5,610	44.37	8,380	45.61	13,800	50.98	44,700	58.49	102,000	60.55	121,000
3	43.60	5,580	44.22	7,780	45.83	15,000	51.55	48,300	58.64	103,000	60.50	120,500
4	43.56	5,460	44.13	7,440	45.76	14,600	51.90	50,600	58.79	105,000	60.43	119,000
5	43.46	5,160	44.01	7,000	45.88	15,200	52.24	52,900	58.93	106,000	60.34	119,100
6	43.39	4,950	44.25	7,900	46.07	16,200	52.51	54,700	59.07	108,000	60.24	118,000
7	43.30	4,690	44.29	8,060	46.19	16,700	52.80	56,600	59.20	109,000	60.12	117,000
8	43.27	4,610	44.34	8,260	46.30	17,400	53.22	59,500	59.32	110,000	59.98	116,000
9	43.33	4,780	44.41	8,540	46.47	18,200	53.68	62,800	59.45	111,000	59.80	114,000
10	43.38	4,920	44.30	8,100	46.53	18,600	54.08	65,600	59.56	112,000	59.65	112,000
11	43.40	4,980	44.18	7,630	46.73	19,700	54.45	68,600	59.69	113,000	59.47	112,000
M	43.42	5,040	44.29	8,060	47.03	21,400	54.85	71,800	59.80	114,000	59.28	110,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	55.88	106,000	53.43	61,000	49.85	37,700	47.72	25,400	46.68	19,700	46.15	17,050
4	58.42	102,000	53.03	58,200	49.60	36,200	47.62	24,800	46.62	19,400	46.17	17,100
6	57.89	97,000	52.65	55,600	49.35	34,700	47.52	24,300	46.57	19,200	46.14	17,000
8	57.40	92,600	52.29	53,100	49.20	33,800	47.52	24,300	46.57	19,200	46.20	17,300
10	56.92	88,400	51.94	50,900	49.04	32,800	47.40	23,700	46.51	18,900	46.30	17,800
N	56.46	84,700	51.64	48,900	48.82	31,600	47.21	22,650	46.40	18,300	46.20	17,300
2	55.96	80,800	51.33	46,900	48.75	31,200	47.22	22,700	46.31	17,800	46.10	16,800
4	55.49	76,900	51.04	45,100	48.54	30,000	47.12	22,100	46.34	18,200	46.12	16,900
6	55.01	73,100	50.80	43,600	48.23	28,200	47.00	21,500	46.24	17,500	46.01	16,400
8	54.60	69,800	50.58	42,200	48.12	27,600	46.99	21,480	46.28	17,700	45.98	16,200
10	54.20	66,600	50.33	40,700	47.98	26,800	46.91	21,100	46.25	17,550	45.90	15,800
M	53.80	63,600	50.10	39,200	47.85	26,100	46.78	20,300	46.25	17,550	45.89	15,800

Bakers River near Rumney, N. H.

Location.- Water-stage recorder, lat. 43°47'45", long. 71°50'45", 0.3 mile above mouth of Halls Brook and 1 3/4 miles southwest of Rumney, Grafton County.
Drainage area.- 143 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,980 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area method.
Maxima.- September 1938: Discharge, 15,900 second-feet 3 p.m. Sept. 21 (gage height, 13.03 feet).
1928 to August 1938: Maximum discharge, 19,100 second-feet Mar. 19, 1936 (gage height, 14.49 feet).
Maximum discharge known, 25,900 second-feet Nov. 3, 1927 (gage height, 17.4 feet, from flood marks).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	62	326	9	55	111	17	254	72	25	546	874
2	66	202	10	46	105	18	189	78	26	405	433
3	53	180	11	38	102	19	186	76	27	343	314
4	48	162	12	35	97	20	2,030	78	28	400	254
5	44	144	13	378	94	21	9,790	228	29	306	218
6	40	134	14	242	92	22	5,560	191	30	254	191
7	43	121	15	433	86	23	1,330	140	31		165
8	60	115	16	469	83	24	788	401			
Mean monthly discharge, in second-feet										816	186
Run-off, in inches										6.37	2.14

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.10	210	3.00	172	3.52	393	7.03	3,900	11.57	12,600	5.38	1,810
2	3.09	206	3.00	172	3.70	485	7.21	4,180	11.41	12,300	5.33	1,750
3	3.08	202	3.00	172	3.89	594	7.46	4,580	11.10	11,700	5.28	1,700
4	3.07	199	3.00	172	4.15	758	7.71	5,010	10.65	10,700	5.21	1,630
5	3.07	199	2.99	168	4.35	895	7.90	5,350	10.04	9,480	5.16	1,580
6	3.06	195	2.99	168	4.63	1,100	8.03	5,580	9.54	8,480	5.10	1,520
7	3.06	195	2.99	168	5.05	1,470	8.06	5,640	8.92	7,260	5.05	1,470
8	3.06	195	2.99	168	5.38	1,810	8.11	5,730	8.42	6,310	5.00	1,420
9	3.05	191	2.99	168	5.58	2,030	8.64	6,730	7.98	5,490	4.97	1,390
10	3.05	191	2.99	168	5.63	2,090	9.27	7,940	7.60	4,820	4.92	1,350
11	3.04	187	2.99	168	5.62	2,070	10.10	9,600	7.32	4,350	4.89	1,320
N	3.04	187	2.99	168	5.57	2,020	10.80	11,000	7.05	3,920	4.84	1,280
1	3.04	187	2.99	168	5.61	2,060	11.61	12,700	6.81	3,560	4.80	1,240
2	3.04	187	2.99	168	5.72	2,190	12.50	14,700	6.60	3,270	4.77	1,220
3	3.03	183	2.99	168	5.91	2,420	13.03	15,900	6.40	3,010	4.72	1,180
4	3.03	183	2.99	168	6.12	2,670	13.01	15,800	6.25	2,830	4.69	1,150
5	3.03	183	3.00	172	6.27	2,850	12.80	15,300	6.10	2,650	4.66	1,130
6	3.02	180	3.02	180	6.33	2,930	12.39	14,400	6.00	2,530	4.63	1,100
7	3.02	180	3.06	195	6.35	2,950	11.96	13,500	5.88	2,390	4.60	1,080
8	3.02	180	3.10	210	6.37	2,970	11.60	12,700	5.77	2,250	4.57	1,060
9	3.01	176	3.15	230	6.46	3,090	11.31	12,100	5.70	2,170	4.53	1,020
10	3.01	176	3.19	246	6.61	3,280	11.30	12,100	5.62	2,070	4.50	1,000
11	3.01	176	3.27	279	6.79	3,540	11.40	12,300	5.54	1,980	4.48	986
M	3.00	172	3.37	323	6.91	3,720	11.53	12,600	5.45	1,880	4.45	965
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.40	930	3.95	630	3.62	443	3.43	350	3.60	433	3.40	336
4	4.35	895	3.92	612	3.61	438	3.42	345	3.61	438	3.38	327
6	4.30	860	3.89	594	3.59	428	3.41	341	3.60	433	3.37	323
8	4.27	839	3.86	576	3.58	423	3.40	336	3.59	428	3.36	318
10	4.22	804	3.83	558	3.56	413	3.39	332	3.58	423	3.34	310
N	4.18	777	3.80	540	3.55	408	3.38	327	3.55	408	3.32	301
2	4.15	758	3.78	529	3.52	393	3.37	323	3.52	393	3.31	296
4	4.11	762	3.75	512	3.51	388	3.37	323	3.50	383	3.30	292
6	4.08	712	3.72	496	3.50	383	3.40	336	3.48	362	3.30	292
8	4.03	680	3.70	485	3.48	374	3.43	350	3.46	364	3.29	288
10	4.01	666	3.67	469	3 46	364	3.47	370	3.44	355	3.28	284
M	3.98	648	3.66	464	3.44	355	3.55	408	3.42	345	3.26	275

Smith River near Bristol, N. H.

Location.- Water-stage recorder, lat. 43°34'00", long. 71°44'50", in Hill township, Merrimack County, 1 3/4 miles southwest of Bristol, Grafton County. Zero of gage is 449.85 feet above mean sea level.
Drainage area.- 85.8 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,560 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area method and through contracted opening at gaging station.
Maxima.- September 1938: Discharge, 5,070 second-feet 5 a.m. Sept. 22 (gage height, 10.77 feet).
1918 to August 1938: Discharge, 8,100 second-feet Mar. 19, 1936 (gage height, 16.09 feet, from floodmarks), by contracted-opening method.
Remarks.- Flood run-off not materially affected by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	28	141	9	26	84	17	114	66	25	483	318
2	25	126	10	22	75	18	88	64	26	317	257
3	24	115	11	20	73	19	108	62	27	253	191
4	22	106	12	18	69	20	566	62	28	222	158
5	19	99	13	90	76	21	3,390	99	29	191	141
6	20	91	14	128	78	22	4,470	134	30	160	131
7	20	86	15	139	72	23	1,780	130	31	-	156
8	24	84	16	170	68	24	785	169			
Mean monthly discharge, in second-feet										457	116
Run-off, in inches										5.95	1.56

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.63	101	2.44	83	3.44	226	6.60	1,870	10.47	4,860	8.01	2,990
2	2.65	104	2.50	88	3.45	228	7.50	2,580	10.59	4,940	7.80	2,820
3	2.64	102	2.52	90	3.49	237	7.75	2,780	10.71	5,030	7.61	2,670
4	2.61	99	2.51	89	3.58	257	7.45	2,540	10.75	5,060	7.44	2,530
5	2.58	96	2.49	87	3.69	283	7.08	2,240	10.77	5,070	7.26	2,390
6	2.55	93	2.47	85	3.78	305	6.95	2,140	10.75	5,060	7.10	2,260
7	2.52	90	2.46	84	4.02	372	6.98	2,160	10.71	5,030	6.95	2,140
8	2.51	89	2.46	84	4.09	395	7.10	2,260	10.66	4,990	6.80	2,020
9	2.49	87	2.46	84	4.11	402	7.65	2,700	10.58	4,940	6.65	1,900
10	2.48	86	2.47	85	4.13	408	8.75	3,580	10.47	4,860	6.50	1,800
11	2.48	86	2.48	86	4.15	416	9.60	4,250	10.38	4,800	6.37	1,710
N	2.46	84	2.48	86	4.21	437	9.73	4,340	10.28	4,730	6.25	1,620
1	2.45	84	2.49	87	4.35	492	9.70	4,320	10.13	4,620	6.12	1,530
2	2.44	83	2.49	87	4.53	569	9.70	4,320	10.00	4,530	6.02	1,460
3	2.44	83	2.50	88	4.67	635	9.35	4,060	9.80	4,390	5.92	1,390
4	2.42	81	2.52	90	4.74	672	9.03	3,800	9.63	4,270	5.84	1,340
5	2.41	80	2.58	96	4.75	678	8.90	3,700	9.46	4,150	5.76	1,280
6	2.41	80	2.68	107	4.75	678	8.89	3,690	9.30	4,020	5.68	1,230
7	2.41	80	2.82	124	4.83	722	9.02	3,800	9.12	3,880	5.61	1,190
8	2.41	80	2.97	144	5.10	880	9.25	3,980	8.95	3,740	5.55	1,150
9	2.41	80	3.13	168	5.44	1,080	9.55	4,220	8.75	3,580	5.50	1,120
10	2.43	82	3.29	196	5.58	1,170	9.80	4,390	8.58	3,440	5.44	1,080
11	2.43	82	3.37	212	5.68	1,230	10.11	4,610	8.40	3,300	5.38	1,050
M	2.43	82	3.41	220	5.90	1,380	10.36	4,780	8.20	3,140	5.33	1,020
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.24	964	4.57	587	3.98	360	3.65	273	3.47	233	3.36	210
4	5.16	916	4.52	564	3.94	349	3.62	266	3.44	226	3.33	204
6	5.10	880	4.47	542	3.90	337	3.60	261	3.43	224	3.30	198
8	5.02	832	4.42	521	3.88	332	3.59	259	3.43	224	3.29	196
10	4.99	814	4.37	500	3.85	324	3.58	257	3.43	224	3.28	194
N	4.93	778	4.32	479	3.83	318	3.56	252	3.43	224	3.26	191
2	4.86	738	4.28	463	3.80	310	3.53	246	3.42	222	3.25	189
4	4.81	710	4.21	437	3.74	295	3.52	243	3.41	220	3.22	184
6	4.76	683	4.16	419	3.71	288	3.52	243	3.40	218	3.20	180
8	4.71	656	4.11	402	3.69	283	3.50	239	3.39	216	3.19	178
10	4.66	630	4.07	388	3.68	280	3.48	235	3.37	212	3.18	177
M	4.62	611	4.02	372	3.67	278	3.48	235	3.37	212	3.17	175

Lake Winnipesaukee at The Weirs, N. H.

Location.- Water-stage recorder, lat. 43°36'20", long. 71°27'25", about 800 feet above highway bridge at The Weirs, Belknap County. Zero of gage is 500.00 feet above mean sea level.
Drainage area.- 363 square miles (above Lakeport).
Gage-height record.- Water-stage recorder graph. Gage heights given in table adjusted for effects of wind and seiches.
Maxima.- September 1938: Gage height, 4.08 feet at 6:20 p.m. Sept. 21 (effect of hurricane).
Remarks.- Affected by storage in Wentworth and Mirror Lakes. Records of stage and contents are for Lake Winnipesaukee only (capacity, 7,190,000,000 cubic feet).

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-79	-98	9	-78	-137	17	+19	-39	25	+19	+20
2	-58	-20	10	-59	-20	18	0	-39	26	-19	0
3	-40	-59	11	-39	-39	19	+118	-78	27	0	0
4	-98	-78	12	+20	-39	20	+490	0	28	-39	-20
5	-98	-59	13	+58	-40	21	+490	0	29	0	-39
6	-39	-20	14	0	-39	22	+78	-40	30	-98	-39
7	0	-78	15	+20	-19	23	+20	-39	31		-98
8	-59	-39	16	-39	-40	24	-39	+157			
Gain or loss in storage, in millions of cubic feet.										+451	-1,078
Gain or loss in storage, in equivalent mean second-feet										+174	-402

Gage height, in feet, and contents, in millions of cubic feet, at indicated time, 1938

Hour	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents
	September 11		September 12		September 13		September 14		September 15	
6	3.12	5,135	3.10	5,096	3.15	5,194	3.14	5,174	3.17	5,233
N	3.12	5,135	3.10	5,096	3.14	5,174	3.14	5,174	3.18	5,253
6	3.11	5,116	3.10	5,096	3.14	5,174	3.14	5,174	3.17	5,233
M	3.10	5,096	3.11	5,116	3.14	5,174	3.14	5,174	3.15	5,194
	September 16		September 17		September 18		September 19		September 20	
6	3.14	5,174	3.14	5,174	3.13	5,155	3.13	5,155	3.21	5,312
N	3.13	5,155	3.15	5,194	3.13	5,155	3.13	5,155	3.35	5,586
6	3.13	5,155	3.14	5,174	3.12	5,135	3.17	5,233	3.37	5,625
M	3.13	5,155	3.14	5,174	3.14	5,174	3.20	5,292	3.45	5,782
	September 21		September 22		September 23		September 24		September 25	
6	3.57	6,017	3.70	6,272	3.75	6,370	3.75	6,370	3.74	6,350
N	3.65	6,174	3.71	6,292	3.75	6,370	3.73	6,331	3.72	6,311
6	3.70	6,272	3.72	6,311	3.75	6,370	3.74	6,350	3.72	6,311
M	3.70	6,272	3.74	6,350	3.75	6,370	3.73	6,331	3.74	6,350
	September 26		September 27		September 28		September 29		September 30	
6	3.74	6,350	3.73	6,331	3.72	6,311	3.70	6,272	3.70	6,272
N	3.74	6,350	3.73	6,331	3.72	6,311	3.70	6,272	3.70	6,272
6	3.74	6,350	3.74	6,350	3.72	6,311	3.69	6,252	3.68	6,233
M	3.73	6,331	3.73	6,331	3.71	6,292	3.71	6,292	3.66	6,194
	October 1		October 2		October 3		October 4		October 5	
6	3.64	6,154	3.60	6,076	3.59	6,056	3.55	5,978	3.52	5,919
N	3.63	6,135	3.60	6,076	3.59	6,056	3.55	5,978	3.53	5,939
6	3.62	6,115	3.60	6,076	3.58	6,037	3.55	5,978	3.50	5,880
M	3.61	6,096	3.60	6,076	3.57	6,017	3.53	5,939	3.50	5,880
	October 6		October 7		October 8		October 9		October 10	
6	3.50	5,880	3.48	5,841	3.44	5,762	3.41	5,704	3.35	5,586
N	3.51	5,900	3.46	5,802	3.44	5,762	3.39	5,664	3.34	5,566
6	3.50	5,880	3.45	5,782	3.44	5,762	3.37	5,625	3.35	5,586
M	3.49	5,860	3.45	5,782	3.43	5,743	3.36	5,606	3.35	5,586
	October 11		October 12		October 13		October 14		October 15	
6	3.35	5,586	3.33	5,547	3.30	5,488	3.29	5,468	3.26	5,410
N	3.34	5,566	3.32	5,527	3.30	5,488	3.28	5,449	3.26	5,410
6	3.34	5,566	3.32	5,527	3.30	5,488	3.28	5,449	3.26	5,410
M	3.33	5,547	3.31	5,508	3.29	5,468	3.27	5,429	3.26	5,410

Winnipesaukee River at Tilton, N. H.

Location.- Water-stage recorder, lat. 43°26'30", long. 71°35'15", 0.3 mile above mouth of Packer Brook in Tilton, Belknap County.
Drainage area.- 471 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,100 second-feet; extended to peak stage on basis of determination of flood flow over dam.
Maxima.- September 1938: Discharge, 3,810 second-feet 6:15 p.m. Sept. 21 (gage height, 7.90 feet).
January 1937 to August 1938: Discharge, 3,120 second-feet May 17, 1937 (gage height, 7.27 feet).
Remarks.- Flood run-off affected by storage in Mirror, Winnipesaukee, Wentworth, and Winnisquam Lakes. For information on storage see record for Lake Winnipesaukee at The Weirs, N. H.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	470	1,000	9	440	588	17	697	835	25	1,570	1,180
2	470	805	10	395	545	18	570	605	26	1,220	898
3	430	835	11	380	590	19	671	590	27	970	835
4	390	898	12	390	525	20	1,110	595	28	973	965
5	390	865	13	530	560	21	3,230	805	29	1,060	865
6	445	898	14	646	570	22	3,130	835	30	1,040	727
7	475	965	15	691	241	23	2,550	805	31		691
8	475	1,000	16	805	242	24	2,000	898			
Mean monthly discharge, in second-feet										954	750
Run-off, in inches										2.26	1.83

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.22	590	4.16	560	4.50	745	7.14	2,970	7.51	3,380	7.03	2,850
2	4.21	585	4.16	560	4.50	745	6.85	2,670	7.50	3,370	7.01	2,830
3	4.20	580	4.16	560	4.50	745	6.82	2,640	7.48	3,350	6.98	2,800
4	4.20	580	4.16	560	4.52	757	6.89	2,710	7.45	3,320	6.95	2,770
5	4.20	580	4.17	565	4.53	763	7.01	2,830	7.43	3,290	6.92	2,740
6	4.19	575	4.17	565	4.53	763	7.06	2,890	7.41	3,270	6.88	2,700
7	4.18	570	4.18	570	4.53	763	7.13	2,960	7.39	3,250	6.86	2,680
8	4.18	570	4.21	585	4.55	775	7.18	3,020	7.36	3,220	6.83	2,650
9	4.18	570	4.25	605	4.61	811	7.23	3,070	7.33	3,180	6.81	2,630
10	4.18	570	4.29	625	4.71	872	7.49	3,360	7.30	3,150	6.78	2,600
11	4.18	570	4.33	646	4.91	1,010	7.48	3,350	7.26	3,110	6.76	2,580
N	4.17	565	4.37	668	5.04	1,100	7.57	3,450	7.25	3,100	6.73	2,550
1	4.17	565	4.41	691	5.07	1,120	7.57	3,450	7.24	3,080	6.70	2,520
2	4.17	565	4.44	709	5.10	1,140	7.63	3,510	7.22	3,060	6.67	2,490
3	4.17	565	4.47	727	5.15	1,180	7.66	3,550	7.22	3,060	6.64	2,460
4	4.17	565	4.51	751	5.19	1,200	7.71	3,600	7.21	3,050	6.61	2,430
5	4.17	565	4.68	853	5.31	1,290	7.73	3,620	7.20	3,040	6.59	2,410
6	4.16	560	4.62	817	5.30	1,280	7.86	3,770	7.18	3,020	6.57	2,390
7	4.16	560	4.58	793	5.45	1,400	7.68	3,570	7.16	3,000	6.54	2,360
8	4.16	560	4.55	775	5.62	1,540	7.60	3,480	7.15	2,980	6.52	2,340
9	4.16	560	4.54	769	5.88	1,740	7.58	3,460	7.12	2,950	6.50	2,320
10	4.16	560	4.52	757	5.89	1,750	7.56	3,440	7.10	2,930	6.48	2,300
11	4.16	560	4.51	751	5.92	1,780	7.54	3,410	7.08	2,910	6.46	2,280
M	4.16	560	4.50	745	6.15	1,980	7.53	3,400	7.06	2,890	6.44	2,260
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.40	2,220	5.88	1,740	5.41	1,370	4.91	1,010	4.83	951	4.97	1,050
4	6.36	2,180	5.85	1,720	5.39	1,350	4.89	993	4.82	944	4.97	1,050
6	6.32	2,140	5.82	1,700	5.37	1,340	4.88	986	4.82	944	4.98	1,060
8	6.27	2,090	5.78	1,660	5.35	1,320	4.86	972	4.82	944	4.98	1,060
10	6.20	2,030	5.71	1,610	5.31	1,290	4.84	958	4.82	944	4.98	1,060
N	6.14	1,980	5.64	1,550	5.23	1,230	4.83	951	4.82	944	4.98	1,060
2	6.10	1,940	5.58	1,500	5.15	1,180	4.83	951	4.85	965	4.98	1,060
4	6.06	1,900	5.55	1,480	5.09	1,130	4.83	951	4.88	986	4.98	1,060
6	6.01	1,860	5.51	1,450	5.04	1,100	4.84	958	4.90	1,000	4.98	1,060
8	5.97	1,820	5.48	1,420	5.00	1,070	4.84	958	4.93	1,020	4.98	1,060
10	5.93	1,790	5.45	1,400	4.97	1,050	4.84	958	4.95	1,035	4.98	1,060
M	5.91	1,770	5.43	1,380	4.94	1,030	4.83	951	4.96	1,042	4.97	1,050

Supplemental records.- Sept. 21, 6:15 p.m., 7.90 ft., 3,810 sec.-ft.

Contoocook River at Penacook, N. H.

Location.- Water-stage recorder, lat. 43°17'10", long. 71°36'00", in Penacook, Merrimack County, half a mile above mouth.
Drainage area.- 766 square miles.
Gage-height record.- Water-stage recorder graph except for periods Oct. 4-24 and 29-31, when graph was based on one staff-gage reading daily and shape of stage-graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 39,900 second-feet; extended to peak stage on basis of velocity-area studies.
Maxima.- September 1938: Discharge, 42,400 second-feet 3 a.m. Sept. 23 (gage height, 13.34 feet).
1928 to August 1938: Discharge, 46,800 second-feet Mar. 20, 1936 (gage height, 14.26 feet).
Remarks.- Flood run-off affected slightly by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	336	2,430	9	373	1,140	17	834	762	25	10,300	2,480
2	391	2,120	10	342	1,110	18	729	834	26	5,790	2,430
3	382	1,860	11	322	1,270	19	827	909	27	4,340	1,930
4	329	1,860	12	336	1,240	20	2,720	922	28	3,670	1,720
5	329	1,580	13	502	1,040	21	14,800	1,040	29	3,140	1,500
6	303	1,580	14	502	961	22	35,400	1,340	30	2,770	1,320
7	296	1,420	15	610	974	23	39,300	1,240	31		1,270
8	322	1,210	16	822	935	24	22,400	1,170			
Mean monthly discharge, in second-feet										5,117	1,404
Run-off, in inches										7.45	2.11

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.52	774	2.47	717	2.80	1,140	5.03	5,950	9.88	26,400	13.31	42,200
2	2.52	774	2.48	728	2.83	1,180	5.33	6,880	10.10	27,400	13.33	42,300
3	2.51	762	2.48	728	2.89	1,270	5.51	7,470	10.30	28,400	13.34	42,400
4	2.50	750	2.48	728	2.97	1,380	5.73	8,250	10.50	29,300	13.33	42,300
5	2.50	750	2.48	728	3.05	1,500	5.84	8,650	10.75	30,500	13.30	42,200
6	2.50	750	2.48	728	3.13	1,620	6.02	9,340	10.98	31,500	13.26	42,000
7	2.50	750	2.50	720	3.21	1,740	6.27	10,400	11.15	32,200	13.20	41,700
8	2.49	739	2.50	750	3.30	1,880	6.50	11,300	11.22	32,600	13.13	41,400
9	2.49	739	2.50	750	3.33	1,930	6.62	11,800	11.40	33,400	13.09	41,200
10	2.48	728	2.51	762	3.41	2,060	6.83	12,600	11.60	34,400	13.01	40,800
11	2.47	717	2.51	762	3.51	2,230	7.14	14,000	11.70	34,800	12.94	40,500
N	2.47	717	2.52	774	3.69	2,550	7.20	14,300	12.00	36,200	12.85	40,100
1	2.47	717	2.53	786	3.78	2,730	7.40	15,100	12.19	37,000	12.77	39,800
2	2.46	706	2.53	786	3.88	2,950	7.60	16,000	12.32	37,700	12.68	39,300
3	2.46	706	2.54	798	3.94	3,080	7.80	16,900	12.50	38,500	12.57	38,800
4	2.46	706	2.56	822	4.03	3,290	8.01	17,800	12.63	39,100	12.50	38,500
5	2.47	717	2.61	883	4.10	3,460	8.21	18,700	12.78	39,800	12.35	37,800
6	2.47	717	2.62	896	4.20	3,710	8.38	19,600	12.88	40,200	12.20	37,100
7	2.46	706	2.68	974	4.28	3,920	8.62	20,700	13.00	40,800	12.08	36,500
8	2.46	706	2.69	987	4.44	4,330	9.07	22,700	13.08	41,100	11.90	35,700
9	2.46	706	2.71	1,010	4.50	4,490	9.19	23,200	13.13	41,400	11.73	35,000
10	2.46	706	2.72	1,030	4.60	4,760	9.33	23,900	13.19	41,600	11.57	34,200
11	2.46	706	2.74	1,060	4.69	5,000	9.51	24,800	13.25	42,000	11.38	33,300
M	2.47	717	2.77	1,100	4.80	5,300	9.70	25,600	13.28	42,100	11.20	32,500
	September 24		September 25		September 26		September 27		September 28		September 29	
2	10.83	30,800	7.07	13,700	5.32	6,840	4.60	4,760	4.29	3,940	4.04	3,320
4	10.40	28,800	6.87	12,800	5.23	6,560	4.56	4,650	4.26	3,870	4.03	3,290
6	9.92	26,600	6.67	12,000	5.15	6,310	4.51	4,520	4.24	3,810	4.01	3,240
8	9.50	24,700	6.47	11,200	5.07	6,070	4.47	4,460	4.22	3,760	4.00	3,220
10	9.15	23,000	6.29	10,500	5.00	5,860	4.46	4,390	4.21	3,740	3.99	3,200
N	8.81	21,500	6.10	9,660	4.94	5,690	4.43	4,310	4.18	3,660	3.96	3,130
2	8.53	20,200	6.05	9,460	4.88	5,520	4.40	4,230	4.16	3,610	3.95	3,100
4	8.24	18,900	5.92	8,960	4.82	5,360	4.38	4,180	4.14	3,560	3.93	3,060
6	8.00	17,800	5.78	8,430	4.77	5,220	4.36	4,130	4.12	3,510	3.92	3,040
8	7.76	16,800	5.66	8,000	4.71	5,060	4.33	4,050	4.11	3,480	3.90	2,990
10	7.51	15,600	5.54	7,580	4.68	4,980	4.31	4,000	4.09	3,440	3.89	2,970
M	7.28	14,700	5.42	7,170	4.63	4,840	4.30	3,970	4.07	3,390	3.87	2,920

North Branch of Contoocook River near Antrim, N. H.

Location.- Float gage, lat. 43°04'55", long. 71°58'40", at North Branch, Hillsboro County, 4 miles northwest of Antrim and 6 miles above confluence with Contoocook River. Zero of gage is 882.38 feet above mean sea level.
Drainage area.- 54.8 square miles.
Gage-height record.- Graph based on two gage readings daily and flood marks.
Stage-discharge relation.- Defined by current-meter measurements below 1,590 second-feet; extended to peak stage on basis of slope-area determinations of flood flow.
Maxima.- September 1938: Discharge, 3,850 second-feet 7 a.m. Sept. 22 (gage height, 8.40 feet, from flood marks).
1924 to August 1938: Discharge, 4,680 second-feet (revised) Mar. 19, 1936 (gage height, 9.30 feet, from flood marks).
Remarks.- Flood run-off slightly affected by artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	14	131	9	9.8	49	17	70	33	25	550	156
2	17	115	10	9.8	48	18	67	32	26	387	182
3	16	94	11	9.2	43	19	105	32	27	286	176
4	14	79	12	8.0	40	20	473	32	28	235	156
5	12	71	13	12	38	21	2,960	40	29	188	134
6	10	66	14	16	37	22	3,480	52	30	159	118
7	9.8	59	15	27	36	23	2,190	51	31		103
8	11	54	16	58	34	24	987	75			
Mean monthly discharge, in second-feet										413	76.3
Run-off, in inches										8.41	1.60

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.56	67	1.56	67	2.59	213	5.54	1,460	7.82	3,330	7.25	2,820
2	1.56	67	1.56	67	2.65	226	5.82	1,660	7.93	3,430	7.18	2,750
3	1.56	67	1.56	67	2.72	242	6.14	1,910	8.07	3,550	7.10	2,680
4	1.56	67	1.57	68	2.79	258	6.49	2,190	8.22	3,690	7.05	2,640
5	1.56	67	1.57	68	2.87	277	6.79	2,430	8.33	3,790	6.98	2,580
6	1.56	67	1.59	70	2.96	300	7.12	2,700	8.38	3,830	6.91	2,530
7	1.56	67	1.60	71	3.05	323	7.38	2,930	8.40	3,850	6.85	2,480
8	1.56	67	1.65	76	3.12	342	7.59	3,120	8.39	3,840	6.78	2,420
9	1.56	67	1.67	78	3.18	358	7.76	3,270	8.37	3,820	6.71	2,370
10	1.56	67	1.71	82	3.24	375	7.88	3,380	8.33	3,790	6.64	2,310
11	1.56	67	1.76	88	3.28	386	7.98	3,470	8.27	3,730	6.58	2,260
N	1.56	67	1.80	92	3.31	395	8.02	3,510	8.21	3,680	6.50	2,200
1	1.56	67	1.86	99	3.36	409	8.04	3,530	8.16	3,630	6.44	2,150
2	1.56	67	1.90	103	3.40	420	8.03	3,520	8.08	3,560	6.36	2,090
3	1.56	67	1.94	108	3.48	444	8.01	3,500	8.00	3,490	6.28	2,020
4	1.56	67	1.99	114	3.58	474	7.98	3,470	7.95	3,440	6.20	1,960
5	1.56	67	2.04	120	3.72	519	7.91	3,410	7.87	3,370	6.14	1,910
6	1.56	67	2.10	128	3.87	571	7.83	3,340	7.78	3,290	6.06	1,850
7	1.56	67	2.20	143	4.01	624	7.75	3,260	7.70	3,220	6.00	1,800
8	1.56	67	2.25	151	4.18	692	7.67	3,190	7.62	3,150	5.90	1,720
9	1.56	67	2.31	161	4.41	784	7.62	3,150	7.54	3,080	5.82	1,660
10	1.56	67	2.39	174	4.68	910	7.62	3,150	7.45	3,000	5.74	1,600
11	1.56	67	2.46	187	4.98	1,070	7.67	3,190	7.38	2,930	5.66	1,540
M	1.56	67	2.52	199	5.25	1,260	7.74	3,260	7.31	2,870	5.57	1,480
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.40	1,360	4.10	660	3.48	444	3.02	315	2.78	255	2.56	207
4	5.25	1,260	4.02	628	3.44	432	2.99	307	2.77	253	2.54	203
6	5.09	1,140	3.95	601	3.40	420	2.97	302	2.75	248	2.51	197
8	4.95	1,050	3.88	575	3.36	409	2.94	294	2.72	242	2.50	195
10	4.84	990	3.81	550	3.32	398	2.91	287	2.70	237	2.48	191
N	4.72	930	3.78	539	3.28	386	2.89	282	2.69	235	2.46	187
2	4.62	880	3.73	522	3.24	375	2.88	279	2.68	233	2.45	186
4	4.53	838	3.68	506	3.20	364	2.86	274	2.66	228	2.42	180
6	4.45	802	3.64	493	3.16	353	2.84	270	2.64	224	2.41	178
8	4.37	768	3.61	483	3.13	344	2.82	265	2.62	219	2.40	176
10	4.29	736	3.57	471	3.09	333	2.81	262	2.60	215	2.38	173
M	4.19	696	3.52	456	3.05	323	2.80	260	2.58	211	2.36	169

North Branch of Contoocook River near Antrim, N. H. (revision of 1936 records)[a]

Location.- Float gage, lat. 43°04'55", long. 71°58'40", at North Branch, Hillsboro County, 4 miles northwest of Antrim and 6 miles above confluence with Contoocook River. Zero of gage is 882.38 feet above mean sea level.

Drainage area.- 54.8 square miles.

Gage-height record.- Graph based on two gage readings daily and floodmarks. Gage heights given to half tenths between 1.30 and 3.10 feet; hundredths below and tenths above these limits.

Stage-discharge relation.- Affected by ice Feb. 1 to Mar. 13. Defined by current-meter measurements below 1,590 second-feet; extended to peak stage on basis of slope-area determinations of flood flows.

Maxima.- 1936: Discharge, 4,680 second-feet (revised) 2 to 4 p.m. Mar. 19 (gage height, 9.30 feet, from floodmarks).

1924-1935: Discharge, 2,370 second-feet Apr. 19, 1933 (gage height, 6.55 feet).

Remarks.- Flood run-off slightly affected by artificial and natural storage. Revised discharges for period Mar. 18-20 based on current-meter measurements and determinations of flood flows by slope-area method and other information not available in 1936.

Mean discharge, in second-feet, 1936

Day	Feb.	Mar.	Apr.	Day	Feb.	Mar.	Apr.	Day	Feb.	Mar.	Apr.
1	40	31	395	11	30	43	319	21	46	1,750	180
2	38	30	369	12	28	400	319	22	43	1,870	162
3	36	30	344	13	28	1,100	319	23	40	1,440	144
4	36	30	319	14	30	1,300	295	24	38	856	128
5	36	32	272	15	32	1,070	261	25	32	696	113
6	34	30	344	16	35	723	272	26	35	610	100
7	33	30	452	17	35	613	272	27	32	610	90
8	31	28	553	18	41	1,490	250	28	35	732	84
9	29	27	485	19	47	4,270	229	29	32	665	79
10	30	28	395	20	47	3,020	200	30		560	74
								31		475	
Mean monthly discharge, in second-feet									35.5	793	261
Run-off, in inches									0.70	16.72	5.31

Gage-height, in feet, and discharge, in second-feet, at indicated time, 1936

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	March 8		March 9		March 10		March 11		March 12		March 13	
2	-	-	-	-	-	-	1.6	-	2.55	-	5.3	-
4	-	-	-	-	-	-	-	-	2.85	-	5.3	-
6	-	-	-	-	-	-	-	-	3.2	-	5.3	-
8	-	-	-	-	-	-	1.7	-	3.6	-	5.3	-
10	-	-	-	-	-	-	-	-	4.0	-	5.3	-
N	*1.55	*28	*1.55	*27	*1.55	*28	1.75	*43	4.3	*400	5.3	*1,100
2	-	-	-	-	-	-	-	-	4.5	-	5.3	-
4	-	-	-	-	-	-	1.8	-	4.8	-	5.3	-
6	-	-	-	-	-	-	-	-	4.9	-	5.2	-
8	-	-	-	-	-	-	1.95	-	5.1	-	5.2	-
10	-	-	-	-	-	-	-	-	5.2	-	5.2	-
M	-	-	-	-	-	-	2.3	-	5.2	-	5.2	-
	March 14		March 15		March 16		March 17		March 18		March 19	
2	5.2	1,210	5.3	1,280	4.6	854	4.1	630	4.2	670	8.0	3,490
4	5.2	1,210	5.3	1,280	4.5	804	4.1	630	4.3	714	8.3	3,760
6	5.2	1,210	5.2	1,280	4.5	804	4.0	590	4.3	714	8.6	4,030
8	5.3	1,280	5.1	1,140	4.4	758	4.0	590	4.5	804	8.8	4,210
10	5.3	1,280	5.0	1,080	4.4	758	4.0	590	4.7	908	9.0	4,390
N	5.3	1,280	5.0	1,080	4.3	714	4.0	590	5.0	1,080	9.2	4,580
2	5.4	1,360	4.9	1,020	4.3	714	4.0	590	5.3	1,280	9.3	4,680
4	5.4	1,360	4.9	1,020	4.2	670	4.0	590	5.8	1,680	9.3	4,680
6	5.4	1,360	4.8	964	4.2	670	4.1	630	6.3	2,040	9.3	4,680
8	5.4	1,360	4.8	964	4.2	670	4.1	630	6.8	2,440	9.2	4,580
10	5.4	1,360	4.7	908	4.1	630	4.1	630	7.2	2,770	9.1	4,480
M	5.3	1,280	4.6	854	4.1	630	4.2	670	7.6	3,130	8.9	4,300
	March 20		March 21		March 22		March 23		March 24		March 25	
2	8.6	4,030	5.9	1,760	6.1	1,920	5.8	1,680	5.0	1,080	4.4	758
4	8.4	3,850	5.8	1,680	6.1	1,920	5.8	1,680	4.9	1,020	4.3	714
6	8.2	3,670	5.7	1,600	6.1	1,920	5.7	1,600	4.8	964	4.3	714
8	7.9	3,400	5.7	1,600	6.1	1,920	5.6	1,520	4.7	908	4.3	714
10	7.6	3,130	5.8	1,680	6.1	1,920	5.6	1,520	4.6	854	4.3	714
N	7.4	2,950	5.8	1,680	6.1	1,920	5.5	1,440	4.6	854	4.3	714
2	7.2	2,770	5.9	1,760	6.0	1,840	5.5	1,440	4.5	804	4.2	670
4	7.0	2,600	5.9	1,760	6.0	1,840	5.4	1,360	4.4	758	4.2	670
6	6.8	2,440	6.0	1,840	6.0	1,840	5.4	1,360	4.4	758	4.2	670
8	6.5	2,200	6.0	1,840	6.0	1,840	5.3	1,280	4.4	758	4.2	670
10	6.3	2,040	6.0	1,840	5.9	1,760	5.2	1,210	4.4	758	4.2	670
M	6.2	1,960	6.1	1,920	5.9	1,760	5.1	1,140	4.4	758	4.2	670

a This record supersedes that publiched in Geol. Survey Water-Supply Paper 798, p. 161.

* Mean for day.

Blackwater River near Webster, N. H.

Location.- Water-stage recorder, lat. 43°17'50", long. 71°41'40", 0.2 mile west of Dingit Corner, 2½ miles southeast of Webster, Merrimack County, and 6½ miles above mouth of river.
Drainage area.- 129 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 6,680 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area and critical depth methods.
Maxima.- September 1938: Discharge, 6,880 second-feet 6 p.m. Sept. 22 (gage height, 10.47 feet).
1918 to August 1938: Discharge, 11,000 second-feet (revised) Mar. 19, 1936 (gage height, 11.78 feet).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	53	289	9	50	166	17	202	122	25	1,200	306
2	53	260	10	49	157	18	174	122	26	781	372
3	47	238	11	50	151	19	161	125	27	568	340
4	45	221	12	51	146	20	417	126	28	448	260
5	47	210	13	70	144	21	2,510	148	29	379	217
6	43	202	14	124	139	22	6,090	177	30	328	191
7	41	189	15	166	131	23	4,720	179	31		169
8	47	177	16	179	125	24	2,210	185			
Mean monthly discharge, in second-feet										710	193
Run-off, in inches										6.14	1.73

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.32	195	3.12	157	3.33	197	6.16	1,550	9.00	4,480	10.20	6,340
2	3.31	193	3.12	157	3.34	199	6.26	1,620	9.18	4,730	10.13	6,210
3	3.30	191	3.12	157	3.40	212	6.20	1,580	9.33	4,960	10.03	6,040
4	3.29	189	3.10	153	3.46	226	6.08	1,500	9.48	5,180	9.94	5,890
5	3.28	187	3.10	153	3.52	240	6.01	1,450	9.61	5,380	9.85	5,750
6	3.27	185	3.10	153	3.61	263	6.01	1,450	9.77	5,620	9.75	5,590
7	3.26	183	3.09	151	3.67	278	6.09	1,500	9.90	5,830	9.65	5,440
8	3.24	179	3.08	150	3.72	292	6.23	1,600	10.00	5,990	9.55	5,280
9	3.24	179	3.08	150	3.77	306	6.66	1,940	10.05	6,080	9.44	5,120
10	3.23	177	3.07	148	3.82	320	7.01	2,240	10.10	6,160	9.35	4,980
11	3.22	175	3.07	148	3.92	349	7.25	2,460	10.18	6,300	9.24	4,820
N	3.20	171	3.07	148	4.04	389	7.31	2,510	10.21	6,360	9.15	4,690
1	3.19	169	3.06	146	4.11	413	7.38	2,580	10.28	6,490	9.04	4,540
2	3.18	167	3.06	146	4.17	434	7.48	2,680	10.36	6,650	8.94	4,400
3	3.18	167	3.06	146	4.21	449	7.59	2,790	10.38	6,690	8.81	4,210
4	3.17	166	3.08	150	4.22	453	7.73	2,940	10.41	6,750	8.71	4,080
5	3.17	166	3.16	164	4.22	453	7.88	3,110	10.44	6,810	8.59	3,940
6	3.16	164	3.19	169	4.25	464	8.05	3,300	10.47	6,880	8.49	3,820
7	3.15	162	3.25	181	4.33	495	8.18	3,450	10.46	6,860	8.38	3,690
8	3.14	160	3.27	185	4.45	544	8.29	3,580	10.43	6,790	8.28	3,570
9	3.14	160	3.28	187	4.65	632	8.42	3,730	10.38	6,690	8.18	3,450
10	3.14	160	3.29	189	4.95	779	8.57	3,910	10.35	6,630	8.08	3,330
11	3.13	158	3.30	191	5.20	919	8.70	4,070	10.30	6,530	8.00	3,240
M	3.12	157	3.31	193	5.65	1,200	8.80	4,200	10.25	6,440	7.89	3,120
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.70	2,910	6.10	1,510	5.17	902	4.67	641	4.30	483	4.09	406
4	7.54	2,740	5.99	1,430	5.11	867	4.63	623	4.28	475	4.07	399
6	7.35	2,550	5.88	1,360	5.07	844	4.60	609	4.26	468	4.05	392
8	7.20	2,410	5.78	1,290	5.03	822	4.56	591	4.24	460	4.04	389
10	7.03	2,260	5.69	1,230	4.98	795	4.52	574	4.23	456	4.02	382
N	6.88	2,120	5.62	1,180	4.95	779	4.49	561	4.21	449	4.00	375
2	6.75	2,010	5.53	1,120	4.90	753	4.46	548	4.19	441	3.99	372
4	6.64	1,920	5.46	1,080	4.85	728	4.45	544	4.17	434	3.98	369
6	6.52	1,830	5.40	1,040	4.82	713	4.42	531	4.15	427	3.97	365
8	6.41	1,740	5.34	1,000	4.78	693	4.38	515	4.13	420	3.95	359
10	6.30	1,650	5.28	967	4.75	679	4.36	507	4.12	416	3.94	356
M	6.18	1,570	5.23	937	4.71	660	4.33	495	4.10	409	3.93	353

Blackwater River near Webster, N. H. (revision of 1936 records) [a]

Location.- Water-stage recorder, lat. 43°17'50", long. 71°41'40", 0.2 mile west of Dingit Corner, 2½ miles southeast of Webster, and 6½ miles above mouth of river.
Drainage area.- 129 square miles.
Gage-height record.- Water-stage recorder graph except for period 1 a.m. Mar. 13 to 11 a.m. Mar. 24, record for which was based on floodmarks and shape of stage graphs at nearby stations. Gage heights given to half tenths between 5.10 and 8.40 feet; hundredths below and tenths above these limits.
Stage-discharge relation.- Affected by ice Feb. 1 to Mar. 10. Defined by current-meter measurements below 6,680 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area and critical-depth methods.
Maxima.- 1936: Discharge, 11,000 second-feet (revised) 8 p.m. Mar. 19 (gage height, 11.78 feet, from floodmarks).
1918-1935: Discharge, 2,920 second-feet Apr. 14, 1934 (gage height, 16.31 feet, former site and datum near Contoocook).
Remarks.- Flood run-off not materially affected by artificial or natural storage. Revised discharge for period Mar. 12 to Apr. 19 based on current-meter measurements and determinations of flood flow by slope-area and critical-depth methods and other information not available in 1936.

Mean daily discharge, in second-feet, 1936

Day	Feb.	Mar.	Apr.	Day	Feb.	Mar.	Apr.	Day	Feb.	Mar.	Apr.
1	100	84	753	11	80	114	703	21	84	2,430	406
2	98	84	663	12	79	372	703	22	84	2,520	375
3	95	84	655	13	79	1,790	753	23	82	2,610	354
4	95	85	655	14	80	3,190	703	24	81	1,910	315
5	97	88	632	15	80	1,790	609	25	80	1,460	289
6	96	90	718	16	76	1,270	565	26	82	1,300	272
7	93	90	1,200	17	82	1,220	587	27	84	1,240	254
8	88	90	1,440	18	85	1,740	632	28	84	1,170	241
9	85	92	1,070	19	84	8,030	540	29	84	1,170	232
10	82	98	805	20	83	5,090	462	30		1,040	230
								31		861	
Mean monthly discharge, in second-feet									85.6	1,394	594
Run-off, in inches									0.72	12.45	5.13

Gage height, in feet, and discharge, in second-feet, at indicated time, 1936

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	March 8		March 9		March 10		March 11		March 12		March 13	
2	-	-	-	-	-	-	-	-	2.99	143	4.93	769
4	-	-	-	-	-	-	-	-	3.09	161	5.03	822
6	-	-	-	-	-	-	2.77	-	3.21	184	5.2	919
8	-	-	-	-	-	-	-	-	3.85	211	5.4	1,040
10	-	-	-	-	-	-	-	-	3.61	267	5.7	1,240
N	*2.68	*90	*2.71	*92	*2.76	*98	*2.79	*114	3.91	348	6.0	1,440
2	-	-	-	-	-	-	-	-	4.13	422	6.5	1,810
4	-	-	-	-	-	-	2.83	-	4.34	499	6.85	2,100
6	-	-	-	-	-	-	-	-	4.47	552	7.35	2,550
8	-	-	-	-	-	-	2.86	-	4.59	605	7.9	3,130
10	-	-	-	-	-	-	-	-	4.70	655	8.15	3,410
M	-	-	-	-	-	-	2.85	-	4.83	718	8.4	3,710
	March 14		March 15		March 16		March 17		March 18		March 19	
2	8.4	3,710	6.95	2,180	5.9	1,370	5.65	1,200	5.8	1,300	8.4	3,710
4	8.5	3,830	6.8	2,050	5.85	1,340	5.65	1,200	5.85	1,340	9.0	4,480
6	8.4	3,710	6.7	1,970	5.8	1,300	5.65	1,200	5.9	1,370	9.6	5,360
8	8.35	3,650	6.6	1,890	5.75	1,270	5.65	1,200	5.95	1,400	10.2	6,340
10	8.2	3,470	6.55	1,850	5.75	1,270	5.65	1,200	6.05	1,480	10.9	7,890
N	8.05	3,300	6.45	1,770	5.7	1,240	5.65	1,200	6.15	1,540	11.4	9,430
2	7.85	3,080	6.35	1,690	5.7	1,240	5.7	1,240	6.35	1,690	11.7	10,600
4	7.7	2,910	6.25	1,620	5.7	1,240	5.7	1,240	6.55	1,850	11.7	10,600
6	7.5	2,700	6.2	1,580	5.7	1,240	5.7	1,240	6.75	2,010	11.7	10,600
8	7.3	2,500	6.1	1,510	5.65	1,200	5.7	1,240	7.0	2,230	11.8	11,100
10	7.2	2,410	6.05	1,480	5.65	1,200	5.75	1,270	7.35	2,550	11.6	10,200
M	7.05	2,280	5.95	1,400	5.65	1,200	5.75	1,270	7.8	3,020	11.3	9,080
	March 20		March 21		March 22		March 23		March 24		March 25	
2	10.9	7,890	7.85	3,080	6.45	1,770	7.8	3,020	6.95	2,180	6.2	1,580
4	10.5	6,940	7.75	2,960	6.4	1,730	7.65	2,860	6.85	2,100	6.15	1,540
6	10.2	6,340	7.6	2,800	6.4	1,730	7.55	2,750	6.8	2,050	6.15	1,540
8	9.9	5,830	7.5	2,700	6.4	1,730	7.45	2,650	6.75	2,010	6.1	1,510
10	9.5	5,210	7.35	2,550	6.45	1,770	7.4	2,600	6.7	1,970	6.05	1,480
N	9.1	4,620	7.2	2,410	6.75	2,010	7.4	2,600	6.65	1,930	6.0	1,440
2	8.8	4,200	7.0	2,230	7.5	2,700	7.35	2,550	6.55	1,850	6.0	1,440
4	8.5	3,830	6.85	2,100	8.25	3,530	7.25	2,460	6.5	1,810	5.95	1,400
6	8.2	3,470	6.75	2,010	8.4	3,710	7.2	2,410	6.45	1,770	5.95	1,400
8	8.1	3,350	6.7	1,970	8.35	3,650	7.15	2,360	6.35	1,690	5.9	1,370
10	8.0	3,240	6.6	1,890	8.15	3,410	7.05	2,280	6.3	1,650	5.9	1,370
M	7.95	3,180	6.55	1,850	8.0	3,240	7.0	2,230	6.25	1,620	5.85	1,340

a This record supersedes that published in Geol. Survey Water-Supply Paper 798, p. 161.
* Mean for day.

Suncook River at North Chichester, N. H.

Location.- Water-stage recorder and concrete control, lat. 43°15'45", long. 71°22'10", at North Chichester, Merrimack County, 3.1 miles above mouth of Little Suncook River. Zero of gage is 329.35 feet above mean sea level (general adjustment of 1912).
Drainage area.- 157 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 4,780 second-feet; extended to peak stage on basis of average discharge determined by slope-area and contracted-opening methods.
Maxima.- September 1938: Discharge, 2,110 second-feet 10 a.m. Sept. 21 (gage height, 8.96 feet).
1918 to August 1938: Discharge, 12,900 second-feet Mar. 19, 1936 (gage height, 15.27 feet).
Remarks.- Flood flow not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	51	144	9	50	105	17	116	170	25	401	577
2	50	155	10	55	228	18	110	254	26	338	367
3	43	253	11	44	248	19	169	260	27	298	279
4	37	264	12	48	245	20	991	246	28	304	274
5	34	253	13	114	258	21	1,880	275	29	287	133
6	36	261	14	121	242	22	1,520	136	30	285	103
7	56	255	15	132	123	23	1,020	51	31		195
8	60	137	16	165	38	24	555	233			
Mean monthly discharge, in second-feet										312	218
Run-off, in inches										2.22	1.60

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.35	103	3.38	110	4.14	356	7.75	1,520	8.39	1,800	6.51	1,210
2	3.36	105	3.39	112	4.31	433	7.73	1,520	8.32	1,760	6.46	1,200
3	3.37	107	3.40	114	4.33	442	7.84	1,550	8.28	1,740	6.39	1,180
4	3.38	110	3.41	116	4.33	442	8.02	1,620	8.21	1,700	6.30	1,160
5	3.39	112	3.43	121	4.34	447	8.22	1,710	8.11	1,680	6.21	1,140
6	3.39	112	3.44	124	4.42	487	8.38	1,790	8.10	1,660	6.13	1,120
7	3.40	114	3.47	131	4.51	535	8.51	1,860	8.04	1,630	6.05	1,110
8	3.40	114	3.49	136	4.67	627	8.68	1,940	8.08	1,650	6.08	1,110
9	3.40	114	3.50	138	4.92	756	8.91	2,080	7.91	1,580	6.01	1,100
10	3.40	114	3.51	141	4.91	751	8.96	2,110	7.85	1,560	5.92	1,080
11	3.40	114	3.55	152	5.00	790	8.95	2,100	7.81	1,540	5.85	1,060
N	3.40	114	3.58	160	5.21	870	8.94	2,090	7.74	1,520	5.76	1,040
1	3.40	114	3.61	168	5.61	997	8.91	2,080	7.66	1,500	5.67	1,010
2	3.37	107	3.62	171	6.17	1,130	8.87	2,050	7.59	1,480	5.59	991
3	3.37	107	3.62	171	6.97	1,310	8.81	2,020	7.50	1,450	5.52	971
4	3.37	107	3.62	171	7.40	1,420	8.76	1,990	7.41	1,420	5.46	953
5	3.35	103	3.63	174	7.64	1,490	8.72	1,970	7.32	1,400	5.38	927
6	3.37	107	3.67	185	7.81	1,540	8.71	1,960	7.23	1,380	5.32	908
7	3.40	114	3.71	197	7.95	1,590	8.71	1,960	7.13	1,350	5.24	880
8	3.39	112	3.77	216	8.01	1,610	8.70	1,960	7.04	1,330	5.19	862
9	3.38	110	3.83	236	8.02	1,620	8.65	1,930	6.93	1,300	5.11	833
10	3.38	110	3.93	271	7.99	1,610	8.49	1,840	6.84	1,280	5.07	817
11	3.38	110	4.03	309	7.93	1,580	8.45	1,820	6.77	1,260	5.02	798
M	3.38	110	4.10	338	7.86	1,560	8.42	1,810	6.60	1,230	4.89	742
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.86	728	4.35	452	4.11	342	3.81	229	3.90	260	3.83	236
4	4.85	723	4.31	433	4.10	338	3.78	220	3.87	250	3.77	216
6	4.79	694	4.30	428	4.08	330	3.78	220	3.85	243	3.82	233
8	4.64	609	4.29	423	4.06	322	3.87	250	3.86	246	3.87	250
10	4.63	603	4.26	410	4.30	428	4.06	322	4.08	330	4.08	330
N	4.68	632	4.24	400	4.17	369	4.07	326	4.10	338	4.07	326
2	4.67	627	4.22	392	4.09	334	4.07	326	4.10	338	4.03	309
4	4.20	382	4.19	378	4.06	322	4.09	334	4.10	338	4.03	309
6	3.63	174	4.18	373	4.05	318	4.11	342	4.08	330	4.03	309
8	4.28	419	4.16	364	4.03	309	4.10	338	4.04	313	4.03	309
10	4.38	467	4.14	356	4.04	313	4.11	342	4.09	334	4.03	309
M	4.38	467	4.12	347	4.03	309	4.10	338	4.05	318	4.03	309

Clark Brook at Auburn, N. H.

Location.- Water-stage recorder and concrete control, lat. 43°00'20", long. 71°20'55", at Auburn, Rockingham County, 0.4 mile above Massabesic Lake.
Drainage area.- 27.7 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements.
Maxima.- September 1938: Discharge, 218 second-feet noon to 5 p.m. Sept. 21 (gage height, 1.75 feet).
January to August 1938: Discharge, 290 second-feet July 30, 1938 (gage height, 1.94 feet).
Remarks.- Run-off affected by natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	19	81	9	16	46	17	32	27	25	124	56
2	18	75	10	13	44	18	29	27	26	112	72
3	17	73	11	12	38	19	35	28	27	108	80
4	14	70	12	14	33	20	98	27	28	100	70
5	14	62	13	16	32	21	205	32	29	91	59
6	14	60	14	23	31	22	199	36	30	85	40
7	17	57	15	24	27	23	169	27	31		42
8	17	53	16	32	20	24	150	30			
Mean monthly discharge, in second-feet										60.6	46.9
Run-off, in inches										2.44	1.95

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.80	30	0.79	29	0.99	49	1.60	172	1.74	215	1.63	181
2	.80	30	.79	29	1.01	52	1.63	181	1.74	215	1.63	181
3	.80	30	.79	29	1.03	55	1.64	184	1.74	215	1.62	178
4	.80	30	.80	30	1.04	56	1.66	189	1.73	211	1.62	178
5	.79	29	.81	31	1.08	61	1.67	192	1.73	211	1.61	175
6	.79	29	.82	32	1.09	63	1.68	195	1.72	208	1.60	172
7	.79	29	.82	32	1.11	66	1.69	198	1.72	208	1.60	172
8	.79	29	.82	32	1.14	70	1.70	201	1.71	204	1.60	172
9	.79	29	.82	32	1.16	73	1.71	204	1.71	204	1.60	172
10	.78	28	.82	32	1.18	76	1.72	208	1.70	201	1.60	172
11	.78	28	.82	32	1.25	89	1.73	211	1.70	201	1.60	172
N	.78	28	.82	32	1.29	96	1.75	218	1.70	201	1.59	169
1	.78	28	.82	32	1.30	98	1.75	218	1.69	198	1.59	169
2	.78	28	.82	32	1.33	105	1.75	218	1.68	195	1.58	167
3	.78	28	.83	33	1.36	111	1.75	218	1.68	195	1.58	167
4	.78	28	.84	34	1.38	116	1.75	218	1.67	192	1.57	164
5	.78	28	.85	35	1.42	125	1.75	218	1.66	189	1.56	161
6	.78	28	.87	37	1.46	135	1.74	215	1.66	189	1.56	161
7	.78	28	.90	40	1.48	140	1.74	215	1.65	186	1.56	161
8	.78	28	.94	44	1.50	145	1.74	215	1.65	186	1.55	158
9	.78	28	.94	44	1.52	150	1.74	215	1.65	186	1.55	158
10	.78	28	.95	45	1.54	156	1.74	215	1.64	184	1.55	158
11	.78	28	.97	47	1.56	161	1.74	215	1.64	184	1.55	158
M	.78	28	.98	48	1.57	164	1.74	215	1.64	184	1.55	158
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.55	158	1.46	135	1.38	116	1.34	107	1.32	102	1.27	92
4	1.54	156	1.45	132	1.38	116	1.35	109	1.32	102	1.27	92
6	1.54	156	1.44	130	1.37	113	1.35	109	1.32	102	1.27	92
8	1.53	153	1.43	128	1.36	111	1.35	109	1.31	100	1.27	92
10	1.53	153	1.41	122	1.36	111	1.35	109	1.31	100	1.26	91
N	1.52	150	1.40	120	1.37	113	1.36	111	1.32	102	1.28	94
2	1.51	148	1.40	120	1.36	111	1.36	111	1.32	102	1.27	92
4	1.50	145	1.39	118	1.36	111	1.35	109	1.30	98	1.26	91
6	1.50	145	1.39	118	1.36	111	1.35	109	1.30	98	1.26	91
8	1.50	145	1.39	118	1.35	109	1.33	105	1.29	96	1.25	89
10	1.49	142	1.38	116	1.34	107	1.32	102	1.28	94	1.24	87
M	1.48	140	1.38	116	1.34	107	1.32	102	1.28	94	1.23	85

Souhegan River at Merrimack, N. H.

Location.- Water-stage recorder, lat. 42°51'25", long. 71°30'30", at head of Atherton Falls at Merrimack, Hillsboro County, 1½ miles above confluence with Merrimack River. Zero of gage is 160.58 feet above mean sea level.
Drainage area.- 171 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 7,200 second-feet; extended to peak stage on basis of determinations of flood flow over dam, verified by velocity-area study at measuring section.
Maxima.- September 1938: Discharge, 10,800 second-feet 11:45 p.m. Sept. 21 (gage height, 12.78 feet).
1909 to August 1938: Discharge, 16,900 second-feet Mar. 19, 1936 (gage height, 16.2 feet).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	102	332	9	92	169	17	169	172	25	881	690
2	113	308	10	84	197	18	130	180	26	675	505
3	98	296	11	65	205	19	314	159	27	534	356
4	81	273	12	66	191	20	1,260	146	28	472	308
5	72	238	13	70	175	21	5,780	205	29	417	292
6	68	235	14	100	172	22	7,770	262	30	364	277
7	62	229	15	113	169	23	2,440	222	31		251
8	84	222	16	199	152	24	1,290	240			
Mean monthly discharge, in second-feet										799	253
Run-off, in inches										5.21	1.71

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.78	134	2.84	149	4.03	615	6.51	2,300	12.74	10,700	7.94	3,800
2	2.78	134	2.87	156	4.05	625	6.63	2,400	12.69	10,600	7.76	3,580
3	2.77	132	2.91	167	4.09	645	6.73	2,490	12.60	10,400	7.58	3,370
4	2.77	132	2.94	175	4.17	685	6.88	2,630	12.57	10,400	7.41	3,180
5	2.76	129	2.98	186	4.31	760	7.03	2,780	12.30	9,960	7.27	3,030
6	2.75	127	3.02	197	4.46	846	7.19	2,940	12.12	9,690	7.11	2,860
7	2.74	125	3.06	208	4.61	936	7.40	3,170	12.00	9,510	6.99	2,740
8	2.73	122	3.09	216	4.71	1,000	7.64	3,440	11.82	9,240	6.87	2,620
9	2.73	122	3.11	222	4.78	1,050	7.93	3,790	11.59	8,900	6.76	2,510
10	2.73	122	3.13	229	4.85	1,090	8.21	4,130	11.41	8,620	6.65	2,420
11	2.73	122	3.15	235	4.93	1,140	8.53	4,550	11.18	8,280	6.55	2,330
N	2.72	120	3.19	248	5.05	1,220	8.88	5,000	10.96	7,950	6.47	2,270
1	2.72	120	3.24	266	5.15	1,290	9.21	5,450	10.73	7,600	6.38	2,190
2	2.72	120	3.31	292	5.24	1,350	9.63	6,040	10.52	7,290	6.31	2,140
3	2.72	120	3.38	320	5.33	1,410	10.05	6,630	10.28	6,950	6.21	2,060
4	2.73	122	3.45	348	5.42	1,470	10.60	7,410	10.01	6,570	6.16	2,020
5	2.75	127	3.54	385	5.51	1,540	11.00	8,010	9.77	6,240	6.08	1,950
6	2.77	132	3.65	432	5.62	1,610	11.57	8,860	9.52	5,890	6.01	1,900
7	2.81	142	3.78	491	5.76	1,710	11.82	9,240	9.27	5,540	5.95	1,850
8	2.83	146	3.87	535	5.92	1,830	12.18	9,780	9.00	5,160	5.89	1,800
9	2.82	144	3.92	560	6.05	1,930	12.40	10,100	8.77	4,860	5.81	1,750
10	2.82	144	3.95	575	6.19	2,040	12.61	10,400	8.54	4,560	5.76	1,710
11	2.82	144	3.97	585	6.30	2,130	12.70	10,600	8.34	4,300	5.69	1,660
M	2.81	142	4.00	600	6.42	2,230	12.75	10,700	8.12	4,020	5.63	1,620
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.51	1,540	4.73	1,010	4.26	733	3.98	590	3.81	505	3.71	460
4	5.41	1,470	4.67	976	4.23	716	3.95	575	3.78	491	3.68	446
6	5.33	1,410	4.61	936	4.21	706	3.91	555	3.74	473	3.62	419
8	5.25	1,360	4.57	912	4.18	690	3.88	540	3.72	464	3.60	410
10	5.18	1,310	4.54	894	4.15	675	3.83	515	3.70	455	3.58	402
N	5.12	1,270	4.50	870	4.12	660	3.83	515	3.70	455	3.57	397
2	5.06	1,230	4.47	852	4.11	655	3.88	540	3.73	468	3.60	410
4	5.00	1,190	4.46	846	4.10	650	3.89	545	3.75	478	3.62	419
6	4.94	1,150	4.39	804	4.09	645	3.82	510	3.74	473	3.62	419
8	4.89	1,120	4.37	794	4.09	645	3.79	496	3.73	468	3.61	414
10	4.83	1,080	4.33	772	4.09	645	3.76	482	3.71	460	3.55	389
M	4.79	1,050	4.30	755	4.01	605	3.77	486	3.71	460	3.52	376

Supplemental records.- Sept. 21, 11:45 p.m., 12.78 ft., 10,800 sec.-ft.

North Nashua River near Leominster, Mass.

Location.- Water-stage recorder, lat. 42°30'10", long. 71°43'20", 1.3 miles above mouth of Wekepeke Brook, 2½ miles southeast of Leominster, Worcester County, and 6.1 miles above confluence with South Branch of Nashua River. Zero of gage is 270.04 feet above mean sea level (general adjustment of 1929).

Drainage area.- 107 square miles.

Gage-height record.- Water-stage recorder graph except for periods Sept. 1 to 9 a.m. Sept. 8 and 1 a.m. Oct. 3 to 9 a.m. Oct. 4, record for which was based on shape of stage graphs at nearby stations.

Stage-discharge relation.- Defined by current-meter measurements below 3,800 second-feet; extended to peak stage on basis of determinations of flood flow over dam and by slope-area method.

Maxima.- September 1938: Discharge, 10,300 second-feet 3 p.m. Sept. 21 (gage height, 14.57 feet).

September 1935 to August 1938: Discharge, 16,300 second-feet 8 p.m. Mar. 18, 1936 (gage height, 20.53 feet, from flood marks), by computation of flood flow over dam.

Remarks.- Flood run-off affected by some artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	130	242	9	91	204	17	100	145	25	591	416
2	150	227	10	69	172	18	125	125	26	415	282
3	120	220	11	51	111	19	546	119	27	360	227
4	100	220	12	66	125	20	1,690	139	28	370	234
5	110	212	13	195	132	21	6,040	242	29	321	190
6	90	220	14	132	132	22	3,120	212	30	282	167
7	75	190	15	170	121	23	1,310	140	31		197
8	87	173	16	154	108	24	793	316			
Mean monthly discharge, in second-feet										595	192
Run-off, in inches										6.20	2.06

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.22	114	2.47	149	6.61	978	9.90	1,930	12.02	5,300	8.74	1,690
2	2.23	115	2.60	167	6.70	1,000	10.10	2,000	11.79	4,940	8.65	1,640
3	2.26	119	2.78	194	6.75	1,010	10.47	2,260	11.60	4,660	8.54	1,590
4	2.26	119	3.09	240	6.85	1,040	10.92	2,590	11.40	4,370	8.48	1,560
5	2.25	118	3.55	316	4.33	1,160	11.30	2,890	11.25	4,160	8.37	1,510
6	2.24	117	4.03	403	8.05	1,360	11.62	3,200	11.05	3,880	8.29	1,480
7	2.24	117	4.50	492	8.46	1,490	12.03	3,700	10.93	3,730	8.21	1,440
8	2.26	119	4.70	534	8.63	1,540	12.35	4,300	10.80	3,560	8.15	1,420
9	2.27	121	4.76	547	8.69	1,560	12.65	4,800	10.59	3,300	8.13	1,410
10	2.28	122	4.80	555	8.72	1,570	12.95	5,400	10.47	3,150	7.99	1,360
11	2.32	128	5.06	610	8.83	1,600	13.30	6,400	10.41	3,080	7.95	1,340
N	2.33	129	5.09	616	9.10	1,680	13.68	7,200	10.31	2,970	7.86	1,310
1	2.33	129	5.04	605	9.53	1,810	14.14	8,600	10.05	2,700	7.75	1,280
2	2.34	131	5.11	620	9.89	1,930	14.42	9,600	9.96	2,610	7.60	1,230
3	2.34	131	5.27	654	10.17	2,050	14.57	10,300	9.80	2,470	7.52	1,210
4	2.34	131	5.32	665	10.30	2,140	14.50	10,200	9.67	2,360	7.43	1,180
5	2.34	131	5.33	667	10.39	2,200	14.21	9,480	9.53	2,240	7.31	1,150
6	2.33	129	5.21	641	10.47	2,260	14.05	9,130	9.42	2,160	7.15	1,110
7	2.32	128	5.18	635	10.46	2,250	13.75	8,480	9.29	2,050	6.97	1,070
8	2.32	128	5.44	692	10.41	2,220	13.49	7,950	9.17	1,970	6.85	1,040
9	2.33	129	5.90	800	10.31	2,150	13.20	7,370	9.08	1,910	6.75	1,010
10	2.33	129	6.14	860	10.22	2,080	12.98	6,950	9.00	1,850	6.63	982
11	2.34	131	6.31	902	10.07	1,990	12.68	6,400	8.92	1,800	6.56	965
M	2.40	139	6.46	940	9.90	1,930	12.26	5,690	8.82	1,740	6.52	955
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.40	925	5.27	654	4.31	456	3.68	339	3.73	347	3.52	311
4	6.26	890	5.22	643	4.24	443	3.77	354	3.84	367	3.57	320
6	6.14	860	5.17	633	4.20	435	3.84	367	3.85	368	3.60	325
8	6.10	850	5.14	626	4.20	435	3.89	376	3.96	389	3.64	332
10	6.00	825	5.00	597	4.38	469	4.13	422	4.09	414	3.78	356
N	5.89	798	4.96	589	4.30	454	4.02	401	4.11	418	3.83	365
2	5.72	757	5.02	601	4.35	464	3.94	386	3.90	378	3.60	325
4	5.65	740	4.96	589	4.13	422	3.93	384	3.96	389	3.65	334
6	5.47	699	4.84	563	3.88	374	3.73	347	3.87	372	3.52	311
8	5.42	688	4.73	540	3.80	359	3.57	320	3.66	335	3.37	286
10	5.38	678	4.52	496	3.31	276	3.50	308	3.67	337	3.35	282
M	5.32	665	4.38	469	3.57	320	3.57	320	3.58	322	3.33	279

Nashua River at East Pepperell, Mass.

Location.- Water-stage recorder, lat. 42°40'00", long. 71°34'35", 200 feet below Nashua River Paper Co. power plant in town of East Pepperell, Middlesex County. Zero of gage is 169.04 feet above mean sea level (general adjustment of 1929).
Drainage area.- 433 square miles; 117 square miles above Wachusett Dam affected by storage and diversions.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 11,800 second-feet; extended to peak stage on basis of velocity-area study at control section.
Maxima.- September 1938: Discharge, 10,200 second-feet 8 to 10 a.m. Sept. 23 (gage height, 14.08 feet).
October 1935 to August 1938: Discharge, 20,900 second-feet Mar. 20, 1936 (gage height, 19.1 feet, from flood marks).
Remarks.- Flood run-off considerably affected by artificial storage and diversions on 117 square miles on South Branch of Nashua River; slightly affected by artificial and natural storage on other parts. For information on storage and diversion see record for South Branch of Nashua River at Clinton, Mass.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	540	1,120	9	234	219	17	631	598	25	4,830	1,020
2	503	1,070	10	235	553	18	173	736	26	3,310	1,230
3	371	836	11	124	836	19	554	582	27	2,400	1,150
4	56	811	12	180	780	20	1,700	436	28	1,850	1,100
5	8.4	761	13	349	570	21	3,740	561	29	1,520	1,100
6	232	761	14	349	711	22	6,390	536	30	1,150	354
7	232	861	15	503	324	23	9,790	54	31		1,000
8	235	836	16	503	9.7	24	7,440	764			
Mean monthly discharge, in second-feet										1,671	719
Run-off, in inches										4.31	1.91

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.26	674	-0.05	10	2.47	759	6.23	2,860	8.49	4,460	13.61	9,470
2	2.26	674	- .05	10	2.59	810	6.39	2,960	8.58	4,530	13.75	9,670
3	2.25	670	- .05	10	2.74	874	6.50	3,040	8.70	4,630	13.85	9,810
4	2.25	670	- .04	11	2.92	954	6.60	3,110	8.80	4,710	13.94	9,940
5	2.25	670	.80	193	3.10	1,040	6.79	3,240	8.92	4,810	14.03	10,100
6	.80	193	2.26	674	3.27	1,120	6.93	3,340	9.15	4,990	14.05	10,100
7	.50	118	2.29	686	3.42	1,190	7.09	3,450	9.43	5,130	14.07	10,100
8	-.06	9.2	2.32	698	3.55	1,260	7.21	3,540	9.56	5,320	14.08	10,200
9	-.06	9.2	2.32	698	3.71	1,340	7.20	3,530	9.68	5,410	14.08	10,200
10	-.06	9.2	2.32	698	3.83	1,400	7.30	3,600	9.88	5,590	14.08	10,200
11	-.06	9.2	2.32	698	4.07	1,530	7.43	3,690	10.04	5,740	14.07	10,100
N	-.06	9.2	2.32	698	4.35	1,690	7.52	3,750	10.25	5,920	14.06	10,100
1	-.06	9.2	2.33	702	4.53	1,800	7.63	3,830	10.54	6,190	14.03	10,100
2	-.06	9.2	2.33	702	4.70	1,900	7.73	3,900	10.70	6,330	13.95	9,960
3	-.06	9.2	2.33	702	4.89	2,010	7.83	3,970	11.12	6,710	13.98	9,980
4	-.06	9.2	2.34	706	5.04	2,100	7.94	4,050	11.35	6,920	13.85	9,810
5	-.06	9.2	2.35	710	5.23	2,220	8.20	4,230	11.60	7,160	13.79	9,730
6	-.06	9.2	2.35	710	5.37	2,300	8.50	4,470	12.68	8,320	13.73	9,640
7	-.06	9.2	2.36	714	5.51	2,390	8.40	4,390	12.78	8,440	13.67	9,560
8	-.06	9.2	2.37	718	5.65	2,480	8.27	4,290	12.84	8,510	13.55	9,400
9	-.06	9.2	2.38	722	5.78	2,570	8.24	4,260	12.97	8,660	13.48	9,300
10	-.06	9.2	2.38	722	5.90	2,640	8.28	4,290	13.15	8,880	13.40	9,200
11	-.06	9.2	2.39	726	6.02	2,720	8.33	4,330	13.35	9,140	13.32	9,100
M	-.06	9.2	2.40	730	6.12	2,790	8.41	4,400	13.48	9,300	13.20	8,940
	September 24		September 25		September 26		September 27		September 28		September 29	
2	13.00	8,700	10.09	5,780	7.57	3,790	6.02	2,720	4.92	2,030	4.25	1,640
4	12.78	8,440	9.83	5,550	7.42	3,680	5.92	2,650	4.86	2,000	4.21	1,620
6	12.52	8,130	9.58	5,330	7.27	3,580	5.81	2,590	4.80	1,960	4.18	1,600
8	12.35	7,940	9.35	5,150	7.20	3,530	5.72	2,530	4.73	1,920	4.13	1,580
10	12.12	7,690	9.10	4,950	7.05	3,420	5.63	2,470	4.67	1,880	3.52	1,240
N	11.92	7,480	8.83	4,730	6.88	3,310	5.54	2,410	4.60	1,840	4.15	1,590
2	11.65	7,210	8.60	4,550	6.72	3,190	5.40	2,320	4.53	1,800	4.10	1,560
4	11.35	6,920	8.42	4,410	6.61	3,120	5.29	2,250	4.49	1,770	4.00	1,500
6	11.06	6,650	8.27	4,290	6.46	3,010	5.22	2,210	4.42	1,730	3.96	1,470
8	10.83	6,450	8.12	4,170	6.33	2,920	5.12	2,150	4.38	1,700	3.92	1,450
10	10.58	6,220	7.95	4,060	6.23	2,860	5.05	2,110	4.34	1,680	3.88	1,430
M	10.35	6,020	7.77	3,930	6.12	2,790	4.99	2,070	4.28	1,650	3.83	1,410

Supplemental records.- Sept. 29, 9 a.m., 4.10 ft., 1,560 sec.-ft.; 11 a.m., 3.55 ft., 1,260 sec.-ft.

Wachusett Reservoir on South Branch of Nashua River at Clinton, Mass.

Location.- Lat. 42°24'15", long. 71°41'25", at Wachusett Dam, 1 mile south of Clinton, Worcester County.
Drainage area.- Total above Wachusett Dam, 117 square miles since July 1937; practically all flow from 9.43 square miles of Pine Hill Reservoir drainage area diverted from basin for Worcester water supply.
Remarks.- Records furnished by water division of the Metropolitan District Commission.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-16.3	+1.8	9	-21.6	-3.6	17	+1.8	-14.3	25	-32.6	-16.1
2	-16.3	0	10	-9.0	-19.8	18	+45.0	-16.1	26	-38.0	-16.1
3	-10.8	-14.4	11	0	-19.7	19	+37.8	-17.9	27	-21.7	-14.3
4	0	-14.4	12	-7.2	0	20	+202.8	-10.7	28	-12.6	-8.9
5	0	-18.0	13	-10.8	-17.9	21	+142.4	-12.5	29	-12.6	-16.0
6	-18.1	-18.0	14	-10.8	-10.7	22	-71.3	-7.1	30	-3.6	-14.2
7	-16.2	-16.2	15	-1.8	-5.4	23	-74.7	+7.1	31		-28.4
8	-19.8	-3.6	16	-12.6	+1.8	24	-54.5	+7.2			
Gain or loss in storage, in millions of cubic feet										-63.1	-336.4
Gain or loss in storage, in equivalent mean second-feet.										-24.3	-126

South Branch of Nashua River at Clinton, Mass.

Location.- Lat. 42°24'15", long. 71°41'25", at Wachusett Dam, 1 mile south of Clinton, Worcester County.
Drainage area.- Total above Wachusett Dam, 117 square miles since July 1937; practically all flow from 9.43 square miles of Pine Hill Reservoir drainage area diverted from basin for Worcester water supply.
Discharge.- Observed discharge from 117 square miles is the outflow from Wachusett Reservoir into South Branch of Nashua River and is the combined flow over spillway and through Venturi meter.

Adjusted discharge is the run-off from 108 square miles and is the observed discharge adjusted for diversions into the basin from Ware River, diversions from the basin through Pine Hill Reservoir (9.43 square miles) into Blackstone River Basin for Worcester water supply, diversions from the basin through Wachusett Aqueduct for Boston water supply, and for storage in Wachusett Reservoir.
Remarks.- For information on storage see record for Wachusett Reservoir on South Branch of the Nashua River at Clinton, Mass. Records furnished by water division of the Metropolitan District Commission.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	12	55	283	279	16	4.3	111	77	85
2	10	54	289	265	17	4.2	140	61	111
3	9.4	1.2	219	233	18	4.2	524	81	110
4	10	10	190	205	19	4.3	694	96	105
5	8.8	8.8	177	153	20	64	2,650	80	173
6	8.2	53	159	135	21	2,690	4,150	103	172
7	7.3	71	125	123	22	3,620	2,330	97	112
8	5.4	30	147	91	23	2,450	1,430	96	164
9	3.9	6.8	142	86	24	1,650	1,010	155	450
10	3.9	15	114	124	25	1,160	795	281	293
11	3.9	3.9	145	155	26	781	579	254	262
12	4.2	173	99	86	27	533	480	215	257
13	4.2	130	80	112	28	414	415	189	294
14	4.3	131	86	200	29	321	320	368	272
15	4.3	235	75	115	30	272	379	348	163
					31			288	171
Mean daily discharge, in second-feet						469	566	165	179
Run-off, in inches						-	5.87	-	1.91

Concord River below River Meadow Brook, at Lowell, Mass.

Location.- Water-stage recorder, lat. 42°38'15", long. 71°18'10", at Lowell, Middlesex County, 300 feet below Rogers Street Bridge, 0.3 mile below River Meadow Brook, and 0.8 mile above mouth. Zero of gage is 67.41 feet above mean sea level (general adjustment of 1929).

Drainage area.- 405 square miles; 93 square miles affected by storage and diversion in Sudbury River and Lake Cochituate Basins.

Stage-discharge relation.- Defined by current-meter measurements.

Maxima.- September 1938: Discharge, 3,210 second-feet 2 p.m. Sept. 24 (gage height, 7.74 feet).

December 1936 to August 1938: Discharge, 3,790 second-feet July 29, 1938 (gage height, 8.11 feet).

Remarks.- Flood run-off affected by natural storage in swamps and by storage and diversion in Sudbury River and Lake Cochituate Basins. For information on storage and diversion see records for Sudbury River at Framingham Center, Mass., and Lake Cochituate outlet at Cochituate, Mass.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	421	1,760	9	251	878	17	416	581	25	3,040	574
2	416	1,600	10	228	846	18	506	544	26	2,890	634
3	370	1,490	11	183	788	19	890	515	27	2,690	669
4	340	1,390	12	276	732	20	1,460	481	28	2,430	676
5	292	1,300	13	320	711	21	2,160	476	29	2,180	648
6	312	1,150	14	338	669	22	2,650	426	30	1,930	648
7	298	1,050	15	389	607	23	3,000	437	31		669
8	278	958	16	426	574	24	3,150	498			
Mean monthly discharge, in second-feet										1,151	806
Run-off, in inches										3.17	2.29

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.06	476	5.29	614	5.96	1,120	6.68	1,850	7.14	2,420	7.48	2,860
2	5.06	476	5.31	627	5.98	1,140	6.70	1,870	7.15	2,440	7.50	2,890
3	5.07	481	5.34	648	6.01	1,170	6.74	1,920	7.17	2,460	7.51	2,900
4	5.07	481	5.39	683	6.03	1,190	6.77	1,950	7.18	2,470	7.52	2,920
5	5.07	481	5.44	718	6.05	1,200	6.79	1,980	7.18	2,470	7.53	2,930
6	5.07	481	5.50	760	6.10	1,250	6.83	2,030	7.21	2,510	7.59	3,010
7	5.07	481	5.63	854	6.14	1,286	6.85	2,050	7.23	2,540	7.55	2,960
8	5.08	487	5.67	886	6.15	1,295	6.88	2,090	7.26	2,580	7.57	2,980
9	5.08	487	5.67	886	6.16	1,304	6.90	2,110	7.28	2,600	7.59	3,010
10	5.08	487	5.67	886	6.18	1,320	6.91	2,120	7.31	2,640	7.58	2,990
11	5.08	487	5.68	894	6.21	1,350	6.93	2,150	7.32	2,660	7.59	3,010
N	5.08	487	5.73	934	6.30	1,440	6.94	2,160	7.35	2,700	7.59	3,010
1	5.08	487	5.73	934	6.31	1,450	6.97	2,200	7.35	2,700	7.60	3,020
2	5.08	487	5.73	934	6.36	1,500	6.99	2,230	7.38	2,730	7.60	3,020
3	5.10	498	5.73	934	6.47	1,628	6.99	2,230	7.38	2,730	7.60	3,020
4	5.13	515	5.82	1,010	6.46	1,610	7.05	2,300	7.40	2,760	7.61	3,030
5	5.14	521	5.77	966	6.51	1,660	7.05	2,300	7.40	2,760	7.62	3,050
6	5.14	521	5.81	998	6.53	1,680	7.06	2,320	7.41	2,770	7.62	3,050
7	5.15	526	5.83	1,010	6.56	1,720	7.14	2,420	7.43	2,800	7.64	3,070
8	5.16	532	5.86	1,040	6.59	1,750	7.07	2,330	7.44	2,810	7.65	3,080
9	5.20	555	5.89	1,060	6.61	1,770	7.07	2,330	7.45	2,820	7.65	3,080
10	5.23	574	5.93	1,100	6.63	1,790	7.10	2,370	7.46	2,840	7.66	3,100
11	5.26	594	5.95	1,120	6.67	1,840	7.11	2,380	7.47	2,850	7.69	3,140
M	5.28	607	5.94	1,110	6.67	1,840	7.13	2,410	7.47	2,850	7.64	3,070
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.68	3,120	7.67	3,110	7.55	2,960	7.41	2,770	7.22	2,530	7.02	2,270
4	7.68	3,120	7.66	3,100	7.53	2,930	7.40	2,760	7.20	2,500	7.02	2,270
6	7.72	3,180	7.65	3,080	7.52	2,920	7.38	2,730	7.19	2,490	7.00	2,240
8	7.72	3,180	7.66	3,100	7.53	2,930	7.37	2,720	7.17	2,460	6.99	2,230
10	7.71	3,160	7.62	3,050	7.52	2,920	7.38	2,730	7.16	2,450	6.96	2,190
N	7.72	3,180	7.62	3,050	7.51	2,900	7.35	2,700	7.14	2,420	6.95	2,180
2	7.74	3,210	7.61	3,030	7.50	2,890	7.35	2,700	7.13	2,410	6.93	2,150
4	7.71	3,160	7.59	3,010	7.48	2,860	7.33	2,670	7.12	2,400	6.92	2,140
6	7.67	3,110	7.58	2,990	7.45	2,820	7.30	2,630	7.10	2,370	6.89	2,100
8	7.69	3,140	7.58	2,990	7.46	2,840	7.28	2,600	7.09	2,360	6.89	2,100
10	7.68	3,120	7.57	2,980	7.44	2,810	7.25	2,560	7.07	2,330	6.87	2,070
M	7.67	3,110	7.55	2,960	7.41	2,770	7.24	2,550	7.04	2,290	6.84	2,040

Sudbury River at Framingham Center, Mass.

Location.- Lat. 42°17'30", long. 71°26'40", at dam of Framingham Reservoir No. 1, half a mile above outlet of Farm Pond and three-quarters of a mile southwest of Framingham Center, Middlesex County.
Drainage area.- 75.2 square miles (includes Farm Pond).
Stage-discharge relation.- Observed discharge is combined flow over dam and through venturi meter and is the run-off from 75.2 square miles into the Sudbury River.
Remarks.- Mean monthly discharge adjusted for storage and for diversions into reservoir from Wachusett Reservoir on South Branch of Nashua River at Clinton, Mass., and diversions from reservoir for Boston water supply. Records furnished by water division of the Metropolitan District Commission.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	43	345	9	69	77	17	51	66	25	248	67
2	38	170	10	68	76	18	80	65	26	210	69
3	35	97	11	64	73	19	172	62	27	188	69
4	31	90	12	62	73	20	711	62	28	169	74
5	28	86	13	61	73	21	1,120	62	29	157	76
6	26	84	14	56	73	22	877	61	30	299	76
7	30	82	15	57	75	23	660	62	31		77
8	56	77	16	53	71	24	355	68			
Mean monthly discharge, in second-feet (observed)										202	85.1
Gain or loss in storage, in millions of cubic feet										+73.2	-66.3
Mean monthly discharge, in second-feet (adjusted)										265	111
Run-off, in inches (adjusted)										3.93	1.71

Lake Cochituate outlet at Cochituate, Mass.

Location.- Lat. 42°18'45", long. 71°23'15", at outlet three-eighths of a mile north of Cochituate railroad station, Middlesex County, and 1¼ miles above confluence with Sudbury River.
Drainage area.- 17.40 square miles since January 1937.
Stage-discharge relation.- Observed discharge is combined flow over dam and through venturi meter and is the run-off from 17.4 square miles into the Sudbury River.
Remarks.- Mean monthly discharge adjusted for storage and diversions into and from Lake Cochituate. Records furnished by water division of the Metropolitan District Commission.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	0	0	9	0	0	17	0	0	25	176	0
2	0	0	10	0	0	18	48	0	26	165	0
3	0	0	11	0	0	19	121	0	27	154	0
4	0	0	12	0	0	20	210	0	28	145	0
5	0	1.9	13	0	0	21	211	0	29	135	0
6	0	0	14	0	0	22	205	0	30	126	0
7	0	0	15	0	0	23	197	0	31		0
8	0	0	16	0	0	24	187	0			0
Mean monthly discharge, in second-feet (observed)										69.3	0.1
Gain or loss in storage, in millions of cubic feet										-48.3	+57.8
Mean monthly discharge, in second-feet (adjusted)										53.6	24.5
Run-off, in inches (adjusted)										3.44	1.63

Willimantic River near South Coventry, Conn.

Location.- Water-stage recorder, lat. 41°45'00", long. 72°16'00", 700 feet above highway bridge, 2 miles southeast of South Coventry, Tolland County, and 2¾ miles above mouth of Hop River. Zero of gage is 239.05 feet above mean sea level (general adjustment of 1929).

Drainage area.- 121 square miles.

Gage-height record.- Water-stage recorder graph except for period 10 a.m. to 8 p.m. Sept. 21, record for which was based on high-water mark, existing record, and study of distribution of water released by failure of dam upstream.

Stage-discharge relation.- Defined by current-meter measurements to 3,510 second-feet; extended to peak stage on basis of determination of flood flow over spillway of dam 3 miles upstream in March 1936 and September 1938 and study of theoretical shape of rating curve for contracted-opening control.

Maxima.- September 1938: Discharge resulting from breaking of dam upstream, 15,500 second-feet 11 a.m. Sept. 21 (gage height, 18.08 feet, from floodmark).
1931 to August 1938: Discharge, 7,880 second-feet Mar. 12, 1936 (gage height, 12.19 feet).

Remarks.- Flood run-off affected by storage in several ponds and reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	170	480	9	81	251	17	176	234	25	915	412
2	164	414	10	104	257	18	79	221	26	680	343
3	160	389	11	41	251	19	1,230	218	27	583	269
4	32	348	12	118	253	20	2,830	218	28	535	238
5	15	323	13	136	239	21	12,900	246	29	474	224
6	117	299	14	125	240	22	8,410	238	30	478	207
7	99	285	15	160	228	23	2,750	211	31		207
8	83	269	16	202	228	24	1,440	248			
Mean monthly discharge, in second-feet										1,176	274
Run-off, in inches										10.84	2.61

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.23	170	4.10	370	7.24	1,470	11.94	7,330	16.11	13,100	9.79	3,710
2	3.10	145	4.71	533	7.27	1,490	12.30	8,080	15.85	12,800	9.70	3,600
3	2.91	112	5.34	722	7.23	1,470	12.69	8,780	15.57	12,500	9.60	3,480
4	2.55	59	5.72	836	7.27	1,490	13.12	9,490	15.24	12,100	9.53	3,400
5	2.31	34	6.16	971	7.38	1,560	13.63	10,200	14.92	11,700	9.45	3,300
6	2.19	25	6.74	1,210	7.52	1,640	14.46	11,200	14.56	11,300	9.35	3,180
7	2.12	21	7.22	1,460	7.64	1,730	15.17	12,000	14.22	10,900	9.28	3,110
8	2.10	20	7.47	1,610	7.71	1,780	15.78	12,700	13.86	10,500	9.19	3,010
9	2.10	20	7.54	1,660	7.73	1,790	16.35	13,400	13.51	10,000	9.13	2,940
10	2.16	24	7.53	1,650	7.77	1,820	16.75	13,900	13.14	9,520	9.05	2,860
11	2.20	26	7.43	1,590	7.88	1,900	18.08	15,500	12.83	9,030	8.99	2,790
N	2.21	27	7.31	1,520	8.17	2,120	17.81	15,200	12.52	8,480	8.91	2,710
1	2.24	29	7.18	1,440	8.48	2,370	17.62	14,900	12.21	7,900	8.84	2,640
2	2.22	27	7.07	1,380	8.71	2,580	17.59	14,900	11.92	7,280	8.74	2,540
3	2.22	27	6.96	1,320	8.93	2,790	17.61	14,900	11.63	6,680	8.67	2,470
4	2.19	25	6.85	1,260	9.15	3,020	17.60	14,900	11.36	6,170	8.61	2,410
5	2.21	27	6.81	1,240	9.43	3,320	17.55	14,900	11.11	5,720	8.54	2,340
6	2.31	34	6.78	1,230	9.74	3,690	17.50	14,800	10.86	5,300	8.45	2,260
7	2.42	44	6.79	1,240	10.07	4,100	17.42	14,700	10.65	4,960	8.37	2,180
8	2.92	113	6.84	1,260	10.36	4,500	17.31	14,600	10.46	4,660	8.31	2,130
9	2.91	112	6.96	1,320	10.75	5,120	17.22	14,500	10.30	4,420	8.24	2,070
10	3.57	241	7.06	1,370	11.14	5,770	16.93	14,100	10.13	4,180	8.16	1,990
11	3.70	271	7.13	1,410	11.44	6,310	16.63	13,800	10.01	4,010	8.10	1,940
M	3.97	338	7.21	1,460	11.71	6,840	16.38	13,500	9.90	3,860	8.05	1,900
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.91	1,790	6.79	1,060	6.02	747	5.58	599	5.53	584	5.24	497
4	7.79	1,690	6.72	1,030	5.98	733	5.56	593	5.54	587	5.22	491
6	7.69	1,610	6.65	995	5.94	719	5.55	590	5.48	569	5.16	475
8	7.61	1,560	6.55	950	5.90	705	5.54	587	5.41	548	5.13	468
10	7.55	1,520	6.51	934	5.85	688	5.50	575	5.33	524	5.10	460
N	7.43	1,430	6.45	910	5.82	677	5.49	572	5.28	509	5.10	460
2	7.31	1,360	6.37	878	5.74	649	5.52	581	5.31	518	5.13	468
4	7.21	1,300	6.33	862	5.76	656	5.54	587	5.32	521	5.16	475
6	7.13	1,250	6.25	830	5.72	642	5.50	575	5.28	509	5.14	470
8	7.04	1,190	6.19	806	5.68	629	5.50	575	5.27	506	5.13	468
10	6.95	1,140	6.14	789	5.66	623	5.51	578	5.30	515	5.17	478
M	6.86	1,100	6.08	768	5.61	608	5.47	566	5.26	503	5.11	462

Shetucket River near Willimantic, Conn.

Location.- Water-stage recorder, lat. 41°41'58", long. 72°10'53", at Bingham Bridge, 1 mile below confluence of Willimantic and Natchaug Rivers and 1½ miles below Willimantic, Windham County. Zero of gage is 131.40 feet above mean sea level (general adjustment of 1929).

Drainage area.- 401 square miles.

Gage-height record.- Water-stage recorder graph except for period 6 a.m. Sept. 21 to 5 p.m. Sept. 23, record for which was based on partial gage-height record, floodmarks, information from local residents, and correlation with flood-routing study for gaging stations on three main headwater streams.

Stage-discharge relation.- Defined by current-meter measurements below 10,900 second-feet; extended logarithmically to peak stage on basis of computation of flood flow of March 1936, and of September 1938 over spillway of dams 5 and 9 miles downstream, correlated with combined flow at gaging stations on three main headwater streams.

Maxima.- September 1938: Discharge, 52,200 second-feet 2-3 p.m. Sept. 21 (gage height, 27.6 feet, from floodmarks).

1904-5, 1933 to August 1938: Discharge, 23,900 second-feet Mar. 12, 1936 (gage height, 18.55 feet, from floodmarks).

Remarks.- Flood run-off affected by storage in numerous ponds and reservoirs and by failure of dams upstream.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	270	1,600	9	206	832	17	489	635	25	3,190	1,150
2	300	1,380	10	117	810	18	553	605	26	2,400	1,100
3	267	1,190	11	172	728	19	3,950	580	27	1,910	890
4	206	1,080	12	212	690	20	8,420	575	28	1,700	783
5	139	956	13	249	665	21	35,500	625	29	1,520	766
6	237	896	14	341	670	22	25,500	665	30	1,460	734
7	238	914	15	386	665	23	11,400	585	31		665
8	217	878	16	620	645	24	4,960	645			
Mean monthly discharge, in second-feet										3,571	826
Run-off, in inches										9.94	2.38

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.25	498	4.01	886	9.73	6,760	13.94	13,800	23.3	38,000	14.05	14,100
2	3.25	498	4.20	1,000	9.78	6,830	14.53	15,000	22.85	36,600	13.75	13,500
3	3.26	502	4.72	1,350	9.86	6,940	15.00	16,000	22.4	35,200	13.65	13,300
4	3.27	506	4.92	1,500	9.92	7,030	15.51	17,000	21.95	33,800	13.8	13,600
5	3.28	511	5.06	1,610	10.02	7,170	16.1	18,300	21.6	32,800	14.15	14,300
6	3.25	498	5.50	1,960	10.12	7,310	16.8	19,900	21.15	31,400	14.5	15,000
7	3.23	488	5.74	2,180	10.22	7,450	17.6	21,900	20.8	30,400	14.3	14,600
8	3.21	480	6.17	2,560	10.29	7,550	18.6	24,500	20.35	29,200	14.1	14,200
9	3.22	484	6.55	2,940	10.31	7,570	19.85	27,800	19.95	28,100	13.85	13,700
10	3.24	493	6.93	3,320	10.37	7,660	21.85	33,600	19.5	26,800	13.55	13,100
11	3.31	524	7.26	3,680	10.44	7,760	23.45	38,400	19.1	25,800	13.25	12,500
N	3.09	426	7.66	4,120	10.57	7,960	25.5	45,100	18.7	24,700	12.95	11,900
1	2.99	381	7.93	4,450	10.60	8,000	26.8	49,500	18.3	23,700	12.6	11,300
2	3.39	560	8.23	4,810	10.65	8,080	27.6	52,200	17.95	22,800	12.3	10,700
3	3.54	630	8.48	5,120	10.72	8,180	27.6	52,200	17.6	21,900	12.0	10,200
4	3.44	583	8.76	5,490	10.84	8,360	27.55	52,100	17.2	20,900	11.7	9,720
5	3.47	596	8.92	5,700	11.00	8,600	27.35	51,400	16.8	19,900	11.46	9,340
6	3.50	610	9.19	6,050	11.21	8,940	27.1	50,500	16.45	19,100	11.20	8,920
7	3.51	615	9.33	6,230	11.52	9,430	26.75	49,400	16.05	18,200	10.99	8,580
8	3.53	625	9.50	6,450	11.89	10,000	26.2	47,500	15.7	17,500	10.76	8,220
9	3.55	635	9.56	6,530	12.31	10,800	25.55	45,300	15.3	16,600	10.52	7,840
10	3.61	665	9.58	6,550	12.71	11,500	25.0	43,400	15.0	16,000	10.33	7,560
11	3.85	790	9.63	6,620	13.10	12,200	24.3	41,200	14.65	15,300	10.12	7,240
M	3.89	814	9.67	6,680	13.58	13,100	23.8	39,600	14.35	14,700	9.92	6,940
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.57	6,430	7.40	3,670	6.44	2,670	5.79	2,080	5.46	1,820	5.16	1,580
4	9.23	5,950	7.29	3,550	6.37	2,600	5.73	2,030	5.45	1,810	5.14	1,560
6	8.98	5,600	7.19	3,440	6.31	2,550	5.69	2,000	5.43	1,790	5.17	1,590
8	8.72	5,270	7.09	3,330	6.26	2,500	5.65	1,970	5.41	1,780	5.13	1,550
10	8.51	4,990	7.00	3,230	6.20	2,450	5.60	1,930	5.40	1,770	5.11	1,540
N	8.32	4,750	6.91	3,140	6.13	2,390	5.56	1,900	5.32	1,710	5.07	1,510
2	8.18	4,580	6.84	3,070	6.09	2,350	5.51	1,860	5.28	1,670	5.04	1,490
4	8.01	4,370	6.78	3,010	6.00	2,270	5.42	1,790	5.27	1,670	5.02	1,470
6	7.90	4,240	6.69	2,920	5.97	2,240	5.43	1,790	5.13	1,550	5.01	1,470
8	7.75	4,060	6.62	2,850	5.93	2,210	5.44	1,800	5.13	1,550	5.01	1,470
10	7.61	3,900	6.57	2,800	5.89	2,170	5.46	1,820	5.14	1,560	5.00	1,460
M	7.50	3,780	6.50	2,730	5.83	2,120	5.46	1,820	5.15	1,570	4.99	1,450

Hop River near Columbia, Conn.

Location.- Water-stage recorder, lat. 41°43'25", long. 72°18'05", 1,000 feet below abandoned mill and dam, a quarter of a mile below Hop River depot, 2 miles north of Columbia, Tolland County, and 3½ miles above confluence of Hop and Willimantic Rivers. Zero of gage is 249.25 feet above mean sea level (general adjustment of 1929).

Drainage area.- 76.2 square miles.

Gage-height record.- Water-stage recorder graph except for period 5:30 a.m. Sept. 21 to noon Sept. 24, record for which was based on high-water marks, existing record, one inspection, and study of distribution of water released by failure of dam upstream.

Stage-discharge relation.- Defined by current-meter measurements to 2,880 second-feet; extended to peak stage on basis of determination of flood flow over spillway of dam a quarter of a mile upstream.

Maxima.- September 1938: Discharge, 6,450 second-feet 4 p.m. Sept. 21 (gage height, 16.25 feet, from floodmarks).
1932 to August 1938: Discharge, 3,300 second-feet Mar. 12, 1936 (gage height, 13.85 feet, from floodmarks).

Remarks.- Flood run-off affected by storage in two reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	38	264	9	32	188	17	63	115	25	622	242
2	32	224	10	27	151	18	78	110	26	444	181
3	24	199	11	21	140	19	712	108	27	331	156
4	31	183	12	32	127	20	1,900	108	28	298	144
5	31	170	13	29	123	21	4,930	126	29	257	152
6	36	165	14	41	119	22	3,500	129	30	242	143
7	29	207	15	52	119	23	3,180	120	31		131
8	28	199	16	85	117	24	1,050	135			
Mean monthly discharge, in second-feet										606	155
Run-off, in inches										8.87	2.34

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.13	47	4.15	168	7.26	875	12.94	3,150	14.90	4,800	14.00	4,020
2	3.12	47	4.32	199	7.28	880	12.98	3,170	14.70	4,620	15.30	5,200
3	3.17	51	4.63	261	7.34	895	13.05	3,200	14.45	4,400	15.55	5,460
4	3.25	57	5.24	384	7.44	920	13.15	3,260	14.30	4,260	15.35	5,250
5	3.31	62	5.91	538	7.53	944	13.43	3,420	14.10	4,100	14.85	4,760
6	3.39	69	6.25	622	7.63	974	13.87	3,680	13.90	3,940	14.35	4,300
7	3.42	72	6.52	690	7.75	1,010	14.35	3,970	13.80	3,860	13.90	3,940
8	3.46	76	6.75	748	7.87	1,050	14.75	4,280	13.65	3,760	13.50	3,650
9	3.48	78	6.93	792	8.01	1,090	15.05	4,570	13.50	3,650	13.20	3,440
10	3.49	79	7.09	832	8.23	1,150	15.30	4,840	13.35	3,540	12.90	3,230
11	3.50	80	7.20	860	8.60	1,270	15.50	5,110	13.20	3,440	12.65	3,070
N	3.50	80	7.30	885	9.00	1,410	15.75	5,500	13.10	3,370	12.40	2,920
1	3.50	80	7.39	908	9.40	1,550	15.90	5,770	12.95	3,260	12.15	2,770
2	3.54	84	7.30	885	9.98	1,770	16.05	6,050	12.80	3,160	11.95	2,660
3	3.54	84	7.37	902	11.41	2,380	16.20	6,350	12.70	3,100	11.70	2,530
4	3.55	86	7.30	885	12.75	3,050	16.25	6,450	12.55	3,010	11.50	2,430
5	3.57	88	7.22	865	13.13	3,240	16.20	6,360	12.45	2,950	11.25	2,300
6	3.59	90	7.17	852	13.22	3,290	16.15	6,280	12.30	2,860	11.05	2,200
7	3.60	91	7.14	845	13.15	3,250	16.10	6,200	12.20	2,800	10.85	2,120
8	3.61	92	7.17	852	13.06	3,210	15.95	5,970	12.05	2,710	10.65	2,040
9	3.63	95	7.21	862	13.03	3,200	15.80	5,760	12.00	2,680	10.45	1,960
10	3.65	97	7.25	872	12.96	3,160	15.60	5,520	12.00	2,680	10.25	1,880
11	3.74	108	7.26	875	12.93	3,140	15.40	5,300	12.25	2,830	10.00	1,780
M	3.90	129	7.25	872	12.91	3,140	15.15	5,050	13.05	3,340	9.80	1,700
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.30	1,500	6.93	714	6.17	519	5.41	354	5.20	314	4.96	271
4	8.90	1,350	6.84	689	6.12	507	5.38	348	5.19	312	4.94	267
6	8.50	1,210	6.76	668	6.08	497	5.35	342	5.18	310	4.92	264
8	8.25	1,120	6.70	652	6.03	485	5.32	336	5.16	307	4.92	264
10	7.95	1,020	6.62	631	5.97	471	5.29	330	5.14	303	4.90	260
N	7.75	955	6.56	616	5.84	443	5.28	328	5.12	300	4.88	256
2	7.59	907	6.50	600	5.72	416	5.25	323	5.11	298	4.87	255
4	7.46	868	6.44	584	5.65	402	5.24	321	5.07	291	4.85	251
6	7.32	826	6.39	572	5.60	392	5.23	319	5.04	285	4.83	247
8	7.22	796	6.33	557	5.53	378	5.22	318	5.02	282	4.82	246
10	7.12	768	6.27	543	5.49	370	5.21	316	5.00	278	4.80	242
M	7.03	742	6.21	528	5.44	360	5.21	316	4.98	274	4.79	240

Natchaug River at Willimantic, Conn.

Location.- Water-stage recorder, lat. 41°43'14", long. 72°11'53", 200 feet below New York, New Haven & Hartford Railroad bridge and 1 mile northeast of Willimantic, Windham County. Zero of gage is 150.31 feet above mean sea level (general adjustment of 1929).
Drainage area.- 169 square miles.
Gage-height record.- Water-stage recorder graph except for period 11:00 a.m. to 7:00 p.m. Sept. 21, record for which was based on high-water mark and existing record.
Stage-discharge relation.- Defined by current-meter measurements to 6,530 second-feet; extended to peak stage on basis of determinations of flood flow over spillway of dam 2 miles upstream in March 1936 and September 1938.
Maxima.- September 1938: Discharge, resulting from breaking of dam upstream, 32,000 second-feet 2 p.m., Sept. 21 (gage height, 16.39 feet, from floodmarks).
1930 to August 1938: Discharge, resulting from breaking of dam upstream, 14,200 second-feet Mar. 18, 1936 (gage height, 13.57 feet).
Remarks.- Flood run-off affected by storage in several small ponds. Small diversions for water supply of Willimantic pumped from reservoir 2 miles upstream. Mean monthly diversions: September, 1.56 second-feet; October, 1.77 second-feet.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	102	691	9	64	311	17	198	240	25	1,280	426
2	94	596	10	62	296	18	297	234	26	983	410
3	87	498	11	54	278	19	2,230	228	27	782	350
4	73	434	12	38	257	20	4,570	218	28	685	315
5	73	362	13	75	247	21	18,200	237	29	641	323
6	68	354	14	155	257	22	8,570	237	30	601	327
7	62	350	15	166	271	23	3,310	215	31		285
8	66	323	16	295	257	24	1,810	237			
Mean monthly discharge, in second-feet										1,523	325
Run-off, in inches										10.05	2.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.08	173	3.31	538	9.07	3,870	11.30	6,400	13.56	14,200	10.13	4,710
2	2.13	184	3.50	610	9.14	3,920	11.40	6,600	13.37	13,300	9.97	4,540
3	2.17	193	3.81	734	9.20	3,970	11.52	6,850	13.20	12,600	9.84	4,410
4	2.20	200	4.00	820	9.28	4,030	11.70	7,300	13.02	11,700	9.67	4,240
5	2.22	205	4.14	883	9.37	4,110	12.01	8,130	12.88	11,200	9.52	4,090
6	2.25	212	4.41	1,020	9.45	4,170	12.46	9,560	12.73	10,600	9.34	3,920
7	2.29	222	4.75	1,180	9.54	4,240	13.06	11,900	12.67	10,300	9.18	3,770
8	2.32	230	5.16	1,390	9.60	4,290	13.60	14,400	12.51	9,740	9.03	3,640
9	2.40	251	5.52	1,570	9.63	4,310	14.13	17,300	12.35	9,180	8.87	3,500
10	2.51	281	5.84	1,730	9.65	4,330	14.58	19,900	12.20	8,700	8.74	3,390
11	2.52	284	6.24	1,930	9.74	4,410	15.04	22,800	12.07	8,310	8.60	3,280
N	2.52	284	6.64	2,170	9.80	4,460	15.42	25,200	11.91	7,830	8.45	3,160
1	2.56	295	7.04	2,410	9.81	4,470	15.95	29,000	11.77	7,480	8.33	3,060
2	2.65	320	7.45	2,660	9.84	4,500	16.39	32,000	11.65	7,180	8.20	2,960
3	2.70	335	7.84	2,930	9.89	4,540	16.12	30,100	11.52	6,850	8.07	2,870
4	2.72	341	8.22	3,190	9.93	4,580	15.74	27,500	11.40	6,600	7.96	2,780
5	2.76	353	8.44	3,360	10.09	4,720	15.54	26,100	11.30	6,400	7.85	2,700
6	2.80	365	8.66	3,540	10.21	4,830	15.40	25,100	11.16	6,120	7.74	2,630
7	2.85	380	8.83	3,670	10.34	4,950	15.18	23,700	11.01	5,860	7.64	2,560
8	2.89	392	8.93	3,750	10.51	5,140	14.92	22,000	10.89	5,680	7.54	2,490
9	2.91	398	8.96	3,780	10.70	5,400	14.57	19,800	10.73	5,440	7.45	2,430
10	2.99	426	8.95	3,770	10.87	5,660	14.26	18,000	10.60	5,250	7.37	2,380
11	3.12	472	8.98	3,790	11.00	5,850	13.97	16,400	10.44	5,060	7.29	2,320
M	3.22	507	9.03	3,830	11.19	6,180	13.73	15,100	10.29	4,890	7.21	2,270
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.04	2,160	5.80	1,450	5.09	1,100	4.62	860	4.42	760	4.19	650
4	6.90	2,070	5.72	1,410	5.04	1,070	4.58	840	4.41	755	4.19	650
6	6.76	1,990	5.64	1,370	5.00	1,050	4.56	830	4.39	745	4.23	668
8	6.64	1,910	5.56	1,330	4.95	1,020	4.54	820	4.37	735	4.23	668
10	6.50	1,830	5.44	1,270	4.91	1,000	4.50	800	4.33	715	4.20	655
N	6.37	1,750	5.42	1,260	4.84	970	4.45	775	4.23	668	4.18	646
2	6.32	1,720	5.40	1,250	4.82	960	4.39	745	4.22	664	4.16	637
4	6.21	1,660	5.28	1,190	4.73	915	4.35	725	4.24	673	4.14	628
6	6.14	1,620	5.26	1,180	4.73	915	4.30	700	4.03	578	4.13	624
8	6.05	1,580	5.22	1,160	4.72	910	4.35	725	4.09	606	4.13	624
10	5.96	1,530	5.17	1,140	4.69	895	4.40	750	4.13	624	4.11	614
M	5.88	1,490	5.12	1,110	4.66	880	4.42	760	4.17	642	4.10	610

Quinebaug River at Quinebaug, Conn.

Location.- Water-stage recorder, lat. 42°01'20", long. 71°57'15", at Quinebaug, Windham County, 500 feet above highway bridge, a quarter of a mile below Massachusetts-Connecticut State line, and 7 miles above confluence with French River.
Drainage area.- 157 square miles.
Gage-height record.- Water-stage recorder graph except for one hour during very sharp peak.
Stage-discharge relation.- Defined by current-meter measurements to 2,000 second-feet; extended to peak stage on basis of computations of 1936 and 1938 peak flows at bridge 500 feet downstream, and determination of peak flow during 1936 flood at dam a quarter of a mile upstream. Shortly after peak of 1938 flood, a deep bypass was scoured around right end of bridge which created a shifting stage-discharge relation down to about 9.0 feet, where flow through bypass ceased; stage-discharge relation for this period based on studies of amount of water bypassed and verified by hydrographic comparison with records for station at Putnam, Conn.
Maxima.- September 1938: Discharge, 14,100 second-feet 10:30 a.m. Sept. 21 (gage height, 16.21 feet; from high-water mark).
1931 to August 1938: Discharge, 10,500 second-feet (revised) 8:30 p.m. Mar. 18, 1936 (gage height, 13.44 feet).
Remarks.- Flood run-off doubtless affected by storage in several lakes and ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	215	660	9	194	300	17	198	198	25	1,590	357
2	201	594	10	204	287	18	243	226	26	1,140	331
3	149	480	11	137	269	19	968	202	27	907	320
4	114	436	12	99	244	20	2,020	174	28	819	322
5	124	410	13	229	230	21	9,620	220	29	707	271
6	130	375	14	204	202	22	9,010	208	30	649	244
7	194	365	15	236	186	23	5,500	195	31	-	254
8	197	338	16	244	198	24	2,630	268			
Mean monthly discharge, in second-feet										1,296	302
Run-off, in inches										9.20	2.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.70	204	3.04	337	4.67	1,250	6.70	2,940	12.76	10,500	10.40	7,270
2	2.73	215	3.07	349	4.69	1,260	6.72	2,960	12.77	10,400	10.25	7,180
3	2.74	218	3.23	418	4.67	1,250	6.82	3,060	12.75	10,200	10.07	7,020
4	2.74	218	3.56	580	4.70	1,270	7.30	3,570	12.66	10,100	9.95	6,940
5	2.74	218	3.91	770	4.70	1,270	8.10	4,500	12.55	10,000	9.80	6,860
6	2.75	222	4.27	982	4.70	1,270	9.20	5,990	12.41	9,760	9.65	6,690
7	2.84	256	4.51	1,140	4.80	1,340	10.40	6,830	12.32	9,460	9.50	6,510
8	2.83	252	4.60	1,200	4.91	1,420	12.30	8,250	12.26	9,520	9.38	6,400
9	2.85	260	4.70	1,270	5.13	1,570	14.40	11,800	12.16	9,400	9.21	6,130
10	2.88	271	4.70	1,270	5.30	1,700	16.00	13,800	12.07	9,280	9.10	5,990
11	2.86	263	4.62	1,210	5.26	1,670	14.75	14,100	11.96	9,160	8.97	5,710
N	2.89	275	4.51	1,140	5.40	1,780	14.25	14,000	11.84	9,040	8.85	5,500
1	2.85	260	4.40	1,060	5.73	2,040	14.00	13,700	11.76	8,820	8.63	5,190
2	2.90	279	4.32	1,010	6.03	2,310	13.67	13,300	11.68	8,710	8.52	5,050
3	2.83	252	4.31	1,010	6.13	2,400	13.46	12,900	11.60	8,600	8.40	4,890
4	2.85	260	4.30	1,000	6.16	2,420	13.27	12,600	11.56	8,490	8.30	4,760
5	2.87	267	4.30	1,000	6.32	2,570	13.05	12,300	11.46	8,380	8.10	4,500
6	2.86	263	4.30	1,000	6.50	2,740	13.07	11,900	11.35	8,270	7.98	4,360
7	2.87	267	4.25	970	6.80	3,040	13.06	11,500	11.24	8,060	7.84	4,190
8	2.88	271	4.20	940	6.71	2,950	13.05	11,200	11.11	7,960	7.73	4,060
9	2.90	279	4.30	1,000	6.71	2,950	12.97	11,100	10.98	7,860	7.60	3,900
10	2.92	287	4.45	1,100	6.67	2,910	12.92	11,000	10.86	7,760	7.50	3,790
11	2.91	283	4.55	1,160	6.63	2,870	12.76	10,700	10.74	7,560	7.39	3,670
M	2.93	291	4.63	1,220	6.62	2,860	12.70	10,600	10.55	7,460	7.21	3,470
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.04	3,280	5.51	1,870	4.75	1,280	4.31	972	4.17	880	3.96	751
4	6.91	3,150	5.45	1,820	4.70	1,240	4.30	965	4.15	868	3.93	733
6	6.78	3,020	5.39	1,770	4.67	1,220	4.27	946	4.13	854	3.92	727
8	6.68	2,920	5.30	1,700	4.65	1,200	4.24	926	4.11	842	3.92	727
10	6.47	2,710	5.20	1,620	4.57	1,150	4.22	913	4.11	842	3.94	739
N	6.31	2,560	5.13	1,560	4.57	1,150	4.20	900	4.03	793	3.91	721
2	6.19	2,450	5.09	1,530	4.50	1,100	4.18	887	4.03	793	3.87	698
4	6.08	2,350	5.03	1,480	4.48	1,090	4.16	874	4.05	805	3.85	688
6	5.94	2,230	4.93	1,400	4.41	1,040	4.12	848	4.00	775	3.81	666
8	5.80	2,100	4.90	1,380	4.41	1,040	4.09	829	4.00	775	3.80	660
10	5.74	2,050	4.84	1,340	4.36	1,000	4.19	894	4.00	775	3.80	660
M	5.63	1,960	4.79	1,300	4.33	984	4.18	887	3.99	769	3.80	660

Supplemental records.- Sept. 20, 6:20 p.m., 6.87 ft., 3,110 sec.-ft.; Sept. 21, 10:30 a.m., 16.21 ft., 14,100 sec.-ft.

Quinebaug River at Putnam, Conn.

Location.- Water-stage recorder, lat. 41°54'30", long. 71°54'30", at Putnam, Windham County, 600 feet below mouth of Muddy Brook and 3 miles below junction of Quinebaug and French Rivers.

Drainage area.- 331 square miles.

Gage-height record.- Water-stage recorder graph except for period 1 p.m. Sept. 21 to 4 p.m. Sept. 24, record for which was based on floodmarks, partial gage-height graph at Belding-Hemingway Co. dam at Putnam, and records at Putnam Water Co. dam on Muddy Brook.

Stage-discharge relation.- Defined by current-meter measurements below 2,880 second-feet; extended to peak stage on basis of determination of flood flow at dam 1 mile upstream, combined with inflow from Muddy Brook determined by flow over spillway at dam 2 miles above its mouth.

Maxima.- September 1938: Discharge, 20,900 second-feet 1:30 p.m. Sept. 21 (gage height, 19.45 feet, from floodmarks).
1929 to August 1938: Discharge, 17,200 second-feet Mar. 19, 1936 (gage height, 17.28 feet, from floodmarks).

Remarks.- Flood run-off affected by storage in several ponds and reservoirs and by failure of dams upstream. City of Putnam diverts about 1,000,000 gallons per day from Muddy Brook for municipal water supply.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	380	1,380	9	360	712	17	407	610	25	3,430	850
2	478	1,260	10	330	676	18	513	596	26	2,370	870
3	306	1,140	11	242	656	19	2,450	604	27	1,880	743
4	167	1,020	12	258	640	20	5,170	542	28	1,690	836
5	289	980	13	322	616	21	13,800	554	29	1,510	714
6	398	852	14	396	584	22	14,300	556	30	1,380	696
7	324	834	15	430	580	23	8,490	501	31	-	741
8	242	820	16	418	493	24	5,560	613			
Mean monthly discharge, in second-feet										2,276	751
Run-off, in inches										7.68	2.62

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.76	584	4.46	892	9.04	4,250	11.83	7,650	17.25	16,500	14.15	10,800
2	3.75	580	4.50	910	9.05	4,260	11.92	7,770	17.15	16,300	13.95	10,500
3	3.74	576	4.64	980	9.06	4,280	12.02	7,900	17.05	16,200	13.80	10,200
4	3.56	506	4.76	1,040	9.07	4,290	12.16	8,090	17.00	16,100	13.60	9,900
5	3.32	422	4.73	1,020	9.08	4,300	12.30	8,290	12.90	15,900	13.50	9,740
6	2.70	238	5.11	1,220	9.16	4,390	12.49	8,560	16.85	15,800	13.30	9,420
7	2.86	283	5.98	1,730	9.14	4,360	12.68	8,820	16.75	15,600	13.20	9,260
8	3.14	367	6.24	1,890	9.11	4,330	12.91	9,140	16.65	15,400	13.05	9,000
9	2.96	313	6.50	2,070	9.10	4,320	13.10	9,410	16.55	15,200	12.90	8,800
10	2.50	185	6.80	2,280	9.10	4,320	13.60	10.200	16.45	15,000	12.80	8,650
11	2.50	185	7.07	2,470	9.17	4,400	14.50	11,600	16.35	14,800	12.65	8,420
N	2.35	148	7.29	2,620	9.26	4,500	16.50	15,100	16.25	14,600	12.50	8,200
1	2.36	151	7.44	2,740	9.47	4,730	19.30	20,600	16.10	14,400	12.40	8,060
2	3.11	358	7.53	2,810	9.64	4,920	19.35	20,700	15.95	14,100	12.30	7,920
3	3.81	604	7.62	2,890	9.88	5,210	19.10	20,200	15.85	13,900	12.20	7,780
4	3.78	592	7.70	2,950	10.05	5,410	18.80	19,600	15.70	13,600	12.15	7,710
5	3.80	600	7.89	3.120	10.30	5,710	18.50	19,000	15.55	13,300	12.05	7,570
6	3.89	636	7.86	3,090	10.51	5,960	18.20	18,400	15.40	13,000	11.95	7,430
7	4.26	802	8.05	3,260	10.75	6,250	18.00	18,000	15.20	12,700	11.85	7,290
8	4.36	847	8.60	3,800	11.00	6,570	17.85	17,700	15.05	12,400	11.80	7,220
9	4.36	847	8.84	4,040	11.27	6,920	17.70	17,400	14.85	12,000	11.70	7,080
10	4.37	852	8.96	4,170	11.47	7,180	17.55	17,100	14.70	11,800	11.60	6,950
11	4.49	906	9.08	4,300	11.62	7,380	17.45	16,900	14.50	11,400	11.50	6,820
M	4.46	892	9.11	4,330	11.73	7,520	17.35	16,700	14.30	11,100	11.40	6,690
	September 24		September 25		September 26		September 27		September 28		September 29	
2	11.25	6,500	9.22	4,160	7.57	2,660	6.70	2,000	6.26	1,710	6.00	1,550
4	11.10	6,300	9.03	3,970	7.49	2,590	6.64	1,960	6.27	1,710	5.98	1,540
6	10.95	6,110	8.88	3,820	7.42	2,540	6.60	1,930	6.28	1,720	5.96	1,530
8	10.80	5,930	8.74	3,680	7.38	2,500	6.57	1,910	6.29	1,720	5.95	1,520
10	10.65	5,750	8.58	3,530	7.26	2,410	6.56	1,900	6.30	1,730	5.94	1,510
N	10.50	5,570	8.43	3,400	7.20	2,360	6.53	1,880	6.27	1,710	5.94	1,510
2	10.35	5,390	8.28	3,260	7.16	2,330	6.53	1,880	6.27	1,710	5.95	1,520
4	10.23	5,250	8.16	3,150	7.08	2,270	6.50	1,860	6.25	1,700	5.96	1,530
6	9.99	4,990	7.99	3,000	7.00	2,210	6.45	1,820	6.19	1,660	5.93	1,510
8	9.83	4,810	7.79	2,830	6.85	2,100	6.40	1,790	6.14	1,630	5.84	1,450
10	9.60	4,560	7.73	2,780	6.80	2,070	6.34	1,750	6.12	1,620	5.80	1,430
M	9.40	4,340	7.66	2,730	6.76	2,040	6.30	1,730	6.06	1,590	5.76	1,410

Supplemental Records.- Sept. 21, 1:30 p.m., 19.45 ft., 20,900 sec.-ft.

Quinebaug River at Jewett City, Conn.

Location.- Water-stage recorder, lat. 41°35'55", long. 71°59'05", at Jewett City, New London County, 1,000 feet below railroad bridge and 570 feet below outlet of canal from Slater Mills (mouth of Pachaug River).
Drainage area.- 711 square miles.
Gage-height record.- Water-stage recorder graph except for period 11:30 p.m. Sept. 21 to 4 p.m. Sept. 25, record for which was based on floodmark, existing record, and operation record at dam of Connecticut Light & Power Co. 6 miles downstream.
Stage-discharge relation.- Defined by current-meter measurements to 15,000 second-feet; extended to peak stage on basis of flood determinations of March 1936, and verified by hourly computations of flow at dam 6 miles downstream during flood of September 1938.
Maxima.- September 1938: Discharge, 22,800 second-feet 2-5 p.m. Sept. 22 (gage height, 21.7 feet, from floodmark).
1918 to August 1938: Discharge, 29,200 second-feet Mar. 19, 1936 (gage height, 24.0 feet, from floodmarks).
Remarks.- Flood run-off affected by unregulated storage in numerous ponds and reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	844	2,450	9	706	1,270	17	642	1,140	25	5,790	1,820
2	868	2,130	10	644	1,360	18	1,000	1,190	26	4,150	1,880
3	777	2,170	11	467	1,300	19	2,990	1,100	27	3,390	1,680
4	522	1,930	12	721	1,190	20	7,940	1,100	28	2,930	1,520
5	464	1,830	13	730	1,170	21	12,400	1,040	29	2,690	1,440
6	672	1,700	14	740	1,130	22	21,000	926	30	2,480	1,330
7	857	1,550	15	866	968	23	16,600	852	31		1,480
8	814	1,360	16	968	932	24	9,410	1,190			
Mean monthly discharge, in second-feet										3,502	1,423
Run-off, in inches										5.50	2.31

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.30	522	6.72	1,270	11.30	5,310	14.34	9,310	18.85	16,800	20.75	20,600
2	5.37	552	6.91	1,390	11.50	5,530	14.56	9,640	19.2	17,500	20.6	20,200
3	5.52	619	7.13	1,540	11.70	5,770	14.73	9,900	19.5	18,000	20.45	19,900
4	5.66	682	7.34	1,690	11.88	5,990	14.83	10,000	19.8	18,600	20.3	19,600
5	5.76	730	7.57	1,850	12.13	6,290	15.00	10,300	20.1	19,200	20.1	19,200
6	5.82	760	7.97	2,170	12.56	6,840	15.19	10,600	20.4	19,800	19.9	18,800
7	5.90	800	8.31	2,440	12.87	7,240	15.32	10,800	20.7	20,400	19.7	18,400
8	5.97	838	8.49	2,580	13.13	7,580	15.47	11,100	20.95	21,000	19.5	18,000
9	6.04	877	8.51	2,600	13.34	7,880	15.63	11,300	21.15	21,400	19.3	17,700
10	6.13	926	8.68	2,730	13.54	8,160	15.86	11,700	21.3	21,800	19.1	17,300
11	6.16	943	8.80	2,840	13.75	8,450	16.06	12,000	21.45	22,200	18.9	16,900
N	6.21	970	8.89	2,920	13.97	8,760	16.26	12,300	21.6	22,500	18.7	16,600
1	6.50	1,140	9.14	3,150	14.18	9,070	16.48	12,700	21.65	22,600	18.5	16,200
2	6.63	1,220	9.24	3,240	14.27	9,200	16.72	13,100	21.7	22,800	18.3	15,800
3	6.64	1,220	9.29	3,370	14.29	9,240	16.90	13,400	21.7	22,800	18.1	15,500
4	6.59	1,190	9.51	3,480	14.28	9,220	16.98	13,600	21.7	22,800	17.9	15,100
5	6.96	1,420	9.65	3,600	14.22	9,130	17.00	13,600	21.7	22,800	17.7	14,800
6	6.93	1,400	9.77	3,710	14.17	9,060	17.27	14,100	21.65	22,600	17.5	14,400
7	6.85	1,350	10.00	3,930	14.13	9,000	17.48	14,400	21.6	22,500	17.3	14,100
8	6.75	1,290	10.28	4,210	14.11	8,960	17.65	14,700	21.5	22,300	17.1	13,800
9	6.69	1,250	10.43	4,360	14.04	8,860	17.82	15,000	21.35	21,900	16.9	13,400
10	6.67	1,240	10.64	4,580	14.04	8,860	18.00	15,300	21.2	21,600	16.7	13,100
11	6.67	1,240	10.89	4,860	14.13	9,000	18.27	15,800	21.05	21,200	16.5	12,800
M	6.71	1,270	11.11	5,100	14.23	9,140	18.5	16,200	20.9	20,900	16.3	12,400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	15.9	11,700	12.6	6,890	10.67	4,620	9.61	3,570	9.07	3,080	8.76	2,800
4	15.55	11,200	12.4	6,630	10.57	4,510	9.52	3,490	9.04	3,060	8.74	2,790
6	15.20	10,600	12.2	6,370	10.46	4,390	9.50	3,470	8.98	3,000	8.71	2,760
8	14.9	10,200	12.0	6,130	10.38	4,310	9.80	3,740	8.98	3,000	8.72	2,770
10	14.6	9,700	11.8	5,890	10.31	4,240	9.46	3,430	8.92	2,950	8.71	2,760
N	14.3	9,250	11.65	5,710	10.23	4,160	9.38	3,360	8.86	2,890	8.65	2,710
2	14.0	8,800	11.5	5,530	10.14	4,070	9.41	3,390	8.83	2,870	8.65	2,710
4	13.75	8,450	11.32	5,330	10.07	4,000	9.32	3,310	8.71	2,760	8.54	2,620
6	13.5	8,100	11.19	5,190	9.91	3,840	9.20	3,200	8.79	2,830	8.45	2,550
8	13.25	7,750	11.04	5,020	9.84	3,780	9.17	3,170	8.83	2,870	8.46	2,560
10	13.0	7,410	10.89	4,860	9.76	3,700	9.13	3,140	8.82	2,860	8.41	2,520
M	12.8	7,150	10.77	4,730	9.69	3,640	9.10	3,110	8.79	2,830	8.45	2,550

Five Mile River at Killingly, Conn.

Location.- Water-stage recorder, lat. 41°50'10", long. 71°53'09", beside northwest abutment of New York, New Haven & Hartford Railroad bridge five-eighths of a mile south of Killingly, Windham County, and 2.7 miles above confluence with Quinebaug River.
Drainage area.- 58.2 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements to 1,540 second-feet; extended logarithmically to maximum flood stage.
Maxima.- September 1938: Discharge, 1,060 second-feet 11:20 p.m. Sept. 21 (gage height, 5.22 feet).
November 1937 to August 1938: Discharge, 2,480 second-feet 2 p.m. July 24, 1938 (gage height, 8.52 feet).
Remarks.- Flood run-off affected by storage in ponds and reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	77	186	9	78	116	17	56	116	25	382	151
2	78	172	10	58	115	18	96	99	26	305	159
3	53	161	11	58	109	19	256	96	27	255	140
4	66	150	12	70	109	20	490	106	28	215	136
5	56	142	13	78	107	21	797	103	29	183	122
6	75	134	14	81	104	22	1,010	74	30	179	123
7	76	127	15	90	102	23	839	78	31		131
8	81	118	16	93	100	24	584	111			
Mean monthly discharge, in second-feet										227	122
Run-off, in inches										4.35	2.42

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.48	87	1.89	152	3.04	396	3.71	575	5.19	1,050	4.95	962
2	1.42	79	1.94	161	3.13	418	3.75	586	5.18	1,040	4.92	952
3	1.44	82	2.03	177	3.20	436	3.81	604	5.17	1,040	4.89	942
4	1.47	86	2.12	194	3.22	441	3.88	324	5.16	1,040	4.86	931
5	1.46	84	2.20	209	3.22	441	3.97	351	5.16	1,040	4.83	920
6	1.45	83	2.28	225	3.21	439	4.08	684	5.16	1,040	4.80	910
7	1.42	79	2.38	246	3.27	454	4.22	726	5.11	1,020	4.76	896
8	1.38	73	2.48	268	3.30	462	4.32	756	5.01	984	4.73	886
9	1.36	71	2.62	298	3.37	481	4.44	792	4.96	966	4.70	875
10	1.43	80	2.64	303	3.40	489	4.44	792	4.99	976	4.66	861
11	1.44	82	2.59	292	3.42	494	4.40	780	5.02	987	4.62	847
N	1.45	83	2.55	283	3.43	497	4.37	771	5.04	994	4.58	834
1	1.47	86	2.50	272	3.45	502	4.34	762	5.05	998	4.54	822
2	1.53	94	2.48	268	3.48	511	4.31	753	5.06	1,000	4.50	810
3	1.61	107	2.47	265	3.50	516	4.29	747	5.07	1,000	4.47	801
4	1.63	110	2.43	257	3.51	519	4.64	854	5.07	1,000	4.43	789
5	1.62	108	2.37	244	3.50	516	4.66	861	5.06	1,000	4.40	780
6	1.65	113	2.42	254	3.51	519	4.72	882	5.06	1,000	4.36	768
7	1.68	118	2.48	268	3.58	538	4.92	952	5.05	998	4.33	759
8	1.67	116	2.57	287	3.60	544	5.12	1,020	5.04	994	4.30	750
9	1.67	116	2.65	305	3.61	547	5.18	1,040	5.03	990	4.27	741
10	1.68	118	2.74	325	3.65	558	5.20	1,050	5.01	984	4.24	732
11	1.76	131	2.84	348	3.66	561	5.21	1,050	4.99	976	4.21	723
M	1.82	140	2.94	372	3.69	569	5.20	1,050	4.97	970	4.18	714
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.11	693	3.21	439	2.77	332	2.50	272	2.31	231	-	-
4	4.04	672	3.15	424	2.74	325	2.48	268	2.29	227	2.15	200
6	3.97	651	3.09	408	2.72	321	2.46	263	2.28	225	-	-
8	3.90	630	3.04	396	2.69	314	2.45	261	2.27	223	2.14	198
10	3.83	610	3.00	386	2.67	309	2.43	257	2.25	219	-	-
N	3.75	586	2.97	379	2.65	305	2.42	254	2.24	217	2.12	194
2	3.67	564	2.93	369	2.63	301	2.41	252	2.23	215	-	-
4	3.58	538	2.84	348	2.60	294	2.45	261	2.10	190	2.10	190
6	3.51	519	2.84	348	2.58	290	2.35	240	2.17	203	-	-
8	3.42	494	2.83	346	2.56	285	2.34	237	2.19	207	1.78	134
10	3.33	470	2.81	341	2.54	281	2.34	237	2.18	205	-	-
M	3.27	454	2.78	334	2.52	276	2.33	235	2.17	203	1.91	156

Supplemental records.- Sept. 21, 11:20 p.m., 5.22 ft., 1,060 sec.-ft.

Moosup River at Moosup, Conn.

Location.- Water-stage recorder, lat. 41°42'40", long. 71°53'15", at outlet of tail-race from Aldrich Bros. mill, 100 feet above New York, New Haven & Hartford Railroad bridge at Moosup, Windham County, and 3½ miles above confluence with Quinebaug River.
Drainage area.- 83.5 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 850 second-feet; extended to peak stage on basis of two determinations of flood flow over dam a quarter of a mile upstream.
Maxima.- September 1938: Discharge, 686 second-feet 7 a.m. Sept. 21 (gage height, 3.74 feet).
1932 to August 1938: Maximum discharge, 4,100 second-feet (natural) July 24, 1938 (gage height, 8.20 feet); maximum stage, 8.35 feet Mar. 12, 1936, resulted from sharp short rise of unknown origin.
Remarks.- Diurnal fluctuation caused by regulation at mills upstream.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	72	136	9	66	76	17	41	106	25	212	280
2	71	139	10	14	113	18	131	86	26	183	254
3	83	153	11	27	90	19	379	79	27	146	213
4	29	121	12	75	83	20	540	80	28	139	170
5	9.2	122	13	72	83	21	586	78	29	133	182
6	78	116	14	74	85	22	478	46	30	128	205
7	72	103	15	84	57	23	379	91	31		203
8	68	45	16	76	72	24	276	124			
Mean monthly discharge, in second-feet										157	122
Run-off, in inches										2.10	1.68

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.63	73	2.33	222	3.29	516	3.55	610	3.28	513	3.00	420
2	1.65	76	2.50	270	3.19	482	3.60	630	3.27	510	2.99	417
3	1.68	80	2.53	279	3.16	471	3.71	674	3.26	506	2.98	414
4	1.74	90	2.62	306	3.20	485	3.54	606	3.26	506	2.91	393
5	1.75	92	2.67	321	3.22	492	3.57	618	3.25	502	2.91	393
6	1.78	97	2.78	354	3.27	510	3.60	630	3.24	499	2.96	408
7	1.80	100	3.08	444	3.45	572	3.74	686	3.30	520	3.16	471
8	1.83	106	2.98	414	3.35	538	3.65	650	3.26	506	2.99	417
9	1.86	111	2.97	411	3.33	530	3.62	638	3.27	510	2.97	411
10	1.87	113	2.97	411	3.32	527	3.60	630	3.24	499	2.92	396
11	1.87	113	2.96	408	3.28	513	3.59	626	3.10	450	2.73	339
N	1.90	119	2.95	405	3.35	538	3.58	622	3.25	502	3.03	429
1	2.08	158	2.93	399	3.37	544	3.56	614	3.15	468	2.89	387
2	2.01	142	2.90	390	3.40	555	3.48	583	3.31	524	2.88	384
3	2.01	142	2.89	387	3.41	558	3.50	590	3.16	471	2.83	369
4	2.04	149	2.83	369	3.38	548	3.40	555	3.00	420	2.66	318
5	2.09	161	2.84	372	3.41	558	3.25	502	3.10	450	2.79	357
6	2.10	163	2.84	372	3.42	562	3.26	506	3.10	450	2.78	354
7	2.13	170	2.85	375	3.43	566	3.27	510	3.10	450	2.76	348
8	2.14	173	2.97	411	3.44	569	3.28	513	3.08	444	2.71	333
9	2.18	183	3.11	454	3.47	580	3.29	516	3.07	441	2.70	330
10	2.23	196	3.18	478	3.50	590	3.30	520	3.06	438	2.68	324
11	2.27	206	3.22	492	3.51	594	3.30	520	3.04	432	2.67	321
M	2.30	214	3.26	506	3.53	602	3.29	516	3.02	426	2.64	312
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.63	309	2.42	247	-	-	-	-	-	-	-	-
4	2.62	306	2.42	247	-	-	-	-	-	-	-	-
6	2.61	303	2.31	217	-	-	-	-	-	-	-	-
8	2.59	297	2.30	214	-	-	-	-	-	-	-	-
10	2.56	288	2.29	211	-	-	-	-	-	-	-	-
N	2.42	247	2.28	209	*2.18	*183	*2.02	*146	*2.00	*139	*1.96	*133
2	2.45	256	2.31	217	-	-	-	-	-	-	-	-
4	2.47	261	2.23	196	-	-	-	-	-	-	-	-
6	2.47	261	2.23	196	-	-	-	-	-	-	-	-
8	2.44	253	2.22	193	-	-	-	-	-	-	-	-
10	2.43	250	2.20	188	-	-	-	-	-	-	-	-
M	2.40	241	2.19	186	-	-	-	-	-	-	-	-

*Mean for the day.

Yantic River at Yantic, Conn.

Location.- Water-stage recorder, lat. 41°33'35", long. 72°07'20", 700 feet below stone-arch highway bridge at Yantic, New London County, and 1 mile below Susquetonscut Brook.

Drainage area.- 88.6 square miles.

Gage-height record.- Water-stage recorder graph except for periods 7 a.m. Sept. 21 to 5 p.m. Sept. 25, when graph was based on existing record and comparison with graphs of nearby stations, and Oct. 19-31, when daily discharge was determined by hydrographic comparison with records of nearby stations.

Stage-discharge relation.- Defined by current-meter measurements below 4,520 second-feet; extended to peak stage on basis of determinations of 1936 and 1938 flood flows over spillway of dam 2½ miles upstream and determination of 1938 flood flow over spillway of dam 3 miles downstream.

Maxima.- September 1938: Discharge, 13,500 second-feet 8 a.m. Sept. 21 (gage height, 14.66 feet, observed from floodmark).
1930 to August 1938: Discharge, 6,980 second-feet July 24, 1938 (gage height, 11.12 feet, adjusted for intake draw-down).

Remarks.- Flood run-off affected by storage in a few lakes and ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	70	336	9	70	62	17	23	66	25	695	320
2	80	249	10	17	73	18	205	54	26	524	170
3	13	189	11	33	63	19	1,140	55	27	369	110
4	21	144	12	74	60	20	3,040	55	28	209	90
5	43	118	13	73	61	21	8,330	55	29	168	110
6	88	102	14	66	59	22	3,160	42	30	193	85
7	65	91	15	68	49	23	1,530	48	31		70
8	70	81	16	91	51	24	1,000	120			
Mean monthly discharge, in second-feet										718	104
Run-off, in inches										9.04	1.35

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.73	84	3.69	497	8.49	3,300	7.59	2,550	11.15	5,290	8.25	1,930
2	1.91	106	3.73	509	8.71	3,500	7.63	2,580	10.9	4,890	8.2	1,890
3	2.02	122	3.87	551	8.80	3,590	7.95	2,840	10.7	4,590	8.1	1,810
4	2.09	132	4.06	616	8.74	3,530	9.60	4,460	10.45	4,240	8.05	1,780
5	2.15	142	4.31	704	8.64	3,440	11.75	7,580	10.25	3,980	8.0	1,740
6	2.19	148	4.57	798	8.48	3,290	13.3	10,400	10.1	3,780	7.95	1,700
7	2.20	150	4.87	918	8.37	3,190	14.3	12,600	9.95	3,600	7.9	1,670
8	2.21	152	5.14	1,040	8.28	3,110	14.66	13,500	9.8	3,420	7.85	1,640
9	2.22	153	5.29	1,120	8.16	3,010	14.45	13,000	9.65	3,260	7.8	1,600
10	2.22	153	5.26	1,100	8.01	2,890	14.2	12,400	9.55	3,140	7.75	1,560
11	2.20	150	5.15	1,040	7.91	2,810	13.9	11,600	9.4	2,980	7.7	1,530
N	2.19	148	5.02	984	7.81	2,730	13.6	11,000	9.3	2,880	7.65	1,500
1	2.35	176	4.75	870	7.87	2,770	13.35	10,500	9.2	2,780	7.6	1,460
2	2.40	185	5.03	988	8.00	2,880	13.1	10,000	9.1	2,680	7.6	1,460
3	2.46	196	5.04	993	8.10	2,960	12.85	9,520	9.0	2,580	7.55	1,430
4	2.51	206	4.98	966	8.19	3,030	13.1	9,130	8.9	2,490	7.5	1,400
5	2.59	222	4.80	890	8.20	3,040	13.0	8,900	8.85	2,440	7.45	1,370
6	2.70	245	5.00	975	8.18	3,020	12.75	8,330	8.75	2,360	7.4	1,340
7	2.86	281	5.65	1,300	8.12	2,980	12.55	7,900	8.65	2,260	7.35	1,310
8	2.98	310	6.30	1,660	8.02	2,900	12.3	7,380	8.6	2,220	7.35	1,310
9	3.20	365	6.85	2,020	7.90	2,800	12.1	6,990	8.5	2,130	7.3	1,280
10	3.29	388	7.33	2,350	7.81	2,730	11.9	6,610	8.4	2,050	7.25	1,250
11	3.47	432	7.85	2,760	7.69	2,630	11.6	6,060	8.35	2,010	7.2	1,220
M	3.66	488	8.20	3,040	7.63	2,580	11.4	5,710	8.3	1,970	7.2	1,220
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.1	1,160	6.35	810	5.74	579	5.35	455	4.30	224	3.97	172
4	7.0	1,110	6.3	790	5.70	565	5.33	449	4.28	221	3.97	172
6	6.95	1,080	6.25	770	5.68	558	5.30	440	4.26	217	3.97	172
8	6.9	1,060	6.2	750	5.82	607	5.57	521	4.78	316	4.50	260
10	6.85	1,040	6.35	810	5.85	618	5.46	488	4.80	320	4.51	262
N	6.8	1,010	6.1	710	5.48	494	5.20	415	4.25	216	3.96	170
2	6.7	965	5.85	618	5.62	537	5.10	390	4.36	235	4.11	193
4	6.65	942	5.75	582	5.45	485	4.80	320	4.17	202	3.90	162
6	6.6	920	5.76	586	5.23	422	4.11	193	3.38	98	3.23	83
8	6.5	875	5.80	600	5.33	449	4.17	202	3.63	127	3.48	109
10	6.45	852	5.80	600	5.37	461	4.26	217	3.85	155	3.64	128
M	6.4	830	5.77	590	5.37	461	4.30	224	3.94	168	3.73	139

Supplemental records.- Sept. 26, 7 a.m., 5.66 ft., 551 sec.-ft. Sept. 28, 12:30 p.m., 4.10 ft., 191 sec.-ft. Sept. 29, 12:30 p.m., 3.76 ft., 143 sec.-ft.

First and Second Connecticut Lakes near Pittsburg, N. H.

Location.- At Second Connecticut Lake at Idlewilde, Coos County, about 12 miles northeast of Pittsburg and at First Connecticut Lake about 6 miles northeast of Pittsburg, Coos County.
Drainage area.- 83.0 square miles, above outlet of First Connecticut Lake.
Remarks.- Total capacity, 3,840,000,000 cubic feet. Basic data furnished by Connecticut River Power Co.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-5.3	-36.3	9	+5.3	-32.0	17	-4.7	-51.8	25	-29.5	+6.5
2	+1.2	-32.0	10	+1.0	-32.4	18	0	-50.5	26	-28.4	-2.3
3	-6.1	-34.6	11	-0.3	-33.3	19	-6.8	-53.3	27	-6.4	-6.3
4	-8.3	-15.9	12	+12.1	-32.9	20	+37.2	-52.2	28	-32.3	-8.6
5	-6.7	+2.2	13	+14.7	-39.9	21	+7.8	-47.4	29	-34.1	-10.5
6	+2.9	-6.4	14	+16.2	-55.6	22	-5.2	-48.7	30	-35.0	-10.1
7	+4.4	-32.9	15	+19.8	-57.3	23	0	-47.4	31		-6.3
8	+2.2	-33.2	16	+14.9	-53.3	24	-18.8	-30.8			
Gain or loss in storage, in millions of cubic feet										-88.2	-945.5
Gain or loss in storage, in equivalent mean second-feet.										-35	-353

Connecticut River at First Connecticut Lake, near Pittsburg, N. H.

Location.- Water-stage recorder, lat. 45°05'15", long. 71°17'35", a quarter of a mile below dam at First Connecticut Lake and 6 miles northeast of Pittsburg, Coos County.
Drainage area.- 83.0 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 1 to Sept. 13, record for which was based on relationship with stage and gate openings at First Connecticut Lake.
Stage-discharge relation.- Defined by current-meter measurements below 1,620 second-feet.
Maxima.- September 1938: Discharge observed, 2,000 second-feet 8 p.m. Sept. 21 (gage height, 4.09 feet); mean daily discharge, adjusted for storage, 1,440 second-feet Sept. 21.
1917 to August 1938: Maximum discharge observed, 1,810 second-feet May 27, 1930 (gage height, 4.02 feet); maximum gage height, 6.35 feet May 5, 1925 (caused by backwater during logging operations).
Remarks.- Flood run-off almost completely stored in First and Second Connecticut Lakes (total of 3,840,000,000 cubic feet of storage capacity). Mean daily and monthly discharges adjusted for storage in First and Second Connecticut Lakes. For information on storage see record for First and Second Connecticut Lakes near Pittsburg, N. H. Basic data on storage in First and Second Connecticut Lakes furnished by New England Power Co.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	196	135	580	160	16	196	368	749	132
2	196	210	580	210	17	322	268	749	150
3	196	125	580	180	18	361	361	749	165
4	196	100	334	150	19	442	363	749	132
5	196	118	113	138	20	570	1,000	749	145
6	152	185	160	86	21	1,350	1,440	749	200
7	79	130	475	94	22	1,240	1,180	749	185
8	79	105	475	91	23	509	509	749	200
9	79	140	475	105	24	489	271	627	270
10	79	91	475	100	25	570	229	250	325
11	79	76	475	90	26	549	220	250	223
12	62	202	475	94	27	286	212	250	177
13	148	318	564	102	28	574	200	250	150
14	200	388	738	94	29	580	185	250	128
15	196	425	749	86	30	580	175	250	133
					31			250	177
Mean monthly discharge, in second-feet						358	324	504	151
Run-off, in inches						-	4.35	-	2.10

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
2	2.91	482	2.59	295	3.02	570	3.02	570	3.97	1,820	2.98	535
4	2.91	482	2.59	295	3.02	570	3.02	570	3.98	1,840	2.98	535
6	2.91	482	2.59	295	3.02	570	3.23	798	3.85	1,640	2.98	535
8	2.91	482	2.59	295	3.02	570	3.42	1,040	3.84	1,630	2.98	535
10	2.59	295	2.75	382	3.02	570	3.60	1,290	3.76	1,510	2.98	535
N	2.59	295	2.75	382	3.02	570	3.70	1,430	3.56	1,230	2.98	535
2	2.59	295	3.02	570	3.02	570	3.76	1,510	3.56	1,230	2.90	475
4	2.59	295	3.02	570	3.02	570	3.94	1,780	3.34	935	2.90	475
6	2.59	295	3.02	570	3.02	570	4.05	1,940	3.34	935	2.90	475
8	2.59	295	3.02	570	3.02	570	4.09	2,000	2.98	535	2.90	475
10	2.59	295	3.02	570	3.02	570	4.01	1,880	2.98	535	2.90	475
M	2.59	295	3.02	570	3.02	570	3.97	1,820	2.98	535	2.90	475
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.90	475	3.02	570	3.02	570	1.91	54	3.01	560	3.03	580
4	2.90	475	3.02	570	3.02	570	1.91	54	3.01	560	3.03	580
6	2.90	475	3.02	570	3.02	570	1.91	54	3.01	560	3.03	580
8	2.80	410	3.02	570	3.02	570	1.91	54	3.03	580	3.03	580
10	2.80	410	3.02	570	3.02	570	1.91	54	3.03	580	3.03	580
N	2.80	410	3.02	570	3.02	570	3.01	560	3.03	580	3.03	580
2	2.80	410	3.02	570	3.02	570	1.92	56	3.03	580	3.03	580
4	3.02	570	3.02	570	3.02	570	3.01	560	3.03	580	3.03	580
6	3.02	570	3.02	570	3.02	570	3.01	560	3.03	580	3.03	580
8	3.02	570	3.02	570	3.02	570	3.01	560	3.03	580	3.03	580
10	3.02	570	3.02	570	3.02	570	3.01	560	3.03	580	3.03	580
M	3.02	570	3.02	570	1.92	56	3.01	560	3.03	580	3.03	580

Connecticut River at North Stratford, N. H.

Location.- Water-stage recorder, lat. 44°44'55", long. 71°37'55", in North Stratford, Coos County, 400 feet below mouth of Nulhegan River. Zero of gage is 880.00 feet above mean sea level.
Drainage area.- 796 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 14,400 second-feet; extended to peak stage by study of flow characteristics at control section.
Maxima.- September 1938: Discharge, 12,800 second-feet 10:45 a.m. Sept. 22 (gage height, 9.81 feet).
1930 to August 1938: Discharge, 28,400 second-feet Mar. 19, 1936 (gage height, 14.64 feet).
Remarks.- Flood flow affected by a total of 3,840,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes. For information on storage see record for First and Second Connecticut Lakes near Pittsburg, N. H.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	782	1,530	9	692	1,030	17	1,660	1,130	25	2,900	2,840
2	1,860	1,500	10	519	1,070	18	1,870	1,120	26	2,390	2,220
3	1,190	1,460	11	495	1,010	19	1,810	1,120	27	1,930	1,600
4	895	1,340	12	468	992	20	2,790	1,160	28	1,980	1,300
5	912	1,050	13	1,770	965	21	8,870	1,520	29	1,860	1,160
6	852	894	14	2,760	1,040	22	11,900	1,660	30	1,660	1,030
7	720	947	15	2,140	1,110	23	7,140	1,460	31		1,000
8	727	1,130	16	2,370	1,110	24	3,640	1,490			
Mean monthly discharge, in second-feet										2,385	1,290
Run-off, in inches										3.35	1.87

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.48	1,520	4.93	2,120	4.50	1,540	6.38	4,560	9.28	11,200	8.78	9,900
2	4.48	1,520	4.90	2,070	4.54	1,590	6.50	4,800	9.34	11,400	8.67	9,620
3	4.49	1,530	4.89	2,060	4.58	1,640	6.73	5,260	9.41	11,600	8.55	9,320
4	4.50	1,540	4.86	2,010	4.60	1,660	6.87	5,540	9.50	11,900	8.44	9,050
5	4.49	1,530	4.85	2,000	4.67	1,750	7.07	5,940	9.58	12,100	8.31	8.720
6	4.50	1,540	4.83	1,970	4.78	1,900	7.23	6,260	9.62	12,300	8.21	8,480
7	4.60	1,660	4.87	2,030	4.98	2,190	7.42	6,640	9.67	12,400	8.08	8,150
8	4.62	1,690	4.78	1,900	5.05	2,300	7.60	7,000	9.71	12,500	8.00	7,950
9	4.63	1,700	4.74	1,850	5.10	2,370	7.80	7,450	9.75	12,600	7.89	7,680
10	4.70	1,790	4.71	1,800	5.19	2,500	8.10	8,200	9.80	12,790	7.79	7,420
11	4.72	1,820	4.70	1,799	5.30	2,680	8.34	8,800	9.79	12,770	7.69	7,180
N	4.79	1,920	4.62	1,690	5.38	2,810	8.90	10,200	9.78	12,740	7.59	6,980
1	4.83	1,970	4.72	1,820	5.50	3,000	9.30	11,300	9.75	12,600	7.49	6,780
2	4.89	2,060	4.67	1,750	5.57	3,110	9.58	12,100	9.72	12,560	7.39	6,580
3	4.92	2,100	4.65	1,720	5.63	3,210	9.58	12,100	9.68	12,400	7.29	6,380
4	4.92	2,100	4.63	1,700	5.71	3,340	9.43	11,700	9.62	12,300	7.18	6,160
5	4.96	2,160	4.60	1,660	5.73	3,370	9.30	11,300	9.56	12,100	7.07	5,940
6	4.97	2,180	4.59	1,650	5.80	3,500	9.24	11,100	9.48	11,800	6.97	5,740
7	4.98	2,190	4.57	1,620	5.85	3,590	9.18	10,940	9.40	11,600	6.87	5,540
8	4.97	2,180	4.55	1,600	5.92	3,720	9.19	10,970	9.31	11,300	6.77	5,340
9	4.95	2,140	4.53	1,580	6.01	3,880	9.19	10,970	9.21	11,000	6.69	5,180
10	4.96	2,160	4.52	1,560	6.10	4,040	9.19	10,970	9.10	10,700	6.60	5,000
11	4.96	2,160	4.51	1,550	6.20	4,220	9.20	11,000	9.00	10,400	6.50	4,800
M	4.95	2,140	4.51	1,550	6.30	4,400	9.21	11,030	8.88	10,200	6.42	4,640
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.29	4,380	5.53	3,050	5.25	2,600	4.94	2,130	4.69	1,780	4.85	2,000
4	6.17	4,170	5.51	3,020	5.20	2,520	4.90	2,070	4.72	1,820	4.81	1,940
6	6.06	3,970	5.00	3,000	5.20	2,520	4.88	2,040	4.77	1,890	4.79	1,920
8	5.97	3,810	5.48	2,970	5.16	2,460	4.92	2,100	4.82	1,960	4.77	1,890
10	5.89	3,660	5.47	2,950	5.12	2,400	4.87	2,030	4.86	2,010	4.75	1,860
N	5.81	3,520	5.45	2,920	5.09	2,360	4.80	1,930	4.90	2,070	7.74	1,850
2	5.75	3,410	5.42	2,870	5.09	2,360	4.78	1,900	4.90	2,070	4.72	1,820
4	5.69	3,300	5.41	2,860	5.08	2,340	4.73	1,830	4.91	2,080	4.71	1,800
6	5.66	3,260	5.39	2,820	5.03	2,260	4.68	1,760	4.92	2,100	4.71	1,800
8	5.61	3,180	5.34	2,740	5.00	2,220	4.65	1,720	4.90	2,070	4.70	1,790
10	5.59	3,140	5.30	2,680	4.99	2,200	4.65	1,720	4.88	2,040	4.68	1,760
M	5.56	3,100	5.28	2,650	4.96	2,160	4.65	1,720	4.86	2,010	4.67	1,750

Supplemental records.- Sept. 22, 10:45 a.m., 9.81 ft., 12,800 sec.-ft.

Connecticut River near Dalton, N. H.

Location.- Water-stage recorder, lat. 44°24'35", long. 71°43'05", 800 feet below dam and 1¼ miles below Dalton, Coos County. Zero of gage is 800.00 feet above mean sea level.
Drainage area.- 1,538 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 44,000 second-feet.
Maxima.- September 1938: Discharge, 19,600 second-feet 7 a.m. Sept. 22 (gage height, 17.5 feet).
1927 to August 1938: Discharge, 48,300 second-feet Mar. 20, 1936 (gage height, 25.6 feet).
Remarks.- Flood run-off affected by a total of 4,030,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes and small reservoirs. For information on storage (total capacity, 3,840,000,000 cubic feet) see record for First and Second Connecticut Lakes near Pittsburg, N. H.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,220	2,830	9	1,260	1,780	17	3,800	1,670	25	8,030	4,360
2	1,730	2,530	10	1,310	1,930	18	2,720	1,780	26	5,820	5,180
3	2,240	2,910	11	900	1,880	19	2,960	1,780	27	4,560	3,800
4	1,330	2,590	12	750	1,730	20	3,550	1,540	28	3,910	3,010
5	1,140	2,410	13	1,650	1,780	21	12,200	1,880	29	3,660	2,530
6	1,490	2,080	14	3,450	1,830	22	19,100	2,530	30	3,270	1,980
7	1,630	1,680	15	3,950	1,440	23	18,700	2,300	31		2,190
8	1,310	1,830	16	4,250	1,260	24	13,900	2,530			
Mean monthly discharge, in second-feet										4,526	2,308
Run-off, in inches										3.28	1.73

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	9.98	3,240	9.59	2,760	9.76	2,960	11.49	5,480	17.01	18,100	17.40	19,260
2	9.97	3,230	9.60	2,770	9.76	2,960	11.68	5,800	17.05	18,200	17.38	19,200
3	9.93	3,180	9.60	2,770	9.77	2,970	11.88	6,140	17.16	18,500	17.39	19,230
4	9.90	3,140	9.61	2,780	9.80	3,010	12.07	6,490	17.26	18,800	17.39	19,230
5	9.89	3,130	9.62	2,790	9.81	3,020	12.24	6,800	17.30	19,000	17.40	19,260
6	9.87	3,100	9.63	2,810	9.33	2,450	12.45	7,200	17.39	19,200	17.40	19,260
7	8.85	1,930	9.86	3,090	9.54	2,700	12.70	7,700	17.50	19,600	17.38	19,200
8	8.78	1,860	9.88	3,110	9.99	3,260	12.92	8,140	17.49	19,530	17.40	19,260
9	8.97	2,050	9.88	3,110	10.00	3,270	13.65	9,600	17.49	19,530	17.38	19,200
10	9.28	2,390	9.86	3,090	10.01	3,280	14.02	10,300	17.49	19,530	17.35	19,100
11	9.38	2,510	9.85	3,080	10.04	3,320	14.73	11,000	17.49	19,530	17.35	19,100
N	9.39	2,520	9.25	2,360	10.09	3,390	16.05	15,300	17.48	19,500	17.31	19,000
1	9.29	2,400	9.45	2,590	10.18	3,500	16.03	15,280	17.46	19,400	17.30	18,960
2	9.30	2,410	9.94	3,190	10.21	3,540	16.18	15,700	17.43	19,350	17.25	18,800
3	9.68	2,870	9.98	3,240	10.02	3,300	16.24	15,900	17.42	19,300	17.20	18,700
4	9.67	2,850	9.93	3,180	10.14	3,450	16.32	16,100	17.40	19,260	17.19	18,600
5	9.64	2,820	9.90	3,140	10.45	3,880	16.45	16,500	17.40	19,260	17.14	18,500
6	9.62	2,790	9.89	3,130	10.60	4,100	16.53	16,700	17.40	19,260	17.10	18,400
7	9.60	2,770	9.87	3,100	10.68	4,220	16.62	16,900	17.40	19,260	17.05	18,200
8	9.60	2,770	9.85	3,080	10.77	4,360	16.50	16,600	17.40	19,260	16.98	18,000
9	9.59	2,760	9.84	3,060	10.88	4,520	16.60	16,900	17.40	19,260	16.91	17,800
10	9.59	2,760	9.81	3,020	11.00	4,700	16.68	17,100	17.40	19,260	16.86	17,600
11	9.59	2,760	9.78	2,990	11.14	4,920	16.80	17,500	17.40	19,260	16.80	17,500
M	9.59	2,760	9.77	2,970	11.30	5,180	16.85	17,600	17.40	19,260	16.73	17,200
	September 24		September 25		September 26		September 27		September 28		September 29	
2	16.58	16,800	13.86	10,000	11.96	6,290	11.16	4,960	10.62	4,130	10.35	3,730
4	16.38	16,300	13.55	9,400	11.90	6,180	11.10	4,866	10.59	4,080	10.35	3,730
6	16.18	15,700	13.28	8,860	11.81	6,020	11.03	4,750	10.55	4,020	10.35	3,730
8	15.97	15,100	13.05	8,400	12.01	6,380	10.99	4,680	10.52	3,980	10.34	3,720
10	15.77	14,600	12.92	8,140	11.87	6,130	10.93	4,600	10.49	3,940	10.33	3,700
N	15.48	13,900	12.75	7,800	11.78	5,970	10.91	4,560	10.45	3,880	10.33	3,700
2	15.24	13,300	12.61	7,520	11.63	5,710	10.83	4,440	10.42	3,830	10.31	3,670
4	15.00	12,700	12.47	7,240	11.53	5,550	10.79	4,380	10.41	3,820	10.29	3,650
6	14.82	12,200	12.35	7,000	11.44	5,400	10.75	4,320	10.39	3,790	10.25	3,600
8	14.60	10,700	12.25	6,820	11.36	5,280	10.73	4,300	10.37	3,760	10.23	3,570
10	14.35	11,100	12.16	6,650	11.29	5,160	10.68	4,220	10.36	3,740	10.20	3,530
M	14.10	10,500	12.05	6,450	11.23	5,070	10.65	4,180	10.36	3,740	10.17	3,490

Fifteenmile Falls Reservoir near Barnet, Vt.

Location.- Lat. 44°19'30", long. 72°00'05", 1¼ miles above mouth of Passumpsic River and 4½ miles east of Barnet, Caledonia County.
Drainage area.- 1,650 square miles.
Remarks.- Inflow affected by a total of 4,030,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes and small reservoirs. For information on storage (total capacity, 3,840,000,000 cubic feet) see record for First and Second Connecticut Lakes near Pittsburg, N. H. Basic data furnished by Connecticut River Power Company.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-45.8	-22.2	9	-35.5	+116.8	17	+185.7	-58.6	25	-64.7	-18.0
2	+20.6	+81.0	10	+32.4	-27.4	18	+76.8	-17.8	26	-91.8	-56.7
3	+110.3	-9.1	11	+77.1	-9.1	19	-36.5	-26.6	27	-38.5	-13.1
4	+96.7	-18.1	12	-90.5	-4.5	20	-97.8	-30.7	28	+68.8	-123.9
5	+49.5	-49.3	13	-109.2	-53.7	21	+115.8	+8.7	29	+43.8	+71.9
6	-22.6	-74.6	14	-38.4	-26.5	22	0	+35.1	30	+35.6	+167.6
7	-9.1	-72.7	15	-66.8	0	23	0	+71.6	31		-58.4
8	-13.5	+120.8	16	+33.2	+102.8	24	0	-18.1			
Gain or loss in storage, in millions of cubic feet										+185.6	-12.8
Gain or loss in storage, in equivalent mean second-feet.										+72	-5

Connecticut River at outlet of Fifteenmile Falls Reservoir near Barnet, Vt.

Location.- Water-stage recorder, lat. 44°19'30", long. 72°00'05", at Frank D. Comerford Hydro-Electric plant at outlet of Fifteenmile Falls Reservoir, 1¼ miles above mouth of Passumpsic River and 4½ miles east of Barnet, Caledonia County.
Drainage area.- 1,650 square miles.
Stage-discharge relation.- Discharge computed from flow over dam and through wheels and gates.
Maxima.- September 1938: Discharge, about 28,000 second-feet, adjusted for storage in Fifteenmile Falls Reservoir, Sept. 22.
Remarks.- Flood run-off affected by a total of 5,210,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes, and Fifteenmile Falls and small reservoirs. For information on storage (total capacity, 5,020,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., and Fifteenmile Falls Reservoir near Barnet, Vt. Mean daily and monthly discharges adjusted for storage in Fifteenmile Falls Reservoir. Basic data furnished by Connecticut River Power Company.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	1,380	849	2,620	2,370	16	3,410	3,790	0	1,190
2	1,060	1,300	1,510	2,450	17	1,420	3,560	1,960	1,280
3	654	1,930	2,520	2,420	18	1,610	2,500	1,830	1,630
4	283	1,400	2,520	2,310	19	3,000	2,580	1,910	1,600
5	300	873	2,700	2,130	20	4,850	3,720	1,790	1,440
6	1,370	1,110	2,730	1,870	21	12,400	13,700	1,530	1,630
7	1,540	1,430	2,340	1,500	22	20,000	20,000	1,830	2,240
8	1,170	1,010	183	1,580	23	19,000	19,000	1,310	2,140
9	1,460	1,050	296	1,650	24	15,000	15,000	2,770	2,560
10	641	1,020	1,840	1,520	25	8,450	7,700	4,360	4,150
11	12	904	1,780	1,670	26	6,160	5,100	5,740	5,090
12	1,550	503	1,480	1,430	27	4,440	3,990	3,900	3,740
13	2,630	1,360	2,110	1,490	28	2,580	3,380	4,310	2,880
14	3,340	2,900	1,880	1,580	29	2,410	2,920	1,620	2,450
15	4,600	3,820	1,360	1,360	30	2,400	2,810	41	1,980
					31			2,580	1,900
Mean monthly discharge, in second-feet						4,305	4,377	2,108	2,104
Run-off, in inches						-	2.96	-	1.48

Connecticut River at McIndoes Falls, Vt.

Location.- Water-stage recorder, lat. 44°15'40", long. 72°03'35", at Connecticut River hydroelectric plant just east of McIndoes Falls, Caledonia County.
Drainage area.- 2,200 square miles.
Stage-discharge relation.- Discharge computed from flow over dam and through wheels and gates.
Maxima.- September 1938: Discharge, about 33,000 second-feet, adjusted for changes in McIndoes Pond, Sept. 22.
Remarks.- Flood run-off affected by a total of 5,390,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes, Fifteenmile Falls, and small reservoirs. For information on storage (total capacity, 5,020,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt. Mean daily and monthly discharges adjusted for McIndoes plant pondage operations.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	1,520	1,770	3,810	3,760	16	5,060	4,880	1,050	473
2	1,780	1,500	1,800	2,190	17	2,630	2,350	1,630	2,550
3	1,240	993	3,520	3,360	18	2,380	2,520	2,000	2,340
4	392	586	3,080	3,240	19	4,230	3,930	2,280	2,330
5	993	730	3,340	3,480	20	5,800	6,430	2,340	2,320
6	1,300	1,810	3,210	3,530	21	19,600	19,300	2,310	2,260
7	1,700	1,830	2,680	3,040	22	30,400	30,400	2,970	2,680
8	1,850	1,570	1,540	775	23	24,600	24,600	2,260	2,010
9	1,720	1,840	630	822	24	19,700	19,700	3,550	3,600
10	1,050	971	2,260	2,660	25	11,500	11,100	6,470	6,610
11	476	229	2,490	2,280	26	10,100	10,100	7,400	7,550
12	1,410	1,890	2,480	2,230	27	6,910	7,030	5,550	4,920
13	3,640	3,740	2,450	2,650	28	4,830	4,360	4,060	5,190
14	4,690	4,490	2,440	2,490	29	4,050	4,090	3,480	2,310
15	5,740	5,900	2,120	1,870	30	4,010	3,550	802	762
					31			2,280	3,210
Mean monthly discharge, in second-feet						6,177	6,142	2,848	2,886
Run-off, in inches						-	3.11	-	1.51

Connecticut River at South Newbury, Vt.

Location.- Water-stage recorder, lat. 44°02'45", long. 72°04'30", below bridge at South Newbury, Orange County, 4 miles above mouth of Waits River. Zero of gage is 374.90 feet above mean sea level.
Drainage area.- 2,825 square miles.
Gage-height record.- Water-stage recorder graph except for periods 11 p.m. Sept. 21 to 11 p.m. Sept. 23 and 6 a.m. Oct. 12 to Oct. 31, record for which was based on floodmarks, two chain-gage readings daily, and shape of graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 49,100 second-feet; extended to peak stage on basis of drainage area comparison of instantaneous and total yield of flood at other gaging stations on the Connecticut River.
Maxima.- September 1938: Discharge, 43,700 second-feet 3 p.m. Sept. 22 (gage height, 28.60 feet).
1918 to August 1938: Discharge, 77,800 second-feet Mar. 19, 20, 1936 (gage height, 38.6 feet).
Remarks.- Flood run-off affected by a total of 5,390,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes, and Fifteenmile Falls, and small reservoirs. For information on storage (total capacity, 5,020,000,000 cubic feet) see records for First and Second Connecticut Lakes, Fifteenmile Falls Reservoir near Barnet, Vt.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	2,030	5,140	9	2,070	1,830	17	4,150	1,830	25	18,200	8,040
2	2,070	3,490	10	1,870	1,990	18	3,120	2,230	26	12,400	9,290
3	2,070	4,100	11	814	2,960	19	4,080	2,630	27	8,600	7,920
4	1,000	3,960	12	1,000	3,140	20	6,620	2,630	28	7,620	5,800
5	867	4,060	13	3,050	3,050	21	18,600	2,960	29	5,670	4,810
6	1,360	3,960	14	5,140	2,960	22	40,500	3,140	30	5,140	3,120
7	1,790	3,680	15	6,240	2,790	23	35,700	3,410	31		1,790
8	2,310	2,790	16	7,440	2,310	24	27,000	3,420			
Mean monthly discharge, in second-feet										7,951	3,717
Run-off, in inches										3.14	1.52

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.42	3,520	3.61	2,800	5.76	4,880	10.07	10,000	24.85	34,100	27.30	39,900
2	4.46	3,550	3.72	2,890	5.75	4,860	10.27	10,300	25.25	35,000	27.15	39,600
3	4.48	3,570	3.83	2,990	5.75	4,860	10.48	10,600	25.55	35,600	27.00	39,100
4	4.49	3,580	3.93	3,080	5.75	4,860	10.68	10,800	26.00	36,600	26.80	38,600
5	4.50	3,590	4.03	3,170	5.77	4,890	10.89	11,100	26.40	37,600	26.65	38,200
6	4.50	3,590	4.12	3,250	5.82	4,940	11.18	11,500	26.70	38,300	26.50	37,800
7	4.46	3,550	4.20	3,320	5.92	5,050	11.50	12,000	27.10	39,400	26.32	37,300
8	4.42	3,520	4.30	3,410	6.00	5,140	11.90	12,600	27.45	40,400	26.18	37,000
9	4.33	3,440	4.41	3,510	6.14	5,290	12.31	13,200	27.75	41,200	26.00	36,600
10	4.24	3,360	4.58	3,660	6.34	5,510	12.90	14,000	28.05	42,000	25.85	36,300
11	4.13	3,260	4.80	3,860	6.60	5,800	13.60	15,100	28.30	42,800	25.70	35,900
N	4.00	3,140	5.05	4,110	6.90	6,130	14.30	16,200	28.40	43,100	25.53	35,600
1	3.82	2,980	5.33	4,400	7.20	6,480	15.25	17,600	28.50	43,400	25.37	35,300
2	3.70	2,870	5.55	4,640	7.60	6,960	16.30	19,200	28.57	43,600	25.20	34,800
3	3.60	2,790	5.75	4,860	7.85	7,260	17.10	20,400	28.60	43,700	25.05	34,500
4	3.53	2,730	5.88	5,010	8.15	7,620	18.50	22,600	28.57	43,600	24.90	34,200
5	3.50	2,710	5.96	5,100	8.38	7,900	19.60	24,400	28.51	43,400	24.72	33,800
6	3.47	2,690	5.97	5,110	8.60	8,160	20.30	25,500	28.42	43,200	24.58	33,600
7	3.46	2,680	5.95	5,080	8.84	8,450	21.10	27,000	28.27	42,700	24.40	33,200
8	3.45	2,670	5.90	5,030	9.05	8,700	21.90	28,400	28.12	42,300	24.25	32,900
9	3.44	2,660	5.87	5,000	9.28	9,000	22.60	29,700	27.95	41,800	24.05	32,500
10	3.43	2,650	5.83	4,950	9.50	9,290	23.15	30,700	27.80	41,300	23.90	32,200
11	3.44	2,660	5.80	4,920	9.73	9,590	23.90	32,200	27.65	41,000	23.72	31,800
M	3.51	2,720	5.78	4,900	9.92	9,840	24.40	33,200	27.48	40,400	23.55	31,500
	September 24		September 25		September 26		September 27		September 28		September 29	
2	23.02	30,400	18.15	22,000	12.76	13,900	9.95	9,880	8.55	8,100	7.30	6,600
4	22.65	29,800	17.60	21,200	12.58	13,600	9.75	9,620	8.62	8,180	6.80	6,020
6	22.30	29,100	16.97	20,100	12.42	13,300	9.55	9,360	8.50	8,040	6.40	5,580
8	21.90	28,400	16.40	19,300	12.30	13,200	9.24	8,950	8.20	7,680	6.11	5,260
10	21.55	27,800	15.95	18,600	12.12	12,800	8.90	8,520	7.92	7,340	5.90	5,030
N	21.15	27,100	15.50	18,000	11.98	12,700	8.70	8,280	7.79	7,190	5.78	4,900
2	20.75	26,400	15.10	17,400	11.65	12,200	8.56	8,110	7.82	7,220	5.93	5,060
4	20.25	25,400	14.70	16,800	11.30	11,700	8.44	7,970	7.98	7,420	6.25	5,420
6	19.86	24,800	14.25	16,100	11.10	11,400	8.35	7,860	8.11	7,570	6.53	5,720
8	19.48	24,200	13.85	15,500	10.90	11,100	8.30	7,800	8.15	7,620	6.70	5,910
10	19.04	23,500	13.40	14,800	10.50	10,600	8.30	7,800	8.08	7,540	6.80	6,020
M	18.60	22,800	13.05	14,300	10.15	10,200	8.40	7,920	7.74	7,130	6.76	5,980

Connecticut River at White River Junction, Vt.

Location.- Water-stage recorder, lat. 43°38'50", long. 72°18'45", below railroad bridge at White River Junction, Windsor County, just below mouth of White River. Zero of gage is 321.59 feet above mean sea level.
Drainage area.- 4,068 square miles.
Gage-height record.- Water-stage recorder graph except for periods 3 p.m. Sept. 19 to 2 p.m. Sept. 27 and Oct. 28 to 31, when graph was based on floodmarks and two chain-gage readings daily.
Stage-discharge relation.- Defined by current-meter measurements below 70,100 second-feet; extended to peak stage by velocity-area study near control section.
Maxima.- September 1938: Discharge, 82,400 second-feet 5 to 6 a.m. Sept. 22 (gage height, 26.7 feet, from floodmarks at chain-gage site).
1911 to August 1938: Discharge, 136,000 second-feet Nov. 4, 1927 (gage height, 35.0 feet, from floodmarks at water-stage recorder site).
Remarks.- Flood run-off affected by a total of 5,550,000,000 cubic feet of storage capacity in First and Second Connecticut Lakes and Fifteenmile Falls, and small reservoirs. For information on storage (total capacity, 5,020,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., and for Fifteenmile Falls Reservoir near Barnet, Vt.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	3,450	8,320	9	3,120	4,260	17	8,090	3,200	25	27,300	10,200
2	2,960	7,400	10	2,810	3,040	18	5,970	3,200	26	19,400	11,900
3	2,880	5,840	11	2,180	3,450	19	5,710	3,540	27	14,500	10,600
4	2,590	6,720	12	1,600	4,560	20	12,900	3,980	28	12,500	8,600
5	1,930	6,280	13	3,020	4,560	21	35,200	4,560	29	10,400	7,100
6	1,650	6,280	14	6,280	4,460	22	68,500	4,970	30	8,830	5,670
7	2,120	5,840	15	8,750	4,360	23	51,100	5,080	31		3,830
8	2,880	5,290	16	11,300	4,080	24	38,200	5,180			
Mean monthly discharge, in second-feet										12,600	5,689
Run-off, in inches										3.46	1.61

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	7.38	6,240	7.15	5,730	8.02	7,650	12.00	18,800	23.90	67,800	21.75	56,900
2	7.33	6,130	7.10	5,620	8.18	8,050	12.22	19,500	24.80	72,500	21.70	56,700
3	7.30	6,060	7.06	5,530	8.30	8,350	12.50	20,300	25.50	76,100	21.62	56,300
4	7.27	5,990	7.04	5,490	8.50	8,850	12.75	21,100	26.30	80,300	21.55	55,900
5	7.26	5,970	7.00	5,400	8.85	9,720	13.03	22,100	26.70	82,400	21.45	55,500
6	7.25	5,950	6.98	5,360	9.16	10,500	13.30	23,000	26.70	82,400	21.35	55,000
7	7.24	5,930	6.97	5,330	9.40	11,100	13.60	24,000	26.60	81,800	21.20	54,300
8	7.23	5,910	6.96	5,310	9.50	11,400	13.95	25,300	26.10	79,200	21.08	53,700
9	7.20	5,840	6.95	5,290	9.62	11,700	14.35	26,700	25.60	76,600	20.91	52,900
10	7.19	5,820	6.95	5,290	9.74	12,000	15.00	29,000	25.00	73,500	20.80	52,400
11	7.19	5,820	6.95	5,290	10.00	12,800	15.85	31,900	24.50	70,900	20.76	52,200
N	7.20	5,840	6.95	5,290	10.18	13,300	16.45	34,000	24.10	68,800	20.52	51,100
1	7.22	5,880	6.96	5,310	10.34	13,800	17.00	36,100	23.65	66,400	20.40	50,500
2	7.25	5,950	6.97	5,320	10.50	14,300	17.70	38,900	23.30	64,700	20.25	49,800
3	7.27	5,990	7.00	5,360	10.78	15,100	18.10	40,500	23.00	63,100	20.10	49,200
4	7.28	6,020	7.05	5,420	10.80	15,200	18.40	41,800	22.78	62,000	19.98	48,600
5	7.28	6,020	7.12	5,500	10.83	15,300	18.70	43,000	22.60	61,100	19.85	48,000
6	7.28	6,020	7.28	5,850	10.88	15,400	19.00	44,300	22.45	60,400	19.74	47,600
7	7.28	6,020	7.40	6,110	10.94	15,600	19.50	46,500	22.33	59,800	19.60	46,900
8	7.27	5,990	7.50	6,350	11.05	16,000	20.15	49,400	22.21	59,200	19.50	46,500
9	7.27	5,990	7.58	6,550	11.20	16,400	20.90	52,800	22.10	58,600	19.35	45,800
10	7.26	5,970	7.67	6,780	11.40	17,000	21.70	56,700	22.00	58,100	19.25	45,400
11	7.23	5,910	7.77	7,020	11.60	17,600	22.20	59,100	21.90	57,600	19.12	44,800
M	7.19	5,820	7.90	7,350	11.80	18,200	23.20	64,100	21.82	57,200	19.00	44,300
	September 24		September 25		September 26		September 27		September 28		September 29	
2	18.75	43,200	15.75	31,600	12.90	21,600	11.20	16,400	10.04	12,900	9.50	11,600
4	18.52	42,300	15.52	30,800	12.73	21,000	11.04	15,900	10.04	12,900	9.45	11,400
6	18.28	41,300	15.30	30,000	12.60	20,600	10.92	15,600	10.03	12,890	9.40	11,300
8	18.00	40,100	15.02	29,000	12.42	20,100	10.80	15,200	10.00	12,870	9.30	11,000
10	17.72	39,000	14.80	28,200	12.28	19,600	10.66	14,800	9.96	12,840	9.20	10,800
N	17.50	38,100	14.60	27,600	12.15	19,200	10.52	14,400	9.90	12,800	9.10	10,500
2	17.25	37,100	14.30	26,500	12.05	19,000	10.40	14,000	9.80	12,500	8.92	9,980
4	17.00	36,100	14.00	25,400	11.90	18,500	10.20	13,400	9.70	12,200	8.80	9,640
6	16.75	35,200	13.75	24,600	11.80	18,200	10.15	13,200	9.65	12,000	8.70	9,370
8	16.50	34,200	13.50	23,700	11.62	17,700	10.10	13,100	9.60	11,900	8.65	9,240
10	16.28	33,400	13.30	23,000	11.48	17,200	10.05	13,000	9.55	11,700	8.60	9,100
M	16.00	32,400	13.10	22,300	11.32	16,800	10.04	12,900	9.50	11,600	8.56	8,990

Connecticut River at Vernon, Vt.

Location.- Water-stage recorder, lat. 42°46'10", long. 72°30'50", just below dam at Vernon, Windham County, and 2 miles above mouth of Ashuelot River.
Drainage area.- 6,240 square miles.
Gage-height record.- Water-stage recorder graph. Gage heights are for tailwater gage.
Stage-discharge relation.- Defined by current-meter measurements below 68,900 second-feet; extended to peak stage by study of flow characteristics at control section.
Maxima.- September 1938: Discharge, 132,500 second-feet 5 a.m. to 9 a.m. Sept. 22 (gage height, 120.7 feet).
Maximum discharge known, 176,000 second-feet Mar. 19, 20, 1936 (gage height, 128.8 feet).
Remarks.- Flood run-off affected by a total storage capacity of 8,360,000,000 cubic feet. For information on storage (total capacity, 7,130,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., and Lake Sunapee, at Sunapee, N. H. Records computed from basic data furnished by Connecticut River Power Co.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	5,660	8,780	9	5,870	3,320	17	14,200	6,230	25	50,400	16,100
2	4,870	13,000	10	2,140	6,460	18	7,660	5,970	26	35,500	16,300
3	1,920	10,900	11	328	6,630	19	10,900	6,140	27	26,200	16,000
4	574	9,220	12	3,160	5,400	20	28,700	6,210	28	18,100	14,400
5	231	9,240	13	5,680	7,520	21	73,800	5,820	29	14,600	14,000
6	2,780	11,600	14	6,700	7,850	22	130,000	6,930	30	12,400	7,860
7	4,620	12,200	15	5,350	5,870	23	104,000	4,760	31		7,970
8	3,760	5,310	16	13,400	3,160	24	69,900	9,080			
Mean monthly discharge, in second-feet										22,110	8,717
Run-off, in inches										3.95	1.61

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	90.4	9,620	87.0	2,110	93.1	17,800	100.7	45,800	118.9	124,000	119.0	124,000
2	90.3	9,350	87.0	2,110	93.7	20,000	101.1	47,400	119.7	128,000	118.6	122,000
3	90.0	8,550	87.0	2,110	93.7	20,000	101.8	50,200	120.0	129,000	118.3	120,000
4	89.8	8,030	86.9	1,970	93.8	20,300	102.1	51,400	120.4	131,000	117.9	118,000
5	89.5	7,270	89.3	6,770	93.8	20,300	102.5	53,000	120.7	132,500	117.5	116,000
6	88.6	5,100	89.8	8,030	93.8	20,300	103.0	55,000	120.7	132,500	117.2	115,000
7	89.0	6,040	91.2	11,900	93.8	20,300	103.6	57,400	120.7	132,500	116.8	113,000
8	90.8	10,700	91.3	12,200	94.1	21,400	104.1	59,400	120.7	132,500	116.4	111,000
9	90.9	11,000	91.4	12,500	94.4	22,400	104.9	62,600	120.7	132,500	116.0	109,000
10	91.0	11,300	91.4	12,500	95.0	24,500	105.5	65,000	120.6	132,000	115.6	107,000
11	91.0	11,300	91.4	12,500	94.4	22,400	106.3	68,200	120.6	132,000	115.2	105,000
N	91.0	11,300	91.4	12,500	96.4	29,400	107.1	71,400	120.6	132,000	114.8	103,000
1	89.3	6,770	91.4	12,500	96.7	30,400	108.0	75,000	120.5	132,000	114.4	101,000
2	89.2	6,530	91.4	12,500	96.9	31,200	108.7	77,800	120.4	131,000	114.1	99,500
3	89.1	6,280	91.4	12,500	97.2	32,200	109.4	80,600	120.4	131,000	113.7	97,800
4	89.1	6,280	91.4	12,500	97.4	32,900	110.0	83,000	120.2	130,000	113.3	96,200
5	89.1	6,280	91.4	12,500	97.5	33,200	110.5	85,000	120.2	130,000	112.9	94,600
6	89.1	6,280	91.4	12,500	97.8	34,300	111.2	87,800	120.1	130,000	112.4	92,600
7	89.1	6,280	91.5	12,800	98.2	35,800	112.1	91,400	120.0	129,000	112.0	91,000
8	89.1	6,280	92.0	14,300	98.7	37,800	113.0	95,000	119.9	128,000	111.7	89,800
9	89.1	6,280	92.9	17,200	99.7	41,800	115.0	104,000	119.8	128,000	111.5	89,000
10	89.0	6,040	93.0	17,500	100.1	43,400	116.0	109,000	119.6	127,000	111.0	87,000
11	88.2	4,210	93.1	17,800	100.3	44,200	110.9	114,000	119.5	126,000	110.8	86,200
M	87.2	2,400	93.1	17,800	100.5	45,000	118.1	120,000	119.2	125,000	110.3	84,200
	September 24		September 25		September 26		September 27		September 28		September 29	
2	109.6	81,400	103.7	57,800	99.5	41,000	95.6	26,600	94.6	23,100	91.3	12,200
4	109.1	79,400	103.2	55,800	99.1	39,400	95.7	27,000	94.0	21,000	90.8	10,700
6	108.4	76,600	102.8	54,200	99.1	39,400	96.4	29,400	93.7	20,000	91.8	13,700
8	107.8	74,200	102.4	52,600	98.6	37,400	96.2	28,700	93.4	18,900	91.8	13,700
10	106.5	69,000	102.0	51,000	98.2	35,800	96.0	28,000	93.7	20,000	92.9	17,200
N	105.9	66,600	101.8	50,200	98.1	35,400	95.8	27,300	93.8	20,300	92.7	16,400
2	105.7	65,800	101.5	49,000	97.8	34,300	95.6	26,600	94.0	21,000	93.9	20,600
4	105.5	65,000	101.2	47,800	97.7	34,000	94.3	22,000	93.1	17,800	92.4	15,500
6	105.3	64,200	100.8	46,200	97.4	32,900	95.2	25,200	92.1	14,600	91.9	14,000
8	105.0	63,000	100.4	44,600	97.1	31,800	95.0	24,500	90.9	11,000	91.9	14,000
10	104.6	61,400	100.2	43,800	96.2	28,700	94.6	23,100	90.6	10,200	91.9	14,000
M	104.2	59,800	99.9	42,600	96.3	29,000	94.9	24,200	91.7	13,400	91.9	14,000

Connecticut River at Turners Falls, Mass.

Location.- Water-stage recorder, lat. 42°36'40", long. 72°33'20", at dam of Turners Falls Power & Electric Co., Turners Falls, Franklin County, just above mouth of Falls River.
Drainage area.- 7,138 square miles.
Gage-height record.- Water-stage recorder graph. Stage affected by flashboards prior to 6 p.m. Sept. 21 and subsequent to 10 a.m. Sept. 28. Crest of dam is at gage height, 3.00 feet.
Discharge.- Determined from flow over dam, through canal and flood gates.
Maxima.- September 1938: Discharge, 174,000 second-feet 8 a.m. to 3 p.m. Sept. 22 (gage height, 14.5 feet).
1915 to August 1938: 210,000 second-feet Mar. 19, 20, 1936 (gage height, 16.7 feet).
Remarks.- Flood run-off affected by a total storage capacity of 8,360,000,000 cubic feet. For information on storage (total capacity, 7,130,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., and Lake Sunapee, at Sunapee, N. H. Records computed from basic data furnished by Turners Falls Power & Electric Co.

Mean discharge, in second-feet, 1938 a/

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6,340	11,400	9	5,320	4,560	17	14,200	7,240	25	56,400	18,900
2	5,420	13,700	10	2,190	6,580	18	8,880	6,060	26	43,200	19,200
3	2,460	12,400	11	1,260	8,710	19	17,000	7,730	27	34,100	19,100
4	900	11,000	12	4,190	6,260	20	40,000	7,280	28	26,500	15,800
5	636	11,300	13	6,080	9,320	21	108,000	7,900	29	18,200	14,800
6	4,520	13,700	14	8,420	8,420	22	168,000	7,860	30	13,200	9,410
7	3,200	12,100	15	11,600	5,350	23	123,000	6,590	31		9,000
8	6,010	7,400	16	13,800	4,360	24	77,900	12,800			
Mean monthly discharge, in second-feet										27,700	10,200
Run-off, in inches										4.33	1.65

a/ For 24 hours ending at 6 a.m. following day indicated.

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	7.2	23,000	9.9	51,000	12.8	138,000	14.0	164,000
2	-	-	-	-	7.0	24,000	9.8	54,000	13.2	146,000	13.9	162,000
3	-	-	-	-	7.0	24,800	9.8	56,500	13.4	150,000	13.8	160,000
4	-	-	-	-	7.0	25,400	9.8	58,700	13.8	157,000	13.6	157,000
5	-	-	-	-	7.0	25,900	9.9	61,000	14.0	161,000	13.6	155,000
6	-	-	-	-	6.8	25,000	9.9	63,600	14.2	168,000	13.4	154,000
7	-	-	-	-	6.8	23,800	9.9	67,000	14.4	172,000	13.4	152,000
8	-	-	-	-	7.2	24,300	9.8	69,500	14.5	174,000	13.2	149,000
9	-	-	-	b11,100	7.4	25,400	9.8	72,000	14.5	174,000	13.1	147,000
10	-	-	-	-	7.4	26,500	9.8	74,500	14.5	174,000	13.0	144,000
11	-	-	-	-	7.3	27,300	9.8	77,000	14.5	174,000	12.8	142,000
N	-	-	6.5	13,200	7.3	28,500	9.9	80,200	14.5	174,000	12.8	141,000
1	-	-	6.4	13,800	7.4	30,200	9.9	83,800	14.5	174,000	12.6	138,000
2	-	-	6.4	14,300	7.8	31,800	10.0	87,000	14.5	174,000	12.4	134,000
3	-	-	6.2	15,000	8.0	34,400	10.1	92,500	14.5	174,000	12.0	129,000
4	-	-	6.2	15,300	8.0	36,500	10.3	95,800	14.4	173,000	11.8	125,000
5	-	-	6.4	15,800	8.1	38,200	10.5	100,000	14.4	172,000	11.6	122,000
6	-	c8,880	6.5	16,200	8.2	40,200	10.7	104,000	14.4	171,000	11.6	120,000
7	-	-	6.7	16,700	8.3	41,300	11.0	108,000	14.4	170,000	11.4	118,000
8	-	-	6.9	17,100	8.5	42,300	11.2	111,000	14.2	169,000	11.3	116,000
9	-	-	7.0	17,600	8.7	43,000	11.5	116,000	14.2	168,000	11.1	112,000
10	-	-	7.0	18,200	9.0	44,200	11.8	121,000	14.2	167,000	10.9	110,000
11	-	-	7.0	18,700	9.3	47,000	12.1	126,000	14.1	166,000	10.8	109,000
M	-	-	7.2	20,500	9.7	49,600	12.4	131,000	14.0	165,000	10.8	108,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	10.6	104,000	8.6	70,000	8.4	53,000	7.3	40,800	4.4	33,600	-	-
4	10.4	102,000	8.6	68,200	8.4	52,000	7.2	40,000	4.2	32,700	-	-
6	10.2	97,500	8.4	66,200	8.4	50,000	7.0	38,000	3.4	31,500	-	-
8	9.9	93,000	8.2	63,900	7.7	48,300	6.4	36,800	3.2	30,200	-	-
10	9.6	88,300	8.0	61,600	7.4	45,800	6.0	35,400	3.2	27,500	-	-
N	9.4	84,600	8.2	58,900	7.2	44,800	6.0	35,000	3.2	26,000	-	-
2	9.0	81,000	8.0	56,600	7.2	44,300	6.0	35,600	3.6	21,600	-	-
4	8.8	78,000	8.2	58,900	7.1	43,800	5.8	33,800	5.0	18,100	-	-
6	8.6	74,800	8.0	55,000	7.3	43,400	5.9	33,000	6.6	22,500	-	d18,200
8	8.3	72,000	8.0	51,700	7.2	42,000	5.8	32,300	6.9	24,700	-	-
10	8.3	70,500	8.1	52,800	7.2	40,600	5.6	32,000	6.6	21,600	-	-
M	8.8	72,000	8.2	54,000	7.2	40,200	5.0	34,000	6.6	19,800	-	-

b Mean for 6-hour period 6 a.m. to noon.
c Mean for 24 hours ending at 6 a.m. Sept. 19.
d Mean for 24 hours ending at 6 a.m. Sept. 30.

Connecticut River at Montague City, Mass.

Location.- Water-stage recorder, lat. 42°34'45", long. 72°34'20", in Montague City, Franklin County 600 feet below mouth of Deerfield River. Zero of gage is 99.87 feet above mean sea level (general adjustment of 1929).

Drainage area.- 7,840 square miles.

Gage-height record.- Water-stage recorder graph except for period 2 a.m. Sept. 22 to 1 a.m. Sept. 23, record for which was based on floodmarks, two wire-weight gage readings daily, and shape of stage graphs at nearby stations.

Stage-discharge relation.- Defined by current-meter measurements below 151,000 second-feet; extended to peak stage by study of flow characteristics at high water control section.

Maxima.- September 1938: Discharge, 195,000 second-feet 11:30 a.m. Sept. 22 (gage height, 44.74 feet, from floodmarks).

1904 to August 1938: Discharge, 236,000 second-feet Mar. 19, 1936 (gage height, 49.2 feet, from floodmarks).

Remarks.- Flood run-off affected by a total storage capacity of 16,140,000,000 cubic feet. For information on storage (total capacity, 14,860,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., Lake Sunapee at Sunapee, N. H., Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., and Harriman Reservoir on Deerfield River at Davis Bridge, Vt.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	7,380	13,600	9	7,140	7,980	17	15,900	9,540	25	72,400	20,600
2	7,790	16,000	10	3,330	8,600	18	13,500	8,680	26	51,600	21,800
3	3,600	17,600	11	2,100	11,400	19	13,400	9,700	27	38,300	21,500
4	2,080	14,400	12	5,460	8,940	20	39,200	10,600	28	29,200	19,400
5	1,360	13,600	13	7,470	10,700	21	101,000	10,000	29	20,900	17,600
6	5,870	14,400	14	10,700	11,800	22	189,000	10,200	30	20,000	14,900
7	4,610	16,800	15	12,300	7,670	23	163,000	10,200	31		11,500
8	7,500	11,300	16	14,700	7,250	24	109,000	12,000			
Mean monthly discharge, in second-feet										32,660	12,910
Run-off, in inches										4.65	1.90

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	11.95	15,200	8.25	6,130	15.20	25,100	24.20	59,200	42.90	180,000	43.25	183,000
2	12.39	16,470	7.30	4,200	15.77	26,900	24.76	61,700	43.22	183,000	43.12	182,000
3	12.41	16,500	6.65	3,020	16.01	27,700	25.24	63,900	43.48	185,000	42.98	181,000
4	11.92	15,200	6.20	2,300	16.20	28,400	25.81	66,400	43.70	187,000	42.75	179,000
5	11.50	14,100	5.83	1,780	16.90	30,700	26.45	69,400	43.90	188,000	42.55	178,000
6	11.30	13,600	7.00	3,640	17.37	32,300	27.05	72,200	44.10	190,000	42.34	175,000
7	11.43	13,900	9.30	8,580	17.14	31,500	27.75	75,800	44.28	191,000	42.10	174,000
8	11.52	14,160	10.70	12,000	17.34	32,200	28.40	79,200	44.44	192,000	41.88	172,000
9	11.54	14,220	11.40	13,800	18.10	34,900	28.95	82,200	44.60	194,000	41.72	171,000
10	11.56	14,300	11.71	14,600	18.54	36,500	29.60	85,800	44.70	194,600	41.47	169,000
11	11.55	14,250	11.95	15,200	18.78	37,300	30.20	89,200	44.72	194,800	41.20	167,000
N	11.53	14,190	12.00	15,400	19.00	38,200	30.85	93,100	44.72	194,800	40.95	164,000
1	11.10	13,100	12.20	15,900	19.25	39,200	31.50	97,000	44.68	194,400	40.65	162,000
2	10.56	11,700	12.42	16,600	19.75	41,000	32.10	101,000	44.58	194,000	40.36	160,000
3	10.38	11,200	12.62	17,100	20.30	43,200	32.80	105,000	44.46	193,000	40.10	158,000
4	10.59	11,800	12.82	17,700	20.95	45,700	33.50	110,000	44.35	192,000	39.80	155,000
5	10.85	12,400	13.00	18,200	21.40	47,500	34.30	115,000	44.22	191,000	39.45	152,000
6	11.25	13,400	13.10	18,500	21.65	48,500	35.06	121,000	44.11	190,000	39.10	150,000
7	11.38	13,800	13.22	18,900	21.85	49,300	35.90	126,000	44.00	189,000	38.85	148,000
8	11.44	13,900	13.45	19,600	22.00	49,900	37.30	136,000	43.90	188,000	38.53	145,000
9	11.40	13,800	13.75	20,400	22.15	50,500	39.20	151,000	43.79	187,000	38.20	143,000
10	10.60	11,800	14.10	21,500	22.40	51,600	40.90	164,000	43.66	186,000	37.90	140,000
11	9.85	9,890	14.10	21,500	22.72	52,900	41.90	172,000	43.53	185,000	37.50	138,000
M	9.38	8,770	14.20	21,800	23.30	55,400	42.50	177,000	43.40	184,000	37.18	135,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	36.58	131,000	29.30	84,200	23.95	58,100	19.88	41,500	17.88	34,100	14.40	22,400
4	35.92	126,000	28.90	82,000	23.64	56,800	19.58	40,400	17.88	34,100	13.65	20,200
6	35.30	122,000	28.40	79,200	23.36	55,600	19.26	39,200	18.00	34,500	12.90	17,900
8	34.70	118,000	27.90	76,500	23.32	55,500	19.50	40,100	17.60	33,100	13.55	19,800
10	34.05	114,000	27.48	74,400	22.97	54,000	19.30	39,300	16.90	30,700	13.42	19,500
N	33.38	109,000	26.90	71,500	22.31	51,200	18.92	37,880	16.50	29,400	13.50	19,700
2	32.64	104,000	26.40	69,200	22.07	50,200	18.93	37,920	15.90	27,400	13.88	20,800
4	31.98	100,000	26.03	67,400	21.70	48,700	18.70	37,100	14.60	23,100	14.25	22,000
6	31.38	96,300	25.65	65,800	21.32	47,200	18.38	35,900	14.25	22,000	14.30	22,100
8	30.90	93,400	25.19	63,100	21.05	46,100	18.39	36,000	15.60	26,400	14.03	21,300
10	30.20	89,200	24.95	62,600	20.68	44,600	18.16	35,100	15.55	26,200	14.42	22,500
M	29.72	86,500	24.42	60,200	20.23	42,900	18.22	35,300	15.00	24,400	13.94	21,000

Supplemental records.- Sept. 22, 11:30 a.m., 44.74 ft., 195,000 sec.-ft.

Connecticut River at Holyoke, Mass.

Location.- Water-stage recorder, lat. 42°12'50", long. 72°36'10", above dam of Holyoke Water Power Co., in Holyoke, Hampden County.
Drainage area.- 8,284 square miles.
Gage-height record.- Water-stage recorder graph. Stage affected by flashboards on dam prior to 1 a.m. Sept. 20.
Discharge.- Determined by adding flow over dam to flow in the canals of Holyoke Power Co.
Maxima.- September 1938: Discharge, 189,000 second-feet 11 p.m. Sept. 22 to 5 a.m. Sept. 23 (gage height, 14.9 feet).
1860 to August 1938: Discharge, 244,000 second-feet Mar. 19, 20, 1936 (gage height, 16.8 feet).
Remarks.- Flood run-off affected by a total storage capacity of 16,540,000,000 cubic feet. For information on storage (total capacity 14,860,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., Lake Sunapee at Sunapee, N. H., Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., and Harriman Reservoir on Deerfield River at Davis Bridge, Vt. Records computed from basic data furnished by Holyoke Water Power Co.

Mean discharge, in second-feet, 1938 a/

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6,520	15,400	9	6,620	8,090	17	14,000	8,240	25	82,900	14,700
2	7,290	15,100	10	3,900	8,960	18	12,300	8,110	26	57,800	17,800
3	3,110	17,700	11	1,650	13,100	19	10,400	7,910	27	43,400	17,700
4	2,050	14,400	12	4,730	14,200	20	52,200	8,370	28	33,900	14,000
5	1,770	12,600	13	5,780	8,030	21	103,000	8,160	29	23,700	16,100
6	4,440	14,000	14	8,370	9,460	22	179,000	8,520	30	21,300	12,600
7	4,800	16,400	15	10,300	6,990	23	171,000	8,410	31		10,300
8	4,720	12,300	16	11,500	5,740	24	124,000				
Mean monthly discharge, in second-feet										33,880	11,710
Run-off, in inches										4.56	1.63

a/ For 24 hours ending at 6 a.m. following day indicated.

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	4.6	39,800	6.2	59,300	11.5	133,000	14.9	189,000
2	-	-	-	-	4.7	40,900	6.3	60,500	11.7	136,000	14.9	189,000
3	-	-	-	-	4.7	40,900	6.4	61,700	12.0	141,000	14.9	189,000
4	-	-	-	-	4.7	40,900	6.6	62,900	12.3	146,000	14.9	189,000
5	-	-	-	-	4.8	43,200	6.7	64,100	12.6	148,000	14.9	189,000
6	-	-	-	-	4.8	43,200	6.9	65,300	12.8	151,000	14.8	187,000
7	-	-	-	-	4.8	43,200	7.0	66,600	13.1	157,000	14.7	185,000
8	-	-	-	-	4.9	44,300	7.2	69,200	13.3	160,000	14.7	185,000
9	-	-	-	-	4.9	44,300	7.4	71,800	13.4	162,000	14.6	183,000
10	-	-	-	-	5.0	45,400	7.6	74,400	13.6	165,000	14.6	183,000
11	-	-	-	-	5.0	45,400	7.8	77,000	13.8	169,000	14.5	182,000
N	-	-	-	-	5.1	46,500	8.0	79,600	13.9	171,000	14.5	182,000
1	-	-	-	-	5.1	46,500	8.2	82,400	14.0	173,000	14.4	180,000
2	-	-	-	-	5.2	47,600	8.4	85,200	14.2	176,000	14.4	180,000
3	-	-	-	-	5.2	47,600	8.6	88,000	14.3	178,000	14.3	178,000
4	-	-	-	-	5.3	48,700	8.9	92,200	14.4	180,000	14.2	176,000
5	-	-	-	-	5.4	49,800	9.1	95,100	14.5	182,000	14.1	174,000
6	-	*12,300	-	*10,400	5.5	50,900	9.3	98,100	14.6	184,000	14.0	173,000
7	-	-	-	-	5.6	52,100	9.6	103,000	14.6	184,000	13.9	171,000
8	-	-	-	-	5.7	53,300	9.9	107,000	14.7	185,000	13.8	169,000
9	-	-	-	-	5.8	54,500	10.3	113,000	14.8	187,000	13.8	169,000
10	-	-	-	-	5.9	55,700	10.5	117,000	14.8	187,000	13.7	167,000
11	-	-	-	-	6.0	56,900	10.8	121,000	14.9	189,000	13.5	164,000
M	-	-	-	-	6.1	58,100	11.2	128,000	14.9	189,000	13.4	162,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	13.2	158,000	10.1	108,000	7.5	70,900	5.7	51,700	4.7	41,300	3.7	30,600
4	13.0	155,000	9.9	105,000	7.4	70,700	5.6	50,800	4.6	40,200	3.6	29,600
6	12.6	149,000	9.5	98,900	7.2	70,400	5.4	49,000	4.6	40,000	3.5	29,200
8	12.4	145,000	9.4	97,400	6.9	66,500	5.2	46,800	4.4	37,800	3.2	26,500
10	12.0	138,000	9.1	92,900	6.7	63,900	5.1	45,700	4.4	37,800	3.0	24,700
N	11.8	135,000	9.0	91,400	6.6	62,600	5.0	44,600	4.4	37,800	3.0	24,700
2	11.6	132,000	8.8	88,600	6.4	60,100	4.9	43,500	4.2	35,600	2.8	23,100
4	11.2	126,000	8.6	85,800	6.3	58,900	4.9	43,500	4.1	34,600	2.8	23,100
6	11.1	124,000	8.4	83,000	6.1	56,500	4.9	43,500	4.1	34,600	2.7	22,300
8	10.9	121,000	8.1	78,800	6.0	55,300	4.8	42,400	3.9	32,600	2.7	22,300
10	10.6	116,000	8.0	77,400	5.9	54,100	4.8	42,400	3.7	30,600	2.8	23,100
M	10.4	113,000	7.7	73,500	5.8	52,900	4.8	42,400	3.7	30,600	2.9	23,900

* Mean for 24 hours ending at 6 a.m. following day indicated.

Connecticut River at Springfield, Mass.

Location.- Water-stage recorder, lat. 42°06'00", long. 72°35'50", at Memorial Bridge, in Springfield, Hampden County, 1½ miles above mouth of Westfield River. Zero of gage is 37.30 feet above mean sea level.
Drainage area.- 9,587 square miles including Westfield River Basin.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Developed from rating curve at Thompsonville, Conn.; adjusted for discharge from intervening drainage area.
Maxima.- September 1938: Discharge, 235,000 second-feet 10 p.m. Sept. 22 to 1 a.m. Sept. 23 (gage height, 25.75 feet).
1801 to August 1938: Discharge, 281,000 second-feet Mar. 19, 20, 1936 (gage height, 28.60 feet).
Remarks.- Flood run-off affected by a total storage capacity of 19,940,000,000 cubic feet. For information on storage (total capacity, 18,260,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., Lake Sunapee at Sunapee, N. H., Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., Harriman Reservoir on Deerfield River at Davis Bridge, Vt., and Borden Brook and Cobble Mountain Reservoirs in Westfield Little River Basin near Westfield, Mass. Records computed from basic data furnished by the U. S. Weather Bureau. Discharge record includes flow of Westfield River.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	8,100	22,000	9	7,750	12,700	17	14,700	10,700	25	109,000	19,900
2	8,500	17,800	10	7,500	11,200	18	15,000	11,700	26	75,200	24,100
3	7,050	21,000	11	4,080	11,700	19	14,400	11,700	27	54,200	23,400
4	3,450	19,400	12	4,920	13,200	20	39,900	11,700	28	43,400	22,000
5	3,070	17,800	13	7,050	12,200	21	109,000	12,400	29	31,500	20,400
6	3,700	16,800	14	8,620	12,200	22	225,000	12,700	30	26,200	18,900
7	5,500	18,400	15	11,000	12,700	23	223,000	12,200	31		15,800
8	7,000	17,300	16	13,200	9,750	24	169,000	13,200			
Mean monthly discharge, in second-feet										42,000	15,710
Run-off, in inches										4.89	1.89

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.70	15,200	4.50	14,200	5.75	20,700	12.1	66,800	23.2	195,000	25.75	235,000
2	4.70	15,200	4.49	14,150	6.00	22,000	12.3	68,400	23.7	202,000	25.70	234,200
3	4.70	15,200	4.49	14,150	6.25	23,800	12.6	70,800	24.1	209,000	25.70	234,200
4	4.70	15,200	4.50	14,200	6.50	25,500	12.85	72,800	24.5	215,000	25.65	233,400
5	4.70	15,200	4.48	14,100	6.70	26,900	13.2	75,600	24.8	220,000	25.60	232,600
6	4.70	15,200	4.48	14,100	6.90	28,300	13.5	78,000	25.0	223,000	25.55	231,800
7	4.70	15,200	4.50	14,200	7.20	30,400	14.0	82,000	25.2	226,000	25.55	231,800
8	4.70	15,200	4.50	14,200	7.50	32,500	14.35	85,200	25.25	227,000	25.45	230,200
9	4.70	15,200	4.50	14,200	7.85	35,000	14.7	88,300	25.30	227,800	25.40	229,400
10	4.70	15,200	4.48	14,100	8.03	36,200	15.2	93,000	25.35	228,600	25.35	228,600
11	4.70	15,200	4.47	14,000	8.30	38,100	15.6	97,000	25.40	229,400	25.25	227,000
N	4.70	15,200	4.40	13,700	8.52	39,600	16.0	101,000	25.45	230,200	25.15	225,000
1	4.70	15,200	4.32	13,300	8.80	41,600	16.45	106,000	25.5	231,000	25.05	224,000
2	4.70	15,200	4.30	13,200	9.00	43,000	16.9	111,000	25.55	231,800	25.00	223,000
3	4.68	15,100	4.31	13,250	9.30	45,100	17.4	117,000	25.6	232,600	24.90	221,000
4	4.67	15,050	4.32	13,300	9.60	47,200	18.0	124,000	25.6	232,600	24.80	224,000
5	4.65	14,950	4.37	13,550	9.80	48,600	18.5	130,000	25.6	232,600	24.65	217,000
6	4.64	14,900	4.40	13,700	10.10	50,800	19.0	136,000	25.6	232,600	24.55	216,000
7	4.63	14,850	4.50	14,200	10.22	51,800	19.3	140,000	25.65	233,400	24.35	213,000
8	4.60	14,700	4.60	14,700	10.40	53,200	20.0	149,000	25.70	234,200	24.20	210,000
9	4.55	14,450	4.80	15,800	10.70	55,600	20.4	155,000	25.70	234,200	24.10	209,000
10	4.54	14,400	5.00	16,800	11.05	58,400	21.1	164,000	25.75	235,000	23.95	206,000
11	4.52	14,300	5.22	17,900	11.50	62,000	21.7	173,000	25.75	235,000	23.80	204,000
M	4.51	14,250	5.50	19,400	11.80	64,400	27.6	186,000	25.75	235,000	23.60	201,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	23.30	196,000	18.60	131,000	14.6	87,400	11.5	62,000	9.52	46,600	8.02	36,100
4	22.90	190,000	18.2	126,000	14.25	84,200	11.3	60,400	9.45	46,200	7.88	35,200
6	22.55	185,000	17.7	120,000	13.95	81,600	11.0	58,000	9.35	45,400	7.75	34,200
8	22.2	180,000	17.3	116,000	13.55	78,400	10.8	56,400	9.27	44,900	7.65	33,600
10	21.8	174,000	16.9	111,000	13.3	76,400	10.65	55,200	9.20	44,400	7.50	32,500
N	21.4	169,000	16.6	108,000	13.1	74,800	10.5	54,000	9.15	44,000	7.35	31,400
2	21.0	163,000	16.2	103,000	12.8	72,400	10.3	52,400	9.08	43,600	7.18	30,300
4	20.6	157,000	15.9	100,000	12.6	70,800	10.1	50,800	8.97	42,800	7.00	29,000
6	20.2	152,000	15.65	97,500	12.35	68,800	9.95	49,600	8.80	41,600	6.91	28,400
8	19.8	146,000	15.35	94,500	12.1	66,800	9.82	48,700	8.63	40,400	6.85	28,000
10	19.4	141,000	15.2	93,000	11.85	64,800	9.68	47,800	8.40	38,800	6.77	27,400
M	19.0	136,000	14.9	90,100	11.7	63,600	9.60	47,200	8.20	37,400	6.73	27,100

Connecticut River at Thompsonville, Conn.

Location.- Water-stage recorder, lat. 41°59'20", long. 72°36'15", in pool above Enfield Dam, 1 mile below Thompsonville, Hartford County. Zero of gage is 38.48 feet above mean sea level.

Drainage area.- 9,637 square miles.

Gage-height record.- Water-stage recorder graph except for period 1 a.m. Sept. 22 to 2 a.m. Sept. 24, record for which was based on floodmarks and shape of stage graphs at nearby stations.

Stage-discharge relation.- Defined by current-meter measurements.

Maxima.- September 1938: Discharge, 236,000 second-feet 11 p.m. Sept. 22 to 2 a.m. Sept. 23 (gage height, 14.40 feet, from floodmarks).
1928 to August 1938: Discharge, 282,000 second-feet Mar. 20, 1936 (gage height, 16.6 feet, from floodmarks).

Remarks.- Flood run-off affected by a total storage capacity of 19,940,000,000 cubic feet. For information on storage (total capacity, 18,260,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., Lake Sunapee at Sunapee, N. H., Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., Harriman Reservoir on Deerfield River at Davis Bridge, Vt., and Borden Brook and Cobble Mountain Reservoirs in Westfield Little River Basin near Westfield, Mass.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	8,310	23,000	9	7,980	13,500	17	15,800	11,100	25	110,000	20,700
2	8,840	18,300	10	7,960	11,500	18	16,400	12,300	26	75,100	26,000
3	7,550	22,200	11	5,920	11,900	19	14,700	11,900	27	55,200	25,200
4	3,510	20,200	12	4,930	13,700	20	41,200	12,300	28	44,900	23,700
5	3,150	18,300	13	6,620	12,500	21	112,000	13,500	29	33,200	21,500
6	3,720	17,700	14	8,700	12,500	22	226,000	13,500	30	28,200	20,200
7	6,020	19,500	15	10,900	13,200	23	224,000	12,800	31		16,600
8	7,220	18,300	16	14,000	9,800	24	169,000	13,400			
Mean monthly discharge, in second-feet										42,700	16,480
Run-off, in inches										4.94	1.97

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.42	16,600	2.33	15,600	2.71	20,000	5.75	72,100	12.30	194,000	14.40	236,000
2	2.42	16,600	2.33	15,600	2.86	22,000	5.82	73,500	12.75	203,000	14.40	236,000
3	2.41	16,500	2.32	15,500	2.97	23,600	5.96	76,100	13.05	209,000	14.39	235,800
4	2.41	16,500	2.32	15,500	3.06	25,000	6.10	78,600	13.35	215,000	14.37	235,400
5	2.41	16,500	2.32	15,500	3.16	26,600	6.19	80,300	13.62	220,000	14.35	235,000
6	2.41	16,500	2.20	14,200	3.25	28,000	6.32	82,800	13.80	224,000	14.30	234,000
7	2.41	16,500	2.21	14,300	3.34	29,500	6.48	85,700	13.93	227,000	14.26	233,000
8	2.41	16,500	2.22	14,400	3.44	31,200	6.66	89,000	14.00	228,000	14.22	232,000
9	2.44	16,800	2.22	14,400	3.64	34,600	6.87	92,900	14.05	229,000	14.16	231,000
10	2.44	16,900	2.23	14,500	3.86	38,300	7.09	97,000	14.09	230,000	14.10	230,000
11	2.43	16,700	2.22	14,400	3.92	39,200	7.28	100,500	14.13	230,600	14.04	229,000
N	2.43	16,700	2.19	14,100	3.99	40,500	7.50	105,000	14.15	231,000	13.96	227,000
1	2.43	16,700	2.17	13,900	4.09	42,300	7.72	108,400	14.19	231,800	13.88	226,000
2	2.43	16,700	2.13	13,400	4.18	43,900	7.97	113,000	14.24	232,800	13.80	224,000
3	2.42	16,600	2.12	13,300	4.27	45,600	8.31	119,000	14.27	233,400	13.72	222,000
4	2.41	16,500	2.12	13,300	4.36	47,200	8.58	125,000	14.30	234,000	13.60	220,000
5	2.40	16,400	2.15	13,600	4.48	49,300	8.87	130,000	14.33	234,600	13.50	218,000
6	2.39	16,200	2.17	13,900	4.62	51,900	9.32	138,000	14.33	234,600	13.40	216,000
7	2.38	16,100	2.19	14,100	4.76	54,400	9.57	143,000	14.34	234,800	13.27	213,000
8	2.37	16,000	2.24	14,600	4.84	55,800	9.92	149,000	14.35	235,000	13.14	211,000
9	2.36	16,000	2.28	15,100	5.20	62,400	10.23	155,000	14.36	235,200	13.00	208,000
10	2.35	15,900	2.36	16,000	5.39	65,900	10.68	164,000	14.38	235,600	12.92	206,000
11	2.34	15,700	2.47	17,200	5.37	67,400	11.20	173,000	14.40	236,000	12.80	204,000
M	2.33	15,600	2.60	18,700	5.63	70,400	11.71	183,000	14.40	236,000	12.67	201,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	12.43	197,000	8.94	131,000	6.48	85,700	5.18	61,700	4.43	48,000	3.85	37,800
4	12.17	191,000	8.65	126,000	6.36	83,500	5.09	60,000	4.39	47,300	3.79	36,700
6	11.87	185,000	8.39	121,000	6.24	81,200	5.02	58,700	4.36	46,800	3.74	35,900
8	11.58	181,000	8.14	117,000	6.11	78,800	4.94	57,200	4.34	46,400	3.71	35,400
10	11.27	174,000	7.88	112,000	6.00	76,800	4.88	56,100	4.32	46,100	3.66	34,500
N	10.97	168,000	7.68	108,000	5.90	75,000	4.81	54,900	4.29	45,500	3.60	33,500
2	10.67	163,000	7.48	105,000	5.77	72,500	4.73	53,400	4.26	45,000	3.50	31,800
4	10.38	158,000	7.30	101,000	5.65	70,300	4.68	52,500	4.21	44,100	3.44	30,800
6	10.09	153,000	7.12	97,600	5.57	68,900	4.62	51,500	4.16	43,200	3.38	29,800
8	9.83	148,000	6.96	94,500	5.47	67,000	4.58	50,700	4.09	41,900	3.37	29,600
10	9.48	142,000	6.79	91,500	5.37	65,100	4.53	49,800	4.01	40,500	3.35	29,200
M	9.21	136,000	6.63	88,500	5.28	63,500	4.48	48,900	3.92	38,900	3.32	28,700

Connecticut River at Hartford, Conn.

Location.- Water-stage recorder, lat. 41°46'10", long. 72°40'00", at Memorial Bridge in Hartford, Hartford County, three-quarters of a mile above Park River and 1½ miles above mouth of Hockanum River. Zero of gage is 0.55 foot below mean sea level.

Drainage area.- 10,480 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Discharge is the measured discharge for Connecticut River at Thompsonville, Farmington River at Tariffville, and Scantic River at Broad Brook (98.4 percent of the drainage area) plus computed inflow from ungaged area; adjusted for gain or loss in valley storage between points of measured discharge and Hartford gage.

Maxima.- September 1938: Maximum discharge, 251,000 second-feet 12 p.m. Sept. 22 to 4 a.m. Sept. 23; maximum gage height, 35.42 feet at 4 p.m. Sept. 23.
1639 to August 1938: Maximum discharge, 313,000 second-feet Mar. 20, 1936 (augmented by breaching of Hartford dikes); maximum gage height, 37.6 feet Mar. 21, 1936.

Remarks.- Gage-height record furnished by U. S. Weather Bureau. Flood run-off affected by a total storage capacity of 20,940,000,000 cubic feet. For information on storage (total capacity, 19,260,000,000 cubic feet) see records for First and Second Connecticut Lakes near Pittsburg, N. H., Fifteenmile Falls Reservoir near Barnet, Vt., Mascoma River reservoirs above Mascoma, N. H., Lake Sunapee at Sunapee, N. H., Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., Harriman Reservoir on Deerfield River at Davis Bridge, Vt., Borden Brook and Cobble Mountain Reservoirs in Westfield Little River Basin near Westfield, Mass., Otis Reservoir at Cold Spring, Mass., Barkhamsted Reservoir near Barkhamsted, Conn., East Branch Reservoir at New Hartford, Conn., and Nepaug Reservoir near Collinsville, Conn.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	9,110	26,900	9	8,800	15,500	17	16,700	12,200	25	135,000	22,600
2	9,660	21,600	10	8,610	13,000	18	17,500	13,500	26	92,000	28,000
3	8,190	24,000	11	6,380	13,600	19	17,000	13,200	27	66,400	27,300
4	3,960	22,700	12	5,460	15,400	20	39,300	13,600	28	52,800	25,800
5	3,600	21,100	13	7,440	14,400	21	113,000	15,200	29	40,000	23,500
6	4,280	20,000	14	9,600	13,900	22	228,000	15,500	30	32,200	22,000
7	6,800	21,300	15	11,900	14,600	23	242,000	14,300	31		18,300
8	8,050	20,600	16	15,100	11,300	24	197,000	14,700			
Mean monthly discharge, in second-feet										47,190	18,370
Run-off, in inches										5.02	2.02

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.15	17,600	5.23	16,700	6.21	20,500	16.60	68,600	25.70	187,000	34.15	251,000
2	5.06	17,600	5.19	16,600	6.33	23,600	17.05	71,300	26.20	193,000	34.30	251,000
3	4.98	17,600	5.12	16,700	6.43	25,800	17.50	74,100	26.70	200,000	34.45	251,000
4	4.90	17,500	5.02	16,700	6.57	27,200	17.90	77,400	27.20	206,000	34.55	251,000
5	4.82	17,500	4.95	16,800	6.72	28,500	18.30	80,200	27.70	210,000	34.70	250,000
6	4.81	17,500	4.91	16,900	6.93	29,400	18.65	83,900	28.20	214,000	34.80	250,000
7	4.86	17,500	4.92	15,700	7.19	30,300	19.00	87,100	28.65	218,000	34.90	249,000
8	4.92	17,500	5.02	15,900	7.65	31,200	19.35	90,400	29.15	222,000	35.00	248,000
9	4.94	17,500	5.17	16,000	8.20	32,700	19.70	94,200	29.60	225,000	35.10	248,000
10	4.93	17,800	5.27	16,100	8.75	34,300	20.00	98,600	30.00	228,000	35.15	247,000
11	4.92	17,900	5.31	16,300	9.30	36,100	20.40	104,000	30.35	231,000	35.25	246,000
N	4.89	17,700	5.32	16,200	9.83	37,800	20.75	108,000	30.80	234,000	35.30	245,000
1	4.85	17,700	5.31	16,100	10.40	39,600	21.05	112,000	31.15	236,000	35.33	244,000
2	4.81	17,700	5.29	16,100	10.90	41,300	21.47	118,000	31.50	238,000	35.38	242,000
3	4.76	17,700	5.27	16,500	11.40	43,000	21.95	124,000	31.80	240,000	35.40	240,000
4	4.70	17,600	5.32	17,000	11.85	44,700	22.30	129,000	32.10	242,000	35.42	239,000
5	4.65	17,500	5.30	17,100	12.40	46,700	22.50	133,000	32.40	244,000	35.41	238,000
6	4.70	17,400	5.30	17,100	12.85	48,700	22.95	139,000	32.65	245,000	35.41	235,000
7	4.84	17,200	5.36	17,400	13.25	50,300	23.20	144,000	32.90	247,000	35.40	234,000
8	5.03	17,100	5.51	17,900	13.80	52,900	23.60	152,000	33.15	248,000	35.40	232,000
9	5.18	17,000	5.68	18,600	14.40	55,800	24.00	157,000	33.40	249,000	35.39	231,000
10	5.25	17,000	5.82	19,000	14.90	58,400	24.35	163,000	33.60	250,000	35.35	229,000
11	5.39	16,900	5.93	19,300	15.50	62,000	24.80	171,000	33.80	250,000	35.32	221,000
M	5.32	16,700	6.04	20,100	16.10	65,300	25.25	179,000	33.95	251,000	35.27	225,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	35.15	221,000	31.50	159,000	26.20	106,000	21.25	74,600	17.00	57,500	13.56	46,000
4	34.97	216,000	31.10	153,000	25.75	103,000	20.85	72,200	16.66	56,000	13.18	44,700
6	34.80	213,000	30.65	148,000	25.30	100,000	20.50	70,500	16.31	55,200	12.81	43,500
8	34.55	208,000	30.25	143,000	24.90	96,500	20.15	69,200	16.00	54,500	12.51	42,100
10	34.30	202,000	29.80	139,000	24.50	94,400	19.75	67,500	15.72	53,800	12.25	41,100
N	34.05	198,000	29.35	135,000	24.05	91,300	19.40	66,100	15.48	53,100	11.99	40,000
2	33.70	191,000	28.90	129,000	23.65	88,700	19.10	64,700	15.22	52,300	11.71	39,100
4	33.40	187,000	28.45	125,000	23.25	86,400	18.70	63,500	14.98	51,300	11.42	37,300
6	33.05	181,000	27.95	120,000	22.83	83,800	18.35	61,800	14.72	50,400	11.16	36,000
8	32.70	177,000	27.55	116,000	22.43	81,500	18.00	60,200	14.48	49,400	10.90	35,100
10	32.30	171,000	27.10	112,000	22.03	79,000	17.68	59,000	14.20	48,200	10.64	34,600
M	31.90	165,000	26.65	109,000	21.63	77,000	17.35	58,000	13.90	47,000	10.40	34,200

Passumpsic River at Passumpsic, Vt.

Location.- Water-stage recorder, lat. 44°21', long. 72°01', 1 mile below dam at Passumpsic, Caledonia County.
Drainage area.- 423 square miles.
Gage-height record.- Water-stage recorder graph except for period Oct. 26-31, when graph was based on twice daily gage readings.
Stage-discharge relation.- Defined by current-meter measurements below 9,180 second-feet; extended to peak stage on basis of determinations of flood flows over dam.
Maxima.- September 1938: Discharge, 7,710 second-feet 1 a.m. Sept. 22 (gage height, 12.23 feet).
1928 to August 1938: Discharge, 16,000 second-feet Mar. 18, 1936 (gage height, 21.23 feet).
Remarks.- Flood run-off slightly affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	175	556	9	250	361	17	688	324	25	1,220	1,680
2	300	516	10	165	388	18	649	295	26	872	1,340
3	214	490	11	120	349	19	622	281	27	778	600
4	196	472	12	165	328	20	1,120	304	28	810	640
5	256	417	13	812	330	21	4,670	574	29	690	500
6	238	413	14	1,030	323	22	6,140	604	30	595	530
7	155	390	15	870	326	23	3,000	420	31		480
8	233	387	16	1,140	268	24	1,690	540			
Mean monthly discharge, in second-feet										995	498
Run-off, in inches										2.62	1.36

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.93	485	3.25	686	2.89	461	5.40	2,180	12.23	7,710	8.11	4,220
2	2.90	467	3.23	673	2.76	390	5.52	2,260	12.20	7,680	7.90	4,050
3	2.94	491	3.21	660	2.77	395	5.60	2,320	12.05	7,540	7.72	3,910
4	2.92	479	3.21	660	2.90	467	5.69	2,380	11.84	7,360	7.57	3,790
5	2.93	485	3.20	653	3.00	527	5.88	2,520	11.61	7,150	7.41	3,660
6	2.97	509	3.20	653	3.10	589	6.17	2,720	11.40	6,960	7.25	3,530
7	3.03	546	3.19	647	3.21	660	6.40	2,880	11.20	6,780	7.10	3,410
8	3.12	602	3.18	640	3.30	720	6.70	3,090	11.05	6,640	6.96	3,300
9	3.21	660	3.18	640	3.43	807	6.80	3,170	10.90	6,510	6.82	3,190
10	3.24	680	3.20	653	3.59	915	7.05	3,370	10.79	6,410	6.71	3,100
11	3.28	707	3.33	740	3.98	1,190	7.75	3,930	10.63	6,270	6.50	2,950
N	3.31	727	3.37	767	4.01	1,210	8.21	4,300	10.48	6,130	5.83	2,480
1	3.30	720	3.23	673	4.00	1,200	9.00	4,930	10.30	5,970	6.10	2,670
2	3.29	713	3.19	647	4.06	1,240	10.05	5,770	10.12	5,830	6.17	2,720
3	3.40	787	3.00	527	4.01	1,210	10.65	6,280	9.98	5,710	6.11	2,680
4	3.26	693	2.91	473	4.21	1,350	11.00	6,600	9.79	5,560	5.93	2,550
5	3.27	700	3.14	615	4.48	1,536	11.11	6,700	9.61	5,420	5.93	2,550
6	3.31	727	3.09	583	4.49	1,543	11.10	6,690	9.44	5,280	5.89	2,520
7	3.34	747	3.03	546	4.68	1,680	11.03	6,630	9.29	5,160	5.74	2,420
8	3.35	754	3.01	533	4.80	1,760	11.10	6,690	9.11	5,020	5.65	2,360
9	3.35	754	3.08	577	4.94	1,860	11.40	6,960	8.95	4,890	5.55	2,285
10	3.41	794	3.04	552	5.03	1,920	11.72	7,250	8.73	4,710	5.54	2,278
11	3.32	733	2.96	503	5.20	2,040	12.00	7,500	8.53	4,550	5.44	2,210
M	3.29	713	3.05	558	5.26	2,080	12.13	7,620	8.32	4,390	5.30	2,110
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.13	1,990	4.03	1,220	3.72	1,000	3.22	666	3.35	754	3.07	570
4	4.98	1,890	4.18	1,330	3.63	943	3.38	774	3.41	794	3.30	720
6	4.90	1,830	4.12	1,280	3.61	929	3.37	767	3.41	794	3.26	693
8	4.80	1,760	4.10	1,270	3.61	929	3.33	740	3.40	787	3.24	680
10	4.75	1,720	4.10	1,270	3.38	774	3.58	908	3.62	936	3.48	841
N	4.71	1,700	4.17	1,320	3.31	727	3.50	854	3.57	902	3.33	740
2	4.61	1,630	3.94	1,160	3.51	861	3.68	977	3.50	854	3.25	686
4	4.44	1,510	3.93	1,150	3.50	854	3.20	653	3.44	814	3.25	686
6	4.36	1,450	3.90	1,130	3.71	998	3.32	733	3.40	787	3.22	666
8	4.36	1,450	3.87	1,110	3.61	929	3.30	720	3.48	841	3.31	727
10	4.47	1,530	3.88	1,120	3.10	589	3.48	841	3.54	881	3.30	720
M	4.35	1,440	3.77	1,040	3.46	827	3.10	589	3.05	558	3.03	546

Moose River at St. Johnsbury, Vt.

Location.- Water-stage recorder, lat. 44°25'20", long. 71°59'55", half a mile above mouth of river in St. Johnsbury, Caledonia County.
Drainage area.- 126 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,430 second-feet; extended to peak stage by determination of flood flow over dam.
Maxima.- September 1938: Discharge, 2,030 second-feet 3:15 p.m. Sept. 21 (gage height, 4.25 feet).
1928 to August 1938: Discharge observed, 5,220 second-feet Apr. 30, 1929 (gage height, 8.09 feet, former site and datum).
Remarks.- Flood run-off affected by some artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	36	151	9	60	91	17	246	67	25	432	581
2	45	138	10	42	86	18	201	63	26	293	526
3	45	125	11	31	82	19	187	63	27	245	293
4	40	117	12	34	79	20	417	78	28	234	212
5	51	109	13	282	76	21	1,220	187	29	201	174
6	45	106	14	344	73	22	1,490	201	30	169	153
7	38	102	15	310	72	23	1,150	129	31		135
8	49	94	16	384	69	24	736	188			
Mean monthly discharge, in second-feet										302	149
Run-off, in inches										2.68	1.36

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.06	197	3.11	212	3.01	182	3.84	632	4.08	1,290	4.11	1,400
2	3.06	197	3.11	212	3.06	197	3.86	654	4.10	1,360	4.10	1,360
3	3.07	200	3.10	209	3.14	221	3.86	654	4.09	1,320	4.06	1,220
4	3.08	203	3.09	206	3.20	240	3.89	687	4.09	1,320	4.05	1,180
5	3.08	203	3.08	203	3.33	287	3.89	687	4.06	1,220	4.04	1,150
6	3.09	206	3.08	203	3.41	319	3.90	698	4.07	1,260	4.05	1,180
7	3.09	206	3.06	197	3.47	346	3.92	724	4.10	1,360	4.06	1,220
8	3.09	206	3.05	194	3.51	366	3.95	764	4.12	1,450	4.09	1,320
9	3.08	203	3.04	191	3.53	378	4.06	1,080	4.12	1,450	4.09	1,320
10	3.08	203	3.04	191	3.54	384	4.11	1,400	4.15	1,580	4.08	1,290
11	3.06	197	3.03	188	3.55	390	4.11	1,400	4.16	1,620	4.07	1,260
N	3.05	194	3.01	182	3.56	397	4.13	1,490	4.16	1,620	4.05	1,180
1	3.05	194	2.99	176	3.59	415	4.17	1,670	4.16	1,620	4.02	1,080
2	3.04	191	2.99	176	3.62	436	4.17	1,670	4.16	1,620	4.01	1,040
3	3.03	188	2.97	171	3.67	475	4.24	1,980	4.17	1,670	4.01	1,040
4	3.04	191	2.98	174	3.73	525	4.23	1,940	4.18	1,710	4.01	1,040
5	3.04	191	2.98	174	3.75	543	4.22	1,890	4.16	1,620	4.02	1,080
6	3.06	197	2.98	174	3.77	561	4.17	1,670	4.15	1,580	4.01	1,040
7	3.08	203	2.97	171	3.80	588	4.14	1,540	4.14	1,540	4.01	1,040
8	3.09	206	2.96	169	3.80	588	4.09	1,320	4.14	1,540	4.01	1,040
9	3.10	209	2.97	171	3.80	588	4.09	1,320	4.14	1,540	4.01	1,040
10	3.11	212	2.98	174	3.81	599	4.04	1,150	4.14	1,540	4.00	1,010
11	3.11	212	2.99	176	3.81	599	4.10	1,360	4.13	1,490	3.98	968
M	3.11	212	2.99	176	3.82	610	4.09	1,320	4.11	1,400	3.96	926
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.95	905	3.70	535	3.42	331	3.24	254	3.20	240	3.13	218
4	3.93	863	3.67	508	3.40	320	3.23	250	3.19	237	3.12	215
6	3.91	821	3.64	481	3.38	311	3.22	247	3.19	237	3.11	212
8	3.90	800	3.61	454	3.37	306	3.21	244	3.19	237	3.09	206
10	3.87	755	3.59	438	3.36	302	3.20	240	3.19	237	3.08	203
N	3.85	725	3.57	424	3.34	293	3.19	237	3.19	237	3.08	203
2	3.83	695	3.55	410	3.33	288	3.19	237	3.19	237	3.06	197
4	3.81	665	3.52	389	3.30	275	3.21	244	3.18	234	3.05	194
6	3.79	638	3.50	375	3.28	268	3.22	247	3.17	231	3.04	191
8	3.78	627	3.48	364	3.27	264	3.21	244	3.16	228	3.03	188
10	3.75	592	3.46	353	3.26	261	3.21	244	3.15	224	3.01	182
M	3.73	570	3.44	342	3.25	258	3.21	244	3.14	221	3.00	179

Supplemental records.- Sept. 21, 3:15 p.m., 4.25 ft., 2,030 sec.-ft.

Ammonoosuc River near Bath, N. H.

Location.- Water-stage recorder, lat. 44°09'15", long. 71°59'10", 0.4 mile below mouth of Wild Ammonoosuc River and 1½ miles below Bath, Grafton County.
Drainage area.- 393 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 1 to 4 p.m. Sept. 14, record for which was based on stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 12,800 second-feet; extended to peak stage by velocity-area study at measuring section.
Maxima.- September 1938: Discharge, 26,800 second-feet 6 p.m. Sept. 21 (gage height, 15.07 feet).
1935 to August 1938: Discharge, 27,900 second-feet Mar. 18, 1936 (gage height, 15.40 feet).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	470	637	9	270	349	17	536	245	25	1,550	2,550
2	370	575	10	240	358	18	400	245	26	1,190	1,220
3	280	536	11	230	319	19	367	232	27	999	828
4	270	531	12	220	311	20	1,770	239	28	1,040	654
5	260	469	13	630	303	21	16,300	512	29	849	547
6	250	407	14	450	292	22	13,000	542	30	714	494
7	260	394	15	778	272	23	3,280	383	31		444
8	310	380	16	932	258	24	1,960	669			
Mean monthly discharge, in second-feet										1,672	522
Run-off, in inches										4.74	1.53

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.90	444	2.75	376	2.80	398	6.88	4,210	13.90	22,800	7.11	4,580
2	2.89	439	2.71	358	2.84	416	7.24	4,780	13.90	22,800	6.99	4,380
3	2.80	398	2.67	340	2.88	435	7.70	5,600	13.80	22,500	6.88	4,210
4	2.80	398	2.62	319	2.93	459	8.01	6,220	13.57	21,800	6.78	4,050
5	2.83	412	2.67	340	3.20	603	8.26	6,730	13.23	20,700	6.68	3,910
6	2.84	416	2.69	349	3.42	733	8.50	7,260	12.85	19,400	6.59	3,790
7	2.84	416	2.69	349	3.62	861	8.80	7,920	12.50	18,400	6.52	3,690
8	2.84	416	2.70	353	4.00	1,120	9.17	8,770	12.05	17,000	6.42	3,550
9	2.83	412	2.79	394	4.25	1,300	9.68	10,000	11.58	15,500	6.35	3,450
10	2.88	435	2.79	394	4.37	1,390	10.40	12,000	11.10	14,100	6.29	3,370
11	2.87	430	2.76	380	4.40	1,410	11.60	15,600	10.68	12,800	6.19	3,250
N	2.80	398	2.72	362	4.45	1,450	12.70	19,000	10.25	11,500	5.99	3,010
1	2.78	389	2.72	362	4.63	1,590	13.60	21,900	9.85	10,400	6.00	3,020
2	2.78	389	2.70	353	4.95	1,860	13.98	23,100	9.49	9,540	5.98	3,000
3	2.77	384	2.67	340	5.18	2,080	14.22	23,900	9.15	8,720	5.90	2,900
4	2.70	353	2.66	336	5.35	2,250	14.60	25,200	8.85	8,030	5.82	2,800
5	2.70	353	2.70	353	5.58	2,520	14.92	26,300	8.55	7,370	5.80	2,780
6	2.78	389	2.79	394	5.80	2,780	15.07	26,800	8.28	6,780	5.74	2,710
7	2.79	394	2.81	403	6.00	3,020	14.91	26,200	8.05	6,300	5.70	2,660
8	2.73	366	2.80	398	6.10	3,140	14.77	25,700	7.87	5,940	5.61	2,550
9	2.72	362	2.78	389	6.19	3,250	14.35	24,400	7.68	5,560	5.59	2,530
10	2.79	394	2.78	389	6.38	3,490	14.10	23,500	7.52	5,280	5.55	2,480
11	2.79	394	2.78	389	6.57	3,760	13.91	22,800	7.37	5,010	5.50	2,420
M	2.82	407	2.78	389	6.69	3,930	13.84	22,600	7.23	4,770	5.43	2,340
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.36	2,260	4.80	1,730	4.25	1,300	3.87	1,030	3.93	1,070	3.69	908
4	5.27	2,170	4.77	1,710	4.21	1,270	3.86	1,020	3.97	1,100	3.68	902
6	5.20	2,100	4.73	1,670	4.19	1,250	3.83	1,000	3.97	1,100	3.65	882
8	5.14	2,040	4.66	1,620	4.17	1,240	3.80	982	3.96	1,090	3.63	868
10	5.07	1,970	4.64	1,600	4.12	1,200	3.80	982	3.95	1,080	3.62	861
N	5.00	1,900	4.58	1,550	4.10	1,190	3.77	962	3.92	1,060	3.59	842
2	4.95	1,860	4.54	1,520	4.08	1,180	3.78	969	3.90	1,050	3.58	835
4	4.90	1,810	4.49	1,480	4.02	1,130	3.79	975	3.88	1,040	3.57	828
6	4.88	1,794	4.44	1,440	4.00	1,120	3.80	982	3.83	1,000	3.58	835
8	4.87	1,786	4.40	1,410	3.98	1,110	3.84	1,010	3.81	989	3.60	848
10	4.84	1,760	4.34	1,360	3.93	1,070	3.87	1,030	3.76	955	3.43	739
M	4.81	1,740	4.30	1,330	3.90	1,050	3.90	1,050	3.72	928	3.44	745

White River near Bethel, Vt.

Location.- Water-stage recorder, lat. 43°48'45", long. 72°39'25", a third of a mile above mouth of Locust Creek and 1 3/4 miles southwest of Bethel, Windsor County.
Drainage area.- 241 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 5,090 second-feet; extended to peak stage on basis of determinations of flood flows over dam and by slope-area method.
Maxima.- September 1938: Discharge, 32,200 second-feet, midnight Sept. 21 (gage height, 9.46 feet).
1931 to August 1938: Maximum discharge, 16,100 second-feet, Mar. 18, 1936 (gage height, 6.72 feet); maximum gage height, 8.32 feet Mar. 27, 1934 (affected by ice).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	230	485	9	230	286	17	778	206	25	1,090	675
2	215	437	10	190	270	18	773	198	26	836	580
3	185	404	11	168	260	19	733	188	27	714	485
4	232	379	12	160	250	20	2,020	184	28	754	360
5	205	355	13	723	240	21	9,190	224	29	609	265
6	172	331	14	455	230	22	9,250	276	30	535	250
7	175	303	15	1,780	220	23	2,360	255	31		235
8	382	292	16	1,200	211	24	1,530	269			
Mean monthly discharge, in second-feet										1,262	310
Run-off, in inches										5.85	1.49

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.52	678	1.53	687	1.77	912	3.26	3,090	8.84	27,700	3.18	3,050
2	1.54	696	1.52	678	1.84	980	3.29	3,150	8.49	25,300	3.12	2,950
3	1.59	741	1.51	669	1.95	1,100	3.31	3,190	7.89	21,500	3.08	2,880
4	1.64	788	1.51	669	2.15	1,330	3.35	3,270	6.97	16,300	3.04	2,810
5	1.69	836	1.50	660	2.37	1,620	3.40	3,370	6.29	13,000	3.00	2,740
6	1.70	845	1.50	660	2.53	1,860	3.46	3,500	5.80	10,800	2.96	2,670
7	1.71	854	1.50	660	2.59	1,940	3.56	3,710	5.60	9,990	2.89	2,550
8	1.71	854	1.50	660	2.60	1,960	3.70	4,020	5.19	8,410	2.85	2,490
9	1.70	845	1.50	660	2.59	1,940	3.84	4,350	4.93	7,500	2.82	2,440
10	1.69	836	1.53	687	2.58	1,930	4.10	5,000	4.69	6,720	2.79	2,390
11	1.68	826	1.56	714	2.58	1,930	4.30	5,550	4.54	6,260	2.77	2,360
N	1.68	826	1.59	741	2.59	1,940	4.47	6,050	4.36	5,740	2.73	2,300
1	1.66	807	1.61	760	2.63	2,010	4.70	6,750	4.22	5,350	2.71	2,270
2	1.64	788	1.62	769	2.68	2,090	4.89	7,370	4.10	5,040	2.68	2,220
3	1.62	769	1.63	778	2.73	2,170	5.04	7,880	3.92	4,600	2.64	2,160
4	1.62	769	1.64	788	2.77	2,230	5.17	8,340	3.83	4,390	2.61	2,120
5	1.60	750	1.64	788	2.86	2,380	5.38	9,120	3.74	4,180	2.58	2,070
6	1.60	750	1.64	788	2.92	2,480	5.65	10,190	3.67	4,020	2.57	2,060
7	1.58	732	1.64	788	2.99	2,600	6.08	12,000	3.58	3,830	2.54	2,010
8	1.58	732	1.64	788	3.04	2,690	7.14	17,200	3.51	3,680	2.50	1,950
9	1.57	723	1.64	788	3.06	2,730	8.09	22,800	3.44	3,540	2.48	1,920
10	1.56	714	1.66	807	3.10	2,800	8.29	24,000	3.32	3,310	2.46	1,890
11	1.55	705	1.68	826	3.14	2,870	9.03	29,100	3.27	3,220	2.44	1,870
M	1.54	696	1.70	845	3.19	2,960	9.46	32,200	3.22	3,130	2.41	1,820
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.37	1,770	1.97	1,250	1.67	920	1.47	734	1.59	841	1.37	651
4	2.32	1,700	1.93	1,210	1.64	890	1.46	726	1.58	832	1.36	643
6	2.28	1,640	1.90	1,170	1.63	880	1.44	709	1.55	805	1.35	635
8	2.25	1,600	1.87	1,140	1.61	860	1.43	700	1.53	787	1.34	627
10	2.22	1,570	1.84	1,100	1.59	841	1.42	692	1.50	760	1.33	619
N	2.19	1,530	1.82	1,080	1.58	832	1.41	684	1.49	752	1.32	611
2	2.16	1,490	1.80	1,060	1.57	823	1.41	684	1.47	734	1.31	603
4	2.12	1,440	1.77	1,030	1.55	805	1.41	684	1.45	718	1.30	595
6	2.09	1,400	1.75	1,000	1.54	796	1.41	684	1.44	709	1.28	580
8	2.05	1,350	1.73	983	1.52	778	1.45	718	1.42	692	1.27	572
10	2.02	1,310	1.70	950	1.50	760	1.50	760	1.40	675	1.26	565
M	1.99	1,280	1.68	930	1.49	752	1.57	823	1.38	659	1.26	565

White River at West Hartford, Vt.

Location.- Water-stage recorder, lat. 43°42'45", long. 72°25'10", 500 feet above highway bridge at West Hartford, Windsor County, and 7 miles above mouth of river. Zero of gage is 374.22 feet above mean sea level.
Drainage area.- 690 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 12,800 second-feet, extended to peak stage on basis of determination of flood flow by slope-area method.
Maxima.- September 1938: Discharge, 47,600 second-feet 3:30 a.m. Sept. 22 (gage height, 19.26 feet).
1915 to August 1938: Discharge, 120,000 second-feet Nov. 4, 1927 (gage height, 29.3 feet, from flood marks).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	505	1,450	9	536	840	17	1,550	608	25	3,120	1,700
2	495	1,360	10	416	805	18	1,540	580	26	2,480	1,140
3	435	1,220	11	380	758	19	1,480	550	27	2,190	931
4	435	1,140	12	352	740	20	3,850	565	28	2,240	826
5	500	1,060	13	1,030	704	21	12,900	770	29	1,830	752
6	388	952	14	1,000	668	22	25,100	784	30	1,600	698
7	370	924	15	2,340	650	23	6,300	644	31		668
8	629	896	16	3,060	632	24	4,180	906			
Mean monthly discharge, in second-feet										2,774	869
Run-off, in inches										4.48	1.45

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.05	1,355	5.24	1,540	5.46	1,770	8.66	6,740	18.32	41,900	9.35	8,190
2	5.05	1,355	5.22	1,520	5.62	1,940	8.73	6,880	19.05	46,300	9.23	7,930
3	5.06	1,364	5.20	1,500	5.85	2,210	8.80	7,020	19.24	47,400	9.12	7,680
4	5.07	1,370	5.18	1,480	5.91	2,280	8.90	7,220	19.25	47,500	9.01	7,440
5	5.08	1,380	5.17	1,470	6.00	2,390	9.03	7,490	19.09	46,500	8.92	7,260
6	5.10	1,400	5.16	1,460	6.10	2,520	9.11	7,660	18.60	43,600	8.81	7,040
7	5.11	1,410	5.14	1,440	6.20	2,650	9.20	7,860	17.80	39,000	8.72	6,860
8	5.13	1,430	5.13	1,430	6.32	2,810	9.37	8,230	16.88	34,400	8.64	6,700
9	5.18	1,480	5.12	1,420	6.51	3,070	9.59	8,720	15.92	29,700	8.56	6,540
10	5.23	1,530	5.11	1,410	6.79	3,480	9.81	9,240	15.01	26,000	8.50	6,430
11	5.30	1,600	5.10	1,400	7.08	3,940	10.08	9,890	14.17	22,900	8.41	6,260
N	5.35	1,650	5.10	1,400	7.26	4,230	10.40	10,700	13.40	20,000	8.34	6,130
1	5.39	1,690	5.10	1,400	7.36	4,390	10.71	11,500	12.73	17,700	8.28	6,010
2	5.40	1,700	5.09	1,390	7.39	4,440	10.96	12,300	12.16	15,800	8.21	5,880
3	5.41	1,710	5.09	1,390	7.43	4,510	11.29	13,200	11.70	14,400	8.14	5,750
4	5.40	1,700	5.10	1,400	7.46	4,560	11.61	14,100	11.32	13,300	8.07	5,630
5	5.39	1,690	5.12	1,420	7.49	4,610	11.90	15,000	10.99	12,300	8.02	5,540
6	5.38	1,680	5.16	1,460	7.60	4,800	12.29	16,200	10.73	11,600	7.96	5,430
7	5.36	1,660	5.21	1,510	7.77	5,090	12.57	17,100	10.47	10,900	7.89	5,300
8	5.34	1,640	5.26	1,560	7.88	5,280	12.90	18,300	10.24	10,300	7.84	5,210
9	5.32	1,620	5.29	1,590	8.02	5,540	13.69	21,100	10.08	9,890	7.80	5,140
10	5.30	1,600	5.32	1,620	8.15	5,770	14.47	24,000	9.90	9,460	7.74	5,040
11	5.28	1,580	5.34	1,640	8.31	6,070	15.40	27,600	9.73	9,050	7.69	4,940
M	5.26	1,560	5.38	1,680	8.51	6,450	17.00	35,000	9.59	8,720	7.65	4,880
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.56	4,730	6.78	3,470	6.21	2,660	5.86	2,220	6.05	2,460	5.62	1,940
4	7.47	4,580	6.73	3,400	6.17	2,610	5.83	2,190	6.06	2,470	5.60	1,920
6	7.41	4,480	6.66	3,290	6.14	2,570	5.81	2,160	6.03	2,430	5.58	1,900
8	7.34	4,360	6.61	3,220	6.11	2,530	5.79	2,140	5.98	2,370	5.56	1,880
10	7.27	4,240	6.57	3,160	6.09	2,510	5.78	2,130	5.90	2,270	5.54	1,850
N	7.22	4,160	6.54	3,120	6.07	2,480	5.77	2,110	5.85	2,210	5.52	1,830
2	7.16	4,070	6.49	3,050	6.05	2,460	5.76	2,100	5.81	2,160	5.51	1,820
4	7.09	3,950	6.45	2,990	6.02	2,420	5.78	2,130	5.77	2,110	5.48	1,790
6	7.04	3,870	6.40	2,920	5.99	2,380	5.83	2,190	5.75	2,090	5.47	1,780
8	6.98	3,780	6.35	2,850	5.97	2,350	5.87	2,230	5.72	2,050	5.43	1,730
10	6.91	3,670	6.31	2,790	5.93	2,310	5.99	2,380	5.68	2,010	5.42	1,720
M	6.84	3,560	6.27	2,740	5.89	2,260	6.03	2,430	5.65	1,980	5.40	1,700

Supplemental records.- Sept. 22, 3:30 a.m., 19.26 ft., 47,600 sec.-ft.

Mascoma River reservoirs above Mascoma, N. H.

Location.- Mascoma and Crystal Lakes and Goose and Grafton Ponds on or tributary to Mascoma River above Mascoma, Grafton County, have a combined storage capacity of about 1,250,000,000 cubic feet, which is used to regulate the flow of the Mascoma River.

Drainage area.- 153 square miles above Mascoma Lake dam.

Storage.- Daily gain or loss in storage, in millions of cubic feet, is the net change in contents in the reservoirs.

Remarks.- Records computed from basic data furnished by Mascoma River Improvement Co.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-6.2	-7.3	9	-5.2	-2.2	17	+10.8	-7.4	25	-57.5	+36.8
2	-5.8	-6.0	10	-5.8	-1.7	18	+14.7	-8.1	26	-25.1	+14.7
3	-6.9	-5.5	11	-6.4	-3.8	19	+62.4	-8.1	27	-5.9	+1.9
4	-7.0	-1.0	12	+6.1	-5.2	20	+137.3	-8.3	28	-1.4	-2.2
5	-6.8	-2.8	13	+22.8	-5.3	21	+216.3	+10.0	29	-5.6	-6.5
6	-6.3	-3.6	14	+23.7	-5.4	22	+83.9	0	30	-7.9	-5.4
7	-7.0	-3.9	15	+25.8	-9.9	23	-113.5	+4.4	31		-2.4
8	-6.3	-3.6	16	+37.3	-4.4	24	-112.3	+20.4			
Gain or loss in storage, in millions of cubic feet.										+242.2	-31.8
Gain or loss in storage, in equivalent mean second-feet										+94	-12

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Mascoma River at Mascoma, N. H.

Location.- Water-stage recorder, lat. 43°39'00", long. 72°11'05", in Mascoma, Grafton County, 250 feet below railroad bridge and 1,500 feet below outlet of Mascoma Lake.
Drainage area.- 153 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 1 to 4 p.m. Sept. 19, record for which was based on Mascoma Lake gate openings and gage heights.
Stage-discharge relation.- Rating curve defined by current-meter measurements below 2,450 second-feet; extended to peak stage by determinations of flood flows over dams.
Maxima.- September 1938: Discharge, 4,400 second-feet 8 p.m. Sept. 22 (gage height, 6.85 feet).
1923 to August 1938: Discharge, 5,840 second-feet Mar. 19, 1936 (gage height, 7.50 feet).
Remarks.- Flood run-off considerably affected by storage in Mascoma and Crystal Lakes and Goose and Grafton Ponds, total capacity, 1,250,000,000 cubic feet. For information on storage see record for Mascoma River reservoirs. Mean daily and monthly discharges adjusted for storage.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	110	38	335	251	16	110	542	101	50
2	110	43	288	219	17	113	238	178	92
3	109	29	223	159	18	117	287	173	79
4	108	27	191	179	19	120	842	173	79
5	107	28	194	162	20	182	1,770	176	80
6	106	33	191	149	21	1,540	4,040	173	289
7	105	24	183	138	22	4,030	5,000	181	181
8	104	31	170	128	23	3,650	2,340	181	232
9	103	43	156	131	24	2,210	910	181	417
10	103	36	151	131	25	1,360	694	183	609
11	102	28	168	124	26	884	594	239	409
12	101	172	181	121	27	560	492	314	336
13	102	366	178	117	28	465	449	311	286
14	105	379	178	115	29	420	355	282	207
15	110	409	159	44	30	376	285	251	188
					31			228	200
Mean monthly discharge, in second-feet						591	684	202	190
Run-off, in inches						-	4.99	-	1.43

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
2	2.30	116	2.31	118	2.32	121	3.55	584	6.30	3,440	6.78	4,260
4	2.30	116	2.31	118	2.32	121	3.72	682	6.45	3,680	6.74	4,190
6	2.30	116	2.32	121	2.32	121	3.87	776	6.55	3,860	6.67	4,070
8	2.30	116	2.32	121	2.32	121	4.02	879	6.70	4,120	6.59	3,920
10	2.31	118	2.32	121	2.32	121	4.25	1,050	6.63	3,990	6.51	3,790
N	2.31	118	2.32	121	2.32	121	4.67	1,410	6.69	4,100	6.44	3,670
2	2.31	118	2.32	121	2.32	121	4.90	1,630	6.74	4,190	6.35	3,520
4	2.31	118	2.32	121	2.34	125	5.14	1,880	6.76	4,230	6.26	3,380
6	2.31	118	2.32	121	2.37	132	5.50	2,300	6.79	4,280	6.18	3,250
8	2.31	118	2.32	121	2.90	289	5.69	2,550	6.85	4,400	6.10	3,130
10	2.31	118	2.32	121	3.34	476	6.05	3,060	6.77	4,250	6.01	3,000
M	2.31	118	2.32	121	3.44	526	6.09	3,120	6.81	4,320	5.93	2,880
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.84	2,760	4.88	1,610	4.30	1,090	3.67	655	3.29	476	3.19	436
4	5.75	2,630	4.82	1,550	4.25	1,050	3.65	645	3.29	476	3.19	436
6	5.68	2,530	4.75	1,480	4.22	1,030	3.63	635	3.29	476	3.18	432
8	5.59	2,420	4.70	1,440	4.17	988	3.62	630	3.28	472	3.17	428
10	5.49	2,290	4.64	1,380	4.13	958	3.59	615	3.27	468	3.16	424
N	5.37	2,140	4.59	1,340	4.08	921	3.31	484	3.26	464	3.15	420
2	5.29	2,050	4.57	1,320	4.04	893	3.32	489	3.25	460	3.14	416
4	5.22	1,970	4.51	1,260	3.77	712	3.33	494	3.25	460	3.13	412
6	5.15	1,900	4.47	1,230	3.75	700	3.34	498	3.24	456	3.13	412
8	5.07	1,810	4.43	1,200	3.74	694	3.34	498	3.23	452	3.12	408
10	4.98	1,710	4.38	1,150	3.72	682	3.33	494	3.23	452	3.10	400
M	4.92	1,650	4.34	1,120	3.70	670	3.31	484	3.22	448	3.09	396

Supplemental records.- Sept. 20, 7 p.m., 2.38 ft., 134 sec.-ft.; 9 p.m., 3.27 ft., 442 sec.-ft. Sept. 21, 3 a.m., 3.62 ft., 624 sec.-ft.; 9 a.m., 4.10 ft., 935 sec.-ft.; 11 a.m., 4.40 ft., 1,170 sec.-ft.; 1 p.m., 4.80 ft., 1,530 sec.-ft.; 3 p.m., 5.00 ft., 1,730 sec.-ft.; 5 p.m., 5.22 ft., 1,970 sec.-ft.; 7 p.m., 5.58 ft., 2,400 sec.-ft.; 9 p.m., 5.85 ft., 2,770 sec.-ft.; 11 p.m., 6.03 ft., 3,020 sec.-ft. Sept. 22, 7 a.m., 6.61 ft., 3,960 sec.-ft.; 9 a.m., 6.70 ft., 4,120 sec.-ft.; 7 p.m., 6.83 ft., 4,360 sec.-ft.; 9 p.m., 6.83 ft., 4,360 sec.-ft. Sept. 23, 5 p.m., 6.23 ft., 3,330 sec.-ft.

Ottauquechee River at North Hartland, Vt.

Location.- Water-stage recorder, lat. 43°36'05", long. 72°21'20", at highway bridge in North Hartland, Windsor County, 1 mile above mouth.
Drainage area.- 221 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 5,380 second-feet; extended to peak stage of November 1927 on basis of determinations of flood flows over dams.
Maxima.- September 1938: Discharge, 24,400 second-feet 11:45 p.m. Sept. 21 (gage height, 17.68 feet).
1930 to August 1938: Discharge, 19,200 second-feet Mar. 18, 1936 (gage height, 15.58 feet).
Maximum discharge known, 30,400 second-feet November 1927 (gage height, 21.5 feet, from floodmarks).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	159	520	9	150	294	17	400	234	25	1,110	703
2	174	480	10	126	297	18	399	205	26	910	438
3	132	443	11	99	270	19	440	208	27	807	362
4	126	400	12	143	263	20	2,180	208	28	806	319
5	128	383	13	313	250	21	7,550	301	29	660	270
6	143	350	14	312	244	22	7,860	270	30	571	266
7	116	327	15	552	214	23	2,270	222	31	-	283
8	137	290	16	686	228	24	1,450	455			
Mean monthly discharge, in second-feet										1,030	322
Run-off, in inches										5.20	1.68

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.15	316	3.38	408	3.83	632	6.84	3,760	16.55	21,700	6.25	2,970
2	3.12	304	3.37	404	3.97	708	6.81	3,720	14.80	17,800	6.20	2,900
3	3.13	308	3.36	400	4.19	839	6.88	3,820	13.25	14,600	6.13	2,800
4	3.17	323	3.35	396	4.43	991	7.10	4,120	12.20	12,600	6.10	2,760
5	3.20	334	3.35	396	4.75	1,220	7.13	4,160	11.40	11,100	6.03	2,670
6	3.22	342	3.41	421	5.10	1,520	7.13	4,160	10.70	9,800	5.98	2,610
7	3.26	358	3.42	426	5.53	2,000	7.20	4,250	10.10	8,770	5.94	2,550
8	3.31	378	3.43	430	5.78	2,330	7.36	4,460	9.62	7,950	5.89	2,480
9	3.36	400	3.43	430	5.80	2,360	7.63	4,830	9.20	7,250	5.83	2,400
10	3.42	426	3.41	421	5.74	2,270	7.98	5,320	8.85	6,690	5.78	2,330
11	3.46	443	3.39	413	5.73	2,260	8.40	5,970	8.50	6,130	5.73	2,260
N	3.48	451	3.37	404	5.73	2,260	8.67	6,400	8.22	5,680	5.69	2,210
1	3.49	456	3.36	400	5.80	2,360	8.78	6,580	8.00	5,350	5.65	2,160
2	3.49	456	3.37	404	5.89	2,480	8.80	6,610	7.72	4,960	5.61	2,100
3	3.48	451	3.41	421	5.93	2,540	9.20	7,250	7.52	4,690	5.55	2,020
4	3.47	447	3.42	426	5.97	2,590	9.45	7,660	7.32	4,410	5.52	1,990
5	3.46	443	3.44	434	5.98	2,610	9.60	7,920	7.17	4,210	5.50	1,960
6	3.44	434	3.53	475	6.03	2,670	9.80	8,260	7.00	3,980	5.47	1,920
7	3.43	430	3.56	490	6.11	2,770	10.10	8,770	6.88	3,820	5.43	1,880
8	3.43	430	3.59	505	6.20	2,900	10.60	9,620	6.71	3,590	5.40	1,840
9	3.42	426	3.56	490	6.28	3,010	11.60	11,400	6.62	3,470	5.36	1,800
10	3.41	421	3.64	530	6.47	3,260	13.90	15,900	6.48	3,280	5.32	1,750
11	3.40	417	3.68	550	6.70	3,580	16.80	22,300	6.43	3,210	5.29	1,720
M	3.39	413	3.73	576	6.88	3,820	17.64	24,300	6.31	3,050	5.27	1,700
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.21	1,630	4.73	1,200	4.39	964	4.13	803	4.28	893	3.96	703
4	5.13	1,550	4.71	1,190	4.37	950	4.13	803	4.25	875	3.93	686
6	5.13	1,550	4.68	1,170	4.35	938	4.08	773	4.18	833	3.88	659
8	5.09	1,510	4.67	1,160	4.41	977	4.14	809	4.21	851	3.93	686
10	5.05	1,480	4.65	1,140	4.33	924	4.12	797	4.15	815	3.93	686
N	5.01	1,440	4.62	1,120	4.31	912	4.12	797	4.13	803	3.89	664
2	4.99	1,420	4.59	1,100	4.30	905	4.12	797	4.13	803	3.87	654
4	4.94	1,380	4.55	1,080	4.27	887	4.12	797	4.09	779	3.86	648
6	4.92	1,360	4.51	1,050	4.25	875	4.13	803	4.05	755	3.83	632
8	4.86	1,310	4.47	1,020	4.23	863	4.14	809	4.03	743	3.82	626
10	4.83	1,280	4.45	1,000	4.18	833	4.21	851	4.01	731	3.80	615
M	4.77	1,240	4.42	984	4.13	803	4.26	881	3.98	714	3.78	604

Supplemental records.- Sept. 21, 11:45 p.m., 17.68 ft., 24,400 sec.-ft.

Sunapee Lake at Sunapee, N. H.

Location.- Staff gage, lat. 43°23'10", long. 72°04'55", at outlet of Sunapee Lake, in Sunapee, Sullivan County.
Drainage area.- 45.5 square miles.
Gage-height record.- Graph based on weekly gage readings except during flood period, when gage was read daily.
Remarks.- Total storage capacity of Sunapee Lake is 862,000,000 cubic feet.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	9.95	5,750	11.60	6,040	16	9.70	5,707	10.18	5,789
2	9.94	5,748	11.45	6,013	17	9.67	5,702	10.15	5,784
3	9.93	5,746	11.30	5,986	18	9.64	5,697	10.12	5,778
4	9.92	5,744	11.13	5,955	19	9.69	5,705	10.08	5,772
5	9.91	5,743	10.98	5,928	20	10.40	5,826	10.06	5,768
6	9.90	5,741	10.88	5,910	21	11.75	6,067	10.04	5,765
7	9.89	5,739	10.75	5,887	22	12.20	6,148	10.01	5,760
8	9.88	5,738	10.64	5,867	23	12.33	6,171	9.99	5,756
9	9.87	5,736	10.57	5,855	24	12.34	6,173	9.97	5,753
10	9.85	5,732	10.50	5,843	25	12.33	6,171	9.94	5,748
11	9.84	5,731	10.45	5,834	26	12.24	6,155	9.91	5,743
12	9.82	5,727	10.39	5,824	27	12.14	6,137	9.88	5,738
13	9.79	5,722	10.34	5,816	28	12.02	6,116	9.87	5,736
14	9.77	5,719	10.28	5,806	29	11.88	6,090	9.86	5,734
15	9.73	5,712	10.23	5,797	30	11.75	6,067	9.84	5,731
					31			9.81	5,726

	September	October
Gain or loss in storage, in millions of cubic feet.	+316	-341
Gain or loss in storage, in equivalent mean second-feet	+122	-127

Sugar River at West Claremont, N. H.

Location.- Water-stage recorder, lat. 43°25'15", long. 72°21'45", below Redwater Brook at West Claremont, Sullivan County.
Drainage area.- 269 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 3,940 second-feet, extended to peak stage on the basis of determinations of flood flows over dam.
Maxima.- September 1938: Discharge, 13,100 second-feet 8:30 p.m. Sept. 21 (gage height, 10.49 feet).
1928 to August 1938: Maximum discharge, 14,000 second-feet Mar. 19, 1936 (gage height, 10.92 feet); maximum gage height, 11.80 feet Mar. 12, 1938 (ice jam).
Remarks.- Flood run-off affected by storage in Sunapee Lake, total capacity 862,000,000 cubic feet. For information on storage see record for Sunapee Lake at Sunapee, N. H.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	129	784	9	135	476	17	523	271	25	1,610	1,250
2	135	732	10	110	417	18	389	263	26	1,310	751
3	132	686	11	104	427	19	369	250	27	1,110	600
4	123	642	12	96	427	20	3,000	271	28	1,120	517
5	113	624	13	358	319	21	8,650	456	29	973	444
6	101	594	14	471	280	22	8,720	391	30	855	391
7	101	600	15	488	284	23	3,660	315	31		375
8	126	534	16	770	276	24	2,290	569			
Mean monthly discharge, in second-feet										1,269	491
Run-off, in inches										5.27	2.11

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.17	411	1.97	315	2.94	881	6.40	5,000	9.94	11,900	6.31	4,860
2	2.18	417	1.95	306	3.11	997	6.52	5,190	9.82	11,540	6.22	4,710
3	2.18	417	1.94	302	3.50	1,310	6.60	5,330	9.77	11,450	6.12	4,560
4	2.18	417	1.93	297	3.90	1,700	6.68	5,470	9.74	11,400	6.02	4,410
5	2.18	417	1.93	297	4.20	2,020	6.70	5,500	9.68	11,300	5.93	4,280
6	2.18	417	1.94	302	4.40	2,250	6.72	5,530	9.63	11,200	5.84	4,140
7	2.18	417	1.95	306	4.53	2,410	6.85	5,760	9.52	10,900	5.77	4,040
8	2.18	417	1.96	310	4.60	2,490	7.08	6,150	9.30	10,500	5.69	3,920
9	2.18	417	1.98	319	4.63	2,530	7.60	7,070	9.13	10,200	5.60	3,790
10	2.18	417	1.98	319	4.68	2,590	8.07	7,970	8.95	9,760	5.53	3,690
11	2.17	411	2.00	328	4.77	2,690	8.48	8,790	8.62	9,070	5.47	3,610
N	2.17	411	2.00	328	4.91	2,860	8.67	9,180	8.44	8,710	5.40	3,510
1	2.16	406	2.01	333	5.11	3,120	8.81	9,470	8.25	8,330	5.34	3,430
2	2.15	401	2.02	337	5.38	3,470	8.85	9,560	8.10	8,030	5.29	3,360
3	2.12	385	2.03	342	5.59	3,780	8.80	9,450	7.90	7,640	5.23	3,280
4	2.11	380	2.04	347	5.70	3,930	8.90	9,660	7.70	7,260	5.19	3,230
5	2.10	375	2.05	352	5.74	3,990	8.95	9,760	7.46	6,820	5.14	3,160
6	2.08	366	2.08	366	5.78	4,050	9.13	10,200	7.24	6,420	5.10	3,110
7	2.05	352	2.10	375	5.87	4,180	10.12	12,200	7.09	6,160	5.06	3,060
8	2.02	337	2.15	401	5.93	4,280	10.48	13,100	6.92	5,870	5.01	2,990
9	2.00	328	2.30	482	6.00	4,380	10.48	13,100	6.80	5,670	4.98	2,950
10	2.00	328	2.48	588	6.12	4,560	10.43	13,000	6.67	5,450	4.94	2,900
11	1.99	324	2.60	660	6.23	4,730	10.32	12,700	6.53	5,210	4.90	2,850
M	1.98	319	2.78	777	6.31	4,860	10.07	12,200	6.41	5,020	4.86	2,800
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.78	2,710	4.03	1,830	3.62	1,420	3.34	1,170	3.35	1,180	3.14	1,020
4	4.70	2,610	3.99	1,790	3.61	1,410	3.31	1,150	3.39	1,210	3.12	1,000
6	4.62	2,510	3.93	1,730	3.58	1,380	3.30	1,140	3.38	1,200	3.12	1,000
8	4.55	2,430	3.88	1,680	3.55	1,360	3.28	1,120	3.35	1,180	3.11	997
10	4.48	2,350	3.85	1,650	3.51	1,320	3.25	1,100	3.31	1,150	3.10	990
N	4.41	2,260	3.88	1,680	3.50	1,310	3.23	1,084	3.27	1,120	3.09	983
2	4.34	2,180	3.82	1,620	3.49	1,300	3.22	1,076	3.25	1,100	3.07	969
4	4.28	2,110	3.63	1,430	3.46	1,270	3.21	1,070	3.22	1,080	3.05	955
6	4.23	2,050	3.59	1,390	3.43	1,250	3.21	1,070	3.20	1,060	3.03	941
8	4.20	2,020	3.61	1,410	3.41	1,230	3.23	1,080	3.19	1,053	3.01	927
10	4.14	1,950	3.62	1,420	3.39	1,210	3.27	1,120	3.18	1,046	3.00	920
M	4.09	1,900	3.62	1,420	3.37	1,200	3.31	1,150	3.16	1,030	2.99	914

Supplemental records.- Sept. 21, 8:30 p.m., 10.49 ft., 13,100 sec.-ft.

Black River at North Springfield, Vt.

Location.- Water-stage recorder, lat. 43°20'00", long. 72°30'55", in North Springfield, Windsor County, 1,300 feet above Great Brook.
Drainage area.- 158 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,330 second-feet; extended to peak stage on basis of determinations of flood flows over dams. For 1936 defined by current-meter measurements below 4,600 second-feet; extended to peak stage on basis of determination of flood flow over dam.
Maxima.- September 1938: Discharge, 15,500 second-feet 12:30 a.m. Sept. 22 (gage height, 17.68 feet).
1930 to August 1938: Discharge, 14,700 second-feet Mar. 18, 1936 (gage height, 16.41 feet).
Remarks.- Flood run-off not materially affected by artificial storage or natural pondage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	94	280	9	87	160	17	348	96	25	733	668
2	106	264	10	93	145	18	308	108	26	561	349
3	89	234	11	73	122	19	431	127	27	484	300
4	50	220	12	68	137	20	2,980	112	28	364	231
5	83	203	13	351	135	21	7,350	219	29	265	189
6	68	190	14	235	128	22	6,660	170	30	270	192
7	97	182	15	515	119	23	1,810	119	31		189
8	113	157	16	586	106	24	1,050	448			
Mean monthly discharge, in second-feet										877	203
Run-off, in inches										6.19	1.48

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.52	302	3.55	312	5.05	1,030	9.12	4,470	17.20	14,720	7.30	2,720
2	3.52	302	3.55	312	5.65	1,400	9.28	4,630	16.30	13,350	7.12	2,560
3	3.52	302	3.55	312	6.05	1,690	9.45	4,800	15.40	12,010	7.00	2,450
4	3.52	302	3.55	312	6.55	2,090	9.77	5,120	14.20	10,360	6.85	2,330
5	3.52	302	3.55	312	7.15	2,580	9.83	5,180	13.30	9,190	6.72	2,230
6	3.52	302	3.55	312	7.48	2,880	9.85	5,200	12.50	8,200	6.60	2,130
7	3.51	298	3.55	312	7.72	3,100	9.95	5,300	11.85	7,420	6.49	2,040
8	3.51	298	3.56	316	7.82	3,190	10.20	5,570	11.50	7,000	6.38	1,950
9	3.51	298	3.56	316	7.78	3,150	10.54	5,940	11.15	6,620	6.28	1,870
10	3.51	298	3.57	320	7.64	3,030	10.83	6,260	10.85	6,280	6.16	1,780
11	3.52	302	3.57	320	7.56	2,950	11.04	6,490	10.55	5,960	6.14	1,760
N	3.53	306	3.55	312	7.59	2,980	11.35	6,840	10.23	5,600	6.04	1,680
1	3.54	309	3.61	334	7.73	3,110	11.65	7,180	9.94	5,290	5.98	1,640
2	3.54	309	3.74	381	7.85	3,220	11.92	7,500	9.62	4,970	5.90	1,580
3	3.55	312	3.83	417	7.92	3,280	12.20	7,840	9.39	4,740	5.86	1,550
4	3.56	316	3.92	453	7.91	3,270	12.40	8,080	9.10	4,450	5.80	1,510
5	3.56	316	3.99	481	7.98	3,330	12.60	8,320	8.82	4,170	5.75	1,480
6	3.56	316	4.05	508	7.95	3,300	12.65	8,380	8.60	3,950	5.70	1,440
7	3.57	320	4.15	552	8.04	3,390	12.64	8,370	8.37	3,720	5.56	1,340
8	3.57	320	4.27	610	8.28	3,630	13.15	9,000	8.15	3,500	5.59	1,360
9	3.57	320	4.40	675	8.50	3,850	14.20	10,360	7.95	3,300	5.57	1,350
10	3.56	316	4.52	736	8.86	4,210	15.60	12,300	7.78	3,150	5.50	1,300
11	3.56	316	4.67	818	8.94	4,290	16.50	13,650	7.60	2,990	5.47	1,280
M	3.55	312	4.84	912	9.00	4,350	17.25	14,800	7.46	2,860	5.44	1,260
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.36	1,220	4.70	835	4.26	605	4.02	494	3.91	449	3.52	316
4	5.28	1,170	4.66	813	4.24	595	3.99	481	3.90	445	3.51	313
6	5.22	1,130	4.62	791	4.22	585	3.98	477	3.82	417	3.34	261
8	5.17	1,100	4.58	769	4.20	575	3.98	477	3.55	326	3.30	249
10	5.13	1,080	4.53	742	4.18	566	3.97	473	3.40	279	3.29	246
N	5.07	1,040	4.50	725	4.22	585	3.98	477	3.80	410	3.18	216
2	5.03	1,020	4.48	715	4.12	539	3.98	477	3.78	403	3.42	285
4	4.97	984	4.45	700	4.05	508	4.04	503	3.60	342	3.42	285
6	4.88	934	4.40	675	4.09	526	4.03	498	3.58	336	3.40	279
8	4.85	918	4.38	665	4.20	575	4.03	498	3.57	332	3.37	270
10	4.80	890	4.30	625	4.06	512	3.96	469	3.39	276	3.20	221
M	4.75	862	4.29	620	4.04	503	3.92	453	3.30	249	3.20	221

Supplemental records.- Sept. 22, 12:30 a.m., 17.68 ft., 15,500 sec.-ft.

West River at Newfane, Vt.

Location.- Water-stage recorder, lat. 42°59'45", long. 72°38'20", 600 feet below highway bridge and 1 mile northeast of Newfane, Windham County. (Revised).
Drainage area.- 308 square miles.
Gage-height record.- Water-stage recorder graph except for periods Sept. 1, 9 p.m. Sept. 21 to 1:30 a.m. Sept. 22, 5:30 a.m. Sept. 22 to 3 p.m. Sept. 24, and Oct. 20-24, 28-31, records for which were based on two chain gage readings daily, floodmarks, and shape of stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 8,770 second-feet; extended to peak stage on basis of determinations of flood flows by contracted-opening and slope-area methods.
Maxima.- September 1938: Discharge, 52,300 second-feet 11 p.m. Sept. 21 (gage height, 22.81 feet, from floodmarks).
1919 to August 1938: Discharge, 45,000 second-feet Nov. 3, 1927 (gage height, 23.0 feet, floodmarks at chain-gage site at highway bridge upstream), from logarithmic extension of rating curve. (The revised discharge 53,100 second-feet, published in Water-Supply Papers 781, 798, and 801, is now believed to be in error.)
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	79	716	9	144	482	17	384	427	25	1,050	1,640
2	106	660	10	95	482	18	322	427	26	759	735
3	93	612	11	79	475	19	609	414	27	638	228
4	76	580	12	72	454	20	5,830	205	28	762	347
5	72	566	13	167	447	21	17,200	352	29	519	347
6	76	538	14	333	440	22	13,500	423	30	423	328
7	67	517	15	624	434	23	3,250	275	31		292
8	127	496	16	860	427	24	1,680	730			
Mean monthly discharge, in second-feet										1,667	500
Run-off, in inches										6.04	1.87

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.74	290	4.90	375	6.33	1,750	9.80	8,340	20.00	41,700	8.28	4,740
2	4.74	290	4.89	370	6.53	2,020	9.95	8,700	18.00	34,100	8.20	4,570
3	4.74	290	4.88	364	6.85	2,480	10.02	8,870	16.20	26,600	8.09	4,340
4	4.74	290	4.89	370	7.35	3,300	10.01	8,840	14.55	21,900	8.00	4,150
5	4.73	285	4.88	364	8.07	4,580	10.00	8,820	13.10	17,200	7.95	4,040
6	4.72	280	4.88	364	8.51	5,450	10.00	8,820	12.20	14,600	7.83	3,800
7	4.70	270	4.88	364	8.72	5,890	10.01	8,840	11.70	13,200	7.79	3,720
8	4.70	270	4.88	364	8.83	6,130	10.15	9,200	11.35	12,300	7.70	3,540
9	4.70	270	4.89	370	8.90	6,280	10.25	9,440	11.00	11,400	7.62	3,380
10	4.70	270	4.90	375	8.95	6,390	10.42	9,870	10.70	10,600	7.59	3,320
11	4.71	275	4.93	394	8.97	6,430	10.62	10,400	10.40	9,810	7.51	3,170
N	4.73	285	4.96	414	8.98	6,460	11.00	11,400	10.20	9,290	7.45	3,060
1	4.75	295	5.01	447	9.03	6,570	11.43	12,500	10.00	8,790	7.40	2,960
2	4.78	310	5.09	503	9.10	6,720	11.80	13,500	9.80	8,290	7.38	2,920
3	4.82	331	5.23	604	9.12	6,760	12.10	14,300	9.60	7,790	7.32	2,820
4	4.86	353	5.35	700	9.10	6,720	12.25	14,700	9.45	7,420	7.25	2,690
5	4.90	375	5.45	785	9.08	6,680	12.28	14,800	9.20	6,940	7.21	2,620
6	4.92	388	5.52	848	9.08	6,680	12.43	15,300	9.15	6,700	7.20	2,600
7	4.93	394	5.56	884	9.13	6,790	13.20	17,600	8.99	6,330	7.15	2,520
8	4.93	394	5.62	940	9.37	7,330	16.20	27,600	8.83	5,960	7.11	2,450
9	4.93	394	5.69	1,010	9.63	7,930	19.60	40,200	8.72	5,710	7.06	2,360
10	4.93	394	5.80	1,120	9.65	7,980	22.40	50,800	8.60	5,440	7.02	2,290
11	4.92	388	5.99	1,330	9.62	7,910	22.81	52,300	8.50	5,220	7.00	2,260
M	4.91	382	6.16	1,530	9.60	7,860	21.80	48,500	8.40	5,000	6.98	2,230
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.89	2,080	6.32	1,260	5.99	875	5.74	636	5.95	835	5.69	592
4	6.82	1,970	6.27	1,190	5.96	845	5.73	627	5.96	845	5.66	568
6	6.78	1,910	6.23	1,150	5.93	815	5.70	600	5.96	845	5.64	552
8	6.71	1,800	6.20	1,110	5.92	805	5.68	584	5.95	835	5.63	544
10	6.65	1,720	6.17	1,080	5.89	776	5.67	576	5.93	815	5.60	520
N	6.60	1,640	6.14	1,040	5.87	756	5.67	576	5.90	785	5.58	506
2	6.57	1,600	6.11	1,010	5.85	738	5.67	576	5.86	747	5.57	500
4	6.53	1,540	6.08	973	5.82	709	5.72	618	5.84	728	5.57	500
6	6.45	1,430	6.05	940	5.79	681	5.78	672	5.81	700	5.55	486
8	6.42	1,390	6.02	907	5.77	663	5.80	690	5.77	663	5.53	472
10	6.40	1,360	6.00	885	5.78	672	5.87	756	5.74	636	5.51	459
M	6.35	1,300	6.00	885	5.77	663	5.93	815	5.71	609	5.50	452

Ashuelot River near Gilsum, N. H.

Location.- Water-stage recorder, lat. 43°02'20", long. 72°16'15", at stone-arch bridge just off Keene-Newport road, 0.7 mile below Gilsum, Cheshire County.
Drainage area.- 71.1 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,990 second-feet; extended to peak stage on basis of determinations of flood flows by slope-area and surface-float methods.
Maxima.- September 1938: Discharge, 5,220 second-feet 6 p.m. Sept. 21 (gage height, 11.24 feet).
1922 to August 1938: Discharge, 4,400 second-feet Mar. 18, 19, 1936 (gage height, 12.80 feet).
Remarks.- Flood run-off affected by some artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	49	145	9	31	37	17	96	16	25	441	362
2	39	124	10	24	29	18	66	16	26	301	313
3	32	100	11	14	36	19	130	17	27	243	231
4	25	86	12	8	25	20	971	21	28	238	182
5	30	75	13	62	29	21	4,140	65	29	209	145
6	16	65	14	81	25	22	3,500	74	30	176	116
7	22	41	15	93	27	23	1,520	60	31		97
8	32	36	16	136	19	24	709	128			
Mean monthly discharge, in second-feet										448	88.5
Run-off, in inches										7.03	1.43

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.19	76	1.90	53	3.60	306	7.25	1,640	10.50	4,550	7.60	2,330
2	2.15	73	1.90	53	4.20	452	7.45	1,840	10.15	4,270	7.50	2,270
3	2.12	71	1.90	53	4.48	525	7.60	2,020	9.90	4,070	7.25	2,120
4	2.09	68	1.91	54	4.55	544	7.90	2,300	9.85	4,030	7.00	1,970
5	2.07	67	1.91	54	4.63	567	8.40	2,750	9.85	4,030	6.90	1,910
6	2.07	67	1.92	55	4.83	627	9.30	3,590	9.90	4,070	6.70	1,790
7	2.06	66	1.95	57	4.85	633	10.55	4,600	9.80	3,990	6.40	1,630
8	2.06	66	2.00	61	4.86	636	10.76	4,780	9.50	3,750	6.35	1,600
9	2.07	67	2.05	65	5.04	693	10.95	4,960	9.00	3,350	6.30	1,580
10	2.07	67	2.07	67	5.60	890	10.85	4,860	9.30	3,590	6.15	1,500
11	2.08	68	2.12	71	5.80	966	11.00	5,000	9.10	3,430	6.05	1,460
N	2.08	68	2.15	73	6.20	1,120	10.80	4,820	9.20	3,510	5.90	1,380
1	2.10	69	2.18	75	6.35	1,180	10.75	4,780	9.10	3,430	5.90	1,380
2	2.11	70	2.23	80	6.37	1,190	10.70	4,730	9.00	3,350	5.85	1,360
3	2.11	70	2.28	84	6.37	1,190	10.65	4,680	8.90	3,270	5.70	1,280
4	2.10	69	2.60	119	6.43	1,210	10.60	4,640	8.85	3,230	5.60	1,230
5	2.08	68	3.20	215	6.52	1,250	10.70	4,730	8.75	3,150	5.60	1,230
6	2.05	65	3.35	248	6.65	1,300	11.24	5,220	8.60	3,030	5.50	1,180
7	2.03	63	3.44	268	6.75	1,340	11.00	5,000	8.55	3,000	5.40	1,140
8	2.00	61	3.48	277	6.90	1,400	10.85	4,860	8.55	3,000	5.35	1,120
9	1.97	59	3.50	282	7.00	1,440	10.80	4,820	8.45	2,920	5.30	1,100
10	1.95	57	3.52	287	7.05	1,460	10.75	4,780	8.25	2,780	5.30	1,100
11	1.93	55	3.54	292	7.10	1,480	10.70	4,730	8.10	2,680	5.30	1,100
M	1.90	53	3.55	294	7.20	1,530	10.70	4,730	7.90	2,540	5.20	1,060
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.00	980	3.86	541	3.15	333	2.83	257	2.78	246	2.69	227
4	4.85	920	3.80	520	3.10	320	2.80	250	2.78	246	2.68	225
6	4.40	740	3.70	490	3.10	320	2.74	237	2.77	244	2.65	219
8	4.25	680	3.67	481	3.09	318	2.72	233	2.75	239	2.64	217
10	4.25	680	3.55	445	3.08	315	2.70	229	2.75	239	2.62	213
N	4.20	660	3.52	436	3.05	308	2.69	227	2.75	239	2.60	209
2	4.20	660	3.48	424	3.00	295	2.69	227	2.75	239	2.58	205
4	4.12	632	3.40	401	2.98	290	2.82	254	2.74	237	2.55	200
6	4.03	600	3.35	387	2.93	279	2.81	252	2.72	233	2.53	196
8	4.00	590	3.30	373	2.88	268	2.81	252	2.71	231	2.52	194
10	3.92	562	3.21	349	2.88	268	2.79	248	2.70	229	2.50	190
M	3.90	555	3.18	341	2.86	263	2.78	245	2.70	229	2.49	188

Ashuelot River at Hinsdale, N. H.

Location.- Water-stage recorder, lat. 42°47'05", long. 72°29'10", above highway bridge in Hinsdale, Cheshire County, a quarter of a mile below dam and 1¼ miles above mouth of river.
Drainage area.- 420 square miles.
Gage-height record.- Water-stage recorder graph except for periods 9 p.m. Sept. 6 to 10 a.m. Sept. 21 and midnight Sept. 21 to 6 p.m. Sept. 23, record for which was based on floodmarks and two gage readings daily.
Stage-discharge relation.- Defined by current-meter measurements below 11,200 second-feet; extended to peak stage on basis of determinations of flood flow over dam.
Maxima.- September 1938: Discharge, 16,200 second-feet 12 p.m. Sept. 22 (gage height, 11.37 feet).
1907 to August 1938: Maximum discharge observed, 18,000 second-feet Mar. 29, 1920 (gage height, 9.98 feet, former site, same datum). Maximum gage height, 20.2 feet Mar. 19, 1936 (backwater from Connecticut River).
Remarks.- Flood run-off affected by artificial storage and natural pondage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	196	938	9	247	471	17	624	345	25	6,680	1,470
2	199	818	10	238	460	18	439	392	26	2,710	1,670
3	229	744	11	153	471	19	620	388	27	1,750	1,320
4	215	662	12	147	498	20	3,580	388	28	1,440	1,010
5	178	630	13	158	466	21	8,520	512	29	1,270	856
6	144	618	14	333	420	22	14,200	676	30	1,070	662
7	156	582	15	378	425	23	14,300	493	31		570
8	178	526	16	663	333	24	10,800	549			
Mean monthly discharge, in second-feet										2,394	657
Run-off, in inches										6.36	1.80

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	4.14	*430	4.15	*435	5.50	*1,550	7.68	*6,830	9.50	*12,000	11.30	*16,000
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	4.15	*435	4.22	*471	6.19	*2,530	7.83	*7,370	10.40	*14,200	10.85	*15,200
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
N	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	4.18	*450	4.48	*618	6.94	*4,320	8.40	*9,200	10.65	*14,800	10.00	*13,200
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	4.16	*440	4.94	*956	7.42	*5,910	9.02	*10,700	11.20	*15,800	9.80	*12,700
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	--	-	-	-	-	-	-	-	-
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.44	11,800	8.30	8,900	6.69	3,620	5.81	1,940	5.48	1,530	5.34	1,360
4	9.17	11,100	8.20	8,600	6.57	3,330	5.79	1,920	5.47	1,510	5.33	1,350
6	9.17	11,100	8.06	8,180	6.47	3,090	5.76	1,880	5.45	1,490	5.31	1,320
8	9.10	11,000	7.88	7,560	6.38	2,900	5.71	1,810	5.43	1,470	5.29	1,300
10	9.09	10,900	7.77	7,150	6.29	2,720	5.69	1,790	5.41	1,440	5.28	1,290
N	9.20	11,200	7.66	6,760	6.20	2,550	5.66	1,750	5.40	1,430	5.26	1,270
2	9.09	10,900	7.49	6,160	6.14	2,450	5.61	1,680	5.39	1,420	5.24	1,240
4	8.91	10,500	7.36	5,700	6.08	2,350	5.59	1,660	5.38	1,410	5.22	1,220
6	8.76	10,100	7.21	5,180	6.02	2,250	5.57	1,630	5.38	1,410	5.21	1,210
8	8.66	9,850	7.10	4,820	5.98	2,190	5.54	1,600	5.37	1,390	5.20	1,200
10	8.61	9,720	6.96	4,380	5.92	2,100	5.51	1,560	5.36	1,380	5.18	1,180
M	8.53	9,520	6.81	3,950	5.87	2,030	5.49	1,540	5.35	1,370	5.19	1,190

Supplemental records.- Sept. 22, 12:00 p.m., 11.37 ft., 16,200 sec.-ft. Sept. 23, 12:00 p.m., 9.69 ft., 12,400 sec.-ft.
* Mean for 6-hour period ending 3 hours after indicated time.

Otter Brook near Keene, N. H.

Location.- Water-stage recorder, lat. 42°57'55", long. 72°14'00", at bridge near State Highway 9, 3½ miles northeast of Keene, Cheshire County, and 3½ miles above confluence with Minewawa Brook.
Drainage area.- 41.8 square miles.
Gage-height record.- Water-stage recorder graph except for period Oct. 17-21, record for which was based on shape of stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 1,230 second-feet; extended to peak stage on basis of determinations of flood flow by float measurements and by slope-area and contracted-opening methods.
Maxima.- September 1938: Discharge, 6,130 second-feet 1 p.m. Sept. 21 (gage height, 7.93 feet).
1923 to August 1938: Maximum discharge, 3,580 second-feet Mar. 18, 1936 (gage height, 7.10 feet); maximum gage height, 7.77 feet Mar. 12, 1936 (ice jam).
Remarks.- Flood run-off not affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	30	103	9	18	44	17	60	30	25	296	239
2	23	88	10	15	40	18	51	30	26	226	140
3	18	79	11	14	38	19	183	32	27	184	96
4	17	70	12	14	36	20	1,010	30	28	182	79
5	15	59	13	62	34	21	4,040	60	29	147	67
6	14	54	14	32	34	22	2,190	50	30	118	60
7	19	50	15	90	33	23	645	42	31	-	54
8	27	46	16	85	31	24	407	119			
Mean monthly discharge, in second-feet										341	63.5
Run-off, in inches										9.10	1.75

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.15	54	3.09	46	4.25	480	5.79	1,750	7.05	3,850	4.93	898
2	3.15	54	3.10	47	4.26	485	5.81	1,770	7.00	3,740	4.85	839
3	3.15	54	3.10	47	4.40	562	6.03	2,060	6.80	3,340	4.81	810
4	3.15	54	3.13	51	4.55	647	6.18	2,270	6.83	3,400	4.76	777
5	3.15	54	3.15	54	4.73	757	6.28	2,420	6.78	3,300	4.74	763
6	3.15	54	3.16	55	4.74	763	6.52	2,820	6.67	3,090	4.70	737
7	3.15	54	3.18	57	4.70	737	7.10	3,960	6.57	2,910	4.65	706
8	3.15	54	3.20	60	4.65	706	7.55	5,040	6.40	2,610	4.62	688
9	3.14	52	3.22	63	4.70	737	7.03	3,810	6.33	2,500	4.57	659
10	3.14	52	3.23	65	4.81	810	6.67	3,090	6.22	2,330	4.55	647
11	3.13	51	3.24	67	4.98	935	7.17	4,110	6.09	2,140	4.52	630
N	3.13	51	3.25	68	5.42	1,330	7.47	4,820	6.01	2,030	4.48	607
1	3.13	51	3.26	70	5.58	1,500	7.93	6,130	5.90	1,880	4.46	596
2	3.12	50	3.28	74	5.56	1,480	7.85	5,890	5.79	1,750	4.43	579
3	3.11	48	3.31	79	5.48	1,390	7.65	5,310	5.68	1,620	4.42	573
4	3.11	48	3.43	106	5.40	1,310	7.53	4,980	5.57	1,490	4.40	562
5	3.11	48	3.75	224	5.33	1,240	7.44	4,750	5.48	1,390	4.39	556
6	3.12	50	4.05	374	5.33	1,240	7.60	5,170	5.38	1,290	4.37	546
7	3.11	48	4.27	491	5.32	1,230	7.65	5,310	5.31	1,220	4.36	540
8	3.10	47	4.30	507	5.32	1,230	7.50	4,900	5.24	1,150	4.34	529
9	3.10	47	4.33	524	5.23	1,140	7.50	4,900	5.14	1,060	4.31	512
10	3.09	46	4.31	512	5.21	1,130	7.37	4,580	5.08	1,010	4.29	502
11	3.09	46	4.27	491	5.43	1,340	7.27	4,340	5.01	958	4.28	496
M	3.08	45	4.26	485	5.63	1,560	7.13	4,030	5.00	950	4.27	491
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.25	480	3.97	333	3.81	253	3.68	192	3.68	192	3.61	161
4	4.21	458	3.95	322	3.80	248	3.67	188	3.68	192	3.61	161
6	4.18	442	3.94	317	3.79	243	3.66	183	3.67	188	3.60	157
8	4.15	426	3.93	312	3.78	239	3.66	183	3.66	183	3.59	154
10	4.13	416	3.92	307	3.76	229	3.65	179	3.66	183	3.58	150
N	4.11	405	3.90	297	3.75	224	3.64	175	3.66	183	3.57	147
2	4.08	390	3.88	287	3.74	220	3.64	175	3.65	179	3.56	143
4	4.06	379	3.87	282	3.73	215	3.64	175	3.65	179	3.55	140
6	4.04	369	3.85	272	3.72	210	3.65	179	3.64	175	3.54	137
8	4.02	358	3.84	268	3.71	206	3.67	188	3.64	175	3.53	133
10	4.00	348	3.83	263	3.70	201	3.68	192	3.63	170	3.52	130
M	3.98	338	3.82	258	3.69	197	3.68	192	3.62	166	3.51	126

South Branch of Ashuelot River at Webb, near Marlboro, N. H.

Location.- Water-stage recorder, lat. 42°52'20", long. 72°12'55", at bridge a quarter of a mile from Webb railroad station and about 2½ miles south of Marlboro, Cheshire County.
Drainage area.- 36.6 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 3,280 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area and contracted-opening methods.
Maxima.- September 1938: Discharge, 5,960 second-feet 10:15 a.m. Sept. 21 (gage height, 7.89 feet).
1920 to August 1938: Maximum discharge, 3,880 second-feet Mar. 18, 1936 (gage height, 7.55 feet); maximum gage height, 9.70 feet Mar. 12, 1936 (ice jam).
Remarks.- Flood run-off affected by artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	18	85	9	20	35	17	45	29	25	185	208
2	27	60	10	11	44	18	37	37	26	151	127
3	25	73	11	7.9	53	19	197	38	27	134	91
4	3.0	62	12	14	51	20	1,070	41	28	132	81
5	7.0	56	13	41	47	21	3,070	108	29	113	53
6	7.6	72	14	41	44	22	1,190	68	30	105	40
7	13	70	15	45	44	23	454	36	31		46
8	28	54	16	105	29	24	262	111			
Mean monthly discharge, in second-feet										252	64.3
Run-off, in inches										7.69	2.03

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.83	5.6	1.87	6.6	5.24	695	6.30	1,910	6.43	2,120	5.13	616
2	2.65	30	1.87	6.6	5.24	695	6.43	2,120	6.35	1,990	5.09	588
3	2.67	30	2.83	35	5.27	718	6.56	2,370	6.30	1,910	5.05	562
4	2.68	30	2.87	37	5.33	766	6.66	2,570	6.23	1,800	5.02	543
5	2.68	30	2.91	38	5.42	843	6.78	2,810	6.13	1,660	5.00	530
6	2.68	30	2.98	41	5.47	888	6.88	3,010	6.04	1,530	4.97	512
7	2.68	30	3.06	45	5.50	915	6.94	3,150	5.94	1,390	4.95	500
8	2.68	30	3.85	118	5.53	944	7.02	3,350	5.86	1,290	4.93	488
9	3.77	106	3.81	112	5.54	953	7.54	4,770	5.79	1,210	4.91	476
10	3.76	105	3.80	110	5.60	1,010	7.07	3,480	5.72	1,130	4.90	470
11	2.92	39	2.80	34	5.72	1,130	7.54	4,770	5.67	1,080	4.87	454
N	2.42	23	2.27	18	5.84	1,270	7.47	4,560	5.62	1,030	4.85	443
1	2.06	12	3.90	126	5.93	1,380	7.36	4,230	5.57	982	4.83	432
2	1.91	7.7	3.84	116	5.99	1,460	7.24	3,900	5.52	934	4.80	416
3	1.84	5.8	3.84	116	5.99	1,460	6.88	3,010	5.48	897	4.78	406
4	1.82	5.3	3.91	128	5.97	1,430	6.84	2,930	5.44	861	4.77	402
5	2.73	32	4.30	212	5.94	1,390	6.79	2,830	5.40	825	4.75	392
6	2.48	33	4.56	307	5.91	1,350	6.71	2,670	5.37	800	4.73	382
7	3.28	59	4.70	368	5.87	1,300	6.76	2,770	5.33	766	4.72	378
8	3.78	107	4.87	454	5.82	1,240	6.70	2,650	5.30	740	4.70	368
9	3.62	88	5.12	609	5.47	1,190	6.69	2,630	5.27	718	4.68	359
10	2.50	25	5.20	665	5.75	1,160	6.69	2,630	5.24	695	4.67	354
11	2.10	13	5.22	680	5.93	1,380	6.64	2,530	5.21	672	4.65	346
M	1.93	8.2	5.23	688	6.14	1,670	6.54	2,330	5.16	637	4.64	341
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.60	323	4.28	207	4.08	159	4.00	143	4.00	143	3.87	121
4	4.55	303	4.26	202	4.07	157	3.98	140	4.00	143	3.87	121
6	4.52	291	4.24	196	4.06	155	3.95	134	3.98	140	3.86	120
8	4.48	275	4.23	194	4.05	153	3.94	133	3.96	136	3.83	115
10	4.47	272	4.21	189	4.05	153	3.92	129	3.95	134	3.78	107
N	4.43	256	4.20	186	4.06	155	3.92	129	3.98	140	3.73	101
2	4.40	245	4.18	181	4.07	157	3.92	129	3.98	140	3.71	98
4	4.37	235	4.16	177	4.02	147	3.93	131	3.87	121	3.69	96
6	4.35	228	4.15	174	4.02	147	3.92	129	3.86	120	3.71	98
8	4.33	222	4.12	168	4.01	145	3.92	129	3.86	120	3.75	104
10	4.32	219	4.11	165	4.01	145	3.96	136	3.87	121	3.77	106
M	4.30	212	4.00	143	4.00	143	3.99	141	3.87	121	3.78	107

Supplemental records.- Sept. 21, 10:15 a.m., 7.89 ft., 5,960 sec.-ft.

Millers River near Winchendon, Mass.

Location.- Water-stage recorder, lat. 42°41'00", long. 72°05'05", at Nolan Bridge, a third of a mile below mouth of Sip Pond Brook and 2 miles west of Winchendon, Worcester County. Zero of gage is 826.66 feet above mean sea level (general adjustment of 1929).
Drainage area.- 83.8 miles.
Gage-height record.- Water-stage recorder graph except for periods 1 a.m. Sept. 21 to 7 a.m. Sept. 23 and 8 a.m. Sept. 25 to 4 p.m. Sept. 28, when it was based on flood marks, occasional gage readings, and shape of stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 2,870 second-feet; extended to peak stage on basis of determination of flood flow over dam adjusted for intermediate inflow.
Maxima.- September 1938: Discharge, 8,500 second-feet 2 a.m. Sept. 22 (gage height, 21.55 feet, from floodmarks).
1916 to August 1938: Discharge, 5,530 second-feet Mar. 19, 1936 (gage height, 18.3 feet, from floodmarks).
Remarks.- Flood run-off affected by artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	87	291	9	97	74	17	52	47	25	1,040	330
2	93	273	10	45	110	18	109	93	26	773	289
3	43	195	11	16	49	19	229	101	27	590	283
4	20	214	12	56	88	20	1,250	79	28	447	200
5	13	197	13	124	29	21	5,670	113	29	383	206
6	59	178	14	140	22	22	6,130	104	30	333	197
7	73	169	15	156	24	23	2,730	104	31		161
8	103	83	16	159	22	24	1,540	153			
Mean monthly discharge, in second-feet										752	144
Run-off, in inches										10.01	1.98

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.98	35	4.61	164	5.28	358	13.10	3,320	21.48	8,460	13.60	3,570
2	3.98	35	4.61	164	5.63	413	13.50	3,520	21.55	8,500	13.40	3,470
3	3.98	35	4.62	168	6.01	494	13.90	3,740	21.49	8,460	13.20	3,370
4	3.98	35	4.54	142	6.42	597	14.30	4,000	21.20	8,260	13.00	3,270
5	3.98	35	4.93	282	6.52	624	14.60	4,120	20.90	8,050	12.85	3,200
6	3.98	35	4.80	242	6.65	660	14.97	4,320	20.50	7,770	12.70	3,120
7	3.98	35	4.69	194	7.00	760	15.30	4,500	20.20	7,560	12.50	3,020
8	3.98	35	4.70	198	7.45	902	15.70	4,730	19.80	7,300	12.38	2,960
9	4.28	83	4.73	211	8.00	1,095	16.00	4,910	19.40	7,040	12.20	2,870
10	4.58	154	4.62	168	8.50	1,270	16.40	5,150	19.00	6,780	12.02	2,780
11	4.59	157	4.81	245	8.60	1,310	16.75	5,360	18.50	6,460	11.90	2,720
N	4.59	157	4.86	261	8.55	1,290	17.10	5,570	18.00	6,130	11.75	2,660
1	4.59	157	4.87	264	8.50	1,270	17.50	5,810	17.30	5,690	11.60	2,590
2	4.59	157	4.86	261	8.43	1,250	17.85	6,030	16.70	5,330	11.50	2,540
3	4.58	154	4.67	187	8.40	1,235	18.20	6,260	16.35	5,120	11.40	2,500
4	4.58	154	4.90	274	8.42	1,240	18.65	6,550	16.00	4,910	11.25	2,430
5	4.58	154	4.98	295	8.50	1,270	19.10	6,840	15.60	4,670	11.15	2,390
6	4.58	154	5.01	302	8.70	1,350	19.40	7,040	15.30	4,500	11.05	2,340
7	4.58	154	5.03	307	9.10	1,510	19.75	7,270	14.95	4,310	10.90	2,280
8	4.58	154	4.93	282	9.80	1,790	20.10	7,500	14.65	4,150	10.80	2,230
9	4.57	151	4.76	224	10.60	2,140	20.45	7,740	14.40	4,010	10.65	2,160
10	4.57	151	4.73	211	11.50	2,540	20.70	7,910	14.20	3,900	10.55	2,120
11	4.58	154	4.77	229	12.25	2,900	21.10	8,190	14.00	3,790	10.40	2,050
M	4.61	164	4.98	295	12.70	3,120	21.30	8,330	13.80	3,680	10.30	2,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	10.08	1,910	8.22	1,170	7.40	885	6.65	660	6.01	494	5.49	391
4	9.90	1,830	8.15	1,150	7.30	850	6.60	646	6.00	492	5.54	398
6	9.70	1,750	8.08	1,120	7.22	826	6.56	635	5.97	485	5.55	400
8	9.50	1,670	7.98	1,090	7.15	805	6.50	618	5.92	473	5.54	398
10	9.30	1,590	7.90	1,060	7.08	784	6.44	602	5.85	457	5.30	362
N	9.10	1,510	7.80	1,020	7.00	760	6.40	592	5.80	446	5.30	362
2	8.95	1,450	7.75	1,010	6.95	745	6.35	579	5.74	434	5.30	362
4	8.60	1,310	7.68	983	6.90	730	6.30	566	5.66	419	5.75	436
6	8.65	1,330	7.62	962	6.85	716	6.23	548	5.63	413	5.40	378
8	8.55	1,290	7.57	944	6.80	702	6.15	528	5.60	408	5.32	365
10	8.45	1,250	7.50	920	6.75	688	6.10	516	5.52	395	5.32	365
M	8.35	1,220	7.45	902	6.70	674	6.05	504	5.45	385	5.32	365

Millers River at Erving, Mass.

Location.- Water-stage recorder, lat. 42°35'55", long. 72°24'15", a quarter of a mile below dam at Erving, Franklin County, 8 miles above mouth, and below all important tributaries. Zero of gage is 438.26 feet above mean sea level (general adjustment of 1929).

Drainage area.- 370 square miles.

Gage-height record.- Water-stage recorder graph for period Sept. 1 to 10 a.m. Sept. 21. No gage-height record from 10 a.m. Sept. 21 to 7 a.m. Sept. 27. Graph for Sept. 27 to Oct. 31 based on two staff-gage readings daily and shape of stage-graphs at near-by stations.

Stage-discharge relation.- Defined by current-meter measurements below 7,960 second-feet; extended to peak stage on basis of determinations of flood flows over dam and by contracted-opening and slope-area methods.

Maxima.- September 1938: Discharge, 29,000 second-feet 8 a.m. Sept. 22 (gage height, 13.37 feet, from flood marks).
1914 to August 1938: Discharge, 19,700 second-feet Mar. 19, 1936 (gage height, 10.86 feet, from flood marks).

Remarks.- Flood run-off affected slightly by artificial and natural storage. Discharge for period Sept. 21-26 computed on basis of hydrographic comparison with nearby stations.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	263	1,340	9	411	595	17	559	411	25	5,000	1,270
2	250	1,040	10	202	534	18	385	423	26	3,800	973
3	222	931	11	76	534	19	1,190	451	27	2,980	743
4	268	980	12	177	556	20	5,280	529	28	2,450	749
5	153	966	13	388	552	21	17,000	642	29	1,960	698
6	194	864	14	484	538	22	22,000	632	30	1,530	664
7	196	803	15	593	484	23	14,000	620	31		642
8	249	664	16	655	447	24	8,000	720			
Mean monthly discharge, in second-feet										3,031	710
Run-off, in inches										9.14	2.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.08	329	2.32	425	4.35	2,360	7.00	8,730	-	-	-	-
2	2.08	329	2.34	435	4.56	2,720	7.15	9,140	-	-	-	-
3	2.08	329	2.54	537	4.70	2,980	7.50	10,100	-	-	-	-
4	2.09	332	2.61	576	4.78	3,140	7.67	10,600	-	-	-	-
5	2.09	332	2.62	581	4.75	3,080	8.14	11,800	-	-	-	-
6	2.09	332	3.08	866	4.73	3,040	8.17	11,900	-	-	-	-
7	2.09	332	3.18	944	4.73	3,040	8.21	12,000	-	-	-	-
8	2.08	329	3.20	960	5.05	3,720	8.48	12,800	-	-	-	-
9	2.08	329	3.19	952	5.47	4,760	8.65	13,200	-	-	-	-
10	2.08	329	3.18	944	5.60	5,090	8.88	13,900	-	-	-	-
11	2.08	329	3.20	960	5.70	5,350	-	-	-	-	-	-
N	2.08	329	3.22	978	6.06	6,290	-	-	-	a22,000	-	a14,000
1	2.08	329	3.25	1,000	6.00	6,130	-	-	-	-	-	-
2	2.08	329	3.41	1,160	6.18	6,600	-	-	-	-	-	-
3	2.15	354	3.74	1,510	6.16	6,550	-	-	-	-	-	-
4	2.43	480	3.82	1,610	6.15	6,520	-	-	-	-	-	-
5	2.47	500	3.78	1,560	6.15	6,520	-	b21,200	-	-	-	-
6	2.55	542	3.71	1,470	6.15	6,520	-	-	-	-	-	-
7	2.56	548	3.86	1,660	6.15	6,520	-	-	-	-	-	-
8	2.56	548	4.24	2,190	6.16	6,550	-	-	-	-	-	-
9	2.50	515	4.14	2,040	6.47	7,350	-	-	-	-	-	-
10	2.25	394	4.13	2,020	6.78	8,160	-	-	-	-	-	-
11	2.22	381	4.11	2,000	6.84	8,310	-	-	-	-	-	-
M	2.28	406	4.23	2,180	6.90	8,470	-	-	-	-	-	-
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	5.03	3,300	4.54	2,610	4.14	2,120
4	-	-	-	-	-	-	5.01	3,270	4.54	2,610	4.12	2,090
6	-	-	-	-	-	-	5.00	3,250	4.53	2,590	4.11	2,080
8	-	-	-	-	-	-	4.98	3,220	4.52	2,580	4.10	2,070
10	-	-	-	-	-	-	4.91	3,120	4.48	2,530	4.07	2,030
N	-	a8,000	-	a5,000	-	a3,800	4.84	3,030	4.44	2,480	4.04	2,000
2	-	-	-	-	-	-	4.75	2,900	4.41	2,440	4.01	1,960
4	-	-	-	-	-	-	4.65	2,760	4.37	2,390	3.97	1,920
6	-	-	-	-	-	-	4.60	2,690	4.30	2,310	3.91	1,860
8	-	-	-	-	-	-	4.57	2,650	4.25	2,250	3.85	1,800
10	-	-	-	-	-	-	4.55	2,620	4.21	2,200	3.78	1,730
M	-	-	-	-	5.05	3,330	4.54	2,610	4.18	2,170	3.71	1,660

a Mean for the day.
b Mean for 14 hours.

Sip Pond Brook near Winchendon, Mass.

Location.- Water-stage recorder, lat. 42°42'45", long. 72°05'10", a quarter of a mile below Massachusetts-New Hampshire State line, 1½ miles below outlet of Sip Pond, and 3 miles northwest of Winchendon, Worcester County.
Drainage area.- 19.0 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,170 second-feet; extended to peak stage on basis of study of critical depth at control section.
Maxima.- September 1938: Discharge, 2,630 second-feet 10 a.m. Sept. 21 (gage height, 13.72 feet).
1916 to August 1938: Discharge, 1,430 second-feet Mar. 18, 19, 1936 (gage height, 12.40 feet).
Remarks.- Flood run-off affected by storage in Pearly and Sip Ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	13	53	9	13	20	17	12	17	25	195	48
2	13	46	10	7.5	19	18	9.4	13	26	145	48
3	8.2	40	11	8.1	17	19	26	14	27	110	46
4	7.9	37	12	9.2	19	20	151	12	28	89	42
5	6.3	33	13	15	18	21	1,740	16	29	74	34
6	13	31	14	9.7	15	22	983	20	30	62	25
7	11	28	15	20	15	23	461	17	31		36
8	13	22	16	13	10	24	280	36			
Mean monthly discharge, in second-feet										151	27.3
Run-off, in inches										8.87	1.66

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.39	7.9	5.50	10	6.20	35	10.36	558	12.40	1,470	10.50	600
2	5.40	8.1	5.55	12	6.22	36	10.68	658	12.31	1,420	10.44	582
3	5.40	8.1	5.58	13	6.34	42	10.97	760	12.20	1,350	10.38	564
4	5.41	8.3	5.60	13	6.44	47	11.21	854	12.10	1,290	10.33	549
5	5.41	8.3	5.62	14	6.49	50	11.40	935	12.00	1,240	10.27	532
6	5.41	8.3	5.64	14	6.52	51	11.72	1,090	11.90	1,180	10.23	522
7	5.40	8.1	5.68	16	6.55	52	12.05	1,260	11.80	1,130	10.18	510
8	5.40	8.1	5.93	24	6.62	56	12.70	1,680	11.72	1,090	10.12	495
9	5.39	7.9	6.09	31	6.77	65	13.66	2,570	11.64	1,050	10.08	485
10	5.58	13	6.13	32	6.97	78	13.72	2,630	11.55	1,000	10.04	476
11	5.65	15	6.17	34	7.18	93	13.71	2,620	11.49	975	9.98	462
N	5.54	12	6.21	36	7.40	109	13.68	2,590	11.42	944	9.94	453
1	5.46	9.5	6.14	33	7.60	125	13.62	2,520	11.34	908	9.90	444
2	5.42	8.6	6.06	29	7.90	152	13.53	2,420	11.25	870	9.85	432
3	5.41	8.3	6.04	29	8.18	178	13.44	2,330	11.16	834	9.80	421
4	5.41	8.3	6.04	29	8.37	197	13.33	2,220	11.10	810	9.76	412
5	5.43	8.8	6.07	30	8.57	218	13.22	2,120	11.03	782	9.72	403
6	5.46	9.5	6.14	33	8.73	238	13.13	2,040	10.96	756	9.67	392
7	5.48	10	6.17	34	8.85	253	13.04	1,960	10.90	735	9.63	384
8	5.50	10	6.18	34	8.99	273	12.96	1,890	10.82	707	9.59	376
9	5.50	10	6.18	34	9.10	290	12.82	1,780	10.75	682	9.54	366
10	5.50	10	6.17	34	9.35	331	12.74	1,710	10.68	658	9.50	358
11	5.49	10	6.16	33	9.68	394	12.61	1,620	10.62	637	9.47	353
M	5.48	10	6.18	34	10.02	472	12.52	1,550	10.56	618	9.44	347
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.35	331	8.60	222	8.03	164	7.56	122	7.24	97	6.99	79
4	9.28	319	8.54	215	7.98	159	7.52	119	7.22	95	6.97	78
6	9.22	309	8.50	210	7.94	156	7.50	117	7.20	94	6.95	76
8	9.15	298	8.44	204	7.90	152	7.47	115	7.17	92	6.94	76
10	9.08	287	8.38	198	7.85	148	7.44	112	7.15	90	6.93	75
N	9.02	277	8.34	194	7.82	145	7.41	110	7.14	90	6.92	74
2	8.95	267	8.29	189	7.78	141	7.38	107	7.13	89	6.90	73
4	8.88	257	8.25	185	7.72	137	7.35	105	7.09	86	6.88	72
6	8.82	249	8.20	180	7.69	133	7.33	103	7.07	85	6.86	71
8	8.77	242	8.15	175	7.66	130	7.30	101	7.04	83	6.83	69
10	8.72	236	8.10	170	7.62	127	7.27	99	7.02	81	6.81	68
M	8.66	229	8.07	167	7.59	124	7.25	98	7.00	80	6.79	66

Priest Brook near Winchendon, Mass.

Location.- Water-stage recorder, lat. 42°40'55", long. 72°06'55", 100 feet below highway bridge, 3 miles above confluence with Millers River, and 3½ miles west of Winchendon, Worcester County. Zero of gage is 849.67 feet above mean sea level (general adjustment of 1929).
Drainage area.- 18.8 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Affected by backwater from tree on control 4 p.m. Sept. 21 to 5 p.m. Oct. 8. Defined by current-meter measurements below 230 second-feet; extended to peak stage on basis of determinations of flood flows by contracted-opening method.
Maxima.- September 1938: Discharge, 3,000 second-feet noon Sept. 21 (gage height, 9.90 feet).
1916 to August 1938: Discharge, 1,840 second-feet Mar. 18, 1936 (gage height, 8.4 feet, from floodmarks).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6.6	41	9	5.2	17	17	20	13	25	154	58
2	6.3	36	10	4.4	16	18	14	20	26	109	50
3	5.5	33	11	3.9	17	19	29	19	27	83	44
4	5.8	27	12	5.0	15	20	412	12	28	68	42
5	5.0	24	13	20	15	21	2,280	29	29	56	35
6	4.7	25	14	16	24	22	1,200	34	30	45	30
7	5.2	23	15	18	28	23	473	21	31		27
8	7.2	19	16	31	19	24	245	25			
Mean monthly discharge, in second-feet										178	27.0
Run-off, in inches										10.68	1.67

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.72	15	2.72	15	3.39	69	7.22	1,160		1,980		640
2	2.71	14	2.73	15	3.50	83	7.55	1,330		1,880		615
3	2.70	14	2.74	16	3.62	100	7.75	1,440		1,780		598
4	2.70	14	2.75	16	3.75	118	7.95	1,560		1,680		577
5	2.70	14	2.76	17	3.90	142	8.10	1,650		1,590		562
6	2.70	14	2.78	18	4.05	168	8.34	1,810		1,500		544
7	2.70	14	2.79	18	4.20	194	8.67	2,030		1,430		529
8	2.70	14	2.81	19	4.33	218	9.00	2,270		1,360		514
9	2.71	14	2.83	20	4.45	240	9.30	2,500		1,290		499
10	2.72	15	2.85	21	4.60	270	9.45	2,620		1,230		484
11	2.72	15	2.87	22	4.76	303	9.65	2,790		1,170		473
N	2.72	15	2.88	23	4.97	351	9.90	3,000		1,110		462
1	2.72	15	2.90	24	5.20	408	9.85	2,960		1,060		451
2	2.72	15	2.95	27	5.46	479	9.78	2,900		1,010		437
3	2.72	15	2.99	30	5.68	544	9.73	2,860		965		429
4	2.72	15	3.02	32	5.85	598	9.65	2,790		920		418
5	2.72	15	3.06	36	6.00	650		2,740		880		408
6	2.72	15	3.10	39	6.08	678		2,660		844		400
7	2.71	14	3.13	42	6.14	699		2,630		808		387
8	2.71	14	3.17	45	6.17	710		2,530		776		377
9	2.70	14	3.20	48	6.20	720		2,440		740		365
10	2.70	14	3.25	53	6.30	760		2,340		710		353
11	2.70	14	3.28	56	6.53	852		2,220		685		341
M	2.72	15	3.34	63	6.87	996		2,100		660		332
	September 24		September 25		September 26		September 27		September 28		September 29	
2		312		181		123		93		74		60
4		294		174		120		90		73		59
6		278		169		117		87		71		58
8		262		162		114		86		70		58
10		248		157		111		83		69		57
N		237		152		108		80		68		57
2		225		149		107		79		66		56
4		218		144		104		78		65		55
6		210		139		101		78		64		54
8		201		134		100		76		63		53
10		194		131		97		76		62		52
M		189		126		94		75		60		52

East Branch of Tully River near Athol, Mass.

Location.- Staff gage, lat. 42°38'35", long. 72°13'20", at highway bridge half a mile below mouth of Lawrence Brook and 3½ miles north of Athol, Worcester County. Zero of gage is 628.11 feet above mean sea level.
Drainage area.- 49.9 square miles.
Gage-height record.- Graph based on two gage readings daily and shape of stage graphs for nearby streams except during period Sept. 20-27, when graph was based on more frequent gage readings and flood marks.
Stage-discharge relation.- Defined by current-meter measurements below 1,540 second-feet; extended to peak stage on basis of determinations of flood flow over dam and by contracted-opening method.
Maxima.- September 1938: Discharge, 5,140 second-feet 4 p.m. Sept. 21 (gage height, 8.60 feet, from flood marks).
1916 to August 1938: Discharge, 3,700 second-feet Mar. 18, 19, 1936 (gage height, 6.50 feet).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	16	131	9	17	67	17	83	48	25	493	142
2	18	112	10	16	62	18	80	46	26	359	152
3	16	106	11	14	56	19	107	43	27	277	131
4	14	99	12	13	54	20	625	44	28	224	112
5	12	88	13	48	51	21	3,650	72	29	186	99
6	11	81	14	74	51	22	2,820	96	30	164	81
7	11	74	15	75	55	23	1,330	86	31		68
8	17	69	16	94	51	24	770	86			
Mean monthly discharge, in second-feet										388	81.1
Run-off, in inches										8.68	1.88

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.65	78	1.70	83	2.36	193	5.14	1,680	7.42	3,820	5.27	1,790
2	1.65	78	1.70	83	2.42	206	5.30	1,810	7.30	3,700	5.20	1,730
3	1.65	78	1.70	83	2.50	224	5.47	1,950	7.20	3,600	5.12	1,670
4	1.65	78	1.71	84	2.58	243	5.65	2,100	7.10	3,500	5.05	1,610
5	1.65	78	1.71	84	2.65	261	5.87	2,300	7.00	3,400	4.98	1,550
6	1.65	78	1.71	84	2.72	280	6.08	2,490	6.88	3,280	4.92	1,510
7	1.65	78	1.72	85	2.80	302	6.30	2,700	6.79	3,190	4.86	1,460
8	1.65	78	1.72	85	2.88	328	6.50	2,900	6.70	3,100	4.80	1,410
9	1.65	78	1.73	87	2.98	362	6.82	3,220	6.62	3,020	4.75	1,370
10	1.66	79	1.75	89	3.08	400	7.15	3,550	6.54	2,940	4.70	1,330
11	1.66	79	1.79	94	3.19	446	7.50	3,910	6.46	2,860	4.66	1,300
N	1.66	79	1.79	94	3.30	495	7.85	4,290	6.38	2,780	4.63	1,280
1	1.66	79	1.82	98	3.43	558	8.15	4,620	6.30	2,700	4.60	1,260
2	1.67	80	1.84	101	3.57	625	8.35	4,840	6.22	2,620	4.56	1,230
3	1.67	80	1.87	105	3.69	685	8.55	5,080	6.16	2,560	4.53	1,210
4	1.67	80	1.91	111	3.82	752	8.60	5,140	6.10	2,510	4.50	1,190
5	1.68	81	1.96	119	3.98	848	8.55	5,080	6.00	2,420	4.47	1,170
6	1.68	81	2.00	125	4.10	920	8.45	4,960	5.90	2,330	4.44	1,150
7	1.68	81	2.04	132	4.22	994	8.28	4,770	5.81	2,250	4.40	1,120
8	1.69	82	2.08	139	4.35	1,080	8.12	4,590	5.72	2,170	4.36	1,090
9	1.69	82	2.13	147	4.51	1,200	7.97	4,430	5.62	2,080	4.33	1,070
10	1.69	82	2.18	156	4.67	1,310	7.82	4,260	5.52	1,990	4.30	1,050
11	1.69	82	2.24	168	4.82	1,430	7.68	4,110	5.43	1,910	4.27	1,030
M	1.69	82	2.30	180	4.98	1,550	7.54	3,950	5.35	1,850	4.23	1,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.17	962	3.46	570	3.10	400	2.85	308	2.66	243	2.50	200
4	4.10	920	3.42	550	3.08	392	2.83	301	2.65	240	2.48	195
6	4.04	884	3.40	540	3.06	384	2.81	294	2.64	237	2.47	193
8	3.98	848	3.36	520	3.04	376	2.80	290	2.62	231	2.47	193
10	3.90	800	3.32	500	3.02	368	2.78	283	2.61	228	2.46	190
N	3.83	758	3.29	486	2.99	357	2.76	276	2.60	225	2.45	188
2	3.75	715	3.26	472	2.97	350	2.74	269	2.58	220	2.43	183
4	3.68	680	3.24	463	2.94	339	2.72	262	2.56	215	2.42	180
6	3.62	650	3.22	454	2.92	332	2.70	255	2.55	212	2.40	175
8	3.58	630	3.18	436	2.90	325	2.69	252	2.54	210	2.39	173
10	3.52	600	3.16	427	2.88	318	2.68	249	2.53	208	2.38	170
M	3.50	590	3.13	414	2.87	315	2.67	246	2.52	205	2.38	170

Moss Brook at Wendell Depot, Mass.

Location.- Staff gage, lat. 42°36'05", long. 72°21'35", a quarter of a mile above confluence with Millers River and a quarter of a mile north of Wendell Depot, Franklin County. Zero of gage is 508.88 feet above mean sea level.
Drainage area.- 12.2 square miles.
Gage-height record.- Graph based on two gage readings daily and shape of stage graphs at nearby stations except for period 7 p.m. Sept. 20 to 9:30 a.m. Sept. 22, record for which was based on floodmarks and shape of stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 138 second-feet; extended to peak stage on basis of three slope-area determinations of flood flow.
Maxima.- September 1938: Discharge, 1,070 second-feet 5 p.m. Sept. 21 (gage height, 5.62 feet, from floodmarks).
1916 to August 1938: Discharge, 1,540 second-feet (revised) Mar. 19, 1936 (gage height, 6.30 feet, from floodmarks).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	3.9	32	9	13	14.5	17	16	11	25	55	68
2	3.8	21	10	11	13	18	15	10	26	42	51
3	3.5	23	11	8.3	15	19	40	9.9	27	37	33
4	3.2	25	12	7.2	13	20	283	10	28	41	24
5	2.9	21	13	15	12	21	660	21	29	40	21
6	2.8	20	14	12	12	22	334	23	30	37	18
7	9.6	21	15	13	12	23	152	18	31		18
8	14	17	16	17	12	24	92	26			
Mean monthly discharge, in second-feet										66.1	20.8
Run-off, in inches										6.05	1.96

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.72	15	1.76	17	2.95	126	4.18	414	4.42	497	3.39	203
2	1.72	15	1.76	17	3.05	141	4.21	424	4.35	472	3.36	197
3	1.71	15	1.77	17	3.14	156	4.25	438	4.28	448	3.33	191
4	1.70	14	1.78	18	3.22	170	4.31	459	4.21	424	3.30	185
5	1.70	14	1.78	18	3.30	185	4.36	476	4.18	414	3.25	176
6	1.70	14	1.79	18	3.40	205	4.42	497	4.12	396	3.21	168
7	1.69	14	1.80	18	3.50	225	4.50	525	4.08	384	3.18	163
8	1.68	14	1.81	19	3.60	250	4.56	546	4.04	372	3.15	158
9	1.67	13	1.82	19	3.68	270	4.62	568	4.01	363	3.11	151
10	1.67	13	1.86	21	3.72	280	4.73	612	3.96	348	3.09	147
11	1.67	13	1.91	24	3.77	293	4.84	658	3.92	336	3.07	144
N	1.68	14	1.97	27	3.82	306	4.95	708	3.88	324	3.06	143
1	1.68	14	2.02	30	3.86	318	5.10	780	3.85	315	3.05	141
2	1.69	14	2.09	35	3.90	330	5.25	858	3.80	300	3.03	138
3	1.69	14	2.14	39	3.92	336	5.38	929	3.75	288	3.02	136
4	1.70	14	2.21	44	3.95	345	5.55	1,030	3.71	278	3.01	135
5	1.71	15	2.26	48	3.97	351	5.62	1,070	3.68	270	3.00	133
6	1.72	15	2.33	54	4.00	360	5.48	988	3.62	255	3.00	133
7	1.72	15	2.41	61	4.02	366	5.20	830	3.60	250	2.99	132
8	1.73	16	2.51	70	4.03	369	5.00	730	3.57	242	2.98	130
9	1.73	16	2.60	79	4.05	375	4.85	662	3.53	232	2.97	128
10	1.74	16	2.70	91	4.08	384	4.70	600	3.50	225	2.96	127
11	1.75	16	2.76	99	4.11	393	4.60	560	3.48	221	2.94	124
M	1.75	16	2.87	114	4.15	405	4.50	525	3.42	209	2.93	122
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.90	118	2.45	64	2.24	46	2.12	37	2.12	37	2.21	44
4	2.87	114	2.43	63	2.23	45	2.11	37	2.12	37	2.19	42
6	2.84	110	2.41	61	2.23	45	2.11	37	2.13	38	2.18	42
8	2.81	105	2.40	60	2.22	45	2.11	37	2.13	38	2.16	40
10	2.76	99	2.37	57	2.22	45	2.12	37	2.14	39	2.15	40
N	2.70	91	2.34	55	2.21	44	2.12	37	2.16	40	2.14	39
2	2.66	86	2.31	52	2.19	42	2.11	37	2.19	42	2.13	38
4	2.60	79	2.28	49	2.16	40	2.10	36	2.21	44	2.13	38
6	2.55	74	2.26	48	2.14	39	2.10	36	2.22	45	2.13	38
8	2.51	70	2.26	48	2.13	38	2.10	36	2.21	44	2.13	38
10	2.49	68	2.25	47	2.12	37	2.11	37	2.21	44	2.13	38
M	2.46	65	2.25	47	2.12	37	2.12	37	2.21	44	2.12	37

Harriman Reservoir on Deerfield River at Davis Bridge, Vt.

Location.- Lat. 42°47'50", long. 72°54'30", at Davis Bridge, Windham County, 3½ miles above mouth of West Branch of Deerfield River.
Drainage area.- 184 square miles; 30 square miles affected by storage in Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt.
Remarks.- Storage capacity, 5,050,000,000 cubic feet. Basic data furnished by New England Power Co.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-57.96	+17.89	9	-44.37	-42.94	17	0	-41.85	25	-9.31	+82.64
2	-69.59	-8.95	10	-15.02	-33.99	18	+14.67	-74.78	26	-17.88	+8.23
3	-20.57	-35.77	11	0	-33.99	19	+88.37	-49.73	27	0	0
4	-12.17	-35.78	12	-51.52	-26.47	20	+464.39	-32.91	28	-8.95	-16.81
5	-12.16	-35.42	13	-21.83	-35.06	21	+750.61	-16.11	29	-8.94	0
6	-70.48	-44.37	14	-30.05	-51.88	22	-55.10	-8.22	30	-17.89	0
7	-60.11	-43.64	15	+22.54	-41.86	23	-127.36	0	31		-24.69
8	-15.02	-35.06	16	+7.51	-16.46	24	-17.89	+16.10			
Gain or loss in storage, in millions of cubic feet										+603.92	-661.88
Gain or loss in storage, in equivalent mean second-feet.										+232	-247

Deerfield River at outlet of Harriman Reservoir, at Davis Bridge, Vt.

Location.- Lat. 42°47'50", long. 72°54'30", at Davis Bridge, Windham County, 3½ miles above mouth of West Branch of Deerfield River.
Drainage area.- 184 square miles; 30 square miles affected by storage in Somerset Reservoir.
Stage-discharge relation.- Discharge determined from flow through wheels and over dam.
Maxima.- September 1938: Discharge, about 44,400 second-feet, adjusted for storage in Harriman Reservoir, Sept. 21.
Remarks.- Flood run-off affected by storage in Harriman and Somerset Reservoirs (total capacity, 7,750,000,000 cubic feet). Mean daily discharges adjusted for gain or loss in storage in Harriman Reservoir only. Mean monthly discharges adjusted for storage in Somerset and Harriman Reservoirs. For information on storage see record for Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., and Harriman Reservoir on Deerfield River at Davis Bridge, Vt. Basic data furnished by New England Power Co.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	718	47	145	352	16	465	552	468	277
2	856	51	252	148	17	47	47	834	350
3	296	58	765	351	18	0	170	1,160	294
4	198	57	734	320	19	318	1,340	805	229
5	258	117	910	500	20	11	5,380	861	480
6	951	135	894	380	21	3,797	12,500	637	451
7	1,024	328	841	336	22	10,768	10,100	334	239
8	656	482	678	272	23	3,542	2,070	209	209
9	667	153	567	70	24	1,827	1,620	695	881
10	347	173	841	448	25	1,258	1,150	160	1,120
11	278	278	572	179	26	945	738	301	396
12	949	353	644	338	27	745	745	475	475
13	620	367	729	323	28	838	734	751	556
14	440	92	783	183	29	600	497	258	258
15	317	578	949	465	30	552	345	245	245
					31			840	554
Mean monthly discharge, in second feet						1,143	a1,375	624	a377
Run-off, in inches						6.93	a8.33	3.91	a2.36

	September	October
Mean monthly discharge, in second-feet	b1,496	b257
Run-off, in inches	b9.07	b1.61

a Adjusted for storage in Harriman Reservoir only.
b Adjusted for storage in Somerset and Harriman Reservoirs.

Deerfield River at Charlemont, Mass.

Location.- Water-stage recorder, lat. 42°37'30", long. 72°51'20", 1 mile below Charlemont, Franklin County. Zero of gage is 517.36 feet above mean sea level (general adjustment of 1929).
Drainage area.- 362 square miles; 184 square miles affected by storage in Somerset and Harriman Reservoirs.
Gage-height record.- Water-stage recorder graph except for period 10 a.m. Sept. 27 to 1 p.m. Oct. 1, when there was no record.
Stage-discharge relation.- Defined by current-meter measurements below 9,950 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area and contracted-opening methods.
Maxima.- September 1938: Discharge, 56,300 second-feet 6:45 p.m. Sept. 21 (gage height, 20.17 feet, from flood marks).
1913 to August 1938: Discharge, 38,200 second-feet July 8, 1915 (gage height, 15.7 feet).
Remarks.- Discharge for period Sept. 27 to Oct. 1 computed on basis of power-plant records. Flood run-off affected by a total of 7,750,000,000 cubic feet of storage capacity in Somerset and Harriman Reservoirs. For information on storage see records for Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt., and for Harriman Reservoir on Deerfield River at Davis Bridge, Vt.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	782	445	9	774	924	17	276	966	25	1,180	1,230
2	814	582	10	734	888	18	247	1,030	26	1,140	656
3	582	998	11	539	952	19	1,060	1,040	27	920	690
4	398	1,110	12	800	536	20	4,710	1,050	28	880	844
5	556	934	13	1,120	798	21	20,600	1,160	29	800	404
6	806	914	14	862	766	22	19,800	806	30	730	572
7	766	1,090	15	721	984	23	5,450	246	31		1,080
8	886	1,090	16	749	654	24	2,430	1,140			
Mean monthly discharge, in second-feet										2,404	857
Run-off, in inches										7.41	2.73

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.70	635	3.01	879	4.20	2,170	7.03	8,390	14.97	35,300	6.87	7,970
2	2.49	488	2.94	822	4.57	2,680	7.06	8,470	14.66	34,000	6.71	7,560
3	2.32	384	2.94	822	5.48	4,470	7.04	8,410	14.22	32,300	6.50	7,020
4	2.17	303	2.83	734	5.66	4,920	6.96	8,210	13.69	30,200	6.42	6,820
5	2.07	254	2.70	635	5.66	4,920	6.91	8,080	13.14	28,200	6.31	6,540
6	1.98	214	2.60	565	5.49	4,500	6.90	8,050	12.66	26,400	6.19	6,240
7	1.93	193	2.47	476	5.30	4,050	7.03	8,390	12.19	24,700	6.09	6,000
8	1.88	172	2.33	389	5.14	3,700	7.46	9,530	11.82	23,400	5.99	5,740
9	1.84	157	2.23	334	5.01	3,440	8.20	11,600	11.39	21,900	5.97	5,700
10	1.83	153	2.15	293	4.98	3,380	8.75	13,200	11.25	21,400	5.91	5,540
11	1.82	150	2.10	268	4.95	3,320	9.00	13,900	11.19	21,100	6.19	6,240
N	1.81	146	3.22	1,070	5.10	3,620	9.40	15,200	10.14	17,500	5.92	5,570
1	1.80	142	3.25	1,100	5.90	5,520	9.07	14,100	9.78	16,400	5.81	5,300
2	1.80	142	3.26	1,110	5.37	4,210	9.07	14,100	9.43	15,300	5.71	5,040
3	1.80	142	3.32	1,170	5.12	3,660	9.03	14,000	9.15	14,400	5.58	4,720
4	1.80	142	3.40	1,250	4.99	3,400	9.65	16,000	8.90	13,600	5.50	4,520
5	1.80	142	3.53	1,390	5.21	3,850	13.10	28,000	8.65	12,800	5.47	4,450
6	1.80	142	3.68	1,550	6.06	5,920	19.00	51,400	8.40	12,200	5.46	4,420
7	1.80	142	3.82	1,700	6.30	6,520	20.10	56,000	8.13	11,400	5.11	3,640
8	1.79	139	3.93	1,840	6.35	6,640	17.50	45,400	7.89	10,800	5.25	3,940
9	1.78	135	3.97	1,880	6.39	6,740	16.15	40,000	7.73	10,300	5.33	4,120
10	1.78	135	3.93	1,840	6.81	7,820	15.35	36,800	7.55	9,780	5.33	4,120
11	2.25	345	3.89	1,790	7.06	8,470	15.02	35,500	7.29	9,070	5.19	3,810
M	3.14	996	3.93	1,840	7.10	8,570	15.02	35,500	7.06	8,470	4.77	3,000
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.01	3,440	3.87	1,760	3.06	924	2.95	830	-	-	-	-
4	4.66	2,820	3.55	1,410	3.03	897	2.84	742	-	-	-	-
6	4.35	2,360	3.54	1,400	3.03	897	2.75	672	-	-	-	-
8	4.34	2,350	3.42	1,270	3.05	915	2.47	476	-	-	-	-
10	4.34	2,350	3.60	1,460	3.30	1,150	-	-	-	-	-	-
N	4.78	3,020	3.72	1,590	3.45	1,300	-	-	-	*880	-	*800
2	4.38	2,400	3.13	987	3.46	1,310	-	-	-	-	-	-
4	3.90	1,800	2.85	750	3.44	1,290	-	**990	-	-	-	-
6	3.85	1,740	2.67	614	3.43	1,280	-	-	-	-	-	-
8	4.20	2,170	2.84	742	3.43	1,280	-	-	-	-	-	-
10	4.26	2,250	2.70	635	3.43	1,280	-	-	-	-	-	-
M	4.00	1,920	3.28	1,130	3.43	1,280	-	-	-	-	-	-

Supplemental records.- Sept. 21, 6:45 p.m., 20.17 ft., 56,300 sec.-ft.
* Mean for the day.
** Mean for 16 hours.

Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt.

Location.- Lat. 42°58'25", long. 72°57'00", 2½ miles northeast of Somerset, Windham County.
Drainage area.- 30 square miles.
Remarks.- Storage capacity, 2,700,000,000 cubic feet. Basic data furnished by New England Power Co.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-3.31	-7.03	9	-11.88	-10.33	17	+3.29	-20.13	25	0	+19.98
2	-3.31	0	10	-12.50	-19.24	18	+3.29	-18.73	26	-14.12	0
3	+1.32	-16.10	11	-11.83	-16.43	19	+26.41	-15.99	27	-3.52	-6.66
4	+1.99	-15.38	12	-16.37	-17.05	20	+96.84	-13.30	28	+7.04	-6.66
5	0	-17.40	13	+9.84	-19.71	21	+188.64	+3.32	29	-7.04	-9.98
6	-13.24	-19.43	14	+6.53	-14.90	22	+70.26	0	30	-14.07	-11.28
7	-3.30	-16.61	15	+6.57	-15.54	23	-3.53	-6.64	31		-8.61
8	0	-13.79	16	+6.57	-16.84	24	0	+9.96			
Gain or loss in storage, in millions of cubic feet										+310.57	-320.50
Gain or loss in storage, in equivalent mean second-feet.										+119	-120

East Branch of Deerfield River at outlet of Somerset Reservoir, near Somerset, Vt.

Location.- Lat. 42°58'25", long. 72°57'00", 2½ miles northeast of Somerset, Windham County.
Drainage area.- 30.0 square miles.
Stage-discharge relation.- Discharge determined from flow through gates.
Maxima.- September 1938: Discharge, about 7,500 second-feet, adjusted for storage in Somerset Reservoir, Sept. 21.
Remarks.- Flood run-off almost completely stored in Somerset Reservoir (capacity, 2,700,000,000 cubic feet). Mean daily and monthly discharges adjusted for gain or loss in storage. For information on storage see record for Somerset Reservoir on East Branch of Deerfield River near Somerset, Vt. Basic data furnished by New England Power Co.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	71	33	92	11	16	0	76	215	20
2	46	8	17	17	17	0	38	250	17
3	0	15	200	14	18	12	50	235	18
4	0	23	200	22	19	23	329	200	15
5	25	25	215	14	20	0	1,120	188	34
6	167	14	235	10	21	164	2,340	0	38
7	117	79	200	8	22	669	1,480	19	19
8	58	58	167	7	23	219	178	95	18
9	152	15	125	6	24	86	86	64	179
10	150	5	235	12	25	100	100	0	231
11	150	13	200	10	26	185	22	65	65
12	204	15	206	9	27	119	78	148	71
13	0	114	238	10	28	23	105	150	73
14	33	109	200	28	29	168	86	150	34
15	54	130	200	20	30	200	37	165	34
					31			200	100
Mean monthly discharge, in second-feet						107	226	157	37.5
Run-off, in inches						-	8.40	-	1.44

Ware River at Cold Brook, Mass.

Location.- Water-stage recorder, lat. 42°23'30", long. 72°03'40", just above dam at Ware River intake works 0.8 mile west of Cold Brook, Worcester County. Zero of gage is 5.65 feet below mean sea level.
Drainage area.- 96.8 square miles.
Gage-height record.- Water-stage recorder graph. Add 600 to published figures to convert to Boston City datum.
Stage-discharge relation.- Discharge ascertained from flow over dam, through venturi meter, and sluices.
Maxima.- September 1938: Discharge, 14,000 second-feet 10:15 a.m. Sept. 21 (gage height, 64.28 feet).
1928 to August 1938: 5,990 second-feet Mar. 19, 1936 (gage height, 61.35 feet).
Remarks.- Flood run-off not materially affected by storage. No diversions for Boston water supply. Records computed from basic data furnished by Metropolitan District Water Supply Commission.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	65	397	9	50	221	17	132	183	25	1,310	345
2	61	371	10	44	214	18	137	175	26	960	355
3	51	317	11	40	206	19	305	167	27	733	296
4	47	297	12	37	202	20	1,010	162	28	597	279
5	45	274	13	99	200	21	8,740	228	29	498	277
6	41	260	14	125	192	22	5,820	258	30	439	248
7	40	251	15	125	188	23	3,160	218	31		218
8	52	228	16	159	187	24	1,880	220			
Mean monthly discharge, in second-feet										893	246
Run-off, in inches										10.30	2.93

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	57.39	125	57.45	155	57.96	503	59.64	2,750	62.12	7,700	60.38	4,020
2	57.39	125	57.48	171	57.98	518	60.00	3,350	62.07	7,560	60.31	3,880
3	57.40	130	57.50	182	58.00	534	60.40	4,060	61.97	7,300	60.26	3,800
4	57.40	130	57.53	198	58.02	551	60.84	4,900	61.86	7,050	60.22	3,720
5	57.41	135	57.55	210	58.04	571	61.32	5,850	61.78	6,850	60.16	3,620
6	57.41	135	57.58	227	58.05	582	61.87	7,100	61.68	6,600	60.11	3,530
7	57.41	135	57.60	240	58.07	603	62.46	8,600	61.61	6,480	60.08	3,480
8	57.42	140	57.63	259	58.08	614	63.10	10,300	61.52	6,270	60.04	3,430
9	57.42	140	57.65	273	58.10	635	63.80	12,400	61.43	6,100	59.99	3,330
10	57.42	140	57.66	280	58.13	667	64.14	13,600	61.36	5,900	59.94	3,250
11	57.42	140	57.67	287	58.20	742	64.10	13,400	61.30	5,800	59.90	3,160
N	57.42	140	57.68	295	58.30	850	63.81	12,400	61.27	5,730	59.85	3,100
1	57.42	140	57.70	309	58.37	928	63.62	11,800	61.24	5,690	59.81	3,020
2	57.42	140	57.71	317	58.43	996	63.45	11,300	61.22	5,620	59.78	2,980
3	57.42	140	57.72	325	58.49	1,070	63.22	10,600	61.05	5,300	59.74	2,940
4	57.42	140	57.74	339	58.54	1,130	63.12	10,400	60.99	5,150	59.71	2,860
5	57.42	140	57.76	354	58.62	1,240	62.80	9,500	60.92	5,000	59.67	2,800
6	57.42	140	57.80	383	58.72	1,380	62.64	9,000	60.86	4,900	59.64	2,750
7	57.42	140	57.84	413	58.80	1,430	62.61	8,900	60.79	4,760	59.61	2,700
8	57.42	140	57.86	428	58.87	1,520	62.57	8,800	60.72	4,630	59.57	2,650
9	57.42	140	57.88	443	58.95	1,640	62.53	8,740	60.64	4,500	59.54	2,600
10	57.42	140	57.89	450	59.12	1,860	62.45	8,500	60.58	4,380	59.51	2,550
11	57.42	140	57.92	473	59.28	2,100	62.35	8,250	60.51	4,250	59.47	2,480
M	57.43	145	57.94	488	59.47	2,500	62.27	8,000	60.44	4,150	59.44	2,400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	59.38	2,280	58.84	1,480	58.50	1,080	58.26	807	58.12	657	58.00	534
4	59.33	2,200	58.81	1,430	58.48	1,060	58.24	785	58.11	646	57.99	526
6	59.27	2,100	58.77	1,410	58.46	1,030	58.23	774	58.10	635	57.98	518
8	59.22	2,020	58.73	1,390	58.44	1,010	58.22	763	58.09	625	57.97	510
10	59.16	1,900	58.70	1,350	58.42	984	58.20	742	58.07	603	57.96	503
N	59.11	1,820	58.67	1,310	58.40	961	58.19	731	58.06	592	57.95	496
2	59.06	1,770	58.64	1,260	58.38	939	58.17	710	58.05	582	57.94	488
4	59.02	1,720	58.62	1,240	58.35	905	58.16	700	58.04	571	57.94	488
6	58.98	1,670	58.59	1,190	58.33	882	58.15	689	58.03	561	57.93	480
8	58.94	1,600	58.57	1,170	58.31	860	58.14	678	58.02	551	57.92	473
10	58.90	1,550	58.55	1,140	58.29	840	58.14	678	58.01	543	57.91	465
M	58.87	1,520	58.53	1,120	58.27	818	58.13	667	58.00	534	57.90	458

Supplemental records.- Sept. 21, 10:15 a.m., 64.28 ft., 14,000 sec.-ft.

Ware River at Gibbs Crossing, Mass.

Location.- Water-stage recorder, lat. 42°14'05", long. 72°16'45", half a mile above Gibbs Crossing, Hampshire County, 1¼ miles above mouth of Beaver Brook, and 2½ miles southwest of Ware. Zero of gage is 379.79 feet above mean sea level (general adjustment of 1929).
Drainage area.- 199 square miles.
Gage-height record.- Water-stage recorder graph except for period 10 a.m. Sept. 21 to 2 p.m. Sept. 28 when there was no record.
Stage-discharge relation.- Defined by current-meter measurements below 9,220 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area method.
Maxima.- September 1938: Discharge, 22,700 second-feet noon Sept. 21 (gage height, 18.2 feet, from flood marks).
1912 to August 1938: Discharge, 11,200 second-feet Mar. 19, 1936 (gage height, 12.04 feet).
Remarks.- Discharge for period of missing record computed on basis of peak discharge, current-meter discharge measurement Sept. 26, and records for Ware River at Cold Brook, Mass. Flood run-off affected slightly by natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	167	670	9	125	405	17	290	443	25	2,140	766
2	132	614	10	113	405	18	328	384	26	1,550	697
3	82	531	11	63	391	19	718	291	27	1,300	620
4	82	551	12	122	363	20	3,180	310	28	1,070	577
5	63	497	13	144	356	21	16,700	538	29	880	531
6	169	482	14	240	349	22	10,700	608	30	778	510
7	127	451	15	304	377	23	6,000	538	31		474
8	169	420	16	382	420	24	3,100	551			
Mean monthly discharge, in second-feet										1,707	488
Run-off, in inches										9.57	2.83

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.57	274	2.76	392	3.58	1,140	9.80	7,450	-	-	-	-
2	2.57	274	2.78	406	3.57	1,130	10.30	8,160	-	-	-	-
3	2.57	274	2.80	420	3.68	1,210	10.85	8,980	-	-	-	-
4	2.58	280	2.82	438	3.74	1,250	11.35	9,760	-	-	-	-
5	2.59	285	2.87	483	3.85	1,320	12.00	10,800	-	-	-	-
6	2.60	290	2.88	492	4.09	1,490	12.75	12,100	-	-	-	-
7	2.62	302	2.92	530	4.18	1,560	13.80	13,900	-	-	-	-
8	2.64	314	3.06	676	4.32	1,650	15.00	16,200	-	-	-	-
9	2.65	320	3.09	709	4.54	1,780	15.90	18,000	-	-	-	-
10	2.66	326	3.08	698	4.90	2,000	16.80	19,800	-	-	-	-
11	2.67	332	3.08	698	5.50	2,480	17.75	21,800	-	-	-	-
N	2.67	332	3.07	687	6.15	3,090	18.2	22,700	-	a10,700	-	a6,000
1	2.68	338	3.06	676	6.55	3,490	-	-	-	-	-	-
2	2.69	344	3.11	730	6.85	3,800	-	-	-	-	-	-
3	2.69	344	3.14	760	7.12	4,080	-	-	-	-	-	-
4	2.69	344	3.16	780	7.32	4,300	-	-	-	-	-	-
5	2.71	357	3.18	800	7.44	4,460	-	-	-	-	-	-
6	2.71	357	3.25	865	7.63	4,700	-	b19,900	-	-	-	-
7	2.72	364	3.31	919	7.79	4,880	-	-	-	-	-	-
8	2.72	364	3.40	1,000	7.95	5,060	-	-	-	-	-	-
9	2.72	364	3.47	1,060	8.23	5,420	-	-	-	-	-	-
10	2.75	385	3.54	1,110	8.55	5,780	-	-	-	-	-	-
11	2.73	371	3.58	1,140	8.95	6,300	-	-	-	-	-	-
M	2.73	371	3.62	1,160	9.40	6,890	-	-	-	-	-	-
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	3.56	946
4	-	-	-	-	-	-	-	-	-	-	3.52	922
6	-	-	-	-	-	-	-	-	-	b1,160	3.49	904
8	-	-	-	-	-	-	-	-	-	-	3.46	886
10	-	-	-	-	-	-	-	-	-	-	3.43	868
N	-	a3,100	-	a2,140	-	a1,550	-	a1,300	-	-	3.42	862
2	-	-	-	-	-	-	-	-	3.68	1,030	3.45	880
4	-	-	-	-	-	-	-	-	3.65	1,000	3.45	880
6	-	-	-	-	-	-	-	-	3.57	952	3.35	820
8	-	-	-	-	-	-	-	-	3.58	958	3.35	820
10	-	-	-	-	-	-	-	-	3.59	964	3.37	832
M	-	-	-	-	-	-	-	-	3.58	958	3.37	832

a Mean for the day.
b Mean for 12-hour period.

Chicopee River at Bircham Bend, Mass.

Location.- Lat. 42°09'30", long. 72°32'30", at dam at Bircham Bend, Hampden County, three-quarters of a mile below Higher Brook and 5½ miles above mouth.
Drainage area.- 703 square miles.
Gage-height record.- None (station destroyed by flood).
Maxima.- September 1938: Discharge, about 45,200 second-feet Sept. 21.
1928 to August 1938: Discharge, 20,400 second-feet Mar. 19, 1936 (gage height, 9.87 feet).
Remarks.- Flood run-off affected by storage above Quabbin Dam and by natural storage. Discharge computed on basis of measured flow at Quaboag River at West Brimfield, Mass., Ware River at Gibbs Crossing, Mass., and Swift River at West Ware, Mass. (76.4 percent of drainage area).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	620	3,810	9	494	1,740	17	1,110	1,395	25	10,500	2,160
2	562	3,460	10	470	1,620	18	1,190	1,280	26	8,060	2,120
3	459	3,140	11	397	1,530	19	2,060	1,120	27	6,590	1,950
4	457	2,920	12	465	1,420	20	7,610	1,130	28	5,650	1,850
5	413	2,670	13	611	1,360	21	37,000	1,570	29	4,890	1,740
6	540	2,480	14	937	1,340	22	30,400	1,680	30	4,340	1,660
7	463	2,270	15	1,020	1,370	23	20,900	1,580	31		1,530
8	540	1,960	16	1,260	1,400	24	14,200	1,660			
Mean monthly discharge, in second-feet										5,474	1,900
Run-off, in inches										8.69	3.11

Swift River at West Ware, Mass.

Location.- Water-stage recorder, lat. 42°16'00", long. 72°20'05", 1,000 feet below dam at West Ware, Hampshire County, and 3 miles below mouth of West Branch of Swift River. Zero of gage is 365.18 feet above mean sea level.
Drainage area.- 188 square miles (revised).
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 6,600 second-feet; extended to maximum flood stage.
Maxima.- September 1938: Discharge, 5,540 second-feet 11 a.m. Sept. 22 (gage height, 13.74 feet).
1910 to August 1938: Discharge, 7,590 second-feet Mar. 19, 1936 (gage height, 15.00 feet).
Remarks.- Flood run-off affected by some artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	168	1,160	9	149	475	17	299	354	25	2,770	550
2	166	1,080	10	144	423	18	314	343	26	2,110	589
3	153	1,010	11	142	391	19	436	326	27	1,690	544
4	151	946	12	138	368	20	1,130	317	28	1,490	508
5	149	886	13	200	351	21	3,740	388	29	1,370	472
6	140	822	14	250	354	22	5,440	411	30	1,250	443
7	132	739	15	258	365	23	4,710	414	31		397
8	149	588	16	311	362	24	3,730	438			
Mean monthly discharge, in second-feet										1,109	542
Run-off, in inches										6.58	3.22

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.39	302	3.49	332	4.45	636	7.53	1,770	13.42	5,370	13.33	5,170
2	3.40	305	3.52	341	4.49	650	7.83	1,890	13.47	5,400	13.28	5,120
3	3.40	305	3.53	344	4.59	684	8.16	2,040	13.49	5,410	13.22	5,070
4	3.40	305	3.56	353	4.76	741	8.51	2,200	13.56	5,440	13.16	5,010
5	3.41	308	3.60	365	4.86	775	8.87	2,380	13.62	5,470	13.12	4,980
6	3.41	308	3.63	374	4.98	816	9.22	2,570	13.65	5,490	13.07	4,930
7	3.41	308	3.66	383	5.05	840	9.57	2,780	13.67	5,500	13.02	4,890
8	3.41	308	3.69	392	5.14	871	10.01	3,050	13.69	5,510	12.98	4,850
9	3.42	311	3.72	401	5.27	915	10.38	3,280	13.71	5,520	12.93	4,810
10	3.43	314	3.73	404	5.48	988	10.70	3,500	13.72	5,520	12.89	4,770
11	3.43	314	3.75	410	5.82	1,110	11.03	3,740	13.74	5,540	12.85	4,740
N	3.43	314	3.80	426	6.05	1,190	11.28	3,940	13.72	5,520	12.81	4,700
1	3.43	314	3.83	435	6.21	1,250	11.46	4,090	13.72	5,520	12.77	4,670
2	3.43	314	3.84	438	6.38	1,310	11.63	4,240	13.72	5,520	12.72	4,630
3	3.44	317	3.86	445	6.50	1,360	11.82	4,410	13.72	5,520	12.66	4,580
4	3.44	317	3.87	448	6.60	1,400	12.04	4,610	13.69	5,490	12.63	4,550
5	3.45	320	3.90	457	6.65	1,420	12.24	4,780	13.66	5,460	12.58	4,510
6	3.45	320	4.02	495	6.69	1,440	12.64	4,980	13.64	5,450	12.52	4,470
7	3.45	320	4.06	508	6.71	1,440	12.80	5,060	13.61	5,420	12.47	4,430
8	3.46	323	4.12	527	6.77	1,470	12.96	5,140	13.57	5,380	12.43	4,390
9	3.46	323	4.20	553	6.82	1,490	13.16	5,240	13.52	5,340	12.38	4,350
10	3.46	323	4.27	576	6.90	1,520	13.25	5,280	13.48	5,300	12.34	4,321
11	3.46	323	4.33	596	7.06	1,580	13.33	5,330	13.43	5,260	12.28	4,270
M	3.47	326	4.40	619	7.28	1,670	13.38	5,360	13.38	5,210	12.24	4,240
	September 24		September 25		September 26		September 27		September 28		September 29	
2	12.14	4,160	10.65	3,120	9.26	2,340	8.11	1,820	7.44	1,560	7.04	1,420
4	12.03	4,070	10.53	3,050	9.17	2,300	8.03	1,790	7.39	1,540	7.01	1,410
6	11.92	3,990	10.39	2,960	9.08	2,250	7.96	1,760	7.34	1,520	6.99	1,400
8	11.81	3,910	10.27	2,890	8.98	2,200	7.88	1,730	7.30	1,510	6.95	1,390
10	11.69	3,820	10.13	2,810	8.86	2,140	7.80	1,700	7.26	1,500	6.93	1,380
N	11.57	3,740	10.01	2,740	8.75	2,080	7.72	1,670	7.22	1,480	6.90	1,370
2	11.44	3,650	9.93	2,690	8.67	2,050	7.65	1,640	7.19	1,470	6.88	1,360
4	11.32	3,560	9.81	2,620	8.58	2,010	7.58	1,610	7.16	1,460	6.85	1,350
6	11.18	3,470	9.70	2,560	8.49	1,980	7.64	1,640	7.13	1,450	6.82	1,340
8	11.05	3,380	9.58	2,500	8.41	1,940	7.58	1,610	7.11	1,440	6.79	1,330
10	10.91	3,280	9.48	2,450	8.30	1,900	7.53	1,590	7.09	1,440	6.75	1,320
M	10.78	3,200	9.37	2,400	8.21	1,860	7.49	1,570	7.07	1,430	6.73	1,310

East Branch of Swift River near Dana, Mass.

Location.- Water-stage recorder, lat. 42°23'35", long. 72°14'25", 0.6 mile below outlet of Pottapaug Pond, 2.1 miles south of Dana, Worcester County. Zero of gage is 504.70 feet above mean sea level (general adjustment of 1929).
Drainage area.- 43.7 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 282 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area and contracted-opening methods.
Maxima.- September 1938: Discharge, 6,780 second-feet 12:45 p.m. Sept. 21 (gage height, 15.05 feet).
1937 to August 1938: Discharge, 900 second-feet Jan. 26, 1938 (gage height, 7.95 feet).
Remarks.- Flood run-off affected slightly by natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	21	142	9	25	81	17	70	70	25	350	162
2	22	128	10	22	76	18	68	63	26	267	169
3	20	120	11	19	70	19	120	56	27	220	138
4	18	110	12	17	66	20	720	55	28	205	115
5	17	100	13	34	63	21	4,690	91	29	186	98
6	15	93	14	60	62	22	2,750	124	30	159	87
7	14	87	15	58	68	23	927	106	31		76
8	21	82	16	75	72	24	503	100			
Mean monthly discharge, in second-feet										390	94.5
Run-off, in inches										9.95	2.49

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.77	64	4.91	77	5.90	225	10.09	2,030	13.04	4,390	8.92	1,350
2	4.77	64	4.92	78	5.96	237	10.50	2,300	12.90	4,260	8.80	1,290
3	4.77	64	4.93	80	6.08	263	11.00	2,650	12.74	4,120	8.68	1,230
4	4.77	64	4.95	81	6.15	278	11.47	3,030	12.50	3,900	8.58	1,180
5	4.77	64	4.97	84	6.22	296	11.90	3,370	12.32	3,740	8.48	1,130
6	4.77	64	4.98	85	6.29	310	12.25	3,680	12.11	3,550	8.37	1,080
7	4.78	65	5.02	88	6.36	335	12.66	4,040	11.92	3,390	8.29	1,050
8	4.79	66	5.04	91	6.46	360	13.06	4,410	11.69	3,200	8.19	1,000
9	4.80	67	5.06	94	6.55	390	13.32	4,680	11.50	3,050	8.11	964
10	4.80	67	5.08	96	6.68	428	14.36	5,890	11.31	2,900	8.04	936
11	4.81	68	5.13	103	6.80	465	14.87	6,550	11.13	2,750	7.99	916
N	4.82	69	5.17	108	6.92	515	14.98	6,690	10.93	2,600	7.91	884
1	4.82	69	5.21	113	7.10	570	15.04	6,770	10.74	2,470	7.83	852
2	4.83	69	5.25	118	7.30	655	14.89	6,580	10.56	2,340	7.80	840
3	4.83	69	5.30	125	7.55	742	14.67	6,290	10.38	2,220	7.70	800
4	4.84	70	5.34	130	7.87	868	14.25	5,760	10.20	2,100	7.67	788
5	4.84	70	5.39	137	8.20	1,000	14.14	5,630	10.04	2,000	7.59	756
6	4.85	71	5.50	155	8.50	1,140	13.81	5,230	9.90	1,910	7.53	736
7	4.85	71	5.54	160	8.73	1,260	13.61	5,000	9.72	1,800	7.49	722
8	4.85	71	5.57	168	8.94	1,360	13.47	4,850	9.57	1,710	7.43	700
9	4.85	71	5.63	177	9.07	1,430	13.37	4,740	9.42	1,620	7.41	694
10	4.86	72	5.69	188	9.22	1,510	13.27	4,630	9.30	1,560	7.34	669
11	4.87	73	5.75	197	9.43	1,630	13.22	4,570	9.17	1,480	7.32	662
M	4.88	74	5.83	212	9.74	1,810	13.13	4,480	9.03	1,410	7.25	638
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.17	610	6.47	395	6.07	295	5.79	236	5.65	208	5.58	195
4	7.10	585	6.43	385	6.04	288	5.77	232	5.65	208	5.57	193
6	7.02	557	6.39	374	6.01	281	5.75	228	5.64	207	5.57	193
8	6.93	529	6.36	367	5.98	275	5.73	224	5.64	207	5.55	190
10	6.87	511	6.32	357	5.96	271	5.71	220	5.64	207	5.54	188
N	6.81	493	6.29	350	5.94	266	5.69	216	5.63	205	5.53	186
2	6.75	475	6.25	340	5.92	262	5.67	212	5.63	205	5.52	184
4	6.70	460	6.22	332	5.89	256	5.66	210	5.62	203	5.51	182
6	6.65	446	6.18	322	5.87	252	5.67	212	5.62	203	5.49	178
8	6.60	431	6.15	314	5.85	248	5.67	212	5.61	201	5.48	176
10	6.56	420	6.12	307	5.83	244	5.66	210	5.60	199	5.47	175
M	6.52	409	6.09	300	5.81	240	5.65	208	5.60	199	5.46	173

Quaboag River at West Brimfield, Mass.

Location.- Water-stage recorder, lat. 42°10'30", long. 72°15'50", at highway bridge at West Brimfield, Hampden County, a third of a mile above mouth of Blodgett Mill Brook. Zero of gage is 377.36 feet above mean sea level (general adjustment of 1929).

Drainage area.- 151 square miles.

Gage-height record.- Water-stage recorder graph except for period 1 a.m. Sept. 9 to 10 a.m. Sept. 25.

Stage-discharge relation.- Defined by current-meter measurements below 3,140 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area method.

Maxima.- September 1938: Discharge, 8,470 second-feet 7 p.m. Sept. 21 (gage height, 11.8 feet, from floodmark).

1909 to August 1938: Maximum discharge, 3,620 second-feet Mar. 18, 1936 (gage height, 8.62 feet); maximum gage height, 8.75 feet Mar. 12, 1936 (ice jam).

Remarks.- Discharge for period of missing record based on power plant records, peak stage and discharge, and study of recession graphs for the station. Flood run-off affected by natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	138	1,160	9	103	463	17	255	268	25	3,120	337
2	131	1,030	10	102	415	18	270	252	26	2,510	332
3	115	930	11	98	388	19	420	236	27	2,080	328
4	115	800	12	95	351	20	1,500	232	28	1,800	328
5	103	716	13	122	332	21	7,800	276	29	1,540	328
6	103	638	14	225	319	22	7,040	264	30	1,350	314
7	94	579	15	220	306	23	5,260	252	31		297
8	94	514	16	265	289	24	4,000	280			
Mean monthly discharge, in second-feet										1,369	437
Run-off, in inches										10.12	3.33

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	7,750	-	5,760
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	7,350	-	5,500
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
N	-	*270	-	*420	-	*1,500	-	*7,800	-	7,000	-	5,240
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	6,670	-	4,990
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	8,470	-	-	-	-
8	-	-	-	-	-	-	-	8,340	-	6,350	-	4,760
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	8,160	-	6,050	-	4,560
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	6.96	2,730	6.35	2,230	5.98	1,930	5.57	1,640
4	-	4,360	-	3,360	6.91	2,690	6.31	2,200	5.94	1,900	5.54	1,620
6	-	-	-	-	6.85	2,640	6.26	2,160	5.91	1,880	5.51	1,600
8	-	4,170	-	3,240	6.80	2,590	6.22	2,130	5.87	1,850	5.48	1,580
10	-	-	-	-	6.75	2,550	6.17	2,090	5.84	1,830	5.45	1,560
N	-	3,980	7.38	3,130	6.70	2,510	6.13	2,050	5.80	1,800	5.43	1,540
2	-	-	7.32	3,070	6.64	2,460	6.10	2,030	5.77	1,780	5.39	1,510
4	-	3,810	7.26	3,010	6.59	2,420	6.06	2,000	5.72	1,740	5.37	1,500
6	-	-	7.18	2,930	6.54	2,380	6.08	2,010	5.68	1,720	5.34	1,480
8	-	3,650	7.12	2,880	6.49	2,340	6.08	2,010	5.65	1,700	5.31	1,460
10	-	-	7.06	2,820	6.45	2,310	6.04	1,980	5.63	1,680	5.29	1,440
M	-	3,500	7.01	2,780	6.41	2,280	6.00	1,950	5.61	1,670	5.27	1,430

Supplemental records.- Sept. 27, 5 p.m., 6.04 ft., 1,980 sec.-ft.; 7 p.m., 6.09 ft., 2,020 sec.-ft.

* Mean for the day.

Westfield River at Knightville, Mass.

Location.- Water-stage recorder, lat. 42°17'25", long. 72°51'45", at Knightville, Hampshire County, three-quarters of a mile above mouth of Pond Brook and 2.7 miles above mouth of Middle Branch of Westfield River. Zero of gage is 471.82 feet above mean sea level (general adjustment of 1929).

Drainage area.- 162 square miles.

Gage-height record.- Water-stage recorder graph except for period Sept. 16-29, for which there is no record.

Stage-discharge relation.- Defined by current-meter measurements below 3,630 second-feet; extended to peak stage on basis of determinations of flood flows by slope-area method.

Maxima.- September 1938: Discharge, 37,900 second-feet about 9 p.m. Sept. 21 (gage height, 29.58 feet, from flood marks).

1909 to August 1938: Discharge, 25,700 second-feet Mar. 18, 1936 (gage height, 24.07 feet, from flood marks).

Remarks.- Intake pipe partially clogged Sept. 30 to Oct. 16. Discharge for period Sept. 16 to Oct. 16 computed on basis of flood marks, occasional staff-gage readings, and hydrographic comparison with records for other stations in the Westfield River Basin. Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	64	340	9	75	190	17	120	136	25	700	800
2	82	320	10	56	180	18	110	123	26	500	390
3	59	300	11	48	190	19	1,200	115	27	380	268
4	60	270	12	46	200	20	3,000	120	28	440	225
5	55	250	13	146	190	21	8,000	344	29	400	252
6	49	240	14	156	160	22	9,000	232	30	360	244
7	49	220	15	167	140	23	3,000	161	31		199
8	71	200	16	200	140	24	1,000	403			
Mean monthly discharge, in second-feet										986	243
Run-off, in inches										6.80	1.73

Westfield River near Westfield, Mass.

Location.- Water-stage recorder, lat. 42°06'25", long. 72°42'05", 1 mile below mouth of Great Brook and 3 miles east of Westfield, Hampden County. Zero of gage is 98.25 feet above mean sea level (general adjustment of 1929).

Drainage area.- 497 square miles.

Gage-height record.- Water-stage recorder graph except for period 11 p.m. Sept. 21 to 3 a.m. Sept. 22, when graph was based on flood marks and shape of water-stage recorder graph, and for periods Sept. 26 to Oct. 5, Oct. 7, 11 to 31, when there was no record.

Stage-discharge relation.- Defined by current-meter measurements below 17,600 second-feet; extended to peak stage on basis of determinations of flood flow over dam.

Maxima.- September 1938: Discharge, 55,500 second-feet 12 p.m. Sept. 21 to 1 a.m. Sept. 22 (gage height, 29.40 feet, from flood marks).
1914 to August 1938: Discharge, 48,200 second-feet Mar. 18, 1936 (gage height, 27.20 feet).

Remarks.- Flood run-off affected by some artificial and natural storage; slightly affected by diversions. Discharge for periods of no record computed on basis of records for other stations in Westfield River Basin and from limits of stage indicated on water-stage recorder chart.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	543	880	9	372	570	17	455	500	25	2,290	2,000
2	470	810	10	434	605	18	413	490	26	1,810	1,300
3	378	760	11	188	630	19	1,700	470	27	1,640	900
4	206	730	12	354	660	20	8,790	500	28	1,780	650
5	202	700	13	573	620	21	22,900	1,100	29	1,360	800
6	468	690	14	590	540	22	26,100	800	30	990	770
7	647	650	15	658	500	23	6,680	600	31		600
8	505	600	16	760	500	24	3,890	1,300			
Mean monthly discharge, in second-feet										2,938	749
Run-off, in inches										6.59	1.74

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.11	435	3.82	306	10.41	7,120	12.24	10,100	29.40	55,500	11.50	8,850
2	4.09	426	3.85	318	10.20	6,800	12.70	10,900	29.15	54,700	11.30	8,530
3	4.07	416	3.87	327	9.87	6,300	13.15	11,700	28.40	52,200	11.12	8,240
4	4.10	430	4.00	385	9.74	6,110	13.60	12,500	27.40	48,900	10.95	7,970
5	4.14	450	4.12	440	9.80	6,200	14.05	13,300	26.30	45,400	10.80	7,730
6	4.17	465	4.27	515	10.06	6,590	14.42	14,000	25.02	41,300	10.63	7,460
7	4.27	515	4.37	565	10.55	7,330	14.63	14,500	23.60	36,900	10.48	7,220
8	4.39	575	4.40	580	11.25	8,450	14.84	14,900	22.10	32,500	10.35	7,020
9	4.38	570	4.43	595	11.72	9,220	15.05	15,300	20.30	27,500	10.22	6,830
10	4.28	520	4.60	690	11.99	9,680	15.50	16,200	18.95	24,000	10.10	6,650
11	4.17	465	4.85	840	12.01	9,720	15.95	17,200	17.75	21,200	10.06	6,590
N	4.11	435	5.02	942	11.99	9,680	16.90	19,300	16.70	18,800	10.15	6,720
1	4.07	416	5.08	978	12.10	9,870	17.66	21,000	15.80	16,900	10.15	6,720
2	4.02	394	5.06	966	12.34	10,300	18.34	22,500	15.15	15,500	9.90	6,350
3	4.00	385	5.11	1,000	12.49	10,500	18.80	23,600	14.55	14,300	9.80	6,200
4	3.99	380	5.33	1,150	12.52	10,600	19.08	24,300	14.00	13,200	9.70	6,050
5	3.97	372	5.48	1,260	12.52	10,600	19.20	24,600	13.55	12,400	9.60	5,910
6	3.93	354	5.80	1,500	12.44	10,400	19.65	25,800	13.15	11,700	9.51	5,780
7	3.89	336	6.50	2,140	12.25	10,100	20.95	29,300	12.85	11,100	9.42	5,660
8	3.85	318	7.60	3,360	12.00	9,700	22.75	34,400	12.55	10,600	9.30	5,490
9	3.83	310	8.80	4,830	11.73	9,240	25.10	41,500	12.25	10,100	9.17	5,310
10	3.79	293	9.80	6,200	11.64	9,090	26.85	47,100	12.01	9,720	9.06	5,170
11	3.79	293	10.41	7,120	11.63	9,070	28.40	52,200	11.85	9,440	8.94	5,010
M	3.79	293	10.52	7,280	11.83	9,410	29.40	55,500	11.65	9,100	8.82	4,860
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.61	4,580	6.97	2,630	6.18	1,830	6.30	1,940	5.97	1,640	5.89	1,570
4	8.47	4,400	6.88	2,530	6.10	1,760	6.16	1,810	6.06	1,720	5.83	1,520
6	8.36	4,270	6.79	2,430	5.99	1,660	6.04	1,710	6.18	1,830	5.78	1,480
8	8.25	4,140	6.73	2,370	5.92	1,600	5.96	1,630	6.28	1,920	5.72	1,440
10	8.15	4,020	6.63	2,270	5.88	1,560	5.90	1,580	6.30	1,940	5.65	1,380
N	8.06	3,910	6.62	2,260	5.86	1,550	5.87	1,560	6.28	1,920	5.60	1,340
2	8.03	3,880	6.59	2,230	5.93	1,610	5.86	1,550	6.22	1,870	5.57	1,320
4	8.00	3,840	6.56	2,200	6.17	1,820	5.83	1,520	6.17	1,820	5.50	1,270
6	7.87	3,680	6.49	2,130	6.46	2,100	5.82	1,520	6.11	1,770	5.47	1,250
8	7.55	3,300	6.41	2,050	6.52	2,160	5.81	1,510	6.03	1,700	5.40	1,200
10	7.25	2,940	6.38	2,020	6.48	2,120	5.83	1,520	5.98	1,650	5.34	1,160
M	7.06	2,730	6.27	1,904	6.40	2,040	5.89	1,570	5.93	1,610	5.28	1,120

Middle Branch of Westfield River at Goss Heights, Mass.

Location.- Water-stage recorder, lat. 42°15'30", long. 72°52'25", at highway bridge in Goss Heights, Hampshire County, half a mile above mouth. Zero of gage is 400.30 feet above mean sea level (general adjustment of 1929).
Drainage area.- 52.6 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,110 second-feet; extended to peak stage on basis of determinations of flood flow by contracted-opening and slope-area methods.
Maxima.- September 1938: Discharge, 19,900 second-feet 6:30 p.m. Sept. 21 (gage height, 10.61 feet).
1910 to August 1938: Maximum discharge, 8,400 second-feet Mar. 18, 1936; maximum gage height, 13.87 feet Mar. 12, 1936 (ice jam).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	16	81	9	16	36	17	31	26	25	208	248
2	16	67	10	12	36	18	32	24	26	155	118
3	13	59	11	11	40	19	454	22	27	147	75
4	13	53	12	10	42	20	1,380	24	28	180	59
5	12	47	13	32	40	21	4,720	101	29	123	80
6	12	44	14	32	34	22	1,220	59	30	91	73
7	11	40	15	50	28	23	475	44	31		53
8	18	40	16	61	28	24	300	164			
Mean monthly discharge, in second-feet										328	60.8
Run-off, in inches										6.96	1.34

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.36	29	2.45	44	4.08	788	5.92	2,190	6.20	2,500	3.78	609
2	2.36	29	2.47	47	4.13	818	5.95	2,220	5.91	2,180	3.75	592
3	2.36	29	2.48	49	4.52	1,060	6.09	2,370	5.68	1,950	3.72	576
4	2.36	29	2.52	59	5.18	1,520	6.10	2,380	5.48	1,770	3.70	565
5	2.36	29	2.57	73	5.26	1,590	6.00	2,270	5.28	1,600	3.67	548
6	2.37	30	2.62	88	5.18	1,520	5.95	2,220	5.13	1,480	3.65	538
7	2.37	30	2.64	95	5.11	1,470	6.00	2,270	4.99	1,380	3.63	526
8	2.38	31	2.64	95	5.03	1,410	6.33	2,670	4.88	1,310	3.60	510
9	2.38	31	2.66	101	4.91	1,330	6.80	3,430	4.77	1,230	3.58	499
10	2.38	31	2.66	101	4.84	1,280	7.23	4,280	4.66	1,150	3.56	488
11	2.39	33	2.74	129	4.87	1,300	7.34	4,520	4.56	1,090	3.54	477
N	2.39	33	2.78	143	5.01	1,400	7.21	4,230	4.48	1,040	3.52	466
1	2.39	33	2.82	157	5.34	1,650	7.11	4,020	4.41	992	3.50	455
2	2.40	34	2.87	174	5.36	1,670	6.91	3,630	4.33	940	3.49	450
3	2.40	34	3.02	233	5.19	1,530	6.17	2,460	4.26	896	3.47	440
4	2.40	34	3.18	301	4.98	1,380	6.85	3,520	4.19	854	3.45	430
5	2.40	34	3.91	686	4.79	1,240	8.12	6,560	4.13	818	3.43	420
6	2.40	34	5.08	1,450	4.68	1,170	9.80	14,100	4.07	782	3.41	410
7	2.40	34	5.40	1,700	4.74	1,210	10.25	17,100	4.02	752	3.39	400
8	2.40	34	5.11	1,470	4.94	1,350	8.86	9,190	3.97	722	3.37	390
9	2.40	34	4.80	1,250	4.96	1,360	8.10	6,500	3.93	698	3.35	380
10	2.40	34	4.54	1,080	5.14	1,490	7.49	4,880	3.89	674	3.34	375
11	2.42	38	4.32	933	5.79	2,060	6.93	3,670	3.83	638	3.32	365
M	2.44	42	4.13	818	5.94	2,210	6.51	2,940	3.81	626	3.30	355
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.29	350	3.03	237	2.85	168	2.76	136	3.00	225	2.77	140
4	3.26	337	3.01	229	2.84	164	2.76	136	2.97	213	2.76	136
6	3.24	328	3.00	225	2.84	164	2.75	132	2.94	201	2.75	132
8	3.22	319	2.99	221	2.83	160	2.75	132	2.91	189	2.75	132
10	3.20	310	2.97	213	2.83	160	2.75	132	2.89	182	2.74	129
N	3.18	301	2.96	209	2.82	157	2.75	132	2.87	174	2.73	126
2	3.16	292	2.95	205	2.81	154	2.75	132	2.86	171	2.72	122
4	3.14	283	2.93	197	2.80	150	2.75	132	2.84	164	2.70	115
6	3.11	270	2.91	189	2.79	146	2.80	150	2.82	157	2.69	112
8	3.08	257	2.89	182	2.78	143	2.89	182	2.81	154	2.68	108
10	3.06	249	2.88	178	2.77	140	2.94	201	2.80	150	2.67	105
M	3.04	241	2.86	171	2.76	136	2.95	205	2.78	143	2.66	101

Supplemental records.- Sept. 21, 6:30 p.m., 10.61 ft., 19,900 sec.-ft.

West Branch of Westfield River at Huntington, Mass.

Location.- Lat. 42°14'20", long. 72°53'40", in Huntington, Hampshire County, 0.4 mile below Roaring Brook and 1½ miles above confluence with Westfield River.
Drainage area.- 93.7 square miles.
Gage-height record.- None (gaging station destroyed during flood).
Stage-discharge relation.- Defined by current-meter measurements below 1,930 second-feet and extended to peak stage on basis of determinations of flood flow over dam and by slope-area method; used to obtain maximum discharge only.
Maxima.- September 1938: Discharge, 21,800 second-feet about 7 p.m. Sept. 21 (gage height, 15.5 feet, from floodmarks).
1935 to August 1938: Discharge, 14,400 second-feet Mar. 18, 1936 (gage height, 12.95 feet).
Remarks.- Flood run-off not materially affected by storage. Discharge estimated by hydrographic comparison with other stations in Westfield River Basin.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	30	190	9	35	100	17	60	60	25	390	450
2	40	180	10	25	95	18	60	55	26	280	220
3	30	160	11	25	100	19	760	50	27	240	140
4	30	150	12	20	110	20	2,100	55	28	290	120
5	25	140	13	70	100	21	6,500	190	29	230	140
6	25	130	14	75	80	22	3,700	120	30	210	130
7	25	120	15	90	65	23	1,300	85	31		110
8	35	110	16	110	65	24	560	260			
Mean monthly discharge, in second-feet										579	132
Run-off, in inches										6.90	1.63

Borden Brook and Cobble Mountain Reservoirs in Westfield Little River Basin near Westfield, Mass.

Location.- At Borden Brook Reservoir on Borden Brook about half a mile above Cobble Mountain Reservoir and about 10 miles west of Westfield, Hampden County, and at Cobble Mountain Reservoir on Westfield Little River at Cobble Mountain, about 6½ miles west of Westfield.
Drainage area.- 45.8 square miles above Cobble Mountain Dam.
Remarks.- Total storage capacity is 3,380,000,000 cubic feet. Gain or loss in storage is the net gain or loss in both reservoirs. Basic data furnished by Board of Water Commissioners, Springfield, Mass.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-20.99	+2.01	9	-12.23	+1.34	17	+0.67	-2.01	25	-0.67	+6.42
2	-11.50	+1.34	10	+1.00	0	18	+10.70	-42.64	26	-6.15	+5.35
3	0	+2.27	11	+.99	-18.04	19	+93.32	-45.18	27	-4.81	+.94
4	+.94	0	12	-33.90	-6.82	20	+131.67	-41.04	28	-3.74	+5.48
5	+.88	+.94	13	-22.41	-9.36	21	+234.88	-28.47	29	+3.34	+5.48
6	-34.60	0	14	-5.88	-2.67	22	-126.59	+3.21	30	+3.21	+3.21
7	-53.49	-.40	15	-23.66	+.94	23	-81.01	+5.48	31		+2.27
8	-1.92	0	16	+.67	+.94	24	-19.38	+12.70			
Gain or loss in storage, in millions of cubic feet										+19.34	-136.31
Gain or loss in storage, in equivalent mean second-feet.										+8	-51.1

Westfield Little River at outlet of Cobble Mountain Reservoir, near Westfield, Mass.

Location.- Lat. 42°07'25", long. 72°53'05", at Cobble Mountain Dam, 1¼ miles below confluence of Pebble and Borden Brooks and 6½ miles west of Westfield, Hampden County.
Drainage area.- 45.8 square miles.
Stage-discharge relation.- Observed discharge is combined flow through power plant and over dam.
Maxima.- September 1938: Mean daily discharge adjusted for storage, 4,760 second-feet Sept. 21.
1905 to August 1938: Discharge, 6,100 second-feet Nov. 3, 1927, at site 1 3/4 miles downstream.
Remarks.- Flood run-off affected by storage in Borden Brook and Cobble Mountain Reservoirs (total capacity, 3,380,000,000 cubic feet). Daily and monthly discharges adjusted for storage in both reservoirs. Basic data furnished by Board of Water Commissioners, Springfield, Mass.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	268	25	24	47	16	16	24	0	11
2	162	29	20	35	17	20	28	39	15
3	12	12	0	26	18	0	124	506	12
4	0	11	16	16	19	17	1,100	542	19
5	0	10	20	30	20	212	1,740	562	87
6	410	10	21	21	21	2,040	4,760	425	95
7	628	9	20	16	22	1,930	469	0	37
8	34	12	16	16	23	1,150	212	0	63
9	153	12	0	15	24	399	175	73	220
10	0	12	20	20	25	107	99	0	74
11	0	11	246	37	26	148	76	15	77
12	405	13	121	42	27	128	73	14	25
13	273	14	144	36	28	112	69	14	77
14	91	23	50	19	29	16	55	0	63
15	328	54	0	11	30	13	50	0	37
					31			25	51
Mean monthly discharge, in second-feet						302	310	94.6	43.5
Run-off, in inches						-	7.55	-	1.10

Scantic River at Broad Brook, Conn.

Location.- Water-stage recorder, lat. 41°54'45", long. 72°34'05", 300 feet above highway bridge, 1 mile southwest of Broad Brook, Hartford County, half a mile below confluence with Broad Brook, and 5½ miles above mouth.

Drainage area.- 98.4 square miles.

Gage-height record.- Water-stage recorder graph except for period 9 a.m. Sept. 21 to noon Sept. 27, when it was based on flood marks, two inspections, shape of recession computed by summation of previous smaller floods, and computation of storage released by failure of dam upstream, and for period Oct. 17-31, when it was based on records for station on Willimantic River near South Coventry.

Stage-discharge relation.- Defined by current-meter measurements below 725 second-feet; extended to peak stage on basis of determinations of flood flow at dams 7 and 9 miles upstream, study of storage released by failure of dam, and estimate of intervening area run-off based upon determination of flood flow at dam on Broad Brook at Broad Brook, Conn.

Maxima.- September 1938: Discharge, 7,360 second-feet 2:30 p.m. Sept. 21 (gage height, 16.08 feet, from floodmark resulting from breaking of dam upstream).

1928 to August 1938: Maximum discharge, 1,820 second-feet (revised) 1 a.m. Mar. 13, 1936 (gage height, 10.17 feet); maximum gage height, 12.31 feet 3-4 p.m. Mar. 21, 1936 (backwater from Connecticut River).

Remarks.- Flood run-off affected by storage in one reservoir and several small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	74	372	9	74	240	17	86	220	25	798	300
2	82	350	10	52	240	18	119	200	26	601	280
3	60	326	11	41	225	19	367	200	27	491	240
4	46	295	12	52	222	20	1,580	200	28	436	220
5	60	283	13	77	212	21	5,090	220	29	409	200
6	81	264	14	76	207	22	3,740	200	30	388	200
7	80	249	15	86	205	23	2,080	150	31		190
8	84	246	16	100	207	24	1,230	180			
Mean monthly discharge, in second-feet										618	237
Run-off, in inches										7.01	2.78

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	1.60	172	4.45	539	12.59	3,250	-	-	-	-
2	1.20	111	1.70	185	5.65	742	12.70	3,350	14.0	4,670	-	-
3	-	-	2.00	221	5.92	791	12.88	3,510	-	-	-	-
4	1.22	114	2.30	250	6.05	814	13.09	3,710	13.8	4,450	11.65	2,480
5	-	-	2.50	270	6.08	819	13.25	3,870	-	-	-	-
6	1.23	116	2.69	289	6.07	818	13.33	3,950	13.65	4,280	-	-
7	-	-	2.93	315	6.20	841	13.42	4,040	-	-	-	-
8	1.23	116	3.07	331	7.05	1,000	13.59	4,220	13.5	4,120	11.3	2,240
9	-	-	3.10	335	7.95	1,180	13.7	4,340	-	-	-	-
10	1.23	116	3.14	340	8.65	1,340	13.9	4,560	13.3	3,920	-	-
11	-	-	3.18	345	9.05	1,440	14.1	4,780	-	-	-	-
N	1.23	116	3.23	352	9.38	1,540	14.7	5,490	13.1	3,720	11.0	2,060
1	-	-	3.27	358	9.70	1,640	15.8	6,970	-	-	-	-
2	1.23	116	3.30	362	10.09	1,790	16.05	7,320	12.9	3,530	-	-
3	-	-	3.34	368	10.40	1,910	16.05	7,320	-	-	-	-
4	1.24	117	3.60	406	10.59	1,990	15.8	6,970	12.7	3,350	10.65	1,880
5	-	-	4.05	475	10.70	2,030	15.6	6,690	-	-	-	-
6	1.26	121	4.20	499	10.79	2,080	15.35	6,340	12.5	3,170	-	-
7	-	-	4.35	523	10.87	2,120	15.1	5,990	-	-	-	-
8	1.27	122	4.42	534	11.20	2,280	14.85	5,670	12.35	3,040	10.3	1,700
9	-	-	4.40	531	11.72	2,580	14.65	5,430	-	-	-	-
10	1.29	125	4.25	507	12.01	2,790	14.45	5,190	12.15	2,870	-	-
11	1.36	137	4.22	502	12.30	3,010	14.3	5,010	-	-	-	-
M	1.57	168	4.22	502	12.48	3,150	14.15	4,840	11.95	2,710	10.0	1,570
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	5.4	522	4.87	454	4.47	406
4	-	-	-	-	-	-	5.35	516	4.83	450	4.50	410
6	9.5	1,370	7.8	860	6.3	639	5.3	509	4.80	446	4.50	410
8	-	-	-	-	-	-	5.35	516	4.88	456	4.62	424
10	-	-	-	-	-	-	5.25	502	4.80	446	4.58	420
N	9.05	1,220	7.4	785	6.0	600	5.2	496	4.72	436	4.52	412
2	-	-	-	-	-	-	5.11	484	4.67	430	4.49	409
4	-	-	-	-	-	-	5.06	478	4.62	424	4.47	406
6	8.6	1,080	7.0	730	5.7	561	4.94	463	4.59	421	4.47	406
8	-	-	-	-	-	-	4.88	456	4.58	420	4.47	406
10	-	-	-	-	-	-	4.88	456	4.56	417	4.47	406
M	8.2	960	6.6	678	5.45	528	4.88	456	4.42	400	4.33	390

Supplemental records.- Sept. 21, 2:30 p.m., 16.08 ft., 7,360 sec.-ft.

Farmington River near New Boston, Mass.

Location.- Water-stage recorder, lat. 42°04'40", long. 73°04'25", at highway bridge a quarter of a mile below Clam River and 1 mile south of New Boston, Berkshire County. Zero of gage is 758.21 feet above mean sea level (general adjustment of 1929).
Drainage area.- 92.0 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 10 to 12, for which there is no record.
Stage-discharge relation.- Defined by current-meter measurements below 1,380 second-feet; extended to peak stage on basis of determinations of flood flows by contracted-opening and slope-area methods.
Maxima.- September 1938: Discharge, 18,500 second-feet 6 p.m. Sept. 21 (gage height, 12.94 feet).
1913 to August 1938: Maximum discharge, 9,080 second-feet Mar. 18, 1936 (gage height, 10.65 feet); maximum gage height, 11.20 feet Mar. 12, 1936 (ice jam).
Remarks.- Discharge for period Sept. 10 to 12 computed on basis of discharge from Otis Reservoir and records for nearby stations. Flood run-off affected by storage in Otis Reservoir, total storage capacity, 780,000,000 cubic feet. For information on storage see record for Otis Reservoir at Cold Spring, Mass.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	169	218	9	52	86	17	126	178	25	380	350
2	44	167	10	90	79	18	257	180	26	285	243
3	36	172	11	210	75	19	1,020	189	27	246	201
4	52	223	12	255	74	20	2,050	175	28	271	130
5	164	201	13	240	60	21	6,680	175	29	270	148
6	184	119	14	232	54	22	3,120	150	30	241	228
7	218	109	15	289	89	23	1,180	210	31	--	210
8	196	97	16	142	184	24	610	331			
Mean monthly discharge, in second-feet										644	165
Run-off, in inches										7.81	2.06

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.17	256	4.25	280	6.22	1,420	7.42	2,780	9.34	6,300	6.46	1,640
2	4.18	259	4.29	292	6.57	1,750	7.49	2,880	8.98	5,480	6.39	1,570
3	4.18	259	4.40	325	6.87	2,070	7.50	2,890	8.70	4,900	6.33	1,520
4	4.18	259	4.43	336	6.82	2,010	7.43	2,790	8.40	4,320	6.28	1,470
5	4.18	259	4.46	346	6.80	1,990	7.43	2,790	8.18	3,930	6.22	1,420
6	4.18	259	4.50	360	6.68	1,860	7.52	2,920	8.02	3,670	6.18	1,380
7	4.18	259	4.53	370	6.77	1,960	7.75	3,260	7.90	3,480	6.13	1,340
8	4.18	259	4.55	378	6.65	1,830	7.99	3,620	7.77	3,280	6.08	1,290
9	4.18	259	4.56	381	6.53	1,710	8.21	3,980	7.66	3,120	6.04	1,260
10	4.18	259	4.56	381	6.50	1,680	8.27	4,090	7.55	2,960	5.99	1,220
11	4.18	259	4.57	384	6.70	1,880	8.47	4,450	7.44	2,810	5.95	1,190
N	4.18	259	4.64	411	6.95	2,160	8.89	5,280	7.35	2,680	5.90	1,160
1	4.18	259	4.76	459	7.00	2,220	8.83	5,160	7.27	2,570	5.86	1,120
2	4.17	256	5.10	620	6.87	2,070	8.76	5,020	7.18	2,450	5.81	1,090
3	4.17	256	5.82	1,090	6.75	1,940	8.78	5,060	7.11	2,360	5.77	1,060
4	4.16	253	6.92	2,120	6.68	1,860	9.24	6,060	7.04	2,270	5.72	1,020
5	4.16	253	7.50	2,890	6.76	1,950	10.40	9,080	6.97	2,180	5.67	990
6	4.16	253	7.50	2,890	7.00	2,220	12.94	18,500	6.91	2,110	5.63	964
7	4.16	253	7.17	2,440	7.04	2,270	12.45	16,400	6.84	2,030	5.58	932
8	4.16	253	6.85	2,040	6.96	2,170	12.20	15,400	6.78	1,970	5.56	919
9	4.14	247	6.64	1,820	7.17	2,440	11.45	12,500	6.71	1,890	5.52	893
10	4.16	253	6.42	1,600	7.40	2,750	11.04	11,100	6.64	1,820	5.49	874
11	4.19	262	6.28	1,470	7.44	2,810	10.46	9,260	6.58	1,760	5.45	850
M	4.22	271	6.21	1,410	7.40	2,750	9.84	7,540	6.53	1,710	5.41	826
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.34	784	4.62	437	4.25	316	4.01	249	4.12	279	4.15	287
4	5.26	738	4.58	423	4.23	310	4.00	246	4.12	279	4.13	281
6	5.19	700	4.54	410	4.21	304	3.99	243	4.11	276	4.12	279
8	5.14	672	4.50	396	4.19	298	3.98	241	4.10	273	4.11	276
10	5.08	640	4.48	389	4.17	293	3.97	238	4.09	270	4.10	273
N	5.01	605	4.45	380	4.15	287	3.96	236	4.08	268	4.10	273
2	4.92	560	4.42	370	4.12	279	3.94	230	4.06	262	4.08	268
4	4.85	528	4.38	357	4.09	270	3.93	228	4.03	254	4.06	262
6	4.80	505	4.35	347	4.07	265	3.97	238	4.01	249	4.05	260
8	4.75	485	4.31	334	4.05	260	4.04	257	4.11	276	4.04	257
10	4.71	469	4.28	325	4.03	254	4.14	284	4.15	287	4.03	254
M	4.67	454	4.26	319	4.02	251	4.14	284	4.14	284	4.02	251

Farmington River at Riverton, Conn.

Location.- Water-stage recorder, lat. 41°57'15", long. 73°00'45", a quarter of a mile below mouth of Still River, 1 mile below Riverton, Litchfield County, and 4 miles northeast of Winsted.
Drainage area.- 216 square miles.
Gage-height record.- Water-stage recorder graph except for period 5:20 to 9 p.m. Sept. 21, record for which was based on floodmark and available record.
Stage-discharge relation.- Defined by current-meter measurements below 5,670 second-feet; extended to peak stage on basis of velocity-area study; roughly verified by comparison with other records on Farmington River.
Maxima.- September 1938: Discharge, 37,100 second-feet 6:30 p.m. Sept. 21 (gage height, 17.95 feet, from floodmark).
1929 to August 1938: Discharge, 19,900 second-feet Mar. 18, 1936 (gage height, 13.42 feet).
Remarks.- Flood run-off affected by artificial storage. For information on storage see record for Otis Reservoir at Cold Spring, Mass.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	249	473	9	136	218	17	208	314	25	1,080	882
2	136	381	10	96	224	18	354	308	26	814	584
3	101	364	11	212	214	19	1,820	320	27	650	484
4	62	432	12	256	211	20	4,530	331	28	634	371
5	169	411	13	328	198	21	15,100	556	29	590	337
6	238	310	14	328	181	22	7,860	388	30	531	424
7	283	278	15	410	184	23	2,870	416	31		428
8	302	253	16	328	303	24	1,640	669			
Mean monthly discharge, in second-feet										1,410	369
Run-off, in inches										7.29	1.97

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	2.38	439	5.56	3,220	7.45	6,160	11.64	15,300	-	-
2	-	-	2.21	369	5.57	3,230	7.57	6,370	10.97	13,600	5.98	3,810
3	-	-	2.22	373	5.75	3,480	7.69	6,580	10.54	12,600	-	-
4	-	-	2.28	397	6.18	4,110	7.69	6,580	9.98	11,300	5.79	3,540
5	-	-	2.34	422	6.39	4,420	7.67	6,550	9.61	10,400	-	-
6	-	-	2.44	467	6.48	4,560	7.79	6,760	9.26	9,650	5.62	3,300
7	-	-	2.55	520	6.54	4,650	8.08	7,290	8.95	9,000	-	-
8	-	-	2.80	650	6.47	4,540	8.62	8,330	8.67	8,430	5.49	3,130
9	-	-	3.06	809	6.37	4,400	9.20	9,520	8.44	7,980	-	-
10	-	-	3.12	848	6.33	4,340	9.64	10,500	8.25	7,620	5.35	2,950
11	-	-	3.14	861	6.42	4,470	9.98	11,300	8.03	7,200	-	-
N	*2.17	*354	3.15	868	6.64	4,810	10.38	12,200	7.82	6,820	5.21	2,780
1	-	-	3.14	861	6.84	5,130	10.63	12,800	7.64	6,490	-	-
2	-	-	3.25	935	6.86	5,170	10.59	12,700	7.48	6,210	5.09	2,640
3	-	-	3.58	1,170	6.70	4,910	10.90	13,400	7.32	5,930	-	-
4	-	-	4.04	1,580	6.52	4,620	12.13	16,600	7.18	5,700	4.96	2,500
5	-	-	5.60	3,270	6.41	4,460	14.80	24,700	7.03	5,440	-	-
6	-	-	6.74	4,970	6.38	4,410	17.3	34,200	6.89	5,210	4.84	2,360
7	-	-	7.04	5,460	6.56	4,690	17.9	36,900	6.76	5,010	-	-
8	-	-	6.65	4,830	6.63	4,800	16.7	31,700	6.64	4,810	4.73	2,240
9	-	-	6.27	4,240	6.64	4,810	15.20	26,100	6.51	4,610	-	-
10	-	-	6.00	3,840	6.81	5,090	14.07	22,400	6.40	4,440	4.63	2,140
11	-	-	5.78	3,520	7.16	5,660	13.21	19,700	6.28	4,260	-	-
M	2.44	467	5.61	3,280	7.34	5,970	12.27	17,000	6.18	4,110	4.54	2,050
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.37	1,880	3.63	1,210	3.18	887	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
8	4.24	1,760	3.54	1,140	3.13	854	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	4.11	1,640	3.44	1,070	3.09	828	*2.80	*650	*2.77	*634	*2.69	*590
2	-	-	-	-	-	-	-	-	-	-	-	-
4	3.96	1,500	3.37	1,020	3.03	790	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
8	3.83	1,390	3.28	956	2.93	728	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	3.72	1,290	3.22	914	2.86	686	-	-	-	-	-	-

Supplemental records.- Sept. 20, 1:30 p.m., 6.88 ft., 5,200 sec.-ft. Sept. 21, 6:30 p.m., 17.95 ft., 37,100 sec.-ft.
* Mean for the day.

Farmington River at Tariffville, Conn.

Location.- Water-stage recorder, lat. 41°54'35", long. 72°45'40", at Tariffville, Hartford County, half a mile above Hartford Electric Light Co.'s plant, three-quarters of a mile below Salmon Brook, and 12 miles above mouth.
Drainage area.- 578 square miles.
Gage-height record.- Water-stage recorder graph except for period 9 a.m. Sept. 10 to 4 p.m. Sept. 26. Gage-height graph determined from power plant data for period midnight Sept. 18 to 3 p.m. Sept. 26.
Stage-discharge relation.- Varies with number of generators operating at power plant. Base rating curves developed for one and two generators operating at full capacity and for flow over spillway of dam with no generators operating. These ratings are correlated by stage relationship curves and are basically defined by discharge measurements and computations of flow over dam. Stage-graph adjusted for periods when generators running at less than full capacity. One-generator rating used Sept. 1-10; spillway rating, Sept. 18-25; and two-generator rating, Sept. 26 to Oct. 31.
Maxima.- September 1938: Discharge, 29,900 second-feet 3-4 p.m. Sept. 22 (gage height, 14.0 feet, from floodmarks).
1928 to August 1938: Discharge, 26,900 second-feet (revised) Mar. 19, 1936 (gage height, 13.4 feet).
Remarks.- Discharge during period of faulty gage-height record based on operation records of Hartford Electric Light Co.'s power plant, half a mile below. Flood run-off affected by artificial storage in reservoirs on main and tributary streams. For information on storage see records for Otis Reservoir at Cold Spring, Mass., Barkhamstead Reservoir near Barkhamstead, Conn., East Branch Reservoir at New Hartford, Conn., and Nepaug Reservoir near Collinsville, Conn.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	566	2,000	9	602	823	17	650	832	25	3,880	2,030
2	584	1,850	10	470	836	18	580	846	26	2,440	1,750
3	462	1,630	11	340	1,280	19	1,110	839	27	2,440	1,360
4	326	1,440	12	370	1,300	20	3,960	852	28	2,310	1,280
5	300	1,660	13	580	1,280	21	8,210	1,240	29	2,080	1,210
6	346	1,610	14	650	1,060	22	24,500	1,360	30	1,980	1,010
7	532	1,500	15	710	846	23	16,500	976	31		862
8	588	1,400	16	790	780	24	7,790	998			
Mean monthly discharge, in second-feet										2,888	1,250
Run-off, in inches										5.58	2.49

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	2.65	590	4.7	2,440	7.1	6,190	10.65	15,200	12.4	22,200
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	2.8	680	5.2	3,070	7.4	6,790	11.3	17,600	12.0	20,400
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	2.95	785	5.45	3,420	7.3	6,590	12.0	20,400	11.7	19,200
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	3.05	855	5.6	3,640	7.3	6,590	12.65	23,300	11.4	18,000
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	3.15	930	5.7	3,790	7.65	7,300	13.25	26,200	11.15	17,000
11	-	-	-	-	-	-	-	-	-	-	-	-
N	*2.63	*580	3.3	1,050	5.75	3,860	7.8	7,620	13.75	28,600	10.9	16,000
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	3.4	1,130	5.85	4,020	8.15	8,380	13.95	29,600	10.65	15,200
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	3.55	1,250	6.15	4,490	8.5	9,150	14.0	29,900	10.4	14,300
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	3.75	1,420	6.35	4,820	8.7	9,610	13.9	29,400	10.1	13,400
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	3.95	1,600	6.4	4,910	8.85	9,960	13.7	28,400	9.9	12,800
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	4.15	1,800	6.6	5,260	9.3	11,000	13.4	26,900	9.65	12,000
11	-	-	-	-	-	-	-	-	-	-	-	-
M	2.55	530	4.35	2,020	6.8	5,620	10.0	13,000	12.85	24,200	9.4	11,300
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.05	10,400	6.45	5,000	4.1	2,440	-	-	-	-	-	-
4	8.75	9,720	6.35	4,820	4.0	2,330	4.15	2,500	4.05	2,380	3.89	2,220
6	8.45	9,040	6.2	4,570	4.0	2,330	-	-	-	-	-	-
8	8.2	8,490	6.05	4,330	4.15	2,500	4.26	2,620	4.12	2,460	3.93	2,260
10	7.95	7,940	5.9	4,090	4.2	2,550	-	-	-	-	-	-
N	7.75	7,520	5.8	3,940	4.2	2,550	4.26	2,620	4.12	2,460	3.88	2,210
2	7.6	7,200	5.7	3,790	4.2	2,550	-	-	-	-	-	-
4	7.45	6,890	5.5	3,490	4.15	2,500	4.07	2,410	3.96	2,290	3.64	1,970
6	7.3	6,590	5.25	3,140	4.1	2,440	-	-	-	-	-	-
8	7.0	6,000	5.05	2,880	4.0	2,330	3.89	2,220	3.80	2,130	3.52	1,860
10	6.7	5,440	4.9	2,680	4.0	2,330	-	-	-	-	-	-
M	6.55	5,170	4.8	2,560	4.0	2,330	3.91	2,240	3.74	2,070	3.52	1,860

* Mean for the day based upon power plant data.

Otis Reservoir at Cold Spring, Mass.

Location.- Staff gage at dam, lat. 42°09'35", long. 73°03'33", on unnamed stream three-quarters of a mile above confluence with Farmington River and 1 mile northeast of Cold Spring, Hampden County.
Drainage area.- 17.2 square miles.
Gage-height record.- One gage reading daily, usually at 7 a.m. Gage height at midnight from graph based on gage-height readings, and correlated with study of gate operation and weather records.
Stage-discharge relation.- Observed discharge computed from records of gate openings and slight flow over spillway.
Remarks.- Mean daily and monthly discharges adjusted for gain or loss in storage in Otis Reservoir. No adjustments for evaporation from reservoir surface. Records based on data furnished by the Collins Co., Collinsville, Conn.

Mean discharge, in second-feet, and gain or loss in storage, in equivalent mean second-feet, 1938

Day	September			October		
	Observed discharge	Gain or loss in storage	Adjusted discharge	Observed discharge	Gain or loss in storage	Adjusted discharge
1	98	-	-	84	-	-
2	0	-	-	22	-	-
3	0	-	-	69	-	-
4	50	-	-	108	-	-
5	151	*-89	*0	77	*-19	*17
6	172	-	-	0	-	-
7	186	-	-	0	-	-
8	135	-	-	0	-	-
9	19	-	-	0	-	-
10	73	-	-	0	-	-
11	182	-163	19	0	-	-
12	181	-161	20	0	-	-
13	179	-169	10	0	-	-
14	179	-159	20	0	-	-
15	123	-100	23	68	*-52	*18
16	18	0	18	134	-	-
17	70	-44	26	134	-	-
18	175	-160	15	134	-	-
19	94	+151	245	132	-	-
20	0	+392	392	93	-	-
21	0	+1,260	1,260	0	-	-
22	0	+739	739	65	-	-
23	0	+330	330	131	-	-
24	0	+202	202	131	-	-
25	0	+133	133	91	**-45	**30
26	0	+90	90	65	-	-
27	0	+69	69	47	-	-
28	31	+27	58	0	-	-
29	86	0	86	38	-	-
30	85	-21	64	130	-	-
31				130	-	-

	September	October
Mean monthly discharge, in second-feet (observed)	76.2	60.7
Run-off, in inches (observed)	4.94	4.07
Mean monthly discharge, in second-feet (adjusted)	127	21.9
Run-off, in inches (adjusted)	8.23	1.46

* Mean for 10-day period.
** Mean for 11-day period.

Barkhamsted Reservoir near Barkhamsted, Conn.

Location.- Lat. 41°54'55", long. 72°57'05", on East Branch of Farmington River 1¼ miles south of Barkhamsted, Litchfield County, and 3½ miles above confluence with Farmington River.
Drainage area.- 50.5 square miles.
Remarks.- Elevations of reservoir surface are for 8 a.m. Gain or loss in storage is for 24-hour period prior to 8 a.m. Data furnished by Water Bureau of the Metropolitan District Commission, Hartford, Conn.

Elevation, in feet, and gain or loss in storage, in millions of gallons, 1938

Day	September		October		Day	September		October	
	Feet	Millions of gallons	Feet	Millions of gallons		Feet	Millions of gallons	Feet	Millions of gallons
1	423.90	-5	465.84	-181	16	431.00	+24	444.05	-40
2	424.00	+3	463.50	-323	17	431.50	+18	443.37	-38
3	423.90	-3	462.27	-160	18	*432.05	+19	442.60	-42
4	*423.90	0	460.52	-203	19	432.60	+19	441.80	-44
5	*424.00	+3	458.55	-221	20	439.20	+300	441.10	-38
6	423.90	-3	456.51	-203	21	449.20	+599	440.80	-17
7	424.50	+13	454.83	-159	22	473.08	+2,945	440.80	0
8	426.20	+36	453.86	-86	23	474.63	+295	*440.80	0
9	426.60	+12	450.60	-265	24	475.30	+127	440.25	-30
10	427.40	+24	448.50	-158	25	*474.90	-76	441.50	+69
11	*427.95	+16	447.35	-77	26	473.25	-313	442.05	+30
12	428.50	+17	446.70	-42	27	472.22	-196	441.70	-19
13	429.00	+15	445.98	-47	28	470.71	-261	441.70	0
14	429.70	+25	445.35	-34	29	469.00	-291	441.20	-28
15	430.30	+21	444.72	-42	30	467.11	-321	440.95	-14
					31			440.70	-13
								September	October
Gain or loss in storage, in millions of gallons.								+3,062	-2,425

* Estimated.

East Branch Reservoir at New Hartford, Conn.

Location.- Lat. 41°52'55", long. 72°57'25", on East Branch of Farmington River 1 mile east of New Hartford, Hartford County, and 1½ miles above confluence with Farmington River.
Drainage area.- 61.2 square miles.
Remarks.- Elevations of reservoir surface are for 8 a.m. Elevation of crest of spillway, 422.5 feet. Gain or loss in storage is for 24-hour period previous to 8 a.m. Data furnished by Water Bureau of the Metropolitan District Commission, Hartford, Conn.

Elevation, in feet, and gain or loss in storage, in millions of gallons, 1938

Day	September		October		Day	September		October	
	Feet	Millions of gallons	Feet	Millions of gallons		Feet	Millions of gallons	Feet	Millions of gallons
1	413.30	-66	421.70	-117	16	406.35	-38	412.02	+14
2	412.65	-69	*420.90	-111	17	406.00	-34	412.65	+60
3	412.20	-44	420.80	-14	18	*406.05	+4	412.75	+9
4	*412.30	+11	420.50	-40	19	406.20	+13	412.90	+15
5	*412.50	+19	419.60	-117	20	406.60	+34	412.75	-15
6	412.50	0	418.75	-104	21	408.80	+185	412.95	+19
7	411.70	-72	417.75	-118	22	413.79	+469	412.80	-14
8	410.99	-57	416.45	-145	23	416.00	+235	413.60	+91
9	410.15	-84	*418.75	+263	24	417.10	+131	414.30	+80
10	409.50	-55	420.00	+153	25	*419.50	+278	414.60	+31
11	*409.40	-8	417.90	-255	26	422.10	+361	415.45	+89
12	409.30	-8	415.35	-283	27	422.50	+50	416.10	+70
13	408.50	-71	412.20	-338	28	422.80	+45	416.05	-6
14	407.60	-78	411.65	-47	29	422.80	0	415.90	-16
15	406.85	-58	411.85	+16	30	422.30	-75	416.50	+70
					31			416.80	+36

	September	October
Gain or loss in storage, in millions of gallons.	+1,018	-724

* Estimated.

Nepaug Reservoir near Collinsville, Conn.

Location.- Lat. 41°49'40", long. 72°56'05", on Nepaug River three-quarters of a mile above confluence with Farmington River and 1½ miles northwest of Collinsville, Hartford County.
Drainage area.- 32.0 square miles.
Remarks.- Elevations of reservoir surface are for 8 a.m. Elevation of crest of spillway, 485.0 feet. Gain or loss in storage is for 24-hour period prior to 8 a.m. Diversions for Hartford water supply are for calendar day. Data furnished by Water Bureau of the Metropolitan District Commission, Hartford, Conn.

Elevation, in feet, gain or loss in storage, in millions of gallons, and diversions, in millions of gallons, 1938

Day	September			October		
	Elevation	Gain or loss in storage	Diversion	Elevation	Gain or loss in storage	Diversion
1	484.36	-8.2	25.0	484.54	+8.2	25.0
2	484.29	-19.2	25.0	484.56	+5.5	25.0
3	484.24	-13.7	25.0	484.56	0	25.0
4	484.18	-16.4	25.0	484.57	+2.7	25.0
5	484.08	-27.4	25.0	484.57	0	25.0
6	484.03	-13.7	25.0	484.57	0	25.0
7	483.98	-13.7	25.0	484.57	0	25.0
8	483.91	-19.1	25.0	484.57	0	25.0
9	483.85	-16.4	25.0	484.56	-2.7	25.0
10	483.78	-19.1	25.0	484.55	-2.7	25.0
11	483.69	-24.5	25.0	484.53	-5.5	25.0
12	483.64	-13.6	25.6	484.52	-2.7	25.0
13	483.58	-16.3	28.0	484.51	-2.7	25.0
14	483.52	-16.3	27.3	484.53	+5.5	25.0
15	483.51	-2.7	25.0	484.53	0	25.0
16	483.48	-8.2	25.0	484.54	+2.7	25.0
17	483.41	-19.0	25.0	484.54	0	25.0
18	483.39	-5.4	25.0	484.52	-5.5	25.0
19	483.48	+24.4	26.6	484.50	-5.5	25.0
20	483.98	+136.3	28.0	484.48	-5.5	25.0
21	485.40	+391.1	16.3	484.62	+38.5	25.0
22	486.92	+425.3	0	484.79	+46.8	25.0
23	485.74	-330.8	9.4	484.77	-5.5	25.0
24	485.35	-108.5	25.0	484.90	+35.8	25.0
25	485.10	-69.3	25.0	484.84	-16.5	25.0
26	484.95	-41.5	25.0	484.68	-44.1	25.0
27	484.74	-57.9	25.0	484.42	-71.5	25.0
28	484.50	-66.0	25.0	484.14	-76.8	25.0
29	484.46	-11.0	25.0	483.87	-73.8	25.0
30	484.51	+13.7	25.0	483.78	-24.6	25.0
31				483.81	+8.2	25.0

	September	October
Gain or loss in storage, in millions of gallons	+32.9	-191.7
Diversion in millions of gallons	711.2	775.0

Burlington Brook near Burlington, Conn.

Location.- Water-stage recorder and artificial control, lat. 41°47'10", long. 72°57'55", 1¼ miles north of Burlington, Hartford County, 2⅝ miles above mouth, and 3 miles southwest of Collinsville.
Drainage area.- 4.1 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Artificial control consists of a sharp-edged orifice 1 foot square and a sharp-crested rectangular weir 12 feet long with end contractions 5 feet high. Crest of weir is at gage height of 1.02 feet, 1.02 feet above bottom edge of orifice. Rating curve developed from formula and coefficients and checked by current-meter measurements below 321 second-feet.
Maxima.- September 1938: Discharge, 645 second-feet 6:30 p.m. Sept. 21 (gage height, 7.24 feet).
1931 to August 1938: Discharge, 503 second-feet Mar. 12, 1936 (gage height, 6.58 feet).
Remarks.- Flood run-off not affected by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	2.90	6.85	9	2.21	5.02	17	2.77	4.55	25	11.6	16.6
2	2.46	6.30	10	2.13	5.02	18	4.44	4.55	26	10.0	8.63
3	2.33	6.03	11	2.09	4.78	19	22.2	4.55	27	9.08	7.41
4	2.33	5.77	12	2.09	4.78	20	44.1	4.78	28	8.33	6.57
5	2.13	5.52	13	2.67	4.78	21	219	15.1	29	7.59	8.32
6	2.05	5.52	14	2.29	6.30	22	61.8	7.41	30	7.41	7.13
7	2.31	5.26	15	3.16	5.52	23	21.1	6.03	31		6.30
8	2.62	5.26	16	2.93	4.78	24	15.0	15.3			
Mean monthly discharge, in second-feet										16.1	6.80
Run-off, in inches										4.38	1.91

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.16	6.03	1.16	6.03	1.83	34.3	2.31	64	3.37	145	1.67	26.0
2	1.15	5.77	1.24	8.32	1.78	31.6	2.29	62	3.12	125	1.66	25.5
3	1.14	5.52	1.32	11.0	1.74	29.5	2.39	69	2.93	109	1.64	24.5
4	1.12	5.02	1.37	12.8	1.73	29.0	2.68	90	2.77	97	1.63	24.0
5	1.11	4.78	1.42	14.7	1.72	28.5	2.96	111	2.61	85	1.62	23.5
6	1.11	4.78	1.48	17.2	1.71	27.9	3.11	124	2.51	77	1.61	23.0
7	1.10	4.55	1.51	18.5	1.72	28.5	3.19	130	2.40	70	1.60	22.5
8	1.09	4.33	1.53	19.4	1.74	29.5	3.26	136	2.32	64	1.59	22.1
9	1.09	4.33	1.54	19.8	1.76	30.6	3.41	149	2.25	60	1.58	21.6
10	1.08	4.13	1.53	19.4	1.78	31.6	3.73	177	2.18	55	1.57	21.2
11	1.08	4.13	1.52	18.9	1.82	33.7	4.00	202	2.13	52	1.57	21.2
N	1.08	4.13	1.53	19.4	1.89	37.6	4.17	218	2.08	48.8	1.56	20.7
1	1.08	4.13	1.54	19.8	1.97	42.2	4.21	222	2.04	46.4	1.56	20.7
2	1.07	3.93	1.57	21.2	2.13	52	4.09	211	1.99	43.4	1.55	20.3
3	1.07	3.93	1.61	23.0	2.26	60	3.91	194	1.95	41.0	1.54	19.8
4	1.07	3.93	1.66	25.5	2.31	64	3.85	188	1.92	39.3	1.53	19.4
5	1.07	3.93	1.72	28.5	2.29	62	5.35	340	1.88	37.0	1.53	19.4
6	1.07	3.93	1.76	30.6	2.27	61	7.01	590	1.85	35.4	1.52	18.9
7	1.07	3.93	1.80	32.6	2.23	58	7.00	588	1.81	33.2	1.51	18.5
8	1.07	3.93	1.84	34.8	2.20	56	6.20	438	1.78	31.6	1.50	18.0
9	1.07	3.93	1.87	36.5	2.21	57	5.30	334	1.76	30.6	1.50	18.0
10	1.07	3.93	1.90	38.1	2.27	61	4.60	261	1.74	29.5	1.49	17.6
11	1.09	4.33	1.87	36.5	2.30	63	4.09	211	1.71	27.9	1.48	17.2
M	1.12	5.02	1.86	35.9	2.32	64	3.70	174	1.69	26.9	1.48	17.2
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.47	16.8	1.36	12.4	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71
4	1.46	16.4	1.36	12.4	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71
6	1.45	16.0	1.35	12.1	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71
8	1.45	16.0	1.35	12.1	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71
10	1.44	15.6	1.35	12.1	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71
N	1.43	15.1	1.34	11.7	1.30	10.3	1.27	9.27	1.24	8.32	1.22	7.71
2	1.42	14.7	1.33	11.4	1.30	10.3	1.27	9.27	1.24	8.32	1.22	7.71
4	1.41	14.3	1.33	11.4	1.29	9.93	1.27	9.27	1.24	8.32	1.22	7.71
6	1.39	13.6	1.32	11.0	1.28	9.60	1.25	8.63	1.23	8.00	1.21	7.41
8	1.38	13.2	1.31	10.6	1.27	9.27	1.25	8.63	1.23	8.00	1.21	7.41
10	1.37	12.8	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71	1.20	7.13
M	1.37	12.8	1.30	10.3	1.27	9.27	1.25	8.63	1.22	7.71	1.20	7.13

Supplemental records:- Sept. 21, 12:40 p.m., 4.22 ft., 223 sec.-ft.; 3:50 p.m., 3.78 ft., 182 sec.-ft.; 6:30 p.m., 7.24 ft., 645 sec.-ft.

South Branch of Park River at Hartford, Conn.

Location.- Water-stage recorder, lat. 41°44'02", long. 72°42'51", at Newfield Avenue bridge, Hartford, Hartford County, 0.7 mile below Trout Brook and 3.3 miles above junction with North Branch of Park River. Zero of gage is 31.07 feet above mean sea level (general adjustment of 1929).

Drainage area.- 40.6 square miles.

Gage-height record.- Water-stage recorder graph; adjusted for variable intake drawdown 6 a.m. Sept. 21 to 8 a.m. Sept. 22.

Stage-discharge relation.- Seriously affected by rate of change of stage above gage height 5 feet. Base rating for no change in stage prior to 7 p.m. Sept. 22 defined by current-meter measurements corrected for changing stage below 1,100 second-feet; extended to peak stage on basis of comparison with flow of North Branch of Park River and Park River. Base rating subsequent to 11 p.m. Sept. 22 defined by current-meter measurements corrected for changing stage. Transition rating used 7 to 11 p.m. Sept. 22. Above gage height 5 feet, rather poorly defined rating curves developed for different rates of change of stage on basis of results of several varying-stage measurements. Correction applied for backwater from unknown source Sept. 1-18 and Oct. 26-31.

Maxima.- September 1938: Discharge, 3,600 second-feet 10 p.m. Sept. 21 (adjusted gage height, 13.6 feet).

1936 to August 1938: Discharge, 2,860 second-feet Jan. 25, 1938 (adjusted gage height, 12.15 feet). Flood of Mar. 12, 1936, reached a stage of 12.1 feet as determined from floodmarks by Hartford city engineers (discharge not determined).

Remarks.- Flood run-off not appreciably affected by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	26	71	9	24	43	17	32	43	25	176	89
2	24	58	10	23	44	18	41	40	26	128	65
3	22	58	11	23	44	19	306	37	27	109	61
4	22	53	12	24	41	20	871	37	28	86	59
5	23	53	13	30	40	21	3,080	60	29	74	60
6	28	50	14	30	47	22	2,060	45	30	70	56
7	26	46	15	42	58	23	519	38	31		53
8	27	43	16	33	42	24	288	63			
Mean monthly discharge, in second-feet										276	51.5
Run-off, in inches										7.59	1.46

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.93		3.40	122	6.47	470	9.55	1,760	13.4	3,490	7.44	765
2	2.80		3.85	162	6.59	525	10.03	2,000	13.25	3,410	7.31	690
3	2.66		4.13	188	6.71	490	10.51	2,210	13.1	3,330	7.16	685
4	2.52		4.45	220	6.76	500	11.05	2,450	12.9	3,230	7.05	640
5	2.42		4.76	251	6.79	475	11.48	2,620	12.65	3,090	6.95	600
6	2.35		5.04	280	6.78	470	11.85	2,760	12.4	2,950	6.86	595
7	2.30		5.23	310	6.77	470	12.15	2,920	12.15	2,810	6.78	590
8	2.27		5.40	330	6.76	465	12.4	3,030	11.85	2,650	6.72	555
9	2.25		5.55	350	6.80	575	12.7	3,170	11.60	2,500	6.65	540
10	2.23		5.68	360	7.01	665	12.95	3,290	11.31	2,330	6.60	520
11	2.21		5.75	355	7.24	765	13.2	3,420	11.02	2,160	6.55	505
N	2.20		5.79	345	7.50	855	13.35	3,470	10.72	1,990	6.51	490
1	2.20		5.77	305	7.73	935	13.4	3,490	10.43	1,850	6.46	475
2	2.19		5.70	260	7.98	1,030	13.35	3,460	10.13	1,680	6.42	465
3	2.19		5.60	260	8.22	1,130	13.3	3,440	9.84	1,520	6.39	460
4	2.19		5.49	260	8.49	1,210	13.25	3,420	9.56	1,350	6.34	450
5	2.18		5.45	320	8.68	1,260	13.25	3,420	9.29	1,260	6.31	435
6	2.17		5.57	355	8.77	1,280	13.3	3,440	9.01	1,100	6.27	425
7	2.17		5.77	380	8.82	1,240	13.35	3,470	8.74	1,020	6.23	420
8	2.17		5.91	385	8.80	1,190	13.45	3,520	8.50	945	6.20	410
9	2.18		6.03	415	8.73	1,200	13.5	3,550	8.25	860	6.15	400
10	2.20		6.16	420	8.84	1,310	13.6	3,600	8.02	860	6.11	385
11	2.25		6.27	435	8.97	1,380	13.55	3,570	7.82	810	6.07	375
M	2.96		6.38	450	9.23	1,580	13.5	3,540	7.62	780	6.02	365
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.92	350	-	-	-	-	-	-	-	-	-	-
4	5.82	335	4.30	205	-	-	-	-	-	-	-	-
6	5.72	320	-	-	3.52	132	3.29	113	2.95	88	2.80	77
8	5.60	310	4.09	184	-	-	-	-	-	-	-	-
10	5.46	295	-	-	-	-	-	-	-	-	-	-
N	5.31	280	3.94	170	3.47	128	3.27	112	2.91	85	2.78	76
2	5.17	270	-	-	-	-	-	-	-	-	-	-
4	5.03	260	3.85	162	-	-	-	-	-	-	-	-
6	4.91	250	-	-	3.42	124	3.22	108	2.91	85	2.76	74
8	4.79	245	3.75	152	-	-	-	-	-	-	-	-
10	4.66	240	-	-	-	-	-	-	-	-	-	-
M	4.53	230	3.63	142	3.32	116	3.03	93	2.83	79	2.60	63

Supplemental records.- Sept. 18, 11:30 p.m., 2.35 ft., 48 sec.-ft.

227907 O—40——14

Park River at Hartford, Conn.

Location.- Water-stage recorder above spillway of timber dam, lat. 41°45'36", long. 72°41'42", at plate girder footbridge on Riverside Street, Hartford, Hartford County, 1,300 feet below junction of North and South Branches of Park River and 2.3 miles above mouth. Zero of gage is 27.13 feet above mean sea level (general adjustment of 1929).

Drainage area.- 74.0 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Prior to Sept. 22, defined by current-meter measurements. Transition curve used 1 to 6 a.m. Sept. 22. From 6 a.m. Sept. 22 until holes opened in dam on Sept. 26, defined by current-meter measurements below 3,700 second-feet; extended to peak stage on basis of previous rating curve. From Sept. 26 until another hole opened in dam on Oct. 10, defined by current-meter measurements. Subsequent to Oct. 10, defined by comparison with flow at stations on North and South Branches of Park River. Backwater from Connecticut River 11 a.m. Sept. 22 to 11 a.m. Sept. 25.

Maxima.- September 1938: Discharge, 5,320 second-feet 3:15 p.m. Sept. 21 (gage height, 8.93 feet); probably a result of concentration of local inflow during hurricane rain; normal maximum, at a slightly lower stage, occurred at 11:30 p.m.

1936 to August 1938: Discharge, 5,650 second-feet Jan. 25, 1938 (gage height, 9.16 feet). Flood of Mar. 12, 1936, reached a stage of 9.0 feet as determined from floodmarks by Hartford city engineers (discharge, 5,400 second-feet). Backwater from Connecticut River on Mar. 21, 1936, caused a stage of 10.7 feet as determined from floodmarks.

Remarks.- Flood run-off probably not appreciably affected by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	34	107	9	26	56	17	44	61	25	241	184
2	28	88	10	26	56	18	77	61	26	178	103
3	28	83	11	23	57	19	469	57	27	148	91
4	23	78	12	26	56	20	1,490	61	28	119	85
5	23	76	13	37	56	21	4,620	97	29	104	87
6	28	72	14	37	63	22	3,010	79	30	94	83
7	26	63	15	59	75	23	780	63	31		79
8	32	58	16	44	63	24	376	94			
Mean monthly discharge, in second-feet										408	77.2
Run-off, in inches										6.15	1.20

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.66	84	3.15	261	3.98	678	6.65	2,790	8.79	5,100	-	-
2	2.68	90	3.28	317	4.31	876	6.92	3,060	8.71	4,930	6.71	1,130
3	2.67	87	3.32	335	4.26	846	7.06	3,210	8.61	4,710	-	-
4	2.66	84	3.31	331	4.30	870	7.29	3,460	8.49	4,470	6.84	1,010
5	2.63	76	3.31	331	4.33	888	7.71	3,920	8.37	4,230	-	-
6	2.60	67	3.33	340	4.35	900	7.94	4,170	8.21	3,940	7.00	922
7	2.58	62	3.36	354	4.38	918	8.19	4,450	8.04	3,640	-	-
8	2.56	57	3.39	367	4.41	937	8.46	4,750	7.86	3,460	7.14	840
9	2.55	54	3.43	386	5.02	1,360	8.61	4,930	7.70	3,320	-	-
10	2.54	51	3.47	406	5.16	1,470	8.68	5,020	7.53	3,170	7.27	785
11	2.53	49	3.50	420	5.10	1,420	8.74	5,090	7.38	3,000	-	-
N	2.53	49	3.53	435	5.16	1,470	8.77	5,120	7.23	2,820	7.37	735
1	2.53	49	3.55	445	5.24	1,530	8.73	5,080	7.09	2,690	-	-
2	2.53	49	3.56	450	5.33	1,600	8.75	5,100	6.96	2,560	7.44	685
3	2.53	49	3.58	460	5.45	1,700	8.91	5,290	6.84	2,390	-	-
4	2.53	49	3.80	575	5.57	1,800	8.77	5,120	6.73	2,270	7.50	635
5	2.53	49	3.95	660	5.62	1,840	8.81	5,170	6.65	2,150	-	-
6	2.53	49	3.89	624	5.75	1,940	8.79	5,150	6.58	1,990	7.51	610
7	2.53	49	3.92	642	5.75	1,940	8.79	5,150	6.53	1,870	-	-
8	2.53	49	3.93	648	5.80	1,990	8.78	5,140	6.51	1,760	7.49	560
9	2.53	49	3.92	642	6.26	2,400	8.82	5,180	6.50	1,650	-	-
10	2.58	62	3.93	648	6.13	2,290	8.85	5,220	6.51	1,510	7.45	535
11	3.25	304	3.94	654	6.36	2,500	8.88	5,260	6.54	1,400	-	-
M	3.23	295	3.96	666	6.54	2,680	8.84	5,210	6.59	1,310	7.38	512
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	7.13	445	3.54	275	2.98	192	2.73	152	-	-	-	-
6	-	-	-	-	-	-	-	-	2.62	123	2.54	105
8	6.76	400	3.19	256	2.95	181	2.72	150	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	6.24	355	3.10	236	2.86	174	2.71	147	2.59	116	2.53	103
2	-	-	-	-	-	-	-	-	-	-	-	-
4	5.63	335	3.06	221	2.79	170	2.71	147	-	-	-	-
6	-	-	-	-	-	-	-	-	2.58	114	2.53	103
8	4.95	315	3.03	210	2.78	166	2.70	144	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	4.25	295	3.01	203	2.76	161	2.66	134	2.57	111	2.50	96

Supplemental records.- Sept. 18, 11:30 p.m., 3.44 ft., 391 sec.-ft. Sept. 19, 3:30 p.m., 3.60 ft., 470 sec.-ft.; 4:30 p.m., 4.09 ft., 744 sec.-ft. Sept. 20, 1:30 a.m., 4.42 ft., 944 sec.-ft.; 10:30 p.m., 6.11 ft., 2,270 sec.-ft. Sept. 21, 2:15 p.m., 8.87 ft., 5,240 sec.-ft.; 3:15 p.m., 8.93 ft., 5,320 sec.-ft.; 4:30 p.m., 8.83 ft., 5,200 sec.-ft.; 11:30 p.m., 8.88 ft., 5,260 sec.-ft.

North Branch of Park River at Hartford, Conn.

Location.- Water-stage recorder and masonry control, lat. 41°47'03", long. 72°42'31", 60 feet below stone arch bridge on Albany Avenue, Hartford, Hartford County, and 3 miles above junction with South Branch of Park River. Zero of gage is 34.20 feet above mean sea level (general adjustment of 1929).
Drainage area.- 25.3 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 800 second-feet; extended logarithmically to peak stages; verified by area-velocity studies.
Maxima.- September 1938: Discharge, 1,350 second-feet 10 p.m. Sept. 21 (gage height, 10.07 feet).
1936 to August 1938: Discharge, 1,640 second-feet Jan. 25, 1938 (effective gage height, 11.6 feet).
Flood of Mar. 12, 1936, reached a stage of 11.2 feet as determined from flood-marks by Hartford city engineers (discharge, probably 1,520 second-feet).
Remarks.- Flood run-off probably not appreciably affected by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	5.0	31	9	4.0	13	17	6.6	14	25	48	78
2	4.9	24	10	3.4	12	18	12	13	26	36	36
3	4.2	20	11	3.3	12	19	145	14	27	31	25
4	4.2	18	12	3.3	12	20	465	13	28	28	20
5	4.0	16	13	4.4	12	21	1,210	38	29	24	21
6	3.5	16	14	5.1	13	22	792	26	30	24	20
7	3.6	14	15	7.0	18	23	187	19	31		16
8	4.3	14	16	9.1	16	24	80	34			
Mean monthly discharge, in second-feet										105	20.9
Run-off, in inches										4.63	0.95

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	2.10	39	3.14	264	7.05	842	9.77	1,300	3.41	358
2	1.54	8.2	2.11	40	3.17	274	7.50	910	9.54	1,260	3.30	320
3	-	-	2.10	39	3.20	285	7.92	983	9.25	1,210	3.21	288
4	1.54	8.2	2.33	66	3.24	299	8.32	1,050	8.95	1,160	3.12	257
5	-	-	2.41	79	3.26	306	8.71	1,110	8.63	1,100	3.06	237
6	1.55	8.5	2.43	82	3.28	313	9.03	1,170	8.31	1,050	3.02	224
7	-	-	2.50	94	3.31	324	9.21	1,200	7.99	994	2.96	205
8	1.58	9.4	2.57	107	3.33	330	9.39	1,230	7.67	940	2.92	193
9	-	-	2.62	117	3.60	395	9.55	1,260	7.37	890	2.89	184
10	1.62	11	2.66	126	4.14	454	9.60	1,270	7.06	844	2.86	176
11	-	-	2.69	133	4.45	490	9.63	1,270	6.74	796	2.83	168
N	1.66	12	2.70	135	4.68	517	9.60	1,270	6.41	751	2.81	163
1	-	-	2.71	138	4.89	539	9.54	1,260	6.11	706	2.79	158
2	1.68	13	2.71	138	5.01	556	9.42	1,240	5.80	665	2.76	150
3	-	-	2.71	138	5.08	563	9.34	1,220	5.51	622	2.74	145
4	1.67	13	2.71	138	5.14	571	9.60	1,270	5.22	583	2.72	140
5	-	-	3.01	220	5.15	572	9.83	1,310	4.93	544	2.70	135
6	1.65	12	3.03	227	5.16	574	9.87	1,320	4.68	517	2.69	133
7	-	-	3.04	230	5.11	566	9.91	1,320	4.44	489	2.67	128
8	1.63	11	3.07	240	5.02	557	9.97	1,330	4.23	463	2.65	124
9	-	-	3.12	257	5.20	580	10.03	1,340	4.03	443	2.63	120
10	1.62	11	3.14	264	5.55	628	10.07	1,350	3.83	418	2.61	115
11	1.83	21	3.15	268	5.90	680	10.05	1,350	3.69	404	2.60	113
M	2.14	43	3.15	268	6.56	769	9.95	1,330	3.54	386	2.59	111
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.55	104	-	-	-	-	-	-	-	-	-	-
4	2.51	96	2.23	53	-	-	-	-	-	-	-	-
6	2.49	92	-	-	2.08	38	-	-	-	-	-	-
8	2.45	86	2.20	49	-	-	-	-	-	-	-	-
10	2.42	80	-	-	-	-	-	-	-	-	-	-
N	2.40	77	2.18	47	2.05	36	*1.99	*31	*1.95	*28	*1.89	*24
2	2.38	74	-	-	-	-	-	-	-	-	-	-
4	2.35	70	2.16	45	-	-	-	-	-	-	-	-
6	2.33	66	-	-	2.04	35	-	-	-	-	-	-
8	2.31	64	2.13	42	-	-	-	-	-	-	-	-
10	2.29	61	-	-	-	-	-	-	-	-	-	-
M	2.27	58	2.11	40	2.02	33	-	-	-	-	-	-

Supplemental records.- Sept. 18, 10:45 p.m., 1.65 ft., 12 sec.-ft.; 11:30 p.m., 2.27 ft., 58 sec.-ft. Sept. 19, 3:15 a.m., 2.29 ft., 61 sec.-ft. Sept. 20, 8:30 p.m., 5.00 ft., 555 sec.-ft. Sept. 21, 3:30 p.m., 9.31 ft., 1,220 sec.-ft.
* Mean for the day.

Hockanum River at outlet of Shenipsit Lake, at Rockville, Conn.

Location.- Staff gage at dam, lat. 41°52'06", long. 72°25'56", three-quarters of a mile east of Rockville, Tolland County.
Drainage area.- 16.5 square miles.
Gage-height record.- One reservoir gage reading daily in morning, except Sundays. Additional hourly readings taken at times during high floods. Gage height at midnight determined from graph constructed from gage-height readings.
Stage-discharge relation.- Observed discharge computed from flow over spillway and through pumps, venturi meter, wheel, and gate.
Maxima.- September 1938: Unadjusted discharge, 1,500 second-feet 5:30 p.m. Sept. 21 (head on dam, 4.23 feet, from floodmarks).
Previous maximum stage of record occurred on Feb. 14, 1886, when a head of 1.6 feet was reached on the same dam.
Remarks.- Mean daily and monthly discharges adjusted for gain or loss in storage in Shenipsit Lake. No adjustments for evaporation from lake surface. Basic data furnished by Rockville Water & Aqueduct Co.

Mean discharge, in second-feet, and gain or loss in storage, in equivalent mean second-feet, 1938

Day	September			October		
	Observed discharge	Gain or loss in storage	Adjusted discharge	Observed discharge	Gain or loss in storage	Adjusted discharge
1	32	-	-	136	-41	95
2	31	-	-	43	-15	28
3	12	-	-	10	+53	63
4	0	-	-	10	+24	34
5	0	-	-	9	+21	30
6	29	-	-	9	+9	18
7	31	-	-	18	+6	24
8	33	*-18	*4	22	0	22
9	33	-	-	14	0	14
10	14	-	-	31	-12	19
11	0	-	-	37	-24	13
12	30	-	-	41	-30	11
13	31	-	-	30	-12	18
14	30	-	-	21	0	21
15	30	-	-	21	+18	39
16	30	-19	11	5	+33	38
17	12	+5	17	28	-12	16
18	0	+19	19	32	-21	11
19	29	+248	277	26	-12	14
20	200	+1,110	1,310	26	-12	14
21	1,130	+810	1,940	26	-3	23
22	959	-674	285	16	+9	25
23	531	-333	198	0	+18	18
24	342	-205	137	12	+53	65
25	254	-97	157	13	+38	51
26	212	-98	114	13	+25	38
27	200	-94	106	13	+9	22
28	163	-63	100	12	+32	44
29	138	-42	96	13	+3	16
30	136	-47	89	31	-19	12
				28	-6	22

	September	October
Mean monthly discharge, in second-feet (observed)	156	24.1
Run-off, in inches (observed)	10.54	1.68
Mean monthly discharge, in second-feet (adjusted)	164	28.3
Run-off, in inches (adjusted)	11.09	1.98

* Mean for 15-day period.

Hockanum River near East Hartford, Conn.

Location.- Water-stage recorder, lat. 41°46'57", long. 72°35'20", at Case & Marshall paper mill, 1½ miles below confluence with South Branch of Hockanum River and 2 3/4 miles east of East Hartford, Hartford County.

Drainage area.- 74.5 square miles.

Gage-height record.- Water-stage recorder graph except for periods 9 a.m. to 5 p.m. Sept. 21 and 9 p.m. Sept. 21 to 2 a.m. Sept. 22, records for which were based on two floodmarks; 3 p.m. Sept. 22 to 12 p.m. Sept. 25 (intake partially plugged), record for which was based on shape of graph as recorded and one inspection; and Sept. 26 to Oct. 31 (intake plugged), when discharge was computed on basis of record for stations on Scantic River at Broad Brook and Willimantic River near South Coventry.

Stage-discharge relation.- Defined by current-meter measurements below 2,100 second-feet for rating used prior to peak of Sept. 21 and below 600 second-feet for rating used thereafter; extended to peak stages on basis of two determinations of flow over Case & Marshall mill dam just above gage and one determination of flow over dam 1 mile below gage.

Maxima.- September 1938: Discharge, 5,160 second-feet 2 p.m. Sept. 21 (gage height, 13.78 feet, from floodmark).
1919-21, 1928 to August 1938: Discharge, 2,140 second-feet Jan. 25, 1938 (gage height, 8.79 feet).

Remarks.- Run-off affected by storage and diversions. For information on storage see record for Hockanum River at outlet of Shenipsit Lake at Rockville, Conn. Distribution of run-off also affected by failure of dams upstream.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	85	280	9	111	150	17	70	190	25	567	260
2	116	260	10	62	190	18	50	190	26	460	220
3	78	240	11	40	180	19	377	180	27	380	190
4	46	220	12	45	180	20	1,840	180	28	340	160
5	33	220	13	73	170	21	4,300	170	29	320	100
6	42	220	14	76	170	22	3,150	90	30	300	60
7	58	200	15	120	130	23	1,420	80	31		158
8	81	160	16	123	110	24	791	200			
Mean monthly discharge, in second-feet										518	178
Run-off, in inches										7.75	2.76

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	1.91	97	3.93	426	10.78	3,150	13.42	4,840	9.5	1,940
2	1.46	52	2.01	109	3.78	396	10.82	3,180	13.18	4,640	9.4	1,880
3	-	-	2.28	142	3.70	380	10.99	3,270	12.93	4,440	9.25	1,800
4	1.44	51	2.63	192	3.61	362	11.20	3,380	12.67	4,240	9.15	1,760
5	-	-	2.84	224	3.67	374	11.49	3,540	12.41	4,030	9.05	1,700
6	1.43	50	3.04	256	3.80	400	11.75	3,690	12.13	3,800	8.95	1,660
7	-	-	3.50	340	4.19	482	12.02	3,850	11.92	3,640	8.85	1,600
8	1.43	50	3.73	386	4.32	513	12.29	4,030	11.71	3,470	8.75	1,560
9	-	-	3.91	422	4.77	621	12.58	4,240	11.49	3,290	8.65	1,500
10	1.42	49	4.10	462	5.50	810	12.88	4,450	11.30	3,140	8.55	1,460
11	-	-	4.24	494	6.49	1,150	13.13	4,640	11.14	3,030	8.45	1,420
N	1.41	48	4.33	515	7.74	1,660	13.42	4,880	11.00	2,930	8.35	1,380
1	-	-	4.37	525	8.90	2,190	13.70	5,100	10.83	2,810	8.25	1,340
2	1.40	47	4.36	522	9.79	2,640	13.78	5,160	10.71	2,730	8.15	1,300
3	-	-	4.31	510	10.66	3,090	13.71	5,110	10.58	2,640	8.05	1,260
4	1.41	48	4.22	489	11.40	3,500	13.50	4,940	10.45	2,540	8.0	1,240
5	-	-	4.02	444	11.71	3,670	13.20	4,700	10.35	2,480	7.9	1,210
6	1.43	50	4.01	442	11.68	3,650	12.91	4,470	10.25	2,400	7.8	1,180
7	-	-	4.01	442	11.44	3,520	12.90	4,460	10.15	2,340	7.7	1,140
8	1.44	51	4.01	442	11.09	3,320	12.91	4,470	10.0	2,240	7.6	1,100
9	-	-	4.02	444	10.76	3,140	13.05	4,580	9.9	2,180	7.55	1,090
10	1.45	52	4.02	444	10.70	3,110	13.33	4,800	9.8	2,120	7.45	1,060
11	1.48	54	4.02	444	10.60	3,060	13.52	4,960	9.7	2,060	7.35	1,020
M	1.59	64	4.03	447	10.62	3,070	13.57	5,000	9.6	2,000	7.3	1,010
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.15	965	-	-	-	-	-	-	-	-	-	-
4	7.0	920	5.8	616	-	-	-	-	-	-	-	-
6	6.85	878	-	-	-	-	-	-	-	-	-	-
8	6.7	836	5.65	583	-	-	-	-	-	-	-	-
10	6.6	810	-	-	-	-	-	-	-	-	-	-
N	6.45	771	5.55	562	*5.0	*460	*4.6	*380	*4.4	*340	*4.2	*320
2	6.35	745	-	-	-	-	-	-	-	-	-	-
4	6.25	720	5.45	542	-	-	-	-	-	-	-	-
6	6.15	696	-	-	-	-	-	-	-	-	-	-
8	6.05	672	5.35	522	-	-	-	-	-	-	-	-
10	6.0	660	-	-	-	-	-	-	-	-	-	-
M	5.9	638	5.30	512	-	-	-	-	-	-	-	-

Supplemental records.- Sept. 20, 5:30 p.m., 11.74 ft., 3,680 sec.-ft. Sept. 21, 11:30 p.m., 13.58 ft., 5,000 sec.-ft.

* Mean for the day.

Salmon River near East Hampton, Conn.

Location.- Water-stage recorder, lat. 41°33'14", long. 72°27'00", at Comstock Bridge, on Hartford-Middlesex County line, 3½ miles southeast of East Hampton, Middlesex County.
Drainage area.- 105 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,450 second-feet; extended to peak stage on basis of determination of peak flow over spillway of dam half a mile upstream.
Maxima.- September 1938: Discharge 12,400 second-feet 8 a.m. Sept. 21 (gage height, 10.96 feet).
1905-6, 1928 to August 1938: Discharge, 6,250 second-feet Mar. 12, 1936 (gage height, 6.98 feet, ice jam).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	73	500	9	60	225	17	142	186	25	697	450
2	67	408	10	52	215	18	310	179	26	571	331
3	64	349	11	48	205	19	2,080	176	27	495	253
4	60	312	12	46	205	20	4,280	173	28	434	222
5	57	292	13	84	202	21	8,720	195	29	392	232
6	52	264	14	84	199	22	2,990	192	30	442	215
7	52	250	15	158	199	23	1,320	173	31		189
8	71	236	16	205	195	24	911	309			
Mean monthly discharge, in second-feet										834	249
Run-off, in inches										8.86	2.73

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.34	198	2.54	835	4.60	3,040	6.58	6,460	7.24	5,380	4.12	1,660
2	1.34	198	2.75	1,000	4.68	3,150	6.79	6,880	6.92	4,910	4.07	1,610
3	1.34	198	3.24	1,440	4.71	3,190	7.12	7,560	6.60	4,460	4.02	1,570
4	1.33	194	3.70	1,900	4.73	3,220	7.72	8,880	6.40	4,200	3.98	1,530
5	1.32	191	3.99	2,250	4.72	3,210	8.82	9,940	6.20	3,940	3.94	1,500
6	1.32	191	4.21	2,510	4.69	3,170	9.30	11,000	6.02	3,710	3.90	1,470
7	1.31	188	4.22	2,520	4.67	3,140	10.16	11,900	5.83	3,470	3.86	1,440
8	1.31	188	4.20	2,500	4.65	3,110	10.96	12,400	5.71	3,320	3.83	1,410
9	1.31	188	4.13	2,420	4.64	3,100	10.76	11,900	5.52	3,090	3.80	1,390
10	1.30	184	4.04	2,310	4.74	3,240	10.58	11,500	5.42	2,970	3.75	1,350
11	1.30	184	3.97	2,220	5.03	3,670	10.16	10,600	5.22	2,750	3.72	1,330
N	1.30	184	3.89	2,130	5.60	4,600	9.72	9,740	5.13	2,650	3.70	1,310
1	1.41	223	3.80	2,020	6.09	5,480	9.16	8,620	5.02	2,530	3.65	1,270
2	1.56	282	3.72	1,920	6.37	6,040	8.61	7,600	4.91	2,410	3.62	1,250
3	1.81	395	3.60	1,800	6.30	5,900	8.21	6,940	4.81	2,310	3.60	1,230
4	1.97	475	3.52	1,720	6.22	5,740	8.62	7,620	4.73	2,230	3.56	1,200
5	2.02	501	3.62	1,820	6.02	5,360	8.89	8,100	4.64	2,140	3.52	1,170
6	1.99	485	3.73	1,940	5.87	5,090	9.03	8,360	4.55	2,050	3.50	1,160
7	1.95	465	3.92	2,160	5.85	5,050	8.89	8,100	4.48	1,980	3.46	1,130
8	1.93	455	4.13	2,420	5.85	5,050	8.79	7,920	4.42	1,930	3.43	1,110
9	1.92	450	4.30	2,620	5.82	5,000	8.52	7,440	4.35	1,860	3.42	1,100
10	1.93	455	4.40	2,760	5.79	4,940	8.38	7,210	4.29	1,810	3.40	1,090
11	2.05	518	4.45	2,830	5.86	5,070	8.02	6,630	4.22	1,750	3.37	1,070
M	2.33	690	4.50	2,900	6.20	5,700	7.64	6,020	4.18	1,710	3.34	1,050
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.32	1,030	2.92	772	-	-	-	-	-	-	-	-
4	3.29	1,010	2.89	754	2.63	602	2.47	515	-	-	-	-
6	3.24	978	2.87	742	-	-	-	-	2.34	450	2.24	403
8	3.22	964	2.84	724	2.60	585	2.45	505	-	-	-	-
10	3.18	936	2.82	712	-	-	-	-	-	-	-	-
N	3.13	901	2.79	694	2.58	574	2.43	495	2.31	435	2.22	394
2	3.11	887	2.77	682	-	-	-	-	-	-	-	-
4	3.06	856	2.74	664	2.54	552	2.41	485	-	-	-	-
6	3.02	832	2.72	652	-	-	-	-	2.27	416	2.19	380
8	3.00	820	2.70	640	2.52	541	2.39	475	-	-	-	-
10	2.97	802	2.68	629	-	-	-	-	-	-	-	-
M	2.94	784	2.65	612	2.50	530	2.36	460	2.25	408	2.18	376

East Branch of Eightmile River near North Lyme, Conn.

Location.- Water-stage recorder, lat. 41°25'40", long. 72°20'05", at highway bridge, 0.4 mile above confluence with West Branch of Eightmile River, and 1.1 miles north of North Lyme, New London County, Conn.
Drainage area.- 22.0 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 300 second-feet; extended to peak stage on basis of study of flow at control section. A constriction of the channel immediately above the gage changed conditions of flow and caused flow to occur at the gage at stages probably less than critical depth for discharges greater than about 1,000 second-feet. Excessive velocities, probably greater than critical, caused sufficient scour to produce the change in stage-discharge relation which was assumed to have been completed at the time of peak stage.
Maxima.- September 1938: Discharge, 2,950 second-feet 1 p.m. Sept. 21 (gage height, 7.00 feet, affected by constriction of channel above gage).
September 1937 to August 1938: Discharge, 1,010 second-feet Nov. 29, 1937 (gage height, 5.25 feet).
Remarks.- Flood run-off affected by storage in a few small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	17	109	9	14	51	17	25	40	25	171	108
2	12	97	10	12	48	18	58	37	26	136	96
3	5.6	82	11	10	46	19	219	36	27	115	66
4	13	72	12	10	45	20	721	36	28	106	54
5	13	66	13	15	43	21	1,480	38	29	95	64
6	12	62	14	19	45	22	750	38	30	93	70
7	12	58	15	26	46	23	359	35	31	-	58
8	16	53	16	34	42	24	230	43			
Mean monthly discharge, in second-feet										160	57.5
Run-off, in inches										8.11	3.01

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.16	41	1.64	90	3.83	559	4.10	640	3.95	1,130	-	-
2	1.19	43	1.72	100	3.91	583	4.22	676	4.02	1,150	3.26	463
3	1.21	45	1.81	111	4.01	613	4.51	763	4.00	1,150	-	-
4	1.23	47	1.88	121	4.09	637	4.73	830	3.56	990	3.19	442
5	1.24	48	1.94	130	4.25	685	4.96	911	4.50	910	-	-
6	1.25	48	1.98	135	4.40	730	5.19	992	4.35	850	3.10	415
7	1.26	49	2.01	140	4.51	763	5.43	1,080	4.28	822	-	-
8	1.26	49	2.04	144	4.57	781	5.35	1,250	4.19	786	3.00	385
9	1.26	49	2.06	147	4.59	787	5.40	1,500	4.15	770	-	-
10	1.27	50	2.12	156	4.62	796	5.77	1,750	4.07	740	2.94	367
11	1.27	50	2.16	163	4.63	799	6.30	2,200	3.97	704	-	-
N	1.30	53	2.20	169	4.66	808	6.70	2,750	3.91	684	2.89	352
1	1.33	56	2.24	176	4.65	805	7.00	2,950	3.88	673	-	-
2	1.35	58	2.28	183	4.61	792	6.76	2,900	3.83	656	2.81	332
3	1.37	60	2.32	190	4.58	784	6.42	2,600	3.78	638	-	-
4	1.39	62	2.45	213	4.54	772	5.74	2,150	3.74	624	2.73	312
5	1.43	66	2.52	226	4.50	760	4.50	1,430	3.70	610	-	-
6	1.46	70	2.69	259	4.46	748	4.50	1,430	3.65	592	2.68	300
7	1.49	73	2.82	286	4.41	733	4.02	1,150	3.61	578	-	-
8	1.52	76	3.16	365	4.36	718	4.12	1,210	3.56	561	2.62	285
9	1.54	78	3.44	442	4.32	706	4.16	1,250	3.51	544	-	-
10	1.57	82	3.58	484	4.25	685	4.14	1,230	3.48	533	2.58	276
11	1.60	85	3.68	514	4.19	667	4.02	1,150	3.42	512	-	-
M	1.62	87	3.74	532	4.13	649	3.90	1,110	3.36	493	2.54	268
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	2.48	256	2.12	187	-	-	-	-	-	-	-	-
6	-	-	-	-	1.85	142	1.68	118	1.61	109	1.51	97
8	2.42	244	2.06	176	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	2.34	228	2.02	169	1.80	135	1.64	113	1.58	106	1.49	95
2	-	-	-	-	-	-	-	-	-	-	-	-
4	2.26	212	1.98	163	-	-	-	-	-	-	-	-
6	-	-	-	-	1.75	128	1.62	111	1.55	102	1.46	92
8	2.22	205	1.94	156	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	2.17	196	1.90	150	1.72	124	1.62	111	1.53	100	1.44	89

Supplemental records.- Sept. 21, 8:15 a.m., 5.28 ft.; 1:10 p.m., 6.67 ft.

West Branch of Eightmile River near North Lyme, Conn.

Location.- Staff gage, lat. 41°25'55", long. 72°20'10", at highway bridge 300 feet above confluence with East Branch of Eightmile River, 1½ miles north of North Lyme, New London County, and 5½ miles above confluence with Connecticut River.
Drainage area.- 19.2 square miles.
Gage-height record.- Graph based on one or two gage readings daily.
Stage-discharge relation.- Defined by current-meter measurements below 225 second-feet; extended to peak stage on basis of determination of flood flow through bridge half a mile upstream and study of run-off for station on East Branch of Eightmile River near North Lyme.
Maxima.- September 1938: Discharge, 1,810 second-feet 10 to 11 a.m. Sept. 21 (gage height, 8.2 feet, from floodmarks).
September 1937 to August 1938: Discharge, 1,020 second-feet Nov. 29, 1937 (gage height, 6.8 feet, from floodmarks).
Remarks.- Flood run-off not affected by artificial storage. Shaw Lake (Lake Hayward) controls headwater run-off to some extent.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	17	120	9	10	48	17	18	39	25	176	124
2	15	89	10	8.8	46	18	68	37	26	146	67
3	13	76	11	7.5	44	19	245	36	27	117	54
4	12	68	12	6.7	44	20	557	37	28	100	51
5	11	62	13	11	43	21	1,310	42	29	87	76
6	8.8	58	14	12	44	22	726	37	30	106	57
7	9.2	54	15	19	44	23	332	35	31	-	47
8	13	50	16	23	41	24	226	56			
Mean monthly discharge, in second-feet										147	55.7
Run-off, in inches										8.55	3.34

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	--	--	--	--	--	--	5.2	495	--	--	--	--
2	--	--	--	--	--	--	5.25	508	6.85	1,040	--	--
3	1.55	40	2.9	165	5.3	520	5.4	545	--	--	4.75	400
4	--	--	--	--	--	--	5.8	655	6.7	980	--	--
5	--	--	--	--	--	--	6.4	860	--	--	--	--
6	1.6	45	3.2	190	5.6	595	7.0	1,110	6.5	900	4.6	373
7	--	--	--	--	--	--	7.6	1,430	--	--	--	--
8	--	--	--	--	--	--	7.9	1,610	6.3	820	--	--
9	1.6	45	3.35	204	5.7	625	8.1	1,740	--	--	4.45	348
10	--	--	--	--	--	--	8.2	1,810	6.1	750	--	--
11	--	--	--	--	--	--	8.2	1,810	--	--	--	--
N	1.7	55	3.5	219	5.65	610	8.15	1,780	5.9	685	4.3	324
1	--	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	8.05	1,700	5.75	640	--	--
3	1.8	66	3.75	248	5.55	582	--	--	--	--	4.15	302
4	--	--	--	--	--	--	7.85	1,580	5.55	582	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--
6	2.0	89	4.05	287	5.4	545	7.65	1,460	5.4	545	4.05	287
7	--	--	--	--	--	--	--	--	--	--	--	--
8	--	--	--	--	--	--	7.5	1,370	5.25	508	--	--
9	2.3	119	4.5	356	5.25	508	--	--	--	--	3.95	274
10	--	--	--	--	--	--	7.25	1,240	5.1	470	--	--
11	--	--	--	--	--	--	--	--	--	--	--	--
M	2.6	141	4.95	440	5.2	495	7.05	1,140	4.95	440	3.85	260
	September 24		September 25		September 26		September 27		September 28		September 29	
2	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--	--	--	--	--
6	3.7	242	3.15	184	2.9	154	--	--	--	--	--	--
8	--	--	--	--	--	--	2.7	120	2.6	102	2.5	86
10	--	--	--	--	--	--	--	--	--	--	--	--
N	3.55	224	3.05	174	2.85	146	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	2.65	111	2.55	94	2.5	86
6	3.4	209	3.0	168	2.8	138	--	--	--	--	--	--
8	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--
M	3.25	194	2.95	161	2.75	129	2.65	111	2.55	94	2.5	86

Quinnipiac River at Wallingford, Conn.

Location.- Water-stage recorder, lat. 41°26'58", long. 72°50'29", 0.4 mile below Quinnipiac Street bridge, in Wallingford, New Haven County, 2 miles above Worton Brook.
Drainage area.- 109 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,360 second-feet; extended to peak stage on basis of determination of flood flow over dam 1 mile upstream.
Maxima.- September 1938: Discharge, 5,230 second-feet 9 p.m. Sept. 21 (gage height, 9.55 feet).
1930 to August 1938: Discharge, 3,240 second-feet (revised) Mar. 12, 1936 (gage height, 8.2 feet).
Remarks.- Flood run-off affected by storage and regulation in several small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	164	421	9	139	267	17	174	210	25	721	315
2	145	391	10	120	249	18	194	198	26	578	290
3	131	363	11	114	238	19	387	221	27	510	226
4	128	340	12	120	218	20	1,560	212	28	470	201
5	125	318	13	142	243	21	4,400	204	29	434	224
6	131	304	14	147	224	22	3,990	218	30	430	218
7	150	296	15	187	240	23	2,030	190	31		193
8	150	282	16	187	224	24	1,080	212			
Mean monthly discharge, in second-feet										641	256
Run-off, in inches										6.56	2.71

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.59	192	2.20	326	3.60	612	7.94	2,930	9.40	4,960	-	-
2	1.58	190	2.49	387	3.89	676	8.14	3,170	9.39	4,940	7.70	2,680
3	1.57	187	2.62	414	4.01	702	8.28	3,340	9.34	4,860	-	-
4	1.57	187	2.69	428	4.05	712	8.50	3,600	9.28	4,770	7.51	2,490
5	1.57	187	2.69	428	4.10	725	8.89	4,150	9.21	4,660	-	-
6	1.57	187	2.60	410	4.18	745	9.15	4,560	9.14	4,540	7.32	2,340
7	1.57	187	2.50	389	4.31	783	9.29	4,780	9.08	4,450	-	-
8	1.57	187	2.43	374	4.44	822	9.23	4,690	9.02	4,350	7.15	2,200
9	1.57	187	2.36	360	5.10	1,040	9.16	4,580	8.97	4,270	-	-
10	1.57	187	2.27	341	5.78	1,350	9.10	4,480	8.91	4,180	7.00	2,100
11	1.57	187	2.19	324	5.93	1,420	9.05	4,400	8.88	4,130	-	-
N	1.55	182	2.12	309	6.35	1,660	9.00	4,320	8.83	4,060	6.86	2,000
1	1.53	177	2.07	299	6.87	2,010	8.97	4,270	8.77	3,980	-	-
2	1.52	174	2.05	295	7.14	2,200	8.96	4,260	8.71	3,890	6.72	1,900
3	1.52	174	2.08	301	7.23	2,260	9.09	4,460	8.62	3,770	-	-
4	1.53	177	2.11	307	7.24	2,270	9.13	4,530	8.54	3,660	6.56	1,790
5	1.53	177	2.19	324	7.23	2,260	9.17	4,590	8.44	3,530	-	-
6	1.53	177	2.35	358	7.20	2,240	9.31	4,820	8.35	3,420	6.40	1,690
7	1.54	179	2.58	406	7.17	2,220	9.47	5,090	8.26	3,310	-	-
8	1.56	185	2.79	448	7.14	2,200	9.54	5,210	8.17	3,200	6.25	1,600
9	1.61	198	3.00	490	7.21	2,250	9.55	5,230	8.09	3,110	-	-
10	1.71	222	3.22	534	7.20	2,240	9.50	5,140	7.99	2,990	6.09	1,500
11	2.16	318	3.42	574	7.38	2,380	9.45	5,050	7.90	2,880	-	-
M	2.09	303	3.60	612	7.79	2,770	9.42	5,000	7.80	2,780	5.90	1,410
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	3.00	490	-	-
4	5.60	1,260	4.36	798	3.59	610	3.14	518	2.94	478	2.73	436
6	-	-	-	-	-	-	-	-	2.91	472	-	-
8	5.38	1,150	4.21	753	3.50	590	3.09	508	2.90	470	2.69	428
10	-	-	-	-	-	-	-	-	3.01	492	-	-
N	5.16	1,060	4.04	710	3.41	572	3.06	502	2.84	458	2.74	438
2	-	-	-	-	-	-	-	-	2.94	478	-	-
4	4.97	988	3.90	678	3.37	564	3.07	504	2.87	464	2.71	432
6	-	-	-	-	-	-	-	-	-	-	-	-
8	4.74	912	3.78	652	3.30	550	3.10	510	2.83	456	2.70	430
10	-	-	-	-	-	-	-	-	-	-	-	-
M	4.54	852	3.65	623	3.24	538	3.03	496	2.80	450	2.70	430

Supplemental records.- Sept. 28, 1 p.m., 2.82 ft., 454 sec.-ft.

Housatonic River at Coltsville, Mass.

Location.- Water-stage recorder, lat. 42°28'10", long. 73°11'50", in Coltsville, Berkshire County, 1 mile above mouth of Unkamet Brook and 2 miles northeast of city of Pittsfield.
Drainage area.- 57.1 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,260 second-feet; extended to peak stage on basis of determination of flood flow over dam.
Maxima.- September 1938: Discharge, 6,400 second-feet 8:30 p.m. Sept. 21 (gage height, 10.80 feet).
1936 to August 1938: Discharge, 6,000 second-feet (revised) Mar. 18, 1936 (gage height, 10.14 feet).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	72	99	9	40	67	17	72	69	25	242	182
2	75	103	10	33	91	18	66	100	26	210	119
3	34	114	11	30	67	19	157	60	27	210	99
4	33	91	12	49	94	20	1,080	77	28	200	95
5	42	98	13	153	91	21	3,110	116	29	121	112
6	54	98	14	115	84	22	2,200	87	30	108	107
7	41	91	15	142	70	23	565	82	31		105
8	56	58	16	146	51	24	312	131			
Mean monthly discharge, in second-feet										326	94
Run-off, in inches										6.37	1.90

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.87	69	2.85	67	5.00	580	7.10	1,660	9.75	4,460	5.78	906
2	2.86	68	2.87	69	5.52	789	7.15	1,700	9.45	4,020	5.66	852
3	2.85	67	2.85	67	5.93	975	7.17	1,710	9.16	3,620	5.55	802
4	2.85	67	2.87	69	6.07	1,040	7.18	1,720	8.84	3,220	5.45	760
5	2.85	67	2.88	70	6.06	1,040	7.17	1,710	8.56	2,900	5.31	704
6	2.75	57	3.15	104	6.05	1,040	7.21	1,740	8.38	2,700	5.15	640
7	2.63	46	3.40	146	6.17	1,100	7.28	1,790	8.18	2,510	5.11	624
8	2.70	52	3.45	156	6.05	1,035	7.41	1,880	8.03	2,380	5.03	592
9	2.77	59	3.25	120	5.95	985	7.53	1,960	7.93	2,290	4.98	573
10	2.81	63	3.29	126	5.94	980	7.74	2,130	7.78	2,160	4.92	552
11	2.83	65	3.27	123	5.96	990	7.98	2,330	7.65	2,060	4.87	535
N	2.84	66	3.20	112	6.06	1,040	8.15	2,480	7.50	1,940	4.82	519
1	2.83	65	3.27	123	6.10	1,060	8.38	2,710	7.39	1,860	4.77	501
2	2.84	66	3.15	104	6.08	1,050	8.45	2,780	7.25	1,760	4.72	486
3	2.85	67	3.24	118	6.07	1,040	8.55	2,880	7.08	1,650	4.60	448
4	2.85	67	3.38	142	6.08	1,050	8.70	3,050	6.90	1,520	4.35	372
5	2.85	67	3.28	125	6.14	1,080	9.25	3,740	6.81	1,470	4.57	439
6	2.85	67	3.28	125	6.25	1,138	9.90	4,700	6.70	1,400	4.58	442
7	2.85	67	3.47	160	6.40	1,220	10.35	5,470	6.55	1,310	4.57	439
8	2.85	67	3.83	238	6.52	1,290	10.60	5,960	6.43	1,240	4.55	432
9	2.84	66	4.23	338	6.63	1,360	10.63	6,030	6.30	1,160	4.53	426
10	3.06	92	4.35	372	6.75	1,430	10.53	5,820	6.18	1,100	4.51	420
11	2.86	68	4.43	396	6.85	1,490	10.35	5,470	6.05	1,040	4.49	414
M	2.85	67	4.85	528	6.95	1,560	10.06	4,960	5.90	960	4.48	411
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.44	399	3.92	259	3.74	218	3.55	176	3.92	259	3.32	132
4	4.42	393	3.92	259	3.72	213	3.53	172	3.94	264	3.33	133
6	4.38	381	3.90	254	3.80	231	3.52	170	3.94	264	3.34	135
3	4.29	355	3.89	252	3.83	238	3.53	172	3.93	261	3.33	133
10	4.33	367	3.87	247	3.68	205	3.48	162	3.72	213	3.32	132
N	4.06	293	3.85	242	3.79	229	3.65	198	3.58	183	3.33	133
2	3.95	266	3.83	238	3.68	205	3.70	209	3.49	164	3.32	132
4	3.83	238	3.82	236	3.68	205	3.86	245	3.44	154	3.08	94
6	3.84	240	3.79	229	3.64	196	3.91	256	3.44	154	3.05	90
8	3.87	247	3.77	224	3.62	191	3.96	268	3.39	144	3.15	104
10	3.80	231	3.80	231	3.60	187	3.93	261	3.32	132	3.18	109
M	3.91	256	3.74	218	3.58	183	3.96	268	3.37	141	3.20	112

Supplemental records.- Sept. 21, 8:30 p.m., 10.80 ft., 6,400 sec.-ft.

Housatonic River near Great Barrington, Mass.

Location.- Water-stage recorder, lat. 42°13'45", long. 73°21'35", just above highway bridge at Van Deusenville, just above mouth of Williams River and 2 miles north of Great Barrington, Berkshire County. Zero of gage is 683.04 feet above mean sea level (general adjustment of 1929).
Drainage area.- 280 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 6,120 second-feet; extended to peak stage on basis of determinations of flood flow by contracted-opening method and by flow over dam.
Maxima.- September 1938: Discharge, 11,520 second-feet 2 p.m. Sept. 22 (gage height, 11.72 feet).
1913 to August 1938: Discharge, 8,990 second-feet Mar. 19, 1936 (gage height, 10.60 feet).
Remarks.- Flood run-off affected by some artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	332	885	9	341	254	17	541	250	25	3,130	745
2	237	718	10	262	334	18	323	373	26	2,130	745
3	292	635	11	181	428	19	228	358	27	1,600	690
4	89	640	12	130	416	20	1,800	366	28	1,410	610
5	82	568	13	260	408	21	4,530	472	29	1,230	492
6	281	536	14	480	432	22	11,000	568	30	1,000	456
7	304	522	15	517	488	23	9,160	464	31		274
8	304	532	16	663	283	24	5,180	304			
Mean monthly discharge, in second-feet										1,601	492
Run-off, in inches										6.38	2.03

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.77	314	2.43	180	3.75	855	6.15	2,580	11.02	9,410	11.44	10,700
2	2.57	229	2.33	148	3.93	970	6.23	2,640	11.20	9,950	11.41	10,600
3	2.41	173	2.23	121	4.07	1,060	6.28	2,680	11.31	10,800	11.38	10,500
4	2.31	142	2.18	109	4.18	1,130	6.34	2,730	11.38	10,500	11.36	10,400
5	2.26	129	2.14	101	4.35	1,240	6.41	2,790	11.47	10,800	11.33	10,300
6	2.43	180	2.30	139	4.55	1,380	6.51	2,870	11.53	10,900	11.28	10,200
7	2.67	269	2.35	154	4.85	1,600	6.62	2,960	11.57	11,100	11.25	10,100
8	2.76	309	2.30	139	5.05	1,750	6.79	3,110	11.61	11,200	11.21	9,980
9	2.74	300	2.46	190	5.09	1,780	6.87	3,190	11.64	11,300	11.16	9,830
10	2.78	318	2.45	186	5.13	1,810	6.99	3,310	11.69	11,390	11.12	9,710
11	2.85	351	2.44	183	5.18	1,840	7.21	3,530	11.69	11,420	11.07	9,560
N	2.86	356	2.43	180	5.21	1,880	7.42	3,700	11.70	11,450	11.01	9,380
1	3.02	435	2.42	177	5.28	1,920	7.67	3,920	11.71	11,480	10.95	9,200
2	3.17	514	2.39	167	5.35	1,970	7.92	4,130	11.72	11,520	10.90	9,050
3	3.12	486	2.33	148	5.43	2,030	8.42	4,750	11.71	11,480	10.83	8,840
4	3.00	425	2.39	167	5.55	2,120	8.73	5,170	11.69	11,420	10.75	8,600
5	2.89	370	2.38	164	5.59	2,150	9.05	5,630	11.67	11,400	10.66	8,350
6	2.86	356	2.39	167	5.67	2,210	9.33	6,010	11.65	11,300	10.59	8,180
7	2.82	337	2.51	207	5.75	2,270	9.65	6,470	11.62	11,210	10.50	7,950
8	2.84	346	2.75	304	5.85	2,350	10.00	7,080	11.58	11,100	10.43	7,780
9	2.88	365	3.01	430	5.94	2,415	10.22	7,460	11.55	11,000	10.33	7,520
10	2.91	380	3.22	541	5.95	2,425	10.45	7,960	11.51	10,900	10.24	7,300
11	2.78	318	3.40	645	5.98	2,440	10.65	8,400	11.48	10,800	10.14	7,080
M	2.58	233	3.48	693	6.06	2,510	10.86	8,960	11.46	10,700	10.06	6,920
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.86	6,520	7.99	3,710	6.70	2,430	5.85	1,720	5.64	1,550	5.28	1,290
4	9.70	6,200	7.86	3,570	6.62	2,360	5.82	1,700	5.53	1,460	5.31	1,310
6	9.55	5,920	7.76	3,460	6.53	2,280	5.79	1,670	5.50	1,440	5.30	1,300
8	9.39	5,680	7.65	3,340	6.56	2,300	5.82	1,700	5.59	1,510	5.38	1,360
10	9.22	5,430	7.56	3,240	6.43	2,190	5.71	1,610	5.48	1,430	5.25	1,260
N	9.06	5,190	7.44	3,120	6.35	2,120	5.67	1,580	5.45	1,400	5.17	1,210
2	8.76	4,740	7.30	2,980	6.30	2,080	5.64	1,550	5.42	1,380	5.21	1,240
4	8.67	4,600	7.19	2,870	6.18	1,980	5.60	1,520	5.41	1,380	5.14	1,190
6	8.53	4,400	7.11	2,800	6.10	1,920	5.64	1,550	5.36	1,340	5.13	1,180
8	8.37	4,180	7.03	2,730	6.09	1,910	5.58	1,500	5.36	1,340	5.13	1,180
10	8.21	3,970	6.91	2,620	5.96	1,810	5.58	1,500	5.31	1,310	5.03	1,120
M	8.09	3,830	6.80	2,520	5.86	1,730	5.46	1,410	5.23	1,250	4.89	1,030

Housatonic River at Falls Village, Conn.

Location.- Water-stage recorder, lat. 41°57'15", long. 73°22'05", at Falls Village, Litchfield County, half a mile below power plant of Connecticut Power Co. Zero of gage is 522.41 feet above mean sea level (general adjustment of 1929).
Drainage area.- 632 square miles.
Gage-height record.- Water-stage recorder graph except for periods 11 p.m. Sept. 21 to 10 a.m. Sept. 24, when recorder failed to function properly, and Oct. 8, 9, 11-31, when intake pipe was plugged.
Stage-discharge relation.- Defined by current-meter measurements below 14,100 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 19,900 second-feet 2 to 6 a.m. Sept. 23 (gage height, 20.7 feet, from floodmark).
1912 to August 1938: Discharge, 14,500 second-feet Mar. 20, 1936 (gage height, 17.41 feet).
Remarks.- Gage-height graph during period of faulty recording and discharge during period of plugged intake determined from operation records of Connecticut Power Co. power plant half a mile upstream. Flood run-off affected by some artificial and natural storage. The following figures of daily discharge supersede those published in Water-Supply Paper 798, page 267:

March 1936	8	9	10	11
Discharge, in second-feet	800	750	900	1,900

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	630	2,110	9	694	970	17	1,100	600	25	10,700	1,230
2	594	1,860	10	634	682	18	892	620	26	6,200	1,540
3	532	1,680	11	270	820	19	900	720	27	4,450	1,330
4	444	1,440	12	276	840	20	2,600	710	28	3,440	1,180
5	316	1,320	13	367	850	21	8,420	920	29	2,910	1,010
6	305	1,170	14	696	740	22	18,500	1,030	30	2,460	910
7	343	1,150	15	860	800	23	19,300	1,010	31		830
8	498	1,080	16	1,150	750	24	15,800	930			
Mean monthly discharge, in second-feet										3,543	1,059
Run-off, in inches										6.26	1.94

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.35	-	2.68	-	3.94	1,350	8.28	4,220	-	-	-	-
2	3.15	-	2.42	-	3.95	1,360	8.39	4,310	19.0	17,000	20.7	19,900
3	3.05	-	2.10	-	3.95	1,360	8.50	4,400	-	-	-	-
4	2.68	-	1.78	-	3.95	1,360	8.59	4,470	19.25	17,300	20.7	19,900
5	2.44	-	1.73	-	3.95	1,360	8.67	4,540	-	-	-	-
6	2.16	-	1.02	-	3.96	1,370	9.00	4,800	19.5	17,800	20.7	19,900
7	2.07	-	2.65	-	4.60	1,750	9.13	4,900	-	-	-	-
8	2.05	-	3.04	-	4.85	1,900	9.30	5,040	19.7	18,100	20.65	19,800
9	2.95	-	3.13	-	4.95	1,960	9.54	5,240	-	-	-	-
10	3.36	-	3.15	-	4.99	1,980	9.80	5,470	19.9	18,500	20.6	19,700
11	3.47	-	3.26	-	5.60	2,350	10.40	6,010	-	-	-	-
N	3.53	*892	1.64	*900	6.10	2,670	10.80	6,370	20.05	18,700	20.5	19,500
1	3.55	-	2.55	-	6.45	2,920	11.25	6,820	-	-	-	-
2	3.00	-	2.75	-	6.65	3,060	11.75	7,320	20.2	19,000	20.4	19,300
3	2.76	-	2.90	-	6.87	3,210	12.40	8,010	-	-	-	-
4	2.69	-	3.33	-	7.11	3,380	14.15	10,000	20.35	19,200	20.3	19,200
5	2.66	-	3.54	-	7.25	3,480	15.30	11,500	-	-	-	-
6	2.65	-	3.60	-	7.37	3,560	16.15	12,600	20.45	19,400	20.15	18,900
7	3.35	-	3.62	-	7.49	3,640	16.80	13,600	-	-	-	-
8	3.45	-	4.01	-	7.71	3,800	17.45	14,500	20.55	19,600	20.0	18,600
9	3.49	-	4.21	-	7.85	3,900	18.00	15,400	-	-	-	-
10	3.50	-	4.26	-	7.94	3,960	18.40	16,000	20.6	19,700	19.85	18,400
11	3.14	-	3.93	-	8.03	4,020	18.6	16,300	-	-	-	-
M	2.80	-	3.89	-	8.17	4,140	18.8	16,600	20.65	19,800	19.65	17,900
	September 24		September 25		September 26		September 27		September 28		September 29	
2	19.45	17,700	16.41	13,000	11.77	7,340	8.99	4,790	7.43	3,600	6.72	3,100
4	19.2	17,300	16.08	12,600	11.44	7,010	8.97	4,780	7.42	3,590	6.43	2,900
6	19.0	17,000	15.75	12,100	11.10	6,670	9.02	4,820	7.44	3,610	6.67	3,070
8	18.75	16,600	15.45	11,700	11.10	6,670	9.05	4,840	7.62	3,730	6.64	3,050
10	18.55	16,200	15.21	11,400	10.77	6,340	8.77	4,620	7.53	3,670	6.53	2,970
N	18.35	15,900	14.82	10,900	10.30	5,920	8.66	4,530	6.75	3,120	6.45	2,920
2	18.15	15,600	14.34	10,200	10.45	6,060	8.44	4,350	6.94	3,260	6.40	2,880
4	17.88	15,200	13.80	9,600	10.15	5,780	8.29	4,230	7.05	3,340	6.32	2,820
6	17.63	14,800	13.45	9,180	9.90	5,560	8.15	4,120	7.03	3,320	6.26	2,780
8	17.32	14,300	13.10	8,780	9.77	5,440	8.02	4,020	6.92	3,240	6.23	2,760
10	17.01	13,900	12.65	8,280	9.61	5,300	7.90	3,930	6.86	3,200	6.18	2,730
M	16.75	13,500	12.20	7,790	9.00	4,800	7.65	3,760	6.80	3,160	6.12	2,680

Supplemental records.- Sept. 27, 5 a.m., 8.92 ft., 4,740 sec.-ft.; 7 a.m., 9.20 ft., 4,960 sec.-ft. Sept. 28, 11 a.m., 7.42 ft., 3,590 sec.-ft.; 1 p.m., 6.80 ft., 3,160 sec.-ft.

* Mean for the day.

Zoar Lake at Stevenson, Conn.

Location.- Staff gage, lat. 41°22'55", long. 73°10'05", at Stevenson dam of Connecticut Light & Power Co. at Stevenson, Fairfield County, Conn.
Drainage area.- 1,544 square miles.
Remarks.- Gain or loss in storage in equivalent mean second-feet computed from elevations of lake at midnight as furnished by Connecticut Light & Power Co., Waterbury, Conn.

Gain or loss in storage, in equivalent mean second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	+261	-150	9	-256	+388	17	+675	-418	25	-804	+209
2	+104	-250	10	-102	-484	18	-365	-309	26	0	-157
3	-157	-392	11	+515	-143	19	+524	+257	27	-316	-208
4	-104	-290	12	+157	+480	20	+1,070	+52	28	-261	0
5	+104	+682	13	-52	-763	21	+2,530	+157	29	-258	-307
6	-209	-777	14	-209	+1,060	22	-1,310	-363	30	-358	+987
7	+104	+531	15	+104	+1,270	23	-781	+51	31		-263
8	-209	-388	16	-361	+261	24	-657	+156			
Gain or loss in storage in equivalent mean second-feet										-20.7	+28.4

Housatonic River at Stevenson, Conn.

Location.- Water-stage recorder, lat. 41°23'05", long. 73°09'55", in New Haven County, a quarter of a mile below dam of Connecticut Light & Power Co. at Stevenson, Fairfield County. Zero of gage is 24.98 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,545 square miles.

Gage-height record.- Water-stage recorder graph except for period 8 a.m. Sept. 20 to noon Oct. 13. For the periods 8 a.m. Sept. 20 to Sept. 30, and midnight to noon Oct. 13, graph was determined by gage-height relationship, from tailrace gage readings at Stevenson dam, a quarter of a mile upstream. Gage-height graph not determined for period Oct. 1-12; discharge based on power plant operation records. Intake pipe not functioning properly Sept. 7-12; discharge based upon power plant operation records.

Stage-discharge relation.- Defined by current-meter measurements below 35,000 second-feet; extended to peak stage on basis of determinations of peak flow at Stevenson dam and power plant, over spillway at Derby dam, and by slope-area method at gaging station.

Maxima.- September 1938: Discharge, 59,500 second-feet midnight Sept. 21 to 1 a.m. Sept. 22 (gage height, 21.5 feet, from high-water marks).
1928 to August 1938: Discharge, 69,500 second-feet Mar. 12, 1936 (gage height, 23.5 feet, from high-water marks).

Remarks.- Run-off affected by storage. For information on storage see records for Zoar Lake at Stevenson, Conn., Rocky River at outlet of Candlewood Lake, near New Milford, Conn., and Shepaug River at outlet of Shepaug Reservoir, at Woodville, Conn.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,130	5,000	9	1,600	2,050	17	1,460	2,650	25	20,700	3,380
2	1,370	4,600	10	1,300	2,950	18	2,360	2,120	26	12,900	3,250
3	1,430	4,050	11	700	2,050	19	3,550	1,860	27	10,800	3,260
4	1,300	4,000	12	750	1,900	20	9,220	1,910	28	8,620	2,970
5	998	2,750	13	1,080	2,800	21	33,500	3,050	29	7,000	2,860
6	1,010	3,600	14	1,210	1,390	22	52,700	3,490	30	6,000	1,480
7	900	2,450	15	1,520	921	23	41,400	2,610	31		2,730
8	1,200	3,000	16	2,450	1,800	24	31,000	2,580			
Mean monthly discharge, in second-feet										8,705	2,758
Run-off, in inches										6.28	2.06

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.49	-	0.89	-	7.40	5,630	11.25	13,700	21.5	59,500	-	-
2	4.03	-	.80	-	7.17	5,250	11.3	13,800	21.4	59,000	18.5	44,500
3	1.40	-	.78	-	6.93	4,870	11.35	13,900	21.3	58,500	-	-
4	.88	-	.78	-	6.99	4,960	11.5	14,300	21.2	58,000	18.5	44,500
5	.80	-	.78	-	7.73	6,190	11.65	14,800	21.1	57,500	-	-
6	.78	-	.78	-	7.63	6,020	12.2	16,500	21.1	57,500	18.4	44,000
7	4.93	-	6.63	-	8.84	8,280	12.5	17,600	21.2	58,000	-	-
8	6.77	-	7.33	-	8.2	7,050	12.9	19,000	21.0	57,000	18.5	44,500
9	6.26	-	7.33	-	8.35	7,340	13.2	20,100	20.6	55,000	-	-
10	6.12	-	7.33	-	8.8	8,200	14.2	24,200	20.2	53,000	18.15	42,800
11	6.44	-	7.33	-	9.5	9,600	15.0	27,800	20.15	52,800	-	-
N	6.90	*2,360	1.65	*3,550	10.0	10,700	16.5	34,600	20.15	52,800	17.6	40,000
1	5.83	-	6.45	-	10.15	11,000	16.7	35,500	20.15	52,800	-	-
2	4.86	-	6.55	-	10.2	11,100	17.6	40,000	20.0	52,000	17.8	41,000
3	4.63	-	6.55	-	10.25	11,200	17.75	40,800	19.8	51,000	-	-
4	4.80	-	6:85	-	10.25	11,200	18.3	43,500	19.7	50,500	17.5	39,500
5	5.70	-	7.36	-	10.3	11,400	19.0	47,000	19.5	49,500	-	-
6	5.91	-	7:36	-	10.35	11,500	19.6	50,000	19.3	48,500	17.5	39,500
7	6.45	-	7.35	-	10.4	11,600	20.0	52,000	19.1	47,500	-	-
8	5.46	-	7:33	-	10.45	11,700	20.2	53,000	18.95	46,800	17.4	39,000
9	6.03	-	7:33	-	10.5	11,800	21.1	57,500	18.8	46,000	-	-
10	4.51	-	7:33	-	10.6	12,000	21.3	58,500	18.7	45,500	17.1	37,500
11	3.55	-	7.34	-	10.75	12,400	21.4	59,000	18.6	45,000	-	-
M	1.53	-	7.38	-	11.2	13,600	21.5	59,500	18.5	44,500	16.9	36,500
	September 24		September 25		September 26		September 27		September 28		September 29	
2	16.9	36,500	14.4	25,100	11.5	14,300	10.5	11,800	9.4	9,400	8.45	7,520
4	16.65	35,200	14.3	24,600	11.5	14,300	10.4	11,600	9.35	9,300	8.3	7,240
6	16.45	34,300	14.45	25,300	11.4	14,000	10.05	10,800	9.3	9,200	8.3	7,240
8	16.2	33,200	14.0	23,300	11.2	13,600	10.0	10,700	9.05	8,700	8.25	7,140
10	15.9	31,800	13.6	21,700	10.65	12,200	9.9	10,500	8.9	8,400	8.2	7,050
N	15.55	30,300	13.3	20,500	10.6	12,000	10.0	10,700	9.0	8,600	8.2	7,050
2	15.3	29,200	13.2	20,100	10.8	12,600	10.0	10,700	9.0	8,600	8.2	7,050
4	15.2	28,700	12.8	18,600	10.8	12,600	10.0	10,700	8.9	8,400	8.2	7,050
6	15.0	27,800	12.5	17,600	10.8	12,600	10.0	10,700	8.9	8,400	8.2	7,050
8	14.8	26,900	12.1	16,200	10.6	12,000	9.9	10,500	8.75	8,100	8.0	6,680
10	14.7	26,400	11.7	14,900	10.55	11,900	9.8	10,300	8.55	7,720	7.7	6,140
M	14.6	26,000	11.55	14,400	10.5	11,800	9.55	9,710	8.5	7,620	7.6	5,970

Supplemental records.- Sept. 18, 5:30 p.m., 7.01 ft. Sept. 20, 5:30 a.m., 8.50 ft., 7,620 sec.-ft.; 7:15 a.m., 7.84 ft., 6,390 sec.-ft.; 7:30 a.m., 8.83 ft., 8,260 sec.-ft.

* Mean for the day.

Tenmile River near Gaylordsville, Conn.

Location.- Water-stage recorder, lat. 41°39'35", long. 73°31'45", 1 mile above Connecticut-New York State line, 1½ miles above confluence with Housatonic River, and 2½ miles northwest of Gaylordsville, Litchfield County.
Drainage area.- 204 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 13 to 4:10 p.m. Sept. 21 (pen not touching chart), record for which was based on hydrographic comparison with Wappinger Creek near Wappinger Falls, N. Y., Shepaug River near Roxbury, Conn., Pomperaug River at Southbury, Conn., and study of climatological data.
Stage-discharge relation.- Defined by current-meter measurements below 9,650 second-feet; extended to peak stage.
Maxima.- September 1938: Discharge, 12,500 second-feet 4 to 5 a.m. Sept. 22 (gage height, 12.77 feet).
1929 to August 1938: Discharge, 10,200 second-feet Mar. 12, 1936 (gage height, 11.61 feet).
Remarks.- Flood run-off may be slightly affected by storage in several small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	168	588	9	128	282	17	150	200	25	1,920	366
2	165	522	10	111	267	18	130	193	26	1,380	291
3	150	464	11	104	253	19	272	188	27	1,090	250
4	144	427	12	102	236	20	1,660	188	28	899	228
5	136	388	13	130	225	21	4,790	343	29	758	225
6	122	349	14	130	210	22	9,380	301	30	656	217
7	120	323	15	140	205	23	4,320	244	31		200
8	144	301	16	220	205	24	2,850	258			
Mean monthly discharge, in second-feet										1,082	288
Run-off, in inches										5.91	1.63

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	12.18	11,300	8.56	5,360
2	-	-	1.6	140	3.65	885	5.95	2,500	12.45	11,800	8.44	5,200
3	-	-	-	-	-	-	-	-	12.63	12,200	8.34	5,070
4	-	-	1.6	140	4.1	1,140	5.95	2,500	12.77	12,500	8.25	4,960
5	-	-	-	-	-	-	-	-	12.77	12,500	8.16	4,840
6	-	-	1.6	140	4.45	1,350	6.05	2,600	12.70	12,300	8.09	4,760
7	-	-	-	-	-	-	-	-	12.60	12,100	8.02	4,670
8	-	-	1.65	150	4.5	1,380	6.25	2,780	12.40	11,700	7.94	4,580
9	-	-	-	-	-	-	-	-	12.17	11,200	7.87	4,490
10	-	-	1.7	161	4.65	1,480	6.55	3,060	11.91	10,700	7.80	4,410
11	-	-	-	-	-	-	-	-	11.63	10,200	7.74	4,340
N	*1.55	*130	1.8	183	4.8	1,590	6.9	3,410	11.35	9,680	7.68	4,270
1	-	-	-	-	-	-	-	-	11.05	9,140	7.61	4,180
2	-	-	1.95	220	5.0	1,730	7.45	4,000	10.76	8,640	7.55	4,120
3	-	-	-	-	-	-	-	-	10.50	8,200	7.48	4,040
4	-	-	2.15	276	5.25	1,920	8.45	5,220	10.22	7,750	7.41	3,960
5	-	-	-	-	-	-	9.05	6,010	9.96	7,340	7.35	3,900
6	-	-	2.45	374	5.5	2,120	9.26	6,300	9.77	7,060	7.28	3,820
7	-	-	-	-	-	-	9.65	6,880	9.45	6,580	7.21	3,740
8	-	-	2.8	502	5.7	2,280	10.37	7,990	9.25	6,290	7.15	3,680
9	-	-	-	-	-	-	11.20	9,410	9.11	6,090	7.10	3,620
10	-	-	3.0	580	5.85	2,420	11.66	10,300	8.96	5,880	7.05	3,560
11	-	-	-	-	-	-	11.86	10,600	8.80	5,670	7.00	3,510
M	1.55	130	3.2	665	5.95	2,500	12.01	10,900	8.67	5,500	6.95	3,460
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	6.73	3,240	5.54	2,150	4.70	1,520	4.14	1,160	3.79	955	3.48	800
6	-	-	-	-	-	-	-	-	-	-	-	-
8	6.52	3,030	5.39	2,030	4.59	1,440	4.07	1,120	3.73	925	3.43	775
10	-	-	-	-	-	-	-	-	-	-	-	-
N	6.32	2,840	5.24	1,910	4.49	1,370	4.00	1,080	3.68	900	3.39	755
2	-	-	-	-	-	-	-	-	-	-	-	-
4	6.12	2,660	5.09	1,790	4.39	1,310	3.95	1,050	3.62	870	3.36	740
6	-	-	-	-	-	-	-	-	-	-	-	-
8	5.91	2,470	4.94	1,690	4.30	1,260	3.90	1,020	3.56	840	3.32	720
10	-	-	-	-	-	-	-	-	-	-	-	-
M	5.72	2,300	4.82	1,600	4.22	1,210	3.85	990	3.52	820	3.28	701

* Mean for the day.

Rocky River at outlet of Candlewood Lake, near New Milford, Conn.

Location.- Nonrecording gage and venturi meter, lat. 41°35'00", long. 73°26'00", at Rocky River hydroelectric plant of Connecticut Light & Power Co., 1½ miles northwest of New Milford, Litchfield County.
Drainage area.- 40.4 square miles.
Gage-height record.- Usually one lake-gage reading daily at about 8 a.m. Gage height at midnight determined from graph constructed from gage readings.
Stage-discharge relation.- Observed discharge computed from flow through venturi meters.
Remarks.- Power plant is of pumped-storage type. Candlewood Lake stores both normal run-off of Rocky River and water pumped from Housatonic River, into which tailrace of plant discharges. No water was pumped from Housatonic River into lake during period Sept. 1 to Oct. 31. Daily and monthly discharges adjusted for gain or loss in Candlewood Lake. No corrections for evaporation from reservoir surface, which is about 8 square miles; negative adjusted discharge values indicate that evaporation from the reservoir surface at times exceeds the volume of inflow. Record based on data furnished by Connecticut Light & Power Co.

Mean discharge, in second-feet, and gain or loss in storage, in equivalent mean second-feet, 1938

Day	September			October		
	Observed discharge	Gain or loss in storage	Adjusted discharge	Observed discharge	Gain or loss in storage	Adjusted discharge
1	183	-	-	29	-	-
2	0	-	-	0	-	-
3	0	-	-	30	-	-
4	0	a-60	a-32	5	-	-
5	0	-	-	176	b-42	b+2
6	0	-	-	17	-	-
7	35	-	-	117	-	-
8	0	-	-	8	-	-
9	25	-	-	0	-	-
10	0	-	-	58	-	-
11	0	-	-	16	-	-
12	32	c0	c+18	149	-	-
13	61	-	-	6	-	-
14	0	-	-	267	-	-
15	7	-	-	0	b-90	b44
16	0	+56	56	0	-	-
17	100	-28	72	62	-	-
18	0	+112	112	256	-	-
19	15	+506	521	332	-	-
20	38	+534	572	251	-	-
21	800	+2,460	3,260	0	-	-
22	1,700	-1,360	340	36	-	-
23	1,380	-1,070	310	0	-	-
24	29	+197	226	144	-	-
25	17	+197	214	47	d-23	d41
26	209	+28	237	46	-	-
27	365	-225	140	32	-	-
28	469	-422	47	0	-	-
29	366	-337	29	0	-	-
30	328	-309	19	226	-	-
31				172	-	-

	September	October
Mean monthly discharge, in second-feet (observed)	205	80.1
Run-off, in inches (observed)	5.66	2.28
Mean monthly discharge, in second-feet (adjusted)	201	29.4
Run-off, in inches (adjusted)	5.56	0.84

a Mean for 8-day period.
b Mean for 10-day period.
c Mean for 7-day period.
d Mean for 11-day period.

Still River near Lanesville, Conn.

Location.- Water-stage recorder, lat. 41°31'14", long. 73°25'09", at highway bridge 1½ miles south of Lanesville, Litchfield County, 2 miles above mouth, and 4 miles south of New Milford. Zero of gage is 213.05 feet above mean sea level (general adjustment of 1929).
Drainage area.- 68.5 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,890 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 4,410 second-feet 8 a.m. Sept. 22 (gage height, 10.88 feet).
1931 to August 1938: Discharge, 3,930 second-feet (revised) Mar. 12, 1936 (gage height, 10.58 feet).
Remarks.- Flood run-off not appreciably affected by storage or regulation.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	65	212	9	60	119	17	70	90	25	671	170
2	68	191	10	50	113	18	62	92	26	528	158
3	56	167	11	45	109	19	169	90	27	408	123
4	52	153	12	42	106	20	572	91	28	314	108
5	46	142	13	53	103	21	1,440	154	29	274	109
6	43	135	14	72	99	22	3,460	154	30	232	105
7	46	133	15	68	99	23	1,350	123	31		94
8	62	127	16	85	95	24	879	116			
Mean monthly discharge, in second-feet										378	125
Run-off, in inches										6.16	2.10

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	2.20	74	5.67	360	7.46	834	10.19	3,330	8.96	1,870
2	2.06	63	2.35	78	5.77	376	7.48	842	10.38	3,610	8.87	1,790
3	-	-	2.40	80	5.87	394	7.50	850	10.52	3,830	8.79	1,720
4	2.01	60	2.45	83	5.96	410	7.52	860	10.66	4,060	8.70	1,640
5	-	-	2.53	88	6.04	425	7.55	875	10.76	4,220	8.62	1,580
6	1.99	60	2.59	90	6.11	438	7.60	900	10.83	4,330	8.58	1,540
7	-	-	2.63	93	6.20	456	7.64	920	10.87	4,390	8.51	1,490
8	1.99	60	2.70	97	6.30	476	7.70	950	10.88	4,410	8.46	1,450
9	-	-	2.81	104	6.40	497	7.80	1,000	10.87	4,390	8.40	1,400
10	2.01	60	2.92	109	6.49	517	7.86	1,040	10.81	4,300	8.35	1,360
11	-	-	3.05	117	6.56	532	7.98	1,110	10.74	4,180	8.30	1,320
N	2.02	61	3.20	126	6.63	548	8.07	1,160	10.64	4,020	8.25	1,280
1	-	-	3.39	138	6.73	572	8.15	1,220	10.51	3,820	8.21	1,260
2	2.03	62	3.66	157	6.82	596	8.23	1,270	10.39	3,620	8.18	1,240
3	-	-	4.05	188	6.91	624	8.39	1,390	10.25	3,410	8.12	1,190
4	2.03	62	4.40	218	7.00	655	8.61	1,570	10.09	3,190	8.10	1,180
5	-	-	4.69	244	7.09	686	8.86	1,780	9.96	3,000	8.06	1,160
6	2.03	62	4.86	261	7.16	714	9.03	1,940	9.80	2,780	8.01	1,130
7	-	-	5.00	276	7.22	738	9.19	2,100	9.66	2,610	7.99	1,110
8	2.04	62	5.10	287	7.27	758	9.32	2,230	9.51	2,440	7.96	1,100
9	-	-	5.20	299	7.31	774	9.47	2,400	9.39	2,310	7.92	1,070
10	2.10	65	5.30	311	7.36	794	9.62	2,560	9.26	2,170	7.90	1,060
11	-	-	5.40	323	7.41	814	9.80	2,780	9.14	2,050	7.86	1,040
M	2.21	70	5.54	341	7.44	826	10.00	3,060	9.03	1,940	7.84	1,020
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.79	995	-	-	-	-	-	-	-	-	-	-
4	7.71	955	7.20	730	-	-	-	-	-	-	-	-
6	7.69	945	-	-	6.68	560	6.11	438	5.43	327	5.07	284
8	7.63	915	7.10	690	-	-	-	-	-	-	-	-
10	7.59	895	-	-	-	-	-	-	-	-	-	-
N	7.55	875	7.03	666	6.54	528	5.96	410	5.31	312	4.99	275
2	7.50	850	-	-	-	-	-	-	-	-	-	-
4	7.46	834	6.96	641	-	-	-	-	-	-	-	-
6	7.40	810	-	-	6.40	497	5.77	376	5.20	299	4.89	264
8	7.37	798	6.90	620	-	-	-	-	-	-	-	-
10	7.32	778	-	-	-	-	-	-	-	-	-	-
M	7.29	766	6.80	590	6.25	466	5.60	349	5.12	289	4.79	254

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Shepaug River at outlet of Shepaug Reservoir, at Woodville, Conn.

Location.- Nonrecording gages at dam at outlet of Shepaug Reservoir, lat. 41°43'16", long. 73°17'40", 1 mile north of Woodville, Litchfield County, and 3 miles above confluence of Shepaug and Bantam Rivers.
Drainage area.- 38.0 square miles.
Gage-height record.- One reservoir gage reading daily at noon; additional readings during periods of rapid change in stage; gage height at midnight determined from graph constructed from gage-height readings.
Stage-discharge relation.- Observed discharges computed from flow through gates and over weir and spillway at times when reservoir gage was read. During period of rapid change in discharge, mean daily discharge computed from graph constructed from determinations of instantaneous discharges.
Maxima.- September 1938: Discharge, 6,000 second-feet 7 p.m. Sept. 21.
1935 to August 1938: Discharge, 4,070 second-feet Mar. 12, 1936.
Remarks.- Mean daily and monthly discharges adjusted for gain or loss in storage in Shepaug Reservoir and diversion to Naugatuck River drainage through Morris Reservoir. No corrections for evaporation from reservoir surface. Minimum flow of 2.35 second-feet maintained at all times below reservoir. Basic data furnished by Bureau of Engineering, City of Waterbury.

Mean discharge, in second-feet, and gain or loss in storage, in equivalent mean second-feet, 1938

Day	September			October		
	Observed discharge	Gain or loss in storage	Adjusted discharge	Observed discharge	Gain or loss in storage	Adjusted discharge
1	21	0	21	92	-2	90
2	17	*0	17	69	-2	67
3	7.9	*+12	20	64	-1	63
4	11	*+15	26	55	-2	53
5	13	*+12	25	49	-1	48
6	6.1	*+12	18	46	-1	45
7	5.3	*+19	24	40	0	40
8	35	*+6	41	40	0	40
9	21	-3	18	38	0	38
10	17	-2	15	38	+1	39
11	8.8	*+5	14	44	0	44
12	8.8	*+12	21	44	0	44
13	23	*+7	30	44	0	44
14	28	+1	29	115	-61	54
15	26	+2	28	246	-177	69
16	44	0	44	210	-168	42
17	28	-2	26	160	-120	40
18	29	+3	32	45	-4	41
19	330	+62	392	45	-3	42
20	1,010	+28	1,040	45	+8	53
21	3,140	+68	3,210	50	+91	141
22	1,900	-78	1,820	74	-30	44
23	808	-23	785	73	-30	43
24	440	-14	426	74	+13	87
25	268	-10	258	35	+127	162
26	199	-7	192	72	-2	70
27	158	-5	153	202	-130	72
28	128	-4	124	112	-65	47
29	107	-3	104	33	+14	47
30	90	-1	89	34	+10	44
31				35	+10	45

	September	October
Mean monthly discharge, in second-feet (observed)	298	74.9
Run-off, in inches (observed)	8.75	2.27
Mean monthly discharge, in second-feet (adjusted)	301	58.0
Run-off, in inches (adjusted)	8.84	1.76

* Includes diversion for city of Waterbury water supply.

Shepaug River near Roxbury, Conn.

Location.- Water-stage recorder, lat. 41°32'53", long. 73°19'51", at highway bridge 0.7 mile below Roxbury Station and 1¼ miles southwest of Roxbury, Litchfield County. Zero of gage is 282.07 feet above mean sea level (general adjustment of 1929).

Drainage area.- 133 square miles.

Gage-height record.- Water-stage recorder graph except for period 9 a.m. Sept. 21 to 2 p.m. Sept. 22 (bead on float wire caught), when it was based on shape of previous similar stage graphs and floodmark.

Stage-discharge relation.- Defined by current-meter measurements below 3,320 second-feet; extended logarithmically to peak discharge, partly on basis of determination of flow over spillway at dam at Roxbury Station.

Maxima.- September 1938: Discharge, 10,500 second-feet 7 p.m. Sept. 21 (gage height, 12.8 feet, from floodmark).
1930 to August 1938: Discharge, 7,000 second-feet Mar. 12, 1936 (gage height, 10.77 feet).

Remarks.- Flood run-off affected by storage in Shepaug Reservoir and in Bantam Lake (drainage area at outlet, 33.2 square miles). For information on storage see record for Shepaug Reservoir at Woodville, Conn.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	99	446	9	73	194	17	86	301	25	1,330	292
2	90	378	10	61	180	18	86	142	26	1,020	183
3	71	337	11	55	174	19	768	123	27	833	353
4	68	301	12	48	168	20	2,080	138	28	695	304
5	66	278	13	69	165	21	6,390	339	29	585	201
6	60	250	14	77	171	22	4,580	240	30	505	177
7	54	229	15	82	333	23	2,590	215	31		165
8	82	215	16	117	321	24	1,850	310			
Mean monthly discharge, in second-feet										819	246
Run-off, in inches										6.87	2.13

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.25	92	2.33	110	5.45	1,660	6.45	2,420	10.95	7,750	-	-
2	2.26	95	2.35	115	5.41	1,630	6.72	2,650	10.55	7,190	6.84	2,960
3	2.25	92	2.36	117	5.67	1,810	6.90	2,810	10.05	6,500	-	-
4	2.21	84	2.40	127	5.92	2,000	6.87	2,780	9.75	6,100	6.74	2,870
5	2.20	82	2.41	130	5.91	1,990	6.84	2,760	9.4	5,670	-	-
6	2.18	78	2.41	130	5.93	2,000	6.92	2,830	9.15	5,370	6.64	2,780
7	2.16	75	2.62	187	6.03	2,080	7.17	3,050	8.95	5,140	-	-
8	2.28	99	2.70	211	5.97	2,040	7.54	3,410	8.7	4,860	6.56	2,700
9	2.35	115	2.87	268	5.87	1,960	7.95	3,840	8.45	4,590	-	-
10	2.31	105	2.98	309	5.81	1,910	8.5	4,450	8.25	4,360	6.52	2,670
11	2.30	103	2.99	312	5.81	1,910	9.15	5,240	8.1	4,200	-	-
N	2.29	101	2.94	294	6.03	2,080	10.05	6,470	7.95	4,040	6.44	2,600
1	2.26	95	2.97	305	6.34	2,330	10.7	7,380	7.85	3,920	-	-
2	2.23	88	3.11	359	6.34	2,330	11.35	8,320	7.75	3,820	6.34	2,520
3	2.20	82	3.55	548	6.20	2,220	12.2	9,600	7.65	3,720	-	-
4	2.18	78	4.72	1,160	6.04	2,090	12.55	10,100	7.54	3,610	6.25	2,450
5	2.16	75	5.66	1,800	6.02	2,080	12.6	10,200	7.48	3,550	-	-
6	2.15	73	5.89	1,970	6.17	2,200	12.75	10,400	7.40	3,470	6.15	2,370
7	2.13	69	5.91	1,990	6.24	2,250	12.8	10,500	7.33	3,400	-	-
8	2.12	68	5.68	1,820	6.17	2,200	12.65	10,300	7.24	3,320	6.05	2,290
9	2.11	66	5.53	1,710	6.23	2,240	12.45	9,980	7.15	3,240	-	-
10	2.11	66	5.63	1,780	6.42	2,400	12.15	9,520	7.10	3,190	5.99	2,240
11	2.18	78	5.61	1,770	6.43	2,400	11.75	8,920	7.04	3,140	-	-
M	2.30	103	5.55	1,720	6.37	2,360	11.4	8,400	6.96	3,060	5.92	2,190
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.84	2,120	-	-	-	-	-	-	-	-	-	-
4	5.76	2,060	4.93	1,460	-	-	-	-	-	-	-	-
6	5.70	2,010	-	-	4.35	1,090	3.99	874	3.74	727	3.51	605
8	5.63	1,950	4.84	1,400	-	-	-	-	-	-	-	-
10	5.53	1,880	-	-	-	-	-	-	-	-	-	-
N	5.49	1,850	4.73	1,320	4.25	1,030	3.91	826	3.70	705	3.48	590
2	5.42	1,810	-	-	-	-	-	-	-	-	-	-
4	5.34	1,750	4.62	1,250	-	-	-	-	-	-	-	-
6	5.27	1,700	-	-	4.13	958	3.87	802	3.61	656	3.42	560
8	5.22	1,660	4.52	1,190	-	-	-	-	-	-	-	-
10	5.13	1,600	-	-	-	-	-	-	-	-	-	-
M	5.05	1,540	4.44	1,140	4.03	898	3.80	760	3.55	625	3.39	545

Pomperaug River at Southbury, Conn.

Location.- Water-stage recorder, lat. 41°28'50", long. 73°13'30", 200 feet above highway bridge, three-quarters of a mile west of Southbury, New Haven County, and 5½ miles above mouth. Zero of gage is 165.64 feet above mean sea level (general adjustment of 1929).
Drainage area.- 75.3 square miles.
Gage-height record.- Water-stage recorder graph except for period 9 p.m. Sept. 21 to 5 p.m. Sept. 22 (float against recorder table), when it was based on shape of stage graphs of previous peaks, floodmark, and one inspection.
Stage-discharge relation.- Defined by current-meter measurements below 1,170 second-feet; extended to peak stage on basis of 1936 and 1938 peak flow determinations at dam 2 miles downstream, adjusted for run-off from intervening area.
Maxima.- September 1938: Discharge, 7,420 second-feet 9 p.m. Sept. 21 (gage height, 16.00 feet, from floodmark).
1932 to August 1938: Discharge, 5,990 second-feet (revised) Mar. 12, 1936 (gage height, 14.13 feet, from floodmark), and 5,980 second-feet Jan. 25, 1938 (gage height, 14.12 feet, from floodmark).
Remarks.- Flood run-off not affected by artificial storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	68	186	9	48	102	17	62	76	25	366	206
2	59	165	10	43	98	18	73	73	26	300	132
3	52	147	11	40	94	19	257	72	27	265	112
4	50	139	12	39	89	20	777	73	28	238	101
5	48	129	13	59	86	21	2,670	198	29	208	126
6	44	121	14	58	88	22	1,630	118	30	196	104
7	45	116	15	70	86	23	707	100	31		94
8	63	110	16	95	80	24	487	174			
Mean monthly discharge, in second-feet										304	116
Run-off, in inches										4.51	1.78

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	5.41	604	6.31	1,000	10.3	3,300	-	-
2	3.26	67	3.50	101	5.19	516	6.35	1,020	9.5	2,800	5.91	824
3	-	-	-	-	5.08	476	6.40	1,050	8.95	2,470	-	-
4	3.28	69	3.60	116	5.03	459	6.45	1,080	8.6	2,260	5.84	793
5	-	-	-	-	5.03	459	6.54	1,120	8.3	2,080	-	-
6	3.30	72	3.72	135	5.11	487	6.65	1,180	8.05	1,930	5.78	766
7	-	-	-	-	5.26	544	6.79	1,240	7.85	1,820	-	-
8	3.32	75	3.90	167	5.41	604	6.91	1,300	7.7	1,740	5.72	739
9	-	-	-	-	5.56	667	7.05	1,380	7.55	1,650	-	-
10	3.34	78	4.11	209	5.69	726	7.21	1,470	7.4	1,570	5.69	726
11	-	-	-	-	5.80	775	7.38	1,560	7.3	1,520	-	-
N	3.34	78	4.26	243	5.90	820	7.54	1,650	7.15	1,430	5.66	712
1	-	-	-	-	5.94	838	7.75	1,760	7.05	1,380	-	-
2	3.35	79	4.29	250	5.99	860	7.99	1,890	6.95	1,320	5.62	694
3	-	-	-	-	6.08	901	8.24	2,040	6.80	1,250	-	-
4	3.33	76	4.31	254	6.19	950	9.20	2,620	6.69	1,200	5.57	672
5	-	-	-	-	6.30	1,000	12.32	4,680	6.58	1,140	-	-
6	3.31	73	4.55	314	6.40	1,050	12.52	4,820	6.46	1,080	5.50	640
7	-	-	-	-	6.45	1,080	12.49	4,800	6.36	1,030	-	-
8	3.30	72	4.90	416	6.39	1,040	13.60	5,590	6.27	986	5.43	612
9	-	-	-	-	6.28	991	16.00	7,420	6.19	950	-	-
10	3.29	71	5.24	536	6.28	991	14.0	5,890	6.12	919	5.37	588
11	-	-	-	-	6.29	996	12.6	4,880	6.06	892	-	-
M	3.34	78	5.42	608	6.30	1,000	11.6	4,180	6.00	865	5.31	564
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	5.23	532	4.82	391	-	-	-	-	-	-	-	-
6	-	-	-	-	4.52	306	4.37	269	4.28	247	4.12	211
8	5.17	509	4.79	382	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	5.11	487	4.74	367	4.50	301	4.36	266	4.25	240	4.11	209
2	-	-	-	-	-	-	-	-	-	-	-	-
4	5.06	469	4.70	355	-	-	-	-	-	-	-	-
6	-	-	-	-	4.47	294	4.34	262	4.20	229	4.09	205
8	4.97	439	4.63	335	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	4.88	410	4.58	322	4.39	274	4.29	250	4.15	218	4.06	199

Naugatuck River near Thomaston, Conn.

Location.- Water-stage recorder, lat. 41°42'11", long. 73°03'56", at highway bridge half a mile above confluence with Leadmine Brook and 2 miles north of Thomaston, Litchfield County. Zero of gage is 389.44 feet above mean sea level (general adjustment of 1929).
Drainage area.- 71.9 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 5,980 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 9,970 second-feet 9:40 p.m. Sept. 21 (gage height, 11.89 feet).
1930 to August 1938: Discharge, 6,830 second-feet Jan. 25, 1938 (gage height, 9.57 feet).
Remarks.- Flood run-off only slightly affected by storage in small ponds and reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	42	148	9	30	91	17	34	71	25	315	279
2	35	130	10	26	84	18	44	70	26	253	167
3	30	122	11	26	82	19	464	68	27	214	135
4	33	113	12	29	79	20	1,590	76	28	190	118
5	32	107	13	39	76	21	5,290	262	29	168	124
6	31	102	14	35	77	22	2,280	141	30	152	111
7	31	96	15	39	76	23	684	105	31		100
8	37	95	16	45	71	24	457	237			
Mean monthly discharge, in second-feet										422	117
Run-off, in inches										6.55	1.88

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.33	38	1.43	50	3.60	980	4.84	1,910	9.02	6,170	-	-
2	1.40	46	1.49	58	3.88	1,180	5.04	2,070	8.00	5,000	3.54	838
3	1.47	55	1.55	66	4.49	1,630	5.12	2,140	7.34	4,270	-	-
4	1.46	54	1.80	110	4.18	1,390	5.14	2,150	6.87	3,770	3.47	792
5	1.42	49	2.00	156	4.13	1,350	5.24	2,230	6.25	3,150	-	-
6	1.40	46	1.93	139	4.30	1,480	5.45	2,400	5.96	2,860	3.40	750
7	1.39	45	1.89	130	4.39	1,550	5.82	2,740	5.60	2,520	-	-
8	1.37	43	2.10	183	4.40	1,560	6.24	3,140	5.28	2,230	3.35	720
9	1.36	42	2.58	366	4.44	1,590	6.85	3,750	5.05	2,020	-	-
10	1.36	42	2.42	296	4.44	1,590	7.28	4,210	4.90	1,890	3.32	702
11	1.36	42	2.39	284	4.63	1,740	7.64	4,600	4.73	1,750	-	-
N	1.36	42	2.49	326	4.82	1,900	8.01	5,010	4.61	1,660	3.28	678
1	1.36	42	2.52	339	4.83	1,900	8.05	5,060	4.50	1,570	-	-
2	1.36	42	2.54	348	4.80	1,880	8.05	5,060	4.39	1,480	3.23	648
3	1.37	43	2.70	425	4.74	1,830	8.24	5,260	4.24	1,360	-	-
4	1.37	43	2.98	578	4.63	1,740	9.30	6,510	4.17	1,310	3.20	630
5	1.37	43	3.42	854	4.56	1,690	10.92	8,610	4.09	1,240	-	-
6	1.40	46	3.29	764	4.58	1,700	11.31	9,150	4.04	1,200	3.13	588
7	1.35	40	3.50	910	4.52	1,660	11.38	9,250	3.96	1,140	-	-
8	1.35	40	3.79	1,110	4.42	1,580	11.57	9,520	3.90	1,090	3.12	582
9	1.35	40	3.80	1,120	4.42	1,580	11.54	9,480	3.83	1,040	-	-
10	1.34	39	3.69	1,040	4.58	1,700	11.62	9,590	3.75	985	3.07	555
11	1.36	42	3.61	987	4.53	1,660	10.98	8,690	3.70	950	-	-
M	1.40	46	3.55	945	4.61	1,730	9.83	7,170	3.64	908	3.03	535
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.02	530	-	-	-	-	-	-	-	-	-	-
4	2.99	515	2.63	342	2.41	263	-	-	-	-	-	-
6	2.95	495	-	-	-	-	2.27	221	2.19	197	2.09	172
8	2.92	480	2.60	330	2.41	263	-	-	-	-	-	-
10	2.91	475	-	-	-	-	-	-	-	-	-	-
N	2.89	465	2.57	318	2.40	260	2.26	218	2.19	197	2.09	172
2	2.84	440	-	-	-	-	-	-	-	-	-	-
4	2.82	430	2.52	298	2.36	248	-	-	-	-	-	-
6	2.80	420	-	-	-	-	2.21	203	2.11	177	2.05	162
8	2.78	410	2.49	287	2.31	233	-	-	-	-	-	-
10	2.71	375	-	-	-	-	-	-	-	-	-	-
M	2.68	362	2.44	272	2.29	227	2.20	200	2.10	174	2.02	155

Supplemental records.- Sept. 21, 9:20 p.m., 11.29 ft., 9,130 sec.-ft.; 9:40 p.m., 11.89 ft., 9,970 sec.-ft.

Naugatuck River near Naugatuck, Conn.

Location.- Water-stage recorder, lat. 41°28'15", long. 73°03'10", a fifth of a mile above Beacon Hill Brook, 1.3 miles below Naugatuck, New Haven County, and 12 miles above mouth. Zero of gage is 155.17 feet above mean sea level (general adjustment of 1929).

Drainage area.- 246 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 4,650 second-feet; extended logarithmically to peak stage on basis of comparison with records for stations on Leadmine Brook near Thomaston and Naugatuck River near Thomaston.

Maxima.- September 1938: Discharge, 17,000 second-feet 10 p.m. Sept. 21 (gage height, 12.40 feet).

1918-24: 1928 to August 1938: Gage height, 12.08 feet Apr. 7, 1924 (discharge uncertain; previously published figure probably too low).

Flood of November 1927 reached a stage of about 14 feet (discharge, probably 18,300 second-feet).

Remarks.- Run-off affected by storage in Wigwam and Morris Reservoirs and by storage in and diversion from Shepaug Reservoir. For information on storage and diversions see records for Shepaug River at outlet of Shepaug Reservoir at Woodville, Conn., and for Branch of Naugatuck River at outlet of Wigwam Reservoir near Thomaston, Conn.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	173	620	9	133	339	17	178	285	25	1,220	922
2	162	530	10	116	330	18	240	258	26	1,000	565
3	138	490	11	102	314	19	1,160	254	27	865	446
4	130	451	12	111	305	20	3,550	254	28	773	386
5	126	423	13	171	293	21	9,900	616	29	672	446
6	123	404	14	151	305	22	6,040	465	30	644	432
7	136	396	15	215	289	23	2,280	352	31	-	396
8	143	347	16	215	273	24	1,620	536			
Mean monthly discharge, in second-feet										1,083	410
Run-off, in inches										4.91	1.92

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.13	242	2.43	873	4.44	2,620	5.97	4,700	11.08	13,900	4.41	2,760
2	1.12	238	2.43	873	4.09	2,250	6.00	4,750	10.47	12,500	4.33	2,670
3	1.11	234	2.66	1,010	4.04	2,200	6.14	4,960	9.73	11,100	4.29	2,630
4	1.11	234	3.23	1,440	4.02	2,180	6.31	5,220	8.99	9,680	4.22	2,560
5	1.11	234	3.10	1,340	3.97	2,130	6.61	5,680	8.23	8,340	4.17	2,510
6	1.11	234	2.82	1,120	4.04	2,200	6.94	6,200	7.64	7,340	4.12	2,460
7	1.11	234	2.62	988	4.57	2,770	7.09	6,440	7.24	6,680	4.09	2,430
8	1.11	234	2.52	927	4.85	3,120	7.44	7,000	6.92	6,170	4.02	2,360
9	1.11	234	2.47	897	5.10	3,440	7.77	7,560	6.61	5,680	4.01	2,350
10	1.12	238	2.47	897	5.33	3,760	8.24	8,360	6.36	5,290	4.00	2,340
11	1.15	248	2.47	897	5.43	3,900	8.73	9,210	6.14	4,960	3.93	2,270
N	1.12	238	2.47	897	5.40	3,860	8.96	9,630	5.93	4,650	3.91	2,250
1	1.11	234	2.47	897	5.43	3,900	9.14	9,950	5.77	4,430	3.89	2,230
2	1.10	231	2.42	867	5.53	4,040	9.34	10,300	5.62	4,220	3.83	2,170
3	1.10	231	2.41	861	5.63	4,200	9.64	10,900	5.46	4,010	3.82	2,160
4	1.10	231	2.55	945	5.72	4,330	10.05	11,700	5.33	3,840	3.78	2,120
5	1.10	231	2.74	1,070	5.86	4,540	10.47	12,500	5.19	3,660	3.73	2,080
6	1.08	225	3.09	1,330	5.84	4,510	10.67	13,000	5.08	3,530	3.71	2,060
7	1.07	221	3.04	1,290	5.80	4,450	11.38	14,500	4.96	3,380	3.75	2,100
8	1.04	212	3.22	1,440	5.74	4,360	11.99	16,000	4.86	3,260	3.72	2,070
9	.99	196	3.62	1,790	5.72	4,330	12.27	16,600	4.75	3,140	3.67	2,020
10	.97	190	3.78	1,940	5.64	4,210	12.40	17,000	4.65	3,020	3.54	1,910
11	1.41	350	3.82	1,980	5.63	4,200	11.98	16,000	4.57	2,940	3.52	1,890
M	1.54	405	4.24	2,400	5.84	4,510	11.80	15,500	4.49	2,850	3.50	1,870
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.42	1,800	-	-	-	-	-	-	-	-	-	-
4	3.39	1,770	2.82	1,310	2.46	1,040	-	-	-	-	-	-
6	3.34	1,730	-	-	-	-	2.21	876	2.08	792	1.89	674
8	3.31	1,700	2.78	1,270	2.45	1,040	-	-	-	-	-	-
10	3.26	1,660	-	-	-	-	-	-	-	-	-	-
N	3.22	1,630	2.72	1,230	2.42	1,010	2.21	876	2.11	812	1.92	692
2	3.18	1,590	-	-	-	-	-	-	-	-	-	-
4	3.12	1,550	2.66	1,180	2.39	994	-	-	-	-	-	-
6	3.09	1,520	-	-	-	-	2.16	844	1.99	734	1.87	662
8	3.02	1,470	2.55	1,100	2.31	942	-	-	-	-	-	-
10	2.97	1,430	-	-	-	-	-	-	-	-	-	-
M	2.94	1,400	2.51	1,080	2.27	916	2.11	812	1.93	698	1.81	626

Supplemental records.- Sept. 18, 11:30 p.m., 1.65 ft., 454 sec.-ft. Sept. 19, 3:30 a.m., 2.61 ft., 982 sec.-ft. Sept. 20, 12:20 a.m. 4.56 ft., 2,760 sec.-ft. Sept. 21, 8:30 p.m., 11.90 ft., 15,800 sec.-ft.; 9:30 p.m., 12.08 ft., 16,200 sec.-ft.

Leadmine Brook near Thomaston, Conn.

Location.- Water-stage recorder, lat. 41°42'10", long. 73°03'36", at highway bridge half a mile above mouth and 2¼ miles northeast of Thomaston, Litchfield County.
Drainage area.- 24.0 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge-relation.- Defined by current-meter measurements below 380 second-feet; extended logarithmically to peak stages on basis of run-off comparison with records for stations on Naugatuck River near Thomaston and Naugatuck.
Maxima.- September 1938: Discharge, 3,050 second-feet 6:30 p.m. Sept. 21 (gage height, 11.14 feet).
1930 to August 1938: Discharge, about 2,800 second-feet Sept. 17, 1934 (gage height, 11.2 feet, from floodmarks).
Remarks. Flood run-off probably slightly affected by storage in a few small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	12	41	9	7.9	24	17	11	20	25	105	91
2	10	38	10	6.8	23	18	18	19	26	82	49
3	7.9	34	11	6.5	22	19	131	19	27	71	40
4	7.6	33	12	6.3	22	20	389	23	28	62	34
5	7.3	31	13	10	22	21	1,370	105	29	52	39
6	6.3	29	14	9.0	22	22	550	46	30	43	35
7	6.1	27	15	12	23	23	224	33	31	-	30
8	9.7	25	16	15	22	24	143	78			
Mean monthly discharge, in second-feet										113	35.5
Run-off, in inches										5.26	1.71

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	2.79	26	4.12	178	5.28	464	6.83	1,030	-	-
2	2.60	17	2.91	33	4.10	174	5.45	518	6.56	924	4.68	284
3	-	-	3.09	46	4.46	244	5.50	535	6.31	824	-	-
4	2.63	18	3.20	56	4.63	282	5.61	574	6.12	752	4.61	265
5	-	-	3.30	66	4.63	282	5.80	640	6.00	710	-	-
6	2.63	18	3.34	70	4.84	335	6.01	714	5.87	664	4.58	257
7	-	-	3.38	74	4.90	350	6.26	804	5.75	622	-	-
8	2.63	18	3.39	75	4.96	368	6.50	900	5.66	591	4.52	241
9	-	-	3.36	72	5.08	404	6.70	980	5.55	552	-	-
10	2.63	18	3.35	71	5.20	440	7.30	1,220	5.50	535	4.48	231
11	-	-	3.35	71	5.30	470	7.60	1,340	5.44	514	-	-
N	2.63	18	3.42	78	5.39	497	7.70	1,380	5.39	497	4.43	218
1	-	-	3.59	98	5.40	500	7.40	1,260	5.30	470	-	-
2	2.62	18	3.87	136	5.39	497	7.20	1,180	5.23	449	4.40	211
3	-	-	4.00	157	5.35	485	7.44	1,280	5.19	437	-	-
4	2.61	17	4.19	190	5.29	467	7.90	1,480	5.11	413	4.35	200
5	-	-	4.41	233	5.29	467	9.55	2,240	5.06	398	-	-
6	2.61	17	4.47	246	5.30	470	10.70	2,820	5.00	380	4.30	188
7	-	-	4.55	264	5.26	458	10.76	2,850	4.95	365	-	-
8	2.60	17	4.58	270	5.19	437	10.70	2,820	4.90	350	4.28	184
9	-	-	4.51	254	5.11	413	9.66	2,300	4.85	335	-	-
10	2.60	17	4.40	231	5.10	410	8.60	1,790	4.80	320	4.23	173
11	-	-	4.30	211	5.08	404	7.79	1,430	4.78	314	-	-
M	2.73	22	4.20	192	5.10	410	7.26	1,200	4.73	299	4.20	167
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.17	161	-	-	-	-	-	-	-	-	-	-
6	-	-	3.90	112	3.72	86	3.62	73	3.56	66	3.48	57
8	4.11	149	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	4.09	145	3.86	106	3.70	83	3.60	70	3.53	62	3.42	51
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.02	133	-	-	-	-	-	-	-	-	-	-
6	-	-	3.79	96	3.66	78	3.59	69	3.50	59	3.40	49
8	3.98	126	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	3.94	119	3.75	90	3.63	74	3.58	68	3.49	58	3.35	45

Supplemental records.- Sept. 21, 3:40 p.m., 7.99 ft., 1,520 sec.-ft.; 3:50 p.m., 7.67 ft., 1,370 sec.-ft.; 4:50 p.m., 9.79 ft., 2,360 sec.-ft.; 5:10 p.m., 10.50 ft., 2,720 sec.-ft.; 6:20 p.m., 10.75 ft., 2,840 sec.-ft.; 6:30 p.m., 11.14 ft., 3,050 sec.-ft.; 6:40 p.m., 10.76 ft., 2,850 sec.-ft.

Branch of Naugatuck River at outlet of Wigwam Reservoir, near Thomaston, Conn.

Location.- Nonrecording gage and venturi meter at dam, lat. 41°39'45", long. 73°07'35", 2½ miles west of Thomaston, Litchfield County, and 3 miles above confluence with Naugatuck River.
Drainage area.- 18.0 square miles.
Gage-height record.- Three reservoir gage readings daily; gage height at midnight determined from graph constructed from gage-height readings.
Stage-discharge relation.- Observed discharge computed from flow over spillways and through venturi meter.
Maxima.- September 1938: Discharge observed, 3,610 second-feet 6 p.m. Sept. 21.
Remarks.- Mean daily and monthly discharges adjusted for gain or loss in storage in Wigwam and Morris Reservoirs and for diversions from Shepaug River drainage basin to Morris Reservoir. No corrections for evaporation from reservoir surfaces. Basic data furnished by Bureau of Engineering, City of Waterbury.

Mean discharge, in second-feet, and gain or loss in storage, in equivalent mean second-feet, 1938

Day	September			October		
	Observed discharge	Gain or loss in storage	Adjusted discharge	Observed discharge	Gain or loss in storage	Adjusted discharge
1	12	-10	2	24	-2	22
2	13	*-2	11	20	-2	18
3	11	*-4	7	19	-2	17
4	11	*-9	2	17	-1	16
5	10	*-10	0	19	0	19
6	11	*-11	0	18	-1	17
7	12	*-1	11	17	0	17
8	11	*-9	2	16	-1	15
9	12	-12	0	14	-1	13
10	12	-6	6	14	-5	9
11	10	*-8	2	14	0	14
12	11	*-11	0	13	-5	8
13	12	*0	12	13	-1	12
14	13	-6	7	11	+1	12
15	12	+1	13	12	+1	13
16	12	+5	17	11	0	11
17	12	-1	11	11	0	11
18	10	+15	25	12	-5	7
19	118	+81	199	12	-1	11
20	427	+73	500	13	+29	42
21	2,130	+6	2,140	49	0	49
22	368	-95	273	24	-5	19
23	149	-20	129	23	-1	22
24	107	-12	95	48	+20	68
25	72	-7	65	53	-14	39
26	46	-4	42	29	-5	24
27	37	-3	34	26	-1	25
28	32	-1	31	29	-1	28
29	31	0	31	30	-13	17
30	31	-2	29	75	-60	15
31				24	-11	13

	September	October
Mean monthly discharge, in second-feet (observed)	125	22.9
Run-off, in inches (observed)	7.74	1.46
Mean monthly discharge, in second-feet (adjusted)	123	20.1
Run-off, in inches (adjusted)	7.62	1.29

* Includes diversion from Shepaug Reservoir.

Saugatuck River near Westport, Conn.

Location.- Water-stage recorder, lat. 41°10'15", long. 73°22'00", on old Ford Road, or Clinton Ave., 400 feet below confluence with West Branch of Saugatuck River, 600 feet below dam of Dorr Co., and 2 miles north of Westport, Fairfield County.
Drainage area.- 77.5 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,700 second-feet; extended logarithmically to 3,000 second-feet with a straight-line extension above 3,000 second-feet on basis of determination of peak flow at dam 600 feet upstream.
Maxima.- September 1938: Discharge, 4,420 second-feet at midnight Sept. 21 (gage height, 10.28 feet).
1932 to August 1938: Discharge, 5,310 second-feet Mar. 12, 1936 (gage height, 11.30 feet).
Remarks.- Bridgeport Hydraulic Co. diverts the flow from 17 square miles of the Aspetuck River drainage basin. Water for diversion is stored in Aspetuck Reservoir and diverted by canal into Hemlocks Reservoir (Mill River Basin), from which it is released for water supply. Daily and monthly discharge not adjusted for diversions. Run-off computations are based on total drainage area above station.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	38	282	9	33	129	17	51	89	25	542	302
2	39	331	10	29	113	18	73	82	26	417	197
3	33	197	11	27	100	19	448	79	27	354	148
4	32	166	12	25	94	20	766	79	28	416	129
5	30	153	13	33	94	21	2,680	144	29	329	127
6	28	144	14	46	92	22	2,780	129	30	293	111
7	27	166	15	66	94	23	1,220	109	31	-	98
8	35	135	16	70	92	24	754	201			
Mean monthly discharge, in second-feet										390	142
Run-off, in inches										5.61	2.11

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.75	63	4.09	366	4.73	592	6.00	1,180	10.21	4,370	-	-
2	2.77	66	4.35	450	4.76	604	6.16	1,280	10.03	4,210	6.65	1,570
3	2.78	67	4.44	481	4.78	612	6.26	1,340	9.87	4,070	-	-
4	2.78	67	4.50	503	4.78	612	6.33	1,380	9.61	3,840	6.50	1,480
5	2.78	67	4.57	529	4.78	612	6.44	1,440	9.39	3,650	-	-
6	2.78	67	4.58	533	4.78	612	6.60	1,540	9.12	3,420	6.36	1,400
7	2.78	67	4.51	507	4.80	620	6.80	1,660	8.90	3,220	-	-
8	2.78	67	4.46	489	4.82	628	7.03	1,810	8.70	3,060	6.23	1,320
9	2.78	67	4.41	471	4.90	660	7.30	2,000	8.54	2,930	-	-
10	2.78	67	4.38	460	4.97	688	7.59	2,200	8.39	2,810	6.11	1,250
11	2.78	67	4.32	440	5.06	724	7.84	2,380	8.21	2,670	-	-
N	2.77	66	4.28	426	5.14	758	8.11	2,590	8.08	2,560	6.00	1,180
1	2.77	66	4.22	407	5.20	785	8.34	2,770	7.93	2,440	-	-
2	2.76	64	4.19	397	5.23	798	8.56	2,950	7.81	2,360	5.90	1,120
3	2.75	63	4.14	381	5.23	798	8.80	3,140	7.70	2,280	-	-
4	2.75	63	4.14	381	5.28	821	9.10	3,400	7.60	2,210	5.80	1,070
5	2.74	62	4.15	384	5.35	852	9.40	3,660	7.49	2,130	-	-
6	2.74	62	4.20	400	5.43	888	9.68	3,900	7.38	2,060	5.70	1,020
7	2.74	62	4.25	416	5.51	925	9.86	4,060	7.29	1,990	-	-
8	2.73	60	4.31	436	5.58	960	9.96	4,150	7.20	1,930	5.62	980
9	2.73	60	4.39	464	5.61	975	9.99	4,170	7.10	1,860	-	-
10	2.89	84	4.45	485	5.65	995	10.11	4,280	7.00	1,790	5.55	945
11	3.29	157	4.55	522	5.73	1,040	10.23	4,380	6.91	1,730	-	-
M	3.72	260	4.66	564	5.87	1,100	10.28	4,420	6.81	1,670	5.48	911
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	5.33	844	4.74	596	4.35	450	4.06	357	4.30	433	4.05	354
6	-	-	-	-	-	-	-	-	-	-	-	-
8	5.22	794	4.67	568	4.30	433	4.03	348	4.32	440	4.00	339
10	-	-	-	-	-	-	-	-	-	-	-	-
N	5.12	749	4.60	540	4.25	416	4.01	342	4.30	433	3.97	330
2	-	-	-	-	-	-	4.00	339	-	-	-	-
4	5.01	704	4.52	510	4.20	400	3.99	336	4.23	410	3.91	313
6	-	-	-	-	-	-	3.98	333	-	-	-	-
8	4.91	664	4.46	489	4.15	384	4.06	357	4.18	394	3.88	304
10	-	-	-	-	-	-	4.18	394	-	-	-	-
M	4.82	628	4.40	467	4.10	369	4.20	400	4.11	372	3.84	293

Mill Neck Creek at Mill Neck, N. Y.

Location.- Water-stage recorder and concrete control, lat. 40°53'15", long. 73°33'55", at Beaver Dam and highway bridge on Feeks Lane (Cliff Road) in village of Mill Neck, Nassau County. Zero of gage is 6.55 feet above mean sea level (general adjustment of 1912).

Drainage area.- About 10 square miles.

Gage-height record.- Water-stage recorder graph. Graph adjusted for tidal effect for period 7 p.m. Sept. 21 to noon Sept. 23.

Stage-discharge relation.- Defined by current-meter measurements below 84 second-feet. Affected by tide 7 p.m. Sept. 21 to noon Sept. 23.

Maxima.- September 1938: Maximum discharge, 86 second-feet 4:45 p.m. Sept. 21 (gage height, 1.38 feet); maximum gage height, 4.85 feet (backwater from tide) 8 p.m. Sept. 21.

January 1937 to August 1938: Discharge, 48.8 second-feet Sept. 13, 1937 (gage height, 0.96 foot).

Remarks.- Records good. Flood run-off probably affected by natural storage in swampy, flat areas and sandy soil.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	8.5	9.8	9	5.9	9.0	17	7.6	8.2	25	10.8	10.8
2	7.3	8.8	10	6.1	9.0	18	11.8	8.0	26	10.0	9.2
3	6.7	8.0	11	6.1	9.0	19	40	8.0	27	9.6	8.6
4	6.5	7.9	12	6.3	8.8	20	33	8.3	28	9.2	8.4
5	6.1	7.9	13	6.7	8.6	21	58	10.4	29	9.0	8.8
6	5.9	8.8	14	6.7	8.4	22	35	9.2	30	9.6	8.4
7	6.3	10.2	15	9.1	8.4	23	19.8	8.8	31		8.4
8	6.3	9.2	16	8.1	8.4	24	13.6	10.2			
Mean monthly discharge, in second-feet										12.85	8.84
Run-off, in inches										-	-

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.315	8.33	1.00	52	0.72	30.4	0.83	38.4	1.59	48.8	0.67	24.5
2	.315	8.33	1.02	54	.72	30.4	.83	38.4	1.49	47.2	.66	23.9
3	.315	8.33	1.01	53	.74	31.8	.83	38.4	1.41	44.8	.64	23.3
4	.310	8.12	.99	51	.74	31.8	.84	39.2	1.33	43.2	.63	22.7
5	.310	8.12	.96	48.8	.74	31.8	.87	41.6	1.26	41.6	.62	22.7
6	.310	8.12	.93	46.4	.73	31.1	.91	44.8	1.20	40.0	.61	22.1
7	.310	8.12	.90	44.0	.72	30.4	.95	48.0	1.14	38.4	.60	21.5
8	.310	8.12	.87	41.6	.73	31.1	.99	51	1.09	37.6	.60	21.5
9	.310	8.12	.84	39.2	.76	33.2	1.01	53	1.05	36.0	.59	20.9
10	.305	7.92	.81	36.8	.78	34.6	1.08	59	1.01	35.3	.58	20.3
11	.310	8.12	.80	36.0	.78	34.6	1.12	62	.97	33.9	.57	19.7
N	.310	8.12	.79	35.3	.78	34.6	1.12	62	.94	33.2	.56	19.7
1	.310	8.12	.78	34.6	.78	34.6	1.13	63	.91	32.5	-	-
2	.315	8.33	.76	33.2	.76	33.2	1.19	69	.88	31.8	.535	18.8
3	.315	8.33	.79	35.3	.76	33.2	1.25	74	.85	31.1	-	-
4	.315	8.33	.81	36.8	.76	33.2	1.35	83	.83	29.7	.525	18.2
5	.315	8.33	.81	36.8	.76	33.2	1.36	84	.80	29.0	-	-
6	.315	8.33	.81	36.8	.75	32.5	1.32	80	.78	28.3	.510	17.3
7	.315	8.33	.80	36.0	.77	33.9	1.32	77	.76	27.6	-	-
8	.340	9.40	.79	35.3	.77	33.9	4.85	70	.74	26.9	.500	16.7
9	.530	18.6	.77	33.9	.77	33.9	3.10	64	.73	26.3	-	-
10	.75	32.5	.76	33.2	.77	33.9	2.20	58	.71	26.3	.490	16.1
11	.87	41.6	.74	31.8	.81	36.8	1.87	54	.70	25.7	-	-
M	.91	44.8	.73	31.1	.83	38.4	1.71	51	.68	25.1	.480	15.6
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	0.460	14.6	0.390	11.2	0.370	10.2	0.360	9.84	0.345	9.23	0.340	9.03
6	-	-	-	-	-	-	-	-	-	-	-	-
8	.440	13.6	.380	10.7	.370	10.2	.360	9.84	.345	9.23	.340	9.03
10	-	-	-	-	-	-	-	-	-	-	-	-
N	.440	13.6	.385	10.9	.365	10.0	.360	9.84	.345	9.23	.340	9.03
2	-	-	-	-	-	-	-	-	-	-	-	-
4	.430	13.1	.380	10.7	.365	10.0	.360	9.84	.345	9.23	.340	9.03
6	-	-	-	-	-	-	-	-	-	-	-	-
8	.415	12.4	.380	10.7	.365	10.0	.350	9.43	.345	9.23	.335	8.83
10	-	-	-	-	-	-	-	-	-	-	-	-
M	.400	11.6	.370	10.2	.365	10.0	.350	9.43	.340	9.03	.330	8.63

Supplemental records.- Sept. 18, 7:55 p.m., 0.315 ft., 8.33 sec.-ft. Sept. 19, 2:45 p.m., 0.76 ft., 33.2 sec.-ft. Sept. 21, 4:45 p.m., 1.38 ft., 86 sec.-ft.

Massatayun Creek at Massapequa, N. Y.

Location.- Water-stage recorder and concrete V-notch control, lat. 40°41'20", long. 73°27'20", 350 feet west of Lake Shore Drive at Garfield Street, Massapequa, Nassau County, and 3,000 feet above Clark Avenue bridge and head of Massapequa Pond of the Brooklyn water-supply system. Zero of gage is 19.314 feet above mean sea level (general adjustment of 1912).

Drainage area.- About 37 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 87 second-feet.

Maxima.- September 1938: Discharge, 90 second-feet 3:20 p.m. Sept. 21 (gage height, 1.37 feet).

December 1936 to August 1938: Discharge, 64 second-feet Nov. 28, 1937 (gage height, 1.18 feet).

Remarks.- Records good. Flood run-off probably affected by natural storage in swampy, flat areas and sandy soil.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	10.8	23.2	9	8.8	18.0	17	10.4	15.2	25	27.5	16.4
2	10.4	21.0	10	8.6	17.4	18	11.2	14.8	26	25.5	15.2
3	10.0	20.2	11	8.8	16.8	19	13.6	14.6	27	24.8	14.8
4	9.9	19.6	12	8.8	16.4	20	29.5	14.6	28	24.8	14.4
5	9.7	19.4	13	9.2	16.2	21	69	15.0	29	23.2	14.4
6	9.2	20.2	14	8.8	16.0	22	48	14.2	30	24.0	14.0
7	9.2	20.2	15	9.9	15.6	23	36.5	14.0	31		13.4
8	9.0	18.8	16	9.2	15.4	24	31	17.0			
Mean monthly discharge, in second-feet										18.31	16.66
Run-off, in inches										-	-

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.620	12.1	0.690	16.1	0.660	14.3	1.02	45.2	1.19	65	-	-
2	.615	11.8	.685	15.8	.675	15.2	1.03	46.3	1.17	62	-	-
3	.610	11.6	.680	15.5	.680	15.5	1.05	48.5	1.15	60	-	-
4	.605	11.4	.675	15.2	.680	15.5	1.07	51	1.13	58	-	-
5	.600	11.1	.665	14.6	.680	15.5	1.10	54	1.12	56	-	-
6	.600	11.1	.660	14.3	.680	15.5	1.13	58	1.10	54	0.95	38.0
7	.595	10.8	.645	13.4	.695	16.4	1.16	61	1.09	53	-	-
8	.590	10.6	.640	13.1	.79	23.2	1.17	62	1.08	52	-	-
9	.590	10.6	.635	12.8	.84	27.4	1.22	69	1.07	51	-	-
10	.590	10.6	.635	12.8	.86	29.2	1.25	73	1.06	49.6	-	-
11	.585	10.4	.630	12.6	.88	31.0	1.26	74	1.04	47.4	-	-
N	.585	10.4	.625	12.4	.89	32.0	1.28	77	1.03	46.3	.94	37.0
1	.585	10.4	.620	12.1	.90	33.0	1.31	82	-	-	-	-
2	.585	10.4	.625	12.4	.93	36.0	1.34	86	1.02	45.2	-	-
3	.585	10.4	.630	12.6	.95	38.0	1.36	89	-	-	-	-
4	.585	10.4	.635	12.8	.96	39.0	1.35	88	1.00	43.0	-	-
5	.585	10.4	.640	13.1	.96	39.0	1.32	83	-	-	-	-
6	.580	10.1	.645	13.4	.95	38.0	1.31	82	.99	42.0	.92	35.0
7	.580	10.1	.650	13.7	.94	37.0	1.29	79	-	-	-	-
8	.600	11.1	.655	14.0	.94	37.0	1.28	77	.98	41.0	-	-
9	.635	12.8	.655	14.0	.95	38.0	1.26	74	-	-	-	-
10	.660	14.3	.650	13.7	.99	42.0	1.25	73	.98	41.0	-	-
11	.680	15.5	.645	13.4	1.01	44.1	1.23	70	-	-	-	-
M	.685	15.8	.650	13.7	1.01	44.1	1.21	67	.97	40.0	.91	34.0
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	0.90	33.0	0.85	28.3	0.83	26.5	0.81	24.8	0.82	25.6	0.79	23.2
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	.88	31.0	.84	27.4	.82	25.6	.80	24.0	.81	24.8	.79	23.2
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	.87	30.1	.84	27.4	.82	25.6	.80	24.0	.80	24.0	.78	22.4
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	.86	29.2	.83	26.5	.82	25.6	.84	27.4	.80	24.0	.78	22.4

Supplemental records.- Sept. 20, 6:30 a.m., 0.680 ft., 15.5 sec.-ft. Sept. 21, 3:20 p.m., 1.37 ft., 90 sec.-ft.

Wantagh Stream at Wantagh, N. Y.

Location.- Water-stage recorder and concrete V-notch control, lat. 40°40'40", long. 73°30'45", on right bank, just above Reservoir No. 2 of Brooklyn water supply at Wantagh, N. Y., and half a mile north of Sunrise Highway, on Wantagh Spur of Jones Beach Parkway, on northwest edge of village of Wantagh, Nassau County.
Drainage area.- About 17 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 58 second-feet.
Maxima.- September 1938: Discharge, 74 second-feet 9:20 a.m. Sept. 21 (gage height, 1.29 feet).
September 1937 to August 1938: Discharge, 55 second-feet Nov. 28, 1937 (gage height, 1.15 feet).
Remarks.- Records good. Flood run-off probably affected by natural storage in swampy, flat areas and sandy soil.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6.5	13.0	9	5.6	9.9	17	7.0	8.4	25	15.0	9.7
2	6.2	11.2	10	5.4	9.5	18	8.5	8.4	26	14.0	8.6
3	6.3	10.8	11	5.4	9.2	19	11.6	8.6	27	13.6	8.4
4	6.2	10.6	12	5.5	9.2	20	25.0	8.7	28	13.2	8.4
5	6.0	10.0	13	5.8	9.2	21	49.5	9.6	29	12.4	8.0
6	5.7	11.2	14	5.7	9.6	22	27.5	8.6	30	13.6	7.8
7	5.7	11.8	15	7.1	9.0	23	20.2	8.4	31		7.6
8	5.6	10.6	16	6.7	8.6	24	17.0	9.8			
Mean monthly discharge, in second-feet										11.45	9.43
Run-off, in inches										-	-

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.530	7.98	0.670	14.5	0.600	11.0	0.92	31.0	0.98	36.5	-	-
2	.525	7.79	.660	14.0	.600	11.0	.90	29.2	.96	34.6	-	-
3	.520	7.59	.645	13.2	.600	11.0	.94	32.8	.95	33.7	-	-
4	.520	7.59	.640	13.0	.600	11.0	.96	34.6	.94	32.8	-	-
5	.520	7.59	.630	12.5	.595	10.8	1.02	40.5	.93	31.9	-	-
6	.520	7.59	.620	12.0	.595	10.8	1.06	44.7	.92	31.0	0.80	21.4
7	.520	7.59	.620	12.0	.625	12.2	1.08	46.9	.91	30.1	-	-
8	.515	7.40	.610	11.5	1.04	42.5	1.12	52	.90	29.2	-	-
9	.515	7.40	.605	11.2	1.12	52	1.22	65	.89	28.4	-	-
10	.515	7.40	.600	11.0	1.09	48.0	1.26	70	.88	27.6	-	-
11	.510	7.21	.600	11.0	1.00	38.5	1.21	63	.87	26.8	-	-
N	.510	7.21	.595	10.8	.93	31.9	1.16	57	.86	26.0	.78	20.0
1	.515	7.40	.590	10.5	.89	28.4	1.17	58	.85	25.2	-	-
2	.515	7.40	.590	10.5	.86	26.0	1.18	59	.84	24.4	-	-
3	.515	7.40	.590	10.5	.86	26.0	1.24	67	-	-	-	-
4	.515	7.40	.590	10.5	.88	27.6	1.22	65	.84	24.4	-	-
5	.515	7.40	.590	10.5	.86	26.0	1.16	57	-	-	-	-
6	.515	7.40	.600	11.0	.84	24.4	1.14	54	.84	24.4	.76	18.6
7	.515	7.40	.610	11.5	.82	22.8	1.11	50	-	-	-	-
8	.520	7.59	.610	11.5	.80	21.4	1.08	46.9	.84	24.4	-	-
9	.650	13.5	.605	11.2	.80	21.4	1.06	44.7	-	-	-	-
10	.650	13.5	.600	11.0	.85	25.2	1.04	42.5	.83	23.6	-	-
11	.650	13.5	.600	11.0	.95	33.7	1.01	39.5	-	-	-	-
M	.680	15.0	.600	11.0	.95	33.7	.99	37.5	.82	22.8	.76	18.6
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	0.74	17.4	0.700	15.0	0.680	14.0	0.670	13.5	0.670	13.5	0.650	12.5
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	.73	16.8	.695	14.8	.675	13.8	.665	13.2	.665	13.2	.645	12.2
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	.72	16.2	.690	14.5	.675	13.8	.665	13.2	.660	13.0	.645	12.2
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	.72	16.2	.685	14.2	.680	14.0	.675	13.8	.655	12.8	.645	12.2

Supplemental records.- Sept. 20, 6:45 a.m., 0.595 ft., 9.86 sec.-ft.; 10:40 p.m., 0.79 ft., 20.7 sec.-ft. Sept. 21, 8:30 a.m., 1.10 ft., 49.2 sec.-ft.; 9:20 a.m., 1.29 ft., 74 sec.-ft.

East Meadow Brook at Freeport, N. Y.

Location.- Water-stage recorder and concrete V-notch control, lat. 40°39'55", long. 73°34'10", 50 feet upstream from bridge on Hempstead-Babylon Turnpike, on north boundary of village of Freeport, Nassau County, and 300 feet west of East Meadow Brook Parkway. Zero of gage is 10.922 feet above mean sea level (general adjustment of 1912).
Drainage area.- About 31 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 140 second-feet.
Maxima.- September 1938: Discharge, 149 second-feet 3 p.m. Sept. 21 (gage height, 1.76 feet).
January 1937 to August 1938: Discharge, 92 second-feet July 20, 1938 (gage height, 1.13 feet).
Remarks.- Records good. Flood run-off probably affected by natural storage in swampy, flat areas and sandy soil.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	16.4	31	9	13.6	23.8	17	15.4	20.4	25	33.5	24.2
2	15.4	28	10	13.6	23.8	18	19.6	20.4	26	32.5	21.4
3	14.6	27.5	11	13.6	22.8	19	51	20.0	27	31.5	20.8
4	14.4	27	12	13.6	22.8	20	57	20.4	28	31.5	20.0
5	14.0	26.5	13	14.0	22.2	21	121	23.8	29	29.5	19.0
6	14.0	28	14	14.0	21.4	22	63	20.4	30	31	18.6
7	14.2	30.5	15	18.6	21.0	23	40	20.4	31		18.6
8	14.0	26.5	16	16.4	20.4	24	36	23.6			
Mean monthly discharge, in second-feet										27.56	23.07
Run-off, in inches										-	-

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.480	17.1	0.81	52	0.66	34.2	1.03	80	1.25	105	-	-
2	.475	16.8	.80	51	.68	36.4	1.01	78	1.17	96	-	-
3	.475	16.8	.81	52	.68	36.4	1.02	79	1.11	90	-	-
4	.470	16.4	.83	54	.68	36.4	1.06	84	1.05	82	-	-
5	.470	16.4	.90	64	.67	35.3	1.15	94	1.00	76	-	-
6	.470	16.4	.96	71	.66	34.2	1.23	103	.96	72	0.71	41.7
7	.465	16.0	1.02	79	.69	37.6	1.34	114	.93	68	-	-
8	.465	16.0	1.01	78	.85	57	1.44	123	.90	64	-	-
9	.465	16.0	.97	73	.92	66	1.55	132	.88	62	-	-
10	.460	15.7	.91	65	.94	69	1.64	140	.86	60	-	-
11	.460	15.7	.86	58	.91	65	1.66	141	.84	57	-	-
N	.460	15.7	.82	53	.89	62	1.62	138	.82	55	.70	40.5
1	.460	15.7	.78	48.4	.88	61	1.65	140	-	-	-	-
2	.460	15.7	.76	46.0	.86	58	1.67	142	.80	52	-	-
3	.460	15.7	.74	43.6	.86	58	1.76	149	-	-	-	-
4	.460	15.7	.72	41.2	.88	61	1.69	144	.78	50	-	-
5	.460	15.7	.71	40.0	.91	65	1.66	141	-	-	-	-
6	.460	15.7	.70	38.8	.92	66	1.66	141	.77	48.9	.68	38.3
7	.460	15.7	.69	37.6	.94	69	1.62	138	-	-	-	-
8	.480	17.1	.68	36.4	.93	68	1.56	133	.76	47.7	-	-
9	.64	32.0	.66	34.2	.91	65	1.48	127	-	-	-	-
10	.70	38.8	.66	34.2	.99	75	1.41	120	.75	46.5	-	-
11	.74	43.6	.66	34.2	1.04	81	1.35	115	-	-	-	-
M	.79	49.6	.66	34.2	1.06	84	1.30	110	.74	45.3	.67	37.2
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	0.66	36.1	0.64	33.9	0.63	32.8	0.62	31.7	0.63	32.8	0.61	30.6
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	.66	36.1	.64	33.9	.63	32.8	.62	31.7	.62	31.7	.60	29.6
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	.65	35.0	.63	32.8	.62	31.7	.62	31.7	.61	30.6	.60	29.6
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	.64	33.9	.63	32.8	.62	31.7	.63	32.8	.61	30.6	.60	29.6

Supplemental records.- Sept. 18, 7:30 p.m., 0.46 ft., 15.7 sec.-ft.; 8:30 p.m., 0.63 ft., 30.9 sec.-ft.; 11:30 p.m., 0.79 ft., 49.6 sec.-ft. Sept. 19, 7:30 a.m., 1.03 ft., 80 sec.-ft. Sept. 20, 9:30 p.m., 0.94 ft., 69 sec.-ft. Sept. 21, 3 p.m., 1.76 ft., 149 sec.-ft.; 4:30 p.m., 1.66 ft., 141 sec.-ft.

Pines Brook at Malverne, N. Y.

Location.- Water-stage recorder and concrete V-notch control, lat. 40°40'00", long. 73°39'30", 100 feet below Lakeview Avenue Bridge and south line of village of Malverne, Nassau County, and 150 feet below outlet of Pines Pond. Zero of gage is 9.424 feet above mean sea level (general adjustment of 1912).
Drainage area.- About 10 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 39.4 second-feet.
Maxima.- September 1938: Discharge, 74 second-feet 4:50 p.m. Sept. 21 (gage height, 2.06 feet).
December 1936 to August 1938: Discharge, 36.7 second-feet July 24, 1938 (gage height, 1.78 feet).
Remarks.- Records good. Flood run-off probably affected by natural storage in swampy flat areas and sandy soil. Flow regulated by storage in Pines Pond.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6.4	13.6	9	6.0	10.8	17	6.2	10.0	25	13.4	10.2
2	6.4	13.2	10	5.9	10.6	18	7.1	9.8	26	13.2	9.4
3	6.4	12.8	11	5.9	10.6	19	24.2	9.6	27	13.2	9.2
4	6.4	12.4	12	5.9	10.6	20	19.4	9.9	28	13.2	9.1
5	6.4	12.0	13	5.9	10.4	21	48.5	11.4	29	12.8	8.8
6	6.3	13.0	14	5.8	11.6	22	25	9.7	30	13.8	8.6
7	6.3	13.2	15	6.2	10.0	23	14.8	9.4	31		8.4
8	6.2	11.2	16	6.3	10.0	24	14.0	10.2			
Mean monthly discharge, in second-feet										11.25	10.64
Run-off, in inches										1.25	1.22

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.210	6.20	1.43	12.8	1.53	17.5	1.64	24.3	1.91	51	-	-
2	1.210	6.20	1.51	16.5	1.54	18.0	1.65	25.0	1.88	48.1	-	-
3	1.210	6.20	1.58	20.3	1.55	18.5	1.65	25.0	1.85	44.5	-	-
4	1.210	6.20	1.63	23.6	1.54	18.0	1.70	29.1	1.81	39.9	-	-
5	1.210	6.20	1.69	28.2	1.52	17.0	1.72	30.9	1.76	34.7	-	-
6	1.210	6.20	1.74	32.7	1.50	16.0	1.74	32.7	1.72	30.9	1.48	15.0
7	1.210	6.20	1.78	36.7	1.52	17.0	1.78	36.7	1.69	28.2	-	-
8	1.210	6.20	1.79	37.7	1.55	18.5	1.80	38.8	1.66	25.8	-	-
9	1.210	6.20	1.78	36.7	1.55	18.5	1.81	39.9	1.63	23.6	-	-
10	1.210	6.20	1.76	34.7	1.54	18.0	1.90	50	1.60	21.5	-	-
11	1.210	6.20	1.72	30.9	1.54	18.0	1.86	45.7	1.58	20.3	-	-
N	1.210	6.20	1.67	26.6	1.54	18.0	1.87	46.7	1.56	19.1	1.48	15.0
1	1.210	6.20	1.62	22.9	1.54	18.0	1.94	56	-	-	-	-
2	1.210	6.20	1.59	20.9	1.53	17.5	1.96	59	1.54	18.0	-	-
3	1.210	6.20	1.65	25.0	1.54	18.0	1.99	63	-	-	-	-
4	1.210	6.20	1.61	22.2	1.54	18.0	2.02	67	1.52	17.0	-	-
5	1.210	6.20	1.61	22.2	1.56	19.1	2.04	70	-	-	-	-
6	1.210	6.20	1.60	21.5	1.58	20.3	2.02	67	1.51	16.5	1.47	14.6
7	1.220	6.40	1.56	19.1	1.63	23.6	2.00	64	-	-	-	-
8	1.260	7.26	1.54	18.0	1.60	21.5	1.98	61	1.50	16.0	-	-
9	1.59	20.9	1.52	17.0	1.61	22.2	1.96	59	-	-	-	-
10	1.270	7.49	1.52	17.0	1.67	26.6	1.94	56	1.50	16.0	-	-
11	1.260	7.26	1.52	17.0	1.64	24.3	1.93	55	-	-	-	-
M	1.300	8.24	1.53	17.5	1.63	23.6	1.92	53	1.49	15.5	1.46	14.2
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	1.46	14.2	1.45	13.7	1.44	13.2	1.44	13.2	1.45	13.7	1.43	12.8
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	1.45	13.7	1.44	13.2	1.44	13.2	1.44	13.2	1.44	13.2	1.43	12.8
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	1.46	14.2	1.44	13.2	1.44	13.2	1.44	13.2	1.44	13.2	1.43	12.8
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	1.45	13.7	1.44	13.2	1.44	13.2	1.44	13.2	1.43	12.8	1.43	12.8

Supplemental records.- Sept. 18, 8:35 p.m., 1.65 ft., 25.0 sec.-ft.; 9:10 p.m., 1.68 ft., 27.4 sec.-ft. Sept. 19, 2:30 p.m., 1.77 ft., 35.7 sec.-ft. Sept. 20, 2:20 a.m., 1.59 ft., 20.9 sec.-ft.; 9:50 p.m., 1.71 ft., 30.0 sec.-ft. Sept. 21, 9:45 a.m., 1.98 ft., 61 sec.-ft.; 12:30 p.m., 1.98 ft., 61 sec.-ft.; 4:50 p.m., 2.06 ft., 74 sec.-ft.

Hudson River near Newcomb, N. Y.

Location.- Water-stage recorder, lat. 43°58'00", long. 74°07'55", just above highway bridge, half a mile below outlet of Harris Lake, and 2 miles east of Newcomb, Essex County. Prior to Aug. 5, 1931, staff gage 125 feet downstream (present datum but different control).
Drainage area.- 192 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 5,840 second-feet; extended logarithmically to peak stage of March 1936 flood.
Maxima.- September 1938: Discharge, 4,970 second-feet 11 p.m. Sept. 22 (gage height, 8.98 feet).
August 1931 to August 1938: Discharge, 5,760 second-feet Mar. 20, 1936 (gage height, 9.69 feet).
September 1925 to July 1931: Discharge, 6,250 second-feet Apr. 9, 1928 (gage height, 8.0 feet, former site and present datum) from rating defined by current-meter measurements below 4,680 second-feet; extended logarithmically to peak stage.
Remarks.- Slight regulation by small storage reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	161	448	9	139	190	17	644	131	25	1,870	310
2	143	390	10	125	178	18	555	127	26	1,280	364
3	123	339	11	113	166	19	492	122	27	936	309
4	113	299	12	105	159	20	539	120	28	769	271
5	102	271	13	221	152	21	1,600	123	29	637	240
6	92	246	14	386	145	22	4,000	125	30	528	215
7	92	220	15	482	141	23	4,260	122	31		193
8	133	201	16	692	137	24	2,810	140			
Mean monthly discharge, in second-feet										805	213
Run-off, in inches										4.68	1.28

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.53	594	3.34	516	3.24	476	4.00	815	6.75	2,780	8.95	4,940
2	3.52	589	3.34	516	3.24	476	4.09	864	6.87	2,890	8.92	4,900
3	3.51	584	3.33	512	3.24	476	4.19	924	7.00	3,010	8.88	4,860
4	3.50	580	3.32	508	3.24	476	4.30	990	7.13	3,130	8.84	4,810
5	3.49	576	3.32	508	3.25	480	4.40	1,050	7.24	3,230	8.79	4,760
6	3.48	572	3.31	504	3.25	480	4.50	1,110	7.35	3,320	8.74	4,700
7	3.47	568	3.31	504	3.25	480	4.60	1,170	7.47	3,430	8.67	4,630
8	3.47	568	3.30	500	3.26	484	4.70	1,240	7.58	3,530	8.61	4,560
9	3.46	564	3.29	496	3.27	488	4.79	1,300	7.71	3,660	8.54	4,490
10	3.45	560	3.28	492	3.28	492	4.88	1,370	7.84	3,790	8.48	4,430
11	3.44	556	3.28	492	3.29	496	5.02	1,460	7.97	3,920	8.41	4,360
N	3.43	552	3.27	488	3.31	504	5.12	1,530	8.11	4,060	8.34	4,290
1	3.42	548	3.27	488	3.33	512	5.24	1,620	8.24	4,190	8.26	4,210
2	3.42	548	3.26	484	3.35	520	5.34	1,690	8.37	4,320	8.18	4,130
3	3.41	544	3.26	484	3.37	528	5.46	1,770	8.48	4,430	8.12	4,070
4	3.40	540	3.25	480	3.40	540	5.57	1,850	8.59	4,540	8.04	3,990
5	3.39	536	3.25	480	3.44	556	5.70	1,940	8.69	4,650	7.97	3,920
6	3.39	536	3.25	480	3.48	572	5.82	2,040	8.78	4,750	7.90	3,850
7	3.38	532	3.24	476	3.54	598	5.97	2,160	8.84	4,810	7.83	3,780
8	3.38	532	3.24	476	3.59	620	6.12	2,280	8.89	4,870	7.75	3,700
9	3.37	528	3.24	476	3.65	648	6.25	2,380	8.94	4,920	7.68	3,630
10	3.36	524	3.24	476	3.73	684	6.37	2,480	8.96	4,950	7.61	3,560
11	3.35	520	3.24	476	3.82	725	6.50	2,580	8.98	4,970	7.54	3,500
M	3.35	520	3.24	476	3.90	765	6.62	2,680	8.96	4,950	7.48	3,440
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.34	3,320	6.02	2,200	5.05	1,480	4.38	1,040	4.03	832	3.74	688
4	7.21	3,200	5.92	2,120	4.99	1,440	4.34	1,010	4.00	815	3.72	679
6	7.09	3,090	5.83	2,040	4.92	1,390	4.29	984	3.98	805	3.69	666
8	6.97	2,980	5.75	1,980	4.85	1,340	4.25	960	3.96	795	3.67	656
10	6.84	2,870	5.66	1,910	4.80	1,310	4.20	930	3.94	785	3.65	648
N	6.74	2,780	5.57	1,850	4.74	1,270	4.20	930	3.91	770	3.62	634
2	6.62	2,680	5.49	1,790	4.68	1,230	4.18	918	3.88	755	3.60	625
4	6.52	2,600	5.41	1,740	4.63	1,190	4.15	900	3.86	745	3.58	616
6	6.42	2,520	5.33	1,680	4.58	1,160	4.12	882	3.84	735	3.56	607
8	6.32	2,440	5.26	1,630	4.53	1,130	4.09	864	3.81	720	3.54	598
10	6.22	2,360	5.18	1,580	4.48	1,100	4.07	854	3.78	706	3.52	589
M	6.12	2,280	5.12	1,530	4.43	1,070	4.05	842	3.76	697	3.49	576

Hudson River at Gooley, near Indian Lake, N. Y.

Location.- Water-stage recorder, lat. 43°49'55", long. 74°11'45", half a mile above Gooley, Essex County, 1 mile above mouth of Indian River, and 5 miles northeast of Indian Lake village, Hamilton County.
Drainage area.- 419 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 9,180 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 9,980 second-feet 10 a.m. Sept. 22 (gage height, 8.46 feet).
August 1916 to August 1938: Discharge, 13,900 second-feet Apr. 12, 1922 (gage height, 10.0 feet).
Remarks.- Slight regulation by small storage reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	256	882	9	242	387	17	977	256	25	3,130	713
2	229	777	10	220	364	18	841	247	26	2,260	769
3	212	690	11	195	342	19	827	238	27	1,800	645
4	195	609	12	182	314	20	1,010	234	28	1,580	574
5	178	553	13	374	299	21	3,720	260	29	1,310	500
6	162	493	14	506	285	22	9,430	275	30	1,030	448
7	166	448	15	728	275	23	7,680	275	31		411
8	229	417	16	1,030	270	24	4,620	350			
Mean monthly discharge, in second-feet										1,511	439
Run-off, in inches										4.03	1.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	3.81	1,740	7.66	8,120	8.19	9,340
2	-	-	-	-	2.89	857	3.94	1,880	7.81	8,450	8.13	9,190
3	-	-	-	-	-	-	4.06	2,020	7.95	8,780	8.06	9,030
4	-	-	2.79	777	2.90	865	4.17	2,140	8.09	9,100	8.00	8,890
5	-	-	-	-	-	-	4.27	2,260	8.20	9,360	7.92	8,710
6	2.90	865	-	-	2.90	865	4.38	2,400	8.29	9,580	7.87	8,590
7	-	-	-	-	-	-	4.50	2,560	8.36	9,740	7.81	8,450
8	-	-	2.83	809	2.91	874	4.60	2,690	8.40	9,840	7.73	8,280
9	-	-	-	-	-	-	4.70	2,830	8.44	9,940	7.69	8,190
10	-	-	-	-	2.93	890	4.79	2,960	8.46	9,980	7.63	8,060
11	-	-	-	-	-	-	4.88	3,080	8.43	9,910	7.59	7,970
N	2.88	849	2.88	849	2.95	908	4.96	3,190	8.41	9,860	7.53	7,840
1	-	-	-	-	-	-	5.05	3,320	8.39	9,820	7.48	7,730
2	-	-	-	-	3.00	950	5.17	3,500	8.36	9,740	7.41	7,580
3	-	-	-	-	-	-	5.29	3,680	8.33	9,670	7.33	7,410
4	-	-	2.88	849	3.07	1,010	5.48	3,990	8.30	9,600	7.24	7,220
5	-	-	-	-	-	-	5.67	4,290	8.28	9,550	7.11	6,950
6	2.83	809	-	-	3.13	1,070	5.89	4,660	8.26	9,500	6.98	6,690
7	-	-	-	-	-	-	6.16	5,140	8.25	9,480	6.88	6,490
8	-	-	2.89	857	3.28	1,200	6.49	5,740	8.25	9,480	6.78	6,290
9	-	-	-	-	-	-	6.80	6,330	8.23	9,430	6.68	6,100
10	-	-	-	-	3.46	1,380	7.08	6,890	8.22	9,410	6.60	5,950
11	-	-	-	-	-	-	7.30	7,350	8.21	9,380	6.52	5,800
M	2.80	785	2.89	857	3.69	1,610	7.50	7,770	8.20	9,360	6.46	5,680
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.33	5,440	5.25	3,620	4.50	2,560	3.98	1,930	3.75	1,690	3.49	1,410
4	6.22	5,250	5.18	3,520	4.44	2,480	3.93	1,870	3.74	1,660	3.46	1,380
6	6.12	5,070	5.10	3,400	4.40	2,430	3.91	1,850	3.72	1,640	3.44	1,360
8	6.01	4,870	5.02	3,280	4.33	2,340	3.87	1,810	3.70	1,620	3.43	1,350
10	5.92	4,710	4.95	3,180	4.30	2,300	3.84	1,770	3.69	1,610	3.41	1,330
N	5.83	4,560	4.90	3,110	4.25	2,240	3.84	1,770	3.66	1,580	3.39	1,310
2	5.75	4,420	4.83	3,010	4.21	2,190	3.83	1,760	3.64	1,560	3.36	1,280
4	5.67	4,290	4.77	2,930	4.18	2,160	3.82	1,750	3.62	1,540	3.34	1,260
6	5.59	4,160	4.71	2,840	4.12	2,080	3.82	1,750	3.61	1,530	3.33	1,250
8	5.50	4,020	4.66	2,770	4.09	2,050	3.81	1,740	3.59	1,510	3.32	1,240
10	5.41	3,880	4.61	2,700	4.04	1,990	3.80	1,730	3.53	1,450	3.30	1,220
M	5.33	3,750	4.57	2,650	4.00	1,950	3.78	1,710	3.51	1,430	3.25	1,180

Hudson River at North Creek, N. Y.

Location.- Water-stage recorder, lat. 43°42'00", long. 73°59'00", just above highway bridge in North Creek, Warren County, 500 feet above mouth of North Creek.
Drainage area.- 792 square miles; 131 square miles affected by storage in Indian Lake Reservoir.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Rating curve for 1938 defined by current-meter measurements below 20,600 second-feet. Rating curve for 1913 defined by current-meter measurements below 11,400 second-feet.
Maxima.- September 1938: Discharge, 16,700 second-feet 10 a.m. Sept. 22 (gage height, 9.42 feet).
September 1907 to August 1938: Discharge observed, 27,400 second-feet Mar. 27, 1913 (gage height, 11.5 feet, chain gage at present site and datum).
Remarks.- Discharge not adjusted for storage in Indian Lake Reservoir and other small reservoirs. For information on storage see record for Indian Lake Reservoir near Indian Lake, N. Y.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	662	1,130	9	939	875	17	1,280	733	25	4,480	1,290
2	655	993	10	896	1,060	18	1,100	593	26	3,170	1,330
3	610	879	11	862	693	19	1,020	599	27	2,260	1,090
4	575	805	12	845	554	20	1,320	678	28	2,010	930
5	547	733	13	948	488	21	6,170	693	29	1,670	837
6	534	670	14	1,210	475	22	15,800	717	30	1,360	975
7	720	618	15	1,470	636	23	11,500	717	31		966
8	904	575	16	1,400	749	24	6,740	871			
Mean monthly discharge, in second-feet										2,455	805
Run-off, in inches										3.46	1.18

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.54	1,160	3.40	1,020	3.46	1,080	4.40	2,260	9.12	15,400	8.80	14,100
2	3.54	1,160	3.40	1,020	3.47	1,090	4.52	2,440	9.20	15,700	8.76	13,900
3	3.53	1,150	3.40	1,020	3.48	1,100	4.67	2,680	9.25	16,000	8.70	13,700
4	3.53	1,150	3.40	1,020	3.49	1,110	4.80	2,900	9.26	16,000	8.65	13,500
5	3.52	1,140	3.39	1,010	3.50	1,120	4.94	3,150	9.29	16,100	8.59	13,300
6	3.51	1,130	3.39	1,010	3.50	1,120	5.08	3,410	9.33	16,300	8.51	12,900
7	3.51	1,130	3.39	1,010	3.50	1,120	5.28	3,810	9.37	16,400	8.44	12,700
8	3.50	1,120	3.39	1,010	3.52	1,140	5.34	3,930	9.39	16,500	8.37	12,400
9	3.50	1,120	3.38	1,000	3.53	1,150	5.44	4,130	9.41	16,600	8.30	12,200
10	3.50	1,120	3.37	993	3.54	1,160	5.57	4,400	9.42	16,700	8.23	11,900
11	3.50	1,120	3.37	993	3.56	1,190	5.70	4,670	9.40	16,600	8.17	11,700
N	3.49	1,110	3.37	993	3.59	1,220	5.86	5,030	9.39	16,500	8.11	11,500
1	3.48	1,100	3.38	1,000	3.61	1,240	6.01	5,370	9.36	16,400	8.04	11,200
2	3.47	1,090	3.40	1,020	3.62	1,250	6.18	5,790	9.31	16,200	7.98	11,000
3	3.47	1,090	3.41	1,030	3.65	1,290	6.35	6,220	9.27	16,000	7.93	10,900
4	3.46	1,080	3.42	1,040	3.68	1,330	6.51	6,640	9.21	15,800	7.87	10,600
5	3.45	1,070	3.43	1,050	3.74	1,400	6.72	7,210	9.18	15,700	7.80	10,400
6	3.45	1,070	3.44	1,060	3.78	1,450	7.00	8,000	9.12	15,400	7.72	10,200
7	3.45	1,070	3.44	1,060	3.81	1,480	7.29	8,870	9.07	15,200	7.62	9,860
8	3.44	1,060	3.45	1,070	3.89	1,580	7.70	10,100	9.03	15,000	7.52	9,560
9	3.43	1,050	3.46	1,080	3.96	1,670	8.13	11,600	8.98	14,800	7.42	9,260
10	3.42	1,040	3.46	1,080	4.04	1,770	8.53	13,000	8.95	14,700	7.32	8,960
11	3.41	1,030	3.46	1,080	4.18	1,950	8.82	14,200	8.90	14,500	7.24	8,720
M	3.40	1,020	3.46	1,080	4.28	2,090	9.00	14,900	8.84	14,300	7.17	8,510
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.03	8,090	5.93	5,190	5.18	3,610	4.54	2,470	4.30	2,120	4.08	1,820
4	6.92	7,770	5.86	5,030	5.14	3,530	4.49	2,400	4.28	2,090	4.05	1,780
6	6.81	7,460	5.78	4,850	5.10	3,450	4.46	2,350	4.27	2,080	4.02	1,750
8	6.70	7,150	5.73	4,740	5.05	3,360	4.42	2,290	4.26	2,060	3.99	1,710
10	6.61	6,910	5.66	4,590	5.00	3,260	4.39	2,250	4.24	2,040	3.98	1,690
N	6.52	6,660	5.59	4,440	4.96	3,190	4.39	2,250	4.22	2,010	3.95	1,660
2	6.43	6,430	5.52	4,290	4.91	3,100	4.37	2,200	4.20	1,980	3.94	1,640
4	6.35	6,220	5.46	4,170	4.87	3,030	4.35	2,190	4.19	1,970	3.91	1,600
6	6.27	6,020	5.40	4,050	4.82	2,940	4.34	2,180	4.17	1,940	3.89	1,580
8	6.18	5,790	5.34	3,930	4.78	2,870	4.34	2,180	4.15	1,920	3.89	1,580
10	6.10	5,590	5.29	3,830	4.68	2,700	4.32	2,150	4.13	1,890	3.88	1,570
M	6.01	5,370	5.25	3,710	4.60	2,570	4.30	2,120	4.11	1,860	3.86	1,540

Hudson River at Hadley, N. Y.

Location.- Water-stage recorder, lat. 43°19'10", long. 73°50'40", at Hadley, Saratoga County, a quarter of a mile above mouth of Sacandaga River and 400 feet below mouth of Lake Luzerne outlet.

Drainage area.- 1,664 square miles; 131 square miles affected by storage in Indian Lake Reservoir.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 27,200 second-feet.

Maxima.- September 1938: Discharge, 23,200 second-feet 11 a.m. Sept. 22 (gage height, 12.96 feet).

July 1921 to August 1938: Discharge, 41,200 second-feet Mar. 18, 1936 (gage height, 19.59 feet).

Remarks.- Flood discharge materially affected by storage in Indian Lake Reservoir and other small reservoirs. For information on storage see records for Indian Lake Reservoir near Indian Lake, N. Y.

Mean daily discharge, in second-feet, 1938 a/

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,020	3,510	9	1,180	1,570	17	1,890	1,400	25	9,970	2,210
2	1,000	3,080	10	1,200	2,100	18	1,730	1,330	26	7,830	2,390
3	963	2,740	11	1,150	1,760	19	1,600	1,120	27	6,240	2,240
4	914	2,470	12	1,130	1,460	20	2,190	1,200	28	5,370	1,980
5	865	2,240	13	1,220	1,320	21	6,870	1,220	29	4,710	1,790
6	824	2,010	14	1,300	1,220	22	21,400	1,260	30	4,060	1,710
7	810	1,840	15	1,870	1,170	23	18,300	1,220	31		1,820
8	1,100	1,690	16	2,130	1,360	24	13,200	1,370			
Mean monthly discharge, in second-feet										4,135	1,800
Run-off, in inches										2.77	1.24

a/ For 24-hour period ending at 11 p.m.

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.35	1,800	3.18	1,630	3.29	1,740	4.59	3,520	10.59	17,200	11.93	20,500
2	3.34	1,790	3.17	1,620	3.30	1,750	4.65	3,620	10.93	18,000	11.83	20,300
3	3.32	1,770	3.17	1,620	3.31	1,760	4.72	3,740	11.33	19,000	11.74	20,000
4	3.31	1,760	3.17	1,620	3.33	1,780	4.79	3,860	11.73	20,000	11.66	19,800
5	3.30	1,750	3.17	1,620	3.39	1,850	4.85	3,970	12.10	21,000	11.57	19,600
6	3.30	1,750	3.17	1,620	3.42	1,880	4.91	4,080	12.43	21,800	11.48	19,400
7	3.30	1,750	3.16	1,610	3.48	1,950	5.00	4,240	12.64	22,400	11.40	19,200
8	3.30	1,750	3.15	1,600	3.51	1,980	5.10	4,420	12.81	22,800	11.33	19,000
9	3.30	1,750	3.14	1,590	3.56	2,040	5.23	4,660	12.91	23,100	11.24	18,800
10	3.29	1,740	3.14	1,590	3.60	2,090	5.39	4,960	12.95	23,200	11.16	18,600
11	3.29	1,740	3.13	1,580	3.63	2,130	5.59	5,350	12.96	23,200	11.06	18,400
N	3.29	1,740	3.12	1,570	3.67	2,170	5.81	5,790	12.95	23,200	10.96	18,100
1	3.29	1,740	3.11	1,560	3.70	2,210	6.08	6,350	12.91	23,100	10.86	17,800
2	3.28	1,730	3.11	1,560	3.74	2,260	6.39	7,000	12.88	23,000	10.75	17,600
3	3.27	1,720	3.11	1,560	3.80	2,340	6.71	7,700	12.84	22,900	10.65	17,300
4	3.26	1,710	3.11	1,560	3.85	2,400	7.04	8,450	12.77	22,700	10.55	17,100
5	3.24	1,690	3.11	1,560	3.90	2,470	7.37	9,210	12.69	22,500	10.45	16,800
6	3.22	1,670	3.11	1,560	3.93	2,510	7.72	10,000	12.62	22,300	10.37	16,600
7	3.21	1,660	3.13	1,580	4.00	2,610	8.06	10,900	12.54	22,100	10.27	16,400
8	3.20	1,650	3.14	1,590	4.04	2,670	8.53	12,000	12.44	21,800	10.18	16,200
9	3.20	1,650	3.16	1,610	4.13	2,800	9.12	13,500	12.35	21,600	10.12	16,000
10	3.20	1,650	3.19	1,640	4.24	2,960	9.60	14,700	12.25	21,400	10.06	15,800
11	3.19	1,640	3.20	1,650	4.38	3,180	9.98	15,600	12.15	21,100	9.97	15,600
M	3.19	1,640	3.23	1,680	4.50	3,370	10.30	16,400	12.04	20,800	9.89	15,400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.69	14,900	8.10	11,000	7.09	8,570	6.36	6,940	5.71	5,590	5.40	4,980
4	9.48	14,400	8.01	10,700	7.01	8,380	6.29	6,790	5.69	5,550	5.38	4,940
6	9.29	13,900	7.92	10,500	6.94	8,220	6.21	6,620	5.68	5,530	5.35	4,880
8	9.14	13,600	7.83	10,300	6.88	8,080	6.12	6,430	5.64	5,450	5.32	4,830
10	9.00	13,200	7.73	10,100	6.80	7,900	6.03	6,240	5.61	5,390	5.30	4,790
N	8.89	12,900	7.65	9,880	6.76	7,810	5.98	6,140	5.59	5,350	5.27	4,730
2	8.77	12,600	7.57	9,690	6.70	7,680	5.93	6,030	5.57	5,310	5.23	4,660
4	8.65	12,300	7.49	9,500	6.64	7,550	5.90	5,970	5.54	5,250	5.20	4,600
6	8.51	12,000	7.40	9,280	6.60	7,460	5.86	5,890	5.52	5,210	5.17	4,550
8	8.41	11,700	7.31	9,070	6.53	7,310	5.81	5,790	5.50	5,170	5.13	4,470
10	8.30	11,400	7.24	8,910	6.48	7,200	5.79	5,750	5.47	5,110	5.10	4,420
M	8.20	11,200	7.17	8,750	6.41	7,040	5.75	5,670	5.43	5,040	5.07	4,370

Hudson River at Mechanicville, N. Y.

Location.- Water-stage recorder, lat. 42°54'45", long. 73°40'45", at dam of West Virginia Pulp and Paper Co., in Mechanicville, Saratoga County. Crest of dam at elevation 70.91 feet (West Virginia Pulp and Paper Co. datum).

Drainage area.- 4,500 square miles; 1,175 square miles affected by storage in Sacandaga and Indian Lake Reservoirs.

Gage-height record.- Water-stage recorder graph used in computing flow over dam and through wheels. Gage heights are heads on crest of dam.

Stage-discharge relation.- Discharge computed from flow over spillway and through wheels. Thirty-inch flashboards on crest of spillway prior to 2 p.m. Sept. 22. Between 2 and 3 p.m. Sept. 22 flashboards believed to have failed progressively until about five percent remained, as found after the flood. Flashboards were not replaced during September 1938.

Maxima.- September 1938: Discharge, 78,000 second-feet 3 p.m. Sept. 22 (gage height, 9.04 feet).
1887 to August 1938: Discharge, 120,000 second-feet Mar. 28, 1913.

Remarks.- For information on storage see record for Sacandaga Reservoir at Conklingville and Indian Lake Reservoir near Indian Lake. Slight additional regulation from other small reservoirs. No adjustment is made for diversion through Glen Falls feeder into Champlain Canal. Daily discharges are for 24-hour period ending at 7 a.m. of following day. Discharges at indicated time do not include flow (about 50 second-feet) through lock of Champlain Canal. Records of gage heights and discharge over spillway and through wheels furnished by West Virginia Pulp and Paper Co. Daylight Saving Time used to 7 a.m. Sept. 25.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	3,120	9,240	9	3,450	5,070	17	5,400	3,680	25	19,700	6,350
2	3,530	9,210	10	3,270	4,080	18	4,950	5,090	26	15,500	6,880
3	3,230	5,770	11	3,040	5,670	19	5,050	4,990	27	14,000	7,560
4	2,360	7,630	12	3,500	5,550	20	16,200	5,280	28	13,700	6,040
5	1,630	7,180	13	3,940	5,730	21	34,200	5,620	29	11,900	5,580
6	2,070	6,350	14	4,700	5,290	22	65,600	5,050	30	10,900	5,290
7	3,110	5,830	15	5,650	4,190	23	37,800	5,500	31		4,610
8	3,280	5,280	16	6,160	3,890	24	27,500	4,970			
Mean monthly discharge, in second-feet										11,280	5,756
Run-off, in inches										2.80	1.48

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.92	5,350	3.92	4,330	3.17	5,760	6.00	20,100	7.16	42,500	7.29	55,900
2	3.04	5,530	3.87	4,160	3.25	5,950	6.04	20,300	7.33	44,200	7.12	54,000
3	3.08	5,600	3.79	3,670	3.37	6,280	6.12	20,900	7.56	53,700	7.04	53,200
4	3.04	5,530	3.71	3,520	3.50	6,650	6.16	21,000	7.83	57,200	6.87	51,300
5	3.00	5,460	3.62	3,230	3.58	6,980	6.16	21,100	8.16	64,200	6.79	50,400
6	2.96	5,410	3.50	3,280	3.67	7,260	6.25	21,500	8.37	69,900	6.62	49,100
7	3.33	3,000	3.25	4,650	3.71	7,460	6.25	21,500	8.54	72,000	6.54	47,800
8	3.83	4,000	2.50	4,540	3.75	7,610	6.21	21,100	8.66	73,600	6.37	45,100
9	4.00	4,680	2.17	4,540	3.79	7,770	6.16	20,800	8.63	72,300	6.12	43,800
10	4.16	5,420	2.08	3,550	3.87	8,100	6.16	20,800	8.75	74,500	6.00	42,700
11	4.16	5,420	2.17	2,490	4.33	10,200	6.16	20,800	8.79	75,000	5.87	42,000
N	4.16	5,420	2.50	4,130	4.79	12,600	6.16	20,800	8.87	76,000	5.79	40,900
1	4.25	5,810	2.71	4,470	5.04	14,100	6.37	21,600	8.87	76,000	5.71	40,200
2	4.25	5,810	2.71	4,860	5.12	14,600	6.45	23,700	8.87	76,000	5.66	40,000
3	4.16	5,420	2.62	4,860	5.21	15,100	6.50	23,700	9.04	78,000	5.62	39,300
4	4.16	5,420	2.54	4,860	5.29	15,600	6.58	27,600	8.71	73,700	5.41	37,700
5	4.08	5,040	2.58	4,860	5.37	16,200	6.25	28,200	8.46	70,300	5.33	36,900
6	4.04	4,870	2.54	4,860	5.42	16,500	6.45	29,900	8.33	68,800	5.29	36,500
7	4.00	4,680	2.54	4,860	5.46	16,700	6.45	29,900	8.20	67,300	5.25	36,200
8	4.00	4,680	2.54	4,860	5.54	17,300	6.54	30,400	8.08	65,700	5.21	35,400
9	4.00	4,680	2.62	4,900	5.66	18,200	6.71	32,000	7.91	63,400	5.12	35,400
10	4.00	4,680	2.87	4,920	5.75	18,700	7.00	33,800	7.79	62,000	5.08	34,700
11	4.00	4,680	3.00	5,460	5.83	19,300	7.08	38,800	7.62	59,800	5.04	34,300
M	4.00	4,680	3.08	5,600	5.92	19,900	7.25	40,400	7.45	57,900	5.00	33,900
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.96	33,500	3.79	24,400	2.92	16,700	2.42	14,800	2.04	12,700	1.92	12,000
4	4.96	33,600	3.79	24,400	2.87	16,500	2.54	15,600	2.28	13,200	1.96	12,200
6	4.92	33,200	3.75	24,000	2.83	16,300	2.62	16,100	2.33	14,200	2.04	12,700
8	4.75	31,800	3.75	24,000	2.54	14,700	2.62	16,100	2.33	14,400	2.04	12,700
10	4.58	30,400	3.75	24,000	2.67	15,500	2.58	15,900	2.54	15,600	2.08	12,900
N	4.46	29,400	3.67	23,100	2.54	14,900	2.46	15,200	2.62	15,900	2.04	12,700
2	4.29	28,000	3.67	23,100	2.46	14,500	2.42	14,900	2.54	15,600	1.96	12,200
4	4.13	26,800	3.58	22,500	2.58	15,400	2.25	14,000	2.33	14,400	1.92	12,000
6	3.96	25,600	3.42	20,800	2.54	15,200	2.13	13,200	2.08	12,900	1.88	11,800
8	3.87	25,000	3.21	18,900	2.29	13,900	2.04	12,700	2.00	12,400	1.79	11,400
10	3.83	24,800	3.00	17,200	2.21	13,500	2.00	12,500	1.88	11,800	1.75	11,100
M	3.83	24,800	2.96	16,900	2.29	14,100	1.96	12,300	1.88	11,800	1.75	11,100

Cedar River below Chain Lakes, near Indian Lake, N. Y.

Location.- Water-stage recorder, lat. 43°51'20", long. 74°14'20", in Essex County, 1½ miles below mouth of Rock River, 2 miles east of Chain Lakes outlet, 3 miles above the mouth, and 5½ miles northeast of Indian Lake village, Hamilton County.
Drainage area.- 160 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,460 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 4,800 second-feet 7 a.m. Sept. 22 (gage height, 10.45 feet).
October 1930 to August 1938: Discharge, 6,050 second-feet Oct. 7, 1932 (gage height, 11.80 feet).
Remarks.- Flow slightly regulated by storage for log-driving operations.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	68	243	9	65	122	17	182	77	25	752	287
2	60	213	10	59	117	18	165	80	26	656	225
3	62	195	11	53	114	19	250	79	27	572	191
4	58	177	12	51	102	20	367	78	28	527	170
5	51	165	13	84	88	21	1,710	96	29	419	155
6	50	151	14	98	83	22	4,160	110	30	289	143
7	57	140	15	174	83	23	2,150	102	31		129
8	83	129	16	223	85	24	996	139			
Mean monthly discharge, in second-feet										483	138
Run-off, in inches										3.37	0.99

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.35	174	2.41	184	2.89	280	4.52	788	9.33	3,860	8.42	3,140
2	2.34	172	2.45	191	2.90	282	4.67	848	9.63	4,100	8.24	2,990
3	2.33	170	2.50	200	2.91	284	4.82	908	9.88	4,300	8.06	2,850
4	2.33	170	2.55	210	2.92	287	5.00	980	10.12	4,510	7.91	2,750
5	2.33	170	2.60	219	2.93	289	5.19	1,060	10.27	4,640	7.79	2,660
6	2.33	170	2.67	233	2.93	289	5.32	1,130	10.39	4,750	7.70	2,600
7	2.33	170	2.72	243	2.93	289	5.42	1,180	10.45	4,800	7.62	2,540
8	2.33	170	2.76	252	2.93	289	5.49	1,210	10.43	4,790	7.54	2,490
9	2.33	170	2.77	254	2.94	291	5.54	1,240	10.38	4,740	7.49	2,450
10	2.33	170	2.80	260	2.95	294	5.59	1,260	10.27	4,640	7.43	2,410
11	2.32	168	2.81	262	2.97	298	5.63	1,280	10.16	4,540	7.38	2,380
N	2.31	167	2.82	264	3.01	307	5.68	1,310	10.03	4,430	7.32	2,330
1	2.29	163	2.83	267	3.05	317	5.82	1,390	9.89	4,310	7.20	2,250
2	2.28	162	2.83	267	3.09	327	6.07	1,540	9.77	4,220	6.99	2,100
3	2.27	160	2.84	269	3.16	345	6.34	1,700	9.64	4,110	6.73	1,940
4	2.26	158	2.85	271	3.21	358	6.59	1,850	9.51	4,010	6.47	1,780
5	2.26	158	2.86	273	3.28	377	6.87	2,020	9.40	3,920	6.22	1,630
6	2.26	158	2.87	275	3.38	404	7.23	2,270	9.28	3,820	6.02	1,510
7	2.26	158	2.87	275	3.50	440	7.61	2,540	9.17	3,740	5.86	1,420
8	2.26	158	2.88	278	3.63	479	7.93	2,760	9.06	3,650	5.75	1,350
9	2.26	158	2.88	278	3.77	521	8.22	2,980	8.97	3,580	5.65	1,300
10	2.27	160	2.88	278	3.99	596	8.51	3,210	8.87	3,500	5.57	1,260
11	2.31	167	2.88	278	4.19	666	8.77	3,420	8.75	3,400	5.51	1,220
M	2.36	175	2.88	278	4.37	730	9.05	3,640	8.61	3,290	5.46	1,200
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.37	1,160	4.63	832	4.32	712	3.97	590	3.91	568	3.54	452
4	5.28	1,110	4.57	808	4.28	698	3.95	582	3.89	562	3.52	446
6	5.20	1,070	4.51	784	4.25	688	3.91	568	3.87	554	3.50	440
8	5.13	1,040	4.47	768	4.22	677	3.89	562	3.85	548	3.47	431
10	5.07	1,010	4.43	752	4.19	666	3.88	558	3.83	540	3.46	428
N	5.00	980	4.39	736	4.16	656	3.89	562	3.81	534	3.45	425
2	4.94	956	4.35	722	4.13	646	3.89	562	3.80	530	3.43	419
4	4.88	932	4.31	708	4.11	638	3.91	568	3.78	524	3.43	419
6	4.83	912	4.29	702	4.08	628	3.93	576	3.75	515	3.42	416
8	4.77	888	4.32	712	4.05	618	3.93	576	3.67	491	3.37	402
10	4.71	864	4.33	716	4.02	607	3.93	576	3.60	470	3.28	377
M	4.67	848	4.34	719	3.99	596	3.93	576	3.55	455	3.20	355

Indian Lake Reservoir near Indian Lake, N. Y.

Location.- Staff gage, lat. 43°45'20", long. 74°16'35", at Indian Lake Dam, 2 miles south of Indian Lake village, Hamilton County. Zero of gage is 1,617.95 feet above mean sea level.
Drainage area.- 131 square miles.
Gage-height record.- Gage read to tenths daily about 8 a.m.
Maxima.- September 1938 to October 1938: Maximum gage height observed, 24.6 feet Oct. 13-14.
1900 to August 1938: Maximum gage height observed, 38.8 feet Mar. 28, 1913.
Remarks.- Flow from reservoir regulated by operation of sluice gates. Usable storage capacity, about 4,700,000,000 cubic feet. Because of wave action, gage readings and corresponding contents may be approximate.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	21.7	2,671	24.2	3,075	16	18.8	2,218	24.4	3,108
2	21.6	2,655	24.2	3,075	17	18.8	2,218	24.3	3,091
3	21.4	2,624	24.3	3,091	18	18.9	2,234	24.2	3,075
4	21.3	2,608	24.3	3,091	19	19.0	2,249	24.1	3,058
5	21.1	2,576	24.3	3,091	20	19.1	2,264	24.0	3,042
6	21.0	2,560	24.4	3,108	21	19.7	2,357	23.9	3,026
7	20.8	2,529	24.4	3,108	22	21.5	2,639	23.7	2,993
8	20.4	2,466	24.5	3,124	23	22.5	2,800	23.6	2,977
9	20.1	2,419	24.5	3,124	24	23.1	2,896	23.5	2,961
10	19.8	2,372	24.5	3,124	25	23.5	2,961	23.7	2,993
11	19.5	2,326	24.5	3,124	26	23.7	2,993	23.8	3,010
12	19.2	2,280	24.5	3,124	27	23.8	3,010	23.9	3,026
13	19.0	2,249	24.6	3,140	28	23.9	3,026	24.0	3,042
14	18.8	2,218	24.6	3,140	29	24.0	3,042	24.1	3,058
15	18.6	2,188	24.5	3,124	30	24.1	3,058	24.0	3,042
					31			23.9	3,026

	September	October
Gain or loss in storage, in equivalent mean second-feet a/	+152	-20.5

a/ Computed from contents corresponding to gage height interpolated for midnight of last day of month.

Indian River near Indian Lake, N. Y.

Location.- Water-stage recorder, lat. 43°45'30", long. 74°16'05", three-quarters of a mile below Indian Lake Dam and 2 miles south of Indian Lake village, Hamilton County.
Drainage area.- 132 square miles; 131 square miles affected by storage in Indian Lake Reservoir.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,630 second-feet.
Maxima.- September 1938: Discharge during flood period, 58 second-feet 8:30 p. m. Sept. 21 (gage height, 0.97 foot).
1912-14, 1915 to August 1938. Discharge, about 3,460 second-feet Mar. 28, 1913 (gage height, 7.8 feet).
Remarks.- For information on storage see record for Indian Lake Reservoir near Indian Lake, N. Y. Mean monthly discharge adjusted for storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	302	2.1	9	608	2.1	17	1.8	267	25	2.4	3.6
2	299	2.1	10	596	2.1	18	1.6	156	26	2.1	2.3
3	299	2.1	11	588	2.1	19	1.6	311	27	2.1	1.9
4	296	2.1	12	584	2.1	20	4.5	308	28	2.6	1.8
5	296	2.1	13	580	2.1	21	22	305	29	2.3	176
6	428	2.1	14	576	123	22	11	305	30	2.1	305
7	628	2.1	15	219	326	23	4.1	305	31		305
8	624	2.1	16	2.3	323	24	2.8	189			
Mean monthly discharge, in second-feet (observed)										233	121
Mean monthly discharge, in second-feet (adjusted)										385	100
Run-off, in inches (adjusted)										3.26	0.87

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	September 18		September 19		September 20		September 21		September 22		September 23	
	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.	Feet	Sec.-ft.
2	-	-	-	-	0.20	1.9	0.55	16.5	0.64	23.2	-	-
4	-	-	-	-	.21	2.1	.53	15.1	.56	17.2	-	-
6	0.18	1.6	0.18	1.6	.22	2.3	.49	12.5	.50	13.0	0.31	4.5
8	-	-	-	-	.23	2.4	.45	10.4	.46	10.9	-	-
10	-	-	-	-	.24	2.6	.45	10.4	.43	9.3	-	-
N	.18	1.6	.18	1.6	.25	2.8	.45	10.4	.40	7.7	.30	4.1
2	-	-	-	-	.28	3.6	.50	13.0	.38	7.0	-	-
4	-	-	-	-	.31	4.5	.61	20.8	.36	6.3	-	-
6	.18	1.6	.18	1.6	.35	5.9	.71	29.0	.35	5.9	.29	3.8
8	-	-	-	-	.39	7.3	.94	54	.34	5.5	-	-
10	-	-	-	-	.45	10.3	.91	50	.33	5.2	-	-
M	.18	1.6	.20	1.9	.53	15.1	.75	33.0	.32	4.8	.28	3.6

Supplemental records.- Sept. 21, 8:30 p.m., 0.97 foot, 58 second-feet.

Schroon River at Riverbank, N. Y.

Location.- Water-stage recorder, lat. 43°36'40", long. 73°44'10", at highway bridge at Riverbank, Warren County, 9 miles below Schroon Lake Reservoir.
Drainage area.- 527 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 3,820 second-feet. For 1936 defined by current-meter measurements below 11,200 second-feet.
Maxima.- September 1938: Discharge, 3,850 second-feet 1 a.m. Sept. 24 (gage height, 7.44 feet).
September 1907 to August 1938: Discharge, 12,100 second-feet Mar. 21, 1936 (gage height, 12.18 feet, from flood marks).
Remarks.- Discharge affected by storage in Schroon Lake, Brant Lake, and other small lakes and reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	242	1,660	9	189	723	17	286	431	25	3,490	607
2	232	1,480	10	175	661	18	301	418	26	3,090	672
3	229	1,310	11	166	607	19	319	381	27	2,710	661
4	217	1,170	12	172	576	20	432	373	28	2,380	644
5	207	1,060	13	166	537	21	1,050	377	29	2,100	613
6	189	974	14	169	508	22	2,560	365	30	1,850	592
7	184	860	15	214	480	23	3,680	346	31		551
8	198	781	16	269	457	24	3,760	449			
Mean monthly discharge, in second-feet										1,041	688
Run-off, in inches										2.21	1.51

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.98	290	2.03	308	2.15	354	2.66	582	4.46	1,760	6.83	3,420
2	1.99	294	2.03	308	2.16	357	2.69	597	4.51	1,800	6.84	3,430
3	1.99	294	2.03	308	2.17	361	2.71	607	4.57	1,840	6.86	3,440
4	2.00	297	2.04	312	2.18	365	2.73	618	4.65	1,900	6.93	3,490
5	2.00	297	2.04	312	2.19	369	2.77	639	4.75	1,960	6.99	3,530
6	2.00	297	2.04	312	2.20	373	2.80	655	4.87	2,050	7.05	3,580
7	2.01	301	2.04	312	2.22	381	2.84	677	4.98	2,130	7.10	3,610
8	2.01	301	2.04	312	2.23	385	2.88	700	5.09	2,200	7.11	3,620
9	2.01	301	2.04	312	2.24	389	2.94	734	5.21	2,290	7.15	3,640
10	2.01	301	2.04	312	2.26	398	3.00	769	5.32	2,360	7.19	3,670
11	2.01	301	2.05	316	2.28	406	3.09	823	5.46	2,460	7.22	3,690
N	2.02	304	2.05	316	2.29	410	3.19	885	5.58	2,550	7.27	3,730
1	2.02	304	2.05	316	2.31	418	3.29	949	5.68	2,620	7.31	3,760
2	2.02	304	2.05	316	2.33	427	3.40	1,020	5.79	2,690	7.34	3,780
3	2.02	304	2.05	316	2.34	431	3.51	1,100	5.88	2,760	7.36	3,790
4	2.02	304	2.06	319	2.37	444	3.64	1,190	6.00	2,840	7.38	3,810
5	2.03	308	2.06	319	2.40	457	3.79	1,290	6.13	2,930	7.39	3,810
6	2.03	308	2.08	327	2.43	471	3.93	1,390	6.19	2,970	7.40	3,820
7	2.03	308	2.09	330	2.47	489	4.10	1,510	6.30	3,050	7.40	3,820
8	2.03	308	2.10	334	2.51	508	4.27	1,630	6.41	3,130	7.40	3,820
9	2.03	308	2.11	338	2.54	522	4.38	1,710	6.49	3,180	7.40	3,820
10	2.03	308	2.12	342	2.57	537	4.40	1,720	6.58	3,250	7.41	3,830
11	2.03	308	2.13	346	2.60	551	4.42	1,730	6.65	3,300	7.43	3,840
M	2.02	304	2.14	350	2.64	571	4.44	1,750	6.74	3,360	7.44	3,850
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.42	3,830	7.14	3,640	6.61	3,270	6.04	2,870	5.52	2,500	5.09	2,200
4	7.40	3,820	7.10	3,610	6.56	3,230	5.99	2,830	5.48	2,480	5.06	2,180
6	7.39	3,810	7.06	3,580	6.51	3,200	5.94	2,800	5.45	2,460	5.03	2,160
8	7.38	3,810	7.02	3,550	6.46	3,160	5.90	2,770	5.41	2,430	5.00	2,140
10	7.36	3,790	6.97	3,520	6.41	3,130	5.84	2,730	5.37	2,400	4.97	2,120
N	7.34	3,780	6.93	3,490	6.37	3,100	5.80	2,700	5.33	2,370	4.94	2,100
2	7.32	3,760	6.89	3,460	6.32	3,060	5.75	2,660	5.30	2,350	4.90	2,070
4	7.30	3,750	6.85	3,440	6.25	3,020	5.72	2,640	5.26	2,320	4.87	2,050
6	7.27	3,730	6.81	3,410	6.20	2,980	5.68	2,620	5.23	2,300	4.86	2,040
8	7.23	3,700	6.75	3,360	6.16	2,950	5.64	2,590	5.19	2,270	4.83	2,020
10	7.21	3,690	6.71	3,340	6.12	2,920	5.60	2,560	5.16	2,250	4.80	2,000
M	7.17	3,660	6.66	3,300	6.08	2,900	5.56	2,530	5.13	2,230	4.76	1,970

Supplemental records.- Sept. 24, 1 a.m., 7.44 ft., 3,850 sec.-ft.

Sacandaga River near Hope, N. Y.

Location.- Water-stage recorder, lat. 43°21'10", long. 74°16'15", 1½ miles below junction of East and West Branches of Sacandaga River and 4½ miles above Hope, Hamilton County.
Drainage area.- 491 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 15,000 second-feet; extended logarithmically to peak stage. For 1913 defined by current-meter measurements below 8,440 second-feet; extended logarithmically as a tangent to peak stage.
Maxima.- September 1938: Discharge, 16,200 second-feet 1 a.m. Sept. 22 (gage height, 8.04 feet).
September 1911 to August 1938: Discharge, 32,000 second-feet Mar. 27, 1913 (gage height, 11.0 feet, from floodmarks at former staff gage, present datum).
Remarks.- Flood discharge not affected by artificial storage or diversions. Occasional diurnal fluctuation due to operation of small dams.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	102	890	9	102	411	17	464	284	25	2,670	1,500
2	99	784	10	92	392	18	444	273	26	2,000	1,150
3	94	703	11	89	367	19	464	264	27	1,620	940
4	87	634	12	99	350	20	1,240	254	28	1,470	804
5	76	577	13	144	332	21	7,530	259	29	1,210	685
6	73	522	14	150	321	22	11,100	259	30	1,040	592
7	82	472	15	501	315	23	5,920	250	31		522
8	115	437	16	694	300	24	3,860	593			
Mean monthly discharge, in second-feet										1,451	530
Run-off, in inches										3.30	1.24

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.28	437	2.27	430	2.46	569	4.80	4,130	8.04	16,200	5.84	6,980
2	2.28	437	2.27	430	2.48	584	4.97	4,530	8.00	16,000	5.81	6,890
3	2.28	437	2.27	430	2.51	608	5.10	4,850	7.91	15,550	5.77	6,770
4	2.29	444	2.26	426	2.53	626	5.20	5,110	7.81	15,050	5.74	6,670
5	2.29	444	2.26	426	2.57	660	5.24	5,220	7.68	14,400	5.70	6,550
6	2.29	444	2.26	426	2.60	685	5.27	5,300	7.52	13,600	5.68	6,490
7	2.30	450	2.26	426	2.62	703	5.29	5,350	7.38	12,900	5.64	6,370
8	2.30	450	2.27	430	2.66	739	5.28	5,330	7.25	12,250	5.62	6,310
9	2.30	450	2.29	444	2.70	775	5.24	5,220	7.12	11,680	5.59	6,220
10	2.30	450	2.29	444	2.75	822	5.22	5,160	7.01	11,240	5.56	6,130
11	2.30	450	2.30	450	2.81	880	5.21	5,140	6.90	10,800	5.52	6,010
N	2.30	450	2.30	450	2.88	950	5.24	5,220	6.80	10,400	5.50	5,950
1	2.30	450	2.31	457	2.94	1,010	5.32	5,440	6.70	10,000	5.46	5,830
2	2.30	450	2.32	464	3.05	1,140	5.44	5,780	6.60	9,600	5.42	5,720
3	2.30	450	2.33	472	3.11	1,200	5.67	6,460	6.50	9,200	5.39	5,630
4	2.30	450	2.34	479	3.22	1,330	5.90	7,170	6.41	8,880	5.36	5,550
5	2.30	450	2.35	486	3.32	1,460	6.16	8,020	6.32	8,570	5.32	5,440
6	2.29	444	2.36	493	3.42	1,590	6.51	9,240	6.25	8,330	5.29	5,350
7	2.29	444	2.38	508	3.54	1,760	6.92	10,880	6.20	8,160	5.24	5,220
8	2.29	444	2.39	515	3.67	1,960	7.32	12,600	6.12	7,890	5.21	5,140
9	2.29	444	2.40	522	3.81	2,180	7.65	14,250	6.07	7,720	5.18	5,060
10	2.28	437	2.40	522	4.01	2,530	7.82	15,100	6.01	7,520	5.13	4,930
11	2.27	430	2.40	522	4.26	2,990	7.91	15,550	5.94	7,300	5.11	4,880
M	2.27	430	2.42	538	4.54	3,550	8.00	16,000	5.90	7,170	5.06	4,750
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.98	4,550	4.29	3,050	3.83	2,210	3.51	1,720	3.40	1,560	3.20	1,310
4	4.90	4,360	4.24	2,960	3.80	2,160	3.50	1,700	3.40	1,560	3.19	1,300
6	4.85	4,240	4.20	2,880	3.77	2,110	3.48	1,670	3.39	1,550	3.17	1,270
8	4.79	4,110	4.16	2,800	3.73	2,050	3.44	1,620	3.37	1,520	3.14	1,240
10	4.72	3,950	4.11	2,710	3.71	2,020	3.42	1,590	3.35	1,500	3.12	1,210
N	4.67	3,830	4.09	2,670	3.69	1,980	3.43	1,600	3.32	1,460	3.11	1,200
2	4.60	3,680	4.04	2,580	3.66	1,940	3.41	1,570	3.30	1,430	3.10	1,190
4	4.55	3,580	4.00	2,510	3.63	1,900	3.40	1,560	3.29	1,420	3.09	1,180
6	4.50	3,470	3.98	2,470	3.60	1,850	3.40	1,560	3.28	1,410	3.08	1,170
8	4.44	3,350	3.94	2,400	3.59	1,840	3.40	1,560	3.26	1,380	3.06	1,150
10	4.39	3,250	3.90	2,330	3.57	1,800	3.40	1,560	3.23	1,350	3.04	1,120
M	4.33	3,130	3.87	2,280	3.54	1,760	3.40	1,560	3.21	1,320	3.02	1,100

Sacandaga Reservoir at Conklingville, N. Y.

Location.- Water-stage recorder, lat. 43°18'55", long. 73°55'35", 800 feet above right end of Conklingville Dam at Conklingville, Saratoga County. Gage readings are elevations above mean sea level (general adjustment of 1912).
Drainage area.- 1,044 square miles.
Gage-height record.- Hourly printing water-stage recorder.
Maxima.- September 1938: Elevation, 759.30 feet 8 p.m. Sept. 25 (contents, 24,890,000,000 cubic feet).
January 1930 to August 1938: Elevation, 769.34 feet July 11, 1935 (contents, 35,800,000,000 cubic feet).
Remarks.- Flow of Sacandaga River regulated at Conklingville by this reservoir. Capacity of reservoir at elevation of spillway crest (771 feet) is 37,720,000,000 cubic feet. Available capacity (above 735 feet) is 33,120,000,000 cubic feet. Area of water surface at elevation of spillway crest is 41.7 square miles. Records furnished by Board of Hudson River Regulating District.

Mean daily elevation, in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	756.48	22,060	758.57	24,150	16	754.55	20,180	756.44	22,020
2	756.27	21,850	758.45	24,020	17	754.44	20,070	756.37	21,950
3	756.09	21,670	758.42	23,990	18	754.41	20,040	756.15	21,730
4	756.07	21,650	758.27	23,840	19	754.41	20,040	756.00	21,580
5	756.01	21,590	758.09	23,660	20	754.51	20,140	755.78	21,370
6	755.89	21,470	757.87	23,440	21	755.20	20,800	755.55	21,140
7	755.69	21,280	757.75	23,320	22	757.32	22,890	755.29	20,890
8	755.51	21,100	757.63	23,200	23	758.34	23,910	755.19	20,790
9	755.33	20,930	757.55	23,120	24	758.76	24,340	755.18	20,780
10	755.16	20,770	757.49	23,060	25	759.01	24,590	755.19	20,790
11	755.07	20,680	757.33	22,900	26	759.17	24,760	755.08	20,690
12	754.98	20,590	757.16	22,730	27	759.11	24,690	754.99	20,600
13	754.85	20,470	756.96	22,530	28	759.03	24,610	754.83	20,450
14	754.66	20,280	756.74	22,310	29	758.86	24,440	754.75	20,370
15	754.63	20,250	756.54	22,110	30	758.71	24,290	754.65	20,270
					31			754.70	20,320

	September	October
Gain or loss in storage, in equivalent mean second-feet.	+802	-1,475

a/ For 24 hours ending at 11 p.m. Sept. 1-24; for 24 hours ending at 12 p.m. Sept. 25 to Oct. 31.

Sacandaga River at Conklingville, N. Y.

Location.- Water-stage recorder, lat. 43°18'40", long. 73°54'50", about half a mile below Conklingville, Saratoga County, and about 5 miles above mouth.
Drainage area.- 1,044 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 7,480 second-feet.
Maxima.- September 1938: Discharge, 5,040 second-feet 9 a.m. Sept. 23 (gage height, 6.12 feet).
October 1932 to August 1938: Discharge, 7,800 second-feet May 16, 1937 (gage height, 7.20 feet).
Remarks.- For information of storage see record for Sacandaga Reservoir at Conklingville, N. Y. Records furnished by Board of Hudson River Regulating District.
Daylight Saving Time Sept. 1-24; Eastern Standard Time Sept. 25 to Oct. 31.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	2,110	3,220	9	2,130	16	17	2,140	2,590	25	447	2,400
2	2,150	17	10	2,140	2,410	18	14	2,620	26	3,180	2,420
3	2,140	2,830	11	14	2,400	19	2,150	2,820	27	3,190	2,390
4	14	2,820	12	2,140	2,640	20	2,150	2,780	28	3,200	2,410
5	13	2,410	13	2,130	2,800	21	2,520	2,820	29	3,200	2,400
6	2,120	2,400	14	2,150	2,810	22	1,310	2,820	30	3,190	15
7	2,150	2,400	15	2,140	2,790	23	3,200	18	31		2,410
8	2,150	2,410	16	2,170	15	24	3,220	2,830			
Mean monthly discharge, in second-feet (observed)										2,032	2,198
Mean monthly discharge, in second-feet (adjusted)										2,834	723
Run-off, in inches (adjusted)										3.02	0.80

Mean discharge, in second-feet, for the hour prior to indicated time, 1938

	September 18		September 19		September 20		September 21		September 22		September 23	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
1	-	-	-	4,250	18	4,240	18	4,270	169	27	30	4,760
2	-	-	-	4,250	18	4,250	18	4,270	30	18	26	4,760
3	-	-	-	4,240	17	4,260	18	4,280	23	17	22	4,770
4	-	-	-	4,250	17	4,260	18	4,290	21	17	20	4,780
5	-	-	-	4,250	17	4,260	18	4,290	20	17	20	4,770
6	14	13	13	4,250	17	4,280	18	4,280	20	16	19	4,760
7	-	-	13	4,260	17	4,300	18	4,280	19	16	19	4,760
8	-	-	3,780	930	3,670	959	3,700	1,170	3,380	2,710	4,040	4,770
9	-	-	4,220	31	4,190	32	4,220	40	4,200	4,850	4,980	4,770
10	-	-	4,250	20	4,190	22	4,270	1,030	4,220	4,880	4,860	4,760
11	-	-	4,260	19	4,220	20	4,270	4,800	4,280	1,930	4,760	4,770
12	13	13	4,250	18	4,240	19	4,260	2,590	483	48	4,760	846

	September 24		September 25		September 26		September 27		September 28		September 29	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
1	40	-	32	-	24	-	28	-	30	-	28	-
2	25	4,800	22	17	19	4,790	20	4,770	20	4,780	20	4,760
3	-	-	-	-	-	-	-	-	-	-	-	-
4	19	4,800	20	17	18	4,780	18	4,770	18	4,780	19	4,760
5	-	-	-	-	-	-	-	-	-	-	-	-
6	19	4,800	19	17	18	4,780	18	4,770	18	4,790	18	4,750
7	18	-	19	3,740	18	-	18	-	18	-	18	-
8	4,330	4,800	18	4,740	3,780	4,780	4,300	4,780	4,300	4,790	4,420	4,770
9	-	-	-	1,690	-	-	-	-	-	-	-	-
10	4,780	4,800	17	165	4,780	4,780	4,760	4,780	4,780	4,790	4,760	4,780
11	-	4,800	-	24	-	4,790	-	4,770	-	4,790	-	4,790
12	4,760	967	17	24	4,780	711	4,770	652	4,780	613	4,770	822

Batten Kill at Arlington, Vt.

Location.- Chain gage on downstream side of bridge, lat. 43°04'40", long. 73°09'30", at Arlington, Bennington County, 0.9 mile below mouth of Warm Brook. Zero of gage is 597.68 feet above mean sea level.
Drainage area.- 152 square miles.
Gage-height record.- Graph drawn on basis of two gage readings daily, flood marks, and shape of stage graphs of nearby streams.
Stage-discharge relation.- Defined by current-meter measurements below 5,160 second-feet; extended to peak stage on basis of flood determinations by slope-area method and by flow over dam.
Maxima.- September 1938: Discharge, 8,430 second-feet 9 p.m. Sept. 21 (gage height, 9.08 feet, from flood marks).
1928 to August 1938: Discharge, 11,100 second-feet Mar. 18, 1936 (gage height, 9.87 feet, revised, from floodmarks above bridge converted to equivalent chain-gage height).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	180	396	9	156	222	17	339	156	25	906	850
2	146	339	10	136	207	18	282	156	26	670	455
3	119	303	11	119	194	19	488	156	27	612	376
4	128	303	12	119	180	20	2,260	221	28	641	321
5	119	286	13	403	180	21	4,870	435	29	500	286
6	112	253	14	339	180	22	5,300	269	30	415	237
7	152	237	15	575	168	23	2,100	207	31		222
8	269	237	16	615	180	24	1,270	368			
Mean monthly discharge, in second-feet										811	277
Run-off, in inches										5.96	2.10

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.12	310	3.03	279	5.25	1,510	6.47	2,770	8.81	7,630	6.78	3,190
2	3.12	310	3.08	296	5.51	1,730	6.53	2,850	8.70	7,310	6.70	3,080
3	3.11	307	3.11	307	5.72	1,920	6.60	2,940	8.60	7,030	6.60	2,940
4	3.11	307	3.14	317	5.84	2,040	6.67	3,040	8.52	6,810	6.52	2,840
5	3.10	303	3.18	332	5.93	2,130	6.75	3,150	8.40	6,500	6.43	2,720
6	3.10	303	3.21	343	6.00	2,200	6.83	3,270	8.30	6,250	6.33	2,590
7	3.10	303	3.24	354	6.03	2,230	6.90	3,380	8.22	6,060	6.25	2,490
8	3.10	303	3.28	369	6.04	2,240	6.94	3,440	8.15	5,890	6.15	2,370
9	3.10	303	3.31	380	6.07	2,280	6.99	3,520	8.08	5,720	6.05	2,260
10	3.09	300	3.35	396	6.08	2,290	7.01	3,560	8.00	5,530	5.95	2,150
11	3.08	296	3.38	407	6.10	2,310	7.03	3,590	7.93	5,370	5.85	2,050
N	3.05	286	3.41	419	6.11	2,320	7.11	3,730	7.85	5,180	5.75	1,950
1	3.03	279	3.45	435	6.12	2,330	7.18	3,850	7.78	5,030	5.65	1,860
2	3.01	272	3.48	447	6.13	2,350	7.30	4,060	7.70	4,850	5.54	1,760
3	2.98	263	3.51	460	6.14	2,360	7.44	4,320	7.62	4,680	5.43	1,660
4	2.97	259	3.54	473	6.15	2,370	7.80	5,070	7.53	4,500	5.37	1,610
5	2.96	256	3.60	500	6.17	2,390	8.30	6,250	7.45	4,340	5.31	1,560
6	2.95	253	3.68	536	6.19	2,420	8.70	7,310	7.38	4,200	5.27	1,530
7	2.94	250	3.78	581	6.22	2,450	8.94	8,010	7.30	4,060	5.23	1,490
8	2.94	250	3.92	650	6.25	2,490	9.07	8,400	7.20	3,880	5.21	1,480
9	2.95	253	4.10	740	6.30	2,550	9.08	8,430	7.13	3,760	5.20	1,470
10	2.97	259	4.35	878	6.33	2,590	9.07	8,400	7.03	3,590	5.19	1,460
11	2.98	263	4.64	1,050	6.38	2,650	9.00	8,190	6.95	3,460	5.18	1,450
M	3.00	269	4.95	1,270	6.42	2,710	8.91	7,920	6.87	3,330	5.17	1,446
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.14	1,420	4.62	1,030	4.14	762	3.79	586	4.00	690	3.70	545
4	5.11	1,400	4.58	1,010	4.10	740	3.78	581	3.99	685	3.67	532
6	5.08	1,370	4.52	972	4.05	715	3.76	572	3.98	680	3.64	518
8	5.04	1,340	4.47	944	4.00	690	3.75	568	3.97	675	3.61	504
10	5.00	1,310	4.42	916	3.98	680	3.74	563	3.94	660	3.60	500
N	4.95	1,270	4.38	894	3.94	660	3.76	572	3.91	645	3.58	491
2	4.90	1,230	4.34	872	3.90	640	3.80	590	3.89	635	3.58	491
4	4.87	1,210	4.30	850	3.88	630	3.88	630	3.87	625	3.58	491
6	4.82	1,170	4.28	839	3.86	620	3.95	665	3.83	605	3.56	482
8	4.78	1,150	4.24	817	3.84	610	3.99	685	3.80	590	3.54	473
10	4.72	1,100	4.20	795	3.82	600	4.00	690	3.77	576	3.53	468
M	4.68	1,080	4.18	784	3.80	590	4.01	695	3.73	558	3.51	460

Batten Kill at Battenville, N. Y.

Location.- Water-stage recorder, lat. 43°06'05", long. 73°25'55", 1 mile southwest of Battenville, Washington County.
Drainage area.- 394 square miles.
Gage-height record.- Water-stage recorder graph except for period 11 p.m. Sept. 21 to 10:30 a.m. Sept. 22, record for which was based on three gage observations including that of the peak.
Stage-discharge relation.- Defined by current-meter measurements below 16,000 second-feet.
Maxima.- September 1938: Discharge, 16,000 second-feet 9 a.m. Sept. 22 (gage height, 14.82 feet).
October 1922 to August 1938: Discharge, 21,300 second-feet Nov. 4, 1927 (gage height, 17.7 feet, from floodmarks).
Remarks.- Flood discharge not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	225	942	9	302	489	17	682	363	25	2,500	1,290
2	258	839	10	237	465	18	551	353	26	1,880	899
3	221	776	11	191	443	19	636	339	27	1,560	720
4	198	707	12	198	426	20	2,090	348	28	1,510	688
5	202	662	13	380	405	21	4,240	522	29	1,260	616
6	187	616	14	578	389	22	13,400	544	30	1,060	551
7	184	564	15	413	384	23	6,480	421	31		525
8	345	519	16	965	379	24	3,560	478			
Mean monthly discharge, in second-feet										1,550	570
Run-off, in inches										4.38	1.67

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.10	590	3.04	551	3.52	875	5.92	2,980	10.07	8,260	10.87	9,460
2	3.08	577	3.04	551	3.59	928	5.95	3,020	11.97	11,200	10.59	9,040
3	3.08	577	3.05	558	3.64	965	5.97	3,040	12.97	12,800	10.29	8,580
4	3.08	577	3.13	610	3.72	1,030	6.03	3,100	13.57	13,800	10.07	8,260
5	3.07	570	3.06	564	3.80	1,090	6.08	3,160	14.00	14,500	9.79	7,850
6	3.03	544	3.16	629	3.93	1,190	6.14	3,220	14.37	15,200	9.53	7,480
7	3.00	525	3.13	610	4.20	1,410	6.22	3,310	14.62	15,600	9.37	7,260
8	3.02	538	3.14	616	4.50	1,650	6.28	3,380	14.77	15,900	9.21	7,030
9	3.03	544	3.11	596	4.89	1,970	6.38	3,490	14.82	16,000	9.02	6,770
10	3.05	558	3.10	590	5.02	2,090	6.48	3,600	14.72	15,800	8.85	6,530
11	3.03	544	3.10	590	5.25	2,310	6.58	3,710	14.61	15,600	8.71	6,340
N	3.03	544	3.10	590	5.35	2,410	6.74	3,880	14.52	15,400	8.57	6,160
1	3.03	544	3.11	596	5.45	2,510	6.89	4,050	14.37	15,200	8.43	5,985
2	3.02	538	3.14	616	5.49	2,550	7.00	4,180	14.20	14,900	8.31	5,820
3	3.02	538	3.17	636	5.58	2,640	7.09	4,290	13.97	14,400	8.19	5,670
4	3.02	538	3.19	648	5.63	2,690	7.21	4,430	13.75	14,100	8.04	5,470
5	3.05	558	3.22	668	5.68	2,740	7.45	4,720	13.50	13,600	7.93	5,330
6	3.01	532	3.25	688	5.71	2,770	7.71	5,040	13.19	13,100	7.83	5,200
7	3.02	538	3.28	707	5.76	2,820	7.94	5,340	12.89	12,600	7.71	5,040
8	3.02	538	3.32	734	5.78	2,840	8.09	5,540	12.57	12,100	7.63	4,940
9	3.02	538	3.35	755	5.82	2,880	8.34	5,860	12.24	11,600	7.52	4,800
10	3.02	538	3.38	776	5.85	2,910	8.70	6,330	11.96	11,100	7.43	4,700
11	3.02	538	3.42	804	5.87	2,930	9.06	6,820	11.54	10,500	7.34	4,590
M	3.03	544	3.46	832	5.89	2,950	9.54	7,500	11.22	9,980	7.26	4,490
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.04	4,230	5.78	2,840	5.00	2,070	4.48	1,630	4.39	1,560	4.13	1,350
4	6.89	4,050	5.73	2,790	4.94	2,020	4.46	1,620	4.42	1,590	4.10	1,230
6	6.74	3,880	5.64	2,700	4.90	1,980	4.44	1,600	4.43	1,590	4.08	1,310
8	6.63	3,760	5.57	2,630	4.85	1,940	4.41	1,580	4.41	1,580	4.05	1,290
10	6.49	3,610	5.51	2,570	4.80	1,890	4.39	1,560	4.39	1,560	4.03	1,270
N	6.37	3,480	5.43	2,490	4.76	1,860	4.35	1,530	4.36	1,540	4.00	1,250
2	6.30	3,400	5.37	2,430	4.73	1,830	4.34	1,520	4.32	1,510	3.99	1,240
4	6.19	3,280	5.31	2,370	4.67	1,790	4.34	1,520	4.31	1,500	3.94	1,200
6	6.10	3,180	5.24	2,300	4.65	1,770	4.33	1,510	4.26	1,460	3.95	1,210
8	6.01	3,080	5.17	2,230	4.60	1,730	4.32	1,510	4.23	1,430	3.92	1,190
10	5.95	3,020	5.11	2,170	4.55	1,690	4.35	1,530	4.21	1,420	3.90	1,170
M	5.87	2,930	5.05	2,120	4.54	1,680	4.38	1,550	4.17	1,390	3.88	1,150

Kayaderosseras Creek near West Milton, N. Y.

Location.- Water-stage recorder, lat. 43°02'25", long. 73°54'30", 500 feet below mouth of Glowegee Creek, and 1 mile east of West Milton, Saratoga County.
Drainage area.- 90 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,050 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 1,700 second-feet midnight Sept. 21 (gage height, 6.56 feet).
July 1927 to August 1938: Discharge, 3,590 second-feet Mar. 18, 1936 (gage height, 10.78 feet, from floodmarks).
Remarks.- Flood discharge not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	28	81	9	28	53	17	56	48	25	191	126
2	28	74	10	22	55	18	60	46	26	143	88
3	22	69	11	22	50	19	65	45	27	124	75
4	23	64	12	22	49	20	292	46	28	118	72
5	24	62	13	38	49	21	993	60	29	97	66
6	22	57	14	35	49	22	1,190	61	30	85	61
7	23	54	15	157	49	23	482	53	31		57
8	46	54	16	100	48	24	278	69			
Mean monthly discharge, in second-feet										160	61.0
Run-off, in inches										1.99	0.78

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.58	54	1.62	58	2.08	130	3.77	600	6.47	1,670	3.87	634
2	1.59	55	1.61	57	2.18	150	3.82	617	6.38	1,630	3.79	606
3	1.60	56	1.61	57	2.29	173	3.85	628	6.29	1,600	3.74	589
4	1.61	57	1.60	56	2.36	188	3.86	631	6.23	1,570	3.69	572
5	1.62	58	1.60	56	2.43	204	3.85	628	6.15	1,540	3.64	554
6	1.63	60	1.59	55	2.50	219	3.85	628	6.04	1,500	3.60	540
7	1.64	61	1.59	55	2.54	228	3.84	624	5.93	1,450	3.56	526
8	1.64	61	1.59	55	2.58	237	3.84	624	5.83	1,410	3.53	516
9	1.65	62	1.59	55	2.63	249	3.88	638	5.70	1,360	3.51	509
10	1.65	62	1.59	55	2.66	256	3.95	662	5.55	1,300	3.48	499
11	1.66	63	1.59	55	2.69	264	4.10	720	5.42	1,250	3.45	490
N	1.66	63	1.59	55	2.74	276	4.26	784	5.25	1,180	3.42	480
1	1.66	63	1.61	57	2.78	287	4.55	900	5.12	1,130	3.39	470
2	1.66	63	1.62	58	2.83	300	4.80	1,000	4.97	1,070	3.36	460
3	1.66	63	1.64	61	2.90	319	5.00	1,080	4.84	1,020	3.32	447
4	1.66	63	1.71	69	2.91	322	5.20	1,160	4.70	960	3.28	434
5	1.66	63	1.74	74	2.92	325	5.50	1,280	4.60	920	3.25	424
6	1.66	63	1.74	74	2.97	339	5.80	1,400	4.50	880	3.22	414
7	1.65	62	1.74	74	3.03	356	6.05	1,500	4.41	844	3.18	402
8	1.65	62	1.75	75	3.12	383	6.30	1,600	4.32	808	3.14	389
9	1.64	61	1.80	82	3.27	430	6.42	1,650	4.21	764	3.10	377
10	1.64	61	1.84	88	3.44	486	6.46	1,660	4.12	728	3.06	365
11	1.63	60	1.91	100	3.61	544	6.51	1,680	4.04	696	3.03	356
M	1.62	58	1.99	113	3.69	572	6.56	1,700	3.97	670	3.00	347
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.94	330	2.49	217	2.21	156	2.04	123	2.07	128	1.92	101
4	2.88	314	2.46	210	2.20	154	2.03	121	2.06	126	1.92	101
6	2.83	300	2.43	204	2.18	150	2.02	119	2.05	124	1.91	100
8	2.80	292	2.41	199	2.16	146	2.02	119	2.04	123	1.91	100
10	2.77	284	2.39	195	2.15	144	2.02	119	2.03	121	1.90	98
N	2.74	276	2.37	190	2.15	144	2.02	119	2.02	119	1.90	98
2	2.71	269	2.35	186	2.14	142	2.07	128	2.00	115	1.89	96
4	2.68	261	2.33	182	2.13	140	2.10	134	1.99	113	1.88	95
6	2.64	252	2.31	177	2.12	138	2.06	126	1.99	113	1.87	93
8	2.60	242	2.28	171	2.09	132	2.06	126	1.99	113	1.87	93
10	2.56	233	2.25	164	2.07	128	2.06	126	1.96	108	1.86	92
M	2.52	224	2.23	160	2.05	124	2.07	128	1.94	105	1.85	90

Supplemental records.- Sept. 27, 1 p.m., 2.02 ft., 119 sec.-ft.

Hoosic River at Adams, Mass.

Location.- Water-stage recorder, lat. 42°36'45", long. 73°07'25", at Adams, Berkshire County, just below mouth of Dry Brook and 0.3 mile above Pecks Brook. Zero of gage is 837.01 feet above mean sea level (general adjustment of 1929).
Drainage area.- 46.3 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 1 to noon Sept. 20, when there was no record.
Stage-discharge relation.- Defined by current-meter measurements below 2,680 second-feet; extended to peak stage on basis of determination of flood flow over dam.
Maxima.- September 1938: Discharge, 5,080 second-feet 5 p.m. Sept. 21 (gage height, 8.25 feet).
1931 to August 1938: Discharge, 3,670 second-feet Mar. 18, 1936 (gage height, 6.33 feet).
Remarks.- Discharge for period Sept. 1-20 computed by hydrographic comparison with nearby streams. Discharges do not include diversion of about 1.2 million gallons daily for Adams water supply. Flood run-off affected by storage in Hoosic Lake.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	35	137	9	45	80	17	95	56	25	316	127
2	32	123	10	40	74	18	100	54	26	255	82
3	30	111	11	35	69	19	330	54	27	245	74
4	33	102	12	40	68	20	900	52	28	226	68
5	35	94	13	450	65	21	2,170	82	29	179	72
6	25	89	14	120	66	22	1,150	59	30	154	68
7	55	84	15	240	64	23	563	55	31		62
8	90	81	16	170	60	24	420	116			
Mean monthly discharge, in second-feet										286	79
Run-off, in inches										6.90	1.97

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	3.41	936	5.17	2,170	2.92	665
2	-	-	-	-	-	-	3.46	966	4.79	1,870	2.91	660
3	-	-	-	-	-	-	3.42	942	4.61	1,730	2.81	610
4	-	-	-	-	-	-	3.40	930	4.43	1,600	2.80	605
5	-	-	-	-	-	-	3.43	948	4.25	1,480	2.80	605
6	-	-	-	-	-	*887	3.55	1,020	4.17	1,420	2.81	610
7	-	-	-	-	-	-	3.74	1,140	4.00	1,300	2.78	596
8	-	-	-	-	-	-	3.85	1,210	3.80	1,180	2.75	582
9	-	-	-	-	-	-	3.95	1,270	3.76	1,150	2.76	587
10	-	-	-	-	-	-	4.03	1,320	3.67	1,090	2.73	574
11	-	-	-	-	-	-	4.38	1,570	3.64	1,070	2.73	574
N	-	**100	-	**330	3.43	948	4.53	1,670	3.59	1,040	2.71	564
1	-	-	-	-	3.36	906	4.60	1,720	3.49	984	2.64	533
2	-	-	-	-	3.30	870	4.58	1,710	3.41	936	2.64	533
3	-	-	-	-	3.27	853	5.00	2,030	3.34	894	2.65	538
4	-	-	-	-	3.25	842	6.40	3,240	3.25	842	2.64	533
5	-	-	-	-	3.45	960	8.25	5,080	3.23	832	2.62	524
6	-	-	-	-	3.45	960	7.80	4,610	3.19	810	2.61	520
7	-	-	-	-	3.33	888	7.50	4,310	3.15	788	2.60	515
8	-	-	-	-	3.32	882	7.27	4,080	3.11	766	2.58	507
9	-	-	-	-	3.40	930	6.84	3,660	3.05	732	2.57	503
10	-	-	-	-	3.45	960	6.40	3,240	3.03	722	2.56	499
11	-	-	-	-	3.44	954	6.00	2,870	2.98	695	2.54	491
M	-	-	-	-	3.42	942	5.55	2,480	2.95	680	2.52	483
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.49	471	2.16	351	1.90	272	1.74	230	1.83	253	1.58	191
4	2.45	455	2.15	348	1.89	269	1.73	228	1.81	248	1.57	189
6	2.42	443	2.14	344	1.88	267	1.71	222	1.80	245	1.56	187
8	2.40	435	2.10	330	1.87	264	1.71	222	1.73	228	1.53	180
10	2.37	424	2.08	324	1.85	258	1.70	220	1.75	232	1.52	178
N	2.35	418	2.06	318	1.84	256	1.70	220	1.74	230	1.56	187
2	2.33	410	2.00	300	1.83	253	1.69	218	1.70	220	1.50	173
4	2.30	400	1.98	294	1.80	245	1.74	230	1.67	213	1.50	173
6	2.29	396	1.97	292	1.79	242	2.13	340	1.65	208	1.49	171
8	2.26	386	1.96	289	1.78	240	1.99	297	1.64	206	1.48	169
10	2.22	372	1.94	283	1.76	235	1.89	269	1.62	201	1.48	169
M	2.21	368	1.92	278	1.74	230	1.84	256	1.60	196	1.47	167

* Mean for 12 hours.
** Mean for the day.

Hoosic River near Eagle Bridge, N. Y.

Location.- Water-stage recorder, lat. 42°56'10", long. 73°22'30", three-quarters of a mile below mouth of Walloomsac River and 1¼ miles southeast of Eagle Bridge, Rensselaer County.
Drainage area.- 510 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- 1938 rating defined by current-meter measurements below 21,400 second-feet; extended logarithmically to peak stage on basis of computations of peak discharge over Schaghticoke and Johnsonville hydroelectric dams. 1927 peak defined by current-meter measurements below 5,230 second-feet; extended logarithmically to peak stage and verified by 1938 rating.
Maxima.- September 1938: Discharge, 35,300 second-feet 2:45 a.m. Sept. 22 (gage height, 17.78 feet).
August 1910 to March 1922, July 1923 to August 1938: Discharge, 29,800 second-feet Nov. 4, 1927 (gage height, 18.78 feet, former datum and former site a quarter of a mile upstream prior to July 1936).
Remarks.- Flood discharge not affected by storage or diversion. Diurnal fluctuation at medium and low stages caused by operation of power plants.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	287	1,260	9	414	608	17	686	429	25	2,770	1,850
2	315	1,120	10	285	599	18	592	418	26	2,210	1,150
3	302	1,010	11	257	559	19	922	392	27	1,920	926
4	260	926	12	303	528	20	9,730	443	28	1,950	875
5	261	845	13	1,030	500	21	16,000	963	29	1,580	765
6	251	755	14	852	472	22	22,700	755	30	1,380	705
7	272	715	15	814	453	23	6,200	543	31		651
8	649	678	16	1,130	441	24	3,730	730			
Mean monthly discharge, in second-feet										2,668	744
Run-off, in inches										5.84	1.68

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.45	592	4.41	562	6.16	2,580	10.57	11,100	17.46	34,100	10.12	8,970
2	4.45	592	4.41	562	6.65	3,270	10.52	11,000	17.70	35,000	9.94	8,540
3	4.44	585	4.42	570	7.28	4,200	10.52	11,000	17.75	35,200	9.75	8,110
4	4.43	578	4.44	585	7.93	5,280	10.54	11,100	17.68	34,900	9.58	7,740
5	4.41	562	4.48	615	8.63	6,620	10.58	11,200	17.57	34,500	9.44	7,440
6	4.41	562	4.48	615	9.22	7,870	10.62	11,300	17.36	33,700	9.29	7,130
7	4.45	592	4.50	630	9.71	8,990	10.67	11,400	17.02	32,500	9.19	6,930
8	4.52	646	4.52	646	10.13	10,000	10.73	11,600	16.07	29,000	9.05	6,650
9	4.46	600	4.56	678	10.39	10,700	10.82	11,800	15.47	26,800	8.94	6,440
10	4.41	562	4.63	737	10.56	11,100	10.92	12,100	14.89	24,700	8.84	6,250
11	4.39	548	4.63	737	10.65	11,300	11.11	12,600	14.40	23,000	8.75	6,080
N	4.44	585	4.76	860	10.75	11,600	11.44	13,500	13.96	21,400	8.65	5,890
1	4.47	608	4.89	999	10.88	12,000	11.74	14,400	13.53	19,900	8.55	5,710
2	4.45	592	4.91	1,020	10.99	12,300	12.00	15,200	13.15	18,600	8.46	5,550
3	4.45	592	4.90	1,010	11.06	12,400	12.31	16,100	12.74	17,100	8.41	5,460
4	4.45	592	4.89	999	11.08	12,500	12.60	17,000	12.43	16,000	8.30	5,260
5	4.46	600	4.92	1,030	11.06	12,400	13.00	18,300	12.13	15,000	8.22	5,120
6	4.47	608	4.93	1,040	11.00	12,300	13.39	19,600	11.85	14,100	8.15	5,000
7	4.47	608	4.98	1,100	10.98	12,200	13.70	20,700	11.59	13,200	8.09	4,900
8	4.46	600	5.04	1,160	10.92	12,100	14.32	22,800	11.30	12,200	8.03	4,800
9	4.45	592	5.14	1,280	10.87	11,900	14.76	24,300	11.07	11,500	7.99	4,730
10	4.43	578	5.31	1,480	10.78	11,700	15.26	26,100	10.81	10,700	7.92	4,620
11	4.42	570	5.52	1,740	10.73	11,600	16.01	28,800	10.57	10,100	7.86	4,530
M	4.43	578	5.77	2,060	10.64	11,300	17.00	32,400	10.34	9,500	7.81	4,450
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.72	4,300	6.86	3,060	6.32	2,370	5.97	1,960	6.10	2,110	5.73	1,690
4	7.62	4,150	6.82	3,010	6.28	2,330	5.95	1,940	6.11	2,120	5.69	1,650
6	7.54	4,030	6.77	2,940	6.26	2,300	5.93	1,910	6.09	2,100	5.67	1,630
8	7.45	3,900	6.72	2,880	6.23	2,270	5.92	1,900	6.03	2,030	5.65	1,600
10	7.38	3,790	6.67	2,810	6.20	2,230	5.89	1,870	5.99	1,980	5.63	1,580
N	7.31	3,680	6.62	2,750	6.19	2,220	5.91	1,890	5.98	1,970	5.64	1,590
2	7.24	3,590	6.58	2,690	6.15	2,170	5.89	1,870	5.90	1,880	5.62	1,570
4	7.17	3,490	6.53	2,630	6.12	2,130	5.89	1,870	5.87	1,850	5.59	1,540
6	7.12	3,240	6.49	2,580	6.09	2,100	5.93	1,910	5.85	1,820	5.57	1,520
8	7.05	3,320	6.44	2,520	6.05	2,050	5.98	1,970	5.82	1,790	5.56	1,510
10	6.99	3,240	6.39	2,460	6.00	1,990	6.00	1,990	5.78	1,750	5.52	1,460
M	6.93	3,150	6.35	2,410	5.98	1,970	6.08	2,090	5.74	1,700	5.51	1,450

Supplemental records.- Sept. 22, 2:45 a.m., 17.78 ft., 35,300 sec.-ft.

North Branch of Hoosic River at North Adams, Mass.

Location.- Water-stage recorder, lat. 42°42'10", long. 73°05'35", at North Adams, Berkshire County, 0.4 mile below Hudson Brook (revised) and 1½ miles above mouth. Zero of gage is 820.46 feet above mean sea level. Prior to Sept. 22 water-stage recorder 100 ft. upstream at same datum.

Drainage area.- 39.0 square miles.

Gage-height record.- Water-stage recorder graph for period Sept. 1 to 5 p.m. Sept. 20 at temporary site and independent datum during reconstruction of station. No gage-height record for period 5 p.m. Sept. 20 to 4 p.m. Sept. 22. Stage graph for period 4 p.m. Sept. 22 to 5 p.m. Oct. 1 based on two or more staff-gage readings daily. Water-stage recorder graph Oct. 1 to 31.

Stage-discharge relation.- Defined by current-meter measurements below 1,780 second-feet; extended to peak stage on basis of computation of flood flow over dam. For 1936 defined by current-meter measurements below 5,100 second-feet; extended to peak stage on basis of computation of flood flow over dam.

Maxima.- September 1938: Discharge, 8,950 second-feet 7 p.m. Sept. 21 (gage height, 12.05 feet, from floodmarks at present site).
1931 to August 1938: Discharge, 6,100 second-feet Mar. 18, 1936 (gage height, 9.25 feet, at former site).
Maximum discharge known, 9,980 second-feet November 1927, determination of peak flow over dam.

Remarks.- Discharge for period 5 p.m. Sept. 20 to 4 p.m. Sept. 22 computed on basis of peak flow and records for nearby stations. Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	18	90	9	28	55	17	84	27	25	187	163
2	17	73	10	20	55	18	87	28	26	154	79
3	15	66	11	18	44	19	277	27	27	176	56
4	17	58	12	21	37	20	1,570	33	28	184	44
5	18	56	13	387	29	21	3,460	88	29	140	35
6	14	55	14	96	27	22	1,220	47	30	98	28
7	45	58	15	206	23	23	412	35	31		25
8	76	58	16	145	23	24	242	113			
Mean monthly discharge, in second-feet										314	527
Run-off, in inches										8.98	1.56

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	87	-	75	-	1,450	-	-	-	-	-	-
2	-	96	-	74	-	1,570	-	-	-	-	-	-
3	-	99	-	78	-	1,580	-	-	-	a2,200	-	-
4	-	101	-	82	-	1,600	-	-	-	-	-	-
5	-	99	-	89	-	1,600	-	-	-	-	-	-
6	-	94	-	99	-	1,610	-	b2,030	-	-	4.35	530
7	-	97	-	131	-	1,600	-	-	-	-	-	-
8	-	96	-	158	-	1,570	-	-	-	-	-	-
9	-	93	-	177	-	1,580	-	-	-	-	-	-
10	-	90	-	177	-	1,610	-	-	-	a1,170	-	-
11	-	89	-	174	-	1,610	-	-	-	-	-	-
N	-	89	-	168	-	1,690	-	-	-	-	4.08	365
1	-	87	-	158	-	1,620	-	-	-	-	-	-
2	-	86	-	154	-	1,560	-	-	-	-	-	-
3	-	84	-	156	-	1,540	-	c4,080	-	-	-	-
4	-	82	-	168	-	1,540	-	-	-	-	-	-
5	-	82	-	196	-	1,540	-	-	-	-	-	-
6	-	76	-	284	-	-	-	-	4.64	742	3.93	290
7	-	80	-	577	-	-	12.05	8,950	-	-	-	-
8	-	78	-	760	-	-	-	-	-	-	-	-
9	-	76	-	739	-	c1,570	-	-	-	-	-	-
10	-	76	-	712	-	-	-	d6,040	-	-	-	-
11	-	78	-	753	-	-	-	-	-	-	-	-
M	-	75	-	942	-	-	-	-	4.52	650	3.90	275
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	3.89	271	3.68	190	3.59	158	3.63	170	3.67	186	3.59	158
8	3.88	266	-	-	-	-	-	-	-	-	3.59	158
10	-	-	-	-	-	-	-	-	-	-	-	-
N	3.77	222	3.67	186	3.57	150	3.67	186	3.67	186	3.67	186
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	3.76	217	3.67	186	3.57	150	3.67	186	3.67	186	3.41	106
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	3.72	203	3.64	173	3.53	140	3.67	186	3.63	170	3.42	109

Supplemental records.- Sept. 29, 11 a.m., 3.67 ft., 185 sec.-ft.; 3 p.m., 3.43 ft., 112 sec.-ft.

a Mean for 6-hour period.
b Mean for 12-hour period.
c Mean for 7-hour period.
d Mean for 5-hour period.

Walloomsac River near North Bennington, Vt.

Location.- Water-stage recorder, lat. 42°54'45", long. 73°15'25", 0.6 mile below Paran Creek and 1.4 miles south of North Bennington, Bennington County.
Drainage area.- 111 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,610 second-feet; extended to peak stage on basis of determination of flood flow by slope-area and contracted-opening methods and by computation of flow over dam.
Maxima.- September 1938: Discharge, 8,450 second-feet at 8 p.m. Sept. 21 (gage height, 12.04 feet).
1931 to August 1938: Discharge, 6,600 second-feet Mar. 18, 1936 (gage height, 11.44 feet).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	98	276	9	130	150	17	210	117	25	504	530
2	96	242	10	108	146	18	199	111	26	414	296
3	78	223	11	85	140	19	439	111	27	386	230
4	86	206	12	93	134	20	2,560	141	28	392	216
5	88	192	13	522	125	21	4,210	340	29	316	195
6	77	172	14	246	128	22	3,050	212	30	292	178
7	167	165	15	380	131	23	1,040	158	31		168
8	293	162	16	330	120	24	674	318			
Mean monthly discharge, in second-feet										585	195
Run-off, in inches										5.88	2.03

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.55	184	2.56	187	4.65	1,240	5.99	2,140	10.05	6,160	4.67	1,360
2	2.58	194	2.56	187	5.24	1,630	6.02	2,160	9.60	5,660	4.60	1,310
3	2.60	200	2.57	190	6.05	2,190	6.02	2,160	9.20	5,250	4.55	1,280
4	2.61	203	2.60	200	7.10	2,980	6.02	2,160	8.80	4,850	4.49	1,240
5	2.63	210	2.67	224	7.45	3,260	6.04	2,180	8.40	4,450	4.44	1,210
6	2.60	200	2.74	249	7.43	3,240	6.04	2,180	8.02	4,070	4.39	1,170
7	2.60	200	2.76	257	7.25	3,100	6.04	2,180	7.65	3,740	4.35	1,150
8	2.62	207	2.93	326	7.19	3,050	6.12	2,240	7.30	3,420	4.32	1,130
9	2.62	207	3.12	410	7.09	2,970	6.30	2,380	7.02	3,170	4.26	1,100
10	2.62	207	3.13	415	7.15	3,120	6.53	2,540	6.75	2,940	4.21	1,070
11	2.62	207	3.16	429	7.22	3,080	6.89	2,820	6.50	2,720	4.16	1,040
N	2.62	207	3.09	396	7.16	3,030	7.45	3,260	6.27	2,530	4.09	994
1	2.61	203	3.11	406	7.00	2,900	8.03	3,830	6.05	2,340	4.07	982
2	2.61	203	3.11	406	6.85	2,790	8.52	4,340	5.90	2,220	4.04	964
3	2.60	200	3.12	410	6.70	2,680	8.63	4,500	5.73	2,100	4.00	940
4	2.60	200	3.13	415	6.60	2,600	8.68	4,610	5.57	1,980	3.96	916
5	2.59	197	3.24	466	6.47	2,500	9.10	5,090	5.42	1,860	3.91	886
6	2.59	197	3.30	494	6.37	2,430	10.32	6,450	5.30	1,780	3.91	886
7	2.59	197	3.50	590	6.25	2,340	11.53	7,840	5.20	1,710	3.88	868
8	2.58	194	3.74	711	6.16	2,260	12.04	8,450	5.09	1,630	3.85	850
9	2.57	190	3.92	807	6.07	2,200	11.62	7,940	4.98	1,560	3.83	838
10	2.57	190	3.98	841	6.00	2,150	11.52	7,820	4.88	1,490	3.80	820
11	2.56	187	4.10	910	5.95	2,160	11.12	7,340	4.79	1,430	3.76	796
M	2.56	187	4.29	1,020	5.95	2,120	10.56	6,720	4.73	1,390	3.76	796
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.72	772	3.32	551	3.12	450	2.95	368	3.11	445	2.87	332
4	3.68	749	3.31	546	3.10	440	2.93	358	3.08	430	2.85	322
6	3.63	722	3.28	530	3.09	435	2.92	354	3.06	420	2.85	322
8	3.60	705	3.26	520	3.09	435	2.93	358	3.02	400	2.83	314
10	3.57	688	3.25	515	3.08	430	2.95	368	3.03	405	2.87	332
N	3.54	672	3.22	500	3.06	420	2.91	350	3.00	390	2.86	327
2	3.52	661	3.20	490	3.06	420	2.92	354	2.99	386	2.84	318
4	3.47	634	3.18	480	3.01	395	2.98	381	2.97	376	2.83	314
6	3.44	617	3.17	475	2.95	368	3.02	400	2.90	345	2.79	296
8	3.42	606	3.16	470	2.99	386	3.10	440	2.94	363	2.82	309
10	3.37	578	3.15	465	2.98	381	3.16	470	2.90	345	2.80	300
M	3.35	568	3.12	450	2.97	376	3.15	465	2.87	332	2.78	292

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Black River Canal (flowing south) near Boonville, N. Y.

Location.- Two water-stage recorders and concrete controls, lat. 43°27'20", long. 75°19'25"--No. 1 on main canal at Lock 69 and No. 2 on Lansingkill spillway, 100 feet downstream from head gates in summit level of canal and 600 feet upstream from Lock 70--2 miles south of Boonville, Oneida County.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements.
Remarks.- Discharge is the combined flow at gages 1 and 2 and gives the total diversion from Black River Basin through Forestport feeder and Black River Canal into Mohawk River Basin above Delta Reservoir.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	41	59	9	49	37	17	59	32	25	38	42
2	40	58	10	47	27	18	55	30	26	61	41
3	44	55	11	47	27	19	54	31	27	64	36
4	45	49	12	46	27	20	55	30	28	68	34
5	45	43	13	58	27	21	77	32	29	64	33
6	44	43	14	59	28	22	64	32	30	61	33
7	48	44	15	58	30	23	31	31	31		32
8	53	44	16	62	33	24	19	33			
Mean monthly discharge, in second-feet										51.9	36.5
Run-off, in inches										-	-

Delta Reservoir at Delta Dam, near Rome, N. Y.

Location.- Staff gage, lat. 43°16'25", long. 75°25'50", at Delta Dam, 5 miles north of Rome, Oneida County. Crest of spillway at elevation 550.0 feet (Barge Canal datum).
Drainage area.- 145 square miles; affected by diversions into basin.
Gage-height record.- Mean of readings to tenths at 8 a.m. and 4 p.m.
Remarks.- Usable storage capacity 2,800,000,000 cubic feet. Records of storage furnished by New York State Department of Public Works. Monthly gain or loss in storage adjusted for diversion from Black River Basin through Black River Canal. For information on diversion from Black River Basin into Mohawk River Basin above Delta Reservoir see record of Black River Canal (flowing south) near Boonville, N. Y.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	536.7	1,466	541.95	1,935	16	536.5	1,450	537.35	1,518
2	536.55	1,454	541.75	1,915	17	536.5	1,450	536.95	1,486
3	536.4	1,442	541.55	1,895	18	536.5	1,450	536.55	1,454
4	536.25	1,430	541.25	1,865	19	536.5	1,450	536.2	1,426
5	536.05	1,414	540.95	1,836	20	536.5	1,450	535.85	1,398
6	535.9	1,402	540.65	1,808	21	536.75	1,470	535.55	1,374
7	535.8	1,394	540.35	1,782	22	540.1	1,759	535.25	1,350
8	535.8	1,394	540.05	1,754	23	541.5	1,890	534.95	1,326
9	535.75	1,390	539.75	1,728	24	542.15	1,955	534.65	1,302
10	535.6	1,378	539.45	1,700	25	542.4	1,980	534.35	1,278
11	535.5	1,370	539.15	1,674	26	542.5	1,990	534.2	1,266
12	535.4	1,362	538.75	1,638	27	542.4	1,980	533.95	1,246
13	535.55	1,374	538.45	1,610	28	542.5	1,990	533.65	1,226
14	535.6	1,378	538.1	1,579	29	542.4	1,980	533.35	1,204
15	536.15	1,422	537.75	1,550	30	542.25	1,965	532.95	1,176
					31			532.55	1,148

	September	October
Gain or loss in storage, in equivalent mean second-feet (observed)	a/ +184	a/ -305
Gain or loss in storage, in equivalent mean second-feet (adjusted)	+132	-341

a/ Computed from contents corresponding to gage height interpolated for midnight of last day of month.

Mohawk River below Delta Dam, near Rome, N. Y.

Location.- Water-stage recorder, lat. 43°15'50", long. 75°26'10", at Spring Brook fish hatchery, 1 mile below Delta Dam and 4 miles north of Rome, Oneida County. Prior to January 1937 staff gage located about 200 feet downstream. Zero of both gages is 474.00 feet above mean sea level (Barge Canal datum).

Drainage area.- 150 square miles (revised); 145 square miles affected by storage in Delta Reservoir.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 2,790 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 464 second-feet 10:30 a.m. Sept. 26 (gage height, 2.73 feet).

October 1927 to August 1938: Discharge, 4,060 second-feet July 9, 1935 (gage height, 8.1 feet, from floodmarks) from rating defined by current-meter measurements below 2,210 second-feet and extended logarithmically to peak stage.

Reports of the Stage Engineer and Surveyor record a maximum discharge of 4,210 second-feet Mar. 9, 1921.

Remarks.- For information on storage and diversion into the basin see record for Delta Reservoir near Rome, N. Y., and for Black River Canal (flowing south) near Boonville, N. Y. Mean monthly discharge adjusted for storage and diversion into the basin.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	215	446	9	224	443	17	237	460	25	140	433
2	215	443	10	227	440	18	234	456	26	342	423
3	215	443	11	227	440	19	232	431	27	277	420
4	215	443	12	227	448	20	237	433	28	328	420
5	215	442	13	230	464	21	256	433	29	446	417
6	215	446	14	232	464	22	125	433	30	446	417
7	217	446	15	242	460	23	170	433	31		414
8	217	446	16	233	460	24	149	433			
Mean monthly discharge, in second-feet (observed)										240	440
Mean monthly discharge, in second-feet (adjusted)										372	99
Run-off, in inches (adjusted).										2.77	0.76

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	2.00	242	2.05	255	1.75	182
2	1.98	237	1.96	232	1.97	234	2.00	242	1.90	217	1.78	189
3	-	-	-	-	-	-	2.00	242	1.78	189	1.80	193
4	1.98	237	1.96	232	1.97	234	2.00	242	1.66	163	1.81	195
5	-	-	-	-	-	-	2.00	242	1.55	142	1.81	195
6	1.96	232	1.96	232	1.97	234	2.00	242	1.46	125	1.79	191
7	-	-	-	-	-	-	2.00	242	1.38	112	1.78	189
8	1.96	232	1.96	232	1.97	234	2.00	242	1.30	100	1.76	184
9	-	-	-	-	-	-	2.00	242	1.24	92	1.74	180
10	1.96	232	1.96	232	1.97	234	2.00	242	1.18	83	1.72	175
11	-	-	-	-	-	-	1.68	167	1.14	78	1.71	173
N	1.96	232	1.96	232	1.97	234	1.67	165	1.09	71	1.69	169
1	-	-	-	-	-	-	1.67	165	1.06	67	-	-
2	1.96	232	1.96	232	1.98	237	1.69	169	1.01	60	1.66	163
3	-	-	-	-	-	-	1.73	178	.99	58	-	-
4	1.96	232	1.96	232	1.98	237	1.82	198	.97	55	1.64	159
5	-	-	-	-	-	-	2.07	260	.95	53	-	-
6	1.96	232	1.96	232	1.98	237	2.47	379	.93	51	1.63	157
7	-	-	-	-	-	-	2.33	335	1.53	138	-	-
8	1.96	232	1.96	232	1.99	240	2.45	372	1.65	161	1.62	155
9	-	-	-	-	-	-	2.48	382	1.67	165	-	-
10	1.96	232	1.96	232	1.99	240	2.43	366	1.68	167	1.61	153
11	-	-	-	-	-	-	2.30	326	1.70	171	-	-
M	1.96	232	1.96	232	2.00	242	2.18	290	1.72	175	1.60	151
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	1.59	149	1.56	143	1.54	140	2.71	456	1.49	130	2.69	450
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	1.60	151	1.55	142	2.72	460	1.52	136	2.70	453	2.69	450
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	1.57	145	1.54	140	2.71	456	1.51	134	2.69	450	2.68	446
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	1.56	143	1.54	140	2.71	456	1.50	132	2.69	450	2.68	446

Supplemental records.- Sept. 26, 8:30 a.m., 1.54 ft., 140 sec.-ft.; 9:15 a.m., 2.72 ft., 460 sec.-ft.; 10:30 a.m., 2.73 ft., 464 sec.-ft. Sept. 27, 10:15 a.m., 2.72 ft., 460 sec.-ft. Sept. 28, 8:50 a.m., 1.49 ft., 130 sec.-ft.; 9:50 a.m., 2.70 ft., 453 sec.-ft.

Mohawk River near Little Falls, N. Y.

Location.- Water-stage recorder, lat. 43°00'50", long. 74°46'40", 1,800 feet below Rocky Rift Dam, 2 miles above mouth of East Canada Creek, and 4½ miles southeast of Little Falls, Herkimer County. Zero of gage is at elevation 310.0 feet, Barge Canal datum.

Drainage area.- 1,348 square miles; 518 square miles affected by storage in Delta and Hinckley Reservoirs.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 13,600 feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 22,700 second-feet (diversion not included) 12:45 a.m. Sept. 22 (gage height, 17.01 feet).
October 1927 to August 1938: Discharge, 23,200 second-feet (diversion not included) Mar. 18, 1936 (gage height, 17.24 feet).

Remarks.- Mean daily discharges include diversion of water into Barge Canal at Rocky Rift Dam. Discharges at indicated time do not include this diversion. For information on diversions into the basin and on storage see records for Delta Reservoir at Delta Dam, near Rome, N. Y., Hinckley Reservoir at Hinckley, N. Y., and Black River Canal (flowing south) near Boonville, N. Y.

Mean daily diversion, in second-feet, at Rocky Rift Dam, September 1938

18	19	20	21	22	23	24	25	26	27	28	29
65	58	99	59	25	25	25	33	29	43	76	121

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	728	2,260	9	910	1,630	17	1,210	1,460	25	5,540	1,890
2	730	1,850	10	790	1,570	18	1,240	1,540	26	4,020	1,800
3	691	1,750	11	850	1,600	19	1,160	1,510	27	2,980	1,750
4	772	1,810	12	834	1,620	20	1,920	1,530	28	2,790	1,630
5	730	1,790	13	1,080	1,630	21	8,960	1,650	29	2,150	1,610
6	676	1,760	14	1,080	1,580	22	16,100	1,660	30	2,190	1,560
7	830	1,690	15	1,730	1,550	23	10,900	1,640	31		1,480
8	990	1,650	16	1,630	1,600	24	9,870	1,640			
Mean monthly discharge, in second-feet										2,869	1,667
Run-off, in inches										2.38	1.43

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.57	1,100	5.30	930	5.69	1,180	7.97	3,900	17.00	22,690	11.11	9,770
2	5.54	1,080	5.29	924	5.71	1,200	8.03	4,000	16.91	22,500	11.04	9,620
3	5.61	1,130	5.30	930	5.90	1,360	7.94	3,860	16.75	22,100	11.00	9,540
4	5.76	1,240	5.40	990	5.90	1,360	8.02	3,980	16.54	21,600	11.01	9,560
5	5.68	1,180	5.45	1,020	5.88	1,340	8.06	4,040	16.26	21,000	11.11	9,770
6	5.75	1,230	5.48	1,040	5.89	1,350	8.07	4,050	16.02	20,400	11.22	10,000
7	5.73	1,210	5.53	1,070	5.90	1,360	8.54	4,800	15.74	19,800	11.26	10,100
8	5.83	1,300	5.72	1,210	5.93	1,390	8.21	4,270	15.40	19,000	11.34	10,300
9	5.90	1,360	5.67	1,170	5.99	1,450	8.11	4,120	15.00	18,100	11.48	10,500
10	5.94	1,400	5.63	1,140	6.13	1,590	8.12	4,130	14.45	16,900	11.59	10,800
11	5.89	1,350	5.62	1,130	6.07	1,530	7.99	3,940	13.98	15,900	11.63	10,900
N	5.83	1,300	5.74	1,220	6.20	1,660	8.17	4,200	13.54	14,900	11.74	11,100
1	5.73	1,210	5.70	1,190	6.14	1,600	8.32	4,440	13.19	14,200	11.90	11,400
2	5.77	1,250	5.63	1,140	6.24	1,700	8.67	5,020	12.92	13,600	12.01	11,700
3	5.90	1,360	5.74	1,220	6.32	1,790	9.54	6,590	12.69	13,100	12.08	11,800
4	5.80	1,270	5.63	1,140	6.31	1,780	10.09	7,660	12.53	12,800	12.13	11,900
5	5.65	1,160	5.70	1,190	6.55	2,040	11.33	10,200	12.38	12,400	12.14	11,900
6	5.60	1,120	5.78	1,250	6.50	1,990	13.59	15,000	12.21	12,100	12.11	11,900
7	5.67	1,170	5.60	1,120	6.62	2,120	14.61	17,300	12.03	11,700	12.05	11,700
8	5.59	1,110	5.59	1,110	6.90	2,460	15.39	19,000	11.87	11,400	12.02	11,700
9	5.50	1,050	5.60	1,120	7.13	2,750	16.21	20,900	11.68	11,000	12.00	11,600
10	5.40	990	5.64	1,150	7.30	2,970	16.68	22,000	11.48	10,500	11.98	11,600
11	5.30	930	5.70	1,190	7.62	3,410	16.86	22,400	11.33	10,200	11.95	11,500
M	5.32	940	5.70	1,190	7.90	3,800	16.96	22,600	11.20	9,960	11.93	11,500
	September 24		September 25		September 26		September 27		September 28		September 29	
2	11.86	11,300	9.93	7,340	8.41	4,590	7.52	3,270	7.08	2,680	6.44	1,920
4	11.81	11,200	9.77	7,020	8.34	4,470	7.47	3,200	7.15	2,780	6.57	2,070
6	11.74	11,100	9.64	6,780	8.27	4,360	7.47	3,200	7.33	3,010	6.80	2,340
8	11.60	10,800	9.46	6,430	8.18	4,220	7.31	2,980	7.30	2,970	6.83	2,380
10	11.37	10,300	8.48	4,700	8.11	4,120	7.32	3,000	7.51	3,250	6.62	2,120
N	11.25	10,100	7.31	2,980	8.04	4,010	7.22	2,870	7.49	3,230	6.59	2,090
2	11.06	9,670	8.93	5,460	7.93	3,840	7.24	2,890	7.25	2,900	6.59	2,090
4	10.98	9,500	8.74	5,140	7.85	3,730	7.15	2,780	6.91	2,470	6.40	1,880
6	10.71	8,930	8.73	5,120	7.79	3,650	7.02	2,610	6.89	2,450	6.29	1,760
8	10.36	8,200	8.62	4,930	7.68	3,490	7.11	2,720	6.93	2,500	6.43	1,910
10	10.20	7,880	8.52	4,760	7.61	3,390	7.20	2,840	6.69	2,210	6.52	2,010
M	10.07	7,620	8.43	4,620	7.65	3,310	7.19	2,830	6.50	1,990	6.48	1,970

Supplemental records.- Sept. 21, 6:45 a.m., 8.77 ft., 5,190 sec.-ft. Sept. 22, 12:45 a.m., 17.01 ft., 22,700 sec.-ft. Sept. 25, 9:30 a.m., 9.23 ft., 6,000 sec.-ft.; 11 a.m., 6.18 ft., 1,640 sec.-ft.; 1:40 p.m., 9.08 ft., 5,730 sec.-ft. Sept. 27, 6:30 a.m., 7.02 ft., 2,610 sec.-ft.

Mohawk River at Cohoes, N. Y.

Location.- Water-stage recorder, lat. 42°47'05", long. 73°42'25", at School Street plant of New York Power & Light Corporation in Cohoes, Albany County.
Drainage area.- 3,456 square miles; 832 square miles affected by storage in Schoharie, Delta, and Hinckley Reservoirs.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 43,800 second-feet; extended logarithmically to peak stage of March 1936.
Maxima.- September 1938: Discharge, 102,000 second-feet 9:15 p.m. Sept. 22 (gage height, 20.61 feet).
December 1917 to August 1938: Discharge, 130,000 second-feet Mar. 19, 1936 (gage height, 22.57 feet).
Remarks.- Daily and monthly discharges not adjusted for diversion or storage. For information on storage and diversions see records for Delta Reservoir at Delta Dam near Rome, N. Y.; Hinckley Reservoir at Hinckley, N. Y.; Schoharie Reservoir at Gilboa Dam, at Gilboa, N.Y., and Black River Canal (flowing south) near Boonville, N. Y.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1,060	3,540	9	1,460	2,010	17	3,020	2,500	25	16,300	4,070
2	1,030	2,590	10	723	2,560	18	2,300	2,330	26	8,760	3,380
3	734	3,070	11	344	2,330	19	1,970	2,200	27	7,900	3,410
4	242	2,380	12	1,250	2,300	20	4,530	2,330	28	5,940	3,360
5	64	2,800	13	1,490	2,710	21	24,700	2,200	29	5,880	2,960
6	829	2,800	14	1,460	2,770	22	89,800	1,920	30	3,910	1,940
7	874	2,800	15	3,320	2,090	23	59,100	1,890	31		2,330
8	1,120	2,700	16	3,330	897	24	26,900	2,820			
Mean monthly discharge, in second-feet										9,345	2,580
Run-off, in inches										3.01	0.86

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	9.90	-	4.41	-	9.93	3,240	10.68	5,420	18.13	68,200	20.26	96,800
2	9.89	-	4.38	-	9.83	2,990	10.74	5,630	18.47	72,600	20.08	94,300
3	9.92	-	4.43	-	9.47	2,260	11.33	7,990	18.67	75,200	19.90	91,800
4	9.77	-	4.43	-	9.60	2,500	11.60	9,240	18.86	77,700	19.64	88,200
5	9.57	-	4.42	-	9.89	3,140	12.30	12,900	19.06	80,300	19.38	84,500
6	9.53	-	9.04	-	9.83	2,990	12.47	13,900	19.17	81,700	19.12	81,100
7	9.53	-	9.50	-	9.90	3,160	12.82	16,000	19.28	83,100	18.80	76,900
8	9.53	-	9.88	-	9.94	3,260	13.15	18,000	19.45	85,500	18.47	72,600
9	9.53	-	9.83	-	9.97	3,340	13.35	19,200	19.57	87,200	18.16	68,600
10	9.53	-	9.82	-	10.00	3,410	13.54	20,500	19.68	88,700	17.82	64,200
11	9.53	-	9.75	-	9.95	3,280	13.67	21,400	19.83	90,800	17.45	59,400
N	9.53	*2,300	9.14	*1,970	10.00	3,410	13.75	22,000	19.91	91,900	17.17	55,700
1	9.89	-	9.14	-	10.00	3,410	13.86	22,700	20.09	94,500	16.75	50,500
2	9.82	-	9.07	-	10.40	4,510	13.93	23,200	20.20	96,000	16.30	45,700
3	9.53	-	9.09	-	10.50	4,820	13.98	23,600	20.35	98,100	16.05	42,400
4	9.53	-	9.15	-	10.60	5,150	14.06	24,100	20.38	98,500	15.82	39,800
5	9.50	-	9.87	-	10.66	5,350	14.15	24,800	20.49	100,000	15.60	37,600
6	9.84	-	9.89	-	10.90	6,210	14.80	30,100	20.48	99,900	15.45	36,100
7	9.52	-	9.89	-	11.04	6,760	15.40	35,600	20.54	101,000	15.31	34,700
8	9.13	-	9.98	-	11.54	8,950	16.00	41,800	20.58	101,000	15.18	33,500
9	9.13	-	10.03	-	11.54	8,950	16.55	48,100	20.57	101,000	15.10	32,800
10	5.82	-	9.98	-	11.38	8,210	16.85	51,700	20.56	101,000	15.06	32,400
11	4.60	-	9.90	-	10.76	5,700	17.45	59,400	20.45	99,500	15.01	32,000
M	4.40	-	9.94	-	10.64	5,290	17.90	65,200	20.37	98,400	14.97	31,600
	September 24		September 25		September 26		September 27		September 28		September 29	
2	14.93	31,300	13.70	21,600	11.71	9,790	11.34	8,040	11.10	7,000	10.58	5,080
4	14.91	31,100	13.62	21,000	11.60	9,240	11.30	7,860	11.04	6,760	10.44	4,630
6	14.87	30,700	13.47	20,000	11.51	8,810	11.25	7,640	11.02	6,680	11.00	6,600
8	14.81	30,200	12.87	16,300	11.41	8,350	11.30	7,860	10.94	6,370	11.31	7,900
10	14.68	29,000	12.50	14,100	11.30	7,860	11.26	7,680	10.90	6,210	11.19	7,380
N	14.40	26,800	12.70	15,300	11.23	7,550	11.30	7,860	10.91	6,250	10.50	4,820
2	14.26	25,700	12.64	14,900	11.40	8,300	11.21	7,460	10.76	5,700	10.67	5,390
4	14.11	24,500	12.60	14,700	11.49	8,710	11.30	7,860	10.64	5,290	10.93	6,330
6	13.93	23,300	12.62	14,800	11.50	8,760	11.32	7,950	10.59	5,120	10.76	5,700
8	13.75	22,000	12.52	14,200	11.54	8,950	11.30	7,860	10.50	4,820	10.60	5,150
10	13.69	21,500	12.17	12,200	11.54	8,950	11.30	7,860	10.45	4,660	10.47	4,730
M	13.71	21,700	11.91	10,800	11.43	8,440	11.22	7,510	10.56	5,020	10.19	3,910

Supplemental records.- Sept. 18, 12:30 p.m., 9.53 ft.; 2:10 p.m., 9.53 ft.; 3:25 p.m., 9.83 ft.; 6:50 p.m., 9.84 ft. Sept. 19, 5:30 a.m., 4.42 ft.; 4:40 p.m., 9.15 ft. Sept. 22, 9:15 p.m., 20.61 ft., 102,000 sec.-ft.

* Mean for the day.

Hinckley Reservoir at Hinckley, N. Y.

Location.- Staff gage, lat. 43°18'25", long. 75°06'25", at Hinckley Dam at Hinckley, Oneida County, about 3 miles east of Prospect. Crest of spillway at elevation 1,225 feet (Barge Canal datum).
Drainage area.- 373 square miles.
Gage-height record.- Gage read to tenths at 8 a.m. daily.
Remarks.- Usable storage capacity, 3,320,000,000 cubic feet. Records furnished by New York State Department of Public Works.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	1,211.7	1,970	1,225.3	3,359	16	1,211.4	1,944	1,219.1	2,660
2	1,211.5	1,953	1,225.0	3,320	17	1,212.3	2,023	1,218.6	2,610
3	1,211.2	1,927	1,224.8	3,296	18	1,212.7	2,058	1,218.0	2,550
4	1,210.9	1,902	1,224.4	3,248	19	1,213.0	2,084	1,217.4	2,490
5	1,210.7	1,886	1,224.1	3,212	20	1,213.1	2,093	1,216.8	2,430
6	1,210.4	1,862	1,223.7	3,165	21	1,214.3	2,199	1,216.3	2,380
7	1,210.0	1,830	1,223.3	3,119	22	1,220.8	2,838	1,215.8	2,332
8	1,209.8	1,814	1,223.0	3,085	23	1,226.8	3,558	1,215.3	2,287
9	1,210.0	1,830	1,222.6	3,039	24	1,227.3	3,625	1,214.7	2,234
10	1,209.8	1,814	1,222.0	2,970	25	1,226.7	3,544	1,215.0	2,260
11	1,209.5	1,790	1,221.5	2,915	26	1,226.2	3,477	1,215.5	2,305
12	1,209.2	1,766	1,221.0	2,860	27	1,226.0	3,450	1,215.8	2,332
13	1,209.1	1,758	1,220.5	2,805	28	1,225.9	3,437	1,215.7	2,323
14	1,209.9	1,822	1,220.1	2,761	29	1,225.8	3,424	1,215.3	2,287
15	1,210.3	1,854	1,219.5	2,700	30	1,225.5	3,385	1,215.1	2,269
					31			1,214.8	2,242

	September	October
Gain or loss in storage, in equivalent mean second-feet. a/	+541	-432

a/ Computed from contents corresponding to gage height interpolated for midnight of last day of month.

West Canada Creek at Hinckley, N. Y.

Location.- Water-stage recorder, lat. 43°18'20", long. 75°07'10", 1 mile below Hinckley Dam, at Hinckley, Oneida County, 1 3/4 miles east of Prospect.
Drainage area.- 375 square miles; 373 square miles affected by storage in Hinckley Reservoir.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 6,430 second-feet.
Maxima.- September 1938: Discharge, 5,190 second-feet 10:30 to 11:30 p.m. Sept. 23 (gage height, 6.92 feet).
June 1919 to August 1938: Discharge, 10,800 second-feet Apr. 12, 1922 (gage height, 8.93 feet).
Remarks.- For information on storage see record for Hinckley Reservoir at Hinckley. Mean monthly discharge adjusted for storage. Small diversion made from Hinckley Reservoir for Utica water supply.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	400	920	9	444	902	17	507	866	25	2,810	884
2	422	848	10	468	902	18	514	857	26	1,770	884
3	428	893	11	488	902	19	514	857	27	1,240	884
4	422	911	12	488	893	20	520	875	28	1,110	884
5	416	911	13	488	893	21	574	893	29	1,050	884
6	422	902	14	494	884	22	764	893	30	1,080	884
7	438	902	15	500	884	23	4,200	893	31		884
8	438	902	16	500	875	24	4,480	884			
Mean monthly discharge, in second-feet (observed)										946	888
Mean monthly discharge, in second-feet (adjusted)										1,487	456
Run-off, in inches (adjusted)										4.43	1.41

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	4.15	628	5.32	1,970
2	-	-	-	-	3.99	514	4.00	520	4.14	620	5.54	2,310
3	-	-	-	-	-	-	-	-	4.14	620	5.75	2,670
4	-	-	-	-	3.99	514	4.00	520	4.14	620	5.93	3,010
5	-	-	-	-	-	-	-	-	4.14	620	6.09	3,340
6	3.99	514	3.99	514	3.99	514	4.00	520	4.14	620	6.21	3,590
7	-	-	-	-	-	-	-	-	4.15	628	6.34	3,880
8	-	-	-	-	3.99	514	4.01	527	4.15	628	6.45	4,120
9	-	-	-	-	-	-	-	-	4.15	628	6.56	4,360
10	-	-	-	-	3.99	514	4.01	527	4.25	705	6.33	3,860
11	-	-	-	-	-	-	-	-	4.25	705	6.44	4,100
N	3.99	514	3.99	514	3.99	514	4.02	534	4.25	705	6.54	4,320
1	-	-	-	-	-	-	-	-	4.25	705	6.60	4,450
2	-	-	-	-	4.00	520	4.10	590	4.26	713	6.70	4,680
3	-	-	-	-	-	-	-	-	4.26	713	6.74	4,770
4	-	-	-	-	4.00	520	4.12	605	4.27	721	6.80	4,910
5	-	-	-	-	-	-	-	-	4.27	721	6.83	4,980
6	3.99	514	3.99	514	4.00	520	4.15	628	4.27	721	6.86	5,050
7	-	-	-	-	-	-	-	-	4.28	729	6.88	5,090
8	-	-	-	-	4.00	520	4.16	635	4.28	729	6.90	5,140
9	-	-	-	-	-	-	-	-	4.37	804	6.91	5,160
10	-	-	-	-	4.00	520	4.15	628	4.58	1,000	6.92	5,190
11	-	-	-	-	-	-	-	-	4.84	1,300	6.92	5,190
M	3.99	514	3.99	514	4.00	520	4.15	628	5.10	1,650	6.92	5,190
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.90	5,140	6.13	3,420	5.41	2,110	-	-	-	-	-	-
4	6.88	5,090	6.07	3,300	5.36	2,030	-	-	-	-	-	-
6	6.83	4,980	6.02	3,190	5.32	1,970	4.84	1,300	4.70	1,130	4.58	1,000
8	6.78	4,860	5.95	3,050	5.26	1,880	-	-	-	-	-	-
10	6.70	4,680	5.88	2,910	5.21	1,800	-	-	-	-	-	-
N	6.64	4,540	5.81	2,780	5.16	1,730	4.79	1,240	4.69	1,120	4.53	950
2	6.57	4,380	5.76	2,690	5.12	1,680	-	-	-	-	4.76	1,200
4	6.52	4,270	5.69	2,560	5.08	1,620	-	-	-	-	-	-
6	6.43	4,080	5.64	2,480	5.05	1,580	4.73	1,170	4.66	1,090	4.69	1,120
8	6.36	3,920	5.58	2,380	5.02	1,540	-	-	-	-	-	-
10	6.28	3,750	5.53	2,300	4.98	1,480	-	-	-	-	-	-
M	6.22	3,610	5.48	2,220	4.95	1,440	4.70	1,130	4.62	1,040	4.61	1,030

Supplemental records.- Sept. 29, 1:00 p.m., 4.53 ft., 950 sec.-ft.

West Canada Creek at Kast Bridge, N. Y.

Location.- Water-stage recorder, lat. 43°04'15", long. 74°59'25", 600 feet below highway bridge at Kast Bridge, Herkimer County, and 4 miles above mouth at Herkimer.
Drainage area.- 556 square miles; 373 square miles affected by storage in Hinckley Reservoir.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 9,000 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 12,700 second-feet 7:45 p.m. Sept. 21 (gage height, 6.29 feet).
October 1920 to August 1938: Discharge, 16,500 second-feet June 21, 1922 (gage height, 7.3 feet).
May 1905 to December 1909, January 1912 to December 1913: Discharge, 23,300 second-feet Mar. 26, 1913 (records of New York State Engineer and Surveyor).
Remarks.- For information on storage see record for Hinckley Reservoir at Hinckley, N. Y. Diurnal fluctuation at low and medium stages caused by power-plant operations. No diversion through Ninemile feeder.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	399	1,250	9	471	1,030	17	624	993	25	3,670	1,210
2	416	1,020	10	470	1,020	18	655	930	26	2,420	1,110
3	433	1,050	11	506	998	19	630	960	27	1,700	1,020
4	438	1,130	12	524	1,000	20	974	966	28	1,500	1,020
5	422	992	13	758	980	21	4,480	1,020	29	1,320	996
6	424	1,040	14	612	982	22	3,700	992	30	1,340	990
7	516	1,030	15	1,060	982	23	4,240	1,010	31		980
8	526	1,030	16	706	959	24	5,340	1,090			
Mean monthly discharge, in second-feet										1,376	1,025
Run-off, in inches										2.76	2.12

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.00	613	1.88	499	2.13	760	2.72	1,580	5.05	7,380	2.88	1,780
2	2.01	624	1.89	508	2.12	747	2.64	1,460	4.80	6,510	3.00	1,980
3	2.23	884	2.09	712	2.06	679	2.57	1,360	4.60	5,860	3.30	2,550
4	2.37	1,070	2.28	949	2.03	646	2.60	1,400	4.46	5,430	3.27	2,490
5	2.37	1,070	2.24	897	2.07	690	2.73	1,600	4.29	4,930	3.24	2,430
6	2.30	975	2.17	808	2.25	910	2.74	1,610	4.17	4,600	3.45	2,860
7	2.21	858	2.12	747	2.36	1,060	2.69	1,540	4.08	4,360	3.70	3,420
8	2.14	772	2.09	712	2.31	988	2.68	1,520	3.98	4,100	3.75	3,540
9	2.10	723	2.07	690	2.23	884	2.69	1,540	3.87	3,830	3.80	3,660
10	2.08	701	2.02	635	2.17	808	2.70	1,550	3.76	3,560	4.10	4,410
11	2.08	701	1.98	594	2.14	772	2.70	1,550	3.67	3,350	4.22	4,740
N	2.07	690	1.94	555	2.13	760	2.72	1,580	3.55	3,080	4.30	4,960
1	2.05	668	1.90	516	2.12	747	2.82	1,740	3.47	2,910	4.37	5,160
2	2.03	646	1.88	499	2.15	784	3.00	2,040	3.45	2,860	4.42	5,310
3	1.97	584	1.87	490	2.20	845	3.30	2,610	3.40	2,760	4.39	5,220
4	1.88	499	1.87	490	2.25	910	3.72	3,570	3.29	2,530	4.35	5,100
5	1.81	440	1.87	490	2.32	1,000	4.68	6,400	3.30	2,550	4.37	5,160
6	1.77	409	1.95	564	2.46	1,190	5.75	10,400	3.22	2,390	4.40	5,250
7	1.76	402	2.05	668	2.54	1,310	6.24	12,400	3.20	2,350	4.44	5,370
8	1.82	448	2.08	701	2.59	1,380	6.27	12,600	3.11	2,180	4.47	5,460
9	1.84	465	2.05	668	2.60	1,400	6.18	12,200	3.01	2,000	4.51	5,580
10	1.88	499	2.01	624	2.65	1,480	5.93	11,000	2.95	1,900	4.52	5,610
11	1.90	516	2.01	624	2.73	1,600	5.63	9,700	3.00	1,980	4.55	5,700
M	1.90	516	2.11	735	2.76	1,650	5.35	8,540	2.96	1,910	4.56	5,740
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.57	5,770	4.08	4,360	3.43	2,820	3.02	2,020	3.03	2,030	2.95	1,900
4	4.57	5,770	4.02	4,200	3.38	2,720	3.03	2,030	2.91	1,830	2.81	1,670
6	4.56	5,740	3.94	4,000	3.31	2,570	2.97	1,930	2.76	1,590	2.63	1,400
8	4.54	5,670	3.90	3,900	3.34	2,630	2.84	1,710	2.74	1,560	2.53	1,250
10	4.52	5,610	3.84	3,760	3.27	2,490	2.75	1,580	2.65	1,420	2.52	1,240
N	4.46	5,430	3.79	3,640	3.22	2,390	2.60	1,350	2.31	963	2.35	1,020
2	4.43	5,340	3.74	3,520	3.18	2,310	2.82	1,680	2.61	1,360	2.31	963
4	4.37	5,160	3.69	3,400	3.13	2,220	2.82	1,680	2.71	1,520	2.50	1,210
6	4.32	5,020	3.60	3,190	3.09	2,140	2.76	1,590	2.71	1,520	2.60	1,350
8	4.25	4,820	3.55	3,080	3.05	2,070	2.91	1,830	2.59	1,340	2.56	1,290
10	4.19	4,650	3.52	3,010	3.05	2,070	2.73	1,540	2.64	1,410	2.40	1,200
M	4.13	4,490	3.53	3,040	2.98	1,950	2.71	1,520	2.63	1,400	2.62	1,380

Supplemental records.- Sept. 21, 7:45 p.m., 6.29 ft., 12,700 sec.-ft. Sept. 28, 1:00 a.m., 2.18 ft., 808 sec.-ft. Sept. 29, 1:25 p.m., 2.19 ft., 819 sec.-ft.

East Canada Creek at Dolgeville, N. Y.

Location.- Water-stage recorder, lat. 43°06'05", long. 74°46'15", at Dolgeville, Herkimer County, 100 feet below lower highway bridge and 1 mile below Spruce Creek. Zero of gage is 750.00 feet above mean sea level (general adjustment of 1912).
Drainage area.- 261 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 5,020 second-feet; extended logarithmically to peak stage. For 1936 defined by current-meter measurements below 3,600 second-feet; extended to peak stage on basis of determinations of peak flow during March 1936 at Inghams and Beardslee hydroelectric plants of the New York Power & Light Corporation.
Maxima.- September 1938: Discharge, 9,920 second-feet 12:45 a.m. Sept. 22 (gage height, 11.09 feet).
September 1927 to August 1938: Discharge, 13,100 second-feet Mar. 18, 1936 (gage height, 11.81 feet).
September 1898 to 1926: Discharge, 14,500 second-feet Mar. 26, 1913. Comparable records of New York State Engineer and Surveyor at High Falls, 1 mile downstream.
Remarks.- Discharge affected by 441,000,000 cubic feet of storage capacity in Canada Lakes. City of Little Falls diverts about 5 second-feet for water supply. Diurnal fluctuation caused by power-plant operation.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	165	361	9	178	207	17	643	226	25	1,060	1,040
2	170	302	10	103	256	18	570	285	26	744	815
3	118	257	11	109	234	19	557	286	27	585	644
4	111	268	12	148	228	20	1,440	303	28	528	522
5	96	258	13	431	234	21	5,290	327	29	449	455
6	133	258	14	397	238	22	7,450	284	30	406	335
7	211	251	15	1,280	263	23	4,010	225	31		366
8	281	214	16	1,070	203	24	2,100	567			
Mean monthly discharge, in second-feet										1,028	346
Run-off, in inches										4.40	1.53

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	8.47	3,220	10.6	8,300	-	-
2	6.60	605	6.46	481	6.90	925	8.57	3,400	10.45	7,850	9.33	4,920
3	-	-	-	-	-	-	8.65	3,540	10.5	8,000	-	-
4	6.61	615	6.46	481	6.94	971	8.71	3,650	10.5	8,000	9.25	4,740
5	-	-	6.45	472	-	-	8.76	3,740	10.45	7,850	-	-
6	6.60	605	6.25	320	7.00	1,040	8.81	3,840	10.65	8,450	9.18	4,590
7	-	-	6.45	472	-	-	8.83	3,880	10.65	8,450	-	-
8	6.60	605	6.46	481	7.04	1,090	8.85	3,920	10.6	8,300	9.10	4,420
9	-	-	-	-	-	-	8.87	3,950	10.75	8,750	-	-
10	6.59	596	6.47	490	7.10	1,160	8.88	3,970	10.6	8,300	9.00	4,210
11	-	-	-	-	-	-	8.92	4,050	10.5	8,000	-	-
N	6.57	578	6.51	524	7.18	1,260	8.98	4,170	10.4	7,700	8.90	4,010
1	-	-	-	-	-	-	9.08	4,380	10.3	7,400	-	-
2	6.56	569	6.67	675	7.29	1,400	9.26	4,760	10.25	7,250	8.79	3,800
3	-	-	-	-	-	-	9.50	5,300	10.4	7,700	-	-
4	6.54	551	6.67	675	7.38	1,510	9.85	6,170	10.3	7,400	8.68	3,590
5	-	-	-	-	-	-	10.23	7,190	10.2	7,100	-	-
6	6.52	533	6.70	705	7.53	1,720	10.35	7,550	10.1	6,820	8.58	3,410
7	-	-	-	-	-	-	10.3	7,400	10.0	6,560	-	-
8	6.51	524	6.63	635	7.70	1,970	10.45	7,850	9.88	6,250	8.49	3,250
9	-	-	-	-	-	-	10.6	8,300	9.78	5,990	-	-
10	6.49	506	6.70	705	7.95	2,360	10.6	8,300	9.68	5,740	8.40	3,100
11	-	-	-	-	-	-	10.7	8,600	9.58	5,490	-	-
M	6.48	498	6.84	856	8.21	2,780	10.8	8,900	9.49	5,280	8.32	2,960
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.24	2,830	7.23	1,320	6.88	902	6.67	675	6.56	569	6.42	447
4	8.16	2,700	7.10	1,160	6.85	868	6.54	551	6.47	490	6.35	392
6	8.09	2,580	7.06	1,110	6.77	778	6.50	515	6.45	472	6.34	385
8	8.02	2,470	7.01	1,050	6.69	695	6.48	498	6.44	464	6.33	378
10	7.97	2,390	6.99	1,030	6.67	675	6.46	481	6.44	464	6.32	370
N	7.75	2,040	7.05	1,100	6.78	789	6.46	481	6.43	456	6.31	362
2	7.57	1,780	7.04	1,090	6.76	768	6.62	625	6.59	596	6.51	524
4	7.49	1,670	7.01	1,050	6.68	685	6.62	625	6.59	596	6.50	515
6	7.43	1,580	6.95	982	6.72	726	6.63	635	6.58	587	6.49	506
8	7.37	1,500	6.83	844	6.65	655	6.63	635	6.57	578	6.48	498
10	7.34	1,460	6.81	822	6.57	578	6.63	635	6.44	464	6.47	490
M	7.30	1,410	6.90	925	6.68	685	6.63	635	6.55	560	6.47	490

Supplemental records.- Sept. 21, 6:30 p.m., 10.15 ft., 6,960 sec.-ft.; 11:45 p.m., 11.08 ft., 9,880 sec.-ft. Sept. 22, 12:45 a.m., 11.09 ft., 9,920 sec.-ft.

Schoharie Creek at Prattsville, N. Y.

Location.- Water-stage recorder, lat. 42°19'25", long. 74°26'05", a quarter of a mile below highway bridge in Prattsville, Greene County. Zero of gage is 1,130.01 feet above mean sea level (general adjustment of 1912).
Drainage area.- 236 square miles.
Gage-height record.- Water-stage recorder graph, recorded peak stage adjusted on basis of levels to floodmarks outside of gage well.
Stage-discharge relation.- Defined by current-meter measurements below 4,540 second-feet; extended logarithmically to Nov. 1926 peak stage on basis of slope-area study by engineers of New York City Board of Water Supply.
Maxima.- September 1938: Discharge, 45,000 second-feet 9 p.m. Sept. 21 (gage height, 15.60 feet, from floodmarks outside of gage shelter).
November 1902 to August 1938: Discharge, 42,300 second-feet Nov. 16, 1926 (gage height, 19.5 feet, former site and datum) from records of New York City Board of Water Supply.
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	48	308	9	38	144	17	49	106	25	955	373
2	50	270	10	34	135	18	50	96	26	707	261
3	44	240	11	32	127	19	74	93	27	569	225
4	45	218	12	31	121	20	936	167	28	491	204
5	43	198	13	47	115	21	10,500	240	29	411	219
6	38	181	14	48	109	22	7,990	189	30	355	262
7	37	164	15	49	105	23	2,180	140	31		225
8	42	152	16	51	123	24	1,380	165			
Mean monthly discharge, in second-feet										911	183
Run-off, in inches										4.31	0.89

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	1.91	178	3.74	1,500	11.10	23,200	-	-
2	-	-	1.43	53	1.96	196	3.87	1,650	10.25	19,200	4.82	2,670
3	-	-	-	-	2.06	231	4.01	1,810	9.50	15,800	-	-
4	1.41	50	1.44	55	2.18	277	4.13	1,960	9.00	13,800	4.75	2,540
5	-	-	-	-	2.36	360	4.22	2,080	8.50	12,000	-	-
6	-	-	1.44	55	2.52	447	4.29	2,170	8.05	10,600	4.70	2,460
7	-	-	-	-	2.86	698	4.30	2,180	7.65	9,350	-	-
8	1.41	50	1.45	56	3.16	941	4.30	2,180	7.05	7,550	4.65	2,380
9	-	-	-	-	3.31	1,070	4.30	2,180	6.75	6,730	-	-
10	-	-	1.45	56	3.38	1,130	4.32	2,210	6.56	6,240	4.61	2,310
11	-	-	-	-	3.42	1,170	4.38	2,290	6.42	5,920	-	-
N	1.41	50	1.46	58	3.43	1,180	4.51	2,480	6.25	5,550	4.55	2,210
1	-	-	-	-	3.45	1,200	4.75	2,840	6.03	5,070	-	-
2	-	-	1.47	60	3.48	1,230	5.11	3,420	5.87	4,720	4.46	2,070
3	-	-	-	-	3.52	1,270	6.05	5,110	5.75	4,460	-	-
4	1.41	50	1.49	63	3.54	1,290	7.00	7,400	5.63	4,220	4.40	1,970
5	-	-	-	-	3.53	1,280	8.65	12,600	5.50	3,960	-	-
6	-	-	1.52	69	3.52	1,270	10.25	19,200	5.38	3,720	4.33	1,860
7	-	-	-	-	3.50	1,250	11.75	26,300	5.29	3,540	-	-
8	1.42	51	1.66	100	3.49	1,240	13.00	32,300	5.22	3,400	4.28	1,790
9	-	-	-	-	3.49	1,240	15.60	45,000	5.14	3,250	-	-
10	-	-	1.78	134	3.52	1,270	14.00	37,200	5.07	3,120	4.23	1,720
11	-	-	-	-	3.56	1,310	13.00	32,300	5.00	2,990	-	-
M	1.42	51	1.88	168	3.63	1,380	12.05	27,700	4.93	2,860	4.19	1,660
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.15	1,600	-	-	-	-	-	-	-	-	-	-
4	4.11	1,540	3.72	1,060	3.43	767	3.21	597	3.08	516	2.93	434
6	4.07	1,490	-	-	-	-	-	-	-	-	-	-
8	4.04	1,450	3.67	1,010	3.39	732	3.18	577	3.06	504	2.90	418
10	4.01	1,410	-	-	-	-	-	-	-	-	-	-
N	3.98	1,370	3.63	963	3.36	708	3.16	565	3.04	493	2.89	413
2	3.94	1,320	-	-	-	-	-	-	-	-	-	-
4	3.90	1,270	3.57	900	3.32	676	3.14	552	3.01	476	2.87	404
6	3.87	1,230	-	-	-	-	-	-	-	-	-	-
8	3.84	1,200	3.51	840	3.27	639	3.13	546	2.98	460	2.84	389
10	3.81	1,160	-	-	-	-	-	-	-	-	-	-
M	3.78	1,130	3.47	803	3.24	618	3.11	533	2.95	444	2.82	380

Schoharie Reservoir at Gilboa Dam, at Gilboa, N. Y.

Location.- Lat. 42°23'30", long. 74°27'05", at Gilboa Dam, 6 miles south of North Blenheim, Schoharie County. Spillway crest at elevation 1,130 feet above mean sea level (levels of New York City Board of Water Supply).
Drainage area.- 314 square miles.
Gage-height record.- One reading daily at 8 a.m. prior to Sept. 22 and at 9 a.m. Oct. 1-31; water-stage recorder graph 8 a.m. Sept. 21 to 9 a.m. Oct. 1. Add 1,100 feet to heights given in table for elevations above mean sea level.
Maxima.- September 1938: Elevation, 1,134.31 feet 10:40 p.m. Sept. 21 (contents, 2,842,000,000 cubic feet).
July 1927 to August 1938: Elevation, 1,134.38 feet Mar. 18, 1936 (contents, 2,846,000,000 cubic feet).
Remarks.- Total capacity, 2,881,000,000 cubic feet. Total available storage at elevation 1,130 feet (crest of spillway) is 2,618,000,000 cubic feet. Total flow, except for periods of spilling, is diverted through Shandaken Tunnel into Esopus Creek above Ashoken Reservoir for New York City water supply. Records collected by New York City Department of Water Supply, Gas, and Electricity and furnished by that organization and New York City Board of Water Supply.

Height, in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	25.17	2,386	29.92	2,614	16	15.26	1,949	22.04	2,244
2	25.28	2,391	29.43	2,590	17	13.46	1,875	22.31	2,256
3	25.38	2,396	28.87	2,564	18	11.66	1,801	22.52	2,266
4	25.49	2,401	28.25	2,534	19	09.84	1,727	22.71	2,274
5	25.58	2,406	27.61	2,503	20	09.50	1,714	22.93	2,284
6	25.65	2,409	26.92	2,470	21	13.59	1,880	21.69	2,228
7	25.72	2,412	26.21	2,436	22	31.85	2,714	20.42	2,171
8	25.84	2,418	25.46	2,400	23	30.91	2,665	18.95	2,107
9	25.92	2,422	24.70	2,364	24	30.82	2,661	17.36	2,039
10	25.44	2,399	23.92	2,329	25	30.87	2,663	17.61	2,049
11	23.98	2,332	23.11	2,293	26	30.80	2,660	18.45	2,085
12	22.20	2,251	22.30	2,256	27	30.88	2,664	19.03	2,110
13	20.47	2,173	21.47	2,218	28	30.63	2,651	19.53	2,132
14	18.75	2,098	21.56	2,222	29	30.46	2,642	20.00	2,152
15	16.99	2,023	21.80	2,233	30	30.33	2,635	20.62	2,180
					31			21.20	2,206

	September	October
Gain or loss in storage, in millions of cubic feet b/	+288	-157
Gain or loss in storage, in equivalent mean second-feet b/. . . .	+88.0	-58.6

a/ At 8 a.m. Sept. 1-24; 9 a.m. Sept. 25 to Oct. 31.
b/ Computed from contents corresponding to observed height on morning of last day of month.

Schoharie Creek at Gilboa Dam, at Gilboa, N. Y.

Location.- Water-stage recorder, lat. 42°23'30", long. 74°27'05", at Gilboa Dam, 6 miles south of North Blenheim, Schoharie County.
Drainage area.- 314 square miles.
Gage-height record.- Water-stage recorder graph.
Maxima.- September 1938: Discharge, 31,300 second-feet 10:40 p.m. Sept. 21 (gage height, 1,134.31 feet).
July 1927 to August 1938: Discharge, 32,000 second-feet Mar. 18, 1936 (gage height, 1,134.38 feet).
Remarks.- Total discharge is the flow passing Gilboa Dam and the flow diverted through Shandaken Tunnel into Esopus Creek above Ashokan Reservoir for New York City water supply. Mean monthly discharge adjusted for storage in Schoharie Reservoir and diversion through Shandaken Tunnel into Esopus Creek. For information on storage see record for Schoharie Reservoir at Gilboa Dam, at Gilboa, N. Y. Records collected by New York City Department of Water Supply, Gas, and Electricity and furnished by that organization and New York City Board of Water Supply.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Gilboa Dam	Shandaken Tunnel	Gilboa Dam	Shandaken Tunnel		Gilboa Dam	Shandaken Tunnel	Gilboa Dam	Shandaken Tunnel
1	0	0	0	589	16	0	961	0	0
2	0	0	0	586	17	0	954	0	0
3	0	0	0	583	18	0	948	0	0
4	0	0	0	580	19	0	464	0	0
5	0	0	0	579	20	0	246	0	928
6	0	0	0	576	21	10,400	62	0	975
7	0	0	0	569	22	4,604	0	0	970
8	0	0	0	566	23	1,779	0	0	965
9	0	285	0	563	24	2,087	0	0	244
10	0	882	0	558	25	1,671	0	0	0
11	0	990	0	554	26	1,346	0	0	0
12	0	987	0	549	27	665	272	0	0
13	0	981	0	68	28	278	299	0	0
14	0	973	0	0	29	217	299	0	0
15	0	968	0	0	30	62	532	0	0
					31			0	0
Mean monthly discharge, in second-feet						770	370	0	355

	September	October
Mean monthly discnarge, in second-feet (observed)	1,140	355
Mean monthly discharge, in second-feet (adjusted)	1,228	296
Run-off, in incnes (adjusted)	4.36	1.09

Schoharie Creek at Middleburg, N. Y.

Location.- Water-stage recorder, lat. 42°36'00", long. 74°20'15", 150 feet below highway bridge in Middleburg, Schoharie County. Prior to Sept. 24, 1938, wire-weight and staff gage located at highway bridge and at same datum.

Drainage area.- 532 square miles. 314 square miles affected by storage and diversion at Schoharie Reservoir.

Gage-height record.- Graph based on twice daily gage readings, floodmarks, and engineers readings Sept. 18 to noon Sept. 24. Water-stage recorder graph noon Sept. 24 to Oct. 31.

Stage-discharge relation.- Defined by current-meter measurements below 13,950 second-feet; extended logarithmically to peak stage on basis of slope-area determination of peak flow during March 1936 flood and comparison with flood discharge for stations on adjacent streams.

Maxima.- September 1938: Discharge, 40,600 second-feet 2 a.m. Sept. 22 (gage height, 15.6 feet, from floodmark in gage-house well).

July 1927 to August 1938: Discharge, 47,800 second-feet Mar. 18, 1936 (gage height, 16.8 feet, from floodmarks).

August 1906 to June 1927: Discharge, 31,600 second-feet Feb. 20, 1909 (records of New York State Engineer and Surveyor).

Remarks.- Flood discharge affected by storage in and diversion from Schoharie Reservoir. No diversion from Schoharie Reservoir Sept. 22-26. For information on storage and diversions, see records for Schoharie Reservoir at Gilboa Dam, at Gilboa, N. Y. and Schoharie Creek at Gilboa Dam, at Gilboa, N. Y. Mean monthly discharge adjusted for storage in and diversions from Schoharie Reservoir.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	25	308	9	21	113	17	46	68	25	2,300	105
2	23	230	10	22	105	18	44	62	26	1,540	100
3	22	200	11	19	98	19	46	61	27	1,200	83
4	23	178	12	17	90	20	243	61	28	920	79
5	19	159	13	23	88	21	6,630	100	29	632	74
6	17	147	14	42	83	22	19,300	110	30	465	77
7	19	132	15	42	79	23	6,130	83	31		70
8	19	121	16	60	74	24	3,380	77			
Mean monthly discharge, in second-feet (observed)										1,443	110
Mean monthly discharge, in second-feet (adjusted)										1,901	320
Run-off, in inches (adjusted)										3.98	0.69

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	0.98	49	3.48	1,280	15.60	40,600	7.22	7,420
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	.99	51	4.00	1,800	14.50	34,700	7.08	7,100
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	1.02	55	4.18	2,000	12.98	27,100	6.92	6,740
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	1.18	84	4.21	2,030	11.92	22,100	6.80	6,480
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	1.24	97	4.22	2,040	10.84	18,100	6.68	6,220
11	-	-	-	-	-	-	-	-	-	-	-	-
N	*0.94	*44	*0.96	*46	1.40	135	4.30	2,140	10.04	15,300	6.60	6,040
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	1.58	187	4.64	2,580	9.36	13,200	6.52	5,870
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	1.80	260	6.20	5,200	8.74	11,300	6.44	5,700
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	2.04	357	7.60	8,310	8.22	9,850	6.38	5,580
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	2.40	535	9.80	14,500	7.92	9,100	6.28	5,370
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	2.74	736	11.80	21,600	7.64	8,410	6.18	5,160
11	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	3.04	938	14.00	32,200	7.41	7,850	6.02	4,840
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.88	4,570	4.60	2,640	3.98	1,850	3.43	1,300	3.18	1,080	-	-
4	5.76	4,350	4.55	2,570	3.89	1,750	3.39	1,260	3.13	1,040	2.65	698
6	5.60	4,060	4.51	2,510	3.82	1,670	3.35	1,220	3.08	1,000	-	-
8	5.34	3,620	4.44	2,420	3.75	1,600	3.32	1,200	3.03	964	2.60	665
10	5.02	3,120	4.39	2,360	3.70	1,550	3.31	1,190	2.99	933	-	-
N	4.92	2,970	4.35	2,300	3.65	1,500	3.31	1,190	2.94	898	2.55	632
2	4.90	2,940	4.31	2,250	3.62	1,470	3.30	1,180	2.91	877	-	-
4	4.88	2,910	4.24	2,160	3.60	1,450	3.32	1,200	2.86	842	2.50	600
6	4.86	2,880	4.19	2,100	3.55	1,400	3.33	1,210	2.83	821	-	-
8	4.82	2,830	4.13	2,030	3.47	1,330	3.29	1,170	2.79	793	2.45	570
10	4.80	2,800	4.08	1,970	3.45	1,320	3.25	1,140	2.75	765	-	-
M	4.78	2,770	4.03	1,910	3.44	1,310	3.22	1,120	2.72	744	2.39	534

* Mean for the day.

Poesten Kill near Troy, N. Y.

Location.- Water-stage recorder, lat. 42°44'00", long. 73°38'00", 500 feet below bridge on Troy-Eagle Mills road, 1½ miles west of Eagle Mills, and 3 miles east of Troy, Rensselaer County.

Drainage area.- 89 square miles.

Gage-height record.- Water-stage recorder graph until 1:40 p.m. Sept. 21 when recorder was removed to prevent submergence. Stage graph based on intermittent observations of stage by engineers at reference point 100 feet landward 1:40 p.m. Sept. 21 to 10:15 a.m. Sept. 28; on twice daily observations of stage at reference point at gage Sept. 28 to Oct. 12; and on twice daily inclined-staff gage readings at new site 60 feet downstream at same datum Oct. 12-31.

Stage-discharge relation.- For 1938 defined by current-meter measurements below 7,210 second-feet extended logarithmically to peak stage on basis of computations of peak flow over Congress Street and Wilson Dams in Troy and by slope-area determination of peak flow just above gage. For 1927 defined by current-meter measurements below 1,830 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 11,900 second-feet 12:30 a.m. Sept. 22 (gage height, 12.1 feet, from floodmarks in gage house).

July 1923 to August 1938: Discharge, 7,030 second-feet Nov. 4, 1927 (gage height, 8.4 feet, from floodmarks at present site and datum).

Remarks.- Flood discharge not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	32	128	9	38	51	17	79	40	25	611	293
2	36	110	10	24	44	18	70	45	26	430	158
3	20	90	11	17	41	19	278	45	27	332	123
4	20	74	12	29	40	20	1,520	51	28	324	128
5	17	69	13	139	40	21	4,780	115	29	247	106
6	16	64	14	120	36	22	6,540	88	30	180	97
7	21	58	15	128	34	23	1,740	67	31		97
8	53	52	16	136	33	24	924	92			
Mean monthly discharge, in second-feet										630	80.9
Run-off, in inches										7.90	1.05

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.61	68	1.65	75	3.58	838	5.19	2,070	12.04	11,800	5.57	2,700
2	1.61	68	1.71	86	4.05	1,140	5.17	2,050	11.60	11,100	5.42	2,540
3	1.61	68	1.77	98	4.32	1,330	5.13	2,020	11.20	10,400	5.30	2,420
4	1.61	68	1.81	106	4.62	1,570	5.14	2,030	10.80	9,850	5.18	2,300
5	1.62	70	1.87	120	4.70	1,630	5.17	2,050	10.42	9,280	5.05	2,170
6	1.63	71	1.97	144	4.65	1,590	5.24	2,120	10.07	8,760	4.94	2,070
7	1.64	73	2.11	182	4.70	1,630	5.23	2,110	9.70	8,200	4.84	1,980
8	1.65	75	2.22	214	4.68	1,610	5.27	2,150	9.39	7,740	4.74	1,890
9	1.65	75	2.28	232	4.58	1,530	5.38	2,260	9.05	7,230	4.66	1,810
10	1.65	75	2.40	270	4.38	1,370	5.52	2,400	8.74	6,800	4.57	1,730
11	1.65	75	2.45	287	4.48	1,450	5.74	2,620	8.45	6,390	4.49	1,660
N	1.64	73	2.45	287	4.52	1,490	6.09	3,010	8.18	6,010	4.41	1,600
1	1.64	73	2.44	284	4.54	1,500	6.45	3,430	7.90	5,620	4.35	1,550
2	1.64	73	2.43	280	4.52	1,490	6.88	3,960	7.64	5,260	4.28	1,490
3	1.63	71	2.43	280	4.56	1,520	7.47	4,760	7.40	4,940	4.23	1,450
4	1.62	70	2.44	284	4.61	1,560	8.10	5,640	7.18	4,650	4.18	1,410
5	1.61	68	2.48	297	4.65	1,590	8.72	6,530	6.96	4,370	4.13	1,370
6	1.61	68	2.56	326	4.71	1,640	9.29	7,380	6.76	4,110	4.09	1,340
7	1.61	68	2.70	381	4.73	1,660	9.85	8,260	6.57	3,860	4.05	1,310
8	1.61	68	2.85	446	4.75	1,680	10.36	9,080	6.38	3,630	4.01	1,280
9	1.61	68	2.95	492	4.78	1,700	10.86	9,880	6.20	3,410	3.97	1,250
10	1.60	66	3.00	515	4.83	1,750	11.31	10,600	6.02	3,190	3.93	1,210
11	1.60	66	3.19	614	4.92	1,830	11.74	11,300	5.87	3,030	3.89	1,180
M	1.60	66	3.27	658	5.08	1,970	12.10	11,900	5.72	2,860	3.86	1,160
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.79	1,110	3.19	711	2.80	493	2.51	357	2.53	366	2.30	273
4	3.71	1,060	3.16	693	2.78	483	2.49	349	2.54	371	2.29	269
6	3.66	1,020	3.12	669	2.75	468	2.47	341	2.53	366	2.28	266
8	3.60	980	3.08	646	2.72	454	2.46	337	2.50	353	2.27	262
10	3.55	945	3.04	623	2.70	444	2.44	328	2.46	337	2.26	258
N	3.49	904	3.02	611	2.67	430	2.42	320	2.44	328	2.26	258
2	3.45	878	2.98	589	2.65	420	2.40	312	2.40	312	2.23	247
4	3.40	845	2.95	572	2.63	411	2.39	308	2.37	300	2.21	240
6	3.36	819	2.92	556	2.60	397	2.39	308	2.36	296	2.19	233
8	3.32	793	2.90	545	2.58	388	2.41	316	2.35	292	2.17	226
10	3.27	761	2.87	529	2.56	379	2.45	332	2.33	285	2.15	219
M	3.23	736	2.83	509	2.54	371	2.49	349	2.31	277	2.13	212

Supplemental records.- Sept. 22, 12:30 a.m., 12.1 ft., 11,900 sec.-ft.

Kinderhook Creek at Rossman, N. Y.

Location.- Water-stage recorder, lat. 42°19'50", long. 73°44'40", at highway bridge in Rossman, Columbia County, 1 mile above confluence with Claverack Creek.
Drainage area.- 329 square miles.
Gage-height record.- Water-stage recorder graph until 10:15 p.m. Sept. 21, when recorder stopped because of submergence. New recorder installed 10:25 a.m. Sept. 25 and water-stage recorder graph thereafter. Stage graph for period of missing record based on intermittent gage readings, floodmarks, and comparison with stage graphs of nearby streams.
Stage-discharge relation.- Defined by current-meter measurements below 9,440 second-feet and by discharge measurement of 11,000 second-feet by float method; extended logarithmically to peak stage on basis of determination of peak flow on Mar. 13 and 19, 1936, over dam at Stuyvesant Falls hydroelectric plant 2 miles upstream and on Sept. 22, 1938, over dam at Midvale Paper Co. 1,000 feet upstream and by slope-area method at the gage.
Maxima.- September 1938: Discharge, 27,800 second-feet 2:30 a.m. Sept. 22 (gage height, 18.4 feet, from floodmarks).
July 1928 to August 1938: Discharge, 12,900 second-feet Mar. 12, 1936 (gage height, 10.25 feet).
March 1906 to May 1914: Discharge, 11,000 second-feet Jan. 22, 1910 (gage height, 9.04 feet, present datum, from discharge measurement by float method).
Remarks.- Flood discharge not affected by storage or diversion. Diurnal fluctuation at low and medium stages caused by power operations.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	168	616	9	220	302	17	390	197	25	2,040	821
2	174	534	10	88	276	18	336	197	26	1,500	680
3	138	498	11	99	263	19	383	164	27	1,170	546
4	109	456	12	162	246	20	5,230	193	28	1,190	510
5	104	422	13	262	231	21	10,000	400	29	905	486
6	151	390	14	493	215	22	15,800	395	30	770	468
7	151	349	15	308	208	23	5,870	280	31		422
8	170	320	16	573	201	24	3,070	322			
Mean monthly discharge, in second-feet										1,734	374
Run-off, in inches										5.88	1.31

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.68	335	1.46	238	2.22	648	7.43	7,950	16.60	25,100	7.60	8,280
2	1.67	330	1.25	163	2.42	785	7.41	7,910	18.20	27,500	7.47	8,020
3	1.66	325	1.20	147	2.92	1,200	7.38	7,850	18.36	27,700	7.31	7,720
4	1.52	263	1.18	141	3.74	2,020	7.35	7,800	17.97	27,200	7.18	7,470
5	1.46	238	1.17	139	4.11	2,450	7.35	7,800	15.58	23,400	7.04	7,210
6	1.45	234	1.17	139	4.78	3,340	7.35	7,800	14.07	20,800	6.92	6,980
7	1.56	280	1.59	293	4.93	3,550	7.35	7,800	12.93	18,800	6.80	6,750
8	1.57	284	1.66	325	5.30	4,100	7.35	7,800	12.16	17,300	6.68	6,520
9	1.67	330	1.62	306	5.67	4,700	7.40	7,890	11.54	16,100	6.56	6,290
10	1.76	375	2.01	516	5.96	5,200	7.45	7,980	11.03	15,100	6.44	6,070
11	1.76	375	2.05	540	6.25	5,720	7.49	8,060	10.61	14,300	6.34	5,880
N	1.76	375	2.00	510	6.45	6,080	7.55	8,180	10.21	13,500	6.22	5,670
1	1.76	375	2.05	540	6.63	6,430	7.64	8,360	9.89	12,900	6.11	5,470
2	1.76	375	2.06	546	6.78	6,710	7.72	8,520	9.60	12,300	6.01	5,290
3	1.76	375	2.07	552	6.90	6,940	7.84	8,760	9.33	11,700	5.91	5,110
4	1.76	375	2.08	558	7.05	7,220	8.10	9,280	9.10	11,300	5.83	4,970
5	1.76	375	2.07	552	7.20	7,510	8.45	9,980	8.88	10,800	5.73	4,800
6	1.76	375	2.01	516	7.28	7,660	8.85	10,800	8.69	10,500	5.65	4,660
7	1.76	375	1.91	456	7.35	7,800	9.37	11,800	8.50	10,100	5.57	4,530
8	1.76	375	1.84	417	7.35	7,800	10.25	13,600	8.35	9,780	5.49	4,400
9	1.76	375	1.85	422	7.37	7,830	11.02	15,100	8.20	9,480	5.40	4,260
10	1.76	375	1.84	417	7.37	7,830	11.92	16,800	8.04	9,160	5.33	4,150
11	1.74	364	1.99	504	7.37	7,830	12.84	18,600	7.89	8,860	5.26	4,040
M	1.60	297	2.23	654	7.42	7,930	14.26	21,200	7.74	8,560	5.19	3,940
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.06	3,740	4.03	2,360	3.42	1,680	2.99	1,260	2.90	1,180	2.68	984
4	4.94	3,570	3.97	2,280	3.37	1,630	2.96	1,230	2.97	1,240	2.66	968
6	4.83	3,410	3.91	2,210	3.33	1,590	2.94	1,220	3.03	1,300	2.63	944
8	4.73	3,270	3.86	2,160	3.29	1,550	2.92	1,200	3.03	1,300	2.62	936
10	4.63	3,130	3.81	2,100	3.27	1,530	2.90	1,180	3.01	1,280	2.60	920
N	4.54	3,010	3.74	2,020	3.24	1,500	2.88	1,160	2.97	1,240	2.60	920
2	4.46	2,900	3.68	1,960	3.20	1,460	2.87	1,150	2.92	1,200	2.57	898
4	4.38	2,790	3.64	1,910	3.16	1,420	2.83	1,120	2.87	1,150	2.54	875
6	4.31	2,700	3.61	1,880	3.13	1,390	2.82	1,110	2.82	1,110	2.52	860
8	4.22	2,590	3.56	1,830	3.09	1,350	2.80	1,090	2.77	1,060	2.50	845
10	4.16	2,510	3.52	1,780	3.05	1,320	2.81	1,100	2.72	1,020	2.49	838
M	4.08	2,420	3.46	1,730	3.02	1,290	2.87	1,150	2.70	1,000	2.48	830

Supplemental records.- Sept. 19, 11:30 a.m., 1.84 ft., 417 sec.-ft. Sept. 22, 2:30 a.m., 18.4 ft., 27,800 sec.-ft.

Catskill Creek at Oak Hill, N. Y.

Location.- Water-stage recorder, lat. 42°24'20", long. 74°09'05", just below highway bridge in southernmost part of Oak Hill, Greene County.
Drainage area.- 98 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,450 second-feet; extended on basis of slope-area determination of peak flow of March 1936.
Maxima.- September 1938: Discharge, 7,900 second-feet 6:45 p.m. Sept. 21 (gage height, 12.08 feet).

March 1929 to August 1938: Discharge, 8,880 second-feet March 18, 1936 (gage height, 12.83 feet, from floodmark in shelter).

April 1910 to February 1929: Discharge, 12,300 second-feet Nov. 9, 1913 (from records of New York City Board of Water Supply).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	5.8	81	9	4.0	31	17	12	18	25	296	56
2	7.2	70	10	4.0	28	18	12	17	26	210	55
3	6.2	59	11	3.6	26	19	14	16	27	163	46
4	5.8	52	12	3.7	25	20	150	17	28	141	39
5	4.9	46	13	5.3	24	21	3,150	45	29	112	31
6	4.2	42	14	9.5	21	22	1,980	48	30	95	26
7	4.7	37	15	10	21	23	800	40	31		26
8	4.9	34	16	15	20	24	450	42			
Mean monthly discharge, in second-feet										256	36.8
Run-off, in inches										2.91	0.43

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	2.02	28	4.46	638	8.43	3,730	-	-
2	1.76	12	1.77	13	2.04	30	4.58	704	8.14	3,440	5.06	936
3	-	-	-	-	2.15	38	4.52	671	7.81	3,130	-	-
4	1.74	11	1.77	13	2.23	45	4.45	632	7.56	2,900	4.99	894
5	-	-	-	-	2.34	55	4.40	605	7.31	2,680	-	-
6	1.75	12	1.76	12	2.45	66	4.38	595	7.15	2,540	5.02	912
7	-	-	-	-	2.57	80	4.46	638	6.98	2,380	-	-
8	1.75	12	1.76	12	2.69	95	4.60	715	5.81	2,230	5.04	924
9	-	-	-	-	2.77	105	4.69	764	6.67	2,100	-	-
10	1.75	12	1.76	12	2.87	119	4.72	781	6.54	1,990	4.96	876
11	-	-	-	-	2.99	137	5.01	946	6.39	1,860	-	-
N	1.74	11	1.76	12	3.12	162	5.61	1,330	6.28	1,770	4.88	829
1	-	-	-	-	3.20	179	6.90	2,310	6.12	1,650	-	-
2	1.74	11	1.77	13	3.23	186	8.30	3,600	6.00	1,550	4.78	774
3	-	-	-	-	3.23	186	9.90	5,290	5.87	1,460	-	-
4	1.74	11	1.81	15	3.23	186	10.66	6,190	5.77	1,390	4.69	725
5	-	-	-	-	3.23	186	11.55	7,260	5.66	1,310	-	-
6	1.74	11	1.84	16	3.23	186	11.87	7,640	5.58	1,260	4.61	685
7	-	-	-	-	3.27	195	12.00	7,800	5.50	1,200	-	-
8	1.75	12	1.85	17	3.32	207	11.47	7,160	5.43	1,160	4.54	650
9	-	-	-	-	3.41	230	10.72	6,260	5.35	1,110	-	-
10	1.75	12	1.87	18	3.58	277	10.23	5,680	5.28	1,070	4.47	615
11	-	-	-	-	3.91	386	9.41	4,750	5.21	1,030	-	-
M	1.77	13	1.98	26	4.17	492	8.91	4,210	5.16	996	4.39	576
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.34	553	-	-	-	-	-	-	-	-	-	-
4	4.29	530	3.81	340	3.47	233	3.23	170	3.17	156	2.99	119
6	4.23	504	-	-	-	-	-	-	-	-	-	-
8	4.19	486	3.74	316	3.43	221	3.22	168	3.14	150	2.97	116
10	4.15	470	-	-	-	-	-	-	-	-	-	-
N	4.09	446	3.69	299	3.39	210	3.21	165	3.12	145	2.95	112
2	4.04	426	-	-	-	-	-	-	-	-	-	-
4	4.01	414	3.60	270	3.34	197	3.18	159	3.08	137	2.93	108
6	3.96	395	-	-	-	-	-	-	-	-	-	-
8	3.93	383	3.53	250	3.29	185	3.17	156	3.03	127	2.91	105
10	3.90	372	-	-	-	-	-	-	-	-	-	-
M	3.87	361	3.50	241	3.26	177	3.18	159	3.01	123	2.89	101

Esopus Creek at Coldbrook, N. Y.

Location.- Water-stage recorder, lat. 42°00'45", long. 74°16'10", at highway bridge at Coldbrook, Ulster County, 1½ miles above Ashokan Reservoir.
Drainage area.- 192 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 7,100 second-feet; extended logarithmically to peak stage on basis of determination of peak flow of flood of August 1933 by float method.
Maxima.- September 1938: Discharge, 19,900 second-feet 8 p.m. Sept. 21 (gage height, 13.97 feet).
January 1914 to August 1938: Discharge, 55,000 second-feet Aug. 24, 1933 (gage height, 20.40 feet).
Remarks.- Water diverted through Shandaken Tunnel from Schoharie Creek enters Esopus Creek about 6 miles above this station. Mean monthly discharge adjusted for diversion into the basin. No diversion Sept. 22-26. For information on diversion see record for Schoharie Creek at Gilboa Dam, at Gilboa, N. Y.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	108	912	9	191	756	17	1,120	104	25	860	314
2	94	882	10	541	746	18	1,120	101	26	655	230
3	88	858	11	1,100	736	19	1,150	96	27	630	202
4	88	837	12	1,110	725	20	1,470	541	28	792	180
5	81	816	13	1,140	576	21	6,450	1,100	29	709	198
6	76	802	14	1,120	132	22	4,660	1,080	30	762	196
7	78	781	15	1,150	113	23	1,820	1,080	31		187
8	86	767	16	1,120	108	24	1,190	1,080			
Mean monthly discharge, in second-feet (observed)										1,052	556
Mean monthly discharge, in second-feet (adjusted)										682	201
Run-off, in inches (adjusted)										3.96	1.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	5.70	1,130	5.40	890	6.57	2,010	10.40	9,020	6.92	2,160
2	-	-	5.74	1,170	5.80	1,220	6.59	2,040	9.90	7,800	6.90	2,140
3	-	-	5.75	1,180	5.92	1,330	6.62	2,070	9.60	7,140	6.88	2,120
4	-	-	5.75	1,180	5.95	1,360	6.65	2,110	9.36	6,640	6.88	2,120
5	-	-	5.75	1,180	6.00	1,400	6.72	2,200	9.10	6,120	6.86	2,100
6	5.69	1,120	5.81	1,230	6.22	1,620	6.78	2,270	8.90	5,720	6.84	2,070
7	-	-	5.81	1,230	6.26	1,670	6.86	2,380	8.75	5,440	6.80	2,030
8	-	-	5.80	1,220	6.18	1,580	6.92	2,460	8.60	5,170	6.76	1,990
9	-	-	5.79	1,210	6.11	1,510	7.03	2,600	8.39	4,790	6.72	1,950
10	-	-	5.79	1,210	6.08	1,480	7.13	2,740	8.26	4,560	6.68	1,910
11	-	-	5.78	1,200	6.05	1,450	7.30	2,990	8.13	4,320	6.62	1,850
N	5.68	1,110	5.77	1,190	6.03	1,430	7.50	3,290	8.01	4,110	6.59	1,820
1	-	-	5.77	1,190	6.02	1,420	7.62	3,480	7.89	3,910	6.55	1,780
2	-	-	5.77	1,190	6.01	1,410	7.90	3,930	7.79	3,750	6.52	1,750
3	-	-	5.81	1,230	6.01	1,410	8.20	4,450	7.68	3,580	6.48	1,710
4	-	-	5.83	1,250	6.00	1,400	8.90	5,720	7.59	3,430	6.44	1,670
5	-	-	5.84	1,260	6.00	1,400	9.82	7,620	7.48	3,260	6.41	1,640
6	5.68	1,110	5.84	1,260	6.00	1,400	11.50	12,000	7.40	3,140	6.40	1,630
7	-	-	5.77	1,190	6.01	1,410	13.80	19,300	7.32	3,020	6.35	1,580
8	-	-	5.75	1,180	6.02	1,420	13.97	19,900	7.25	2,920	6.31	1,540
9	-	-	5.65	1,090	6.30	1,710	13.05	16,700	7.18	2,810	6.28	1,510
10	-	-	5.27	794	6.42	1,840	12.50	14,900	7.10	2,700	6.26	1,490
11	-	-	5.20	745	6.54	1,980	11.50	12,000	7.03	2,600	6.22	1,460
M	5.68	1,110	5.17	726	6.57	2,010	10.90	10,300	6.97	2,520	6.20	1,440
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.13	1,380	-	-	-	-	5.01	557	-	-	-	-
4	6.08	1,330	5.56	942	5.22	704	5.00	550	5.38	816	5.25	725
6	6.04	1,300	-	-	-	-	4.98	538	-	-	-	-
8	6.00	1,260	5.50	900	5.18	676	4.98	538	5.36	802	5.24	718
10	5.95	1,220	-	-	-	-	4.98	538	-	-	-	-
N	5.91	1,190	5.44	858	5.14	648	4.98	538	5.34	788	5.23	711
2	5.85	1,140	-	-	-	-	4.97	532	-	-	-	-
4	5.77	1,090	5.38	816	5.09	613	4.93	508	5.31	767	5.22	704
6	5.74	1,070	-	-	-	-	5.38	816	-	-	-	-
8	5.70	1,040	5.31	767	5.04	578	5.40	830	5.28	746	5.19	683
10	5.66	1,010	-	-	-	-	5.40	830	-	-	-	-
M	5.63	991	5.26	732	5.02	564	5.40	830	5.26	732	5.17	669

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Ashokan Reservoir near Kingston, N. Y.

Location.- Staff gage, lat. 41°57'00", long. 74°12'30", at gatehouse and dividing weir, 10 miles west of Kingston, Ulster County. Gage readings are elevations above mean sea level (levels of New York City Board of Water Supply).
Drainage area.- 257 square miles.
Gage-height record.- Gage read daily at 8 a.m. prior to Sept. 24 and at 9 a.m. thereafter. During period Sept. 20-26, additional readings made at 3 p.m. Sept. 20-24 and at 4 p.m. Sept. 25, 26.
Remarks.- Reservoir is comprised of two basins. East Basin has available storage of 11,010,000,000 cubic feet at crest of flashboards, elevation 589.00 feet (crest of spillway at elevation 587.00 feet). West Basin has available storage of 6,449,000,000 cubic feet at crest of flashboards, elevation 592.00 feet (crest of waste weir at elevation 590.00 feet). The combined available storage capacity is 17,459,000,000 cubic feet. Total flow, except during periods of spilling, is diverted through the Catskill Aqueduct for New York City water supply. Records collected by New York City Department of Water Supply, Gas, and Electricity and furnished by that organization and New York City Board of Water Supply.

East Basin
Elevation in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	586.07	10,550	587.69	10,920	16	583.04	9,891	586.83	10,720
2	585.99	10,540	587.65	10,910	17	582.82	9,844	586.70	10,700
3	585.89	10,510	587.60	10,900	18	582.68	9,814	586.54	10,660
4	585.77	10,490	587.56	10,890	19	582.55	9,786	586.40	10,630
5	585.64	10,460	587.53	10,880	20	582.91	9,863	586.25	10,590
6	585.50	10,430	587.47	10,870	21	583.54	10,000	586.18	10,580
7	585.33	10,390	587.43	10,860	22	586.50	10,650	586.05	10,550
8	585.07	10,330	587.40	10,850	23	588.10	11,010	585.91	10,520
9	584.77	10,260	587.33	10,840	24	588.36	11,070	585.82	10,500
10	584.48	10,200	587.29	10,830	25	588.25	11,040	585.79	10,490
11	584.20	10,140	587.23	10,810	26	588.14	11,020	585.68	10,470
12	583.93	10,080	587.17	10,800	27	588.00	10,990	585.56	10,440
13	583.69	10,030	587.09	10,780	28	587.93	10,970	585.46	10,420
14	583.46	9,982	587.03	10,770	29	587.86	10,960	585.33	10,390
15	583.27	9,941	586.94	10,750	30	587.75	10,930	585.18	10,360
					31			585.04	10,320

	September	October
Gain or loss in storage, in millions of cubic feet	+370	-630
Gain or loss in storage, in equivalent mean second-feet.	+143	-235

Supplemental records.- Sept. 20, 3 p.m., 583.09 ft., 9,902 mil. cu. ft. Sept. 21, 3 p.m., 583.89 ft., 10,080 mil. cu. ft. Sept. 22, 3 p.m., 587.20 ft., 10,810 mil. cu. ft. Sept. 23, 3 p.m., 588.26 ft., 11,040 mil. cu. ft. Sept. 24, 3 p.m., 588.34 ft., 11,060 mil. cu. ft. Sept. 25, 4 p.m., 588.21 ft., 11,030 mil. cu. ft. Sept. 26, 4 p.m., 588.09 ft., 11,010 mil. cu. ft.

a/ At 8 a.m. Sept. 1-24; 9 a.m. Sept. 25 to Oct. 31.

West Basin
Elevation in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	589.34	6,219	591.18	6,474	16	589.80	6,281	590.30	6,350
2	588.93	6,165	591.19	6,476	17	590.20	6,336	590.01	6,309
3	588.51	6,109	591.18	6,474	18	590.60	6,392	589.75	6,274
4	588.15	6,061	591.15	6,470	19	591.04	6,454	589.52	6,243
5	587.81	6,016	591.14	6,469	20	591.47	6,515	589.27	6,210
6	587.44	5,966	591.15	6,470	21	591.52	6,522	589.55	6,247
7	587.11	5,922	591.14	6,469	22	592.58	6,675	589.92	6,297
8	587.07	5,917	591.12	6,466	23	591.75	6,555	590.24	6,341
9	586.98	5,905	591.11	6,464	24	591.48	6,517	590.54	6,384
10	586.99	5,906	591.09	6,461	25	591.30	6,491	590.76	6,415
11	587.29	5,946	591.07	6,459	26	591.19	6,476	590.50	6,378
12	587.80	6,014	591.07	6,459	27	591.12	6,466	590.23	6,340
13	588.31	6,082	591.06	6,457	28	591.12	6,466	589.96	6,302
14	588.79	6,146	590.89	6,433	29	591.13	6,467	589.78	6,278
15	589.33	6,218	590.59	6,391	30	591.13	6,467	589.56	6,249
					31			589.33	6,218

	September	October
Gain or loss in storage, in millions of cubic feet	+255	-288
Gain or loss in storage, in equivalent mean second-feet.	+98.4	-108

Supplemental records.- Sept. 20, 3 p.m., 591.48 ft., 6,517 mil. cu. ft. Sept. 21, 3 p.m., 591.75 ft., 6,555 mil. cu. ft. Sept. 22, 3 p.m., 592.21 ft., 6,623 mil. cu. ft. Sept. 23, 3 p.m., 591.65 ft., 6,541 mil. cu. ft. Sept. 24, 3 p.m., 591.44 ft., 6,511 mil. cu. ft. Sept. 25, 4 p.m., 591.28 ft., 6,488 mil. cu. ft. Sept. 26, 4 p.m., 591.11 ft., 6,464 mil. cu. ft.

a/ At 8 a.m. Sept. 1-24; 9 a.m. Sept. 25 to Oct. 31.

Esopus Creek at outlet of Ashokan Reservoir, near Kingston, N. Y.

Location.- Lat. 41°57'00", long. 74°12'30", at gatehouse and spillway, 10 miles west of Kingston, Ulster County.
Drainage area.- 257 square miles.
Gage-height record.- Reservoir elevations observed twice daily and used in determination of flow over spillways.
Remarks.- Discharge is the flow, measured by venturi meter, through Catskill Aqueduct for New York City water supply and flow over spillway of East Basin. No flow over waste weir of West Basin during flood period. Mean monthly discharge adjusted for storage in Ashokan Reservoir and for diversion into basin through Shandaken Tunnel from Schoharie Reservoir. For information on storage and diversion into basin see record for Ashokan Reservoir near Kingston, N. Y., and for Schoharie Reservoir at Gilboa, N. Y. Records collected by New York City Department of Water Supply, Gas, and Electricity and furnished by that organization and New York City Board of Water Supply.

Mean daily discharge, in second-feet, 1938

Day	September			October			Day	September			October		
	Basin		Aqueduct	Basin		Aqueduct		Basin		Aqueduct	Basin		Aqueduct
	West	East		West	East			West	East		West	East	
1	0	0	913	0	0	962	16	0	0	911	0	0	874
2	0	0	913	0	0	962	17	0	0	911	0	0	876
3	0	0	913	0	0	962	18	0	0	911	0	0	876
4	0	0	913	0	0	907	19	0	0	913	0	0	876
5	0	0	913	0	0	891	20	0	0	900	0	0	876
6	0	0	913	0	0	883	21	0	0	523	0	0	876
7	0	0	913	0	0	880	22	0	0	842	0	0	876
8	0	0	913	0	0	877	23	0	210	931	0	0	954
9	0	0	913	0	0	877	24	0	273	939	0	0	954
10	0	0	911	0	0	877	25	0	82	939	0	0	954
11	0	0	911	0	0	877	26	0	6	951	0	0	954
12	0	0	913	0	0	877	27	0	0	951	0	0	965
13	0	0	913	0	0	876	28	0	0	956	0	0	967
14	0	0	913	0	0	876	29	0	0	962	0	0	967
15	0	0	911	0	0	874	30	0	0	962	0	0	945
							31				0	0	942
Mean monthly discharge, in second-feet.								0	19	906	0	0	909

	September	October
Mean monthly discharge, in second-feet (observed)	925	909
Mean monthly discharge, in second-feet (adjusted)	796	211
Run-off, in inches (adjusted)	3.46	0.95

Rondout Creek near Lowes Corners, N. Y.

Location.- Chain gage, lat. 41°51'55", long. 74°29'10", at highway bridge 1.1 miles above Lowes Corners, Sullivan County, and about 2 3/4 miles above mouth of Chestnut Creek. Subsequent to Oct. 3, water-stage recorder, lat. 41°51'50", long. 74°29'55", three-quarters of a mile downstream.

Drainage area.- 38.5 square miles; 39.4 square miles subsequent to Oct. 3.

Gage-height record.- Graph based on twice daily chain-gage readings Sept. 1 to Oct. 3; water-stage recorder graph Oct. 4-31 at site downstream.

Stage-discharge relation.- Defined by current-meter measurements below 2,030 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 3,060 second-feet about 6 p.m. Sept. 21 (gage height, 5.8 feet, from graph based on gage readings).

February 1937 to August 1938: Discharge, 7,600 second-feet about 8 a.m. July 22, 1938 (gage height, 8.2 feet).

Remarks.- Flood run-off not affected by artificial storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	43	76	9	29	47	17	28	36	25	187	68
2	37	68	10	24	45	18	35	35	26	156	45
3	33	66	11	21	42	19	98	34	27	129	42
4	34	60	12	24	41	20	388	35	28	116	39
5	28	55	13	34	39	21	1,210	54	29	94	46
6	26	53	14	27	38	22	648	38	30	85	44
7	40	51	15	76	37	23	410	34	31		42
8	39	49	16	39	37	24	239	79			
Mean monthly discharge, in second-feet										146	47.6
Run-off, in inches										4.23	1.40

Rondout Creek near Lackawack, N. Y.

Location.- Water-stage recorder, lat. 41°46'25", long. 74°23'35", half a mile below highway bridge known as Wilburs Bridge and 2 3/4 miles southeast of Lackawack, Ulster County.
Drainage area.- 100 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 10,260 second-feet; extended logarithmically to peak stage and verified by slope-area determination of peak flow of July 1938 flood.
Maxima.- September 1938: Discharge, 5,930 second-feet 7:45 p.m. Sept. 21 (gage height, 7.80 feet).
February 1906 to August 1938: Discharge, 26,700 second-feet Aug. 26, 1928 by slope-area determination (from records of New York City Board of Water Supply).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	95	248	9	92	120	17	92	88	25	597	196
2	96	210	10	78	117	18	81	84	26	512	138
3	86	186	11	72	110	19	112	81	27	435	130
4	78	168	12	69	107	20	965	81	28	399	126
5	77	152	13	70	101	21	2,450	129	29	326	131
6	72	143	14	78	96	22	1,860	130	30	282	130
7	80	134	15	124	96	23	982	110	31		126
8	102	124	16	130	96	24	759	201			
Mean monthly discharge, in second-feet										375	132
Run-off, in inches										4.18	1.52

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.32	81	-	-	2.07	365	3.46	1,260	5.53	3,140	3.22	1,080
2	-	-	1.32	81	3.06	965	3.61	1,380	5.24	2,820	3.17	1,050
3	-	-	-	-	3.28	1,130	3.64	1,400	5.12	2,700	3.14	1,020
4	-	-	1.32	81	3.31	1,150	3.58	1,360	5.01	2,590	3.11	1,000
5	-	-	-	-	3.26	1,120	3.48	1,280	4.86	2,440	3.09	988
6	1.32	81	1.33	84	3.20	1,070	3.40	1,220	4.70	2,300	3.09	988
7	-	-	-	-	3.18	1,060	3.32	1,160	4.56	2,170	3.10	995
8	-	-	1.34	86	3.20	1,070	3.27	1,120	4.44	2,070	3.13	1,020
9	-	-	-	-	3.24	1,100	3.25	1,110	4.31	1,950	3.16	1,040
10	-	-	1.37	94	3.30	1,140	3.25	1,110	4.21	1,860	3.18	1,060
11	-	-	-	-	3.33	1,170	3.26	1,120	4.10	1,770	3.18	1,060
N	1.32	81	1.39	98	3.32	1,160	3.29	1,140	4.00	1,690	3.17	1,050
1	-	-	-	-	3.27	1,120	3.36	1,190	3.90	1,610	3.14	1,020
2	-	-	1.42	107	3.23	1,090	3.47	1,270	3.83	1,550	3.12	1,010
3	-	-	-	-	3.15	1,030	3.91	1,620	3.75	1,490	3.07	972
4	-	-	1.45	116	3.06	965	5.00	2,580	3.69	1,440	3.05	958
5	-	-	-	-	2.99	913	6.15	3,880	3.62	1,390	3.02	935
6	1.32	81	1.50	130	2.92	864	7.00	4,900	3.56	1,340	2.99	913
7	-	-	-	-	2.86	822	7.63	5,700	3.51	1,300	2.97	899
8	-	-	1.55	146	2.81	787	7.78	5,900	3.45	1,260	2.95	885
9	-	-	-	-	2.77	760	7.49	5,520	3.40	1,220	2.94	878
10	-	-	1.65	180	2.78	767	6.99	4,890	3.35	1,180	2.93	871
11	-	-	-	-	2.90	850	6.35	4,120	3.31	1,150	2.92	864
M	1.32	81	1.83	251	3.20	1,070	5.90	3,580	3.26	1,120	2.91	857
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.89	843	-	-	-	-	-	-	-	-	-	-
4	2.88	836	2.56	633	2.38	534	2.23	452	2.19	430	2.02	340
6	2.86	822	-	-	-	-	-	-	-	-	-	-
8	2.83	801	2.52	611	2.36	523	2.20	435	2.15	408	2.00	330
10	2.80	780	-	-	-	-	-	-	-	-	-	-
N	2.77	760	2.48	589	2.35	518	2.18	424	2.12	391	1.98	320
2	2.75	748	-	-	-	-	-	-	-	-	-	-
4	2.72	728	2.46	578	2.33	506	2.16	413	2.10	380	1.97	316
6	2.70	715	-	-	-	-	-	-	-	-	-	-
8	2.64	679	2.43	562	2.29	484	2.18	424	2.07	365	1.96	311
10	2.61	661	-	-	-	-	-	-	-	-	-	-
M	2.60	655	2.40	545	2.25	462	2.22	446	2.04	350	1.94	301

Supplemental records.- Sept. 21, 7:45 p.m., 7.80 ft., 5,930 sec.-ft.

Rondout Creek at Rosendale, N. Y.

Location.- Water-stage recorder, lat. 41°50'35", long. 74°05'10", 150 feet above highway bridge in Rosendale, Ulster County. Zero of gage is 42.81 feet above mean sea level (general adjustment of 1912).
Drainage area.- 386 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 14,800 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 18,100 second-feet 12:15 a.m. Sept. 22 (gage height, 15.38 feet).
July 1901 to November 1903, January 1906 to January 1919, August 1926 to August 1938: Discharge, 27,300 second-feet Aug. 27, 1928 (gage height, 21.9 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	218	538	9	214	301	17	236	226	25	1,460	1,190
2	234	460	10	168	308	18	204	235	26	1,120	677
3	196	454	11	156	322	19	530	235	27	920	560
4	178	448	12	154	299	20	4,950	250	28	875	446
5	174	404	13	156	276	21	8,700	547	29	718	524
6	172	384	14	180	267	22	11,200	437	30	622	580
7	156	358	15	270	235	23	3,700	326	31		482
8	238	333	16	380	235	24	2,260	507			
Mean monthly discharge, in second-feet										1,358	414
Run-off, in inches										3.52	1.23

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	5.17	2,300	7.18	4,430	15.34	18,000	7.43	4,730
2	2.41	244	2.41	244	5.54	2,660	7.22	4,470	15.22	17,700	7.29	4,560
3	-	-	-	-	6.05	3,170	7.26	4,520	15.07	17,400	7.16	4,400
4	2.41	244	2.41	244	6.58	3,740	7.34	4,620	14.88	17,100	7.04	4,260
5	-	-	-	-	7.07	4,290	7.48	4,790	14.62	16,500	6.93	4,130
6	2.41	244	2.41	244	7.53	4,840	7.67	5,030	14.31	16,000	6.83	4,010
7	-	-	-	-	7.94	5,380	7.87	5,290	13.89	15,200	6.75	3,920
8	2.41	244	2.50	290	8.36	5,960	8.02	5,490	13.40	14,300	6.68	3,850
9	2.35	217	2.72	413	8.63	6,360	8.11	5,610	12.85	13,300	6.62	3,780
10	2.18	153	2.65	372	8.73	6,500	8.17	5,700	12.25	12,300	6.57	3,730
11	2.13	137	-	-	8.73	6,500	8.23	5,780	11.67	11,300	6.52	3,670
N	2.12	134	2.63	361	8.66	6,400	8.35	5,950	11.03	10,200	6.48	3,630
1	-	-	-	-	8.58	6,280	8.52	6,190	10.66	9,580	6.44	3,580
2	2.12	134	2.64	367	8.47	6,120	8.80	6,610	10.20	8,830	6.41	3,550
3	2.12	134	2.76	436	8.34	5,940	9.58	7,840	9.81	8,210	6.38	3,520
4	2.19	156	2.92	532	8.17	5,700	10.74	9,720	9.46	7,650	6.35	3,480
5	2.25	177	-	-	7.97	5,420	11.68	11,300	9.15	7,150	6.30	3,430
6	2.30	195	2.94	544	7.78	5,170	12.60	12,900	8.86	6,700	6.25	3,380
7	-	-	3.19	698	7.56	4,890	13.37	14,300	8.59	6,300	6.18	3,300
8	2.32	204	3.39	833	7.37	4,650	14.12	15,600	8.36	5,960	6.11	3,230
9	2.40	239	3.65	1,020	7.22	4,470	14.72	16,700	8.14	5,660	6.04	3,160
10	2.39	235	3.90	1,200	7.12	4,350	15.12	17,500	7.94	5,380	5.98	3,100
11	2.39	235	4.26	1,490	7.09	4,320	15.32	17,900	7.76	5,150	5.90	3,020
M	2.40	239	4.67	1,840	7.13	4,370	15.37	18,000	7.58	4,910	5.81	2,930
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.65	2,770	4.45	1,650	4.01	1,290	3.60	980	-	-	-	-
4	5.52	2,640	4.38	1,590	3.96	1,250	3.55	945	3.51	917	3.29	764
6	5.41	2,530	4.33	1,550	3.89	1,190	3.51	917	-	-	-	-
8	5.32	2,440	4.28	1,510	3.83	1,150	3.49	903	3.49	903	3.22	718
10	5.25	2,380	4.23	1,470	3.79	1,120	3.49	903	-	-	-	-
N	5.17	2,300	4.20	1,440	3.77	1,100	3.49	903	3.46	882	3.19	698
2	5.08	2,220	4.16	1,410	3.75	1,090	3.48	896	-	-	-	-
4	4.92	2,070	4.12	1,380	3.73	1,070	3.48	896	3.41	847	3.17	686
6	4.76	1,920	4.12	1,380	3.71	1,060	3.49	903	-	-	-	-
8	4.66	1,830	4.12	1,380	3.68	1,040	3.50	910	3.40	840	3.20	705
10	4.58	1,760	4.08	1,340	3.65	1,020	3.50	910	-	-	-	-
M	4.52	1,710	4.05	1,320	3.63	1,000	3.51	917	3.35	805	3.14	666

Supplemental records.- Sept. 22, 12:15 a.m., 15.38 ft., 18,100 sec.-ft.

Chestnut Creek above Red Brook, at Grahamsville, N. Y.

Location.- Staff gage, lat. 41°50'45", long. 74°32'50", about 300 feet above steel highway bridge at Grahamsville, Sullivan County, and a quarter of a mile above mouth of Red Brook.
Drainage area.- 12.2 square miles.
Gage-height record.- Graph based on twice daily staff gage readings.
Stage-discharge relation.- Defined by current-meter measurements below 523 second-feet; extended logarithmically to peak stage on basis of determination of flood flow through bridge opening on July 22, 1938.
Maxima.- September 1938: Discharge, 965 second-feet about 5 p.m. Sept. 21 (gage height, 3.8 feet, from graph based on gage readings).
May 1937 to August 1938: Discharge, 2,600 second-feet about 8 a.m. July 22, 1938 (gage height, 5.8 feet, observed at time of flood).
Remarks.- Flood run-off not affected by artificial storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	16	14	9	14	10	17	12	9.5	25	27	20
2	14	14	10	13	10	18	13	9.5	26	21	17
3	14	13	11	13	10	19	26	9.5	27	24	15
4	16	12	12	13	10	20	109	10	28	20	14
5	13	12	13	17	9.5	21	320	10	29	17	14
6	13	12	14	16	9.5	22	113	9.5	30	15	14
7	18	12	15	25	9.5	23	68	10	31		14
8	15	10	16	14	9.5	24	35	22			
Mean monthly discharge, in second-feet										35.5	12.1
Run-off, in inches										3.25	1.14

Wallkill River near Unionville, N. Y.

Location.- Wire-weight gage, lat. 41°15'35", long. 74°32'55", at the highway bridge on the Quarryville-Milton road about 2 miles south of the New York-New Jersey State line and 3 miles south of Unionville, Orange County.
Drainage area.- 144 square miles.
Gage-height record.- Graph based on twice daily wire weight gage readings.
Stage-discharge relation.- Defined by current-meter measurements.
Maxima.- September 1938: Discharge, 3,120 second-feet 10 to 12 p.m. Sept. 22 (gage height, 11.20 feet, from readings during discharge measurement).
September 1937 to August 1938: Discharge, 1,680 second-feet Jan. 26, 1938 (gage height, 10.06 feet, from readings during discharge measurement).
Remarks.- No regulation or diversion. Natural storage in small lakes and swampy areas.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	52	517	9	34	175	17	84	104	25	1,850	348
2	61	393	10	33	149	18	74	100	26	1,430	353
3	46	283	11	32	137	19	94	100	27	1,140	283
4	41	214	12	31	125	20	467	100	28	926	240
5	52	175	13	33	114	21	951	199	29	752	214
6	40	162	14	42	109	22	2,500	268	30	640	188
7	37	175	15	69	104	23	2,970	240	31		168
8	35	188	16	104	104	24	2,400	227			
Mean monthly discharge, in second-feet										567	202
Run-off, in inches										4.40	1.61

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	6.60	254	8.33	650	9.98	1,600	11.19	3,100
2	-	-	-	-	6.94	306	8.39	672	10.06	1,670	11.19	3,100
3	-	-	-	-	7.15	344	8.43	686	10.13	1,740	11.18	3,090
4	-	-	-	-	7.28	369	8.49	706	10.21	1,820	11.17	3,070
5	-	-	-	-	7.39	391	8.53	722	10.30	1,910	11.16	3,050
6	5.15	74	5.17	76	7.48	411	8.59	746	10.39	2,010	11.15	3,040
7	-	-	-	-	7.53	422	8.63	762	10.46	2,090	11.15	3,040
8	-	-	-	-	7.58	434	8.70	790	10.54	2,180	11.14	3,020
9	-	-	-	-	7.62	444	8.75	812	10.62	2,270	11.13	3,000
10	-	-	-	-	7.66	453	8.80	835	10.70	2,370	11.12	2,980
11	-	-	-	-	7.69	461	8.85	858	10.78	2,470	11.11	2,970
N	-	-	5.26	85	7.73	471	8.90	880	10.85	2,570	11.11	2,970
1	-	-	-	-	7.78	484	8.96	910	10.92	2,670	11.11	2,970
2	-	-	-	-	7.82	495	9.02	940	11.00	2,790	11.10	2,950
3	-	-	-	-	7.86	506	9.10	980	11.05	2,870	11.10	2,950
4	-	-	-	-	7.90	517	9.18	1,030	11.10	2,950	11.09	2,930
5	-	-	-	-	7.95	531	9.27	1,080	11.14	3,020	11.09	2,930
6	-	-	5.39	98	8.00	545	9.35	1,130	11.17	3,070	11.08	2,920
7	5.11	70	-	-	8.06	563	9.45	1,200	11.17	3,070	11.06	2,890
8	-	-	5.50	109	8.10	575	9.52	1,240	11.18	3,090	11.04	2,850
9	-	-	-	-	8.16	593	9.61	1,310	11.19	3,100	11.03	2,840
10	-	-	5.72	136	8.20	605	9.70	1,370	11.20	3,120	11.02	2,820
11	-	-	-	-	8.25	622	9.77	1,430	11.20	3,120	11.00	2,790
M	-	-	6.23	201	8.29	636	9.86	1,500	11.20	3,120	10.98	2,760
	September 24		September 25		September 26		September 27		September 28		September 29	
2	10.93	2,680	10.43	2,050	9.96	1,580	-	-	-	-	-	-
4	10.88	2,610	10.39	2,010	9.91	1,540	9.49	1,220	9.10	980	8.70	790
6	10.83	2,540	10.34	1,950	9.86	1,500	-	-	-	-	-	-
8	10.79	2,490	10.30	1,910	9.82	1,470	9.42	1,170	9.02	940	8.60	750
10	10.76	2,450	10.27	1,880	9.79	1,440	-	-	-	-	-	-
N	10.72	2,400	10.23	1,840	9.77	1,430	9.37	1,140	8.99	925	8.56	734
2	10.67	2,330	10.20	1,810	9.74	1,400	-	-	-	-	-	-
4	10.64	2,300	10.17	1,780	9.71	1,380	9.30	1,100	8.94	900	8.56	734
6	10.61	2,260	10.13	1,740	9.67	1,350	-	-	-	-	-	-
8	10.57	2,210	10.10	1,710	9.64	1,330	9.25	1,070	8.90	880	8.56	734
10	10.51	2,140	10.06	1,670	9.60	1,300	-	-	-	-	-	-
M	10.48	2,110	10.00	1,620	9.58	1,290	9.18	1,030	8.80	835	8.50	710

Wallkill River at Pellets Island Mountain, N. Y.

Location.- Water-stage recorder, lat. 41°22'50", long. 74°24'50", at highway bridge at Pellets Island Mountain, Orange County, 4½ miles south of Middletown. Zero of gage is 357.41 feet above mean sea level (general adjustment of 1912).
Drainage area.- 385 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 4,300 second-feet; extended logarithmically to peak stage on basis of discharge record and two discharge measurements at Phillipsburg, N. Y. For 1936 defined by current-meter measurements below 8,970 second-feet; extended logarithmically to peak stage on basis of comparison with discharge record at Phillipsburg, N. Y.
Maxima.- September 1938: Discharge, 6,210 second-feet 7:45 a.m. Sept. 23 (gage height, 15.58 feet).
December 1919 to August 1938: Discharge, 12,400 second-feet Mar. 14, 1936 (gage height, 20.0 feet, present site and datum).
Maximum gage height, Mar. 16, 1920, 25.7 feet, chain gage at present site and datum.
Remarks.- No known diversions but natural storage in large swampy areas and small lakes above Pellets Island Mountain.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	124	932	9	89	393	17	202	303	25	3,960	890
2	143	788	10	83	368	18	166	292	26	2,870	755
3	131	641	11	77	342	19	233	287	27	2,200	635
4	117	529	12	76	303	20	2,090	287	28	1,760	582
5	114	454	13	82	311	21	3,840	563	29	1,370	543
6	108	413	14	90	326	22	5,930	641	30	1,100	497
7	95	427	15	127	324	23	6,110	578	31		436
8	94	427	16	215	313	24	5,340	582			
Mean monthly discharge, in second-feet										1,298	489
Run-off, in inches										3.76	1.46

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	3.45	161	5.95	688	10.68	2,840	14.47	5,380	15.57	6,210
2	3.56	176	3.45	161	6.42	826	10.74	2,870	14.53	5,420	15.57	6,210
3	-	-	3.45	161	6.88	982	10.77	2,890	14.61	5,480	15.57	6,210
4	3.54	174	3.45	161	7.42	1,198	10.81	2,920	14.73	5,560	15.57	6,210
5	-	-	3.45	161	7.95	1,410	10.85	2,940	14.79	5,600	15.56	6,200
6	3.52	171	3.45	161	8.48	1,670	10.90	2,970	14.89	5,670	15.56	6,200
7	-	-	3.45	161	8.90	1,880	10.94	2,990	14.93	5,700	15.56	6,200
8	3.50	168	3.46	162	9.22	2,040	10.97	3,010	15.11	5,840	15.55	6,190
9	-	-	3.47	164	9.45	2,160	11.01	3,040	15.19	5,900	15.54	6,180
10	3.48	165	3.48	165	9.69	2,280	11.10	3,090	15.27	5,970	15.52	6,170
11	-	-	3.50	168	9.93	2,400	11.23	3,170	15.34	6,020	15.51	6,160
N	3.47	164	3.57	178	10.03	2,450	11.38	3,260	15.39	6,060	15.50	6,150
1	-	-	3.65	190	10.08	2,480	11.64	3,410	15.43	6,090	15.49	6,140
2	3.47	164	3.72	200	10.12	2,500	12.10	3,720	15.48	6,130	15.47	6,130
3	-	-	3.79	210	10.17	2,530	12.80	4,210	15.52	6,170	15.44	6,100
4	3.46	162	3.87	223	10.20	2,550	13.40	4,630	15.53	6,170	15.41	6,080
5	-	-	3.96	238	10.24	2,570	13.78	4,900	15.54	6,180	15.38	6,050
6	3.45	161	4.08	259	10.26	2,590	14.01	5,060	15.54	6,180	15.35	6,030
7	-	-	4.22	285	10.29	2,600	14.17	5,170	15.55	6,190	15.31	6,000
8	3.45	161	4.43	326	10.33	2,630	14.24	5,220	15.55	6,190	15.28	5,970
9	-	-	4.64	369	10.37	2,650	14.27	5,240	15.55	6,190	15.24	5,940
10	3.45	161	4.93	434	10.42	2,680	14.30	5,260	15.56	6,200	15.20	5,910
11	-	-	5.22	505	10.50	2,730	14.34	5,290	15.56	6,200	15.16	5,880
M	3.45	161	5.58	595	10.59	2,780	14.40	5,330	15.56	6,200	15.12	5,850
	September 24		September 25		September 26		September 27		September 28		September 29	
2	15.00	5,750	13.29	4,550	11.34	3,230	9.99	2,420	9.04	1,950	8.07	1,510
4	14.91	5,690	13.09	4,410	11.21	3,160	9.91	2,380	8.97	1,920	8.01	1,480
6	14.80	5,610	12.92	4,290	11.08	3,080	9.81	2,340	8.90	1,880	7.92	1,450
8	14.69	5,530	12.78	4,200	10.96	3,010	9.70	2,280	8.81	1,840	7.83	1,410
10	14.58	5,460	12.60	4,070	10.84	2,930	9.60	2,230	8.75	1,800	7.77	1,390
N	14.47	5,380	12.43	3,950	10.72	2,860	9.50	2,180	8.68	1,770	7.71	1,360
2	14.36	5,300	12.27	3,840	10.60	2,790	9.42	2,140	8.59	1,720	7.64	1,340
4	15.21	5,200	12.09	3,710	10.48	2,720	9.33	2,100	8.51	1,600	7.58	1,310
6	14.03	5,070	11.93	3,600	10.36	2,650	9.28	2,070	8.42	1,650	7.51	1,280
8	13.88	4,970	11.78	3,500	10.25	2,580	9.22	2,040	8.32	1,610	7.43	1,250
10	13.70	4,840	11.62	3,400	10.14	2,510	9.17	2,020	8.25	1,580	7.38	1,230
M	13.45	4,660	11.48	3,320	10.06	2,470	9.12	1,990	8.15	1,540	7.31	1,210

Supplemental records.- Sept. 23, 7:45 a.m., 15.58 ft., 6,210 sec.-ft.

Wallkill River near Phillipsburg, N. Y.

Location.- Water-stage recorder, lat. 41°26'00", long. 74°22'20", a quarter of a mile upstream from abandoned electric railway bridge and mouth of Masonic Creek, and about one mile southwest of Phillipsburg, Orange County. Zero of gage is 352.61 feet above mean sea level (general adjustment of 1912).
Drainage area.- 432 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 6,550 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 7,090 second-feet 10:40 p.m. Sept. 21 (gage height, 9.67 feet).
October 1936 to August 1938: Discharge, 5,180 second-feet 11 p.m. July 23, 1938 (gage height, 7.88 feet).
January 1936 to August 1938: Maximum gage height, Mar. 13, 1936, 11.63 feet, present site and datum, from graph based on staff-gage readings.
Remarks.- No known diversions but natural storage in large swampy areas and lakes above Pellets Island Mountain, N. Y.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	149	1,070	9	106	438	17	211	327	25	4,220	1,050
2	157	904	10	101	407	18	183	313	26	3,000	869
3	149	740	11	99	381	19	271	310	27	2,310	715
4	133	610	12	95	338	20	2,410	314	28	1,890	646
5	126	520	13	101	334	21	4,610	638	29	1,510	614
6	126	466	14	99	352	22	6,700	720	30	1,250	560
7	116	479	15	145	349	23	6,370	646	31		492
8	113	484	16	205	338	24	5,600	682			
Mean monthly discharge, in second-feet										1,418	552
Run-off, in inches										3.66	1.48

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	1.26	177	2.83	816	5.86	3,160	9.59	7,000	-	-
2	1.33	198	1.26	177	3.09	960	5.89	3,190	9.52	6,920	9.18	6,550
3	-	-	1.26	177	3.36	1,120	5.93	3,230	9.47	6,870	-	-
4	1.31	192	1.26	177	3.64	1,310	5.95	3,250	9.40	6,790	9.16	6,530
5	-	-	1.26	177	3.91	1,500	5.99	3,290	9.36	6,750	-	-
6	1.29	186	1.26	177	4.24	1,730	6.01	3,310	9.36	6,750	9.12	6,480
7	-	-	1.26	177	4.59	2,010	6.03	3,330	9.31	6,690	-	-
8	1.28	183	1.26	177	4.88	2,260	6.01	3,310	9.29	6,670	9.10	6,460
9	-	-	1.27	180	5.12	2,480	6.06	3,360	9.27	6,650	-	-
10	1.27	180	1.27	180	5.33	2,670	6.13	3,430	9.27	6,650	9.06	6,420
11	-	-	1.28	183	5.48	2,800	6.23	3,530	9.28	6,660	-	-
N	1.27	180	1.29	186	5.58	2,890	6.35	3,650	9.29	6,670	9.04	6,390
1	-	-	1.33	198	5.67	2,970	6.56	3,860	9.28	6,660	-	-
2	1.27	180	1.41	223	5.71	3,010	6.94	4,240	9.28	6,660	9.00	6,350
3	-	-	1.48	246	5.75	3,050	7.63	4,930	9.27	6,650	-	-
4	1.27	180	1.63	296	5.75	3,050	8.22	5,520	9.27	6,650	8.96	6,310
5	-	-	1.76	342	5.74	3,040	8.68	6,000	9.27	6,650	-	-
6	1.26	177	1.84	370	5.73	3,030	9.02	6,370	9.26	6,640	8.92	6,260
7	-	-	1.89	388	5.73	3,030	9.28	6,660	9.25	6,620	-	-
8	1.26	177	1.91	396	5.72	3,020	9.45	6,840	9.24	6,610	8.87	6,210
9	-	-	1.94	407	5.72	3,020	9.58	6,990	9.23	6,600	-	-
10	1.26	177	2.08	462	5.73	3,030	9.63	7,040	9.22	6,590	8.82	6,150
11	-	-	2.30	560	5.77	3,070	9.63	7,040	9.20	6,570	-	-
M	1.26	177	2.52	660	5.80	3,100	9.61	7,020	9.19	6,560	8.75	6,080
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.70	6,020	7.55	4,850	6.09	3,390	5.19	2,540	4.63	2,040	4.13	1,650
4	8.62	5,930	7.43	4,730	6.01	3,310	5.13	2,490	4.60	2,020	4.07	1,610
6	8.55	5,860	7.28	4,580	5.93	3,230	5.08	2,440	4.56	1,990	4.03	1,580
8	8.47	5,770	7.16	4,460	5.82	3,120	5.03	2,400	4.52	1,960	3.99	1,550
10	8.39	5,690	7.03	4,330	5.74	3,040	4.96	2,330	4.48	1,920	3.95	1,520
N	8.31	5,610	6.91	4,210	5.68	2,980	4.91	2,290	4.44	1,890	3.92	1,500
2	8.23	5,530	6.78	4,080	5.60	2,910	4.86	2,240	4.40	1,860	3.89	1,480
4	8.15	5,450	6.67	3,970	5.54	2,860	4.82	2,210	4.36	1,830	3.85	1,460
6	8.05	5,350	6.54	3,840	5.46	2,780	4.78	2,170	4.30	1,780	3.82	1,430
8	7.93	5,230	6.43	3,730	5.38	2,710	4.74	2,140	4.26	1,750	3.79	1,410
10	7.81	5,110	6.31	3,610	5.32	2,660	4.70	2,100	4.21	1,710	3.76	1,390
M	7.69	4,990	6.21	3,510	5.25	2,600	4.66	2,070	4.16	1,670	3.72	1,360

Supplemental records.- Sept. 21, 10:40 p.m., 9.67 ft., 7,090 sec.-ft.

Wallkill River at Gardiner, N. Y.

Location.- Water-stage recorder, lat. 41°41'10", long. 74°09'55", at highway bridge 500 feet below mouth of Shawangunk Kill and three-quarters of a mile northwest of Gardiner, Ulster County. Zero of gage is 185.70 feet above mean sea level (general adjustment of 1912).

Drainage area.- 711 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 11,200 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 17,500 second-feet 1:15 a.m. Sept. 22 (gage height, 14.92 feet).

September 1924 to August 1938: Maximum discharge, 18,000 second-feet Mar. 12, 1936 (gage height, 15.16 feet); maximum gage height, 16.42 feet Mar. 12, 1936 (ice jam).

Remarks.- Large diurnal fluctuations during low and medium stages caused by power-plant operations. Natural storage occurs in swampy areas and small lakes above Pellets Island Mountain, and artificial and natural storage in lakes and ponds in the intervening area.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	248	1,610	9	202	670	17	314	518	25	6,620	2,140
2	251	1,360	10	171	613	18	320	497	26	4,900	1,520
3	228	1,120	11	155	579	19	784	518	27	3,620	1,170
4	219	902	12	176	545	20	8,170	470	28	2,930	982
5	196	777	13	209	512	21	11,800	1,300	29	2,330	955
6	184	700	14	233	514	22	14,700	1,200	30	1,880	928
7	186	663	15	263	524	23	9,960	991	31		825
8	223	678	16	251	518	24	8,200	1,180			
Mean monthly discharge, in second-feet										2,664	886
Run-off, in inches										4.18	1.44

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	6.47	4,180	9.58	8,840	14.88	17,400	11.05	11,200
2	3.18	342	3.16	331	6.93	4,860	9.55	8,800	14.90	17,500	10.95	11,000
3	-	-	-	-	7.33	5,460	9.53	8,760	14.83	17,400	10.84	10,800
4	3.19	347	3.13	316	7.73	6,060	9.54	8,780	14.73	17,200	10.74	10,700
5	-	-	-	-	8.13	6,660	9.62	8,900	14.61	17,000	10.67	10,600
6	3.18	342	3.07	285	8.68	7,490	9.72	9,050	14.45	16,700	10.58	10,400
7	-	-	-	-	9.33	8,460	9.80	9,180	14.27	16,400	10.53	10,300
8	3.16	331	3.05	276	9.71	9,040	9.83	9,230	14.11	16,100	10.46	10,200
9	-	-	3.04	271	9.93	9,390	9.88	9,310	13.90	15,800	10.41	10,200
10	3.12	310	3.07	285	10.00	9,500	10.00	9,500	13.71	15,500	10.36	10,100
11	-	-	3.15	326	10.06	9,600	10.21	9,840	13.48	15,100	10.31	10,000
N	3.07	285	3.23	369	10.11	9,680	10.43	10,200	13.27	14,700	10.24	9,880
1	-	-	3.32	420	10.14	9,720	10.76	10,700	13.03	14,300	10.21	9,840
2	3.06	280	3.41	476	10.08	9,630	11.18	11,400	12.85	14,100	10.15	9,740
3	-	-	3.52	551	10.03	9,550	11.78	12,300	12.63	13,700	10.10	9,660
4	3.12	310	3.64	642	9.96	9,440	12.53	13,500	12.45	13,400	10.04	9,560
5	-	-	3.85	820	9.83	9,230	13.33	14,800	12.22	13,100	10.00	9,500
6	3.13	316	4.06	1,020	9.68	8,990	13.58	15,200	12.04	12,800	9.96	9,440
7	-	-	4.22	1,180	9.54	8,780	13.70	15,400	11.83	12,400	9.89	9,320
8	3.13	316	4.38	1,360	9.43	8,620	13.84	15,700	11.66	12,200	9.84	9,240
9	-	-	4.63	1,650	9.35	8,500	14.18	16,300	11.45	11,800	9.80	9,180
10	3.14	321	5.09	2,230	9.37	8,520	14.58	16,900	11.35	11,700	9.74	9,080
11	-	-	5.55	2,860	9.45	8,640	14.76	17,200	11.25	11,500	9.71	9,040
M	3.15	326	6.01	3,500	9.53	8,760	14.71	17,200	11.15	11,300	9.66	8,960
	September 24		September 25		September 26		September 27		September 28		September 29	
2	9.56	8,810	8.55	7,300	7.42	5,600	6.37	4,020	5.77	3,170	5.35	2,580
4	9.48	8,690	8.47	7,180	7.32	5,450	6.31	3,940	5.74	3,130	5.31	2,520
6	9.40	8,570	8.38	7,040	7.22	5,300	6.24	3,830	5.70	3,070	5.27	2,470
8	9.32	8,450	8.30	6,920	7.13	5,160	6.18	3,740	5.66	3,010	5.23	2,410
10	9.25	8,340	8.20	6,770	7.04	5,030	6.13	3,670	5.63	2,970	5.19	2,360
N	9.17	8,220	8.11	6,640	6.95	4,900	6.07	3,590	5.61	2,940	5.16	2,320
2	9.08	8,090	8.01	6,480	6.85	4,740	6.01	3,500	5.57	2,890	5.12	2,270
4	8.98	7,940	7.92	6,350	6.76	4,610	5.96	3,430	5.54	2,850	5.08	2,210
6	8.90	7,820	7.82	6,200	6.68	4,490	5.94	3,410	5.50	2,790	5.05	2,180
8	8.81	7,680	7.73	6,060	6.59	4,360	5.88	3,320	5.46	2,730	5.02	2,140
10	8.73	7,560	7.64	5,930	6.52	4,250	5.84	3,270	5.42	2,680	4.99	2,100
M	8.64	7,430	7.52	5,750	6.44	4,130	5.81	3,220	5.39	2,640	4.96	2,060

Supplemental records.- Sept. 21, 11:30 p.m., 14.88 ft., 17,400 sec.-ft. Sept. 22, 1:15 a.m., 14.92 ft., 17,500 sec.-ft.

Pochuck Creek at Newport, near Pine Island, N. Y.

Location.- Water-stage recorder, lat. 41°16'30", long. 74°28'20", at Newport, Orange County, about 2.3 miles south of Pine Island and 4 miles above mouth.
Drainage area.- 98.0 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For September 1938 defined by current-meter measurements below 2,030 second-feet; extended logarithmically to peak stage. For January 1938 defined by current-meter measurements below 937 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 2,070 second-feet 8:30 to 10 p.m. Sept. 22 (gage height, 7.80 feet).
September 1937 to August 1938: Discharge, 1,150 second-feet Jan. 26, 1938 (gage height, 6.71 feet).
Remarks.- No known regulation or diversion; natural storage in swampy areas. Stage-discharge relation affected by backwater from weeds and aquatic vegetation.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	39	242	9	28	100	17	32	122	25	1,020	173
2	39	197	10	27	108	18	32	118	26	802	168
3	35	162	11	26	92	19	43	112	27	625	147
4	34	135	12	25	81	20	203	112	28	484	138
5	33	117	13	26	116	21	504	165	29	380	128
6	30	107	14	27	130	22	1,710	190	30	302	121
7	28	116	15	32	130	23	1,830	173	31		109
8	30	110	16	38	127	24	1,330	156			
Mean monthly discharge, in second-feet										326	136
Run-off, in inches										3.72	1.60

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	1.72	33	2.90	103	4.44	291	6.64	985	7.79	2,050
2	1.68	31	1.72	33	3.09	119	4.48	299	6.75	1,040	7.78	2,040
3	-	-	1.72	33	3.27	135	4.52	306	6.89	1,120	7.77	2,030
4	1.68	31	1.72	33	3.42	150	4.56	313	7.02	1,220	7.76	2,020
5	-	-	1.72	33	3.56	164	4.61	322	7.14	1,320	7.75	2,010
6	1.69	32	1.73	33	3.67	176	4.65	330	7.25	1,420	7.74	1,980
7	-	-	1.73	33	3.75	186	4.69	338	7.35	1,520	7.73	1,970
8	1.69	32	1.73	33	3.80	192	4.74	348	7.43	1,610	7.71	1,940
9	-	-	1.74	34	3.84	198	4.79	358	7.50	1,690	7.70	1,930
10	1.70	32	1.75	34	3.88	203	4.85	371	7.56	1,760	7.68	1,900
11	-	-	1.75	34	3.91	207	4.90	382	7.60	1,810	7.66	1,870
N	1.70	32	1.79	36	3.94	212	4.96	395	7.65	1,880	7.64	1,850
1	-	-	1.84	38	3.97	216	5.09	426	7.69	1,930	7.62	1,820
2	1.70	32	1.89	40	4.00	220	5.26	471	7.71	1,950	7.60	1,800
3	-	-	1.94	42	4.02	223	5.48	534	7.74	1,990	7.57	1,760
4	1.70	32	1.99	44	4.05	227	5.63	580	7.76	2,020	7.55	1,740
5	-	-	2.03	46	4.07	230	5.79	631	7.77	2,030	7.53	1,710
6	1.70	32	2.08	48	4.11	236	5.96	692	7.78	2,040	7.51	1,690
7	-	-	2.13	50	4.15	242	6.08	737	7.79	2,060	7.49	1,660
8	1.70	32	2.18	53	4.19	248	6.20	785	7.79	2,060	7.47	1,640
9	-	-	2.25	57	4.24	256	6.29	821	7.80	2,070	7.45	1,620
10	1.70	32	2.40	66	4.30	266	6.38	861	7.80	2,070	7.43	1,600
11	-	-	2.54	76	4.35	275	6.46	897	7.79	2,060	7.41	1,570
M	1.72	33	2.72	89	4.39	282	6.54	935	7.79	2,060	7.39	1,550
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.35	1,510	6.89	1,130	6.42	882	5.94	693	5.46	536	5.00	416
4	7.31	1,470	6.86	1,110	6.38	866	5.90	679	5.42	525	4.97	410
6	7.27	1,430	6.82	1,080	6.34	850	5.86	665	5.38	514	4.94	403
8	7.24	1,400	6.78	1,060	6.30	834	5.82	651	5.33	501	4.90	394
10	7.20	1,370	6.74	1,040	6.27	822	5.78	637	5.30	493	4.86	385
N	7.15	1,330	6.70	1,020	6.23	806	5.74	624	5.26	483	4.83	379
2	7.10	1,280	6.65	990	6.18	782	5.70	609	5.23	475	4.79	370
4	7.07	1,260	6.61	971	6.14	767	5.66	597	5.18	462	4.76	364
6	7.04	1,230	6.57	953	6.10	752	5.62	585	5.15	455	4.73	358
8	7.00	1,200	6.53	935	6.06	738	5.58	573	5.11	445	4.70	352
10	6.96	1,180	6.49	917	6.02	724	5.54	562	5.07	436	4.67	346
M	6.93	1,160	6.46	904	5.98	710	5.50	550	5.03	426	4.64	340

Supplemental records.- Sept. 22, 8:30 p.m., 7.80 ft., 2,070 sec.-ft.

Quaker Creek at Florida, N. Y.

Location.- Staff gage, lat. 41°20'20", long. 74°21'45", about one-quarter of a mile north of railroad station at Florida, Orange County, and about 5 miles southwest of Goshen.
Drainage area.- 9.74 square miles.
Gage-height record.- Graph based on two or more daily readings of inclined-staff gage.
Stage-discharge relation.- Defined by current-meter measurements below 209 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge observed, 650 second-feet 5 p.m. Sept. 21 (gage height, 6.00 feet).
September 1937 to August 1938: Discharge observed, 387 second-feet Jan. 25, 1938 (gage height, 4.75 feet).
Remarks.- Regulation from swimming pool one-eighth mile upstream during summer months. No diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1.1	18	9	0.9	6.7	17	0.9	3.6	25	51	15
2	1.0	14	10	.7	6.0	18	1.8	3.4	26	40	7.7
3	1.0	10	11	.7	5.7	19	5.6	7.2	27	33	7.7
4	.9	8.4	12	.8	5.2	20	112	14	28	31	11
5	.8	6.7	13	1.2	4.4	21	303	7.7	29	25	7.7
6	.7	10	14	1.0	4.4	22	230	4.9	30	22	6.7
7	1.2	10	15	2.4	4.2	23	108	3.9	31		6.0
8	1.1	8.4	16	1.2	3.9	24	72	16			
Mean monthly discharge, in second-feet										35.1	8.02
Run-off, in inches										4.02	0.92

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	-	-	-	-
2	0.82	1.5	0.85	2.0	1.97	50	2.57	94	4.56	353	3.04	139
3	-	-	-	-	-	-	-	-	-	-	-	-
4	.83	1.6	.85	2.0	2.37	78	2.64	101	4.27	305	2.98	133
5	-	-	-	-	-	-	-	-	-	-	-	-
6	.83	1.6	.86	2.1	2.90	125	2.72	108	4.06	273	2.92	127
7	-	-	-	-	-	-	-	-	-	-	-	-
8	.83	1.6	.87	2.2	2.33	173	2.84	119	3.89	248	2.86	121
9	-	-	-	-	-	-	-	-	-	-	-	-
10	.83	1.6	.88	2.4	3.43	185	3.01	136	3.72	224	2.79	114
11	-	-	-	-	-	-	-	-	-	-	-	-
N	.84	1.8	.89	2.6	3.30	169	3.30	169	3.60	207	2.70	106
1	-	-	-	-	-	-	-	-	-	-	-	-
2	.84	1.8	.91	2.9	2.97	132	4.22	297	3.50	194	2.62	99
3	-	-	-	-	-	-	-	-	-	-	-	-
4	.85	2.0	.96	3.7	2.70	106	5.92	630	3.41	182	2.56	93
5	-	-	-	-	-	-	6.00	650	-	-	-	-
6	.85	2.0	1.00	4.4	2.50	88	5.99	648	3.32	171	2.50	88
7	-	-	-	-	-	-	-	-	-	-	-	-
8	.85	2.0	1.15	8.8	2.47	86	5.73	582	3.25	163	2.47	86
9	-	-	-	-	-	-	-	-	-	-	-	-
10	.85	2.0	1.37	18	2.49	87	5.30	495	3.18	155	2.44	83
11	-	-	-	-	-	-	-	-	-	-	-	-
M	.85	2.0	1.63	30	2.52	90	4.90	415	3.10	146	2.41	81
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.40	80	-	-	-	-	-	-	-	-	-	-
4	2.39	79	2.09	57	1.85	43	1.70	34	1.70	34	1.56	27
6	2.37	78	-	-	-	-	-	-	-	-	-	-
8	2.35	76	2.04	54	1.83	42	1.70	34	1.69	34	1.54	26
10	2.32	74	-	-	-	-	-	-	-	-	-	-
N	2.30	72	2.00	52	1.80	40	1.68	33	1.66	32	1.52	25
2	2.27	70	-	-	-	-	-	-	-	-	-	-
4	2.24	68	1.93	48	1.77	38	1.66	32	1.61	30	1.50	24
6	2.20	65	-	-	-	-	-	-	-	-	-	-
8	2.18	64	1.89	45	1.74	36	1.65	32	1.59	28	1.50	24
10	2.16	62	-	-	-	-	-	-	-	-	-	-
M	2.13	60	1.87	44	1.71	35	1.67	32	1.58	28	1.48	23

Wappinger Creek near Wappinger Falls, N. Y.

Location.- Water-stage recorder, lat. 41°39'05", long. 73°52'20", 4½ miles northeast of Wappinger Falls, Dutchess County.
Drainage area.- 182 square miles.
Gage-height record.- Water-stage recorder graph except for periods 5 to 9 p.m. Sept. 20, when pen did not function, and from 11 p.m. Sept. 21 to 2 p.m. Sept. 23, when water flooded and stopped recorder. Stage graph for periods of missing record drawn on basis of determination of peak stage by levels, time of peak stage by observer, two gage readings, and two stage determinations made at bridge 300 feet upstream and transferred by slope comparison to gage.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 2,850 second-feet; extended to peak stage on basis of determinations of flood flow over Wappinger Falls dam and through contracted opening at bridge 300 feet upstream; verified by comparison with flood records of Tenmile River near Gaylordsville, Conn. For 1936 defined by current-meter measurements below 2,850 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 15,900 second-feet 2 a.m. Sept. 22 (gage height, 18.02 feet, from floodmarks).
August 1928 to August 1938: Discharge, 6,880 second-feet Mar. 12, 1936 (gage height, 12.13 feet) from rating extended logarithmically above 2,850 second-feet.
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	132	500	9	99	240	17	136	151	25	1,500	240
2	130	428	10	88	224	18	114	144	26	1,110	203
3	111	385	11	81	206	19	192	139	27	918	175
4	106	348	12	78	192	20	1,460	142	28	788	163
5	106	325	13	81	181	21	4,130	260	29	670	165
6	92	300	14	92	175	22	7,810	233	30	580	158
7	92	279	15	128	170	23	3,380	186	31		144
8	113	256	16	194	160	24	2,200	181			
Mean monthly discharge, in second-feet										890	228
Run-off, in inches										5.46	1.44

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.42	120	3.38	113	4.93	696	7.01	2,130	16.15	13,000	9.27	4,100
2	3.42	120	3.38	113	5.15	820	7.03	2,140	18.02	15,900	9.20	4,030
3	3.41	118	3.39	114	5.30	910	7.05	2,160	18.00	15,900	9.10	3,930
4	3.40	116	3.38	113	5.41	976	7.09	2,190	16.77	13,900	9.02	3,850
5	3.40	116	3.39	114	5.50	1,030	7.15	2,240	15.56	12,100	8.96	3,790
6	3.40	116	3.39	114	5.60	1,090	7.21	2,290	14.60	10,600	8.88	3,720
7	3.40	116	3.39	114	5.66	1,130	7.29	2,350	13.70	9,340	8.80	3,650
8	3.39	114	3.39	114	5.75	1,180	7.38	2,420	12.90	8,250	8.74	3,600
9	3.39	114	3.40	116	5.86	1,260	7.50	2,520	12.22	7,360	8.67	3,530
10	3.39	114	3.40	116	5.97	1,340	7.61	2,610	11.80	6,860	8.60	3,470
11	3.38	113	3.40	116	6.06	1,400	7.76	2,730	11.38	6,360	8.55	3,420
N	3.38	113	3.43	122	6.13	1,450	7.96	2,890	11.08	6,010	8.48	3,360
1	3.38	113	3.45	126	6.23	1,520	8.13	3,050	10.84	5,740	8.41	3,300
2	3.38	113	3.58	154	6.33	1,590	8.40	3,290	10.66	5,550	8.35	3,240
3	3.37	111	3.61	162	6.43	1,660	8.69	3,550	10.49	5,360	8.30	3,200
4	3.37	111	3.64	169	6.53	1,740	9.01	3,840	10.35	5,200	8.24	3,150
5	3.37	111	3.75	200	6.60	1,800	9.58	4,410	10.20	5,040	8.17	3,080
6	3.38	113	3.92	252	6.70	1,880	10.45	5,320	10.06	4,890	8.11	3,030
7	3.38	113	4.02	285	6.77	1,940	11.35	6,320	9.92	4,750	8.04	2,970
8	3.38	113	4.10	313	6.84	1,990	12.06	7,170	9.80	4,630	7.99	2,920
9	3.38	113	4.21	355	6.90	2,040	12.74	8,040	9.67	4,500	7.91	2,850
10	3.38	113	4.33	404	6.94	2,070	13.43	8,960	9.56	4,390	7.86	2,810
11	3.38	113	4.50	479	6.97	2,100	14.10	9,900	9.45	4,280	7.80	2,760
M	3.39	114	4.70	575	7.00	2,120	14.75	10,900	9.35	4,180	7.73	2,700
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.61	2,610	6.50	1,740	5.75	1,220	5.40	990	5.16	846	4.92	711
4	7.48	2,500	6.42	1,680	5.72	1,190	5.36	966	5.13	828	4.89	695
6	7.36	2,410	6.35	1,640	5.68	1,170	5.34	954	5.12	822	4.88	690
8	7.27	2,340	6.26	1,570	5.66	1,150	5.32	942	5.10	810	4.86	680
10	7.17	2,260	6.20	1,530	5.63	1,130	5.29	924	5.08	799	4.84	670
N	7.06	2,170	6.14	1,490	5.61	1,120	5.27	912	5.06	788	4.83	665
2	7.00	2,120	6.09	1,450	5.57	1,090	5.24	894	5.03	772	4.82	660
4	6.89	2,030	6.03	1,410	5.54	1,070	5.23	888	5.01	760	4.80	650
6	6.81	1,970	5.97	1,370	5.51	1,060	5.22	882	5.00	755	4.80	650
8	6.73	1,900	5.91	1,330	5.48	1,040	5.21	876	4.97	738	4.78	640
10	6.65	1,840	5.85	1,280	5.45	1,020	5.19	864	4.95	728	4.76	630
M	6.57	1,790	5.79	1,240	5.43	1,010	5.18	858	4.93	716	4.75	625

New Croton Reservoir at New Croton Dam, near Croton, N. Y.

Location.- Staff gage, lat. 41°13'40", long. 73°51'25", at New Croton Dam, 1 3/4 miles northeast of Croton, Westchester County. Crest of spillway is at elevation 201.06 feet above mean sea level (202.00 feet, Croton datum).
Drainage area.- 377 square miles.
Gage-height record.- Gage read at 7 a.m. Sept. 1-24, and at 8 a.m. Sept. 25 to Oct. 31. Gage heights are elevations referred to Croton datum.
Remarks.- New Croton Reservoir is the lowest reservoir in the Croton River system of reservoirs, which consists of 10 other storage reservoirs and 6 controlled lakes having a combined storage capacity of about 13,782,000,000 cubic feet. The storage capacity of New Croton Reservoir is about 3,758,000,000 cubic feet. The contents of Muscoot Reservoir, a continuation of New Croton Reservoir after its dam is submerged at elevation 200.0 feet, is not included in the contents given in the tables below. For information on storage and diversion in the Croton River Basin see record for Croton River reservoirs above New Croton Dam, near Croton, N. Y. Records furnished by New York City Department of Water Supply, Gas, and Electricity.

Elevation, in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	201.08	3,666	202.55	3,812	16	198.33	3,399	202.07	3,765
2	201.01	3,658	202.43	3,800	17	198.10	3,376	202.07	3,765
3	200.94	3,652	202.37	3,794	18	197.88	3,355	202.06	3,764
4	200.83	3,641	202.32	3,789	19	197.80	3,348	202.04	3,762
5	200.71	3,629	202.27	3,784	20	198.55	3,420	202.03	3,761
6	200.59	3,617	202.22	3,780	21	199.87	3,546	202.19	3,777
7	200.41	3,608	202.20	3,778	22	204.18	3,976	202.19	3,777
8	200.25	3,583	202.17	3,775	23	204.00	3,958	202.14	3,772
9	200.03	3,561	202.15	3,773	24	203.54	3,911	202.15	3,773
10	199.76	3,536	202.13	3,771	25	203.20	3,877	202.19	3,777
11	199.48	3,509	202.12	3,770	26	202.97	3,854	202.15	3,773
12	199.19	3,481	202.09	3,767	27	202.82	3,839	202.10	3,768
13	198.94	3,457	202.08	3,766	28	202.82	3,839	202.08	3,766
14	198.75	3,439	202.08	3,766	29	202.72	3,829	202.05	3,763
15	198.51	3,416	202.07	3,765	30	202.63	3,820	202.04	3,762
					31			202.03	3,761

a/ At 8 a.m. Sept. 1-24; 9 a.m. Sept. 25 to Oct. 31.

Elevation in feet, and contents, in millions of cubic feet, at indicated time, 1938

Hour	Feet	Millions of cubic feet	Feet	Millions of cubic feet	Feet	Millions of cubic feet	Feet	Millions of cubic feet
	September 18		September 19		September 20		September 21	
3 a.m.	197.92	3,359	197.79	3,347	198.34	3,400	199.50	3,511
7	197.88	3,355	197.80	3,348	198.55	3,420	199.87	3,546
11	197.84	3,350	197.81	3,349	198.72	3,436	200.45	3,603
3 p.m.	197.81	3,349	197.82	3,350	198.87	3,450	201.50	3,708
7	197.79	3,347	198.07	3,373	199.08	3,470	202.74	3,831
11	197.78	3,346	198.20	3,386	199.30	3,492	203.63	3,920
	September 22		September 23		September 24		September 25	
3 a.m.	204.04	3,962	204.06	3,964	203.62	3,919	-	-
4	-	-	-	-	-	-	203.25	3,882
7	204.18	3,976	204.00	3,958	203.54	3,911	-	-
8	-	-	-	-	-	-	203.20	3,877
11	204.23	3,981	203.92	3,950	203.48	3,905	-	-
12	-	-	-	-	-	-	203.16	3,873
3 p.m.	204.22	3,980	203.85	3,943	203.42	3,899	-	-
4	-	-	-	-	-	-	203.11	3,868
7	204.18	3,976	203.78	3,935	203.37	3,894	-	-
8	-	-	-	-	-	-	203.07	3,864
11	204.14	3,972	203.69	3,926	203.30	3,886	-	-
12	-	-	-	-	-	-	203.03	3,860
	September 26		September 27		September 28		September 29	
4 a.m.	203.00	3,857	202.85	3,842	202.82	3,839	202.73	3,830
8	202.97	3,854	202.82	3,839	202.82	3,839	202.72	3,829
12	202.94	3,851	202.81	3,838	202.79	3,836	202.70	3,827
4 p.m.	202.91	3,848	202.80	3,837	202.77	3,834	202.69	3,826
8	202.89	3,846	202.82	3,839	202.76	3,833	202.67	3,824
12	202.87	3,844	202.82	3,839	202.74	3,831	202.66	3,823

Croton River reservoirs above New Croton Dam, near Croton, N. Y.

Location.- The flow of the Croton River and its tributaries is controlled and regulated for the New York City water supply by about 13,782,000,000 cubic feet of storage in 11 reservoirs and 6 controlled lakes. The storage reservoirs are Boyd's Corners, West Branch, Middle Branch, East Branch, Croton Falls (main), Croton Falls (diversion), Titicus, Amawalk, Cross River, Muscoot, Croton, and New Croton. The controlled lakes are Mahopoc, Kirk, Gleneida, Gilead and Barrett's Lakes and White Ponds.

Drainage area.- 377 square miles above New Croton Dam near Croton, N. Y., the lowest regulating dam on the Croton River.

Diversions.- Mean daily diversion, in second-feet, is the net diversion from the basin from storage reservoirs at Boyd's Corners, West Branch, Middle Branch, East Branch, Croton Falls (main), Croton Falls (diversion), Titicus, Amawalk and Cross River. Mean daily diversions are for 24 hours beginning at 7 a.m. of indicated day, Sept. 1-23; for 25 hours, Sept. 24; and for 24 hours beginning at 8 a.m. of indicated day, Sept. 25 to Oct. 31.

Storage.- Daily gain or loss in storage, in equivalent mean second-feet, is the net change in contents in the 12 storage reservoirs and 6 controlled lakes for 24 hours beginning at 7 a.m. of indicated day, Sept. 1-23; for 25 hours, Sept. 24; and for 24 hours beginning at 8 a.m. of indicated day, Sept. 25 to Oct. 31.

Remarks.- Records furnished by New York City Department of Water Supply, Gas, and Electricity.

Mean daily diversion, in second-feet, and gain or loss in storage, in equivalent mean second-feet, 1938

Day	September		October		Day	September		October	
	Diversion	Storage	Diversion	Storage		Diversion	Storage	Diversion	Storage
1	487	-278	296	-365	16	500	-308	430	-170
2	468	-388	305	-246	17	499	-169	440	-206
3	469	-396	293	-203	18	475	166	469	-224
4	490	-391	331	-176	19	447	2,597	478	-224
5	496	-394	457	-192	20	414	3,934	478	647
6	496	-314	458	-149	21	309	12,314	478	101
7	496	-305	459	-127	22	389	-1,550	466	-80
8	485	-330	442	-161	23	311	-2,093	403	-8
9	475	-387	447	-152	24	317	-1,157	325	469
10	484	-506	465	-141	25	312	-941	356	51
11	495	-458	479	-226	26	325	-678	393	77
12	514	-288	470	-170	27	312	-271	317	84
13	499	-158	449	-167	28	305	-606	332	97
14	517	-237	449	-200	29	305	-534	332	97
15	497	-71	437	-189	30	289	-390	334	17
					31			346	-22
Mean for the month, in second-feet.						429	+180	407	-70

Croton River at New Croton Dam, near Croton, N. Y.

Location.- Lat. 41°13'40", long. 73°51'25", at New Croton Dam, 1 3/4 miles northeast of Croton, Westchester County.
Drainage area.- 377 square miles.
Gage-height record.- Elevation of New Croton Reservoir observed at 4-hour intervals. For information on elevation of New Croton Reservoir see record for New Croton Reservoir at New Croton Dam, near Croton, N. Y.
Stage-discharge relation.- Discharge is waste over top of permanent steel flashboards on spillway at elevation 202.00 feet (Croton datum), computed by rating table from observed elevations of New Croton Reservoir.
Maxima.- September 1938: Discharge, 10,240 second-feet 11 a.m. Sept. 22 (gage height, 204.23 feet, from observation of elevation and estimate of time by engineers of New York City Department of Water Supply, Gas, and Electricity).
Remarks.- Mean daily discharges are for 24 hours beginning at 7 a.m. of indicated day, Sept. 1-23; for 25 hours, Sept. 24; and for 24 hours beginning at 8 a.m. of indicated day, Sept. 25 to Oct. 31. Mean monthly discharge adjusted for diversion and storage in the Croton River system of reservoirs. For information on diversions and storage see records for New Croton Reservoir at New Croton Dam, near Croton, N. Y., and for Croton River Reservoirs above New Croton Dam, near Croton, N. Y. Records furnished by New York City Department of Water Supply, Gas, and Electricity.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	0	1,033	9	0	122	17	0	42	25	3,441	173
2	0	716	10	0	99	18	0	29	26	2,596	90
3	0	538	11	0	74	19	0	12	27	2,263	63
4	0	429	12	0	62	20	0	82	28	2,039	39
5	0	289	13	0	51	21	3,716	213	29	1,703	22
6	0	223	14	0	50	22	9,726	152	30	1,343	19
7	0	195	15	0	42	23	7,289	108	31		11
8	0	149	16	0	42	24	5,114	186			
Mean monthly discharge, in second-feet (observed)										1,308	173
Mean monthly discharge, in second-feet (adjusted)										1,917	510
Run-off, in inches.										5.68	1.56

Discharge, in second-feet, at indicated time, September 1938

Hr.	18	19	20	21	22	23	24	25	26	27	28	29
3	0	0	0	0	8,973	9,096	6,257	-	-	-	-	-
4	- -	- -	-	-	-	-	-	4,304	3,079	2,410	2,283	1,918
7	0	0	0	0	9,901	8,730	5,891	-	-	-	-	-
8	-	-	-	-	-	-	-	4,048	2,941	2,283	2,283	1,878
11	0	0	0	0	10,240	8,208	5,549	-	-	-	-	-
N	-	-	-	-	-	-	-	3,847	2,803	2,242	2,160	1,802
3	0	0	0	0	10,180	7,763	5,213	-	-	-	-	-
4	-	-	-	-	-	-	-	3,600	2,670	2,201	2,079	1,762
7	0	0	0	1,957	9,901	7,325	4,940	-	-	-	-	-
8	-	-	-	-	-	-	-	3,406	2,583	2,283	2,036	1,686
11	0	0	0	6,415	9,622	6,774	4,565	-	-	-	-	-
M	-	-	-	-	-	-	-	3,218	2,497	2,283	1,957	1,649

Supplemental records.- Sept. 21, 5:50 p.m., beginning of waste over flashboards.

227907 O—40——19

Croton River at Quaker Bridge, near Croton, N. Y.

Location.- Water-stage recorder, lat. 41°12'40", long. 73°52'10", 25 feet below Quaker Bridge, 600 feet below mouth of Bird Brook, and 1 mile east of Croton, Westchester County.

Drainage area.- 379 square miles; 377 square miles affected by storage and diversion in the Croton River system of reservoirs and controlled lakes.

Gage-height record.- Water-stage recorder graph except for period 9:30 p.m. Sept. 21 to 5:30 p.m. Sept. 27, when discharge was computed on basis of spillway discharge at New Croton Dam.

Stage-discharge relation.- Sept. 11 to Oct. 31 affected below gage height 2.87 feet by backwater from pipe on control. Defined by current-meter measurements below 3,310 second-feet; extended logarithmically to peak stage on basis of discharge at New Croton Dam.

Maxima.- September 1938: Discharge, 8,410 second-feet noon Sept. 22 (gage height, 13.34 feet).

July 1933 to August 1938: Discharge, 4,530 second-feet Mar. 19, 1936 (gage height, 10.30 feet).

Remarks.- Flow regulated at New Croton Dam, where diversion is made for New York City water supply. Diurnal fluctuations caused by pumping for Croton water supply from wells downstream from New Croton Dam. Mean monthly discharge adjusted for storage and diversion in the entire Croton River system of reservoirs. For information on storage and diversions see records for Croton River Reservoirs above New Croton Dam, near Croton, N. Y.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	4.40	1,040	9	2.46	221	17	2.3	98	25	3,300	279
2	3.77	786	10	2.49	187	18	2.4	86	26	2,430	201
3	3.46	652	11	2.40	150	19	6.4	58	27	1,980	150
4	3.20	553	12	2.30	122	20	11.2	62	28	1,870	165
5	3.03	429	13	2.7	110	21	1,030	310	29	1,570	108
6	2.86	346	14	2.35	112	22	7,980	260	30	1,300	98
7	2.93	320	15	2.6	110	23	6,690	197	31		82
8	2.73	255	16	2.5	104	24	4,620	259			
Mean monthly discharge, in second-feet (observed)										1,090	255
Mean monthly discharge, in second-feet (adjusted)										1,699	592
Run-off, in inches (adjusted)										5.00	1.80

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.57	2.50	0.66	3.35	1.11	8.57	1.44	16.0	12.02	6,580	12.89	7,750
2	.58	2.59	.66	3.35	1.11	8.57	1.40	14.8	12.37	7,030	12.80	7,620
3	.58	2.59	.66	3.35	1.08	8.15	1.39	14.5	12.64	7,400	12.71	7,490
4	.58	2.59	.77	4.45	1.10	8.43	1.41	15.1	12.81	7,630	12.65	7,410
5	.58	2.59	.89	5.77	1.23	10.4	1.53	18.7	12.94	7,820	12.60	7,340
6	.59	2.68	.88	5.65	1.22	10.2	1.57	20.2	13.04	7,960	12.54	7,260
7	.59	2.68	.86	5.43	1.20	9.85	1.63	22.6	13.16	8,140	12.48	7,170
8	.59	2.68	.84	5.21	1.60	21.4	1.62	22.2	13.24	8,260	12.40	7,070
9	.59	2.68	.80	4.77	1.50	17.8	1.78	29.0	13.29	8,340	12.32	6,970
10	.59	2.68	.77	4.45	1.42	15.4	2.02	43.6	13.32	8,380	12.24	6,860
11	.59	2.68	.74	4.15	1.35	13.3	2.16	56	13.34	8,410	12.16	6,760
N	.59	2.68	.71	3.85	1.27	11.3	2.12	52	13.34	8,410	12.09	6,670
1	.58	2.59	.72	3.95	1.18	9.55	2.37	80	13.34	8,410	12.01	6,560
2	.57	2.50	.83	5.10	1.14	8.99	2.70	135	13.33	8,400	11.95	6,490
3	.56	2.42	1.31	12.3	1.17	9.41	2.94	189	13.31	8,350	11.88	6,410
4	.54	2.26	1.41	15.1	1.19	9.70	2.87	173	13.27	8,300	11.80	6,310
5	.53	2.18	1.31	12.3	1.16	9.27	2.63	122	13.23	8,240	11.74	6,240
6	.53	2.18	1.21	10.0	1.14	8.99	5.15	960	13.20	8,200	11.67	6,150
7	.52	2.11	1.13	8.85	1.23	10.4	7.00	2,020	13.16	8,140	11.59	6,060
8	.52	2.11	1.06	7.89	1.25	10.8	8.38	2,990	13.12	8,080	11.51	5,960
9	.52	2.11	1.03	7.50	1.26	11.1	10.03	4,400	13.09	8,040	11.42	5,850
10	.54	2.26	1.01	7.24	1.32	12.5	10.55	4,920	13.06	7,990	11.32	5,740
11	.57	2.50	0.99	6.98	1.44	16.0	10.96	5,350	13.02	7,930	11.22	5,630
M	.62	2.95	1.08	8.15	1.45	16.3	11.62	6,090	12.97	7,860	11.14	5,540
	September 24		September 25		September 26		September 27		September 28		September 29	
2	10.98	5,370	9.35	3,780	7.97	2,700	7.14	2,120	6.95	1,990	6.46	1,700
4	10.83	5,200	9.22	3,670	7.90	2,650	7.09	2,080	6.94	1,980	6.40	1,660
6	10.67	5,040	9.09	3,560	7.82	2,590	7.01	2,030	6.90	1,960	6.38	1,650
8	10.48	4,850	8.96	3,460	7.74	2,540	6.92	1,970	6.88	1,950	6.36	1,640
10	10.32	4,690	8.86	3,380	7.66	2,480	6.90	1,960	6.79	1,890	6.29	1,590
N	10.18	4,550	8.76	3,300	7.57	2,420	6.87	1,940	6.72	1,850	6.25	1,570
2	10.06	4,430	8.64	3,200	7.49	2,360	6.83	1,920	6.68	1,830	6.21	1,550
4	9.94	4,320	8.50	3,090	7.41	2,310	6.80	1,900	6.64	1,800	6.16	1,520
6	9.81	4,200	8.40	3,010	7.36	2,270	6.73	1,860	6.61	1,790	6.11	1,490
8	9.68	4,080	8.30	2,930	7.30	2,230	6.90	1,960	6.58	1,770	6.09	1,470
10	9.57	3,980	8.19	2,850	7.24	2,190	6.92	1,970	6.52	1,730	6.04	1,440
M	9.46	3,880	8.07	2,770	7.20	2,160	6.94	1,980	6.49	1,710	6.04	1,440

Oradell Reservoir at Oradell, N. J.

Location.- Water-stage recorder, lat. 40°57'24", long. 74°01'43", at Oradell Dam, Oradell, Bergen County. Gage heights are elevations above mean sea level (general adjustment of 1929).
Drainage area.- 113 square miles.
Gage-height record.- Water-stage recorder graph. Gage heights are given at 8 a.m. in table.
Remarks.- Storage capacity, 381,000,000 cubic feet. Records furnished by Hackensack Water Co.

Gage height, in feet, and contents, in millions of cubic feet, at 8 a.m., 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	22.74	383	22.19	367	16	22.69	382	22.28	370
2	22.73	383	22.25	369	17	22.68	382	22.24	369
3	22.71	382	22.26	369	18	22.67	381	22.21	368
4	22.70	382	22.25	369	19	22.71	382	22.26	369
5	22.68	382	22.24	369	20	22.58	379	22.33	371
6	22.66	381	22.19	367	21	21.83	357	22.43	374
7	22.66	381	21.96	361	22	21.80	357	22.54	378
8	22.65	381	22.02	363	23	21.75	355	22.59	379
9	22.63	380	22.11	365	24	21.50	348	22.60	379
10	22.59	379	22.20	368	25	21.48	348	21.81	357
11	22.58	379	22.29	370	26	21.49	348	21.67	353
12	22.54	378	22.30	371	27	22.02	363	21.79	356
13	22.51	377	22.32	371	28	22.05	363	21.85	358
14	22.54	378	22.32	371	29	22.04	363	21.87	358
15	22.58	379	22.30	371	30	22.08	364	21.85	358
					31			21.77	356

	September	October
Gain or loss in storage, in millions of cubic feet	-16	-14
Gain or loss in storage, in equivalent mean second-feet.	-6.17	-5.23

Hackensack River at New Milford, N. J.

Location.- Water-stage recorder, lat. 40°56'52", long. 74°01'34", at pumping plant of Hackensack Water Co., New Milford, Bergen County, 3½ miles below mouth of Dwars Kill. Zero of gage is 6.25 feet above mean sea level (general adjustment of 1929).
Drainage area.- 113 square miles, materially affected by diversions and by storage in Woodcliff Lake and Oradell Reservoir.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements. Affected by sheet piling in channel to waste gates Sept. 16-27.
Maxima.- September 1938: Discharge, 2,190 second-feet 6 p.m. Sept. 21 (gage height, 4.72 feet).
1921 to August 1938: Discharge, 2,800 second-feet Mar. 12 and 13, 1936 (gage height, 5.08 feet).
Remarks.- Run-off affected by storage and diversions. Mean monthly discharge adjusted for diversions and for storage in Woodcliff Lake and Oradell Reservoir. Mean monthly diversions at West Nyack, N. Y.: September, 1.1 second-feet; October, 1.0 second-foot. Mean monthly diversions at New Milford: September, 52.1 second-feet; October, 51.7 second-feet. For information on storage see records for Oradell Reservoir at Oradell, N. J., and Woodcliff Lake at Hillsdale, N. J. Records of diversions and storage and part of equipment furnished by Hackensack Water Co.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	28	78	9	5.6	33	17	12.9	55	25	515	263
2	23	78	10	1.7	34	18	10.2	37	26	232	94
3	15.9	78	11	2.2	48	19	151	25	27	199	48
4	12.7	74	12	2.1	55	20	609	25	28	195	81
5	10.5	74	13	.3	56	21	1,650	111	29	158	91
6	4.3	127	14	0	56	22	2,000	78	30	74	116
7	4.6	143	15	.7	56	23	1,260	78	31		116
8	13.0	54	16	14.6	55	24	781	336			
Mean monthly discharge, in second-feet (observed)										266	85.6
Mean monthly discharge, in second-feet (adjusted)										314	132
Run-off, in inches (adjusted)										3.10	1.35

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.11	9.8	1.15	14.4	2.12	378	3.28	1,150	4.58	2,100	3.66	1,430
2	1.14	13.2	1.18	18.5	2.12	378	3.28	1,150	4.57	2,090	3.66	1,430
3	1.15	14.4	1.21	24	2.12	378	3.28	1,150	4.57	2,090	3.66	1,430
4	1.15	14.4	1.22	24	2.13	384	3.29	1,160	4.57	2,090	3.66	1,430
5	1.15	14.4	1.22	24	2.13	384	3.28	1,150	4.56	2,090	3.53	1,340
6	1.15	14.4	1.22	24	2.12	378	3.27	1,140	4.56	2,090	3.52	1,330
7	1.15	14.4	1.19	20	2.13	384	3.26	1,140	4.55	2,080	3.51	1,320
8	1.14	13.2	1.18	18.5	2.13	384	3.26	1,140	4.55	2,080	3.52	1,330
9	1.12	10.9	1.18	18.5	2.65	698	3.60	1,390	4.56	2,090	3.52	1,330
10	1.10	8.8	1.18	18.5	2.66	706	3.77	1,520	4.57	2,090	3.52	1,330
11	1.07	5.8	1.19	20	2.66	706	3.90	1,610	4.58	2,100	3.52	1,330
N	1.05	4.0	1.23	26	2.66	706	4.05	1,720	4.58	2,100	3.51	1,320
1	1.03	2.4	1.26	32	2.66	706	4.07	1,730	4.55	2.080	3.51	1,320
2	1.02	1.6	1.31	42	2.66	706	4.11	1,760	4.54	2,070	3.51	1,320
3	1.05	4.0	1.38	60	2.67	713	4.52	2,060	4.54	2,070	3.50	1,310
4	1.05	4.0	2.10	367	2.67	713	4.61	2,120	4.54	2,070	3.33	1,190
5	1.09	7.7	2.17	405	2.67	713	4.66	2,150	4.54	2,070	3.33	1,190
6	1.12	10.9	2.17	405	2.67	713	4.72	2,190	4.53	2,070	3.33	1,190
7	1.12	10.9	2.15	394	2.68	719	4.70	2,180	4.53	2,070	3.33	1,190
8	1.13	12.0	2.13	384	2.67	713	4.69	2,170	4.13	1,780	3.15	1,060
9	1.13	12.0	2.12	378	2.69	725	4.68	2,170	4.10	1,750	3.12	1,030
10	1.14	13.2	2.12	378	2.68	719	4.62	2,130	3.75	1,490	3.08	999
11	1.14	13.2	2.12	378	3.10	1,010	4.59	2,110	3.67	1,440	3.06	985
M	1.14	13.2	2.12	378	3.28	1,150	4.58	2,100	3.66	1,430	3.07	992
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.85	836	2.64	692	2.28	468	1.62	145	1.84	274	1.66	186
4	2.84	829	2.64	692	2.28	468	1.62	145	1.70	204	1.67	190
6	2.84	829	2.42	551	2.11	372	1.61	141	1.65	181	1.66	186
8	2.84	829	2.41	545	1.65	157	1.60	137	1.65	181	1.64	176
10	2.83	822	2.27	461	1.58	130	1.60	137	1.65	181	1.65	181
N	2.83	822	2.27	461	1.59	134	1.60	137	1.65	181	1.65	181
2	2.83	822	2.27	461	1.60	137	1.82	263	1.66	186	1.65	181
4	2.63	686	2.27	461	1.60	137	1.83	269	1.66	186	1.55	137
6	2.63	686	2.27	461	1.60	137	1.83	269	1.66	186	1.55	137
8	2.64	692	2.27	461	1.60	137	1.83	269	1.66	186	1.55	137
10	2.64	692	2.28	468	1.61	141	1.84	274	1.66	186	1.40	78
M	2.64	692	2.28	468	1.62	145	1.84	274	1.66	186	1.39	74

Woodcliff Lake at Hillsdale, N. J.

Location.- Lat. 41°00'42", long. 74°02'55", at Woodcliff Lake Dam, Hillsdale, Bergen County. Gage heights are elevations above mean sea level (general adjustment of 1929).
Drainage area.- 20.2 square miles.
Gage-height record.- Gage read twice daily to hundredths. Gage heights at 8 a.m. are given in table.
Remarks.- Storage capacity, 112,000,000 cubic feet. Records furnished by Hackensack Water Co.

Gage height, in feet, and contents, in millions of cubic feet, at 8 a.m., 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	94.53	113	94.63	114	16	94.53	113	94.53	113
2	94.53	113	94.63	114	17	94.43	112	94.53	113
3	94.53	113	94.63	114	18	94.43	112	94.53	113
4	94.43	112	94.63	114	19	94.53	113	94.53	113
5	94.43	112	94.63	114	20	95.13	117	94.53	113
6	94.43	112	94.53	113	21	95.33	119	94.63	114
7	94.43	112	94.63	114	22	96.03	124	94.63	114
8	94.43	112	94.63	114	23	95.03	117	94.63	114
9	94.43	112	94.63	114	24	94.83	115	94.53	113
10	94.43	112	94.53	113	25	94.73	114	94.53	113
11	94.43	112	94.53	113	26	94.63	114	94.53	113
12	94.43	112	94.53	113	27	94.63	114	94.53	113
13	94.43	112	94.53	113	28	94.63	114	94.53	113
14	94.43	112	94.53	113	29	94.63	114	94.53	113
15	94.53	113	94.53	113	30	94.63	114	94.53	113
					31			94.53	113

	September	October
Gain or loss in storage, in millions of cubic feet	+1	-1
Gain or loss in storage, in equivalent mean second-feet.	+.39	-.37

Pascack Brook at Westwood, N. J.

Location.- Water-stage recorder, lat. 40°59'33", long. 74°01'19", 75 feet above Sand Road, Westwood, Bergen County, 500 feet below Musquapsink Creek. Zero of gage is 28.62 feet above mean sea level (general adjustment of 1929).
Drainage area.- 29.6 square miles; 20.2 square miles affected by storage in Woodcliff Lake.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 500 second-feet; extended to peak stage by study of run-off of nearby streams.
Maxima.- September 1938: Discharge, 1,120 second-feet 2 a.m. Sept. 22 (gage height, 5.37 feet).
1934 to August 1938: Discharge, 1,190 second-feet Mar. 12, 1936 (gage height, 5.53 feet).
Remarks.- Mean monthly discharge adjusted for storage in Woodcliff Lake. For information on storage see records for Woodcliff Lake at Hillsdale, N. J. Recorder operated and storage data furnished by Hackensack Water Co.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	28	39	9	14.6	35	17	15.8	30	25	67	46
2	18.8	38	10	11.4	28	18	19.4	25	26	54	39
3	20	36	11	14.1	30	19	49	30	27	49	34
4	15.8	35	12	11.9	31	20	195	30	28	47	31
5	15.2	32	13	17.0	30	21	562	58	29	43	35
6	19.4	32	14	14.6	23	22	808	49	30	41	35
7	15.2	48	15	27	29	23	232	36	31		25
8	20	42	16	18.2	24	24	102	32			
Mean monthly discharge, in second-feet (observed)										85.5	34.4
Mean monthly discharge, in second-feet (adjusted)										85.8	34.7
Run-off, in inches (adjusted)										3.24	1.35

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.61	22	1.56	18.8	2.28	109	3.00	272	5.34	1,110	3.40	386
2	1.61	22	1.63	24	2.31	114	3.01	275	5.37	1,120	3.31	359
3	1.61	22	1.65	25	2.36	123	3.04	283	5.34	1,110	3.24	339
4	1.61	22	1.72	32	2.44	139	3.08	294	5.31	1,100	3.15	313
5	1.60	21	1.71	31	2.49	150	3.11	302	5.26	1,070	3.08	294
6	1.60	21	1.67	27	2.57	167	3.13	307	5.18	1,040	3.01	275
7	1.59	21	1.65	25	2.64	183	3.16	316	5.11	1,010	2.98	267
8	1.58	20	1.63	24	2.68	192	3.24	339	5.00	970	2.95	259
9	1.58	20	1.62	23	2.69	195	3.27	347	4.90	930	2.93	254
10	1.57	19.4	1.62	23	2.71	199	3.39	383	4.81	893	2.88	241
11	1.56	18.8	1.61	22	2.72	202	3.50	417	4.72	857	2.82	226
N	1.56	18.8	1.62	23	2.74	207	3.67	470	4.65	829	2.77	214
1	1.55	18.2	1.73	33	2.75	209	3.81	516	4.55	790	2.73	204
2	1.55	18.2	2.03	68	2.76	211	4.02	589	4.44	747	2.69	195
3	1.54	17.6	2.09	78	2.76	211	4.18	648	4.34	708	2.65	186
4	1.54	17.6	2.07	74	2.77	214	4.31	697	4.24	670	2.62	179
5	1.54	17.6	2.04	70	2.77	214	4.42	739	4.14	633	2.59	172
6	1.53	17.0	2.03	68	2.80	221	4.55	790	4.03	593	2.56	165
7	1.53	17.0	2.06	73	2.80	221	4.68	841	3.91	550	2.53	159
8	1.53	17.0	2.09	78	2.85	234	4.88	922	3.80	513	2.51	154
9	1.53	17.0	2.12	82	2.90	246	5.03	982	3.77	503	2.49	150
10	1.53	17.0	2.17	90	2.95	259	5.17	1,040	3.69	477	2.46	144
11	1.53	17.0	2.22	98	2.98	267	5.23	1,060	3.57	439	2.44	139
M	1.54	17.6	2.27	107	2.99	269	5.30	1,090	3.48	411	2.42	135
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.39	129	2.08	76	1.95	58	1.88	49	1.87	48	1.84	44
4	2.35	122	2.07	74	1.95	58	1.88	49	1.87	48	1.84	44
6	2.32	116	2.06	73	1.94	56	1.88	49	1.87	48	1.84	44
8	2.29	110	2.04	70	1.94	56	1.88	49	1.87	48	1.83	43
10	2.26	105	2.03	68	1.93	55	1.87	48	1.87	48	1.83	43
N	2.24	102	2.02	67	1.93	55	1.87	48	1.86	47	1.83	43
2	2.20	95	2.00	64	1.92	54	1.87	48	1.86	47	1.83	43
4	2.18	92	1.99	63	1.91	52	1.87	48	1.85	46	1.82	42
6	2.15	87	1.98	61	1.90	51	1.87	48	1.85	46	1.82	42
8	2.13	84	1.97	60	1.89	50	1.87	48	1.84	44	1.82	42
10	2.12	82	1.97	60	1.89	50	1.87	48	1.84	44	1.81	41
M	2.10	79	1.96	59	1.89	50	1.87	48	1.84	44	1.81	41

Passaic River near Millington, N. J.

Location.- Water-stage recorder, lat. 40°40'48", long. 74°31'40", at Davis Bridge, 1 mile upstream from Millington, Somerset County, and 1½ miles below mouth of Black Brook. Zero of gage is 215.60 feet above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 55.4 square miles; about one-quarter of the area is swamp land, which is overflowed at medium and high stages.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 600 second-feet.

Maxima.- September 1938: Discharge, 1,040 second-feet 4-10 a.m. Sept. 22 (gage height, 8.11 feet).

1903-6, 1921 to August 1938: Discharge, 2,000 second-feet Mar. 8, 1904 (gage height, 7.50 feet, former site and datum).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	27	75	9	15.2	53	17	15.2	31	25	569	52
2	27	60	10	14.1	46	18	15.2	29	26	402	56
3	20	52	11	13.6	41	19	34	27	27	268	47
4	18.8	45	12	13.6	39	20	200	29	28	183	56
5	17.0	41	13	14.6	38	21	624	48	29	125	70
6	16.4	41	14	14.6	35	22	1,000	56	30	94	76
7	15.8	59	15	15.2	34	23	895	45	31		68
8	15.8	63	16	17.0	33	24	753	39			
Mean monthly discharge, in second-feet										182	47.9
Run-off, in inches										3.67	1.00

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.99	14.1	4.01	15.2	4.60	78	5.98	344	8.03	1,010	7.86	953
2	3.99	14.1	4.01	15.2	4.70	94	6.01	352	8.06	1,020	7.85	949
3	3.99	14.1	4.02	15.8	4.83	116	6.04	359	8.08	1,030	7.84	945
4	3.99	14.1	4.02	15.8	4.97	142	6.07	367	8.10	1,040	7.83	942
5	4.00	14.6	4.02	15.8	5.00	147	6.09	372	8.10	1,040	7.82	938
6	4.00	14.6	4.03	16.4	5.01	149	6.12	380	8.11	1,040	7.80	931
7	4.00	14.6	4.03	16.4	5.02	151	6.20	402	8.11	1,040	7.79	927
8	4.00	14.6	4.04	17.0	5.03	152	6.28	424	8.11	1,040	7.78	924
9	4.00	14.6	4.04	17.0	5.06	158	6.38	454	8.10	1,040	7.76	917
10	4.00	14.6	4.05	17.6	5.08	161	6.55	506	8.10	1,040	7.75	913
11	4.00	14.6	4.25	34	5.13	170	6.85	602	8.08	1,030	7.74	909
N	4.00	14.6	4.29	37	5.19	181	7.05	668	8.05	1,020	7.72	902
1	4.00	14.6	4.32	40	5.25	192	7.20	719	8.04	1,020	7.71	899
2	4.00	14.6	4.33	41	5.30	201	7.30	753	8.02	1,010	7.69	891
3	4.00	14.6	4.34	42	5.37	214	7.31	756	8.00	1,000	7.68	888
4	4.00	14.6	4.36	45	5.45	228	7.28	746	7.99	997	7.66	881
5	4.00	14.6	4.37	46	5.55	248	7.28	746	7.98	993	7.64	873
6	4.00	14.6	4.38	47	5.65	268	7.33	764	7.96	987	7.63	870
7	4.00	14.6	4.40	49	5.75	290	7.45	806	7.95	984	7.61	863
8	4.01	15.2	4.44	55	5.83	308	7.58	852	7.94	980	7.59	855
9	4.01	15.2	4.48	60	5.87	317	7.70	895	7.92	974	7.57	848
10	4.01	15.2	4.51	64	5.90	324	7.80	931	7.91	970	7.55	841
11	4.01	15.2	4.53	68	5.93	332	7.90	967	7.89	963	7.53	834
M	4.01	15.2	4.57	74	5.95	336	8.00	1,000	7.88	960	7.51	827
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.48	816	7.00	651	6.42	466	5.86	315	5.37	214	4.99	145
4	7.45	806	6.95	634	6.37	451	5.82	306	5.33	206	4.97	142
6	7.42	795	6.90	618	6.32	436	5.78	297	5.30	201	4.95	138
8	7.39	784	6.85	602	6.27	422	5.73	286	5.26	194	4.93	134
10	7.35	770	6.80	585	6.23	410	5.69	277	5.23	188	4.90	129
N	7.30	753	6.75	569	6.18	397	5.65	268	5.20	183	4.88	125
2	7.27	743	6.70	553	6.13	383	5.60	258	5.16	176	4.86	122
4	7.23	729	6.65	537	6.08	370	5.56	250	5.13	170	4.84	118
6	7.19	716	6.61	524	6.03	357	5.52	242	5.10	165	4.82	115
8	7.15	702	6.56	509	5.98	344	5.48	234	5.07	160	4.80	111
10	7.10	685	6.51	493	5.94	334	5.45	228	5.05	156	4.79	109
M	7.05	668	6.46	478	5.90	324	5.41	221	5.02	151	4.78	108

Passaic River near Chatham, N. J.

Location.- Water-stage recorder, lat. 40°43'31", long. 74°23'23", 100 feet below Stanley Avenue Bridge, Chatham, Morris County, 3 miles upstream from Canoe Brook. Zero of gage is 193.00 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 100 square miles; materially affected by natural storage in swampy areas at high stages.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 900 second-feet.
Maxima.- September 1938: Discharge, 1,910 second-feet 6 p.m. Sept. 21 (gage height, 6.86 feet).
1937 to August 1938: Discharge, 1,840 second-feet July 23, 1938 (gage height, 6.51 feet).
Remarks.- Discharge for periods Sept. 1-19 and Oct. 3-6 based on twice daily readings of temporary staff gage; the gage heights shown in table for these periods are from recorder graph and were affected by backwater caused by construction of concrete control at station.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	27	111	9	19	78	17	19	42	25	1,180	71
2	32	89	10	19	53	18	19	40	26	994	75
3	29	74	11	19	37	19	110	38	27	784	72
4	26	61	12	17	45	20	518	38	28	576	87
5	23	55	13	18	48	21	1,190	53	29	337	90
6	20	56	14	18	49	22	1,410	65	30	160	92
7	19	80	15	20	47	23	1,490	61	31		85
8	17	89	16	19	45	24	1,370	57			
Mean monthly discharge, in second-feet										350	64.0
Run-off, in inches										3.90	.74

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.65	-	3.64	-	4.32	231	5.17	664	6.24	1,440	6.31	1,500
2	3.65	-	3.64	-	4.36	246	5.17	664	6.19	1,400	6.32	1,500
3	3.64	-	3.64	-	4.46	285	5.17	664	6.17	1,390	6.32	1,500
4	3.64	-	3.64	-	4.56	328	5.21	690	6.14	1,360	6.32	1,500
5	3.64	-	3.64	-	4.78	434	5.23	703	6.13	1,350	6.32	1,500
6	3.64	-	3.65	-	5.03	576	5.24	709	6.13	1,350	6.33	1,510
7	3.63	-	3.65	-	5.02	570	5.25	716	6.12	1,350	6.33	1,510
8	3.63	-	3.66	-	5.09	613	5.28	736	6.12	1,350	6.33	1,510
9	3.63	*19	3.67	-	5.10	619	5.34	777	6.13	1,350	6.33	1,510
10	3.62	-	3.67	*22	5.10	619	5.39	811	6.15	1,370	6.33	1,510
11	3.62	-	3.67	-	5.09	613	5.44	846	6.16	1,380	6.33	1,510
N	3.62	-	3.80	-	5.07	601	5.72	1,040	6.17	1,390	6.32	1,500
1	3.62	-	4.37	-	5.05	588	6.02	1,270	6.19	1,400	6.32	1,500
2	3.62	-	4.30	-	5.03	576	6.42	1,580	6.21	1,420	6.31	1,500
3	3.62	-	4.29	-	5.02	570	6.51	1,650	6.22	1,430	6.31	1,500
4	3.61	-	4.35	*199	5.00	558	6.64	1,750	6.23	1,430	6.30	1,490
5	3.61	*20	4.32	-	4.99	552	6.82	1,880	6.24	1,440	6.30	1,490
6	3.61	-	4.24	-	4.98	546	6.86	1,910	6.26	1,460	6.29	1,480
7	3.61	-	4.22	-	4.99	552	6.82	1,880	6.27	1,470	6.29	1,480
8	3.61	-	4.20	-	5.06	595	6.76	1,840	6.28	1,470	6.28	1,470
9	3.62	-	4.19	-	5.13	638	6.62	1,740	6.29	1,480	6.28	1,470
10	3.62	-	4.20	-	5.16	657	6.49	1,630	6.30	1,490	6.27	1,470
11	3.62	-	4.27	-	5.17	664	6.38	1,550	6.31	1,500	6.26	1,460
M	3.63	-	4.32	-	5.17	664	6.30	1,490	6.31	1,500	6.25	1,450
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.24	1,440	6.02	1,270	5.77	1,080	5.48	873	5.17	664	4.82	455
4	6.22	1,430	6.01	1,260	5.74	1,060	5.45	852	5.14	645	4.78	434
6	6.21	1,420	5.98	1,240	5.72	1,040	5.42	832	5.12	632	4.73	408
8	6.19	1,400	5.96	1,220	5.69	1,020	5.40	818	5.09	613	4.68	384
10	6.18	1,390	5.94	1,210	5.67	1,010	5.37	797	5.07	601	4.63	360
N	6.16	1,380	5.92	1,190	5.64	986	5.34	777	5.04	582	4.58	337
2	6.14	1,360	5.90	1,180	5.62	972	5.32	763	5.01	564	4.53	314
4	6.12	1,350	5.88	1,160	5.60	957	5.29	742	4.99	552	4.48	293
6	6.10	1,330	5.86	1,150	5.58	943	5.27	729	4.96	535	4.43	273
8	6.08	1,310	5.83	1,120	5.55	922	5.25	716	4.93	517	4.37	250
10	6.06	1,300	5.81	1,110	5.53	908	5.22	696	4.90	500	4.33	235
M	6.04	1,280	5.79	1,090	5.50	887	5.20	683	4.86	478	4.28	217

* On basis of temporary gage readings at times indicated.

Passaic River above dam at Little Falls, N. J.

Location.- Lat. 40°53'00", long. 74°14'03", above Beattie Dam at Little Falls, Passaic County. Gage readings are elevations above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 761 square miles.
Gage-height record.- Gage read daily at 8 a.m., 4 p.m., and midnight.
Maxima.- 1938: Gage height observed, 161.90 feet at 4 p.m. and 12 p.m. Sept. 23. Maximum stage known, 168.30 feet 2 to 8 p.m. Oct. 10, 1903.
Remarks.- The center section of the dam is 160 feet long with crest at elevation 157.18 feet; the north wing is 64 feet long with crest at elevation 157.81 feet; and the south wing, which is parallel to the channel, is 61 feet long with crest at elevation 157.56 feet. Gage-height record furnished by Passaic Valley Water Commission.

Mean gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	157.12	158.50	9	157.01	157.27	17	157.07	157.12	25	161.13	157.63
2	157.06	158.32	10	156.99	157.26	18	157.09	157.06	26	160.43	157.42
3	157.05	157.99	11	157.07	157.31	19	157.27	157.01	27	159.86	157.28
4	157.01	157.71	12	157.13	157.18	20	158.32	157.05	28	159.40	157.28
5	156.99	157.35	13	157.03	157.07	21	159.47	157.35	29	159.02	157.21
6	157.07	157.33	14	157.05	157.11	22	160.82	157.45	30	158.70	157.06
7	156.96	157.40	15	157.12	157.05	23	161.72	157.25	31		157.14
8	157.62	157.32	16	157.12	156.96	24	161.68	157.22			

Gage height, in feet, at indicated time, September 1938

Hr.	18	19	20	21	22	23	24	25	26	27	28	29
8	157.10	157.10	158.00	159.15	160.60	161.70	161.70	161.25	160.50	159.90	159.40	159.00
4	157.10	157.25	158.50	159.60	161.15	161.90	161.65	161.00	160.40	159.80	159.30	159.00
M	157.15	157.80	159.10	160.20	161.20	161.90	161.50	160.80	160.00	159.80	159.20	158.90

Passaic River below dam at Little Falls, N. J.

Location.- Lat. 40°52'55", long. 74°13'40", 2,000 feet below Beattie Dam, at tailrace of filter plant, Little Falls, Passaic County. Gage readings are elevations above mean sea level (New Jersey Geological Survey benchmark).
Gage-height record.- Gage read daily at 8 a.m., 4 p.m., and midnight.
Maximum.- 1938: Gage height observed, 129.60 feet at 4 p.m. and 12 p.m. Sept. 23.
Remarks.- Record furnished by Passaic Valley Water Commission.

Mean gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	121.28	124.48	9	121.07	122.46	17	121.09	121.72	25	128.17	122.48
2	121.22	124.02	10	121.07	122.34	18	121.16	121.68	26	127.12	122.36
3	121.22	123.62	11	121.15	122.22	19	121.84	121.67	27	126.34	122.22
4	121.23	123.24	12	121.28	122.15	20	124.10	121.69	28	125.65	122.34
5	121.12	122.94	13	121.19	122.00	21	125.86	121.84	29	125.15	122.40
6	121.15	122.60	14	121.16	121.85	22	127.73	122.22	30	124.77	122.36
7	121.02	122.55	15	121.17	121.80	23	129.31	122.30	31		122.21
8	121.07	122.60	16	121.15	121.77	24	129.20	122.05			

Gage height, in feet, at indicated tire, September 1938

Hr.	18	19	20	21	22	23	24	25	26	27	28-	29
8	121.10	121.15	123.50	125.30	127.50	129.40	129.40	128.40	127.25	126.40	125.70	125.20
4	121.25	122.00	124.40	126.20	128.15	129.60	129.00	127.90	127.00	126.20	125.50	125.10
M	121.25	123.50	125.30	126.85	128.25	129.60	128.80	127.60	126.65	126.20	125.30	125.00

Passaic River at Paterson, N. J.

Location.- Water-stage recorder, lat. 40°54'50", long. 74°10'51", at hydroelectric plant of the Society for Establishing Useful Manufactures, Paterson, Passaic County. Gage heights are elevations above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 785 square miles; materially affected by diversions, by storage in large swamp areas, and by storage in large reservoirs for water supply.

Gage-height record.- Water-stage recorder graph. Add 100.00 feet to gage heights published in this report to convert to observed gage heights or to mean sea level.

Stage-discharge relation.- Defined by current-meter measurements. Affected by break in flashboards Sept. 21 to Oct. 6.

Maxima.- September 1938: Discharge, 9,350 second-feet 7 to 12 p.m. Sept. 23 (gage height, 19.22 feet).
1898 to August 1938: Maximum mean daily discharge, 28,000 second-feet Oct. 10, 1903.

Remarks.- Tables of daily and hourly discharges give total flow over spillway and through power plant and raceway, representing total flow just above Great Falls. Mean monthly discharge adjusted for diversions and for storage in Boonton, Wanaque, and Pequannock River reservoirs and in Greenwood Lake. Mean monthly diversions were: September, 267 second-feet; October, 277 second-feet. For information on storage see records for Boonton Reservoir at Boonton, N. J., Wanaque Reservoir at Wanaque, N. J., Oak Ridge Reservoir at Oak Ridge, N. J., Canistear Reservoir near Stockholm, N. J., Clinton Reservoir near Newfoundland, N. J., Echo Lake Reservoir near Charlotteburg, N. J., and Greenwood Lake at The Glens, N. J.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	236	2,180	9	197	884	17	214	412	25	7,210	867
2	279	1,860	10	158	779	18	219	450	26	5,480	934
3	236	1,610	11	248	713	19	469	421	27	4,300	823
4	247	1,320	12	389	603	20	1,920	409	28	3,480	788
5	202	1,050	13	332	560	21	4,590	564	29	2,940	813
6	207	866	14	204	517	22	7,020	802	30	2,510	771
7	149	964	15	244	451	23	9,140	745	31		640
8	205	943	16	214	464	24	8,810	700			
Mean monthly discharge, in second-feet (observed)										2,068	836
Mean monthly discharge, in second-feet (adjusted)										2,442	1,019
Run-off, in inches (adjusted)										3.47	1.50

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	15.46	260	15.45	217	15.25	834	16.92	3,090	18.04	5,720	19.03	8,720
2	15.43	260	15.47	238	15.26	952	16.92	3,090	18.07	5,810	19.06	8,820
3	15.39	260	15.47	238	15.30	1,050	16.92	3,090	18.10	5,890	19.09	8,930
4	15.38	217	15.47	265	15.32	1,050	16.93	3,110	18.14	5,990	19.11	8,990
5	15.37	217	15.46	265	15.38	1,300	16.97	3,190	18.17	6,080	19.14	9,100
6	15.37	217	15.44	272	15.58	1,330	17.01	3,270	18.21	6,180	19.15	9,130
7	15.38	181	15.42	272	15.82	1,500	17.07	3,400	18.25	6,310	19.17	9,200
8	15.41	181	15.38	249	15.96	1,630	17.10	3,460	18.31	6,480	19.17	9,190
9	15.44	181	15.37	249	16.05	1,720	17.14	3,540	18.44	6,540	19.17	9,200
10	15.45	181	15.39	191	16.11	1,780	17.18	3,630	18.50	6,720	19.17	9,190
11	15.43	238	15.41	191	16.15	1,840	17.22	3,710	18.45	6,880	19.17	9,190
N	15.38	285	15.33	191	16.19	1,870	17.30	3,890	18.48	7,010	19.18	9,220
1	15.37	285	15.38	393	16.24	1,930	17.41	4,140	18.51	7,100	19.18	9,210
2	15.37	238	15.58	261	16.33	2,050	17.67	4,780	18.56	7,240	19.19	9,250
3	15.37	217	15.48	394	16.41	2,160	17.95	5,520	18.61	7,390	19.20	9,280
4	15.37	217	15.37	907	16.47	2,260	18.16	6,100	18.66	7,550	19.20	9,280
5	15.38	217	15.12	1,070	16.55	2,380	18.30	6,480	18.70	7,670	19.21	9,320
6	15.39	217	15.00	1,060	16.60	2,450	18.40	6,760	18.76	7,850	19.21	9,330
7	15.39	217	14.92	884	16.66	2,550	18.40	6,730	18.81	8,010	19.22	9,350
8	15.40	217	14.86	850	16.71	2,640	18.33	6,530	18.85	8,140	19.22	9,350
9	15.41	217	14.90	789	16.76	2,730	18.20	6,150	18.90	8,300	19.22	9,350
10	15.41	217	15.00	627	16.81	2,830	18.10	5,870	18.93	8,400	19.22	9,350
11	15.43	217	15.03	713	16.87	2,950	18.05	5,750	18.98	8,550	19.22	9,350
M	15.44	217	15.12	840	16.91	3,020	18.04	5,720	19.01	8,650	19.22	9,350
	September 24		September 25		September 26		September 27		September 28		September 29	
2	19.20	9,280	18.79	7,930	18.17	6,080	17.63	4,730	17.22	3,760	16.92	3,140
4	19.18	9,200	18.73	7,740	18.12	5,950	17.59	4,640	17.19	3,700	16.90	3,100
6	19.16	9,140	18.69	7,620	18.07	5,820	17.55	4,540	17.16	3,640	16.88	3,060
8	19.14	9,090	18.64	7,470	18.09	5,870	17.51	4,440	17.13	3,570	16.85	3,000
10	19.09	8,920	18.60	7,350	18.00	5,650	17.47	4,350	17.10	3,510	16.83	2,960
N	19.04	8,740	18.55	7,190	17.95	5,520	17.43	4,250	17.07	3,450	16.80	2,900
2	19.01	8,640	18.50	7,030	18.02	5,380	17.41	4,200	17.06	3,430	16.78	2,860
4	18.99	8,580	18.44	6,850	17.87	5,320	17.38	4,130	17.05	3,400	16.78	2,860
6	18.96	8,470	18.39	6,700	17.81	5,160	17.36	4,090	17.03	3,360	16.77	2,850
8	18.93	8,380	18.33	6,530	17.76	5,030	17.33	4,020	17.00	3,300	16.75	2,810
10	18.88	8,220	18.28	6,390	17.71	4,900	17.29	3,930	16.98	3,260	16.72	2,760
M	18.83	8,060	18.22	6,220	17.67	4,780	17.25	3,840	16.95	3,200	16.70	2,720

Passaic River at Dundee Dam, Clifton, N. J.

Location.- Lat. 40°52'55", long. 74°07'37", above Dundee Dam, Clifton, Passaic County. Zero of gage is 25.3 feet above mean sea level (New Jersey Geological Survey benchmarks).

Gage-height record.- Gage read to inches daily at 6:30 a.m., 1 p.m., and 6:30 p.m.

Maxima.- 1938: Gage height observed, 3.50 feet 1 p.m., 6:30 p.m. Sept. 23; 6:30 a.m., 1 p.m., and 6:30 p.m. Sept. 24.

Maximum stage known, 7.62 feet Oct. 10, 1903.

Remarks.- Elevation of crest of dam is zero gage height. Flashboards (16 inches high) placed on dam on September 1 and were partly broken on September 21. Records furnished by The Dundee Water Power & Land Co.

Mean daily gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	0.57	1.83	9	1.58	1.24	17	1.58	0.92	25	3.19	1.17
2	1.53	1.70	10	1.58	1.12	18	1.59	.92	26	2.78	1.24
3	1.58	1.58	11	1.59	1.11	19	1.87	.92	27	2.51	1.24
4	1.53	1.44	12	1.66	1.08	20	2.36	.92	28	2.18	1.17
5	1.50	1.33	13	1.66	1.01	21	2.83	1.01	29	2.17	1.09
6	1.57	1.23	14	1.59	1.00	22	3.00	1.16	30	1.94	1.16
7	1.52	1.24	15	1.58	1.00	23	3.43	1.16	31		1.17
8	1.60	1.25	16	1.58	.99	24	3.49	1.09			

Gage height, in feet, at indicated time, September 1938

Hour	18	19	20	21	22	23	24	25	26	27	28	29
6:30 a.m.	1.58	1.67	2.25	2.75	2.83	3.33	3.50	3.33	2.83	2.50	2.33	2.33
1:00 p.m.	1.58	1.92	2.42	2.92	2.92	3.50	3.50	3.17	2.75	2.50	2.08	2.25
6:30 p.m.	1.58	2.00	2.42	2.92	3.17	3.50	3.50	3.08	2.75	2.50	2.00	2.00

Rockaway River at Dover, N. J.

Location.- Lat. 40°53'04", long. 74°33'21", at Bergen Street Bridge, Dover, Morris County. Zero of gage is at mean sea level (New Jersey Geological Survey benchmark).
Gage-height record.- One gage reading daily at 11 a.m.
Maxima.- September 1938: Gage height observed, 556.7 feet 11 a.m. Sept. 22.
Stage of 559.5 feet reached on Mar. 12, 1936.
Remarks.- Record furnished by Department of Streets and Public Improvements, Bureau of Water, Jersey City.

Gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	554.2	554.5	9	554.1	554.4	17	554.1	554.3	25	555.7	554.5
2	554.2	554.5	10	554.1	554.4	18	554.1	554.2	26	555.3	554.5
3	554.2	554.4	11	554.1	554.4	19	554.2	554.2	27	555.1	554.5
4	554.2	554.4	12	554.1	554.3	20	555.2	554.2	28	554.9	554.4
5	554.2	554.4	13	554.1	554.3	21	555.5	554.4	29	554.7	554.3
6	554.1	554.5	14	554.1	554.3	22	556.7	554.4	30	554.6	554.3
7	554.1	554.5	15	554.1	554.3	23	*556.9	554.4	31		554.3
8	554.1	554.5	16	554.1	554.3	24	556.3	554.4			

* Probably in error.

Rockaway River above reservoir at Boonton, N. J.

Location.- Water-stage recorder, lat. 40°54'06", long. 74°24'40", at Morris Street, Boonton, Morris County. Zero of gage is 364.47 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 116 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements.
Maxima.- September 1938: Discharge, 2,220 second-feet 9:15 to 10 a.m. Sept. 22 (gage height, 5.55 feet).
1937 to August 1938: Discharge 2,120 second-feet July 24, 1938 (gage height, 5.43 feet).
Remarks.- Mean monthly discharge and run-off, in inches, adjusted for diversion through trunk sewer. Mean monthly diversions were: September, 4.8 second-feet; October, 4.4 second-feet. Water-stage recorder operated by Department of Streets and Public Improvements, Bureau of Water, Jersey City.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	96	212	9	54	170	17	60	112	25	765	253
2	85	180	10	49	151	18	67	110	26	540	208
3	73	164	11	50	145	19	174	108	27	437	173
4	69	151	12	52	131	20	723	112	28	361	157
5	64	151	13	53	125	21	1,200	221	29	305	151
6	57	170	14	47	122	22	2,020	195	30	253	142
7	57	248	15	64	120	23	1,470	164	31		134
8	57	204	16	65	115	24	1,090	170			
Mean monthly discharge, in second-feet (observed)										349	160
Mean monthly discharge, in second-feet (adjusted)										353	165
Run-off, in inches (adjusted)										3.39	1.64

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.12	64	2.17	73	3.07	415	3.93	967	5.18	1,920	4.89	1,690
2	2.13	65	2.18	74	3.10	431	3.92	959	5.28	2,000	4.85	1,660
3	2.13	65	2.18	74	3.15	459	3.91	952	5.36	2,070	4.82	1,640
4	2.13	65	2.18	74	3.20	487	3.92	959	5.42	2,120	4.78	1,610
5	2.13	65	2.18	74	3.26	522	3.95	982	5.47	2,160	4.75	1,580
6	2.13	65	2.18	74	3.36	583	3.99	1,010	5.51	2,190	4.72	1,560
7	2.13	65	2.18	74	3.40	608	4.00	1,020	5.53	2,200	4.69	1,540
8	2.13	65	2.18	74	3.45	640	4.04	1,050	5.49	2,170	4.67	1,530
9	2.13	65	2.18	74	3.50	672	4.04	1,050	5.48	2,160	4.65	1,510
10	2.13	65	2.18	74	3.55	705	4.07	1,070	5.55	2,220	4.63	1,490
11	2.13	65	2.19	76	3.60	738	4.09	1,080	5.51	2,190	4.61	1,480
N	2.13	65	2.19	76	3.65	772	4.13	1,110	5.48	2,160	4.59	1,460
1	2.13	65	2.52	160	3.67	785	4.16	1,130	5.38	2,080	4.57	1,450
2	2.13	65	2.63	199	3.68	792	4.24	1,190	5.33	2,040	4.55	1,430
3	2.13	65	2.68	221	3.73	826	4.36	1,280	5.27	2,000	4.53	1,410
4	2.13	65	2.73	244	3.76	846	4.43	1,330	5.26	1,990	4.51	1,400
5	2.13	65	2.76	258	3.82	888	4.42	1,330	5.22	1,960	4.50	1,390
6	2.14	67	2.80	276	3.83	895	4.45	1,350	5.17	1,920	4.48	1,370
7	2.14	67	2.85	300	3.87	923	4.50	1,390	5.14	1,890	4.46	1,360
8	2.15	69	2.90	325	3.88	930	4.65	1,510	5.10	1,860	4.43	1,330
9	2.15	69	2.93	341	3.91	952	4.80	1,620	5.06	1,830	4.41	1,320
10	2.15	69	2.99	372	3.91	952	4.89	1,690	5.01	1,790	4.39	1,300
11	2.15	69	3.01	382	3.92	959	5.01	1,790	4.97	1,760	4.37	1,290
M	2.16	71	3.05	404	3.92	959	5.11	1,870	4.93	1,720	4.35	1,280
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.30	1,240	3.83	895	3.41	614	3.16	465	3.07	415	2.91	330
4	4.26	1,210	3.80	874	3.38	596	3.15	459	3.05	404	2.90	325
6	4.22	1,180	3.76	846	3.35	577	3.13	448	3.03	393	2.89	320
8	4.21	1,170	3.72	819	3.33	565	3.12	442	2.97	361	2.88	315
10	4.17	1,140	3.67	785	3.30	546	3.11	437	2.93	341	2.87	310
N	4.12	1,100	3.63	758	3.28	534	3.10	431	2.93	341	2.86	305
2	4.08	1,080	3.59	731	3.26	522	3.10	431	2.94	346	2.85	300
4	4.04	1,050	3.55	705	3.23	505	3.09	426	2.94	346	2.84	296
6	3.99	1,010	3.52	685	3.22	499	3.10	431	2.94	346	2.83	291
8	3.95	982	3.49	666	3.20	487	3.09	426	2.93	341	2.82	286
10	3.91	952	3.46	646	3.19	481	3.08	420	2.92	335	2.81	281
M	3.87	923	3.43	627	3.18	476	3.08	420	2.92	335	2.80	276

Supplemental records.- Sept. 21, 4:30 p.m., 4.46 ft., 1,360 sec.-ft. Sept. 22, 9:15 a.m., 5.55 ft., 2,220 sec.-ft.

Boonton Reservoir at Boonton, N. J.

Location.- Lat. 40°53'35", long. 74°23'55", at Boonton Reservoir dam, Boonton, Morris County. Zero of gage is 305.25 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 119 square miles.
Gage-height record.- One gage reading daily, usually about 8 a.m.
Remarks.- Usable storage capacity 870,000,000 cubic feet. Elevation of crest of dam is zero gage height. Records furnished by Department of Streets and Public Improvements, Bureau of Water, Jersey City.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	1.39	1,067	2.02	1,089	16	-0.69	995	1.85	1,083
2	1.38	1,067	1.98	1,087	17	-.77	992	1.85	1,083
3	1.36	1,066	1.95	1,086	18	-.84	989	1.85	1,083
4	1.33	1,065	1.93	1,086	19	-.86	989	1.86	1,083
5	1.29	1,063	1.92	1,085	20	-.01	1,018	1.83	1,082
6	1.26	1,062	1.90	1,085	21	1.90	1,085	1.92	1,085
7	1.17	1,059	2.01	1,088	22	3.01	1,123	1.99	1,088
8	1.09	1,057	2.01	1,088	23	2.86	1,118	1.96	1,087
9	.97	1,052	1.96	1,087	24	2.59	1,109	1.96	1,087
10	.86	1,049	1.92	1,085	25	2.39	1,102	2.00	1,088
11	.30	1,029	1.91	1,085	26	2.23	1,096	2.01	1,088
12	-.32	1,008	1.91	1,085	27	2.22	1,096	1.98	1,087
13	-.47	1,002	1.90	1,085	28	2.19	1,095	1.96	1,087
14	-.53	1,000	1.88	1,084	29	2.15	1,093	1.95	1,086
15	-.64	996	1.87	1,084	30	2.07	1,091	1.93	1,086
					31			1.92	1,085

	September	October
Gain or loss in storage, in millions of cubic feet.	+22	-5
Gain or loss in storage, in equivalent mean second-feet	+8.5	-1.9

Rockaway River below reservoir at Boonton, N. J.
(formerly Rockaway River at Boonton, N. J.)

Location.- Water-stage recorder, lat. 40°53'47", long. 74°23'36", 1,500 feet below dam of Boonton Reservoir, Boonton, Morris County. Zero of gage is 195.68 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 119 square miles; affected by storage and diversion.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,300 second-feet; extended to peak stage on basis of discharge over Boonton Reservoir dam obtained by weir formula.
Maxima.- September 1938: Discharge, including effluent from sewage disposal plant, 1,870 second-feet 1 to 2 p.m. Sept. 22 (gage height, 6.06 feet).
1906 to August 1938: Discharge, 3,770 second-feet Mar. 12, 1936 (gage height, 8.03 feet).
Maximum observed daily discharge, 7,560 second-feet Oct. 10, 1903, at site a quarter of a mile below present gage.
Remarks.- Tables of daily and hourly discharges indicate total flow over dam, through waste gate, and from sewage disposal plant. Mean monthly discharge and run-off, in inches, adjusted for diversion and effect of storage in Boonton Reservoir. Mean monthly diversions were: September, 78.7 second-feet; October, 78.8 second-feet. For information on storage see record for Boonton Reservoir at Boonton, N. J. Water-stage recorder owned and operated by Department of Streets and Public Improvements, Bureau of Water, Jersey City.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	5.3	152	9	5.0	92	17	4.4	32	25	717	148
2	4.6	116	10	126	67	18	4.5	30	26	445	140
3	4.6	90	11	224	64	19	7.5	30	27	351	106
4	4.9	75	12	107	56	20	15.5	28	28	299	86
5	4.6	68	13	4.6	49	21	550	90	29	242	78
6	4.7	88	14	4.5	41	22	1,690	120	30	196	67
7	5.1	152	15	4.7	38	23	1,390	94	31		53
8	5.2	141	16	4.5	37	24	1,030	92			
Mean monthly discharge, in second-feet (observed)										249	81.3
Mean monthly discharge, in second-feet (adjusted)										336	158
Run-off, in inches (adjusted)										3.15	1.53

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.21	4.4	1.24	4.5	1.55	13.3	1.61	17.3	5.14	1,290	5.74	1,660
2	1.21	4.4	1.25	4.6	1.52	12.2	1.57	15.7	5.24	1,350	5.70	1,640
3	1.21	4.4	1.25	4.6	1.52	12.2	1.54	14.5	5.34	1,410	5.65	1,610
4	1.21	4.4	1.25	4.6	1.60	15.3	1.53	14.1	5.45	1,480	5.61	1,580
5	1.21	4.4	1.25	4.6	1.55	13.3	1.53	14.1	5.55	1,540	5.57	1,550
6	1.21	4.4	1.25	4.6	1.70	20	1.60	16.9	5.64	1,600	5.52	1,520
7	1.21	4.4	1.25	4.6	1.98	42	1.68	21	5.71	1,650	5.49	1,500
8	1.22	4.5	1.25	4.6	1.80	27	2.16	66	5.84	1,730	5.44	1,470
9	1.22	4.5	1.25	4.6	1.68	19.2	2.54	142	5.92	1,780	5.40	1,450
10	1.22	4.5	1.25	4.6	1.62	16.2	2.86	232	5.96	1,810	5.35	1,420
11	1.22	4.5	1.25	4.6	1.56	13.7	3.01	276	6.01	1,840	5.30	1,390
N	1.22	4.5	1.25	4.6	1.52	12.2	3.20	340	6.05	1,870	5.28	1,380
1	1.22	4.5	1.25	4.6	1.51	11.8	3.62	516	6.06	1,870	5.26	1,370
2	1.22	4.5	1.93	37	1.51	11.8	4.16	772	6.06	1,870	5.23	1,350
3	1.22	4.5	1.72	20	1.49	11.1	4.52	958	6.05	1,870	5.17	1,310
4	1.22	4.5	1.55	12.0	1.47	10.4	4.92	1,170	6.04	1,860	5.13	1,290
5	1.22	4.5	1.44	8.2	1.46	10.1	4.81	1,110	6.01	1,840	5.11	1,280
6	1.22	4.5	1.39	6.9	1.46	10.1	4.82	1,120	5.98	1,820	5.09	1,270
7	1.22	4.5	1.36	6.3	1.46	10.1	4.80	1,110	5.94	1,790	5.07	1,250
8	1.23	4.6	1.35	6.1	1.51	11.8	4.82	1,120	5.91	1,780	5.06	1,250
9	1.23	4.6	1.34	5.9	1.55	13.3	4.89	1,150	5.89	1,760	5.02	1,230
10	1.23	4.6	1.33	5.7	1.63	16.6	4.95	1,190	5.85	1,730	5.00	1,220
11	1.24	4.7	1.63	15.3	1.64	17.1	4.97	1,200	5.81	1,710	4.98	1,210
M	1.24	4.7	1.54	11.6	1.66	18.1	5.05	1,250	5.77	1,680	4.96	1,200
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.92	1,170	4.26	823	3.75	574	3.27	367	3.17	330	2.97	263
4	4.86	1,140	4.21	797	3.71	556	3.26	363	3.16	326	2.95	257
6	4.81	1,110	4.18	782	3.66	533	3.26	363	3.15	322	2.94	254
8	4.76	1,090	4.15	767	3.63	520	3.24	355	3.12	312	2.92	248
10	4.74	1,070	4.10	742	3.60	506	3.24	355	3.10	305	2.92	248
N	4.64	1,020	4.06	722	3.57	493	3.22	348	3.08	299	2.90	242
2	4.60	1,000	4.02	703	3.17	430	3.21	344	3.06	292	2.89	239
4	4.52	958	3.97	679	3.21	344	3.20	340	3.04	286	2.87	233
6	4.43	911	3.92	655	3.24	355	3.22	348	3.02	279	2.85	227
8	4.40	895	3.88	636	3.27	367	3.20	340	3.01	276	2.84	225
10	4.34	864	3.83	612	3.28	370	3.19	336	3.00	273	2.83	222
M	4.30	843	3.79	593	3.28	370	3.19	336	2.98	267	2.82	219

Supplemental records.- Sept. 20, 6:30 a.m., 2.00 ft., 44 sec.-ft. Sept. 21, 4:40 p.m., 4.91 ft., 1,170 sec.-ft.; 5:15 p.m., 4.91 ft., 1,170 sec.-ft. Sept. 27, 10:30 a.m., 3.25 ft., 359 sec.-ft.; 4:30 p.m., 3.24 ft., 355 sec.-ft.

Beaver Brook at outlet of Splitrock Pond, N. J.

Location.- Water-stage recorder, lat. 40°57'38", long. 74°27'43", 50 feet below Splitrock Pond, 2 miles northeast of Hibernia, Morris County, and 3½ miles above mouth of Hibernia Brook.
Drainage area.- 5.50 square miles; affected by storage in Splitrock Pond.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Based on Francis formula for sharp-crested weir; verified by current-meter measurements below 40 second-feet.
Maxima.- September 1938: Discharge, 75 second-feet 11 a.m. Sept. 22 to 2 a.m. Sept. 23 (gage height, 2.12 feet).
1925 to August 1938: Discharge, 126 second-feet Mar. 12, 1936 (gage height estimated, 2.70 feet).
Remarks.- Discharge regulated by operation of gates in Splitrock Pond dam. Water-stage recorder owned and operated by Department of Streets and Public Improvements, Bureau of Water, Jersey City, N. J.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	2.2	15.2	9	0.52	6.6	17	0.36	3.6	25	45	7.0
2	2.2	12.7	10	.36	6.1	18	.36	3.3	26	39	7.3
3	1.81	10.2	11	.27	5.7	19	1.52	3.1	27	32	7.3
4	1.40	8.7	12	.27	5.5	20	12.9	3.3	28	27	6.2
5	1.25	7.4	13	.27	5.6	21	33	4.5	29	23	5.6
6	1.03	7.0	14	.27	5.5	22	68	4.8	30	19.0	5.6
7	.89	7.5	15	.27	4.6	23	70	4.9	31		5.6
8	.70	7.1	16	.32	4.0	24	54	5.7			
Mean monthly discharge, in second-feet										14.6	6.36
Run-off, in inches										-	-

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.12	0.41	0.12	0.41	0.63	5.0	1.32	22	1.83	52	2.12	75
2	.11	.36	.12	.41	.70	5.8	1.33	22	1.84	53	2.12	75
3	.11	.36	.12	.41	.76	6.6	1.34	23	1.85	54	2.11	74
4	.11	.36	.12	.41	.83	7.5	1.35	23	1.86	55	2.11	74
5	.11	.36	.12	.41	.90	8.5	1.36	24	1.87	56	2.10	73
6	.11	.36	.12	.41	.96	9.4	1.37	24	1.88	56	2.10	73
7	.11	.36	.12	.41	1.00	10.0	1.38	25	1.89	57	2.09	72
8	.11	.36	.12	.41	1.05	11.1	1.39	25	1.90	57	2.09	72
9	.11	.36	.12	.41	1.07	11.7	1.41	26	2.05	69	2.08	71
10	.11	.36	.12	.41	1.09	12.4	1.43	27	2.11	74	2.08	71
11	.11	.36	.12	.41	1.10	12.7	1.45	28	2.12	75	2.07	71
N	.11	.36	.13	.47	1.12	13.3	1.47	30	2.12	75	2.07	71
1	.11	.36	.28	1.48	1.14	14.0	1.49	31	2.12	75	2.06	70
2	.11	.36	.31	1.72	1.15	14.4	1.53	33	2.12	75	2.04	68
3	.11	.36	.34	1.98	1.17	15.2	1.57	35	2.12	75	2.04	68
4	.11	.36	.36	2.2	1.18	15.6	1.61	38	2.12	75	2.04	68
5	.11	.36	.38	2.3	1.20	16.4	1.67	42	2.12	75	2.03	67
6	.11	.36	.40	2.5	1.22	17.2	1.70	43	2.12	75	2.03	67
7	.11	.36	.42	2.7	1.23	17.6	1.71	44	2.12	75	2.02	67
8	.11	.36	.45	3.0	1.25	18.6	1.73	45	2.12	75	2.02	67
9	.12	.41	.47	3.2	1.27	19.4	1.75	47	2.12	75	2.01	66
10	.12	.41	.52	3.7	1.29	20	1.77	48	2.12	75	2.00	65
11	.12	.41	.55	4.1	1.30	21	1.79	50	2.12	75	2.00	65
M	.12	.41	.58	4.4	1.31	21	1.81	51	2.12	75	1.98	63
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.97	62	1.74	46	1.67	42	1.56	35	1.47	30	1.38	25
4	1.95	61	1.74	46	1.66	41	1.55	34	1.47	30	1.38	25
6	1.94	60	1.73	45	1.66	41	1.55	34	1.46	29	1.37	24
8	1.92	59	1.73	45	1.65	40	1.54	34	1.45	28	1.36	24
10	1.90	57	1.72	45	1.64	40	1.53	33	1.44	28	1.35	23
N	1.78	49	1.72	45	1.62	39	1.52	32	1.43	27	1.35	23
2	1.78	49	1.71	44	1.61	38	1.51	32	1.42	27	1.34	23
4	1.77	48	1.71	44	1.60	37	1.50	31	1.42	27	1.34	23
6	1.76	47	1.70	43	1.60	37	1.50	31	1.41	26	1.33	22
8	1.76	47	1.69	43	1.59	36	1.50	31	1.40	26	1.32	22
10	1.75	47	1.68	42	1.58	36	1.49	31	1.40	26	1.32	22
M	1.75	47	1.68	42	1.57	35	1.48	30	1.39	25	1.31	21

Whippany River at Morristown, N. J.

Location.- Water-stage recorder, lat. 40°48'21", long. 74°27'22", at Morristown sewage-disposal plant, three-quarters of a mile below Morristown, Morris County, and 9 miles above mouth of the river. Zero of gage is 260.01 feet above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 29.4 square miles; not materially affected by artificial storage.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 300 second-feet; extended to peak stage on basis of determinations of flood flow over dam and by slope-area method.

Maxima.- September 1938: Discharge, 1,170 second-feet 4 a.m. Sept. 22 (gage height, 5.62 feet).

1921-August 1938: Discharge, about 1,500 second-feet Aug. 26, 1928, and Mar. 12, 1936; maximum gage height, 7.30 feet Aug. 26, 1928.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	34	41	9	20	35	17	18.7	28	25	61	46
2	23	36	10	18.7	33	18	23	28	26	54	34
3	23	36	11	19.3	32	19	96	28	27	50	41
4	22	38	12	19.3	31	20	287	32	28	48	41
5	21	36	13	22	30	21	489	57	29	44	35
6	20	44	14	20	30	22	676	34	30	43	31
7	21	57	15	24	30	23	129	31	31		28
8	21	39	16	21	30	24	80	42			
Mean monthly discharge, in second-feet										81.6	35.9
Run-off, in inches										3.10	1.41

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.95	22	1.97	23	3.01	213	3.24	268	5.51	1,120	2.94	196
2	1.95	22	1.97	23	3.05	222	3.18	253	5.56	1,140	2.89	183
3	1.95	22	1.97	23	3.02	216	3.15	246	5.60	1,160	2.83	168
4	1.96	23	1.97	23	3.00	211	3.13	241	5.62	1,170	2.79	157
5	1.96	23	1.98	24	3.17	251	3.12	239	5.56	1,140	2.76	149
6	1.96	23	1.98	24	3.07	227	3.13	241	5.46	1,090	2.73	141
7	1.96	23	1.98	24	3.38	304	3.15	246	5.33	1,030	2.71	136
8	1.96	23	1.97	23	3.69	393	3.15	246	5.12	938	2.68	128
9	1.96	23	1.97	23	3.47	329	3.13	241	4.86	825	2.67	126
10	1.96	23	1.97	23	3.41	312	3.12	239	4.65	739	2.67	126
11	1.95	22	1.98	24	3.42	315	3.20	258	4.56	703	2.66	123
N	1.95	22	2.00	26	3.42	315	3.30	283	4.45	660	2.65	121
1	1.95	22	2.00	26	3.41	312	3.30	283	4.31	606	2.65	121
2	1.95	22	2.01	27	3.40	309	3.39	306	4.12	536	2.65	121
3	1.95	22	2.78	155	3.40	309	3.72	402	3.93	470	2.64	119
4	1.95	22	3.50	337	3.40	309	4.50	679	3.74	408	2.63	116
5	1.96	23	2.91	188	3.41	312	4.95	864	3.61	369	2.61	111
6	1.96	23	3.00	211	3.39	306	4.96	868	3.47	329	2.59	107
7	1.96	23	3.01	213	3.39	306	5.00	885	3.35	296	2.57	103
8	1.96	23	2.97	204	3.38	304	4.96	868	3.26	273	2.55	99
9	1.96	23	2.93	194	3.37	301	5.06	911	3.17	251	2.54	97
10	1.96	23	2.92	191	3.36	299	5.22	983	3.10	234	2.53	95
11	1.96	23	2.91	188	3.35	296	5.29	1,020	3.05	222	2.52	93
M	1.96	23	3.15	246	3.29	280	5.38	1,050	3.00	211	2.51	91
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.50	89	2.36	66	2.28	55	2.25	52	2.24	50	2.20	46
4	2.49	87	2.35	65	2.26	53	2.24	50	2.23	49	2.19	44
6	2.48	86	2.34	63	2.26	53	2.24	50	2.23	49	2.19	44
8	2.47	84	2.33	62	2.26	53	2.24	50	2.22	48	2.19	44
10	2.46	82	2.33	62	2.27	54	2.24	50	2.22	48	2.19	44
N	2.46	82	2.33	62	2.27	54	2.24	50	2.22	48	2.19	44
2	2.45	80	2.32	61	2.27	54	2.24	50	2.22	48	2.19	44
4	2.45	80	2.32	61	2.28	55	2.24	50	2.22	48	2.20	46
6	2.44	79	2.32	61	2.28	55	2.24	50	2.22	48	2.20	46
8	2.42	75	2.31	59	2.27	54	2.24	50	2.22	48	2.20	46
10	2.41	74	2.30	58	2.26	53	2.25	52	2.21	47	2.20	46
M	2.38	69	2.29	57	2.25	52	2.25	52	2.20	46	2.19	44

Supplemental records.- Sept. 21, 5:30 p.m., 4.78 ft., 792 sec.-ft.

227907 O—40——20

Ramapo River near Mahwah, N. J.

Location.- Water-stage recorder, lat. 41°05'51", long. 74°09'43", 150 feet below State Highway 2, three-quarters of a mile below Mahwah River, and 1 mile west of Mahwah, Bergen County. Zero of gage is 254.19 feet above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 118 square miles; not materially affected by artificial storage.

Gage-height record.- Water-stage recorder graph except for periods 10 a.m. Sept. 7 to noon Sept. 19, 10 a.m. Sept. 21 to 11 a.m. Sept. 28, and 9 p.m. Oct. 1 to 5 p.m. Oct. 3.

Stage-discharge relation.- Defined by current-meter measurements below 1,200 second-feet; extended to peak stage on basis of study of determination of peak flows over 3 nearby dams and study of yield of Ramapo River at Pompton Lakes.

Maxima.- September 1938: Discharge estimated, 5,500 second-feet on Sept. 22.
1903-6, 1922 to August 1938: Discharge, about 12,400 second-feet Oct. 9, 1903 (gage height, 9.8 feet, former datum).

Remarks.- Discharge for periods of missing record computed on basis of record at Pompton Lakes.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	62	161	9	*38	102	17	*45	69	25	*550	174
2	52	*140	10	*42	98	18	*45	68	26	*400	133
3	42	*130	11	*38	87	19	*140	58	27	*280	113
4	41	117	12	*35	81	20	664	56	28	*250	106
5	45	108	13	*40	74	21	*2,200	192	29	222	105
6	44	103	14	*45	76	22	*4,200	152	30	190	101
7	*45	140	15	*45	65	23	*1,880	109	31		87
8	*43	113	16	*45	58	24	*960	110			
Mean monthly discharge, in second-feet										424	106
Run-off, in inches										4.00	1.04

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	4.22	343	6.46	1,180	-	-	-	-
2	-	-	-	-	4.30	362	6.55	1,240	-	-	-	-
3	-	-	-	-	4.41	388	6.62	1,290	-	-	-	-
4	-	-	-	-	4.55	424	6.68	1,330	-	-	-	-
5	-	-	-	-	4.65	450	6.72	1,370	-	-	-	-
6	-	-	-	**46	4.81	493	6.75	1,390	-	-	-	-
7	-	-	-	-	4.98	540	6.79	1,420	-	-	-	-
8	-	-	-	-	5.19	603	6.84	1,470	-	-	-	-
9	-	-	-	-	5.37	664	6.90	1,520	-	-	-	-
10	-	-	-	-	5.50	710	6.96	1,580	-	-	-	-
11	-	-	-	-	5.58	740	-	-	-	-	-	-
N	-	*45	2.88	81	5.62	756	-	-	-	*4,200	-	*1,880
1	-	-	2.97	94	5.62	756	-	-	-	-	-	-
2	-	-	3.55	197	5.62	756	-	-	-	-	-	-
3	-	-	3.80	248	5.65	768	-	-	-	-	-	-
4	-	-	3.67	221	5.66	772	-	-	-	-	-	-
5	-	-	3.69	225	5.70	788	-	**2,800	-	-	-	-
6	-	-	3.65	217	5.75	809	-	-	-	-	-	-
7	-	-	3.55	197	5.83	843	-	-	-	-	-	-
8	-	-	3.57	201	5.93	888	-	-	-	-	-	-
9	-	-	3.78	244	6.05	946	-	-	-	-	-	-
10	-	-	3.91	272	6.14	991	-	-	-	-	-	-
11	-	-	4.06	306	6.25	1,050	-	-	-	-	-	-
M	-	-	4.14	324	6.36	1,120	-	-	-	-	-	-
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	3.75	238
4	-	-	-	-	-	-	-	-	-	-	3.73	233
6	-	-	-	-	-	-	-	-	-	**250	3.70	227
8	-	-	-	-	-	-	-	-	-	-	3.69	225
10	-	-	-	-	-	-	-	-	-	-	3.68	223
N	-	*960	-	*550	-	*400	-	*280	3.83	255	3.69	225
2	-	-	-	-	-	-	-	-	3.78	244	3.65	217
4	-	-	-	-	-	-	-	-	3.81	250	3.64	215
6	-	-	-	-	-	-	-	-	3.88	266	3.63	213
8	-	-	-	-	-	-	-	-	3.82	252	3.58	203
10	-	-	-	-	-	-	-	-	3.78	244	3.57	201
M	-	-	-	-	-	-	-	-	3.77	242	3.57	201

* Estimated mean for the day.
** Estimated mean for the period.

Ramapo River at Pompton Lakes, N. J.

Location.- Water-stage recorder, lat. 40°59'20", long. 74°16'48", at hydroelectric plant in Pompton Lakes, Passaic County, 1½ miles above mouth of the river. Zero of gage is 200.93 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 160 square miles; not materially affected by artificial storage.
Gage-height record.- Water-stage recorder graph of head on spillway dam.
Stage-discharge relation.- Defined by current-meter measurements below 1,600 second-feet; extended to peak stage by determination of flow by weir formula based on the current-meter measurements.
Maxima.- September 1938: Discharge, about 6,620 second-feet 6 to 7:30 a.m. Sept. 22 (gage height, 3.13 feet).
1921 to August 1938: Discharge, about 12,300 second-feet Mar. 12, 1936 (gage height, 3.56 feet).
Remarks.- Discharge is total flow over spillway and through power house (waste gate in dam not open during this period).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	90	256	9	58	161	17	69	113	25	828	218
2	81	218	10	63	152	18	69	113	26	584	208
3	63	199	11	58	144	19	167	113	27	440	180
4	63	180	12	53	136	20	816	106	28	378	161
5	69	170	13	63	128	21	2,210	218	29	333	161
6	63	170	14	69	121	22	5,680	237	30	289	161
7	69	199	15	69	121	23	2,840	180	31		136
8	63	180	16	69	113	24	1,410	180			
Mean monthly discharge, in second-feet										573	166
Run-off, in inches										3.99	1.20

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.17	69	0.16	63	0.53	403	1.06	1,210	2.85	5,710	2.29	4,040
2	.17	69	.16	63	.56	440	1.08	1,240	2.95	6,030	2.25	3,930
3	.17	69	.16	63	.59	477	1.11	1,300	3.02	6,260	2.21	3,830
4	.17	69	.16	63	.62	516	1.13	1,340	3.08	6,450	2.16	3,690
5	.17	69	.16	63	.66	571	1.15	1,370	3.11	6,550	2.11	3,560
6	.17	69	.16	63	.70	625	1.16	1,390	3.13	6,620	2.08	3,480
7	.17	69	.16	63	.72	654	1.19	1,450	3.13	6,620	2.04	3,370
8	.17	69	.16	63	.75	698	1.21	1,490	3.12	6,590	2.00	3,270
9	.17	69	.16	63	.79	757	1.22	1,510	3.07	6,420	1.93	3,090
10	.17	69	.16	63	.82	804	1.24	1,550	3.02	6,260	1.85	2,890
11	.17	69	.16	63	.84	835	1.29	1,650	2.95	6,030	1.81	2,790
N	.17	69	.18	75	.85	851	1.36	1,790	2.89	5,840	1.77	2,700
1	.17	69	.34	199	.89	914	1.43	1,930	2.87	5,770	1.73	2,600
2	.16	63	.34	199	.89	914	1.48	2,040	2.85	5,710	1.69	2,510
3	.16	63	.34	199	.89	914	1.58	2,260	2.85	5,710	1.65	2,410
4	.16	63	.34	199	.91	947	1.66	2,440	2.82	5,610	1.62	2,350
5	.16	63	.35	208	.92	963	1.77	2,700	2.77	5,460	1.59	2,280
6	.16	63	.38	237	.94	996	1.87	2,950	2.72	5,300	1.56	2,210
7	.16	63	.44	300	.96	1,030	1.97	3,190	2.63	5,030	1.53	2,150
8	.16	63	.46	322	.98	1,070	2.02	3,320	2.57	4,850	1.51	2,100
9	.16	63	.50	366	.99	1,080	2.12	3,580	2.51	4,670	1.48	2,040
10	.16	63	.51	378	1.00	1,100	2.27	3,990	2.46	4,520	1.45	1,970
11	.16	63	.51	378	1.02	1,140	2.50	4,640	2.40	4,350	1.43	1,930
M	.16	63	.52	391	1.04	1,170	2.65	5,090	2.34	4,180	1.40	1,870
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.35	1,770	0.94	996	0.71	640	0.61	503	0.53	403	0.50	366
4	1.31	1,690	.91	947	.70	625	.60	489	.53	403	.50	366
6	1.27	1,610	.89	914	.70	625	.58	464	.52	391	.49	355
8	1.23	1,530	.87	883	.69	611	.57	452	.52	391	.49	355
10	1.20	1,470	.85	851	.67	584	.56	440	.51	378	.48	344
N	1.16	1,390	.83	819	.66	571	.55	428	.51	378	.47	333
2	1.13	1,340	.81	788	.65	557	.55	428	.50	366	.46	322
4	1.09	1,260	.80	772	.65	557	.55	428	.50	366	.46	322
6	1.05	1,190	.78	743	.64	543	.54	415	.50	366	.45	311
8	1.03	1,150	.77	728	.64	543	.54	415	.50	366	.45	311
10	1.00	1,100	.75	698	.63	530	.53	403	.50	366	.45	311
M	.96	1,030	.72	654	.62	516	.53	403	.50	366	.45	311

Supplemental records.- Sept. 22, 7:30 a.m., 3.13 ft., 6,620 sec.-ft.

Greenwood Lake at The Glens, N. J.

Location.- Water-stage recorder, lat. 41°09'36", long. 74°20'03", in gatehouse above dam at The Glens, Passaic County. Zero of gage is 608.86 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 27.1 square miles.
Gage-height record.- Water-stage recorder graph except for period Sept. 1-5, 18, and 19, records for which were based on study of recorder graph of river below dam. Gage heights given are for midnight.
Remarks.- Storage capacity above sill of blow-off gate (gage height, -4.00 feet) is 919,000,000 cubic feet. Contents shown in table is contents above gage height -0.8 foot. Gage-height record furnished by Morris Canal & Banking Co.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	*9.97	768	10.04	773	16	9.83	756	9.77	751
2	*9.96	767	9.87	759	17	9.82	755	9.79	753
3	*9.94	765	9.82	755	18	*9.82	755	9.78	752
4	*9.92	763	9.80	754	19	*10.05	774	9.77	751
5	*9.90	762	9.80	754	20	10.35	799	9.89	761
6	9.89	761	9.82	755	21	11.46	892	9.89	761
7	9.87	759	9.79	753	22	11.44	890	9.89	761
8	9.85	758	9.79	753	23	11.11	862	9.89	761
9	9.81	754	9.77	751	24	10.82	838	9.99	769
10	9.82	755	9.76	750	25	10.67	825	10.00	770
11	9.81	754	9.77	751	26	10.52	813	9.97	768
12	9.79	753	9.77	751	27	10.40	803	9.96	767
13	9.82	755	9.77	751	28	10.36	800	9.94	765
14	9.80	754	9.77	751	29	10.31	796	9.93	764
15	9.84	757	9.77	751	30	10.22	788	9.92	763
					31			9.90	762

	September	October
Gain or loss in storage, in millions of cubic feet.	+20	-26
Gain or loss in storage, in equivalent mean second-feet	+7.72	-9.71

* Estimated.

Wanaque River at Monks, N. J.

Location.- Water-stage recorder, lat. 41°07'14", long. 74°17'41", just above Wanaque Reservoir, in Monks, Passaic County. Zero of gage is 303.17 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 40.4 square miles; affected by storage in Greenwood Lake.
Gage-height record.- Water-stage recorder graph except for period 4 p.m. Sept. 21 to 3 p.m. Sept. 22.
Stage-discharge relation.- For spillway defined by current-meter measurements below 800 second-feet; extended to peak flow by logarithmic plotting.
Maxima.- September 1938: Discharge estimated, 1,260 second-feet midnight Sept. 21. 1935 to August 1938: Discharge, about 1,920 second-feet Mar. 12, 1936 (gage height estimated, 3.15 feet).
Remarks.- Discharges shown in tables are total of flow over weir, through ports in weir, and down fish ladder. Discharge for period of missing gage heights, Sept. 21, 22, computed on basis of record at outlet of Greenwood Lake. Mean monthly discharge adjusted for storage in Greenwood Lake. For information on storage see record for Greenwood Lake at The Glens, N. J. Water-stage recorder owned and operated by North Jersey District Water Supply Commission.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	13.9	218	9	11.0	30	17	9.7	15.5	25	300	37
2	13.2	184	10	11.0	24	18	9.7	15.5	26	214	46
3	11.7	95	11	11.0	17.1	19	30	15.5	27	164	26
4	13.2	22	12	11.0	16.3	20	144	17.4	28	128	30
5	12.4	21	13	11.0	16.3	21	560	37	29	102	57
6	11.7	32	14	11.0	16.3	22	1,030	22	30	122	55
7	11.7	48	15	12.4	16.3	23	688	18.8	31		37
8	11.7	30	16	10.4	15.5	24	436	27			
Mean monthly discharge, in second-feet (observed)										138	40.6
Mean monthly discharge, in second-feet (adjusted)										145	30.7
Run-off, in inches (adjusted)										4.00	0.88

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.21	9.7	0.21	9.7	0.64	70	0.99	184	-	1,250	2.04	848
2	.21	9.7	.21	9.7	.66	74	1.01	192	-	1,220	2.02	832
3	.21	9.7	.21	9.7	.72	91	1.02	196	-	1,200	2.00	814
4	.21	9.7	.22	10.4	.77	105	1.02	196	-	1,180	1.98	798
5	.21	9.7	.22	10.4	.81	117	1.04	205	-	1,160	1.96	782
6	.21	9.7	.22	10.4	.90	149	1.06	214	-	1,140	1.94	766
7	.21	9.7	.22	10.4	1.00	188	1.08	223	-	1,100	1.93	758
8	.21	9.7	.22	10.4	1.00	188	1.10	231	-	1,080	1.91	742
9	.21	9.7	.23	11.0	1.03	201	1.13	246	-	1,070	1.89	726
10	.21	9.7	.23	11.0	1.04	205	1.16	260	-	1,050	1.87	710
11	.21	9.7	.23	11.0	1.02	196	1.18	270	-	1,020	1.85	694
N	.21	9.7	.23	11.0	.98	180	1.21	284	-	990	1.83	680
1	.21	9.7	.26	13.2	.94	164	1.30	331	-	980	1.81	664
2	.21	9.7	.47	37	.91	153	1.48	436	-	960	1.80	656
3	.21	9.7	.54	49	.89	146	1.74	612	-	950	1.78	642
4	.21	9.7	.54	49	.87	138	-	770	2.14	934	1.76	628
5	.21	9.7	.56	53	.86	134	-	900	2.13	926	1.74	612
6	.21	9.7	.60	61	.85	131	-	1,010	2.11	908	1.72	598
7	.21	9.7	.60	61	.85	131	-	1,100	2.10	900	1.70	583
8	.21	9.7	.59	59	.85	131	-	1,180	2.10	900	1.69	576
9	.21	9.7	.58	57	.86	134	-	1,210	2.10	900	1.68	570
10	.21	9.7	.58	57	.89	146	-	1,240	2.10	900	1.67	562
11	.21	9.7	.58	57	.92	157	-	1,250	2.08	882	1.66	555
M	.21	9.7	.62	65	.95	168	-	1,260	2.06	866	1.64	542
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.60	514	1.33	347	1.12	241	0.98	180	0.90	149	0.79	110
4	1.57	494	1.31	337	1.11	236	.97	176	.87	138	.79	110
6	1.55	482	1.29	326	1.09	227	.96	172	.87	138	.78	107
8	1.52	462	1.26	310	1.08	223	.95	168	.86	134	.77	105
10	1.49	442	1.25	305	1.07	218	.94	164	.85	131	.77	105
N	1.47	430	1.23	294	1.06	214	.92	157	.84	128	.76	102
2	1.45	418	1.21	284	1.04	205	.92	157	.82	121	.76	102
4	1.44	412	1.20	279	1.03	201	.92	157	.81	117	.76	102
6	1.43	406	1.18	270	1.02	196	.91	153	.81	117	.75	99
8	1.41	394	1.17	264	1.01	192	.91	153	.80	114	.74	96
10	1.39	382	1.15	255	1.00	188	.91	153	.80	114	.73	93
M	1.36	365	1.14	250	.99	184	.91	153	.79	110	.73	93

Wanaque Reservoir at Wanaque, N. J.

Location.- Water-stage recorder, lat. 41°02'30", long. 74°17'35", at Raymond Dam on Wanaque River, Wanaque, Passaic County. Gage heights are elevations above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 90.4 square miles (not including portion of Post Brook area diverted into reservoir).

Gage-height record.- Water-stage recorder graph for gage heights above 300.00 feet; gage read to hundredths daily at 8 a.m. for lower gage heights. Gage heights at 8 a.m. are given in table.

Remarks.- Usable storage capacity, 3,476,000,000 cubic feet. Crest of spillway at gage height 300.00 feet. Records furnished by North Jersey District Water Supply Commission.

Gage height, in feet, and contents, in millions of cubic feet, at 8 a.m., 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	300.12	3,726	301.83	3,902	16	298.55	3,569	300.81	3,797
2	300.02	3,716	301.84	3,903	17	298.44	3,557	300.75	3,791
3	299.89	3,702	301.84	3,903	18	298.36	3,549	300.65	3,780
4	299.78	3,691	301.75	3,894	19	298.31	3,545	300.55	3,770
5	299.69	3,682	301.67	3,886	20	298.75	3,587	300.45	3,760
6	299.59	3,672	301.57	3,875	21	299.25	3,637	300.45	3,760
7	299.46	3,659	301.57	3,875	22	301.52	3,871	300.40	3,755
8	299.36	3,648	301.49	3,868	23	302.18	3,938	300.29	3,743
9	299.28	3,641	301.40	3,858	24	302.15	3,935	300.27	3,741
10	299.16	3,628	301.34	3,852	25	302.05	3,925	300.27	3,741
11	299.05	3,617	301.26	3,843	26	302.00	3,919	300.23	3,737
12	298.95	3,607	301.17	3,834	27	301.90	3,909	300.16	3,730
13	298.83	3,595	301.07	3,824	28	301.87	3,906	300.10	3,724
14	298.74	3,587	300.98	3,814	29	301.85	3,904	300.07	3,721
15	298.65	3,578	300.91	3,807	30	301.82	3,901	300.02	3,716
					31			299.99	3,713

	September	October
Gain or loss in storage, in millions of cubic feet	+176	-199
Gain or loss in storage, in equivalent mean second-feet.	+67.9	-74.3

Wanaque River at Wanaque, N. J.

Location.- Water-stage recorder, lat. 41°02'33", long. 74°17'36", above weir which is 50 feet above highway bridge in Wanaque, Passaic County. Zero of gage is 210.00 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 90.4 square miles (not including Post Brook); affected by storage in Greenwood Lake and Wanaque Reservoir.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,700 second-feet.
Maxima.- September 1938: Discharge, 912 second-feet 12:40 p.m. Sept. 23 (gage height, 4.03 feet).
1903-5, 1912-15, 1919 to August 1938: Gage height, 8.35 feet (former site and datum), from high-water marks, June 22 or 23, 1919 (discharge, uncertain); maximum daily discharge, 3,630 second-feet Apr. 7, 1924.
Remarks.- Mean monthly discharge adjusted for diversions from Post Brook into Wanaque Reservoir, diversions from Wanaque Reservoir, and storage in Wanaque Reservoir and Greenwood Lake. For information on diversions and storage see records for Wanaque Reservoir at Wanaque, N. J., and Greenwood Lake at The Glens, N. J. Mean monthly diversions from Post Brook into Wanaque Reservoir were: September, 4.6 second-feet; October, 0.4 second-foot. Mean monthly diversions from Wanaque Reservoir were: September, 113 second-feet; October, 111 second-feet. Basic data furnished by North Jersey District Water Supply Commission.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	17.5	118	9	16.9	37	17	16.9	25	25	476	23
2	16.9	117	10	17.5	34	18	16.9	24	26	300	23
3	16.9	100	11	17.5	32	19	19.6	24	27	208	24
4	16.9	52	12	17.5	31	20	19.6	24	28	146	24
5	16.9	38	13	17.5	30	21	23	24	29	115	24
6	16.9	44	14	17.5	29	22	146	23	30	116	24
7	17.5	44	15	17.5	27	23	841	23	31		23
8	17.5	35	16	16.9	26	24	778	23			
Mean monthly discharge, in second-feet (observed)										117	37.1
Mean monthly discharge, in second-feet (adjusted)										301	63.8
Run-off, in inches (adjusted)										3.72	.81

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.28	16.9	1.28	16.9	1.32	19.6	1.31	18.8	1.32	19.6	3.34	630
2	1.28	16.9	1.28	16.9	1.31	18.8	1.30	18.2	1.33	20	3.44	687
3	1.28	16.9	1.28	16.9	1.32	19.6	1.30	18.2	1.34	21	3.53	732
4	1.28	16.9	1.28	16.9	1.32	19.6	1.31	18.8	1.36	22	3.61	764
5	1.28	16.9	1.28	16.9	1.33	20	1.31	18.8	1.37	23	3.68	788
6	1.28	16.9	1.28	16.9	1.42	27	1.31	18.8	1.38	24	3.75	812
7	1.28	16.9	1.28	16.9	1.35	22	1.31	18.8	1.39	24	3.80	830
8	1.28	16.9	1.28	16.9	1.32	19.6	1.31	18.8	1.54	36	3.84	844
9	1.28	16.9	1.28	16.9	1.31	18.8	1.31	18.8	1.54	36	3.88	858
10	1.28	16.9	1.28	16.9	1.31	18.8	1.31	18.8	1.54	36	3.92	872
11	1.28	16.9	1.28	16.9	1.30	18.2	1.31	18.8	1.55	37	3.94	879
N	1.28	16.9	1.28	16.9	1.30	18.2	1.31	18.8	1.59	40	3.98	893
1	1.28	16.9	1.42	27	1.30	18.2	1.47	31	1.77	57	4.01	904
2	1.28	16.9	1.50	33	1.30	18.2	1.52	35	2.02	86	4.00	900
3	1.28	16.9	1.33	20	1.30	18.2	1.62	43	2.19	122	4.01	904
4	1.28	16.9	1.31	18.8	1.30	18.2	1.49	32	2.33	162	4.02	908
5	1.28	16.9	1.30	18.2	1.30	18.2	1.51	34	2.44	201	3.98	893
6	1.28	16.9	1.30	18.2	1.30	18.2	1.44	28	2.56	246	3.94	879
7	1.28	16.9	1.30	18.2	1.30	18.2	1.36	22	2.69	300	3.91	868
8	1.28	16.9	1.30	18.2	1.32	19.6	1.33	20	2.80	348	3.91	868
9	1.28	16.9	1.30	18.2	1.33	20	1.32	19.6	2.91	400	3.90	865
10	1.28	16.9	1.42	27	1.32	19.6	1.31	18.8	3.02	455	3.89	862
11	1.28	16.9	1.37	23	1.32	19.6	1.31	18.8	3.13	513	3.88	858
M	1.28	16.9	1.34	21	1.31	18.8	1.31	18.8	3.23	568	3.87	854
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.83	840	3.28	596	2.84	367	2.53	235	2.35	169	2.20	124
4	3.81	834	3.19	546	2.81	353	2.51	227	2.35	169	2.20	124
6	3.77	820	3.14	519	2.80	348	2.50	223	2.35	169	2.20	124
8	3.71	798	3.11	502	2.76	330	2.48	216	2.32	159	2.18	119
10	3.66	781	3.10	497	2.71	308	2.44	201	2.30	152	2.17	117
N	3.59	756	3.05	471	2.67	291	2.43	197	2.27	144	2.17	117
2	3.54	736	3.00	445	2.63	275	2.41	190	2.25	138	2.15	112
4	3.55	740	2.96	425	2.60	262	2.41	190	2.23	132	2.14	110
6	3.55	740	2.94	415	2.59	258	2.42	193	2.23	132	2.13	108
8	3.50	720	2.92	405	2.57	250	2.44	201	2.23	132	2.13	108
10	3.38	653	2.89	390	2.56	246	2.44	201	2.22	130	2.13	108
M	3.32	619	2.87	381	2.54	239	2.42	193	2.21	127	2.14	110

Supplemental records.- Sept. 19, 1:20 p.m., 1.62 ft., 43 sec.-ft.; 10:30 p.m., 1.46 ft., 30 sec.-ft. Sept. 21, 1:30 p.m., 1.44 ft., 28 sec.-ft. Sept. 23, 12:40 p.m., 4.03 ft., 912 sec.-ft. Sept. 24, 5 p.m., 3.68 ft., 788 sec.-ft.; 7 p.m., 3.64 ft., 774 sec.-ft.

Oak Ridge Reservoir at Oak Ridge, N. J.

Location.- Lat. 41°02'20", long 74°30'05", at Oak Ridge Dam on Pequannock River, 1 mile southwest of Oak Ridge, Passaic County. Gage heights are elevations above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 33.7 square miles.
Gage-height record.- Gage read daily at 6 a.m. and 6 p.m. Gage heights at 6 a.m. are given in table.
Remarks.- Usable storage capacity, 532,000,000 cubic feet. Record furnished by Department of Public Affairs, Division of Water, Newark, N. J.

Gage height, in feet, and contents, in millions of cubic feet, at 6 a.m., 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	845.44	510	846.12	523	16	845.42	510	845.83	517
2	845.53	512	846.10	523	17	845.40	509	845.79	517
3	845.55	512	846.08	522	18	845.41	509	845.75	516
4	845.56	512	846.07	522	19	845.42	510	845.70	515
5	845.57	513	846.06	522	20	845.98	520	845.65	514
6	845.58	513	846.04	521	21	846.36	528	845.78	517
7	845.59	513	846.08	522	22	846.89	538	845.98	520
8	845.60	513	846.07	522	23	846.54	531	846.03	521
9	845.60	513	846.06	522	24	846.36	528	846.03	521
10	845.59	513	846.04	521	25	846.27	526	846.12	523
11	845.54	512	846.02	521	26	846.21	525	846.09	522
12	845.49	511	845.99	520	27	846.18	524	846.11	523
13	845.45	510	845.95	520	28	846.16	524	846.10	523
14	845.41	510	845.91	519	29	846.15	524	846.04	521
15	845.36	509	845.87	518	30	846.14	523	846.02	521
					31			846.02	521

	September	October
Gain or loss in storage, in millions of cubic feet	+13	-2
Gain or loss in storage, in equivalent mean second-feet.	+5.0	-.75

Canistear Reservoir near Stockholm, N. J.

Location.- Lat. 41°06'35", long. 74°29'40", at Canistear Reservoir dam on Pacock Brook, 2 miles north of Stockholm, Sussex County. Add 1,000 feet to heights given in table to obtain gage heights and elevations above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 5.59 square miles.
Gage-height record.- One gage reading daily at noon.
Remarks.- Usable storage capacity, 322,000,000 cubic feet. Record furnished by Department of Public Affairs, Division of Water, Newark, N. J.

Height, in feet, and contents, in millions of cubic feet, at noon, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	86.09	323	86.17	324	16	86.03	322	86.12	324
2	86.08	323	86.16	324	17	86.03	322	86.12	324
3	86.08	323	86.16	324	18	86.08	323	86.12	324
4	86.08	323	86.15	324	19	86.08	323	86.12	324
5	86.08	323	86.15	324	20	86.35	327	86.11	323
6	86.08	323	86.15	324	21	86.32	326	86.14	324
7	86.07	323	86.13	324	22	86.50	329	86.14	324
8	86.07	323	86.13	324	23	86.33	326	86.14	324
9	86.07	323	86.13	324	24	86.23	325	86.15	324
10	86.06	323	86.13	324	25	86.24	325	86.20	325
11	86.05	322	86.13	324	26	86.20	325	86.19	325
12	86.04	322	86.13	324	27	86.19	325	86.18	324
13	86.03	322	86.12	324	28	86.19	325	86.18	324
14	86.02	322	86.12	324	29	86.18	324	86.18	324
15	86.00	322	86.12	324	30	86.18	324	86.18	324
					31			86.17	324

	September	October
Gain or loss in storage, in millions of cubic feet	+1	0
Gain or loss in storage, in equivalent mean second-feet.	+.4	0

Clinton Reservoir near Newfoundland, N. J.

Location.- Lat. 41°04'20", long. 74°27'00", at Clinton Reservoir dam on a branch of the Pequannock River, 2 miles north of Newfoundland, Passaic County. Gage heights are elevations above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 10.5 square miles.
Gage-height record.- One gage reading daily at 9 a.m.
Remarks.- Usable storage capacity, 470,000,000 cubic feet. Record furnished by Department of Public Affairs, Division of Water, Newark, N. J.

Gage height, in feet, and contents, in millions of cubic feet, at 9 a.m., 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	991.52	462	992.21	474	16	989.30	424	991.63	464
2	991.37	460	992.20	474	17	989.15	422	991.54	462
3	991.20	457	992.19	474	18	989.00	419	991.45	461
4	991.07	454	992.17	473	19	988.86	417	991.37	460
5	990.92	452	992.14	473	20	989.30	424	991.34	459
6	990.77	449	992.12	472	21	989.66	430	991.39	460
7	990.60	446	992.11	472	22	991.80	467	991.37	460
8	990.35	442	992.09	472	23	992.45	478	991.36	459
9	990.20	439	992.07	472	24	992.45	478	991.35	459
10	990.05	437	992.05	471	25	992.44	478	991.39	460
11	989.96	435	992.02	471	26	992.44	478	991.40	460
12	989.90	434	991.95	469	27	992.40	477	991.46	461
13	989.75	432	991.88	468	28	992.34	476	991.50	462
14	989.60	429	991.79	467	29	992.25	475	991.54	462
15	989.45	427	991.71	465	30	992.22	474	991.58	463
					31			991.62	464

	September	October
Gain or loss in storage, in millions of cubic feet	+12	-10
Gain or loss in storage, in equivalent mean second-feet.	+4.6	-3.7

Echo Lake Reservoir near Charlotteburg, N. J.

Location.- Lat. 41°02'55", long. 74°24'25", on branch of Pequannock River, 1½ miles northeast of Charlotteburg, Passaic County. Gage heights are elevations above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 2.51 square miles.
Gage-height record.- One gage reading daily at noon.
Remarks.- Usable storage capacity, 225,000,000 cubic feet. Records furnished by Department of Public Affairs, Division of Water, Newark, N. J.

Gage height, in feet, and contents, in millions of cubic feet, at noon, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	890.12	178	892.78	209	16	889.16	167	892.85	210
2	890.03	177	892.80	209	17	889.15	167	892.85	210
3	889.95	176	892.81	209	18	889.17	167	892.63	207
4	889.86	175	892.82	209	19	889.20	168	892.52	206
5	889.79	174	892.83	209	20	889.80	174	892.41	204
6	889.71	173	892.84	210	21	890.26	179	892.49	205
7	889.63	172	892.96	211	22	890.90	187	892.40	204
8	889.56	171	892.98	211	23	891.27	191	892.32	203
9	889.49	170	893.00	212	24	891.49	194	892.30	203
10	889.42	170	893.01	212	25	891.60	195	892.41	204
11	889.36	169	893.00	212	26	891.68	196	892.40	204
12	889.30	169	892.99	212	27	892.70	208	892.31	203
13	889.26	168	892.99	212	28	892.71	208	892.28	203
14	889.22	168	892.99	212	29	892.73	208	892.21	202
15	889.19	167	892.97	211	30	892.75	208	892.17	202
					31			892.13	201

	September	October
Gain or loss in storage, in millions of cubic feet	+31	-8
Gain or loss in storage, in equivalent mean second-feet.	+12.0	-3.0

Pequannock River at Macopin intake dam, N. J.

Location.- Lat. 41°01'00", long. 74°23'47", at Macopin intake dam of Newark waterworks, 3 miles above Butler, Morris County. Zero of gage is 583.74 feet above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 63.7 square miles; materially affected by artificial storage.

Gage-height record.- Two gage readings daily. Elevation of crest of dam is zero gage height.

Stage-discharge relation.- Based on determinations of flow over 40-foot sharp-crested weir.

Maxima.- September 1938: Discharge observed, 1,300 second-feet at 6 a.m. Sept. 22 (gage height, 1.40 feet).

1892 to August 1938: Discharge observed, about 6,100 second-feet Oct. 10, 1903 (gage height, 3.85 feet).

Remarks.- Tables of daily and hourly discharges give flow over intake dam only. Mean monthly discharge and run-off, in inches, are adjusted for storage and diversion. For information on storage see records for Oak Ridge Reservoir at Oak Ridge, N. J.; Canistear Reservoir near Stockholm, N. J.; Clinton Reservoir near Newfoundland, N. J.; and Echo Lake Reservoir near Charlotteburg, N. J. Mean monthly diversions: September, 52.2 second-feet; October, 63.9 second-feet. Records furnished by Department of Public Affairs, Division of Water, Newark, N. J.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	0	38	9	0	49	17	0	11.1	25	297	95
2	0	28	10	0	38	18	0	11.1	26	200	46
3	0	16.7	11	0	28	19	0	11.1	27	139	42
4	0	25	12	0	13.8	20	225	19.3	28	99	46
5	0	25	13	0	11.1	21	783	38	29	73	33
6	0	22	14	0	16.7	22	1,160	38	30	49	28
7	0	35	15	0	10.4	23	781	28	31		17.0
8	0	49	16	0	9.6	24	489	61			
Mean monthly discharge, in second-feet (observed)										143	30.3
Mean monthly discharge, in second-feet (adjusted)										217	86.8
Run-off, in inches (adjusted)										3.80	1.57

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
6	-1.20	0	-0.50	0	0.55	312	0.70	447	1.40	1,300	1.05	832
6	-.80	0	.15	49	.55	312	1.35	1,230	1.30	1,160	1.10	895
	September 24		September 25		September 26		September 27		September 28		September 29	
6	.75	497	.55	312	.45	221	.35	160	.25	99	.20	73
6	.65	401	.50	270	.35	160	.30	128	.25	99	.20	73

Saddle River at Lodi, N. J.

Location.- Water-stage recorder, lat. 40°53'24", long. 74°04'50", at highway bridge 1 mile above Lodi, Bergen County, and 2 3/4 miles above mouth. Zero of gage is 22.46 feet above mean sea level (general adjustment of 1929).
Drainage area.- 54.6 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 700 second-feet; extended to peak stage on basis of study of peak discharge of Pascack Brook.
Maxima.- September 1938: Discharge, about 2,150 second-feet 11 a.m. Sept. 22 (gage height, 6.21 feet).
1923 to August 1938: Discharge, about 2,200 second-feet Mar. 12, 1936 (gage height, 6.27 feet).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	52	85	9	61	78	17	61	56	25	138	102
2	48	78	10	67	73	18	65	54	26	109	88
3	38	76	11	54	67	19	116	56	27	100	74
4	36	79	12	46	63	20	286	61	28	95	71
5	33	74	13	65	59	21	772	110	29	91	74
6	38	71	14	59	59	22	1,720	108	30	87	84
7	49	108	15	94	59	23	705	80	31		71
8	57	92	16	91	57	24	262	76			
Mean monthly discharge, in second-feet										183	75.6
Run-off, in inches										3.74	1.59

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.96	65	1.99	71	2.77	208	3.50	444	5.00	1,210	4.90	1,150
2	1.96	65	2.00	73	2.78	211	3.57	472	5.20	1,340	4.82	1,100
3	1.97	67	2.02	76	2.82	221	3.64	501	5.34	1,440	4.72	1,040
4	1.99	71	2.16	96	2.84	227	3.69	522	5.44	1,510	4.62	982
5	2.01	74	2.10	88	2.87	235	3.73	539	5.60	1,630	4.53	931
6	2.01	74	2.06	82	2.90	243	3.77	556	5.77	1,770	4.44	882
7	1.98	69	2.05	80	2.92	249	3.79	565	5.90	1,870	4.35	834
8	1.96	65	2.06	82	2.94	255	3.82	578	6.02	1,980	4.27	793
9	1.94	61	2.07	84	2.96	260	3.87	600	6.11	2,060	4.18	747
10	1.94	61	2.10	88	2.98	266	3.94	632	6.19	2,130	4.10	708
11	1.94	61	2.12	91	3.01	275	3.99	655	6.21	2,150	4.02	670
N	1.94	61	2.16	96	3.02	278	4.07	694	6.20	2,140	3.98	651
1	1.94	61	2.22	104	3.03	281	4.25	782	6.17	2,110	3.94	632
2	1.93	59	2.29	112	3.06	291	4.37	844	6.10	2,050	3.87	600
3	1.93	59	2.36	122	3.08	297	4.45	887	6.01	1,970	3.80	569
4	1.93	59	2.42	133	3.10	303	4.51	920	5.91	1,880	3.74	543
5	1.93	59	2.46	140	3.11	306	4.58	959	5.81	1,800	3.68	518
6	1.93	59	2.50	147	3.16	323	4.65	1,000	5.70	1,710	3.62	492
7	1.94	61	2.55	158	3.19	333	4.72	1,040	5.58	1,610	3.56	468
8	1.97	67	2.60	168	3.25	353	4.78	1,080	5.47	1,530	3.51	448
9	1.98	69	2.63	175	3.31	374	4.84	1,110	5.36	1,450	3.47	433
10	1.98	69	2.66	182	3.35	388	4.88	1,140	5.24	1,370	3.42	414
11	1.98	69	2.71	194	3.38	399	4.91	1,160	5.13	1,290	3.37	395
M	1.98	69	2.74	201	3.43	417	4.96	1,190	5.00	1,210	3.33	381
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.25	353	2.58	164	2.32	116	2.22	104	2.17	98	2.15	95
4	3.18	329	2.55	158	2.30	114	2.22	104	2.17	98	2.14	94
6	3.12	310	2.52	151	2.29	112	2.21	103	2.16	96	2.13	92
8	3.06	291	2.48	143	2.27	110	2.19	100	2.15	95	2.12	91
10	3.00	272	2.45	138	2.26	109	2.18	99	2.15	95	2.11	90
N	2.94	255	2.44	136	2.25	108	2.18	99	2.15	95	2.11	90
2	2.89	240	2.42	133	2.24	106	2.17	98	2.15	95	2.11	90
4	2.84	227	2.40	129	2.24	106	2.17	98	2.15	95	2.11	90
6	2.78	211	2.38	125	2.24	106	2.17	98	2.15	95	2.11	90
8	2.72	196	2.36	122	2.23	105	2.16	96	2.15	95	2.10	88
10	2.67	184	2.35	120	2.23	105	2.17	98	2.15	95	2.10	88
M	2.62	173	2.33	117	2.23	105	2.17	98	2.15	95	2.11	90

Supplemental records.- Sept. 20, 6:30 a.m., 2.95 ft., 258 sec.-ft.; 8:15 p.m., 3.20 ft., 336 sec.-ft.

Elizabeth River at Elizabeth, N. J.

Location.- Water-stage recorder, lat. 40°40'03", long. 74°13'09", just above Westfield Avenue Bridge, Elizabeth, Union County, and 2½ miles above mouth.
Drainage area.- 18.0 square miles; (revised); affected by diversions for municipal use.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 190 second-feet; extended to peak stage on basis of determination of flood flow by contracted-opening method.
Maxima.- September 1938: Discharge, about 2,020 second-feet 5:15 p.m. Sept. 21 (gage height, 9.25 feet).
1921 to August 1938: Discharge, about 2,720 second-feet July 23, 1938 (gage height, 13.05 feet, from floodmark).
Remarks.- Mean monthly discharge and run-off, in inches, adjusted for diversion. Mean monthly diversions were: September, 4.5 second-feet; October, 4.9 second-feet.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	30	11.3	9	6.1	8.5	17	6.9	6.5	25	26	10.2
2	7.6	9.6	10	6.0	7.9	18	12.5	7.3	26	23	7.9
3	6.5	9.3	11	5.4	8.5	19	140	7.3	27	36	18.0
4	6.1	9.3	12	5.4	8.2	20	230	23	28	20	16.0
5	6.1	9.0	13	11.9	8.2	21	751	26	29	15.7	10.7
6	10.5	44	14	6.1	8.2	22	84	8.2	30	14.4	7.1
7	6.3	16.6	15	15.5	7.6	23	16.2	7.1	31		6.8
8	6.3	9.6	16	8.2	6.5	24	33	23			
Mean monthly discharge, in second-feet (observed)										51.8	11.9
Mean monthly discharge, in second-feet (adjusted)										56.3	16.8
Run-off, in inches (adjusted)										3.49	1.08

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.77	8.5	3.34	38	4.18	140	5.04	344	5.06	351	2.69	6.3
2	2.75	7.9	3.26	32	4.19	141	4.70	249	4.70	249	2.68	6.1
3	2.74	7.6	3.52	53	4.20	143	4.31	163	4.35	171	2.67	6.0
4	2.73	7.3	3.41	44	4.21	145	4.34	169	4.17	138	2.66	5.8
5	2.72	7.1	3.60	61	4.26	154	4.73	257	4.07	122	2.95	14.8
6	2.72	7.1	3.50	51	4.60	225	4.92	309	3.99	110	3.28	34
7	2.72	7.1	3.47	49	5.16	383	4.89	300	3.92	100	3.36	40
8	2.71	6.8	3.32	37	5.58	528	4.84	286	3.87	93	3.38	41
9	2.70	6.5	3.20	28	5.29	427	4.99	329	3.83	88	3.40	43
10	2.69	6.3	3.20	28	5.15	380	5.16	383	3.80	84	3.40	43
11	2.68	6.1	3.17	26	4.80	275	5.24	410	3.76	79	3.41	44
N	2.68	6.1	3.25	32	4.24	150	5.41	468	3.73	76	3.42	45
1	2.69	6.3	4.20	143	3.88	94	5.80	615	3.55	56	3.42	45
2	2.77	8.5	5.04	344	3.69	71	6.90	1,130	3.00	17.0	3.42	45
3	2.78	8.7	5.59	532	3.61	62	7.17	1,280	2.88	12.0	3.41	44
4	2.78	8.7	5.40	465	3.68	70	8.10	1,690	2.84	10.7	3.39	42
5	2.84	10.7	5.01	335	4.20	143	9.18	2,010	2.81	9.6	3.36	40
6	2.87	11.7	4.92	309	4.70	249	9.00	1,960	2.80	9.3	3.35	39
7	2.87	11.7	4.75	262	4.78	270	8.26	1,740	2.78	8.7	3.34	38
8	2.87	11.7	4.30	161	4.64	235	7.38	1,390	2.76	8.2	3.34	38
9	3.14	24	3.92	100	4.83	283	6.79	1,030	2.75	7.9	3.33	37
10	3.20	28	3.76	79	5.08	357	6.10	745	2.73	7.3	3.33	37
11	3.56	57	4.12	129	5.17	386	5.53	510	2.71	6.8	3.32	37
M	3.48	49	4.16	136	5.18	389	5.31	434	2.70	6.5	3.32	37
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.30	35	3.19	27	3.12	23	3.10	22	3.19	27	3.00	17.0
4	3.30	35	3.19	27	3.12	23	3.09	22	3.10	22	2.98	16.1
6	3.29	34	3.18	27	3.11	23	3.08	21	3.07	20	2.97	15.7
8	3.28	34	3.18	27	3.11	23	3.07	20	3.05	19.5	2.97	15.7
10	3.27	33	3.17	26	3.11	23	3.07	20	3.04	19.0	2.95	14.8
N	3.27	33	3.16	26	3.11	23	3.07	20	3.04	19.0	2.95	14.8
2	3.26	32	3.15	25	3.11	23	3.07	20	3.02	18.0	2.95	14.8
4	3.25	32	3.15	25	3.11	23	3.07	20	3.02	18.0	2.95	14.8
6	3.24	31	3.14	24	3.11	23	3.07	20	3.02	18.0	2.95	14.8
8	3.24	31	3.14	24	3.11	23	4.44	189	3.02	18.0	2.95	14.8
10	3.20	28	3.13	24	3.11	23	3.76	79	3.01	17.5	2.95	14.8
M	3.19	27	3.13	24	3.10	22	3.36	40	3.00	17.0	2.95	14.8

Supplemental records.- Sept. 22, 3:30 a.m., 4.24 ft., 150 sec.-ft. Sept. 21, 5:15 p.m., 9.25 ft., 2,020 sec.-ft.

Rahway River near Springfield, N. J.

Location.- Water-stage recorder, lat. 40°41'11", long. 74°18'44", 50 feet below State Route 29, just below Pope Brook, and 1½ miles south of Springfield, Union County. Zero of gage is 64.47 feet above mean sea level (New Jersey Geological Survey bench-mark).

Drainage area.- 25.5 square miles; affected by diversions for municipal use.

Gage-height record.- Water-stage recorder graph except for period 3 a.m. Sept. 27 to 3 p.m. Oct. 7.

Stage-discharge relation.- Defined by current-meter measurements below 900 second-feet; extended to peak stage by logarithmic plotting.

Maxima.- September 1938: Discharge, about 1,590 second-feet 7:30 p.m. Sept. 21 (gage height, 6.70 feet).

July to August 1938: Discharge, about 1,940 second-feet 1:15 p.m. July 23, 1938 (gage height, 7.41 feet).

Remarks.- Discharge for period of missing gage-height record computed on basis of record at Rahway. Mean monthly discharge and run-off, in inches, adjusted for diversions. Mean monthly diversions were: September, 13.9 second-feet; October, 13.3 second-feet.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	18.4	*13	9	5.9	10.0	17	5.9	8.2	25	21	11.1
2	7.3	*12	10	5.6	8.6	18	7.8	7.8	26	17.0	8.6
3	7.3	*11	11	6.2	8.2	19	82	7.8	27	*15	10.4
4	7.3	*10	12	6.5	8.6	20	168	8.6	28	*20	15.0
5	7.3	*10	13	7.8	8.6	21	731	26	29	*15	10.0
6	6.9	*38	14	6.2	8.6	22	530	9.1	30	*13	8.6
7	6.2	*15	15	6.5	8.6	23	68	8.2	31		8.2
8	6.5	10.5	16	6.2	8.2	24	31	16.4			
Mean monthly discharge, in second-feet (observed)										61.4	11.4
Mean monthly discharge, in second-feet (adjusted)										75.3	24.6
Run-off, in inches (adjusted)										3.29	1.11

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.45	7.3	1.58	14.7	2.20	108	2.67	241	5.83	1,220	2.22	113
2	1.45	7.3	1.61	17.0	2.24	119	2.62	227	5.60	1,140	2.19	106
3	1.44	6.9	1.61	17.0	2.24	119	2.55	206	5.36	1,040	2.16	98
4	1.44	6.9	1.61	17.0	2.31	138	2.50	192	5.14	968	2.14	94
5	1.44	6.9	1.65	20	2.48	186	2.51	195	4.90	885	2.12	89
6	1.44	6.9	1.72	27	2.53	201	2.59	218	4.65	802	2.10	84
7	1.44	6.9	1.75	30	2.61	224	2.64	233	4.40	723	2.08	80
8	1.44	6.9	1.75	30	2.71	253	2.70	250	4.15	648	2.06	76
9	1.43	6.5	1.73	28	2.71	253	2.80	279	3.92	584	2.05	74
10	1.44	6.9	1.71	26	2.64	233	2.94	320	3.70	524	2.03	71
11	1.45	7.3	1.69	24	2.54	204	3.10	365	3.50	473	2.01	67
N	1.46	7.8	1.69	24	2.44	175	3.33	429	3.30	421	1.99	63
1	1.46	7.8	1.75	30	2.36	152	3.58	493	3.15	379	1.97	60
2	1.46	7.8	2.10	84	2.27	127	4.12	640	3.01	340	1.96	59
3	1.45	7.3	2.61	224	2.23	116	4.95	902	2.88	302	1.94	55
4	1.45	7.3	2.71	253	2.26	124	5.70	1,170	2.77	270	1.93	54
5	1.46	7.8	2.66	238	2.27	127	6.28	1,400	2.67	241	1.91	51
6	1.47	8.2	2.55	206	2.28	130	6.57	1,530	2.58	215	1.90	49
7	1.48	8.6	2.45	178	2.32	141	6.69	1,580	2.51	195	1.89	48
8	1.49	9.1	2.34	146	2.35	149	6.68	1,580	2.45	178	1.88	46
9	1.49	9.1	2.23	116	2.41	166	6.58	1,530	2.38	157	1.87	45
10	1.49	9.1	2.15	96	2.56	209	6.45	1,480	2.33	143	1.86	44
11	1.50	9.5	2.11	86	2.65	236	6.27	1,400	2.30	135	1.85	42
M	1.54	11.8	2.10	84	2.67	241	6.07	1,320	2.26	124	1.84	41
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.83	40	1.68	23	1.62	17.9	1.58	14.7	-	-	-	-
4	1.81	37	1.67	22	1.62	17.9	-	-	-	-	-	-
6	1.80	36	1.67	22	1.62	17.9	-	-	-	-	-	-
8	1.80	36	1.67	22	1.61	17.0	-	-	-	-	-	-
10	1.78	33	1.67	22	1.62	17.9	-	-	-	-	-	-
N	1.77	32	1.66	21	1.62	17.9	-	*15	-	*20	-	*15
2	1.75	30	1.65	20	1.61	17.0	-	-	-	-	-	-
4	1.75	30	1.64	19.6	1.62	17.9	-	-	-	-	-	-
6	1.73	28	1.64	19.6	1.61	17.0	-	-	-	-	-	-
8	1.71	26	1.64	19.6	1.59	15.4	-	-	-	-	-	-
10	1.69	24	1.63	18.7	1.58	14.7	-	-	-	-	-	-
M	1.68	23	1.62	17.9	1.58	14.7	-	-	-	-	-	-

Supplemental records.- Sept. 21, 7:30 p.m., 6.70 ft., 1,590 sec.-ft.

* Estimated mean for the day.

Rahway River at Rahway, N. J.

Location.- Water-stage recorder, lat. 40°37'05", long. 74°17'00", 100 feet above St. George Avenue Bridge, Rahway, Union County, 1 mile above mouth of Robinsons Branch of Rahway River. Zero of gage is 8.63 feet above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 40.9 square miles; affected by diversions for municipal use.

Gage-height record.- Water-stage recorder graph except for periods Sept. 1 to 7 a.m. Sept. 20 and Sept. 27.

Stage-discharge relation.- Defined by current-meter measurements below 500 second-feet; extended to peak stage by logarithmic plotting and study of laboratory rating of control having similar cross section.

Maxima.- September 1938: Discharge, 1,780 second-feet 6-7 a.m. Sept. 22 (gage height, 4.94 feet).

1908-15, 1921 to August 1938: Discharge, 3,140 second-feet July 24, 1938 (gage height, 6.35 feet).

Remarks.- For periods of missing gage-height record, discharge computed on basis of recorded range of stage and record near Springfield. Mean monthly discharge and run-off, in inches, adjusted for diversions. Mean monthly diversions were: September, 19.2 second-feet; October, 18.3 second-feet.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	*30	23	9	*10	21	17	*10	14.5	25	60	30
2	*15	22	10	*10	19.2	18	*15	19.2	26	33	20
3	*14	19.2	11	*11	17.1	19	*130	15.2	27	*26	19.5
4	*13	19.2	12	*12	18.1	20	*260	15.2	28	40	33
5	*13	19.2	13	*13	19.2	21	897	35	29	28	26
6	*13	21	14	*12	19.2	22	1,380	24	30	24	19.7
7	*12	50	15	*11	16.1	23	340	18.1	31		18.1
8	*11	27	16	*10	16.1	24	89	18.1			
Mean monthly discharge, in second-feet (observed)										118	21.7
Mean monthly discharge, in second-feet (adjusted)										137	40.0
Run-off, in inches (adjusted)										3.74	1.13

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1							2.74	377	4.56	1,470	3.40	703
2							2.68	352	4.66	1,550	3.31	654
3							2.63	331	4.77	1,640	3.22	606
4							2.62	327	4.84	1,690	3.13	559
5						*190	2.62	327	4.90	1,740	3.04	515
6							2.68	352	4.94	1,780	2.97	481
7							2.74	377	4.94	1,780	2.89	444
8					2.41	247	2.84	421	4.92	1,760	2.80	403
9					2.48	273	2.94	467	4.88	1,720	2.72	369
10					2.63	331	3.06	524	4.80	1,660	2.66	344
11					2.54	296	3.20	595	4.74	1,610	2.60	319
N		*15		*130	2.48	273	3.34	670	4.64	1,530	2.54	296
1					2.45	262	3.54	782	4.57	1,480	2.48	273
2					2.43	254	3.91	1,010	4.47	1,410	2.42	250
3					2.43	254	4.28	1,270	4.37	1,330	2.37	232
4					2.44	258	4.60	1,500	4.27	1,260	2.31	212
5					2.48	273	4.81	1,670	4.17	1,190	2.26	195
6					2.52	288	4.84	1,690	4.07	1,120	2.21	179
7					2.55	300	4.80	1,660	3.96	1,040	2.16	164
8					2.56	303	4.74	1,610	3.86	976	2.12	153
9					2.60	319	4.64	1,530	3.76	914	2.09	144
10					2.63	331	4.54	1,460	3.66	853	2.06	137
11					2.71	364	4.48	1,410	3.57	800	2.03	129
M					2.75	382	4.50	1,430	3.48	748	2.00	121
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.95	110	1.78	73	1.65	50			*1.49	*26	1.55	34
4	1.92	103	1.77	71	1.62	44			1.53	31	1.54	33
6	1.89	96	1.75	68	1.61	43			1.60	41	1.52	30
8	1.86	90	1.72	62	1.59	40			1.66	51	1.51	28
10	1.84	85	1.71	60	1.60	41			1.67	53	1.51	28
N	1.84	85	1.71	60	1.56	35		*26	1.66	51	1.50	27
2	1.83	83	1.69	56	1.54	33			1.64	48	1.50	27
4	1.83	83	1.68	55	1.45	21			1.60	41	1.49	26
6	1.83	83	1.68	55	1.44	20			1.59	40	1.49	26
8	1.82	81	1.67	53	1.43	19.2			1.57	37	1.49	26
10	1.81	79	1.66	51	1.42	18.1			1.56	35	1.48	25
M	1.79	75	1.65	50	1.41	17.1			1.55	34	1.48	25

Supplemental records.- Sept. 26, 9 a.m., 1.57 ft., 37 sec.-ft.; 9:30 a.m., 1.64 ft., 48 sec.-ft.; 1:30 p.m., 1.70 ft., 58 sec.-ft.

* Estimated mean for the period.

South Branch of Raritan River near High Bridge, N. J.

Location.- Water-stage recorder, lat. 40°40'40", long. 74°52'51", 1 mile above High Bridge, Hunterdon County, and 4 miles above mouth of Spruce Run. Zero of gage is 282.10 feet above mean sea level (New Jersey Geological Survey benchmark).
Drainage area.- 65.3 square miles; not affected by storage.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,600 second-feet; extended to peak stage by logarithmic plotting.
Maxima.- September 1938: Discharge, 2,650 second-feet 11 p.m. Sept. 21 (gage height, 10.17 feet).
1919 to August 1938: Discharge, about 3,600 second-feet Feb. 2, 1922 (gage height, 10.97 feet).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	91	115	9	48	93	17	50	76	25	178	174
2	65	108	10	48	91	18	52	74	26	154	104
3	62	102	11	50	87	19	80	72	27	146	93
4	58	100	12	45	84	20	553	76	28	139	95
5	55	95	13	50	82	21	1,130	147	29	129	95
6	51	106	14	50	80	22	983	96	30	121	86
7	50	150	15	56	79	23	299	82	31		80
8	51	108	16	56	77	24	221	137			
Mean monthly discharge, in second-feet										171	98.2
Run-off, in inches										2.92	1.73

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	5.97	48	6.05	59	7.08	299	7.52	479	10.02	2,470	7.23	355
2	5.97	48	5.98	50	7.20	343	7.52	479	9.87	2,310	7.21	347
3	5.97	48	5.91	41	7.30	383	7.57	503	9.65	2,060	7.19	339
4	5.97	48	5.87	37	7.45	448	7.63	532	9.45	1,860	7.17	332
5	5.97	48	5.97	48	7.67	551	7.65	542	9.22	1,630	7.16	328
6	5.98	50	6.01	53	7.80	617	7.64	537	9.01	1,440	7.14	321
7	5.99	51	6.01	53	7.90	670	7.59	512	8.81	1,270	7.14	321
8	5.99	51	6.02	55	7.98	714	7.56	498	8.58	1,090	7.13	317
9	5.99	51	6.03	56	8.00	725	7.55	494	8.35	931	7.12	313
10	5.99	51	6.04	58	8.04	748	7.57	503	8.11	788	7.11	310
11	5.99	51	6.08	63	8.06	759	7.67	551	7.92	681	7.09	303
N	5.99	51	6.10	66	8.07	765	7.92	681	7.78	607	7.09	303
1	5.99	51	6.12	69	8.05	754	8.20	840	7.68	556	7.09	303
2	5.99	51	6.11	68	8.00	725	8.54	1,060	7.63	532	7.08	299
3	5.99	51	6.11	68	7.92	681	8.91	1,350	7.58	508	7.08	299
4	5.99	51	6.22	86	7.79	612	9.26	1,670	7.54	489	7.07	296
5	6.00	52	6.21	84	7.63	532	9.29	1,700	7.49	466	7.05	289
6	6.00	52	6.24	89	7.54	489	9.31	1,720	7.44	443	7.04	286
7	6.00	52	6.34	108	7.42	434	9.39	1,800	7.42	434	6.99	269
8	6.00	52	6.30	100	7.36	408	9.55	1,960	7.38	417	6.99	269
9	6.00	52	6.40	119	7.38	417	9.85	2,280	7.34	400	6.97	263
10	6.15	74	6.56	152	7.42	434	10.10	2,570	7.30	383	6.95	256
11	6.13	71	6.73	193	7.52	479	10.17	2,650	7.27	371	6.94	253
M	6.08	63	6.90	241	7.53	484	10.13	2,610	7.25	363	6.93	250
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.91	244	6.71	188	6.60	161	6.53	146	6.51	141	6.45	129
4	6.89	238	6.70	185	6.59	159	6.53	146	6.51	141	6.45	129
6	6.88	235	6.69	183	6.59	159	6.53	146	6.51	141	6.45	129
8	6.86	229	6.68	180	6.59	159	6.53	146	6.51	141	6.45	129
10	6.85	226	6.68	180	6.60	161	6.53	146	6.53	146	6.46	131
N	6.84	224	6.67	178	6.57	154	6.53	146	6.52	143	6.45	129
2	6.81	215	6.66	175	6.57	154	6.53	146	6.48	135	6.45	129
4	6.80	212	6.65	173	6.58	157	6.52	143	6.49	137	6.45	129
6	6.77	204	6.64	171	6.55	150	6.55	150	6.50	139	6.44	127
8	6.75	198	6.63	168	6.55	150	6.52	143	6.46	131	6.42	123
10	6.74	196	6.61	163	6.55	150	6.52	143	6.46	131	6.42	123
M	6.72	190	6.60	161	6.54	148	6.52	143	6.46	131	6.42	123

South Branch of Raritan River at Stanton, N. J.

Location.- Water-stage recorder, lat. 40°34'21", long. 74°52'10", at highway bridge near Stanton railroad station, Reading Township, Hunterdon County, and half a mile above mouth of Prescott Brook. Zero of gage is 125.01 feet above mean sea level (general adjustment of 1929).

Drainage area.- 147 square miles; not materially affected by artificial storage.

Gage-height record.- Water-stage recorder graph except for period 6 to 11 p.m. Sept. 19, when gage heights were based on study of stage graphs at stations on the North Branch of Raritan River.

Stage-discharge relation.- Defined by current-meter measurements below 1,200 second-feet; extended to peak stage on basis of average discharge determined by slope-area method and computation of flow over dams.

Maxima.- September 1938: Discharge, 8,130 second-feet 7:30 p.m. Sept. 21 (gage height, 10.72 feet).

1903-6, 1919 to August 1938: Discharge, about 8,280 second-feet (revised) July 9, 1935 (gage height, 10.80 feet).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	180	256	9	94	204	17	94	150	25	413	372
2	138	234	10	92	193	18	96	148	26	351	219
3	114	219	11	90	182	19	165	148	27	406	193
4	105	210	12	96	168	20	1,410	152	28	376	190
5	103	202	13	101	160	21	3,410	306	29	292	190
6	103	236	14	99	168	22	2,380	190	30	272	174
7	99	358	15	103	158	23	770	160	31		163
8	96	234	16	114	150	24	535	314			
Mean monthly discharge, in second-feet										423	206
Run-off, in inches										3.21	1.61

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.42	90	2.49	105	3.37	371	5.89	1,980	8.67	4,810	4.38	916
2	2.43	92	2.50	107	3.70	520	6.06	2,110	8.28	4,300	4.34	890
3	2.43	92	2.50	107	4.40	929	6.08	2,120	8.08	4,060	4.31	870
4	2.43	92	2.51	109	4.95	1,300	5.87	1,970	8.01	3,970	4.28	851
5	2.43	92	2.55	118	5.45	1,660	5.45	1,660	7.98	3,940	4.26	839
6	2.43	92	2.57	123	5.75	1,880	5.10	1,410	7.86	3,790	4.24	826
7	2.43	92	2.57	123	6.00	2,060	4.89	1,260	7.66	3,570	4.21	807
8	2.43	92	2.57	123	6.13	2,160	4.80	1,200	7.37	3,260	4.19	795
9	2.43	92	2.56	121	6.14	2,170	4.76	1,170	7.00	2,890	4.17	783
10	2.43	92	2.54	116	6.04	2,090	4.75	1,160	6.60	2,540	4.15	770
11	2.44	94	2.52	112	5.85	1,950	4.85	1,240	6.27	2,280	4.14	764
N	2.46	99	2.59	128	5.58	1,750	5.17	1,460	5.95	2,020	4.12	752
1	2.47	101	2.63	138	5.35	1,580	5.78	1,900	5.64	1,790	4.11	746
2	2.47	101	2.64	140	5.20	1,480	6.75	2,660	5.35	1,580	4.10	740
3	2.47	101	2.66	145	5.09	1,400	7.62	3,520	5.12	1,420	4.08	728
4	2.46	99	2.67	148	5.01	1,350	8.26	4,280	4.95	1,300	4.07	722
5	2.45	96	2.75	168	4.92	1,280	8.90	5,130	4.83	1,220	4.05	710
6	2.46	99	*3.05	256	4.84	1,230	9.89	6,630	4.74	1,160	4.03	699
7	2.47	101	*3.30	343	4.75	1,160	10.62	7,940	4.65	1,100	4.01	687
8	2.47	101	*3.28	336	4.67	1,110	10.71	8,110	4.60	1,060	3.99	675
9	2.47	101	*3.11	275	4.66	1,100	10.46	7,650	4.55	1,030	3.97	664
10	2.48	103	*2.98	234	4.76	1,170	10.02	6,860	4.49	989	3.95	653
11	2.48	103	*2.97	231	5.04	1,370	9.55	6,080	4.45	962	3.93	642
M	2.49	105	3.11	275	5.55	1,720	9.09	5,400	4.41	936	3.90	625
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.86	603	3.55	449	3.36	367	*3.26	328	3.64	491	3.20	306
4	3.83	587	3.53	440	3.35	363	3.25	324	3.49	422	3.19	303
6	3.80	571	3.51	431	3.34	359	3.24	321	3.41	387	3.18	299
8	3.78	561	3.50	426	3.33	355	3.23	317	3.36	367	3.17	296
10	3.76	551	3.48	417	3.32	351	3.23	317	3.33	355	3.17	296
N	3.74	540	3.47	413	3.32	351	3.23	317	3.33	355	3.17	296
2	3.71	525	3.46	409	3.32	351	3.23	317	3.37	371	3.17	296
4	3.69	515	3.44	400	3.31	347	3.23	317	3.30	343	3.15	289
6	3.65	496	3.42	392	3.30	343	3.48	417	3.27	332	3.15	289
8	3.61	477	3.40	383	3.28	336	4.32	877	3.23	317	3.14	286
10	3.59	467	3.38	375	3.27	332	3.91	631	3.22	313	3.12	279
M	3.56	454	3.37	371	3.26	328	3.90	625	3.21	310	3.12	279

* Estimated.

Supplemental records.- Sept. 21, 7:30 p.m., 10.72 ft., 8,130 sec.-ft.

Raritan River at Manville, N. J.

Location.- Water-stage recorder, lat. 40°33'18", long. 74°35'02", at highway bridge, Manville, Somerset County, and 1¼ miles above mouth of Millstone River. Zero of gage is 20.61 feet above mean sea level (general adjustment of 1929).
Drainage area.- 490 square miles.
Gage-height record.- Water-stage recorder graph except for period 10 p.m. Sept. 21 to 3 p.m. Sept. 24, record for which was based on floodmark, hourly gage heights at pump house of Johns-Manville Co. 10 p.m. Sept. 21 to noon Sept. 22, and comparison with readings of a gage at Somerville.
Stage-discharge relation.- Defined by current-meter measurements below 14,000 second-feet; extended to peak stage on basis of determination of flood flow by slope-area method.
Maxima.- September 1938: Discharge, 36,100 second-feet about 2 a.m. Sept. 22 (gage height, 20.42 feet, from floodmark).
1903-7, 1921 to August 1938: Discharge, 26,000 second-feet July 23, 1938 (gage height, 17.75 feet).
Remarks.- Discharge for Sept. 21 to 24 based on gage-height graph obtained as explained above and verified by comparison with sum of discharges of South Branch of Raritan River at Stanton, North Branch of Raritan River at Milltown, and Neshanic River at Reaville.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	223	681	9	149	537	17	165	352	25	1,380	1,060
2	263	597	10	142	489	18	149	329	26	1,080	597
3	203	537	11	142	452	19	688	329	27	1,080	498
4	188	498	12	153	434	20	6,060	336	28	1,870	471
5	179	462	13	153	400	21	12,100	607	29	860	537
6	149	489	14	161	400	22	21,600	517	30	735	489
7	157	968	15	153	400	23	3,760	384	31		434
8	161	660	16	170	376	24	2,200	416			
Mean monthly discharge, in second-feet										1,882	508
Run-off, in inches										4.28	1.20

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.04	146	4.08	161	6.07	2,490	8.81	5,420	20.35	35,800	9.15	5,920
2	4.02	138	4.07	157	5.89	2,220	9.33	6,200	20.42	36,100	8.8	5,400
3	4.01	134	4.07	157	5.90	2,240	9.80	6,930	20.15	35,000	8.4	4,860
4	4.00	130	4.07	157	6.37	2,870	10.08	7,380	19.9	34,000	8.15	4,560
5	4.00	130	4.07	157	7.15	3,590	10.26	7,670	19.55	32,500	7.9	4,300
6	4.00	130	4.07	157	8.00	4,400	10.40	7,910	19.15	31,100	7.7	4,100
7	4.00	130	4.07	157	8.90	5,550	10.44	7,980	18.7	29,400	7.55	3,950
8	4.02	138	4.09	165	9.55	6,530	10.39	7,890	18.4	28,300	7.4	3,810
9	4.05	149	4.12	179	9.94	7,150	10.25	7,680	17.9	26,500	7.25	3,680
10	4.06	153	4.14	188	10.21	7,590	10.07	7,360	17.4	24,800	7.15	3,590
11	4.07	157	4.15	193	10.47	8,030	9.95	7,170	16.9	23,200	7.05	3,520
N	4.07	157	4.18	207	10.75	8,500	9.88	7,060	16.3	21,300	6.95	3,440
1	4.07	157	4.20	218	10.98	8,900	10.05	7,330	15.6	19,200	6.85	3,380
2	4.07	157	4.23	235	11.13	9,170	10.50	8,080	15.1	17,800	6.8	3,340
3	4.07	157	4.35	309	11.21	9,320	11.20	9,300	14.5	16,600	6.7	3,270
4	4.07	157	4.36	316	11.14	9,190	12.06	10,900	13.9	15,100	6.65	3,220
5	4.07	157	4.39	336	10.90	8,760	13.20	13,400	13.3	13,600	6.6	3,180
6	4.07	157	4.41	352	10.42	7,940	14.30	16,100	12.75	12,400	6.55	3,140
7	4.07	157	4.62	537	9.80	6,930	15.40	18,600	12.15	11,100	6.5	3,100
8	4.08	161	5.50	1,640	9.18	5,970	16.48	21,800	11.6	10,000	6.4	3,000
9	4.09	165	6.30	2,780	8.68	5,230	17.50	25,200	11.05	9,030	6.4	3,000
10	4.10	170	6.57	3,080	8.32	4,760	18.9	30,100	10.55	8,160	6.3	2,890
11	4.10	170	6.51	3,020	8.20	4,610	19.5	32,400	10.05	7,330	6.3	2,890
M	4.09	165	6.31	2,790	8.36	4,810	20.1	34,800	9.55	6,530	6.25	2,830
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.15	2,710	5.36	1,560	5.07	1,160	4.92	968	7.75	4,150	4.89	931
4	6.1	2,650	5.32	1,510	5.05	1,140	4.90	943	6.90	3,410	4.86	896
6	6.0	2,520	5.29	1,470	5.03	1,110	4.90	943	5.95	2,440	4.85	884
8	5.9	2,370	5.27	1,440	5.03	1,110	4.89	931	5.53	1,820	4.84	872
10	5.85	2,300	5.25	1,410	5.02	1,100	4.88	919	5.31	1,490	4.84	872
N	5.8	2,220	5.22	1,370	5.00	1,070	4.91	956	5.18	1,310	4.82	849
2	5.7	2,070	5.19	1,330	5.00	1,070	4.95	1,010	5.10	1,200	4.82	849
4	5.64	1,980	5.17	1,300	4.99	1,060	4.80	825	5.04	1,120	4.81	837
6	5.57	1,880	5.15	1,270	4.98	1,040	4.86	896	5.00	1,070	4.79	814
8	5.53	1,820	5.13	1,240	4.97	1,030	4.89	931	5.00	1,070	4.78	803
10	5.46	1,710	5.11	1,210	4.94	994	5.07	1,160	4.92	968	4.78	803
M	5.40	1,620	5.09	1,190	4.93	981	7.25	3,680	4.90	943	4.76	780

Supplemental records.- Sept. 20, 3:20 p.m., 11.24 ft., 9,370 sec.-ft. Sept. 28, 1:30 a.m., 7.82 ft., 4,220 sec.-ft.

227907 O—40——21

Neshanic River at Reaville, N. J.

Location.- Water-stage recorder, lat. 40°28'18", long. 74°49'42", at highway bridge half a mile southwest of Reaville, Hunterdon County.
Drainage area.- 25.7 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,700 second-feet; extended to peak stage by logarithmic plotting.
Maxima.- September 1938: Discharge, about 4,300 second-feet 4:30 p.m. Sept. 21 (gage height, 10.74 feet).
1930 to August 1938: Discharge, about 4,370 second-feet Aug. 23, 1933 (gage height, 10.80 feet).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	5.0	27	9	2.3	18.5	17	2.1	8.9	25	33	30
2	3.4	20	10	2.1	16.7	18	2.3	8.2	26	26	18.5
3	3.0	16.7	11	2.1	14.4	19	154	7.5	27	315	16.7
4	2.7	14.4	12	2.1	13.3	20	727	8.2	28	78	23
5	2.4	12.8	13	2.1	12.3	21	1,480	16.2	29	43	34
6	2.3	32	14	2.4	11.4	22	174	9.3	30	33	25
7	2.3	41	15	2.4	10.5	23	76	8.2	31		22
8	2.6	23	16	2.3	9.7	24	48	40			
Mean monthly discharge, in second-feet										108	18.4
Run-off, in inches										4.69	.83

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.31	2.1	2.33	2.4	5.23	724	5.38	786	4.32	356	3.41	92
2	2.31	2.1	2.33	2.4	6.12	1,110	4.84	568	4.21	313	3.40	90
3	2.31	2.1	2.33	2.4	6.40	1,250	4.47	418	4.13	283	3.40	90
4	2.31	2.1	2.33	2.4	6.73	1,420	4.27	336	4.06	258	3.39	88
5	2.31	2.1	2.33	2.4	6.80	1,460	4.13	283	3.99	235	3.39	88
6	2.31	2.1	2.33	2.4	6.88	1,500	4.05	255	3.93	216	3.38	87
7	2.32	2.3	2.33	2.4	6.92	1,520	4.00	238	3.88	201	3.38	87
8	2.32	2.3	2.34	2.6	6.17	1,140	3.98	232	3.84	190	3.37	85
9	2.32	2.3	2.34	2.6	5.60	880	4.08	265	3.80	178	3.36	84
10	2.32	2.3	2.34	2.6	4.90	592	4.50	431	3.77	170	3.35	82
11	2.32	2.3	2.36	3.0	4.40	389	5.90	1,020	3.73	160	3.34	80
N	2.32	2.3	2.54	7.8	4.15	290	7.52	1,870	3.70	152	3.32	77
1	2.32	2.3	3.62	134	3.97	229	8.52	2,520	3.66	143	3.31	76
2	2.32	2.3	5.14	688	3.82	184	9.12	2,960	3.63	136	3.30	74
3	2.32	2.3	5.52	846	3.73	160	10.08	3,710	3.60	129	3.27	70
4	2.32	2.3	5.06	656	3.64	138	10.62	4,190	3.57	123	3.26	68
5	2.33	2.4	4.47	418	3.58	125	10.64	4,210	3.54	116	3.24	66
6	2.33	2.4	3.98	232	3.54	116	9.90	3,570	3.51	110	3.22	63
7	2.33	2.4	3.65	140	3.68	147	8.94	2,820	3.49	106	3.21	61
8	2.33	2.4	3.48	104	4.16	294	8.06	2,210	3.47	103	3.20	60
9	2.33	2.4	3.38	87	5.78	961	6.05	1,080	3.46	101	3.19	59
10	2.33	2.4	3.40	90	6.62	1,360	5.03	644	3.44	97	3.18	58
11	2.33	2.4	3.90	207	6.60	1,350	4.67	500	3.43	95	3.17	56
M	2.33	2.4	4.60	472	6.00	1,060	4.46	414	3.42	94	3.17	56
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.16	55	2.99	37	2.88	27	2.82	23	3.63	136	3.09	47
4	3.15	54	2.99	37	2.88	27	2.82	23	3.48	104	3.09	47
6	3.14	53	2.98	36	2.88	27	2.82	23	3.39	88	3.08	46
8	3.14	53	2.98	36	2.88	27	2.82	23	3.33	79	3.07	45
10	3.13	52	2.97	35	2.88	27	2.82	23	3.29	73	3.06	44
N	3.12	50	2.96	34	2.88	27	2.82	23	3.26	68	3.05	43
2	3.10	48	2.94	33	2.87	27	2.81	22	3.21	61	3.04	42
4	3.08	46	2.92	31	2.86	26	2.81	22	3.17	56	3.02	40
6	3.05	43	2.91	30	2.84	24	3.84	190	3.14	53	3.01	39
8	3.02	40	2.90	29	2.82	23	7.60	1,920	3.12	50	3.00	38
10	3.01	39	2.89	28	2.82	23	6.40	1,250	3.11	49	2.99	37
M	3.00	38	2.88	27	2.82	23	4.05	255	3.10	48	2.99	37

Supplemental records.- Sept. 19, 9:45 p.m., 3.35 ft., 82 sec.-ft. Sept. 20, 4:40 a.m., 6.82 ft., 1,470 sec.-ft.; 6:40 a.m., 6.98 ft., 1,550 sec.-ft.; 10:30 p.m., 6.70 ft., 1,400 sec.-ft. Sept. 21, 4:30 p.m., 10.74 ft., 4,300 sec.-ft.; 8:30 p.m., 7.66 ft., 1,960 sec.-ft.

North Branch of Raritan River near Far Hills, N. J.

Location.- Water-stage recorder, lat. 40°42'27", long. 74°38'20", at Ravine Lake dam 2 miles north of Far Hills, Somerset County, and 2 miles above mouth of Peapack Brook. Zero of gage is 224.49 feet above mean sea level (New Jersey Geological Survey benchmark).

Drainage area.- 26.2 square miles; not materially affected by storage.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 500 second-feet; extended to peak stage by weir formula based on current-meter measurements.

Maxima.- September 1938: Discharge, 2,700 second-feet 8 p.m. Sept. 21 (gage height, 5.31 feet).

1922 to August 1938: Discharge, about 2,630 second-feet Sept. 30, 1934 (gage height, 5.24 feet).

Stage of 7.6 feet, from authentic floodmark, reached on July 23, 1919 (discharge, about 7,000 second-feet).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	34	65	9	24	44	17	22	37	25	122	62
2	30	55	10	24	40	18	23	35	26	105	42
3	27	49	11	23	38	19	96	34	27	92	37
4	27	46	12	22	38	20	310	37	28	88	38
5	26	46	13	24	37	21	793	72	29	79	37
6	23	55	14	24	37	22	316	40	30	68	34
7	24	80	15	24	37	23	151	34	31		32
8	24	49	16	24	37	24	136	58			
Mean monthly discharge, in second-feet										93.5	44.6
Run-off, in inches										3.98	1.96

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.11	22	2.13	24	2.71	228	2.65	196	3.36	661	2.58	160
2	2.11	22	2.13	24	2.81	284	2.72	233	3.22	556	2.58	160
3	2.11	22	2.13	24	2.89	332	2.75	250	3.13	491	2.58	160
4	2.12	23	2.13	24	2.98	389	2.75	250	3.06	443	2.58	160
5	2.12	23	2.13	24	3.13	491	2.74	244	3.01	409	2.58	160
6	2.12	23	2.13	24	3.22	556	2.71	228	2.98	389	2.58	160
7	2.12	23	2.13	24	3.22	556	2.68	212	2.95	370	2.58	160
8	2.12	23	2.13	24	3.23	563	2.65	196	2.92	351	2.58	160
9	2.12	23	2.13	24	3.21	548	2.64	191	2.90	338	2.58	160
10	2.12	23	2.13	24	3.13	491	2.63	186	2.88	326	2.58	160
11	2.12	23	2.13	24	3.04	429	2.63	186	2.85	308	2.57	156
N	2.12	23	2.13	24	2.95	370	2.66	201	2.79	272	2.56	151
1	2.12	23	2.17	27	2.87	320	2.74	244	2.73	239	2.56	151
2	2.12	23	2.28	42	2.80	278	2.93	357	2.70	222	2.55	146
3	2.12	23	2.48	113	2.73	239	3.25	578	2.68	212	2.55	146
4	2.12	23	2.72	233	2.67	206	3.66	911	2.66	201	2.55	146
5	2.12	23	2.77	261	2.61	175	4.18	1,400	2.65	196	2.55	146
6	2.12	23	2.77	261	2.57	156	4.74	2,020	2.64	191	2.55	146
7	2.13	24	2.74	244	2.54	141	5.21	2,580	2.63	186	2.55	146
8	2.13	24	2.70	222	2.53	136	5.31	2,700	2.62	180	2.55	146
9	2.13	24	2.66	201	2.52	132	4.95	2,270	2.61	175	2.55	146
10	2.13	24	2.64	191	2.52	132	4.40	1,640	2.60	170	2.55	146
11	2.13	24	2.62	180	2.52	132	3.98	1,200	2.59	165	2.55	146
M	2.13	24	2.62	180	2.58	160	3.62	875	2.59	165	2.55	146
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.55	146	2.51	127	2.48	113	2.43	92	2.43	92	2.41	83
4	2.54	141	2.51	127	2.48	113	2.43	92	2.43	92	2.41	83
6	2.54	141	2.50	122	2.47	109	2.43	92	2.43	92	2.41	83
8	2.54	141	2.50	122	2.47	109	2.43	92	2.43	92	2.40	79
10	2.53	136	2.50	122	2.47	109	2.43	92	2.42	88	2.40	79
N	2.53	136	2.50	122	2.47	109	2.43	92	2.41	83	2.39	75
2	2.53	136	2.50	122	2.46	105	2.43	92	2.41	83	2.39	75
4	2.52	132	2.50	122	2.46	105	2.43	92	2.41	83	2.39	75
6	2.51	127	2.49	118	2.46	105	2.43	92	2.41	83	2.39	75
8	2.51	127	2.49	118	2.45	100	2.43	92	2.41	83	2.39	75
10	2.51	127	2.48	113	2.44	96	2.43	92	2.41	83	2.39	75
M	2.51	127	2.48	113	2.44	96	2.43	92	2.41	83	2.39	75

North Branch of Raritan River at Milltown, N. J.

Location.- Water-stage recorder, lat. 40°34'10", long. 74°40'45", at Milltown, Somerset County, 1½ miles upstream from junction of North and South Branches of Raritan River. Zero of gage is 50.43 feet above mean sea level (general adjustment of 1929).
Drainage area.- 190 square miles; not materially affected by storage.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,100 second-feet; extended to peak stage on basis of determinations of flood flow by slope-area method.
Maxima.- September 1938: Discharge, 16,500 second-feet 8:40 p.m. Sept. 21 (gage height, 12.16 feet).
1923 to August 1938: Discnarge, 14,400 second-feet Jan. 3, 1936 (gage height, 11.35 feet, from floodmark).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	137	244	9	85	195	17	85	154	25	535	346
2	119	216	10	85	185	18	91	154	26	428	216
3	106	206	11	82	175	19	516	150	27	372	195
4	106	195	12	85	171	20	3,130	154	28	342	195
5	99	185	13	88	167	21	7,040	272	29	286	200
6	93	206	14	91	167	22	3,340	185	30	262	180
7	88	328	15	93	162	23	977	162	31		171
8	96	211	16	96	158	24	722	265			
Mean monthly discharge, in second-feet										656	199
Run-off, in inches										3.85	1.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.76	88	2.79	96	4.55	1,780	6.05	3,240	10.57	12,100	4.01	1,090
2	2.75	85	2.79	96	5.20	2,560	6.12	3,280	9.98	10,400	4.00	1,080
3	2.74	82	2.79	96	6.00	3,200	5.93	3,160	9.32	8,820	3.99	1,070
4	2.74	82	2.79	96	6.57	3,670	5.57	2,910	8.60	7,190	3.98	1,060
5	2.74	82	2.79	96	7.00	4,170	5.15	2,500	7.60	5,190	3.97	1,050
6	2.75	85	2.79	96	7.31	4,680	4.83	2,140	6.45	3,560	3.96	1,030
7	2.77	91	2.79	96	7.53	5,060	4.65	1,900	5.55	2,890	3.95	1,020
8	2.77	91	2.79	96	7.70	5,380	4.58	1,810	5.00	2,340	3.95	1,020
9	2.78	93	2.80	99	7.84	5,650	4.58	1,810	4.70	1,970	3.95	1,020
10	2.78	93	2.80	99	7.92	5,800	4.66	1,920	4.56	1,790	3.94	1,010
11	2.78	93	2.80	99	7.86	5,680	5.10	2,450	4.47	1,670	3.93	1,000
N	2.78	93	2.82	106	7.45	4,920	5.95	3,170	4.41	1,590	3.92	989
1	2.78	93	2.92	141	6.30	3,420	7.10	4,330	4.37	1,540	3.92	989
2	2.78	93	2.99	171	5.10	2,450	7.95	5,860	4.34	1,510	3.91	977
3	2.78	93	3.11	232	4.59	1,830	8.55	7,080	4.29	1,450	3.89	955
4	2.78	93	3.50	535	4.37	1,540	9.45	9,130	4.24	1,380	3.88	943
5	2.78	93	4.35	1,520	4.22	1,360	10.40	11,600	4.20	1,330	3.87	932
6	2.78	93	4.53	1,750	4.10	1,200	11.14	13,700	4.17	1,290	3.85	910
7	2.78	93	4.43	1,620	4.03	1,120	11.70	15,300	4.13	1,240	3.84	898
8	2.78	93	4.25	1,400	4.06	1,150	12.05	16,200	4.11	1,210	3.82	876
9	2.78	93	4.10	1,200	4.28	1,430	12.08	16,300	4.08	1,180	3.80	853
10	2.78	93	4.00	1,080	4.70	1,970	11.85	15,600	4.06	1,150	3.79	842
11	2.78	93	3.94	1,010	5.27	2,630	11.50	14,700	4.04	1,130	3.78	831
M	2.78	93	4.05	1,140	5.78	3,070	11.08	13,500	4.02	1,100	3.77	820
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.75	798	3.56	596	3.42	456	3.33	380	3.33	380	3.22	300
4	3.74	787	3.55	586	3.42	456	3.33	380	3.33	380	3.21	293
6	3.73	776	3.54	576	3.41	446	3.32	372	3.32	372	3.21	293
8	3.72	765	3.53	566	3.41	446	3.32	372	3.30	356	3.21	293
10	3.71	754	3.52	555	3.40	436	3.32	372	3.29	349	3.21	293
N	3.70	743	3.51	545	3.40	436	3.32	372	3.28	342	3.20	286
2	3.68	722	3.50	535	3.39	428	3.32	372	3.27	335	3.20	286
4	3.67	711	3.48	515	3.38	420	3.32	372	3.26	328	3.20	286
6	3.65	690	3.47	505	3.37	412	3.32	372	3.25	321	3.20	286
8	3.62	658	3.46	495	3.36	404	3.32	372	3.24	314	3.19	280
10	3.59	627	3.44	476	3.35	396	3.32	372	3.23	307	3.18	274
M	3.57	606	3.43	466	3.34	388	3.33	380	3.22	300	3.17	268

Supplemental records.- Sept. 21, 8:40 p.m., 12.16 ft., 16,500 sec.-ft.

Black River near Pottersville, N. J.

Location.- Water-stage recorder, lat. 40°43'39", long. 74°43'50", 1 mile above highway bridge at Pottersville, Somerset County, and 8 miles above mouth of Rockaway Creek. Zero of gage is 284.14 feet above mean sea level (New Jersey Geological Survey bench-mark).

Drainage area.- 32.8 square miles; slightly affected by storage in swampy area above station.

Gage-height record.- Water-stage recorder graph. Record missing Oct. 4-10.

Stage-discharge relation.- Defined by current-meter measurements below 200 second-feet; extended to peak stage on basis of laboratory rating of control having similar cross section.

Maxima.- September 1938: Discharge, about 760 second-feet 4:40 p.m. Sept. 21 (gage height, 3.97 feet).
1921 to August 1938: Discharge, about 1,600 second-feet Nov. 17, 1927 (gage height, 4.75 feet).

Remarks.- Discharge for period of missing gage-height record, Oct. 4-10, computed on basis of record of North Branch of Raritan River near Far Hills.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	32	64	9	18.8	*60	17	19.6	43	25	183	79
2	27	60	10	18.8	*55	18	20	42	26	144	68
3	26	59	11	18.0	54	19	62	42	27	116	66
4	25	*58	12	17.3	54	20	185	47	28	96	66
5	22	*56	13	18.8	52	21	323	62	29	79	64
6	20	*60	14	18.8	49	22	302	52	30	72	59
7	19.6	*75	15	19.6	48	23	263	49	31		54
8	19.6	*65	16	19.6	45	24	227	72			
Mean monthly discharge, in second-feet										81.1	57.4
Run-off, in inches										2.76	2.02

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.66	19.6	1.68	21	2.53	183	2.57	194	3.09	358	2.84	273
2	1.66	19.6	1.69	22	2.78	254	2.51	178	3.07	351	2.84	273
3	1.66	19.6	1.69	22	2.77	251	2.47	167	3.04	340	2.84	273
4	1.66	19.6	1.69	22	2.73	239	2.45	162	3.02	333	2.84	273
5	1.66	19.6	1.69	22	2.80	260	2.43	157	3.01	330	2.84	273
6	1.66	19.6	1.69	22	2.71	233	2.43	157	2.99	323	2.84	273
7	1.66	19.6	1.69	22	2.59	199	2.43	157	2.97	316	2.83	270
8	1.66	19.6	1.69	22	2.51	178	2.43	157	2.96	312	2.83	270
9	1.66	19.6	1.69	22	2.46	165	2.44	159	2.94	306	2.83	270
10	1.66	19.6	1.70	23	2.43	157	2.50	175	2.93	302	2.82	266
11	1.66	19.6	1.76	29	2.42	154	2.61	205	2.92	299	2.82	266
N	1.66	19.6	2.07	75	2.41	152	2.87	282	2.91	295	2.82	266
1	1.66	19.6	2.33	132	2.41	152	3.04	340	2.90	292	2.81	263
2	1.66	19.6	2.25	114	2.40	149	3.32	448	2.89	289	2.80	260
3	1.67	20	2.18	98	2.40	149	3.61	577	2.88	286	2.80	260
4	1.67	20	2.13	87	2.37	142	3.91	727	2.88	286	2.80	260
5	1.67	20	2.08	77	2.36	139	3.92	733	2.87	282	2.79	257
6	1.67	20	2.05	72	2.36	139	3.59	567	2.86	279	2.79	257
7	1.67	20	2.03	68	2.37	142	3.35	461	2.86	279	2.78	254
8	1.67	20	2.02	66	2.42	154	3.20	400	2.85	276	2.78	254
9	1.67	20	2.09	79	2.52	180	3.14	377	2.85	276	2.78	254
10	1.67	20	2.27	118	2.59	199	3.11	366	2.85	276	2.77	251
11	1.68	21	2.42	154	2.65	216	3.11	366	2.85	276	2.77	251
M	1.68	21	2.49	172	2.63	210	3.10	362	2.85	276	2.77	251
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.76	248	2.60	202	2.44	159	2.31	127	2.20	102	2.12	85
4	2.74	242	2.59	199	2.42	154	2.30	125	2.20	102	2.11	83
6	2.73	239	2.57	194	2.41	152	2.29	123	2.19	100	2.11	83
8	2.72	236	2.56	191	2.40	149	2.28	120	2.18	98	2.10	81
10	2.71	233	2.55	188	2.39	147	2.27	118	2.17	96	2.10	81
N	2.70	230	2.53	183	2.38	144	2.26	116	2.16	94	2.09	79
2	2.68	224	2.51	178	2.36	139	2.25	114	2.16	94	2.09	79
4	2.67	222	2.50	175	2.35	137	2.24	111	2.15	92	2.08	77
6	2.65	216	2.48	170	2.34	135	2.23	109	2.14	89	2.08	77
8	2.64	213	2.47	167	2.33	132	2.23	109	2.13	87	2.07	75
10	2.62	208	2.46	165	2.32	130	2.22	107	2.13	87	2.07	75
M	2.61	205	2.45	162	2.31	127	2.21	104	2.12	85	2.06	73

Supplemental records.- Sept. 20, 2:30 a.m., 2.82 ft., 266 sec.-ft. Sept. 21, 4:40 p.m., 3.97 ft., 760 sec.-ft.

* Estimated.

Lake Carnegie at Princeton, N. J.

Location.- Lat. 40°22'10", long. 74°37'20", at Kingston Dam on Millstone River, 2 miles northeast of Princeton, Mercer County.
Drainage area.- 159 square miles.
Gage-height record.- One gage reading daily at about 8 a.m.
Remarks.- Only contents above crest of spillway are given in table. Elevation of crest of lower spillway is zero gage height. Records furnished by Princeton University.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	0.26	2.73	0.50	5.24	16	0.26	2.73	0.36	3.78
2	.24	2.52	.46	4.82	17	.26	2.73	.36	3.78
3	.24	2.52	.44	4.61	18	.34	3.56	.38	3.98
4	.24	2.52	.44	4.61	19	.34	3.56	.36	3.78
5	.24	2.52	.42	4.40	20	1.12	11.74	.36	3.78
6	.24	2.52	.40	4.19	21	1.30	13.63	.38	3.98
7	.24	2.52	.54	5.66	22	3.21	33.66	.40	4.19
8	.24	2.52	.54	5.66	23	1.50	15.73	.38	3.98
9	.24	2.52	.52	5.45	24	.94	9.86	.38	3.98
10	.24	2.52	.50	5.24	25	.70	7.34	.44	4.61
11	.22	2.31	.46	4.82	26	.60	6.29	.44	4.61
12	.22	2.31	.42	4.40	27	.82	8.60	.44	4.61
13	.24	2.52	.42	4.40	28	.76	7.97	.44	4.61
14	.24	2.52	.38	3.98	29	.68	7.13	.48	5.03
15	.26	2.73	.36	3.78	30	.50	5.24	.50	5.24
					31			.52	5.45

	September	October
Gain or loss in storage, in millions of cubic feet.	+2.51	+0.21
Gain or loss in storage, in equivalent mean second-feet	+.97	+.08

Millstone River near Kingston, N. J.

Location.- Water-stage recorder, lat. 40°23'05", long. 74°37'29", at Princeton sewage disposal plant, 1 mile downstream from Heathcots Brook, Kingston, Middlesex County. Zero of gage is 38.00 feet above mean sea level (New Jersey Geological Survey bench-mark).

Drainage area.- 171 square miles; affected by storage in Lake Carnegie and by water diverted into basin from Delaware River in Delaware & Raritan Canal.

Gage-height record.- Water-stage recorder graph except for period 3 p.m. Sept. 21 to 10 p.m. Sept. 22 and 7 p.m. Sept. 25 to 11 a.m. Sept. 28.

Stage-discharge relation.- Defined by current-meter measurements below 2,100 second-feet; extended to peak stage on basis of study of run-off of Millstone River at Blackwells Mills, N. J.

Maxima.- September 1938: Discharge, 9,820 second-feet about 10 p.m. Sept. 21 (gage height, 14.12 feet, from floodmark).
1933 to August 1938: Discharge, 8,600 second-feet July 23, 1938 (gage height, 13.37 feet, from floodmark).

Remarks.- Discharge for periods of missing gage-height record, 3 p.m. Sept. 21 to 10 p.m. Sept. 22 and 7 p.m. Sept. 25 to 11 a.m. Sept. 28, computed on basis of flood-mark and record at Blackwells Mills. For information on storage see record for Lake Carnegie at Princeton, N. J.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	114	255	9	80	263	17	103	148	25	542	220
2	107	222	10	85	233	18	118	165	26	400	224
3	100	196	11	72	193	19	350	159	27	450	198
4	80	174	12	88	163	20	1,560	148	28	680	191
5	96	159	13	98	149	21	5,000	187	29	330	259
6	85	182	14	92	144	22	6,800	198	30	278	294
7	98	278	15	96	142	23	2,510	178	31		286
8	85	278	16	97	136	24	947	189			
Mean monthly discharge, in second-feet										718	200
Run-off, in inches										---	---

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.73	90	2.05	138	4.07	548	7.26	2,010	-	9,400	9.70	3,970
2	1.75	93	2.05	138	4.25	600	7.38	2,080	-	9,200	9.55	3,820
3	1.77	96	2.04	136	4.42	655	7.50	2,160	-	9,000	9.37	3,650
4	1.79	99	2.03	135	4.75	768	7.59	2,210	-	8,700	9.20	3,500
5	1.81	101	2.02	133	5.58	1,100	7.69	2,280	-	8,400	9.03	3,350
6	1.82	103	2.02	133	6.25	1,420	7.78	2,350	-	8,200	8.85	3,190
7	1.83	104	2.02	133	6.80	1,720	7.88	2,420	-	8,000	8.68	3,040
8	1.84	106	2.02	133	7.13	1,920	7.95	2,480	-	7,700	8.51	2,910
9	1.85	107	2.01	132	7.32	2,040	8.01	2,520	-	7,400	8.30	2,740
10	1.86	108	2.05	138	7.37	2,070	8.10	2,580	-	7,100	8.13	2,600
11	1.90	114	2.11	149	7.34	2,050	8.24	2,690	-	6,900	7.96	2,480
N	1.95	122	2.67	258	7.29	2,020	8.48	2,880	-	6,700	7.80	2,360
1	1.98	127	3.90	501	7.23	1,990	9.00	3,320	-	6,400	7.64	2,250
2	2.00	130	4.52	688	7.17	1,950	10.00	4,270	-	6,200	7.50	2,160
3	2.02	133	4.80	786	7.10	1,900	-	5,500	-	6,000	7.35	2,060
4	2.04	136	4.84	801	7.00	1,840	-	7,000	-	5,800	7.22	1,980
5	2.04	136	4.72	757	6.85	1,750	-	8,000	-	5,600	7.10	1,900
6	2.03	135	4.53	691	6.73	1,680	-	8,900	-	5,400	6.97	1,820
7	2.03	135	4.28	610	6.66	1,650	-	9,400	-	5,200	6.85	1,750
8	2.05	138	4.04	539	6.65	1,640	-	9,700	-	4,900	6.73	1,680
9	2.06	140	3.89	498	6.71	1,680	-	9,800	-	4,700	6.61	1,620
10	2.06	140	3.82	480	6.82	1,730	14.12	9,820	10.22	4,500	6.50	1,550
11	2.06	140	3.89	498	6.97	1,820	-	9,700	10.05	4,320	6.39	1,500
M	2.06	140	3.98	523	7.12	1,910	-	9,600	9.88	4,150	6.29	1,440
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.09	1,340	4.38	642	-	450	-	340	-	1,100	3.37	375
4	5.88	1,240	4.26	604	-	440	-	340	-	1,000	3.31	362
6	5.70	1,160	4.20	585	-	430	-	330	-	900	3.25	350
8	5.55	1,090	4.10	556	-	420	-	320	-	800	3.20	340
10	5.41	1,020	4.06	545	-	410	-	320	-	700	3.14	329
N	5.20	940	3.97	520	-	400	-	310	4.25	600	3.09	319
2	5.03	873	3.95	514	-	390	-	310	4.05	542	3.07	316
4	4.88	816	3.88	496	-	380	-	310	3.84	485	3.07	316
6	4.71	754	3.85	488	-	370	-	320	3.67	443	3.06	314
8	4.50	681	-	470	-	360	-	700	3.56	417	3.04	310
10	4.58	708	-	470	-	350	-	1,100	3.48	399	3.03	308
M	4.48	674	-	460	-	340	-	1,150	3.42	385	3.00	303

Millstone River at Blackwells Mills, N. J.

Location.- Water-stage recorder, lat. 40°28'30", long. 74°34'34", at highway bridge in Blackwells Mills, Somerset County, a quarter of a mile below mouth of Middlebrush Brook. Zero of gage is 26.97 feet above mean sea level (general adjustment of 1929).

Drainage area.- 258 square miles; affected by water diverted from Delaware River in Delaware & Raritan Canal.

Gage-height record.- Water-stage recorder graph except for period 7 p.m. Sept. 21 to 10 a.m. Sept. 22, record for which was based on floodmark and shape of available water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 4,000 second-feet; extended to peak stage on basis of average discharge obtained by slope-area determinations of flood flow.

Maxima.- September 1938: Discharge, about 18,300 second-feet about midnight Sept. 21 (gage height, 15.29 feet, from floodmark).
1921 to August 1938: Discharge, about 12,400 second-feet July 23, 1938 (gage height, 13.22 feet, from floodmark).

Remarks.- Delaware & Raritan Canal parallels river for some distance; canal loses water to river by leakage, seepage, and flow over spillways. Daily discharge also affected by storage in Lake Carnegie. For information on storage see record for Lake Carnegie at Princeton, N. J.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	145	399	9	112	399	17	125	235	25	917	268
2	138	337	10	112	362	18	135	240	26	614	258
3	135	302	11	109	322	19	594	235	27	622	231
4	112	273	12	103	273	20	2,260	217	28	1,450	217
5	112	263	13	125	249	21	7,860	268	29	554	363
6	125	308	14	116	240	22	13,500	249	30	457	399
7	119	554	15	122	235	23	5,130	213	31		362
8	112	457	16	122	226	24	2,160	213			
Mean monthly discharge, in second-feet										1,277	296
Run-off, in inches										---	---

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.79	135	1.86	160	3.29	964	7.43	3,260	15.28	18,200	10.83	7,590
2	1.79	135	1.86	160	3.25	942	7.55	3,360	15.26	18,200	10.65	7,280
3	1.78	132	1.87	164	3.28	959	7.68	3,480	15.21	18,000	10.43	6,920
4	1.77	128	1.87	164	3.47	1,060	7.76	3,560	15.15	17,800	10.30	6,710
5	1.76	125	1.87	164	4.35	1,450	7.84	3,640	15.06	17,600	10.14	6,470
6	1.76	125	1.87	164	5.38	1,890	7.89	3,690	14.96	17,300	9.95	6,200
7	1.75	122	1.87	164	5.90	2,150	7.93	3,730	14.78	16,700	9.80	5,990
8	1.75	122	1.87	164	6.14	2,280	7.97	3,770	14.51	15,900	9.63	5,750
9	1.75	122	1.87	164	6.28	2,370	8.01	3,810	14.26	15,200	9.48	5,540
10	1.75	122	1.87	164	6.38	2,430	8.09	3,890	14.04	14,500	9.32	5,330
11	1.75	122	1.87	164	6.48	2,500	8.23	4,030	13.80	13,900	9.18	5,140
N	1.77	128	1.99	213	6.54	2,540	8.50	4,320	13.55	13,200	9.02	4,940
1	1.77	128	2.41	421	6.60	2,580	8.65	4,480	13.33	12,700	8.86	4,730
2	1.78	132	2.95	765	6.66	2,620	8.97	4,870	13.11	12,200	8.71	4,550
3	1.78	132	3.38	1,010	6.72	2,670	9.80	5,990	12.88	11,700	8.56	4,390
4	1.79	135	3.63	1,140	6.75	2,690	10.80	7,540	12.65	11,100	8.42	4,230
5	1.80	138	3.75	1,200	6.78	2,710	11.92	9,640	12.44	10,700	8.27	4,070
6	1.81	142	3.84	1,250	6.82	2,750	13.15	12,300	12.22	10,200	8.14	3,940
7	1.82	145	3.90	1,270	6.87	2,790	14.25	15,200	12.00	9,800	8.00	3,800
8	1.83	149	3.87	1,260	6.93	2,830	14.90	17,100	11.80	9,400	7.87	3,670
9	1.84	153	3.77	1,220	7.02	2,910	15.10	17,700	11.60	9,000	7.73	3,530
10	1.85	156	3.64	1,150	7.11	2,980	15.22	18,100	11.40	8,620	7.60	3,410
11	1.86	160	3.51	1,080	7.20	3,050	15.28	18,200	11.20	8,260	7.46	3,280
M	1.86	160	3.39	1,020	7.31	3,150	15.29	18,300	11.01	7,920	7.34	3,180
	September 24		September 25		September 26		September 27		September 28		September 29	
2	7.09	2,960	3.67	1,160	2.84	696	2.57	517	5.38	1,890	2.79	663
4	6.86	2,780	3.52	1,090	2.81	676	2.55	505	5.40	1,900	2.74	628
6	6.64	2,610	3.39	1,020	2.78	656	2.53	493	5.27	1,840	2.71	607
8	6.40	2,440	3.28	959	2.75	635	2.52	487	5.08	1,740	2.67	580
10	6.16	2,300	3.20	915	2.73	621	2.50	475	4.83	1,640	2.64	561
N	5.89	2,140	3.13	873	2.72	614	2.49	469	4.56	1,530	2.61	542
2	5.59	2,000	3.06	831	2.71	607	2.49	469	4.24	1,410	2.58	523
4	5.25	1,820	3.00	795	2.68	587	2.48	463	3.88	1,260	2.56	511
6	4.85	1,650	2.96	771	2.67	580	2.45	445	3.51	1,080	2.55	505
8	4.48	1,500	2.93	753	2.64	561	2.70	600	3.21	920	2.54	499
10	4.15	1,370	2.90	735	2.60	535	4.30	1,430	3.00	795	2.53	493
M	3.88	1,260	2.87	716	2.57	517	5.13	1,760	2.87	716	2.52	487

Green Brook at Plainfield, N. J.

Location.- Water-stage recorder, lat. 40°36'50", long. 74°25'55", just below Sycamore Avenue, Plainfield, Union County, and 1 mile upstream from Stony Brook.
Drainage area.- 9.75 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 200 second-feet; extended to peak stage by averaging discharges obtained in 2 reaches by contracted-opening determinations of flood flow.
Maxima.- September 1938: Discharge, 1,740 second-feet 3:40 p.m. Sept. 21 (gage height, 4.89 feet).
May to August 1938: Discharge, 2,890 second-feet July 23, 1938 (gage height, 5.82 feet).
Remarks.- Record started May 12, 1938.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	3.5	6.2	9	1.7	3.6	17	2.9	3.2	25	14.0	5.5
2	2.2	3.3	10	1.7	3.2	18	2.9	2.9	26	10.1	4.2
3	2.0	3.2	11	1.5	3.4	19	44	2.6	27	7.4	4.2
4	2.0	4.2	12	1.4	3.4	20	104	4.2	28	7.2	8.3
5	2.0	4.2	13	1.7	3.4	21	498	5.9	29	6.0	5.5
6	1.8	7.7	14	1.7	3.2	22	81	4.5	30	4.8	4.5
7	2.0	8.2	15	2.9	3.2	23	26	3.4	31		3.9
8	1.7	4.2	16	2.4	3.2	24	16.4	4.8			
Mean monthly discharge, in second-feet										28.6	4.37
Run-off, in inches										3.27	0.52

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.83	2.6	0.84	2.9	1.32	28	1.98	145	2.12	180	1.37	34
2	.83	2.6	1.04	9.5	1.79	102	1.87	119	2.04	160	1.36	33
3	.83	2.6	.94	5.8	1.52	54	1.83	111	1.98	145	1.35	32
4	.82	2.4	.88	3.9	1.87	119	1.81	106	1.90	126	1.35	32
5	.82	2.4	.86	3.4	1.90	126	1.80	104	1.85	115	1.34	31
6	.82	2.4	.94	5.8	2.02	155	1.82	108	1.80	104	1.33	29
7	.82	2.4	.90	4.5	2.36	249	1.89	124	1.76	96	1.33	29
8	.81	2.2	.88	3.9	2.40	261	1.98	145	1.72	88	1.32	28
9	.81	2.2	.88	3.9	2.22	208	2.07	168	1.68	79	1.32	28
10	.81	2.2	.87	3.6	2.00	150	2.31	234	1.65	74	1.31	27
11	.80	2.0	.87	3.6	1.80	104	2.32	237	1.63	70	1.30	26
N	.94	5.8	2.00	150	1.66	76	2.71	366	1.60	66	1.30	26
1	.92	5.2	1.81	106	1.56	59	3.20	564	1.58	62	1.29	25
2	.86	3.4	1.94	136	1.52	54	3.70	818	1.55	58	1.28	25
3	.83	2.6	1.93	133	1.45	44	4.10	1,070	1.53	55	1.27	24
4	.82	2.4	1.70	84	1.42	40	4.59	1,450	1.51	52	1.26	23
5	.82	2.4	1.65	74	1.43	41	4.69	1,540	1.48	48	1.26	23
6	.81	2.2	1.56	59	1.51	52	4.57	1,440	1.47	47	1.24	21
7	.81	2.2	1.47	47	1.52	54	4.20	1,140	1.45	44	1.24	21
8	.82	2.4	1.40	38	1.68	79	3.50	709	1.43	41	1.23	21
9	.90	4.5	1.36	33	1.75	94	2.88	430	1.42	40	1.22	19.8
10	.88	3.9	1.36	33	1 91	128	2.52	300	1.40	38	1.22	19.8
11	.86	3.4	1.49	49	2.02	155	2.33	240	1.39	37	1.22	19.8
M	.85	3.2	1.33	29	2.03	158	2.21	205	1.38	35	1.21	19.0
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.20	18.3	1.14	14.6	1.12	13.5	0.94	5.8	1.00	7.9	0.98	7.2
4	1.19	17.7	1.14	14.6	1.11	12.9	.94	5.8	.99	7.5	.98	7.2
6	1.19	17.7	1.14	14.6	1.11	12.9	.94	5.8	.99	7.5	.98	7.2
8	1.18	17.1	1.14	14.6	1.10	12.4	.94	5.8	.98	7.2	.98	7.2
10	1.18	17.1	1.13	14.0	1.10	12.4	.94	5.8	.98	7.2	.98	7.2
N	1.17	16.4	1.13	14.0	1.09	11.8	.94	5.8	.98	7.2	.95	6.2
2	1.17	16.4	1.13	14.0	1.02	8.7	.94	5.8	.98	7.2	.93	5.5
4	1.17	16.4	1.13	14.0	.98	7.2	.94	5.8	.98	7.2	.92	5.2
6	1.15	15.2	1.12	13.5	.96	6.6	1.12	13.5	.98	7.2	.91	4.8
8	1.15	15.2	1.12	13.5	.95	6.2	1.08	11.3	.98	7.2	.90	4.5
10	1.15	15.2	1.12	13.5	.95	6.2	1.03	9.1	.98	7.2	.90	4.5
M	1.15	15.2	1.12	13.5	.95	6.2	1.00	7.9	.98	7.2	.90	4.5

Supplemental records.- Sept. 19, 11:55 a.m., 2.14 ft., 186 sec.-ft.; 12:05 p.m., 1.84 ft., 113 sec.-ft.; 12:20 p.m., 2.49 ft., 290 sec.-ft.; 2:15 p.m., 1.91 ft., 128 sec.-ft. Sept. 20, 4:30 a.m., 1.74 ft., 92 sec.-ft.; 5:20 a.m., 2.32 ft., 237 sec.-ft.; 7:30 a.m., 2.43 ft., 271 sec.-ft.; 4:20 p.m., 1.49 ft., 49 sec.-ft. Sept. 21, 8:40 a.m., 1.97 ft., 143 sec.-ft.; 10:30 a.m., 2.23 ft., 211 sec.-ft.; 3:40 p.m., 4.89 ft., 1,740 sec.-ft.

Reservoir on Lawrence Brook at Farrington Dam, N. J.

Location.- Water-stage recorder, lat. 40°27'00", long. 74°27'05", on Lawrence Brook at Farrington Dam, half a mile southwest of Milltown, Middlesex County.
Drainage area.- 34.4 square miles.
Gage-height record.- Water-stage recorder graph.
Remarks.- Usable storage capacity is 87,600,000 cubic feet. Crest of notch in dam at gage height 24.00 feet. Blow-off gate open after 8:15 a.m. Sept. 12. For additional information on stage see record of gage heights for Lawrence Brook at Farrington Dam, N. J.

Gage height, in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	24.51	92.4	22.06	70.2	16	24.16	89.0	21.66	67.0
2	24.50	92.2	21.76	67.8	17	24.14	88.9	21.72	67.4
3	24.49	92.1	21.55	66.0	18	24.15	89.0	21.81	68.2
4	24.48	92.1	21.46	65.4	19	24.74	94.5	21.82	68.2
5	24.48	92.1	21.49	65.5	20	25.01	97.1	21.85	68.4
6	24.48	92.1	21.47	65.4	21	25.95	107.1	21.80	68.0
7	24.46	91.8	21.68	67.1	22	24.88	95.8	21.58	66.3
8	24.44	91.8	22.11	70.6	23	24.74	94.5	21.40	64.8
9	24.45	91.7	22.26	71.8	24	24.66	93.7	21.40	64.8
10	24.45	91.7	22.23	71.5	25	24.61	93.3	21.48	65.5
11	24.45	91.7	21.98	69.5	26	24.50	92.2	21.76	67.8
12	24.38	91.2	21.72	67.4	27	24.41	91.4	22.02	69.8
13	24.30	90.4	21.57	66.2	28	24.06	88.1	22.16	71.0
14	24.23	89.7	21.60	66.4	29	23.33	81.3	22.64	74.9
15	24.21	89.6	21.64	66.7	30	22.57	74.2	22.59	74.3
					31			22.34	72.3

	September	October
Gain or loss in storage, in millions of cubic feet.	-17.9	-1.9
Gain or loss in storage, in equivalent mean second-feet	-6.9	-0.7

a/ At 12 p.m. of day indicated.

Lawrence Brook at Farrington Dam, N. J.

Location.- Water-stage recorder, lat. 40°27'00", long. 74°27'05", at Farrington Dam, half a mile southwest of Milltown, Middlesex County, and 5 miles above mouth.
Drainage area.- 34.4 square miles; affected by artificial storage.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For flow over spillway defined by current-meter measurements below 500 second-feet; extended to peak stage on basis of determination of flow by weir formula. Discharge through waste gates defined by current-meter measurements.
Maxima.- September 1938: Discharge, about 2,660 second-feet 8 p.m. Sept. 21 (gage height, 26.18 feet).
1927 to August 1938: Discharge, about 1,900 second-feet July 6, 1928 (gage height, 25.84 feet).
Remarks.- Daily, hourly, and peak discharges are the sum of discharge over spillway and through blow-off gates. Blow-off gates open after 8:15 a.m. Sept. 21. Mean monthly discharge and run-off, in inches, adjusted for storage in reservoir. For information on storage see record for Reservoir on Lawrence Brook at Farrington Dam, N. J. Water-stage recorder operated by employee of city of New Brunswick.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	19.4	97	9	9.0	39	17	12.7	22	25	87	52
2	17.1	64	10	9.0	51	18	12.7	22	26	59	52
3	15.0	49	11	9.0	66	19	45	22	27	36	53
4	13.1	35	12	15.9	64	20	401	22	28	107	55
5	13.1	35	13	17.5	45	21	1,280	40	29	150	58
6	13.1	35	14	15.4	21	22	822	52	30	143	62
7	10.0	35	15	14.1	21	23	233	52	31		59
8	10.0	36	16	13.8	21	24	130	52			
Mean monthly discharge, in second-feet (observed)										124	44.8
Mean monthly discharge, in second-feet (adjusted)										118	44.1
Run-off, in inches (adjusted)										3.83	1.48

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	24.14	12.7	24.15	12.9	24.74	173	25.02	494	25.85	1,940	24.87	310
2	24.14	12.7	24.15	12.9	24.76	193	25.02	494	25.74	1,700	24.87	310
3	24.14	12.7	24.16	13.0	24.77	203	25.03	509	25.64	1,500	24.86	299
4	24.14	12.7	24.16	13.0	24.78	213	25.05	534	25.56	1,350	24.85	287
5	24.14	12.7	24.16	13.0	24.80	233	25.08	574	25.48	1,200	24.84	276
6	24.14	12.7	24.16	13.0	24.88	322	25.09	589	25.42	1,100	24.83	266
7	24.14	12.7	24.17	13.3	24.92	369	25.10	604	25.36	1,000	24.82	254
8	24.14	12.7	24.17	13.3	24.95	405	25.10	604	25.31	920	24.81	244
9	24.14	12.7	24.17	13.3	24.97	430	25.10	604	25.27	855	24.81	244
10	24.14	12.7	24.17	13.3	24.98	443	25.11	619	25.23	795	24.80	233
11	24.14	12.7	24.17	13.3	25.00	468	25.14	659	25.19	735	24.79	223
N	24.14	12.7	24.19	13.8	25.01	481	25.18	720	25.16	689	24.78	213
1	24.14	12.7	24.32	16.8	25.03	509	25.26	840	25.11	619	24.78	213
2	24.14	12.7	24.44	21	25.03	509	25.40	1,060	25.06	549	24.77	203
3	24.14	12.7	24.50	30	25.04	519	25.62	1,460	25.03	509	24.77	203
4	24.14	12.7	24.54	42	25.02	494	25.77	1,760	25.01	481	24.77	203
5	24.14	12.7	24.58	59	25.02	494	25.90	2,040	24.98	443	24.76	193
6	24.14	12.7	24.60	69	25.00	468	26.02	2,300	24.96	418	24.76	193
7	24.14	12.7	24.63	87	24.99	455	26.13	2,550	24.95	405	24.76	193
8	24.14	12.7	24.66	107	24.98	443	26.18	2,660	24.94	393	24.75	183
9	24.14	12.7	24.68	122	24.99	455	26.17	2,640	24.92	369	24.74	173
10	24.15	12.9	24.71	147	25.00	468	26.12	2,530	24.91	357	24.74	173
11	24.15	12.9	24.74	173	25.01	481	26.04	2,350	24.90	345	24.74	173
M	24.15	12.9	24.74	173	25.01	481	25.95	2,150	24.88	322	24.74	173
	September 24		September 25		September 26		September 27		September 28		September 29	
2	24.73	164	24.65	100	24.61	75	24.48	41	24.42	36	24.00	152
4	24.72	155	24.65	100	24.61	75	24.47	40	24.43	36	23.94	152
6	24.71	147	24.64	93	24.60	69	24.45	37	24.43	36	23.88	151
8	24.71	147	24.64	93	24.60	69	24.43	36	24.44	36	23.82	151
10	24.70	138	24.63	87	24.60	69	24.42	36	24.43	164	23.76	150
N	24.70	138	24.63	87	24.59	64	24.41	35	24.38	162	23.70	150
2	24.69	130	24.63	87	24.59	64	24.40	35	24.32	160	23.64	149
4	24.68	122	24.62	81	24.57	70	24.40	35	24.27	159	23.58	149
6	24.67	115	24.62	81	24.55	61	24.41	35	24.22	157	23.52	148
8	24.66	107	24.62	81	24.53	53	24.41	35	24.17	156	23.46	148
10	24.66	107	24.61	75	24.51	47	24.41	35	24.11	154	23.40	147
M	24.66	107	24.61	75	24.50	45	24.41	35	24.06	154	23.33	147

Tinton Falls Reservoir near Red Bank, N. J.

Location.- Water-stage recorder, lat. 40°19'03", long. 74°06'57", on Swimming River above dam of Consolidated Water Co., 3 miles above mouth of river at Red Bank, Monmouth County.
Drainage area.- 48.5 square miles.
Gage-height record.- Water-stage recorder graph.
Remarks.- Contents above zero gage height given in table. For additional information on stage see record for Swimming River near Red Bank, N. J.

Gage height, in feet, and contents, in millions of cubic feet, 1938 a/

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	2.62	12.10	0.98	4.52	16	2.60	12.00	0.90	4.16
2	2.59	11.96	.94	4.34	17	2.58	11.91	.89	4.10
3	2.58	11.91	.93	4.29	18	2.84	13.11	.89	4.10
4	2.56	11.82	.92	4.25	19	3.19	14.73	.89	4.10
5	2.56	11.82	.91	4.20	20	3.27	15.09	.91	4.20
6	2.54	11.74	1.05	4.84	21	4.48	20.69	.96	4.44
7	2.58	11.91	1.13	5.21	22	1.40	6.46	.90	4.16
8	2.55	11.78	.98	4.52	23	1.19	5.49	.89	4.10
9	2.55	11.78	.95	4.38	24	1.08	4.99	.94	4.34
10	2.54	11.74	.94	4.34	25	1.03	4.75	.93	4.29
11	2.54	11.74	.92	4.25	26	1.00	4.61	.90	4.16
12	2.56	11.82	.91	4.20	27	.99	4.57	.90	4.16
13	2.60	12.00	.91	4.20	28	1.03	4.75	1.01	4.65
14	2.57	11.87	.91	4.20	29	.97	4.48	1.09	5.03
15	2.69	12.42	.91	4.20	30	1.01	4.65	.76	3.50
					31			.67	3.09

	September	October
Gain or loss in storage, in millions of cubic feet.	-7.35	-1.56
Gain or loss in storage, in equivalent mean second-feet	-2.84	-.58

a/ At midnight of indicated day.

Swimming River near Red Bank, N. J.

Location.- Water-stage recorder, lat. 40°19'03", long. 74°06'57", above dam of Monmouth Consolidated Water Co., 3 miles above mouth of river at Red Bank, Monmouth County.
Drainage area.- 48.5 square miles; affected by storage.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 500 second-feet; extended to peak stage on basis of determination of flow by weir formula. Discharge through blow-off gates defined by current-meter measurements.
Maxima.- September 1938: Discharge, 7,370 second-feet 7:30 p.m. Sept. 21 (gage height, 6.96 feet).
1922 to August 1938: Discharge, 2,930 second-feet Sept. 9, 1934 (gage height, 5.65 feet).
Remarks.- Hourly and daily discharges indicate sum of discharge over spillway, through blow-off gates, and diversion to pumping station. Blow-off gate open subsequent to noon on Oct. 29. Part of the crest of dam failed about 6 p.m. on Sept. 21. Mean monthly discharge and run-off, in inches, adjusted for storage in Tinton Falls Reservoir. For information on storage see record of Tinton Falls Reservoir near Red Bank, N. J. Water-stage recorder inspected and record of diversion furnished by Monmouth Consolidated Water Co.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	57	151	9	41	130	17	51	106	25	165	126
2	57	126	10	43	122	18	64	102	26	151	110
3	52	119	11	41	118	19	245	103	27	139	106
4	50	114	12	44	110	20	364	103	28	156	125
5	47	110	13	49	110	21	2,380	122	29	138	185
6	45	126	14	52	110	22	1,050	113	30	143	158
7	46	249	15	56	110	23	259	102	31		88
8	46	159	16	69	105	24	201	109			
Mean monthly discharge, in second-feet (observed)										210	123
Mean monthly discharge, in second-feet (adjusted)										207	123
Run-off, in inches (adjusted)										4.76	2.93

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.58	51	2.85	150	3.23	364	3.37	466	4.10	2,950	1.28	331
2	2.58	51	2.86	154	3.28	398	3.54	596	3.76	2,510	1.35	316
3	2.58	51	2.88	164	3.30	412	3.77	788	3.46	2,130	1.32	300
4	2.58	51	2.91	178	3.31	419	3.97	969	3.20	1,830	1.30	289
5	2.59	53	2.95	198	3.31	419	4.08	1,070	2.95	1,550	1.29	284
6	2.59	53	2.99	219	3.31	419	4.10	1,090	2.76	1,360	1.27	274
7	2.59	53	3.03	241	3.30	412	4.10	1,090	2.58	1,180	1.26	269
8	2.59	53	3.05	252	3.28	398	4.10	1,090	2.41	1,030	1.25	264
9	2.59	53	3.07	264	3.26	385	4.10	1,090	2.28	933	1.24	259
10	2.59	53	3.08	270	3.24	371	4.11	1,100	2.14	825	1.24	259
11	2.59	53	3.08	270	3.21	351	4.16	1,150	2.03	744	1.23	254
N	2.59	53	3.08	270	3.19	338	4.26	1,250	1.94	680	1.22	249
1	2.59	53	3.07	264	3.19	338	4.42	1,410	1.89	645	1.22	249
2	2.59	53	3.10	281	3.18	331	4.66	1,680	1.84	611	1.21	244
3	2.59	53	3.10	281	3.16	319	4.98	2,060	1.78	571	1.20	239
4	2.59	53	3.10	281	3.16	319	5.40	2,590	1.72	532	1.20	239
5	2.59	53	3.09	275	3.17	325	6.00	3,500	1.66	494	1.20	239
6	2.59	53	3.08	270	3.17	325	6.62	5,000	1.62	469	1.20	239
7	2.61	59	3.06	258	3.17	325	6.94	6,600	1.58	445	1.20	239
8	2.72	96	3.06	258	3.17	325	6.40	6,430	1.54	422	1.20	239
9	2.74	103	3.08	270	3.19	338	5.80	5,460	1.50	398	1.20	239
10	2.74	103	3.12	294	3.21	351	5.30	4,680	1.47	381	1.20	239
11	2.83	140	3.15	312	3.22	358	4.85	4,010	1.43	359	1.19	234
M	2.84	145	3.19	338	3.27	392	4.48	3,480	1.40	342	1.19	234
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.17	225	1.08	182	1.03	160	1.00	147	.99	142	1.02	155
4	1.16	220	1.08	182	1.03	160	1.00	147	1.00	146	1.02	155
6	1.15	216	1.07	178	1.03	160	1.00	147	1.00	146	1.00	146
8	1.13	206	1.06	173	1.02	156	.98	139	1.01	150	.99	142
10	1.11	197	1.04	165	1.01	151	.98	139	1.02	155	.98	138
N	1.11	197	1.04	165	1.00	147	.97	135	1.03	159	.97	134
2	1.10	192	1.03	160	1.00	147	.97	135	1.04	164	.97	134
4	1.09	188	1.03	160	1.00	147	.97	135	1.04	164	.97	134
6	1.09	188	1.03	160	1.00	147	.98	139	1.04	164	.97	134
8	1.09	188	1.03	160	1.00	147	.99	143	1.04	164	.97	134
10	1.08	183	1.03	160	1.00	147	.99	143	1.04	164	.97	134
M	1.08	183	1.03	160	1.00	147	.99	143	1.03	159	.97	134

Supplemental records.- Sept. 21, 7:30 p.m., 6.96 ft., 7,370 sec.-ft.

Manasquan River at Squankum, N. J.

Location.- Water-stage recorder, lat. 40°09'47", long. 74°09'21", at Farmingdale-Lakewood highway bridge in Squankum, Monmouth County, half a mile below mouth of Marshbog Brook.

Drainage area.- 43.4 square miles; not affected by artificial storage.

Gage-height record.- Water-stage recorder graph except 1 p.m. Sept. 21 to 5 p.m. Sept. 30, when there is no record.

Stage-discharge relation.- Defined by current-meter measurements below 720 second-feet; extended to peak stage on basis of determination of flood flow by contracted-opening method.

Maxima.- September 1938: Discharge, 2,940 second-feet Sept. 21 (gage height, 12.45 feet, from floodmark).
1931 to August 1938: Discharge, 1,550 second-feet June 28, 1938 (gage height, 10.09 feet).

Remarks.- Discharge for period of missing gage heights, 1 p.m. Sept. 21 to 5 p.m., Sept. 30, computed on basis of floodmark and records of Swimming River near Red Bank, N. J., and other nearby streams.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	48	112	9	35	87	17	37	66	25	150	90
2	44	93	10	34	80	18	73	66	26	130	90
3	42	84	11	34	74	19	206	66	27	130	85
4	40	79	12	34	70	20	323	66	28	160	100
5	38	75	13	38	68	21	1,650	85	29	130	150
6	36	85	14	38	67	22	1,300	80	30	114	130
7	35	151	15	38	66	23	300	80	31		100
8	36	104	16	37	66	24	190	80			
Mean monthly discharge, in second-feet										183	86.9
Run-off, in inches										4.71	2.31

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.66	39	4.28	231	4.75	274	7.62	659	-	-	-	-
2	1.66	39	4.23	227	4.66	266	7.72	682	-	-	-	-
3	1.66	39	4.16	220	4.55	256	7.81	704	-	-	-	-
4	1.66	39	4.10	215	4.42	244	7.94	736	-	-	-	-
5	1.66	39	4.01	207	4.35	238	8.04	763	-	-	-	-
6	1.66	39	3.91	198	4.30	233	8.15	793	-	-	-	-
7	1.66	39	3.80	188	4.26	229	8.31	839	-	-	-	-
8	1.66	39	3.65	175	4.24	228	8.47	889	-	-	-	-
9	1.66	39	3.50	163	4.22	226	8.80	1,000	-	-	-	-
10	1.67	40	3.36	152	4.20	224	9.10	1,110	-	-	-	-
11	1.67	40	3.26	144	4.17	221	9.60	1,320	-	-	-	-
N	1.67	40	3.22	141	4.21	225	10.08	1,540	-	*1,300	-	*300
1	1.67	40	3.34	150	4.33	236	10.34	1,660	-	-	-	-
2	1.67	40	3.67	177	4.54	255	-	-	-	-	-	-
3	1.68	41	4.00	206	4.81	280	-	-	-	-	-	-
4	1.75	48	4.20	224	5.17	313	-	-	-	-	-	-
5	1.94	66	4.28	231	5.57	350	-	-	-	-	-	-
6	2.40	94	4.29	232	6.00	398	-	-	-	-	-	-
7	2.92	121	4.31	234	6.36	443	-	**2,500	-	-	-	-
8	3.22	141	4.38	240	6.66	483	-	-	-	-	-	-
9	3.44	158	4.48	249	6.91	522	-	-	-	-	-	-
10	3.78	186	4.59	260	7.16	565	-	-	-	-	-	-
11	4.14	219	4.68	268	7.38	607	-	-	-	-	-	-
M	4.27	230	4.74	274	7.51	634	-	-	-	-	-	-
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	-	*190	-	*150	-	*130	-	*130	-	*160	-	*130
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-	-

* Mean for the day.
** Mean for 12 hours.

Toms River near Toms River, N. J.

Location.- Water-stage recorder, lat. 39°59'10", long. 74°13'29", 1 mile below mouth of Union Branch and 2½ miles northwest of village of Toms River, Ocean County.
Drainage area.- 124 square miles.
Gage-height record.- Water-stage recorder graph except for period 4 p.m. Sept. 22 to 9 a.m. Sept. 24, when graph was based on floodmark and shape of recorder graph before and after the period.
Stage-discharge relation.- Defined by current-meter measurements below 650 second-feet; extended to peak stage by logarithmic plotting.
Maxima.- September 1938: Discharge, 1,540 second-feet 7 to 10 a.m. Sept. 23 (gage height, 12.50 feet, from floodmark).
1928 to August 1938: Discharge, 1,240 second-feet June 29, 1938 (gage height, 11.1 feet, from floodmark).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	162	328	9	149	307	17	147	235	25	736	253
2	174	307	10	146	297	18	156	222	26	542	247
3	174	307	11	146	287	19	216	216	27	444	247
4	166	287	12	144	270	20	282	216	28	389	265
5	160	276	13	146	253	21	511	216	29	351	287
6	153	270	14	149	247	22	1,080	222	30	328	307
7	149	287	15	149	235	23	1,500	229	31		328
8	149	297	16	146	241	24	1,120	235			
Mean monthly discharge, in second-feet										342	265
Run-off, in inches										3.08	2.47

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.83	149	4.25	198	4.68	251	5.63	355	8.47	766	12.27	1,490
2	3.83	149	4.26	199	4.70	253	5.67	359	8.59	785	12.34	1,510
3	3.83	149	4.27	200	4.72	255	5.72	366	8.72	806	12.39	1,520
4	3.83	149	4.28	202	4.73	257	5.79	375	8.83	824	12.43	1,530
5	3.83	149	4.28	202	4.74	258	5.86	384	8.96	845	12.46	1,530
6	3.84	150	4.29	203	4.75	259	5.94	394	9.10	868	12.48	1,540
7	3.84	150	4.31	205	4.78	263	5.99	401	9.25	894	12.50	1,540
8	3.84	150	4.33	208	4.80	265	6.07	412	9.39	917	12.50	1,540
9	3.84	150	4.34	209	4.82	267	6.14	422	9.54	943	12.50	1,540
10	3.84	150	4.36	211	4.85	270	6.21	431	9.73	976	12.50	1,540
11	3.85	152	4.37	212	4.87	273	6.30	444	9.90	1,010	12.49	1,540
N	3.85	152	4.38	214	4.89	275	6.42	461	10.10	1,040	12.47	1,530
1	3.85	152	4.39	215	4.91	277	6.80	514	10.30	1,080	12.44	1,530
2	3.85	152	4.41	217	4.95	282	7.06	551	10.52	1,120	12.40	1,520
3	3.86	153	4.45	222	4.97	284	7.35	594	10.72	1,160	12.37	1,510
4	3.87	154	4.48	226	4.98	285	7.50	617	10.90	1,200	12.32	1,500
5	3.87	154	4.52	231	5.07	294	7.63	636	11.12	1,240	12.26	1,490
6	3.87	154	4.56	236	5.16	303	7.74	653	11.33	1,290	12.19	1,470
7	3.88	155	4.59	240	5.25	312	7.84	668	11.58	1,340	12.11	1,450
8	3.94	161	4.61	242	5.32	319	7.93	682	11.75	1,370	12.04	1,440
9	4.02	170	4.63	245	5.40	328	8.05	700	11.90	1,410	11.96	1,420
10	4.10	180	4.64	246	5.47	336	8.15	715	12.02	1,430	11.88	1,400
11	4.18	190	4.66	248	5.54	344	8.25	731	12.12	1,450	11.80	1,380
M	4.22	194	4.67	249	5.59	350	8.35	747	12.20	1,470	11.70	1,360
	September 24		September 25		September 26		September 27		September 28		September 29	
2	11.50	1,320	9.09	866	7.42	605	6.56	480	5.92	392	5.76	371
4	11.30	1,280	8.90	835	7.33	592	6.50	472	5.89	388	5.69	362
6	11.08	1,240	8.73	808	7.24	578	6.44	464	5.85	382	5.62	353
8	10.88	1,200	8.58	784	7.17	568	6.39	457	5.87	385	5.57	347
10	10.65	1,150	8.42	758	7.09	556	6.33	448	5.94	394	5.52	341
N	10.49	1,120	8.28	736	7.01	544	6.27	440	5.95	396	5.49	338
2	10.30	1,080	8.14	713	6.94	534	6.22	433	5.91	390	5.46	335
4	10.10	1,040	7.98	689	6.87	524	6.16	424	5.85	382	5.43	331
6	9.88	1,010	7.84	668	6.80	514	6.11	417	5.86	384	5.44	332
8	9.69	969	7.72	650	6.73	504	6.06	410	5.90	389	5.47	336
10	9.48	933	7.61	634	6.67	496	6.01	403	5.89	388	5.50	339
M	9.28	899	7.51	618	6.62	489	5.96	397	5.83	380	5.49	338

Great Egg River at Folsom, N. J.

Location.- Water-stage recorder, lat. 39°35'42", long. 74°51'05", at highway bridge 1 mile south of Folsom, Atlantic County, and 2 miles above Pennypot Stream.
Drainage area.- 56.3 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 600 second-feet.
Maxima.- September 1938: Discharge, 718 second-feet 6 a.m. to 1 p.m. Sept. 23 (gage height, 6.59 feet).
1925 to August 1938: Discharge, 599 second-feet Sept. 8, 1935 (gage height, 6.18 feet).

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	60	276	9	57	141	17	53	108	25	465	114
2	69	318	10	56	141	18	56	117	26	318	119
3	69	296	11	54	138	19	68	121	27	233	125
4	74	239	12	53	130	20	129	117	28	192	130
5	77	196	13	53	117	21	406	112	29	169	141
6	70	167	14	53	108	22	651	106	30	180	150
7	64	148	15	53	101	23	707	104	31		154
8	60	139	16	53	101	24	624	108			
Mean monthly discharge, in second-feet										174	148
Run-off, in inches										3.45	3.03

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.67	53	3.71	58	3.90	88	4.61	222	6.06	572	6.55	707
2	3.67	53	3.71	58	3.91	90	4.69	239	6.09	580	6.56	710
3	3.68	54	3.71	58	3.92	92	4.78	259	6.12	588	6.57	713
4	3.68	54	3.71	58	3.95	97	4.85	274	6.15	596	6.57	713
5	3.68	54	3.71	58	3.96	99	4.92	289	6.19	607	6.58	715
6	3.68	54	3.71	58	3.97	101	5.00	307	6.21	613	6.59	718
7	3.69	56	3.71	58	3.99	104	5.07	323	6.24	621	6.59	718
8	3.69	56	3.71	58	4.00	106	5.16	344	6.26	626	6.59	718
9	3.69	56	3.71	58	4.02	110	5.23	361	6.28	632	6.59	718
10	3.69	56	3.72	60	4.03	112	5.29	376	6.31	640	6.59	718
11	3.69	56	3.72	60	4.05	116	5.38	397	6.34	648	6.59	718
N	3.69	56	3.74	63	4.06	117	5.48	422	6.35	651	6.59	718
1	3.69	56	3.76	66	4.08	121	5.57	444	6.37	657	6.59	718
2	3.69	56	3.78	69	4.10	125	5.64	462	6.39	662	6.58	715
3	3.70	57	3.80	72	4.12	129	5.68	473	6.42	671	6.58	715
4	3.70	57	3.80	72	4.14	132	5.71	481	6.44	676	6.58	715
5	3.70	57	3.81	74	4.18	139	5.75	491	6.46	682	6.57	713
6	3.70	57	3.82	75	4.24	150	5.79	501	6.48	687	6.57	713
7	3.70	57	3.83	77	4.29	159	5.83	512	6.49	690	6.56	710
8	3.70	57	3.84	78	4.36	172	5.88	525	6.50	693	6.55	707
9	3.70	57	3.84	78	4.41	182	5.92	535	6.52	699	6.55	707
10	3.70	57	3.86	82	4.46	192	5.95	543	6.53	701	6.54	704
11	3.70	57	3.87	83	4.50	200	5.99	553	6.54	704	6.53	701
M	3.70	57	3.87	83	4.55	210	6.03	564	6.55	707	6.52	699
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.49	690	5.90	530	5.29	376	4.80	263	4.52	204	4.38	176
4	6.46	682	5.85	517	5.24	364	4.77	256	4.50	200	4.37	174
6	6.42	671	5.80	504	5.20	354	4.74	250	4.49	198	4.36	172
8	6.38	659	5.75	491	5.15	342	4.70	241	4.47	194	4.35	170
10	6.34	648	5.70	478	5.11	332	4.67	235	4.47	194	4.34	169
N	6.29	634	5.64	462	5.07	323	4.65	230	4.45	190	4.34	169
2	6.23	618	5.58	447	5.03	314	4.62	224	4.44	188	4.33	167
4	6.18	605	5.53	434	4.99	305	4.59	218	4.43	186	4.32	165
6	6.13	591	5.49	424	4.95	296	4.57	214	4.42	184	4.33	167
8	6.08	578	5.44	412	4.91	287	4.58	216	4.41	182	4.33	167
10	6.02	561	5.39	400	4.88	281	4.56	212	4.39	178	4.32	165
M	5.96	546	5.34	388	4.84	272	4.53	206	4.38	176	4.32	165

East Branch of Delaware River at Margaretville, N. Y.

Location.- Water-stage recorder, lat. 42°08'40", long. 74°39'15", at bridge at southwest end of Margaretville, Delaware County, and 1 3/4 miles below mouth of Bush Kill.
Drainage area.- 163 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 4,840 second-feet; extended logarithmically to peak stage on basis of area-mean velocity study.
Maxima.- September 1938: Discharge, 13,200 second-feet 8:15 p.m. Sept. 21 (gage height, 11.74 feet).
February 1937 to August 1938: Discharge, 6,000 second-feet May 15, 1937 (gage height, 7.6 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	91	302	9	68	137	17	85	85	25	970	188
2	80	253	10	62	128	18	108	81	26	716	139
3	74	224	11	57	120	19	108	79	27	600	124
4	78	201	12	56	122	20	870	84	28	500	118
5	74	183	13	136	118	21	5,100	169	29	402	128
6	79	171	14	96	100	22	5,500	114	30	340	124
7	88	154	15	120	90	23	2,460	94	31		118
8	91	146	16	118	88	24	1,420	133			
Mean monthly discharge, in second-feet										685	139
Run-off, in inches										4.69	0.98

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.14	102	-	-	-	-	4.20	2,000	10.35	10,300	5.03	2,820
2	-	-	-	-	1.76	296	4.28	2,070	9.98	9,580	5.01	2,800
3	-	-	-	-	-	-	4.30	2,090	9.51	8,720	5.04	2,830
4	1.19	113	1.11	95	2.08	442	4.26	2,050	9.07	7,980	5.05	2,840
5	-	-	-	-	-	-	4.22	2,020	8.67	7,360	5.03	2,820
6	-	-	-	-	2.27	544	4.18	1,980	8.30	6,800	5.01	2,800
7	-	-	-	-	-	-	4.14	1,950	7.98	6,350	5.00	2,790
8	1.20	115	1.12	97	2.55	712	4.11	1,920	7.71	5,970	4.97	2,760
9	-	-	-	-	-	-	4.10	1,910	7.47	5,660	4.95	2,740
10	-	-	-	-	2.90	950	4.09	1,900	7.27	5,400	4.92	2,710
11	-	-	-	-	-	-	4.10	1,910	7.06	5,130	4.87	2,660
N	1.19	113	1.13	100	3.07	1,070	4.19	1,990	6.86	4,880	4.80	2,590
1	-	-	-	-	-	-	4.43	2,220	6.67	4,650	-	-
2	-	-	-	-	3.05	1,060	4.90	2,690	6.48	4,430	4.64	2,430
3	-	-	-	-	-	-	5.58	3,410	6.31	4,220	-	-
4	1.16	106	1.16	106	2.98	1,010	6.72	4,710	6.12	4,000	4.47	2,260
5	-	-	-	-	-	-	8.38	6,920	5.97	3,840	-	-
6	-	-	-	-	2.92	964	10.34	10,300	5.81	3,660	4.31	2,100
7	-	-	-	-	2.93	971	11.32	12,300	5.67	3,510	-	-
8	1.14	102	1.19	113	3.03	1,040	11.67	13,100	5.53	3,350	4.17	1,970
9	-	-	-	-	-	-	11.66	13,100	5.42	3,230	-	-
10	-	-	1.28	135	3.47	1,380	11.44	12,600	5.31	3,110	4.05	1,860
11	-	-	-	-	-	-	11.12	11,900	5.21	3,000	-	-
M	1.12	97	1.46	187	4.02	1,840	10.78	11,200	5.12	2,910	3.95	1,780
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.85	1,680	3.15	1,120	2.64	784	-	-	-	-	-	-
4	3.77	1,620	3.10	1,090	2.62	772	2.34	620	-	-	-	-
6	3.69	1,550	3.05	1,060	2.60	760	-	-	2.16	532	1.91	422
8	3.62	1,500	3.00	1,020	2.57	744	2.32	610	-	-	-	-
10	3.57	1,460	2.96	992	2.55	732	2.33	615	-	-	-	-
N	3.52	1,420	2.92	964	2.53	722	2.31	605	2.09	500	1.87	406
2	3.45	1,360	2.87	930	2.52	716	-	-	-	-	-	-
4	3.42	1,340	2.82	898	2.48	694	2.28	590	-	-	-	-
6	3.36	1,290	2.77	866	2.45	678	-	-	2.02	469	1.81	382
8	3.31	1,250	2.73	840	2.42	661	2.24	570	-	-	-	-
10	3.25	1,200	2.69	814	2.40	650	-	-	-	-	-	-
M	3.20	1,160	2.66	796	2.38	640	2.22	560	1.95	439	1.76	363

Supplemental records.- Sept. 21, 8:15 p.m., 11.74 ft., 13,200 sec.-ft.

227937 O—40——22

East Branch of Delaware River at Harvard, N. Y.

Location.- Water-stage recorder, lat. 42°01'15", long. 75°07'05", at highway bridge at Harvard, Delaware County, about 400 feet above Baxter Brook. Zero of gage is 1,007.96 feet above mean sea level (general adjustment of 1912).
Drainage area.- 443 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 9,300 second-feet; extended logarithmically to peak stage on basis of slope-area determination of the peak flow of the March 1936 flood.
Maxima.- September 1938: Discharge, 31,400 second-feet 6:10 a.m. Sept. 22 (gage height, 16.93 feet).
October 1934 to August 1938: Discharge, 26,200 second-feet Mar. 18, 1936 (gage height, 15.58 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	226	806	9	210	362	17	300	217	25	2,750	560
2	223	720	10	156	336	18	305	208	26	2,020	484
3	187	615	11	133	315	19	333	199	27	1,620	425
4	173	560	12	123	297	20	1,520	208	28	1,340	397
5	167	506	13	206	284	21	8,900	359	29	1,100	401
6	153	463	14	340	267	22	20,400	367	30	930	413
7	172	425	15	285	245	23	6,800	274	31		381
8	274	389	16	395	230	24	3,950	336			
Mean monthly discharge, in second-feet										1,856	389
Run-off, in inches										4.68	1.01

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	3.35	366	7.57	3,660	15.34	24,500	10.51	8,720
2	3.09	274	3.27	336	3.39	381	7.82	3,970	15.82	26,400	10.36	8,390
3	-	-	-	-	3.44	401	8.11	4,350	16.17	27,800	10.22	8,080
4	3.10	277	3.27	336	3.50	425	8.37	4,740	16.54	29,500	10.11	7,840
5	-	-	-	-	3.58	459	8.63	5,140	16.82	30,900	10.02	7,640
6	3.11	280	3.25	329	3.70	510	8.86	5,510	16.93	31,400	9.94	7,480
7	-	-	-	-	3.83	568	8.98	5,720	16.83	31,000	9.85	7,300
8	3.13	287	3.24	325	3.98	640	9.04	5,820	16.55	29,600	9.79	7,180
9	-	-	-	-	4.17	735	9.05	5,840	16.08	27,400	9.73	7,070
10	3.15	294	3.23	322	4.45	882	9.06	5,850	15.53	25,200	9.69	6,990
11	-	-	-	-	4.82	1,090	9.08	5,890	14.98	23,000	9.65	6,920
N	3.17	301	3.21	315	5.16	1,320	9.15	6,000	14.45	20,900	9.59	6,800
1	-	-	-	-	5.50	1,590	9.28	6,230	13.95	18,900	9.52	6,670
2	3.20	311	3.20	311	5.83	1,850	9.53	6,690	13.53	17,400	9.45	6,540
3	-	-	-	-	6.10	2,090	9.94	7,480	13.13	16,000	9.37	6,400
4	3.24	325	3.24	325	6.29	2,260	10.46	8,610	12.77	14,900	9.34	6,340
5	-	-	-	-	6.43	2,400	11.07	10,000	12.45	13,800	9.20	6,090
6	3.27	336	3.25	329	6.55	2,520	11.79	11,900	12.13	12,900	9.11	5,940
7	-	-	-	-	6.63	2,600	12.48	13,900	11.87	12,200	9.02	5,780
8	3.28	340	3.29	343	6.73	2,700	13.05	15,800	11.60	11,400	8.93	5,630
9	-	-	-	-	6.83	2,810	13.56	17,500	11.35	10,800	8.84	5,480
10	3.28	340	3.30	347	6.97	2,970	13.98	19,100	11.10	10,100	8.75	5,330
11	-	-	-	-	7.13	3,140	14.40	20,700	10.90	9,640	8.65	5,170
M	3.28	340	3.34	362	7.32	3,360	14.88	22,600	10.70	9,160	8.55	5,010
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.38	4,750	7.10	3,110	6.30	2,270	5.68	1,730	-	-	-	-
4	8.22	4,510	7.03	3,030	6.23	2,210	5.63	1,690	5.32	1,450	4.92	1,150
6	8.08	4,310	6.96	2,960	6.18	2,160	5.60	1,670	-	-	-	-
8	7.95	4,140	6.88	2,870	6.12	2,110	5.57	1,650	5.26	1,400	4.87	1,120
10	7.84	3,990	6.82	2,800	6.06	2,050	5.53	1,610	-	-	-	-
N	7.73	3,860	6.75	2,720	6.01	2,010	5.50	1,590	5.20	1,350	4.81	1,090
2	7.63	3,740	6.69	2,660	5.97	1,970	5.49	1,580	-	-	-	-
4	7.54	3,630	6.63	2,600	5.92	1,930	5.47	1,570	5.12	1,290	4.76	1,060
6	7.44	3,510	6.57	2,540	5.88	1,890	5.45	1,550	-	-	-	-
8	7.35	3,400	6.50	2,470	5.83	1,850	5.43	1,530	5.06	1,250	4.72	1,030
10	7.26	3,290	6.43	2,400	5.78	1,810	5.42	1,530	-	-	-	-
M	7.19	3,210	6.36	2,330	5.73	1,770	5.40	1,510	4.99	1,200	4.63	982

Supplemental records.- Sept. 22, 6:10 a.m., 16.93 ft., 31,400 sec.-ft.

East Branch of Delaware River at Fishs Eddy, N. Y.

Location.- Water-stage recorder, lat. 41°58'00", long. 75°10'50", at railroad bridge in Fishs Eddy, Delaware County, 4½ miles below mouth of Beaver Kill. Zero of gage is 950.80 feet above mean sea level (general adjustment of 1912).
Drainage area.- 783 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 21,400 second-feet; extended to peak stage on basis of area-mean velocity study and logarithmic plotting.
Maxima.- September 1938: Discharge, 41,000 second-feet 12:45 a.m. Sept. 22 (gage height, 18.21 feet).
November 1912 to August 1938: Discharge, 53,300 second-feet Aug. 24, 1933 (gage height, 20.60 feet).
Maximum discharge known, about 70,000 second-feet (from present rating extended logarithmically to peak stage) Oct. 9, 1903 (gage height, 23.6 feet, present site and datum, from information by local residents).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	473	1,590	9	468	712	17	548	420	25	4,900	1,170
2	468	1,370	10	373	664	18	566	410	26	3,650	965
3	416	1,210	11	332	605	19	620	399	27	3,000	832
4	387	1,090	12	320	581	20	2,950	415	28	2,650	761
5	387	973	13	395	551	21	17,600	626	29	2,160	740
6	368	893	14	572	528	22	29,500	657	30	1,840	740
7	397	810	15	536	487	23	11,400	516	31		670
8	590	740	16	662	448	24	7,000	613			
Mean monthly discharge, in second-feet										3,184	748
Run-off, in inches										4.54	1.11

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	8.10	7,240	18.20	41,000	11.09	14,600
2	-	-	-	-	3.18	776	8.65	8,300	18.10	40,500	10.90	14,000
3	-	-	-	-	-	-	9.20	9,520	17.98	39,900	10.72	13,500
4	2.80	530	2.93	610	3.31	867	9.55	10,400	17.89	39,500	10.60	13,200
5	-	-	-	-	-	-	9.79	11,000	17.89	39,500	10.49	12,800
6	-	-	-	-	3.57	1,070	9.91	11,300	17.93	39,700	10.39	12,500
7	-	-	-	-	-	-	10.00	11,500	17.90	39,600	10.32	12,300
8	2.81	536	2.91	596	3.93	1,380	10.01	11,500	17.70	38,600	10.26	12,200
9	-	-	-	-	-	-	10.00	11,500	17.35	37,100	10.19	12,000
10	-	-	-	-	4.55	1,980	9.99	11,500	16.85	34,900	10.13	11,800
11	-	-	-	-	-	-	9.98	11,400	16.28	32,600	10.06	11,600
N	2.86	566	2.90	590	5.20	2,670	10.00	11,500	15.72	30,400	10.00	11,500
1	-	-	-	-	-	-	10.12	11,800	15.16	28,100	9.95	11,400
2	-	-	-	-	5.92	3,560	10.40	12,600	14.65	26,100	9.87	11,200
3	-	-	-	-	-	-	10.90	14,000	14.20	24,600	9.79	11,000
4	2.90	590	2.93	610	6.37	4,200	11.80	16,800	13.79	23,100	9.66	10,600
5	-	-	-	-	-	-	12.90	20,000	13.40	21,800	9.55	10,400
6	-	-	-	-	6.69	4,700	14.05	24,000	13.05	20,500	9.44	10,100
7	-	-	-	-	-	-	15.22	28,400	12.70	19,400	9.32	9,840
8	2.92	603	3.00	655	6.91	5,070	16.25	32,500	12.39	18,500	9.22	9,640
9	-	-	-	-	-	-	17.05	35,700	12.09	17,600	9.11	9,420
10	-	-	-	-	7.22	5,620	17.62	38,300	11.80	16,800	9.00	9,200
11	-	-	-	-	-	-	18.00	40,000	11.52	15,900	8.90	9,000
M	2.93	610	3.10	720	7.70	6,480	18.19	41,000	11.30	15,200	8.80	8,800
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.60	8,400	7.04	5,570	6.04	4,040	5.41	3,170	-	-	-	-
4	8.40	8,010	6.94	5,400	5.99	3,970	5.38	3,130	5.13	2,820	4.67	2,280
6	8.24	7,710	6.86	5,280	5.92	3,870	5.33	3,070	-	-	-	-
8	8.10	7,440	6.78	5,150	5.87	3,800	5.30	3,030	5.04	2,710	4.60	2,200
10	7.96	7,180	6.69	5,000	5.81	3,710	5.27	2,990	-	-	-	-
N	7.82	6,930	6.60	4,860	5.76	3,640	5.24	2,950	4.97	2,620	4.55	2,140
2	7.70	6,710	6.51	4,720	5.71	3,570	5.24	2,950	-	-	-	-
4	7.59	6,510	6.42	4,590	5.67	3,520	5.27	2,990	4.90	2,540	4.49	2,080
6	7.47	6,300	6.35	4,480	5.62	3,450	5.26	2,980	-	-	-	-
8	7.37	6,130	6.27	4,360	5.57	3,380	5.24	2,950	4.81	2,430	4.43	2,020
10	7.26	5,940	6.20	4,260	5.51	3,300	5.22	2,930	-	-	-	-
M	7.16	5,770	6.11	4,130	5.47	3,250	5.20	2,900	4.74	2,350	4.39	1,980

Supplemental records.- Sept. 22, 12:45 a.m., 18.21 ft., 41,000 sec.-ft.

Delaware River at Port Jervis, N. Y.

Location.- Water-stage recorder, lat. 41°22'20", long. 74°41'50", near highway bridge at Port Jervis, Orange County, 1½ miles above mouth of Neversink River. Zero of gage is 415.35 feet above mean sea level (general adjustment of 1929).

Drainage area.- 3,076 square miles; 369 square miles affected by storage in Lake Wallenpaupack and Toronto and Swinging Bridge Reservoirs.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- For 1938 defined by current-meter measurements below 44,500 second-feet; extended to peak stage on basis of slope-area determination and area-mean velocity study. For 1936 defined by current-meter measurements below 32,300 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 101,000 second-feet noon Sept. 22 (gage height, 14.95 feet).

October 1904 to August 1938: Discharge, 108,000 second-feet Mar. 18, 1936 (gage height, 17.55 feet).

Maximum known discharge, about 155,000 second-feet Oct. 10, 11, 1903 (gage height, 23.3 feet); maximum known stage, 25.5 feet Mar. 8, 1904 (ice gorge).

Remarks.- Large diurnal fluctuation at medium and low stages due to operation of power plants on tributary streams. Mean monthly discharge adjusted for storage in Toronto Reservoir at Toronto Dam, N. Y.; Swinging Bridge Reservoir at Swinging Bridge Dam, N. Y.; and Wallenpaupack Reservoir at Wilsonville, Pa.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	2,950	5,700	9	2,800	2,770	17	3,800	2,110	25	17,400	3,820
2	2,850	4,860	10	2,850	2,720	18	3,000	2,660	26	13,000	4,360
3	2,220	4,680	11	2,040	2,750	19	3,500	2,760	27	10,400	3,520
4	1,700	4,280	12	1,980	2,480	20	5,400	2,850	28	8,800	3,720
5	1,640	3,760	13	2,480	2,580	21	24,000	3,000	29	7,600	3,340
6	1,800	3,840	14	2,500	3,220	22	89,000	2,830	30	6,600	2,710
7	2,650	3,890	15	3,300	2,950	23	49,000	2,520	31		2,760
8	2,800	3,000	16	3,650	2,400	24	26,500	2,340			
Mean monthly discharge, in second-feet (observed)										10,270	3,264
Run-off, in inches (observed)										3.73	1.22
Mean monthly discharge, in second-feet (adjusted)										9,994	2,649
Run-off, in inches (adjusted)										3.63	0.99

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.10	3,580	2.78	2,790	3.57	4,970	4.49	8,420	12.26	66,700	12.88	74,100
2	2.99	3,300	2.73	2,680	3.53	4,860	4.69	9,260	12.64	71,200	12.58	70,500
3	2.91	3,100	2.68	2,570	3.57	4,980	4.90	10,200	12.96	75,000	12.28	66,900
4	2.86	2,970	2.63	2,460	3.61	5,110	4.94	10,400	13.28	78,900	12.00	63,800
5	2.88	3,020	2.61	2,410	3.66	5,280	4.90	10,200	13.60	83,100	11.70	60,500
6	3.10	3,580	2.88	3,020	3.67	5,320	4.97	10,500	13.97	87,900	11.44	57,600
7	3.18	3,800	3.04	3,420	3.61	5,110	5.23	11,700	14.24	91,400	11.18	54,900
8	3.10	3,580	3.01	3,350	3.53	4,860	5.72	14,100	14.50	95,000	10.98	52,900
9	2.99	3,300	3.04	3,420	3.45	4,600	6.30	17,000	14.68	97,500	10.72	50,300
10	2.90	3,070	3.09	3,530	3.38	4,380	6.69	19,200	14.80	99,200	10.50	48,100
11	2.83	2,900	3.04	3,420	3.33	4,230	6.90	20,500	14.90	101,000	10.30	46,300
N	2.79	2,810	3.00	3,320	3.31	4,170	7.02	21,200	14.95	101,000	10.18	45,200
1	2.76	2,740	2.97	3,240	3.30	4,140	7.23	22,500	14.89	100,000	10.11	44,600
2	2.72	2,650	2.92	3,120	3.29	4,110	7.50	24,100	14.78	98,900	10.00	43,600
3	2.70	2,610	2.91	3,100	3.33	4,230	7.70	25,500	14.68	97,500	9.88	42,500
4	2.67	2,540	2.91	3,100	3.38	4,380	7.96	27,300	14.51	95,100	9.71	41,000
5	2.64	2,480	2.91	3,100	3.70	5,420	8.22	29,100	14.40	93,600	9.50	39,100
6	2.62	2,430	3.08	3,530	4.01	6,540	8.66	32,400	14.32	92,500	9.38	38,100
7	2.63	2,460	3.40	4,440	4.11	6,920	9.10	35,900	14.18	90,600	9.27	37,300
8	2.68	2,570	3.53	4,860	4.16	7,110	9.50	39,100	14.06	89,100	9.18	36,500
9	2.78	2,790	3.58	5,020	4.26	7,500	9.96	43,200	13.86	86,500	9.10	35,900
10	2.83	2,900	3.61	5,110	4.33	7,780	10.56	48,700	13.66	83,900	9.00	35,100
11	2.85	2,950	3.60	5,080	4.40	8,060	11.10	54,100	13.45	81,200	8.92	34,500
M	2.80	2,830	3.59	5,050	4.43	8,180	11.78	61,400	13.17	77,500	8.90	34,300
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.70	32,700	7.00	21,100	5.80	14,500	5.21	11,600	4.80	9,740	4.35	7,860
4	8.50	31,100	6.72	19,400	5.64	13,700	5.13	11,200	4.73	9,430	4.51	8,500
6	8.33	29,900	6.60	18,700	5.57	13,400	4.94	10,400	4.55	8,670	4.31	7,700
8	8.16	28,700	6.50	18,100	5.52	13,100	4.88	10,100	4.50	8,460	4.20	7,260
10	7.97	27,400	6.40	17,500	5.49	13,000	4.89	10,100	4.54	8,630	4.25	7,460
N	7.80	26,200	6.31	17,000	5.42	12,600	4.86	10,000	4.53	8,590	4.23	7,380
2	7.65	25,200	6.22	16,600	5.37	12,400	4.81	9,780	4.51	8,500	4.21	7,300
4	7.50	24,100	6.13	16,200	5.41	12,600	4.90	10,200	4.52	8,540	4.20	7,260
6	7.36	23,300	6.02	15,600	5.54	13,200	5.09	11,100	4.63	9,010	4.38	7,980
8	7.21	22,400	5.97	15,400	5.41	12,600	4.92	10,300	4.60	8,880	4.33	7,780
10	7.09	21,600	5.90	15,000	5.40	12,500	4.72	9,390	4.49	8,420	4.20	7,260
M	6.98	21,000	5.80	14,500	5.16	11,400	4.67	9,170	4.39	8,020	4.08	6,800

Delaware River at Belvidere, N. J.

Location.- Water-stage recorder, lat. 40°49'36", long. 75°05'02", at Belvidere, Warren County, just below mouth of Pequest River. Zero of gage is 226.43 feet(revised) above mean sea level (general adjustment of 1929).
Drainage area.- 4,542 square miles; 369 square miles affected by storage in Lake Wallenpaupack and Toronto and Swinging Bridge Reservoirs.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 170,000 second-feet.
Maxima.- September 1938: Discharge, 116,000 second-feet 9 to 11 p.m. Sept. 22 (gage height, 19.27 feet).
1922 to August 1938: Discharge, 179,000 second-feet Mar. 19, 1936 (gage height, 25.0 feet).
Maximum discharge known, 220,000 second-feet Oct. 10, 1903 (gage height, 28.6 feet, from floodmarks).
Remarks.- Mean monthly discharge and run-off, in inches, adjusted for storage in Lake Wallenpaupack and in Toronto and Swinging Bridge Reservoirs.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	4,190	9,220	9	3,580	5,000	17	4,720	3,700	25	28,400	5,900
2	4,060	7,910	10	3,580	4,720	18	4,580	3,470	26	20,100	7,030
3	3,820	7,030	11	3,470	4,450	19	4,190	3,940	27	16,100	6,530
4	3,140	6,860	12	2,730	4,450	20	8,380	4,190	28	13,700	5,900
5	2,630	6,210	13	2,830	4,060	21	21,500	5,290	29	11,500	5,900
6	2,440	5,900	14	3,140	4,320	22	89,800	5,290	30	10,200	5,140
7	2,730	6,700	15	3,580	4,580	23	87,000	4,450	31		4,720
8	3,470	5,740	16	4,580	4,190	24	44,200	4,450			
Mean monthly discharge, in second-feet (observed)										13,940	5,395
Mean monthly discharge, in second-feet (adjusted)										13,670	4,779
Run-off, in inches (adjusted)										3.36	1.21

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.62	4,780	4.45	4,320	4.80	5,290	6.66	12,100	12.66	50,400	19.10	114,000
2	4.60	4,720	4.46	4,350	4.90	5,590	6.66	12,100	13.00	53,500	19.00	112,000
3	4.58	4,670	4.44	4,290	4.98	5,840	6.67	12,200	13.30	56,200	18.85	110,000
4	4.55	4,580	4.42	4,240	5.05	6,060	6.73	12,400	13.64	59,300	18.70	109,000
5	4.52	4,500	4.40	4,190	5.12	6,270	6.83	12,900	14.10	63,400	18.55	108,000
6	4.50	4,450	4.37	4,120	5.18	6,470	6.98	13,600	14.58	68,000	18.32	105,000
7	4.48	4,400	4.35	4,060	5.24	6,660	7.15	14,400	15.05	72,500	18.12	103,000
8	4.46	4,350	4.32	3,990	5.30	6,860	7.32	15,200	15.57	77,700	17.85	100,000
9	4.44	4,290	4.30	3,940	5.39	7,170	7.46	15,900	16.07	82,700	17.60	98,000
10	4.43	4,270	4.29	3,920	5.50	7,550	7.60	16,600	16.52	87,200	17.30	95,000
11	4.44	4,290	4.29	3,920	5.63	8,020	7.70	17,100	17.00	92,000	17.00	92,000
N	4.50	4,450	4.30	3,940	5.77	8,530	7.80	17,600	17.35	95,500	16.65	88,500
1	4.56	4,610	4.31	3,960	5.88	8,940	7.92	18,200	17.72	99,200	16.32	85,200
2	4.62	4,780	4.33	4,020	5.96	9,250	8.12	19,200	18.05	102,000	16.00	82,000
3	4.65	4,860	4.35	4,060	6.03	9,530	8.35	20,400	18.30	105,000	15.65	78,500
4	4.66	4,890	4.38	4,140	6.10	9,800	8.70	22,400	18.60	108,000	15.30	75,000
5	4.65	4,860	4.43	4,270	6.17	10,100	8.95	23,900	18.80	110,000	15.00	72,000
6	4.61	4,750	4.48	4,400	6.23	10,300	9.34	26,200	19.00	112,000	14.65	68,600
7	4.57	4,640	4.50	4,450	6.30	10,600	9.82	29,100	19.10	114,000	14.40	66,300
8	4.52	4,500	4.52	4,500	6.36	10,800	10.40	33,100	19.20	115,000	14.12	63,600
9	4.48	4,400	4.57	4,640	6.42	11,100	11.00	37,300	19.25	116,000	13.90	61,600
10	4.45	4,320	4.60	4,720	6.50	11,500	11.45	40,600	19.27	116,000	13.70	59,800
11	4.45	4,320	4.63	4,800	6.57	11,800	11.91	44,300	19.25	116,000	13.53	58,300
M	4.45	4,320	4.70	5,000	6.62	12,000	12.33	47,600	19.20	115,000	13.35	56,600
	September 24		September 25		September 26		September 27		September 28		September 29	
2	13.02	53,700	10.40	33,100	8.77	22,800	7.76	17,400	7.11	14,200	6.67	12,200
4	12.70	50,800	10.22	31,800	8.66	22,200	7.75	17,400	7.12	14,200	6.67	12,200
6	12.42	48,400	10.05	30,600	8.55	21,500	7.76	17,400	7.18	14,500	6.68	12,200
8	12.20	46,600	9.90	29,600	8.46	21,000	7.73	17,200	7.16	14,400	6.69	12,300
10	12.00	45,000	9.78	28,900	8.37	20,400	7.65	16,800	7.08	14,000	6.64	12,100
N	11.80	43,400	9.65	28,100	8.28	20,000	7.56	16,400	6.98	13,600	6.58	11,800
2	11.64	42,100	9.55	27,500	8.19	19,600	7.48	16,000	6.93	13,400	6.52	11,600
4	11.35	39,800	9.40	26,600	8.10	19,100	7.42	15,700	6.90	13,200	6.50	11,500
6	11.13	38,200	9.27	25,800	8.00	18,600	7.33	15,200	6.83	12,900	6.47	11,400
8	11.00	37,300	9.10	24,800	7.93	18,200	7.25	14,800	6.78	12,700	6.40	11,000
10	10.78	35,800	8.98	24,100	7.86	17,900	7.18	14,500	6.71	12,400	6.35	10,800
M	10.60	34,500	8.88	23,500	7.80	17,600	7.13	14,200	6.69	12,300	6.21	10,600

Delaware River at Riegelsville, N. J.

Location.- Water-stage recorder, lat. 40°35'36", long. 75°11'17", at suspension bridge, Riegelsville, Warren County, 600 feet above mouth of Musconetcong River, flow of which is included in records. Zero of gage is 125.12 feet (revised) above mean sea level (general adjustment of 1929).

Drainage area.- 6,344 square miles (including drainage area of Musconetcong River); 395 square miles affected by storage in Lake Wallenpaupack, Toronto and Swinging Bridge Reservoirs, and Lake Hopatcong.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 27,000 second-feet; extended to peak stage by averaging discharges obtained from slope-area determination and from a rating curve based on shape of former rating curve, which was defined by current-meter measurements below 95,000 second-feet.

Maxima.- September 1938: Discharge, 123,000 second-feet 11 p.m. Sept. 22 to 2 a.m. Sept. 23 (gage height, 23.00 feet).

1906 to August 1938: Discharge, 210,000 second-feet Mar. 19, 1936 (gage height, 32.45 feet).

Maximum discharge known, about 275,000 second-feet Oct. 10, 1903 (gage height, 35.9 feet, from floodmarks).

Remarks.- Mean monthly discharge and run-off, in inches, adjusted for storage in Lake Wallenpaupack, Toronto and Swinging Bridge Reservoirs, and Lake Hopatcong and for diversion in Delaware Division Canal.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6,230	12,800	9	5,010	7,650	17	6,380	5,920	25	37,900	8,810
2	6,080	11,300	10	5,010	7,170	18	6,380	5,460	26	27,700	9,850
3	5,460	9,850	11	5,010	6,850	19	6,540	5,920	27	22,300	9,500
4	5,010	9,500	12	4,430	6,700	20	12,400	6,230	28	19,000	8,470
5	4,290	8,810	13	4,020	6,380	21	30,300	7,810	29	16,000	8,470
6	4,020	8,470	14	4,720	6,230	22	91,900	7,810	30	14,000	7,980
7	3,880	9,850	15	5,160	6,850	23	103,000	7,170	31		7,330
8	4,860	9,150	16	6,700	6,540	24	56,200	7,010			
Mean monthly discharge, in second-feet (observed)										17,660	7,995
Mean monthly discharge, in second-feet (adjusted)										17,460	7,407
Run-off, in inches (adjusted)										3.07	1.35

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.11	6,880	3.97	6,450	4.34	7,620	7.58	20,400	14.18	56,700	23.00	123,000
2	4.09	6,820	3.94	6,350	4.41	7,840	7.72	21,000	14.64	59,700	22.95	123,000
3	4.06	6,730	3.92	6,290	4.49	8,110	7.86	21,700	15.12	62,900	22.85	122,000
4	4.03	6,630	3.88	6,170	4.58	8,400	7.94	22,100	15.50	65,500	22.75	122,000
5	4.01	6,570	3.85	6,080	4.67	8,710	7.98	22,200	15.90	68,300	22.60	120,000
6	3.99	6,510	3.84	6,040	4.82	9,220	7.99	22,300	16.24	70,700	22.45	118,000
7	3.97	6,450	3.83	6,010	4.98	9,780	7.99	22,300	16.70	73,900	22.25	118,000
8	3.94	6,350	3.83	6,010	5.10	10,200	8.01	22,400	17.20	77,500	22.05	116,000
9	3.91	6,260	3.83	6,010	5.23	10,700	8.04	22,500	17.72	81,300	21.82	113,000
10	3.89	6,200	3.83	6,010	5.41	11,300	8.17	23,200	18.28	85,500	21.60	112,000
11	3.87	6,140	3.86	6,110	5.52	11,800	8.34	23,900	18.86	89,900	21.30	109,000
N	3.86	6,110	3.85	6,080	5.58	11,900	8.59	25,200	19.35	93,700	21.00	107,000
1	3.85	6,080	3.87	6,140	5.64	12,200	8.87	26,600	19.88	97,800	20.62	104,000
2	3.83	6,010	3.89	6,200	5.74	12,600	9.23	28,400	20.34	101,000	20.25	100,000
3	3.82	5,980	3.91	6,260	5.86	13,000	9.73	30,900	20.76	105,000	19.85	97,600
4	3.81	5,950	3.98	6,480	6.00	13,600	10.25	33,600	21.20	108,000	19.40	94,100
5	3.81	5,950	4.04	6,660	6.18	14,300	10.66	35,900	21.56	112,000	19.00	91,000
6	3.83	6,010	4.11	6,880	6.36	15,000	11.00	37,700	21.90	114,000	18.60	87,900
7	3.86	6,110	4.16	7,040	6.52	15,700	11.28	39,300	22.20	117,000	18.20	84,900
8	3.90	6,230	4.18	7,110	6.71	16,400	11.70	41,600	22.42	118,000	17.80	81,900
9	3.94	6,350	4.19	7,140	6.94	17,500	12.10	43,900	22.64	120,000	17.40	79,000
10	3.97	6,450	4.23	7,270	7.15	18,400	12.58	46,800	22.80	122,000	17.00	76,100
11	3.99	6,510	4.26	7,360	7.31	19,000	13.04	49,500	22.92	123,000	16.70	73,900
M	3.97	6,450	4.29	7,460	7.44	19,700	13.60	53,000	22.98	123,000	16.40	71,800
	September 24		September 25		September 26		September 27		September 28		September 29	
2	15.90	68,300	12.00	43,300	9.81	31,400	8.31	23,800	7.46	19,800	6.81	16,900
4	15.42	64,900	11.80	42,200	9.65	30,400	8.23	23,400	7.40	19,500	6.75	16,600
6	15.00	62,100	11.60	41,000	9.50	29,700	8.16	23,100	7.38	19,400	6.71	16,400
8	14.60	59,500	11.40	39,900	9.35	29,700	8.12	22,900	7.38	19,400	6.68	16,300
10	14.22	56,900	11.20	38,800	9.20	28,200	8.10	22,800	7.39	19,400	6.68	16,300
N	13.90	54,900	11.00	37,700	9.10	27,700	8.07	22,600	7.39	19,400	6.68	16,300
2	13.64	53,200	10.90	37,200	9.00	27,200	7.98	22,200	7.32	19,100	6.65	16,200
4	13.35	51,400	10.75	36,400	8.89	26,600	7.89	21,800	7.21	18,600	6.60	16,000
6	13.05	49,600	10.55	35,200	8.78	26,100	7.95	22,100	7.12	18,300	6.52	15,700
8	12.80	48,100	10.35	34,200	8.65	25,400	7.77	21,200	7.07	18,000	6.46	15,400
10	12.50	46,300	10.15	33,100	8.52	24,800	7.64	20,700	7.00	17,700	6.42	15,300
M	12.22	44,600	10.00	32,300	8.42	24,300	7.53	20,200	6.90	17,300	6.35	15,000

Delaware River at Trenton, N. J.

Location.- Water-stage recorder, lat. 40°13'18", long. 74°46'38", 200 feet above Calhoun Street Bridge, Trenton, Mercer County, half a mile above mouth of Assunpink Creek. Zero of gage is 7.77 feet above mean sea level (general adjustment of 1929).
Drainage area.- 6,796 square miles; 395 square miles affected by storage in Lake Wallenpaupack, Toronto and Swinging Bridge Reservoirs, and Lake Hopatcong.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 225,000 second-feet.
Maxima.- September 1938: Discharge, 125,000 second-feet 6 to 7 a.m. Sept. 23 (gage height, 11.45 feet).
1913 to August 1938: Discharge, 227,000 second-feet Mar. 19, 1936 (gage height, 16.66 feet).
Maximum stage known, 22.8 feet, from floodmark, caused by ice jam Mar. 8, 1904.
Remarks.- Mean monthly discharge and run-off, in inches, adjusted for diversion in Delaware and Raritan Canal and for storage in Lake Wallenpaupack, Toronto and Swinging Bridge Reservoirs, and Lake Hopatcong.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	5,860	13,500	9	4,890	8,280	17	6,500	6,280	25	41,900	9,150
2	6,060	12,200	10	4,890	7,470	18	6,280	5,650	26	30,500	10,400
3	6,060	11,000	11	4,890	7,220	19	6,740	5,650	27	23,900	10,400
4	5,260	10,100	12	4,710	6,970	20	12,900	6,060	28	20,800	9,460
5	4,710	9,770	13	4,180	6,740	21	42,000	6,970	29	17,500	9,150
6	4,180	9,150	14	4,180	6,280	22	82,200	8,280	30	15,200	8,860
7	4,010	10,100	15	4,710	6,740	23	114,000	7,740	31		7,740
8	4,180	10,400	16	5,860	6,740	24	63,500	6,970			
Mean monthly discharge, in second-feet (observed)										18,750	8,433
Mean monthly discharge, in second-feet (adjusted)										18,580	7,845
Run-off, in inches (adjusted)										3.05	1.33

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.20	6,060	1.21	6,100	1.43	7,120	3.53	21,500	7.15	60,200	11.13	119,000
2	1.19	6,020	1.20	6,060	1.50	7,470	3.85	24,400	7.13	60,000	11.21	120,000
3	1.18	5,980	1.20	6,060	1.65	8,280	4.11	26,700	7.11	59,700	11.27	121,000
4	1.17	5,940	1.19	6,020	1.87	9,580	4.30	28,500	7.17	60,500	11.42	124,000
5	1.17	5,940	1.19	6,020	2.08	10,900	4.35	29,000	7.30	62,200	11.42	124,000
6	1.19	6,020	1.20	6,060	2.23	11,800	4.33	28,800	7.44	64,000	11.45	125,000
7	1.22	6,150	1.20	6,060	2.40	12,800	4.29	28,400	7.61	66,200	11.45	125,000
8	1.26	6,320	1.22	6,150	2.53	13,700	4.25	28,000	7.79	68,600	11.40	124,000
9	1.29	6,460	1.24	6,240	2.63	14,400	4.25	28,000	7.95	70,700	11.33	123,000
10	1.32	6,590	1.26	6,320	2.65	14,600	4.26	28,100	8.12	73,100	11.27	121,000
11	1.35	6,740	1.27	6,370	2.59	14,100	4.30	28,500	8.29	75,500	11.19	120,000
N	1.36	6,780	1.45	7,220	2.51	13,600	4.43	29,800	8.46	77,900	11.08	119,000
1	1.36	6,780	1.39	6,920	2.47	13,300	4.67	32,200	8.68	81,200	11.00	117,000
2	1.35	6,740	1.39	6,920	2.45	13,200	5.05	36,000	8.93	85,000	10.91	115,000
3	1.35	6,740	1.42	7,070	2.45	13,200	5.62	42,100	9.19	88,800	10.78	114,000
4	1.34	6,690	1.49	7,420	2.45	13,200	6.43	51,200	9.40	92,000	10.61	111,000
5	1.32	6,590	1.54	7,680	2.46	13,200	7.35	62,800	9.68	96,200	10.46	108,000
6	1.31	6,550	1.53	7,630	2.52	13,600	7.95	70,700	9.90	99,500	10.27	105,000
7	1.30	6,500	1.48	7,370	2.58	14,100	8.09	72,700	10.11	103,000	10.07	102,000
8	1.29	6,460	1.44	7,170	2.65	14,600	8.01	71,500	10.29	106,000	9.88	99,200
9	1.27	6,370	1.41	7,020	2.72	15,000	7.81	68,800	10.43	108,000	9.70	96,500
10	1.25	6,280	1.39	6,920	2.84	15,900	7.60	66,100	10.64	111,000	9.45	92,800
11	1.24	6,240	1.38	6,880	2.99	17,000	7.40	63,500	10.80	114,000	9.21	89,200
M	1.22	6,150	1.38	6,880	3.22	18,900	7.24	61,400	10.95	116,000	9.01	86,200
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.67	81,000	6.18	48,300	4.85	34,000	4.03	26,000	3.74	23,400	3.21	18,800
4	8.35	76,300	6.07	47,100	4.77	33,200	3.98	25,500	3.64	22,500	3.18	18,500
6	8.04	72,000	5.91	45,300	4.68	32,300	3.92	25,000	3.54	21,600	3.14	18,200
8	7.75	68,000	5.79	44,000	4.59	31,400	3.87	24,500	3.47	20,900	3.10	17,900
10	7.50	64,800	5.65	42,400	4.52	30,700	3.82	24,100	3.42	20,500	3.05	17,500
N	7.38	63,200	5.54	41,200	4.45	30,000	3.79	23,800	3.39	20,200	3.02	17,300
2	7.12	59,900	5.43	40,000	4.39	29,400	3.76	23,500	3.37	20,100	3.00	17,100
4	6.97	58,000	5.34	39,100	4.33	28,800	3.75	23,400	3.36	20,000	2.98	16,900
6	6.78	55,500	5.24	38,100	4.27	28,200	3.74	23,400	3.36	20,000	2.98	16,900
8	6.61	53,300	5.14	37,000	4.21	27,600	3.70	23,000	3.34	19,800	2.97	16,900
10	6.45	51,400	5.05	36,000	4.15	27,000	3.75	23,400	3.30	19,500	2.95	16,700
M	6.31	49,700	4.95	35,000	4.09	26,500	3.80	23,900	3.25	19,100	2.93	16,500

Mill Brook at Arena, N. Y.

Location.- Lat. 42°06'30", long. 74°43'55", 0.2 mile above steel highway bridge, 0.6 mile southeast of Arena, Delaware County, and about 1 mile above confluence with East Branch of Delaware River.
Drainage area.- 25.0 square miles.
Gage-height record.- Graph based on twice-daily readings of staff-gage and floodmarks.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 957 second-feet; extended to peak stage on basis of area-mean velocity study. For 1937 defined by current-meter measurements below 269 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 4,500 second-feet at about 7 p.m. Sept. 21 (gage height, 7.6 feet, from floodmarks).
February 1937 to August 1938: Discharge, 1,550 second-feet Oct. 23, 1937 (gage height, 5.0 feet, from graph based on twice-daily readings of staff-gage).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	17	41	9	11	22	17	14	14	25	118	31
2	14	35	10	11	21	18	16	13	26	85	33
3	12	31	11	10	20	19	23	14	27	82	33
4	12	30	12	9.6	20	20	150	27	28	64	35
5	11	28	13	17	18	21	1,540	22	29	55	33
6	11	26	14	12	17	22	624	19	30	47	30
7	10	25	15	21	16	23	283	22	31		29
8	14	24	16	18	16	24	164	30			
Mean monthly discharge, in second-feet										116	25.0
Run-off, in inches										5.18	1.15

Tremper Kill near Shavertown, N. Y.

Location.- Water-stage recorder, lat. 42°07'15", long. 74°49'10", 500 feet above highway bridge, 2¼ miles northeast of Shavertown, Delaware County, and 2¼ miles above confluence with East Branch of Delaware River.
Drainage area.- 33.0 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 594 second-feet; extended logarithmically to peak stage, verified by run-off comparison with other streams in Delaware River Basin. For 1937 defined by current-meter measurements below 217 second-feet; extended logarithmically to peak stage. Concrete control subsequent to November 1937.
Maxima.- September 1938: Discharge, 4,250 second-feet 6 p.m. Sept. 21 (gage height, 7.12 feet).
February 1937 to August 1938: Discharge, 1,800 second-feet Oct. 23, 1937 (gage height, 4.07 feet, present site and datum but prior to concrete control).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	16	47	9	9.5	20	17	22	13	25	170	29
2	10	40	10	6.7	20	18	28	12	26	128	22
3	8.8	35	11	6.0	18	19	27	12	27	100	21
4	8.8	33	12	5.7	17	20	260	17	28	82	20
5	7.4	29	13	43	16	21	1,620	36	29	65	21
6	5.7	27	14	18	16	22	1,060	20	30	53	21
7	13	26	15	34	15	23	465	16	31		20
8	16	23	16	29	14	24	250	24			
Mean monthly discharge, in second-feet										152	22.6
Run-off, in inches										5.14	.79

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	2.50	60	4.10	706	5.46	2,070	3.62	516
2	2.31	32	2.22	23	2.53	66	4.00	640	5.27	1,860	3.63	522
3	-	-	-	-	2.57	73	3.88	566	5.13	1,720	3.68	549
4	2.31	32	2.22	23	2.63	85	3.80	520	4.95	1,540	3.75	590
5	-	-	-	-	2.74	110	3.78	509	4.91	1,500	3.80	620
6	2.30	31	2.22	23	2.93	159	3.79	515	4.75	1,340	3.80	620
7	-	-	-	-	3.13	222	3.81	526	4.66	1,260	3.76	596
8	2.28	29	2.22	23	3.23	257	3.81	526	4.53	1,150	3.71	566
9	-	-	-	-	3.29	280	3.81	526	4.45	1,080	3.66	538
10	2.27	28	2.22	23	3.30	284	3.83	537	4.39	1,030	3.61	510
11	-	-	-	-	3.28	276	3.97	621	4.33	984	3.57	488
N	2.26	27	2.21	22	3.23	257	4.23	798	4.26	932	3.53	466
1	-	-	-	-	3.19	242	4.58	1,080	4.19	883	3.50	450
2	2.25	26	2.21	22	3.15	228	4.73	1,210	4.13	841	3.46	428
3	-	-	-	-	3.13	222	5.18	1,660	4.06	792	3.43	412
4	2.24	25	2.21	22	3.14	225	5.85	2,420	3.96	722	3.40	395
5	-	-	-	-	3.17	236	6.58	3,390	3.95	715	3.38	384
6	2.23	24	2.26	27	3.24	261	7.12	4,250	3.89	674	3.35	368
7	-	-	-	-	3.33	296	6.80	3,750	3.84	644	3.33	356
8	2.23	24	2.29	30	3.45	347	6.60	3,460	3.81	626	3.31	346
9	-	-	-	-	3.62	426	6.40	3,190	3.78	608	3.29	335
10	2.23	24	2.40	44	3.90	578	6.30	3,060	3.71	566	3.28	330
11	-	-	-	-	4.05	673	5.97	2,640	3.68	549	3.26	320
M	2.22	23	2.47	55	4.10	706	5.75	2,380	3.65	532	3.25	315
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.22	300	-	-	-	-	-	-	-	-	-	-
4	3.19	286	2.96	191	2.79	136	-	-	-	-	-	-
6	3.17	276	-	-	-	-	2.67	105	2.59	86	2.51	69
8	3.15	268	2.92	177	2.78	134	-	-	-	-	-	-
10	3.13	258	-	-	-	-	-	-	-	-	-	-
N	3.11	250	2.90	174	2.76	128	2.65	100	2.57	82	2.49	65
2	3.09	241	-	-	-	-	-	-	-	-	-	-
4	3.07	233	2.87	161	2.73	120	-	-	-	-	-	-
6	3.05	225	-	-	-	-	2.64	98	2.54	75	2.47	62
8	3.03	217	2.83	148	2.71	115	-	-	-	-	-	-
10	3.01	209	-	-	-	-	-	-	-	-	-	-
M	2.99	202	2.82	145	2.69	110	2.61	90	2.52	71	2.45	58

Supplemental records.- Sept. 20, 9:30 a.m., 3.31 ft., 288 sec.-ft. Sept. 21, 12:30 a.m., 4.12 ft., 720 sec.-ft.

Terry Clove Kill near Pepacton, N. Y.

Location.- Lat. 42°07'45", long. 74°53'55", at timber farm bridge, 3½ miles north of Pepacton, Sullivan County, and 1¼ miles above confluence with Fall Clove Kill.
Drainage area.- 14.1 square miles.
Gage-height record.- Graph based on twice-daily readings of staff-gage and floodmark.
Stage-discharge relation.- Defined by current-meter measurements below 335 second-feet; extended to peak stage on basis of area-mean velocity study and logarithmic plotting.
Maxima.- September 1938: Discharge, 1,700 second-feet about 8 p.m. Sept. 21 (gage height, 6.2 feet, from floodmark).
February 1937 to August 1938: Discharge, 850 second-feet Jan. 25, 1938 (gage height, 4.7 feet, from graph based on twice-daily readings of staff-gage).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	6.6	16	9	4.8	7.2	17	12	4.9	25	75	19
2	4.7	14	10	3.8	6.9	18	14	4.7	26	52	12
3	4.2	11	11	3.5	6.2	19	20	4.7	27	44	11
4	3.6	10	12	3.8	6.0	20	126	6.3	28	33	11
5	3.5	9.4	13	22	5.8	21	603	12	29	26	12
6	3.5	9.0	14	8.4	5.5	22	464	7.2	30	21	11
7	10	8.1	15	21	5.2	23	226	5.5	31		9.9
8	8.8	7.4	16	15	5.1	24	128	22			
Mean monthly discharge, in second-feet										65.7	9.23
Run-off, in inches										5.20	.76

Beaver Kill at Craigie Clair, N. Y.

Location.- Water-stage recorder, lat. 41°57'45", long. 74°52'00", 100 feet below highway bridge at Craigie Clair, Sullivan County, 4 3/4 miles above confluence with Willowemoc Creek. Zero of gage is 1,399.69 feet above mean sea level (general adjustment of 1912).
Drainage area.- 82 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 2,680 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 8,360 second-feet 8 p.m. Sept. 21 (gage height, 9.72 feet).
May 1937 to August 1938: Discharge, 9,530 second-feet Aug. 11, 1938 (gage height, 10.11 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	73	161	9	54	86	17	56	60	25	432	138
2	69	139	10	49	81	18	61	59	26	332	100
3	63	125	11	47	78	19	73	57	27	293	90
4	61	117	12	46	73	20	630	59	28	253	86
5	57	106	13	67	69	21	3,400	86	29	208	88
6	53	99	14	59	66	22	2,080	70	30	180	84
7	62	95	15	66	64	23	980	63	31		81
8	78	88	16	64	63	24	610	86			
Mean monthly discharge, in second-feet										352	87.6
Run-off, in inches										4.79	1.23

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	6.10	1,700	7.98	4,260	-	-
2	-	-	-	-	3.61	173	6.00	1,600	7.66	3,720	5.41	1,100
3	-	-	-	-	-	-	5.90	1,500	7.40	3,300	-	-
4	-	-	3.04	59	3.81	233	5.82	1,430	7.18	2,990	5.49	1,150
5	-	-	-	-	-	-	5.75	1,360	7.01	2,760	-	-
6	3.07	63	-	-	4.20	386	5.71	1,330	6.84	2,540	5.51	1,170
7	-	-	-	-	-	-	5.69	1,310	6.68	2,350	-	-
8	-	-	3.04	59	4.55	558	5.66	1,290	6.57	2,210	5.45	1,120
9	-	-	-	-	-	-	5.62	1,260	6.45	2,080	-	-
10	-	-	-	-	4.72	651	5.61	1,250	6.34	1,950	5.38	1,080
11	-	-	-	-	-	-	5.70	1,320	6.24	1,840	-	-
N	3.07	63	3.04	59	4.79	690	5.94	1,540	6.15	1,750	5.28	1,010
1	-	-	-	-	-	-	6.28	1,890	6.07	1,670	-	-
2	-	-	-	-	4.75	668	6.65	2,310	6.00	1,600	5.20	950
3	-	-	-	-	-	-	7.26	3,100	5.95	1,550	-	-
4	-	-	3.11	69	4.69	634	8.00	4,300	5.88	1,480	5.12	894
5	-	-	-	-	-	-	8.67	5,610	5.81	1,420	-	-
6	3.05	60	-	-	4.72	651	9.23	6,980	5.76	1,370	5.05	848
7	-	-	-	-	-	-	9.58	7,940	5.70	1,320	-	-
8	-	-	3.26	94	4.91	761	9.72	8,360	5.64	1,270	4.99	809
9	-	-	-	-	-	-	9.57	7,910	5.59	1,230	-	-
10	-	-	-	-	5.61	1,250	9.19	6,880	5.54	1,190	4.94	779
11	-	-	-	-	-	-	8.76	5,810	5.48	1,150	-	-
M	3.04	59	3.45	132	6.10	1,700	8.34	4,940	5.44	1,120	4.89	749
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.79	690	4.39	475	-	-	-	-	-	-	-	-
6	-	-	-	-	4.12	353	3.98	297	3.90	267	3.76	221
8	4.72	651	4.35	456	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	4.64	607	4.31	437	4.07	332	3.98	297	3.86	253	3.72	208
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.57	568	4.26	414	-	-	-	-	-	-	-	-
6	-	-	-	-	4.02	312	3.98	297	3.82	240	3.69	199
8	4.50	530	4.21	392	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	4.44	500	4.17	374	3.98	297	3.94	282	3.79	230	3.67	194

Beaver Kill at Cooks Falls, N. Y.

Location.- Water-stage recorder, lat. 41°56'50", long. 74°58'45", about 125 feet below highway bridge in Cooks Falls, Delaware County, 5½ miles below mouth of Willowemoc Creek.
Drainage area.- 241 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 9,440 second-feet; extended to peak stage on basis of slope-area determination of peak flow of March 1936 flood. For 1933 defined by current-meter measurements below 2,700 second-feet; extended to peak stage on basis of slope-area determination of peak flow of March 1936 flood.
Maxima.- September 1938: Discharge, 15,300 second-feet 9:15 p.m. Sept. 21 (gage height, 13.67 feet).
July 1913 to August 1938: Discharge, 19,000 second-feet Aug. 24, 1933 (gage height, 17.8 feet, former site, same datum, from floodmarks).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	212	494	9	182	246	17	182	175	25	1,260	454
2	191	431	10	158	234	18	208	168	26	960	306
3	175	394	11	147	224	19	232	160	27	850	257
4	173	358	12	142	212	20	1,780	168	28	760	234
5	171	326	13	184	214	21	7,600	250	29	640	231
6	153	300	14	186	199	22	5,800	210	30	560	226
7	174	277	15	210	189	23	2,800	177	31		217
8	275	257	16	226	179	24	1,800	225			
Mean monthly discharge, in second-feet										946	258
Run-off, in inches										4.38	1.23

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	2.83	462	7.89	4,860	11.72	11,400	-	-
2	-	-	2.00	199	2.96	514	8.02	5,040	11.12	10,300	6.40	3,000
3	-	-	-	-	3.12	579	7.98	4,980	10.59	9,280	-	-
4	2.00	199	1.99	197	3.41	710	7.85	4,800	10.13	8,450	6.38	2,980
5	-	-	-	-	3.70	850	7.68	4,560	9.73	7,730	-	-
6	-	-	2.00	199	3.94	984	7.51	4,340	9.39	7,140	6.48	3,090
7	-	-	-	-	4.22	1,150	7.37	4,160	9.09	6,630	-	-
8	2.08	217	2.00	199	4.61	1,420	7.23	3,980	8.82	6,210	6.52	3,130
9	-	-	-	-	5.00	1,710	7.13	3,850	8.59	5,860	-	-
10	-	-	2.01	201	5.30	1,950	7.08	3,790	8.38	5,550	6.46	3,070
11	-	-	-	-	5.52	2,150	7.08	3,790	8.19	5,280	-	-
N	2.07	214	2.01	201	5.59	2,210	7.19	3,930	8.01	5,020	6.37	2,970
1	-	-	-	-	5.62	2,240	7.51	4,340	7.85	4,800	-	-
2	-	-	2.05	210	5.62	2,240	8.18	5,260	7.70	4,590	6.21	2,800
3	-	-	-	-	5.59	2,210	9.23	6,870	7.55	4,400	-	-
4	2.06	212	2.12	226	5.52	2,150	10.43	8,990	7.41	4,210	6.05	2,640
5	-	-	-	-	5.50	2,130	11.42	10,900	7.27	4,030	-	-
6	-	-	2.21	249	5.47	2,100	12.22	12,400	7.14	3,860	5.92	2,510
7	-	-	-	-	5.48	2,110	12.92	13,800	7.03	3,730	-	-
8	2.04	208	2.33	284	5.54	2,170	13.42	14,800	6.91	3,580	5.77	2,370
9	-	-	-	-	5.74	2,350	13.65	15,300	6.81	3,460	-	-
10	-	-	2.50	340	6.13	2,720	13.58	15,200	6.71	3,340	5.65	2,260
11	-	-	-	-	6.78	3,430	13.17	14,300	6.62	3,240	-	-
M	2.01	201	2.72	420	7.48	4,300	12.45	12,900	6.53	3,140	5.55	2,180
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.47	2,100	-	-	-	-	-	-	-	-	-	-
4	5.38	2,020	4.57	1,390	4.02	1,030	3.66	830	3.62	810	-	-
6	5.30	1,950	-	-	-	-	-	-	-	-	3.30	660
8	5.23	1,890	4.46	1,310	3.95	990	3.67	835	3.56	780	-	-
10	5.16	1,840	-	-	-	-	-	-	-	-	-	-
N	5.10	1,790	4.36	1,240	3.90	960	3.67	835	3.51	755	3.26	642
2	5.03	1,730	-	-	-	-	-	-	-	-	-	-
4	4.99	1,700	4.26	1,180	3.85	930	3.74	870	3.46	732	-	-
6	4.92	1,650	-	-	-	-	-	-	-	-	3.19	610
8	4.84	1,580	4.17	1,120	3.76	880	3.76	880	3.40	705	-	-
10	4.77	1,530	-	-	-	-	-	-	-	-	-	-
M	4.69	1,470	4.08	1,070	3.70	850	3.70	850	3.35	682	3.15	592

Supplemental records.- Sept. 21, 9:15 p.m., 13.67 ft., 15,300 sec.-ft.

Willowemoc Creek near Livingston Manor, N. Y.

Location.- Water-stage recorder, lat. 41°54'15", long. 74°48'50", three-quarters of a mile above highway bridge in Livingston Manor, Sullivan County, and 1½ miles above confluence with Little Beaver Kill.
Drainage area.- 63 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 3,220 second-feet and a measurement of 5,730 second-feet obtained by using standard cross section at cable with velocity determined by timing of floating drift.
Maxima.- September 1938: Discharge, 3,730 second-feet at 6 p.m. Sept. 21 (gage height, 6.06 feet).
August 1937 to August 1938: Discharge, 6,200 second-feet Aug. 11, 1938 (gage height, 7.87 feet).
Remarks.- Flood run-off not materially affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	60	115	9	50	64	17	48	45	25	263	137
2	51	104	10	42	60	18	62	44	26	206	89
3	45	98	11	36	59	19	90	44	27	181	72
4	46	89	12	35	64	20	570	46	28	162	64
5	44	83	13	52	74	21	1,980	74	29	142	62
6	39	76	14	45	59	22	1,300	55	30	127	60
7	53	70	15	62	51	23	620	46	31		55
8	86	66	16	62	46	24	390	89			
Mean monthly discharge, in second-feet										232	69.7
Run-off, in inches										4.11	1.28

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	1.54	229	3.72	1,420	4.90	2,470	2.59	665
2	-	-	0.85	60	1.65	263	3.65	1,360	4.68	2,250	2.58	660
3	-	-	-	-	1.78	307	3.52	1,260	4.47	2,060	2.57	655
4	0.88	66	.85	60	1.87	340	3.39	1,160	4.28	1,890	2.58	660
5	-	-	-	-	1.95	370	3.28	1,090	4.11	1,740	2.59	665
6	-	-	.85	60	2.04	406	3.19	1,020	3.96	1,610	2.61	676
7	-	-	-	-	2.15	452	3.12	978	3.84	1,510	2.63	686
8	.88	66	.88	66	2.28	511	3.07	946	3.71	1,410	2.64	692
9	-	-	-	-	2.40	570	3.03	920	3.59	1,310	2.68	714
10	-	-	.92	74	2.47	605	3.04	926	3.49	1,230	2.67	708
11	-	-	-	-	2.50	620	3.08	952	3.43	1,190	2.65	698
N	.87	64	.98	87	2.51	625	3.26	1,070	3.34	1,130	2.61	676
1	-	-	-	-	2.49	615	3.60	1,320	3.26	1,070	2.56	650
2	-	-	1.02	95	2.44	590	4.05	1,680	3.18	1,020	2.52	630
3	-	-	-	-	2.39	565	4.65	2,220	3.10	965	2.48	610
4	.85	60	1.04	100	2.35	545	5.29	2,860	3.04	926	2.43	585
5	-	-	-	-	2.34	540	5.92	3,560	2.98	888	2.39	565
6	-	-	1.08	109	2.35	545	6.06	3,730	2.92	852	2.35	545
7	-	-	-	-	2.39	565	6.02	3,680	2.86	816	2.32	530
8	.84	59	1.13	120	2.50	620	5.96	3,610	2.81	786	2.29	515
9	-	-	-	-	2.82	792	5.84	3,470	2.76	758	2.26	502
10	-	-	1.22	142	3.16	1,000	5.60	3,200	2.71	730	2.24	492
11	-	-	-	-	3.48	1,230	5.36	2,940	2.67	708	2.22	483
M	.85	60	1.41	192	3.69	1,390	5.13	2,700	2.63	686	2.20	474
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.16	457	-	-	-	-	-	-	-	-	-	-
4	2.12	440	1.74	293	1.51	220	1.37	181	1.35	176	1.24	147
6	2.08	423	-	-	-	-	-	-	-	-	-	-
8	2.05	410	1.70	279	1.49	214	1.37	181	1.33	170	1.23	144
10	2.00	390	-	-	-	-	-	-	-	-	-	-
N	2.02	398	1.62	253	1.46	206	1.36	178	1.30	162	1.22	142
2	1.99	386	-	-	-	-	1.35	176	-	-	-	-
4	1.95	370	1.60	247	1.42	195	1.40	189	1.27	154	1.20	137
6	1.91	355	-	-	-	-	1.42	195	-	-	-	-
8	1.85	332	1.56	235	1.40	189	1.40	189	1.25	150	1.19	135
10	1.82	321	-	-	-	-	-	-	-	-	-	-
M	1.79	310	1.55	232	1.38	184	1.37	181	1.25	150	1.18	132

Supplemental records.- Sept. 24, 11:30 a.m., 1.98 ft., 382 sec.-ft.

Little Beaver Kill near Livingston Manor, N. Y.

Location.- Lat. 41°52'20", long. 74°47'55", 2½ miles southeast of Livingston Manor, Sullivan County, and 3 miles above Cattail Brook. Zero of gage is 1,496.89 feet above mean sea level (general adjustment of 1912).
Drainage area.- 19.8 square miles.
Gage-height record.- From graph based on twice-daily gage readings and comparison with Willowemoc Creek water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 1,130 second-feet; extended logarithmically to peak stage. For 1928 defined by current-meter measurements below 462 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge observed, 2,070 second-feet 5:30 p.m. Sept. 21 (gage height, 7.0 feet).
July 1924 to August 1938: Discharge, 2,500 second-feet Aug. 26, 1926 (gage height, 8.7 feet, from floodmarks).
Remarks.- Flood run-off not materially affected by artificial storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	14	27	9	9.9	14	17	13	9.4	25	85	39
2	10	24	10	9.4	15	18	18	8.9	26	62	22
3	9.9	20	11	7.9	14	19	40	9.4	27	53	17
4	9.9	19	12	7.9	13	20	280	9.9	28	44	14
5	8.9	19	13	12	13	21	925	20	29	39	14
6	8.4	16	14	10	13	22	446	14	30	33	14
7	19	15	15	26	10	23	230	11	31		11
8	20	14	16	16	9.9	24	128	34			
Mean monthly discharge, in second-feet										86.5	16.2
Run-off, in inches										4.88	0.94

West Branch of Delaware River at Delhi, N. Y.

Location.- Water-stage recorder, lat. 42°16'15", long. 74°55'10", about 300 feet below mouth of Steele Brook and about one-quarter of a mile below lower highway bridge in Delhi, Delaware County. Zero of gage is 1,345.97 feet above mean sea level (general adjustment of 1912).
Drainage area.- 142 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For September 1938 defined by current-meter measurements below 2,880 second-feet; extended logarithmically to peak stage on basis of area-mean velocity study. For January 1938 defined by current-meter measurements below 1,930 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 8,940 second-feet 11 p.m. Sept. 21 (gage height, 8.81 feet).
February 1937 to August 1938: Discharge, 4,290 second-feet Jan. 25, 1938 (gage height, 6.82 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	82	260	9	60	112	17	118	68	25	870	174
2	65	218	10	53	106	18	144	66	26	653	112
3	60	190	11	49	97	19	138	64	27	547	95
4	68	168	12	49	92	20	730	70	28	470	86
5	60	154	13	168	86	21	3,350	139	29	358	85
6	55	143	14	94	79	22	4,000	96	30	302	82
7	60	130	15	194	76	23	2,040	79	31		79
8	71	118	16	174	72	24	1,240	141			
Mean monthly discharge, in second-feet										544	114
Run-off, in inches										4.27	0.93

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.41	150	-	-	-	-	4.87	1,790	8.54	8,020	-	-
2	-	-	-	-	2.55	196	4.97	1,890	8.28	7,240	5.57	2,150
3	-	-	-	-	-	-	5.04	1,960	7.95	6,380	-	-
4	-	-	2.32	125	2.68	244	5.11	2,040	7.69	5,760	5.59	2,170
5	-	-	-	-	-	-	5.14	2,070	7.45	5,210	-	-
6	2.41	150	-	-	2.99	385	5.17	2,110	7.25	4,780	5.62	2,200
7	-	-	-	-	-	-	5.19	2,130	7.10	4,480	-	-
8	-	-	2.34	131	3.30	555	5.18	2,120	6.95	4,190	5.64	2,230
9	-	-	-	-	-	-	5.14	2,070	6.85	4,010	-	-
10	-	-	-	-	3.54	701	5.10	2,030	6.75	3,840	5.69	2,290
11	-	-	-	-	-	-	5.11	2,040	6.66	3,680	-	-
N	2.42	153	2.32	125	3.66	779	5.20	2,140	6.56	3,520	5.65	2,240
1	-	-	-	-	-	-	5.37	2,330	6.48	3,390	-	-
2	-	-	-	-	3.76	847	5.64	2,650	6.37	3,220	5.58	2,160
3	-	-	-	-	-	-	5.93	3,010	6.29	3,100	-	-
4	-	-	2.32	125	3.80	875	6.19	3,360	6.20	2,960	5.49	2,060
5	-	-	-	-	-	-	6.52	3,830	6.14	2,880	-	-
6	2.37	139	-	-	3.84	903	6.84	4,320	6.05	2,750	5.34	1,890
7	-	-	-	-	-	-	6.99	4,560	5.99	2,670	-	-
8	-	-	2.47	169	4.01	1,030	7.38	5,240	5.90	2,550	5.19	1,740
9	-	-	-	-	-	-	7.99	6,480	5.84	2,470	-	-
10	-	-	-	-	4.38	1,330	8.34	7,420	5.75	2,360	5.07	1,620
11	-	-	-	-	-	-	8.81	8,940	5.69	2,290	-	-
M	2.32	125	2.52	185	4.74	1,660	8.44	7,720	5.63	2,220	4.97	1,520
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.82	1,390	4.31	968	-	-	-	-	-	-	-	-
6	-	-	-	-	3.89	689	3.65	552	3.56	503	3.32	377
8	4.72	1,300	4.23	911	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	4.62	1,220	4.17	869	3.84	659	3.63	542	3.50	470	3.29	362
2	-	-	-	-	-	-	-	-	-	-	-	-
4	4.56	1,170	4.10	820	-	-	-	-	-	-	-	-
6	-	-	-	-	3.77	618	3.62	536	3.44	438	3.26	348
8	4.46	1,090	4.02	768	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	4.39	1,030	3.96	731	3.69	574	3.62	536	3.36	397	3.21	325

West Branch of Delaware River at Hale Eddy, N. Y.

Location.- Water-stage recorder, lat. 42°00'10", long. 75°23'15", at highway bridge in Hale Eddy, Delaware County, 9 miles above confluence with East Branch of Delaware River. Zero of gage is 946.34 feet above mean sea level (general adjustment of 1912).
Drainage area.- 593 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1924 and 1938 defined by current-meter measurements below 22,800 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 25,600 second-feet 11:30 a.m. Sept. 22 (gage height, 15.59 feet).
November 1912 to August 1938: Discharge, 26,500 second-feet Sept. 30, 1924 (gage height, about 15.8 feet, from graph based on gage readings).
Maximum discharge known, about 46,000 second-feet Oct. 10, 1903 (gage height, 20.3 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	325	1,060	9	305	437	17	880	271	25	3,550	1,090
2	335	922	10	229	411	18	850	251	26	2,600	773
3	278	787	11	196	382	19	787	244	27	2,080	660
4	232	691	12	178	358	20	1,960	258	28	1,760	775
5	235	614	13	330	339	21	9,500	376	29	1,420	643
6	213	565	14	640	313	22	22,400	430	30	1,200	603
7	218	510	15	1,100	302	23	10,000	339	31		529
8	365	472	16	1,280	284	24	5,500	559			
Mean monthly discharge, in second-feet										2,365	524
Run-off, in inches										4.45	1.02

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	3.40	870	6.74	3,950	15.26	24,400	11.48	13,000
2	-	-	-	-	3.49	928	6.87	4,120	15.42	25,000	11.28	12,500
3	-	-	-	-	3.58	987	7.01	4,310	15.48	25,200	11.08	12,100
4	3.36	844	3.32	818	3.67	1,050	7.17	4,540	15.46	25,100	10.95	11,700
5	-	-	-	-	3.79	1,130	7.34	4,780	15.48	25,200	10.84	11,500
6	-	-	-	-	3.97	1,260	7.50	5,020	15.43	25,000	10.76	11,300
7	-	-	-	-	4.11	1,360	7.69	5,310	15.46	25,100	10.68	11,100
8	3.37	850	3.29	799	4.17	1,400	7.90	5,650	15.48	25,200	10.60	10,900
9	-	-	-	-	4.21	1,430	8.06	5,910	15.52	25,300	10.51	10,700
10	-	-	-	-	4.28	1,480	8.21	6,170	15.56	25,500	10.41	10,500
11	-	-	-	-	4.39	1,570	8.40	6,490	15.56	25,500	10.31	10,300
N	3.39	864	3.25	775	4.53	1,680	8.62	6,890	15.52	25,300	10.16	9,930
1	-	-	-	-	4.70	1,820	8.87	7,340	15.42	25,000	10.04	9,670
2	-	-	-	-	4.88	1,970	9.17	7,900	15.27	24,400	9.92	9,410
3	-	-	-	-	5.08	2,150	9.52	8,590	14.98	23,400	9.80	9,160
4	3.39	864	3.23	763	5.30	2,360	10.07	9,730	14.67	22,300	9.67	8,890
5	-	-	-	-	5.51	2,570	10.80	11,400	14.27	21,100	9.53	8,610
6	-	-	-	-	5.68	2,740	11.58	13,300	13.86	19,900	9.43	8,410
7	-	-	-	-	5.82	2,880	12.28	15,100	13.44	18,600	9.33	8,210
8	3.39	864	3.21	751	5.95	3,020	12.90	17,000	13.06	17,500	9.24	8,040
9	-	-	-	-	6.09	3,180	13.46	18,700	12.68	16,300	9.16	7,880
10	-	-	3.23	763	6.28	3,390	14.00	20,300	12.34	15,300	9.06	7,690
11	-	-	-	-	6.46	3,600	14.51	21,800	12.06	14,500	8.97	7,520
M	3.37	850	3.34	831	6.60	3,770	14.93	23,300	11.76	13,700	8.86	7,320
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.68	6,990	6.87	4,120	-	-	-	-	-	-	-	-
4	8.50	6,670	6.77	3,990	5.78	2,840	5.15	2,220	4.75	1,860	4.34	1,530
6	8.31	6,340	6.68	3,870	-	-	-	-	-	-	-	-
8	8.10	5,980	6.59	3,760	5.65	2,710	5.06	2,130	4.67	1,800	4.27	1,480
10	7.90	5,650	6.50	3,650	-	-	-	-	-	-	-	-
N	7.72	5,360	6.41	3,540	5.54	2,600	5.00	2,080	4.62	1,760	4.20	1,420
2	7.58	5,140	6.33	3,450	-	-	-	-	-	-	-	-
4	7.43	4,920	6.24	3,340	5.44	2,500	4.92	2,010	4.56	1,710	4.15	1,380
6	7.31	4,740	6.16	3,260	-	-	-	-	-	-	-	-
8	7.20	4,580	6.07	3,160	5.34	2,400	4.86	1,950	4.49	1,650	4.10	1,350
10	7.09	4,430	6.00	3,080	-	-	-	-	-	-	-	-
M	6.98	4,270	5.92	2,990	5.24	2,300	4.81	1,910	4.41	1,590	4.05	1,320

Supplemental records.- Sept. 22, 11:30 a.m., 15.59 ft., 25,600 sec.-ft.

Little Delaware River near Delhi, N. Y.

Location.- Lat. 42°15'10", long. 74°54'10", 20 feet below highway bridge at Peck Hill, 1½ miles above confluence with West Branch of Delaware River, and 2 miles south of Delhi, Delaware County.
Drainage area.- 49.8 square miles.
Gage-height record.- Graph based on two or more daily readings of staff-gage.
Stage-discharge relation.- For September 1938 defined by current-meter measurement below 964 second-feet; extended logarithmically to peak stage. For January 1938 defined by current-meter measurements below 723 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 3,280 second-feet 8 p.m. Sept. 21 (gage height, 8.5 feet, from floodmark on bridge abutment).
October 1937 to August 1938: Discharge, 2,180 second-feet Jan. 25, 1938 (gage height, 6.95 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	26	88	9	18	37	17	35	17	25	385	58
2	20	73	10	14	33	18	45	13	26	278	50
3	16	66	11	13	30	19	50	11	27	224	41
4	30	62	12	13	29	20	423	21	28	184	37
5	18	55	13	64	25	21	1,740	93	29	141	41
6	14	50	14	38	21	22	1,470	44	30	111	35
7	22	43	15	72	19	23	944	35	31		31
8	33	39	16	52	18	24	561	39			
Mean monthly discharge, in second-feet										235	40.5
Run-off, in inches										5.27	0.94

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Lake Wallenpaupack at Wilsonville, Pa.

Location.- Lat. 41°27'35", long. 75°11'05", at Wilsonville Dam at Wilsonville, Wayne County, 1½ miles south of Hawley.
Drainage area.- 228 square miles.
Gage-height record.- Gage read at midnight to half tenths.
Remarks.- Contents given in the table show the usable storage. Records furnished by Pennsylvania Power & Light Co.

Elevation, in feet, and contents, in acre-feet, 1938

Day	September		October		Day	September		October	
	Feet	Acre-feet	Feet	Acre-feet		Feet	Acre-feet	Feet	Acre-feet
1	1,176.35	132,320	1,173.90	119,070	16	1,172.80	113,260	1,172.45	111,440
2	1,176.10	130,950	1,173.95	119,340	17	1,174.80	123,920	1,172.25	110,400
3	1,176.10	130,950	1,173.75	118,280	18	1,172.10	109,620	1,171.90	108,590
4	1,176.05	130,680	1,173.60	117,480	19	1,171.75	107,820	1,171.55	106,800
5	1,176.05	130,680	1,173.55	117,220	20	1,171.85	108,340	1,171.25	105,280
6	1,175.65	128,510	1,173.25	115,620	21	1,172.80	113,260	1,170.95	103,750
7	1,175.30	126,620	1,173.20	115,360	22	1,173.30	115,890	1,170.90	103,500
8	1,174.95	124,730	1,173.25	115,620	23	1,173.65	117,740	1,170.85	103,250
9	1,174.55	122,570	1,173.30	115,890	24	1,173.85	118,800	1,170.75	102,750
10	1,174.40	121,760	1,173.25	115,620	25	1,174.00	119,600	1,170.55	101,750
11	1,174.40	121,760	1,173.20	115,360	26	1,174.10	120,140	1,170.55	101,750
12	1,173.85	118,800	1,173.25	115,620	27	1,174.05	119,870	1,170.30	100,500
13	1,173.50	116,950	1,172.90	113,780	28	1,174.05	119,870	1,170.00	99,000
14	1,173.15	115,100	1,172.60	112,220	29	1,174.00	119,600	1,169.95	98,750
15	1,172.85	113,520	1,172.45	111,440	30	1,173.85	118,800	1,169.95	98,750
					31			1,169.95	98,750

	September	October
Gain or loss in storage, in equivalent mean second-feet	-274	-326

Swinging Bridge Reservoir at Swinging Bridge Dam, N. Y.

Location.- Lat. 41°34'20", long. 74°47'00", at Swinging Bridge Dam, on Mongaup River, 1½ miles northwest of Fowlersville, Sullivan County. Crest of flash boards (5.0 feet) at elevation 1,070 feet above mean sea level (U. S. Geological Survey datum).
Drainage area.- 118 square miles.
Gage-height record.- Gage read at 7 a.m., 11 a.m., and 8 p.m. Sept. 1 to 24, and at 8 a.m., 12 noon, and 9 p.m. Sept. 25 to Oct. 31.
Maxima.- September 1938: Elevation observed, 1,051.9 feet 7 a.m. Sept. 1 (contents, 952,000,000 cubic feet).
January 1930 to August 1938: Elevation, 1,072.4 feet Mar. 18, 1936 (contents, 1,711,000,000 cubic feet).
Remarks.- Usable storage capacity 1,387,000,000 cubic feet. No record of flow of Mongaup River is available. No spilling at Swinging Bridge Dam during September and October. Records furnished by Rockland Light & Power Co.

Gage height, in feet, and contents, in millions of cubic feet, at indicated time, 1938

Hour	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents
	September 1		September 2		September 3		September 4		September 5	
7	1,051.9	952	1,050.5	911	1,049.0	869	--	--	1,046.7	809
11	1,051.7	946	1,050.3	906	1,048.9	867	1,047.7	835	1,046.4	801
8	1,051.1	928	1,049.7	889	1,048.4	853	1,047.1	819	1,045.8	786
	September 6		September 7		September 8		September 9		September 10	
7	1,045.2	771	1,043.8	738	1,042.5	708	1,041.1	676	1,039.6	644
11	1,044.9	764	1,043.5	731	1,042.2	701	1,040.8	670	1,039.3	637
8	1,044.2	747	1,043.0	719	1,041.6	687	1,040.0	652	1,038.9	629
	September 11		September 12		September 13		September 14		September 15	
7	--	--	1,037.0	590	1,035.0	551	1,033.2	517	1,031.1	480
11	1,038.0	610	1,036.7	584	1,034.6	544	1,032.8	510	1,030.8	475
8	1,037.8	606	1,035.9	568	1,033.8	528	1,032.0	496	1,030.4	468
	September 16		September 17		September 18		September 19		September 20	
7	1,029.8	458	1,027.6	422	--	--	1,023.4	360	1,023.6	362
11	1,029.4	451	*1,027.3	417	1,025.3	387	1,023.0	354	1,023.7	364
8	1,028.6	438	1,026.6	406	1,024.5	375	1,022.7	350	1,025.3	387
	September 21		September 22		September 23		September 24		September 25	
7	1,028.4	435	1,043.7	735	1,049.2	875	1,051.1	929	--	--
8	--	--	--	--	--	--	--	--	--	--
11	1,029.5	453	1,045.3	774	1,049.6	886	1,051.2	931	--	--
N	--	--	--	--	--	--	--	--	1,051.6	943
8	1,034.1	534	1,047.7	835	1,050.3	906	1,051.3	934	--	--
9	--	--	--	--	--	--	--	--	1,051.5	940
	September 26		September 27		September 28		September 29		September 30	
8	1,051.3	934	1,050.7	917	1,049.9	894	1,048.9	867	1,047.8	837
N	1,051.2	931	1,050.6	914	1,049.7	889	1,048.8	864	1,047.6	832
9	1,051.0	926	1,050.2	903	1,049.4	880	1,048.3	851	1,047.1	819
	October 1		October 2		October 3		October 4		October 5	
8	1,046.5	804	--	--	1,043.8	738	1,042.4	705	1,040.9	672
N	1,046.3	799	1,045.0	766	1,043.6	733	1,042.2	701	1,040.7	667
9	1,045.8	786	1,044.5	754	1,043.1	721	1,041.7	689	1,040.1	654
	October 6		October 7		October 8		October 9		October 10	
8	1,039.4	639	1,037.7	604	1,035.9	568	--	--	1,032.1	498
N	1,039.1	633	1,037.5	600	1,035.6	563	1,033.8	528	1,031.8	492
9	1,038.5	621	1,036.8	586	1,034.9	549	1,033.1	516	1,031.0	478
	October 11		October 12		October 13		October 14		October 15	
8	1,030.1	463	1,027.9	427	1,025.7	393	1,023.2	357	1,020.7	324
N	1,029.8	458	1,027.5	420	1,025.2	385	1,022.7	350	1,020.2	318
9	1,028.8	441	1,026.6	406	1,024.3	372	1,021.8	338	1,019.1	305
	October 16		October 17		October 18		October 19		October 20	
8	--	--	1,014.8	258	1,011.3	224	1,008.9	203	1,005.9	179
N	1,017.3	284	1,014.1	251	1,010.8	220	1,008.2	198	1,005.3	175
9	1,016.1	271	1,012.8	238	1,009.7	210	1,006.8	186	1,003.8	164
	October 21		October 22		October 23		October 24		October 25	
8	1,003.1	159	1,001.6	148	--	--	1,000.5	141	1,001.5	148
N	1,002.5	154	1,001.0	144	1,000.1	138	999.9	137	1,001.1	145
9	1,001.1	145	999.6	135	1,000.1	138	999.9	137	1,001.1	145
	October 26		October 27		October 28		October 29		October 30	
8	1,000.8	143	1,001.4	147	1,002.2	152	1,001.2	146	--	--
N	1,000.3	140	1,001.3	146	1,002.4	154	1,000.6	142	999.8	136
9	1,000.7	142	1,001.5	148	1,001.6	148	999.6	135	999.6	135
	October 31									
8	1,000.1	138								
N	999.9	137								
9	999.5	134								

	September	October
Gain or loss in storage, in equivalent mean second-feet	-148	-699

* Interpolated.

Toronto Reservoir at Toronto Dam, N. Y.

Location.- Lat. 41°37'15", long. 74°49'55", at Toronto Dam, on Toronto Brook, 3½ miles south of White Lake, Sullivan County. Crest of flashboards at elevation 1,220 feet above mean sea level (U. S. Geological Survey datum).
Drainage area.- 23.2 square miles.
Gage-height record.- Gage read daily except Sundays at 7 a.m. prior to Sept. 24; at 8 a.m. thereafter.
Maxima.- September and October 1938: Elevation, 1,220.5 feet Sept. 30 to Oct. 5 (contents, 1,141,000,000 cubic feet).
May 1925 to August 1938: Elevation, 1,221.6 feet July 1, 1928 (contents, 1,180,000,000 cubic feet).
Remarks.- Usable storage capacity, 1,108,000,000 cubic feet. No record of flow of Toronto Brook is available. Spillage at Toronto Dam was equivalent to a mean monthly discharge of 7.53 second-feet for September and 26.7 second-feet for October. Records furnished by Rockland Light & Power Co.

Gage height, in feet, and contents, in millions of cubic feet, 1938

Day	September		October		Day	September		October	
	Feet	Millions of cubic feet	Feet	Millions of cubic feet		Feet	Millions of cubic feet	Feet	Millions of cubic feet
1	1,216.3	999	1,220.5	1,141	16	1,216.4	1,002	-	-
2	1,216.3	999	-	-	17	1,216.4	1,002	1,219.9	1,120
3	1,216.3	999	1,220.5	1,141	18	-	-	1,219.8	1,116
4	-	-	1,220.5	1,141	19	1,216.4	1,002	-	-
5	1,216.4	1,002	1,220.5	1,141	20	1,216.5	1,005	1,219.6	1,109
6	1,216.4	1,002	1,220.4	1,137	21	1,216.9	1,018	1,219.5	1,106
7	1,216.4	1,002	1,220.4	1,137	22	1,217.9	1,051	-	-
8	1,216.4	1,002	1,220.4	1,137	23	1,218.9	1,085	1,219.0	1,088
9	1,216.4	1,002	-	-	24	1,219.5	1,106	1,219.0	1,088
10	1,216.4	1,002	1,220.4	1,137	25	-	-	1,218.9	1,085
11	-	-	1,220.4	1,137	26	1,220.1	1,127	1,218.9	1,085
12	1,216.4	1,002	1,220.4	1,137	27	1,220.3	1,134	1,218.9	1,085
13	1,216.4	1,002	1,220.3	1,134	28	1,220.4	1,137	1,218.8	1,082
14	1,216.4	1,002	1,220.2	1,130	29	1,220.4	1,137	1,218.7	1,078
15	1,216.4	1,002	1,220.1	1,127	30	1,220.5	1,141	-	-
					31			1,218.3	1,065

	September	October
Gain or loss in storage, in equivalent mean second-feet.	+142	-76

Neversink River at Halls Mills, near Curry, N. Y.

Location.- Water-stage recorder, lat. 41°52'40", long. 74°36'20", 1¼ miles downstream from covered wooden bridge at Halls Mills, about 1 3/4 miles northwest of Curry, Sullivan County.
Drainage area.- 68 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For September 1938 defined by current-meter measurements below 5,010 second-feet; extended logarithmically to peak stage on basis of slope-area study and run-off comparison with other stations downstream. For July 1938 defined by current-meter measurements below 1,430 second-feet; extended logarithmically to peak stage on basis of slope-area study and run-off comparison with other stations downstream.
Maxima.- September 1938: Discharge, 10,000 second-feet 7 p.m. Sept. 21 (gage height, 8.70 feet).
October 29, 1937, to August 1938: Discharge, 12,400 second-feet July 22, 1938 (gage height, 10.05 feet).
Maximum discharge known, 13,000 second-feet Oct. 23, 1937 (gage height, 10.37 feet, from floodmarks in well).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	105	168	9	71	98	17	76	56	25	300	226
2	88	150	10	65	92	18	73	56	26	264	154
3	82	135	11	59	86	19	146	53	27	246	128
4	85	128	12	57	79	20	840	58	28	221	121
5	73	121	13	89	76	21	3,100	131	29	196	121
6	65	118	14	73	73	22	1,460	76	30	184	121
7	94	104	15	134	70	23	590	64	31		108
8	110	101	16	106	64	24	385	198			
Mean monthly discharge, in second-feet										315	108
Run-off, in inches										5.17	1.83

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	1.38	560	2.39	1,330	4.12	3,340	1.46	601
2	-	-	0.11	82	1.65	717	2.40	1,340	3.83	2,980	1.44	589
3	-	-	-	-	1.83	842	2.35	1,290	3.57	2,660	1.44	589
4	0.08	73	.13	88	1.84	850	2.26	1,200	3.36	2,410	1.44	589
5	-	-	-	-	1.80	820	2.17	1,120	3.15	2,160	1.48	613
6	-	-	.15	94	1.79	813	2.08	1,040	2.97	1,960	1.54	649
7	-	-	-	-	1.84	850	2.04	1,010	2.81	1,780	1.59	679
8	.08	73	.16	96	1.94	927	2.03	1,000	2.67	1,630	1.62	698
9	-	-	-	-	2.03	1,000	2.03	1,000	2.54	1,480	1.62	698
10	-	-	.19	105	2.09	1,050	2.03	1,000	2.42	1,360	1.61	692
11	-	-	-	-	2.10	1,060	2.03	1,000	2.31	1,250	1.57	667
N	.09	76	.23	117	2.06	1,030	2.11	1,070	2.22	1,170	1.54	649
1	-	-	-	-	1.98	959	2.35	1,290	2.12	1,080	1.50	625
2	-	-	.30	138	1.90	895	2.84	1,810	2.03	1,000	1.46	601
3	-	-	-	-	1.81	828	3.51	2,590	1.95	935	1.43	583
4	.09	76	.34	150	1.73	771	4.30	3,570	1.88	880	1.39	560
5	-	-	-	-	1.65	717	5.90	5,760	1.82	835	1.36	543
6	-	-	.39	166	1.59	678	7.90	8,720	1.75	785	1.34	532
7	-	-	-	-	1.56	660	8.70	10,000	1.70	750	1.31	516
8	.08	73	.49	198	1.58	672	7.68	8,370	1.65	718	1.28	499
9	-	-	-	-	1.70	750	6.36	6,400	1.60	685	1.26	488
10	-	-	.73	282	1.89	888	5.48	5,170	1.56	661	1.24	477
11	-	-	-	-	2.11	1,070	4.92	4,390	1.52	637	1.22	466
M	.08	73	1.09	428	2.31	1,250	4.51	3,840	1.49	619	1.21	460
	September 24		September 25		September 26		September 27		September 28		September 29	
2	-	-	-	-	-	-	-	-	-	-	-	-
4	1.16	433	.95	325	-	-	-	-	-	-	-	-
6	-	-	-	-	.84	273	.77	242	.74	229	.68	204
8	1.11	406	.93	315	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
N	1.07	385	.90	300	.82	264	.77	242	.72	221	.66	196
2	-	-	-	-	-	-	-	-	-	-	-	-
4	1.04	370	.88	291	-	-	-	-	-	-	-	-
6	-	-	-	-	.80	255	.77	242	.70	212	.64	178
8	1.00	350	.86	282	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	.97	335	.85	278	.78	246	.76	238	.68	204	.63	184

Neversink River at Woodbourne, N. Y.

Location.- Water-stage recorder, lat. 41°45'25", long. 72°35'55", a quarter of a mile below highway bridge in Woodbourne, Sullivan County, and 0.4 mile above small unnamed stream entering from left.
Drainage area.- 113 square miles.
Gage-height record.- Sept. 1 to 20, graph based on twice daily readings of staff gage. Water-stage recorder graph Sept. 20 to Oct. 31.
Stage-discharge relation.- For Sept. 1938 defined by current-meter measurements below 5,510 second-feet; extended logarithmically to peak stage. For July 1938 defined by current-meter measurements below 9,040 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 8,300 second-feet 10:15 p.m. Sept. 21 (gage height, 9.79 feet).
October 1937 to August 1938: Discharge, 12,300 second-feet July 22, 1938 (gage height, 11.2 feet, from floodmarks and graph based on gage readings).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	134	207	9	109	129	17	107	98	25	487	320
2	115	188	10	103	122	18	107	96	26	372	185
3	111	176	11	89	117	19	213	94	27	328	150
4	107	164	12	85	115	20	1,360	97	28	294	134
5	103	155	13	111	110	21	3,550	161	29	251	136
6	96	147	14	115	110	22	2,500	124	30	227	134
7	108	139	15	190	106	23	1,120	102	31		122
8	168	131	16	153	102	24	710	195			
Mean monthly discharge, in second-feet										451	141
Run-off, in inches										4.45	1.44

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	3.45	710	5.18	2,040	8.22	5,780	4.13	1,200
2	-	-	2.00	111	3.69	878	5.16	2,020	7.64	4,920	4.09	1,170
3	-	-	-	-	3.95	1,070	5.13	2,000	7.18	4,270	4.07	1,160
4	-	-	2.01	113	4.23	1,280	5.06	1,930	6.78	3,740	4.05	1,140
5	-	-	-	-	4.29	1,320	5.00	1,880	6.48	3,380	4.06	1,150
6	-	-	2.04	119	4.27	1,310	4.91	1,810	6.31	3,070	4.07	1,160
7	-	-	-	-	4.27	1,310	4.83	1,740	5.94	2,780	4.08	1,170
8	-	-	2.08	128	4.35	1,370	4.75	1,680	5.75	2,590	4.09	1,170
9	-	-	-	-	4.45	1,440	4.68	1,620	5.59	2,430	4.12	1,200
10	-	-	2.14	141	4.53	1,500	4.64	1,590	5.43	2,270	4.15	1,220
11	-	-	-	-	4.56	1,530	4.65	1,600	5.30	2,150	4.17	1,230
N	*1.98	*107	2.22	160	4.58	1,540	4.75	1,680	5.17	2,030	4.16	1,220
1	-	-	-	-	4.59	1,550	5.05	1,920	5.05	1,920	4.14	1,210
2	-	-	2.32	186	4.55	1,520	5.52	2,360	4.95	1,840	4.10	1,180
3	-	-	-	-	4.50	1,480	6.15	3,000	4.85	1,760	4.05	1,140
4	-	-	2.45	224	4.42	1,420	6.84	3,810	4.76	1,690	4.00	1,110
5	-	-	-	-	4.33	1,350	7.68	4,970	4.68	1,620	3.96	1,080
6	-	-	2.60	273	4.25	1,290	8.18	5,720	4.60	1,560	3.91	1,050
7	-	-	-	-	4.21	1,260	8.53	6,250	4.52	1,500	3.86	1,010
8	-	-	2.76	334	4.21	1,260	9.08	7,130	4.45	1,440	3.82	988
9	-	-	-	-	4.35	1,370	9.52	7,840	4.38	1,390	3.77	956
10	-	-	2.97	428	4.66	1,610	9.78	8,290	4.31	1,340	3.73	930
11	-	-	-	-	4.92	1,820	9.58	7,950	4.25	1,290	3.69	904
M	-	-	3.25	580	5.10	1,970	8.88	6,810	4.19	1,250	3.66	884
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.59	839	3.08	549	-	-	-	-	-	-	-	-
4	3.54	809	3.05	534	2.76	394	2.61	332	2.57	317	2.42	261
6	3.49	779	3.03	523	-	-	-	-	-	-	-	-
8	3.44	749	3.00	507	2.73	361	2.60	328	2.54	305	2.41	258
10	3.39	720	2.98	497	-	-	-	-	-	-	-	-
N	3.35	698	2.95	482	2.71	372	2.58	320	2.51	294	2.39	251
2	3.32	681	2.93	472	-	-	-	-	-	-	-	-
4	3.28	659	2.90	457	2.69	364	2.57	317	2.48	283	2.37	244
6	3.23	632	2.88	448	-	-	-	-	-	-	-	-
8	3.19	610	2.85	434	2.66	352	2.59	324	2.46	276	2.36	240
10	3.15	588	2.82	420	-	-	-	-	-	-	-	-
M	3.11	566	2.80	411	2.63	340	2.59	324	2.44	268	2.34	234

Supplemental records.- Sept. 21, 10:15 p.m., 9.79 ft., 8,300 sec.-ft.
* Mean for the day.

Neversink River at Oakland Valley, N. Y.

Location.- Water-stage recorder, lat. 41°29'45", long. 74°38'45", 250 feet below highway bridge known as Paradise Bridge, Orange County, and three-quarters of a mile south of Oakland Valley, Sullivan County. Zero of gage is 632.00 feet above mean sea level (general adjustment of 1912).
Drainage area.- 222 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 7,520 second-feet; extended logarithmically to peak stage. For 1933 defined by current-meter measurements below 4,090 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 11,100 second-feet 2 a.m. Sept. 22 (gage height, 9.47 feet).
July 1928 to August 1938: Discharge, 20,000 second-feet Aug. 24, 1933 (gage height, 12.61 feet).
Remarks.- Flood run-off not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	162	409	9	176	225	17	184	162	25	950	630
2	162	359	10	136	217	18	169	162	26	740	426
3	143	330	11	126	205	19	232	150	27	615	340
4	136	297	12	120	196	20	1,460	165	28	560	316
5	126	274	13	126	188	21	4,400	279	29	484	311
6	117	261	14	150	180	22	5,500	266	30	439	325
7	117	252	15	224	173	23	2,080	192	31		283
8	176	234	16	261	169	24	1,400	301			
Mean monthly discharge, in second-feet										722	267
Run-off, in inches										3.63	1.38

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	4.71	2,080	9.30	10,600	-	-
2	-	-	2.10	180	2.78	499	4.82	2,200	9.47	11,100	5.02	2,440
3	-	-	-	-	-	-	5.05	2,480	9.30	10,600	-	-
4	-	-	2.11	184	3.01	621	5.20	2,670	8.89	9,600	4.91	2,310
5	-	-	-	-	-	-	5.30	2,800	8.31	8,220	-	-
6	2.07	169	2.11	184	3.34	833	5.33	2,840	7.83	7,170	4.82	2,200
7	-	-	-	-	-	-	5.31	2,810	7.42	6,340	-	-
8	-	-	2.11	184	3.77	1,170	5.28	2,770	7.18	5,860	4.75	2,120
9	-	-	-	-	-	-	5.25	2,740	6.95	5,420	-	-
10	-	-	2.11	184	4.01	1,380	5.22	2,700	6.76	5,080	4.71	2,080
11	-	-	-	-	-	-	5.20	2,670	6.59	4,770	-	-
N	2.07	169	2.12	188	4.42	1,770	5.21	2,680	6.45	4,540	4.69	2,060
1	-	-	-	-	-	-	5.30	2,800	6.31	4,300	-	-
2	-	-	2.18	213	4.64	2,000	5.42	2,960	6.17	4,070	4.67	2,040
3	-	-	-	-	-	-	5.74	3,410	6.03	3,850	-	-
4	-	-	2.22	230	4.66	2,030	6.18	4,090	5.91	3,660	4.66	2,030
5	-	-	-	-	-	-	6.85	5,240	5.79	3,480	-	-
6	2.06	165	2.27	252	4.65	2,020	7.50	6,500	5.69	3,340	4.60	1,960
7	-	-	-	-	-	-	8.06	7,670	5.59	3,200	-	-
8	-	-	2.38	302	4.63	1,990	8.40	8,420	5.49	3,060	4.52	1,870
9	-	-	-	-	-	-	8.57	8,830	5.39	2,920	-	-
10	-	-	2.52	369	4.63	1,990	8.63	8,970	5.30	2,800	4.43	1,780
11	2.06	165	-	-	-	-	8.77	9,310	5.22	2,700	-	-
M	2.09	176	2.68	449	4.67	2,040	9.05	9,980	5.15	2,600	4.35	1,700
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.29	1,640	3.67	1,090	-	-	-	-	-	-	-	-
4	4.20	1,550	3.62	1,050	3.29	798	-	-	-	-	-	-
6	4.14	1,500	3.57	1,010	-	-	3.02	627	2.95	588	2.77	494
8	4.08	1,440	3.52	966	3.23	760	-	-	-	-	-	-
10	4.05	1,420	3.49	942	-	-	-	-	-	-	-	-
N	4.00	1,370	3.47	928	3.19	734	2.98	604	2.90	560	2.74	479
2	4.02	1,390	3.44	905	-	-	-	-	-	-	-	-
4	3.99	1,360	3.48	935	3.15	708	-	-	-	-	-	-
6	3.92	1,300	3.47	928	-	-	2.97	598	2.86	540	2.73	474
8	3.86	1,240	3.43	898	3.13	694	-	-	-	-	-	-
10	3.79	1,180	3.39	868	-	-	-	-	-	-	-	-
M	3.73	1,130	3.35	840	3.10	675	2.96	593	2.81	514	2.72	469

Neversink River at Godeffroy, N. Y.

Location.- Water-stage recorder, lat. 41°26'30", long. 74°36'10", 10 feet above county highway bridge, half a mile below Brasher Kill, three-quarters of a mile southeast of Godeffroy, Orange County, and 8½ miles above confluence with Delaware River.

Drainage area.- 302 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- For 1938 defined by current-meter measurements below 8,060 second-feet; extended logarithmically to peak stage. For 1913 defined by current-meter measurements below 1,680 second-feet; extended on basis of area-mean velocity study.

Maxima.- September 1938: Discharge, 13,400 second-feet 3 a.m. Sept. 22 (gage height, 10.00 feet).

August 1937 to August 1938: Discharge, 16,100 second-feet July 22, 1938 (gage height, 10.73 feet).

August 1909 to April 1914: Discharge, about 12,800 second-feet Mar. 27, 1913 (gage height, 7.3 feet, present datum).

August 1903 to October 1903: Maximum gage height recorded, about 10.5 feet, present datum, Oct. 9, 1903 (discharge not determined).

Remarks.- Discharge at low and medium stages affected by operation by power plant upstream. Flood run-off not affected by artificial storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	223	606	9	234	332	17	227	247	25	1,620	792
2	210	537	10	180	310	18	202	222	26	1,290	560
3	198	488	11	168	290	19	300	222	27	1,060	465
4	180	436	12	168	269	20	1,640	226	28	906	455
5	172	412	13	168	269	21	4,850	355	29	774	446
6	166	382	14	194	265	22	7,100	352	30	699	464
7	158	376	15	265	249	23	2,950	284	31		418
8	218	337	16	321	207	24	2,180	400			
Mean monthly discharge, in second-feet										967	377
Run-off, in inches										3.57	1.44

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	3.48	265	4.07	635	5.62	2,320	9.66	12,200	-	-
2	-	-	3.49	269	4.13	683	5.65	2,360	9.91	13,100	6.29	3,320
3	-	-	-	-	4.20	740	5.75	2,500	10.00	13,400	-	-
4	3.33	198	3.49	269	4.27	800	5.90	2,720	9.80	12,700	6.21	3,200
5	-	-	3.49	269	4.38	897	6.02	2,900	9.39	11,300	-	-
6	-	-	3.47	260	4.53	1,040	6.09	3,000	8.88	9,680	6.15	3,100
7	-	-	-	-	4.75	1,260	6.10	3,020	8.49	8,510	-	-
8	3.33	198	3.47	260	4.71	1,220	6.10	3,020	8.20	7,680	6.09	3,000
9	-	-	-	-	4.90	1,430	6.10	3,020	8.00	7,120	-	-
10	-	-	3.48	265	5.00	1,540	6.07	2,980	7.82	6,650	6.05	2,940
11	-	-	-	-	5.11	1,660	6.06	2,960	7.64	6,180	-	-
N	3.33	198	3.49	269	5.31	1,900	6.10	3,020	7.52	5,890	6.03	2,920
1	3.41	232	3.43	241	5.45	2,080	6.17	3,130	7.37	5,530	-	-
2	3.42	236	3.43	241	5.52	2,180	6.40	3,500	7.21	5,140	6.00	2,870
3	3.34	202	-	-	5.55	2,220	6.55	3,770	7.08	4,860	-	-
4	3.33	198	3.44	246	5.55	2,220	6.90	4,460	6.99	4,660	6.00	2,870
5	-	-	3.45	250	5.55	2,220	7.35	5,480	6.90	4,460	-	-
6	-	-	3.62	337	5.58	2,260	7.96	7,020	6.80	4,260	6.00	2,870
7	-	-	3.67	365	5.57	2,250	8.44	8,360	6.73	4,120	-	-
8	3.33	198	3.69	376	5.56	2,230	8.76	9,320	6.64	3,940	5.92	2,750
9	-	-	3.72	394	5.56	2,230	9.00	10,100	6.56	3,790	-	-
10	3.33	198	3.75	412	5.57	2,250	9.13	10,500	6.50	3,680	5.85	2,640
11	3.37	214	3.90	508	5.58	2,260	9.23	10,800	6.44	3,570	-	-
M	3.36	210	3.99	573	5.60	2,290	9.40	11,300	6.38	3,470	5.80	2,570
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.75	2,500	-	-	-	-	-	-	-	-	-	-
4	5.67	2,390	5.18	1,750	4.86	1,390	4.61	1,120	-	-	-	-
6	5.62	2,320	-	-	-	-	-	-	4.45	962	4.29	816
8	5.60	2,290	5.10	1,650	4.81	1,330	4.58	1,090	-	-	-	-
10	5.46	2,100	-	-	-	-	-	-	-	-	-	-
N	5.46	2,100	5.03	1,570	4.75	1,260	4.54	1,050	4.40	915	4.25	782
2	5.53	2,190	-	-	-	-	-	-	-	-	-	-
4	5.47	2,110	4.99	1,530	4.72	1,230	4.52	1,030	-	-	-	-
6	5.43	2,060	5.01	1,550	-	-	-	-	4.36	879	4.22	757
8	5.37	1,980	4.98	1,520	4.69	1,200	4.50	1,010	-	-	-	-
10	5.31	1,900	-	-	-	-	-	-	-	-	-	-
M	5.28	1,870	4.91	1,440	4.65	1,160	4.47	982	4.32	843	4.21	748

Supplemental records.- Sept. 18, 5:30 p.m., 3.46 ft., 255 sec.-ft. Sept. 20, 7:15 a.m., 4.79 ft., 1,310 sec.-ft.; 7:45 a.m., 4.69 ft., 1,200 sec.-ft. Sept. 21, 9:25 a.m., 5.95 ft., 2,800 sec.-ft.; 1:50 p.m., 6.45 ft., 3,590 sec.-ft.; 2:10 p.m., 6.36 ft., 3,440 sec.-ft.

Susquehanna River at Colliersville, N. Y.

Location.- Water-stage recorder, lat. 42°29'55", long. 74°58'55", a quarter of a mile below power plant of Associated Gas & Electric System, and half a mile north of Colliersville, Otsego County. Zero of gage is 1,110.80 feet above mean sea level (general adjustment of 1912).
Drainage area.- 351 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 5,420 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 6,300 second-feet 7:30 p.m. Sept. 22 (gage height, 7.20 feet).
July 1924 to August 1938: Discharge, 8,740 second-feet Mar. 19, 1936 (gage height, 8.13 feet).
Remarks.- Flow regulated by natural storage in Otsego Lake and Canadarago Lake and by storage in Goodyear Lake above power plant upstream. Large fluctuations Sept. 18 to 21 and Sept. 25 to 29 due to power-plant operation.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	105	1,090	9	142	364	17	160	307	25	1,970	608
2	57	908	10	18	430	18	94	250	26	1,630	359
3	80	889	11	18	422	19	136	241	27	1,440	326
4	89	676	12	18	295	20	388	253	28	1,400	284
5	71	834	13	19	379	21	1,260	206	29	1,350	290
6	92	602	14	168	308	22	4,440	259	30	1,290	226
7	157	487	15	142	240	23	4,790	222	31		248
8	195	468	16	113	322	24	2,730	476			
Mean monthly discharge, in second-feet										819	428
Run-off, in inches										2.60	1.41

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	-	-	-	-	4.96	2,250	7.09	6,050
2	-	-	-	-	-	-	-	-	5.04	2,350	7.06	5,980
3	-	-	-	-	-	-	-	-	5.21	2,570	7.01	5,870
4	-	-	-	-	-	-	-	-	5.30	2,700	6.99	5,830
5	-	-	-	-	-	-	-	-	5.38	2,820	6.93	5,700
6	-	-	-	-	-	-	-	-	5.48	2,970	6.88	5,590
7	-	-	-	-	-	-	-	-	5.60	3,160	6.82	5,450
8	-	-	-	-	-	-	-	-	5.72	3,350	6.75	5,300
9	-	-	-	-	-	-	-	-	5.88	3,630	6.68	5,160
10	-	-	-	-	-	-	-	-	6.07	3,970	6.63	5,050
11	-	-	-	-	-	-	-	-	6.23	4,270	6.56	4,910
N	*1.76	*94	*1.93	*136	*2.64	*388	*4.00	*1,260	6.40	4,590	6.49	4,770
1	-	-	-	-	-	-	-	-	6.55	4,890	6.16	4,130
2	-	-	-	-	-	-	-	-	6.69	5,180	6.16	4,130
3	-	-	-	-	-	-	-	-	6.82	5,450	6.39	4,570
4	-	-	-	-	-	-	-	-	6.92	5,670	6.29	4,380
5	-	-	-	-	-	-	-	-	7.02	5,890	6.22	4,250
6	-	-	-	-	-	-	-	-	7.05	5,960	6.14	4,100
7	-	-	-	-	-	-	-	-	7.13	6,140	6.08	3,980
8	-	-	-	-	-	-	-	-	7.14	6,160	6.03	3,890
9	-	-	-	-	-	-	-	-	7.14	6,160	5.94	3,730
10	-	-	-	-	-	-	-	-	7.13	6,140	5.88	3,630
11	-	-	-	-	-	-	-	-	7.12	6,120	5.83	3,540
M	-	-	-	-	-	-	-	-	7.10	6,070	5.78	3,460
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.67	3,270	-	-	-	-	-	-	-	-	-	-
4	5.58	3,130	-	-	-	-	-	-	-	-	-	-
6	5.50	3,000	-	-	-	-	-	-	-	-	-	-
8	5.42	2,880	-	-	-	-	-	-	-	-	-	-
10	5.34	2,760	-	-	-	-	-	-	-	-	-	-
N	5.28	2,670	*4.72	*1,970	*4.40	*1,630	*4.20	*1,440	*4.16	*1,400	*4.10	*1,350
2	5.23	2,600	-	-	-	-	-	-	-	-	-	-
4	5.17	2,520	-	-	-	-	-	-	-	-	-	-
6	5.11	2,440	-	-	-	-	-	-	-	-	-	-
8	5.04	2,350	-	-	-	-	-	-	-	-	-	-
10	5.00	2,300	-	-	-	-	-	-	-	-	-	-
M	4.94	2,230	-	-	-	-	-	-	-	-	-	-

Supplemental records.- Sept. 22, 7:30 p.m., 7.20 ft., 6,300 sec.-ft. Sept. 23, 2:10 p.m., 6.46 ft., 4,710 sec.-ft.
* Mean for the day.

Oaks Creek at Index, N. Y.

Location.- Water-stage recorder, lat. 42°40'00", long. 74°57'35", about 200 ft. above highway bridge in Index, Otsego County, half a mile above mouth and three miles southwest of Cooperstown. Zero of present gage is 1,174.50 feet above mean sea level (general adjustment of 1912). Staff and wire-weight gage at same site but different datum from November 1929 to September 1932.

Drainage area.- 103 square miles.

Gage-height record.- Water-stage recorder graph except for period 12 p.m. Sept. 21 to 10 a.m. Sept. 22, for which graph was drawn based on floodmarks, comparison with graphs of previous floods, and the shape of water-stage recorder graph before and after missing period.

Stage-discharge relation.- For 1938 defined by current-meter measurements below 1,090 second-feet; extended logarithmically to peak stage. For 1932 defined by current-meter measurements below 331 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge, 1,460 second-feet 3:30 a.m. Sept. 22 (gage height, 5.71 feet, from floodmarks).

November 1929 to September 1932: Discharge observed, 1,060 second-feet Apr. 12, 1932 (gage height, 5.3 feet, present site and former datum).

March 1937 to August 1938: Discharge, 1,300 second-feet Feb. 7, 1938 (gage height, 5.53 feet, present site and datum).

Remarks.- Discharge affected by storage in Canadarago Lake.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	30	350	9	26	195	17	32	115	25	554	147
2	30	321	10	25	181	18	34	109	26	510	113
3	29	300	11	25	167	19	34	105	27	473	103
4	30	280	12	24	157	20	61	105	28	446	98
5	27	260	13	30	147	21	265	105	29	412	94
6	26	244	14	28	137	22	860	98	30	381	91
7	27	222	15	34	130	23	590	92	31		87
8	27	207	16	34	121	24	595	123			
Mean monthly discharge, in second-feet										190	161
Run-off, in inches										2.05	1.80

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.56	33	2.57	34	2.65	40	3.20	121	5.13	982	4.43	554
2	2.56	33	2.57	34	2.66	41	3.23	128	5.41	1,200	4.43	554
3	2.56	33	2.57	34	2.67	42	3.26	135	5.69	1,440	4.43	554
4	2.56	33	2.57	34	2.67	42	3.29	142	5.68	1,430	4.44	559
5	2.56	33	2.57	34	2.68	43	3.32	149	5.56	1,330	4.45	564
6	2.56	33	2.57	34	2.69	44	3.35	157	5.43	1,220	4.46	570
7	2.56	33	2.57	34	2.70	45	3.36	160	5.31	1,120	4.46	570
8	2.56	33	2.57	34	2.72	47	3.37	162	5.18	1,020	4.47	575
9	2.56	33	2.57	34	2.73	48	3.38	165	5.06	932	4.47	575
10	2.57	34	2.57	34	2.75	50	3.39	167	4.96	864	4.48	580
11	2.57	34	2.57	34	2.76	52	3.40	170	4.88	811	4.49	585
N	2.57	34	2.57	34	2.77	53	3.43	178	4.81	767	4.49	585
1	2.57	34	2.57	34	2.78	54	3.46	187	4.76	737	4.50	590
2	2.57	34	2.57	34	2.80	56	3.50	198	4.70	701	4.52	601
3	2.57	34	2.57	34	2.81	57	3.55	213	4.65	672	4.53	606
4	2.57	34	2.57	34	2.83	60	3.63	238	4.61	650	4.54	612
5	2.57	34	2.60	36	2.85	62	3.72	267	4.57	628	4.55	617
6	2.57	34	2.61	37	2.88	66	3.86	314	4.54	612	4.56	622
7	2.57	34	2.61	37	2.92	72	4.02	373	4.52	601	4.56	622
8	2.57	34	2.61	37	2.97	80	4.17	433	4.48	580	4.56	622
9	2.57	34	2.61	37	3.02	87	4.35	515	4.47	575	4.56	622
10	2.57	34	2.62	38	3.07	96	4.54	612	4.45	564	4.56	622
11	2.57	34	2.63	39	3.12	105	4.76	737	4.44	559	4.56	622
M	2.57	34	2.63	39	3.16	113	4.98	877	4.43	554	4.55	617
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.54	612	4.46	570	4.38	529	4.29	486	4.23	460	4.16	429
4	4.53	606	4.45	564	4.36	520	4.29	486	4.22	455	4.15	425
6	4.52	601	4.44	559	4.35	515	4.28	482	4.21	450	4.14	421
8	4.51	595	4.44	559	4.34	510	4.27	478	4.20	446	4.13	417
10	4.50	590	4.43	554	4.33	505	4.26	473	4.19	442	4.12	412
N	4.50	590	4.43	554	4.34	510	4.25	468	4.20	446	4.13	417
2	4.50	590	4.43	554	4.34	510	4.25	468	4.20	446	4.13	417
4	4.50	590	4.43	554	4.34	510	4.24	464	4.19	442	4.12	412
6	4.50	590	4.42	549	4.33	505	4.24	464	4.19	442	4.11	408
8	4.50	590	4.41	544	4.32	501	4.24	464	4.18	438	4.10	404
10	4.49	585	4.40	539	4.31	496	4.24	464	4.17	433	4.09	400
M	4.48	580	4.39	534	4.30	491	4.24	464	4.16	429	4.09	400

Supplemental records.- Sept. 22, 3:30 a.m., 5.71 ft., 1,460 sec.-ft.

Cherry Valley Creek at Westville, N. Y.

Location.- Water-stage recorder, lat. 42°38'00", long. 74°52'55", 40 feet below highway bridge in Westville, Otsego County, about five miles below mouth of O'Connell Brook and about four miles above mouth. Wire-weight gage at same site and datum for January 1930 to September 1931.

Drainage area.- 81.3 square miles, (revised).

Gage-height record.- Water-stage recorder graph except for periods 8 p.m. Sept. 1 to 7 a.m. Sept. 3, 7 a.m. Sept. 15 to 7 p.m. Sept. 17, and 9 p.m. Oct. 5 to 8 p.m. Oct. 6, for which graph was drawn based on recorded range of stage and shape of water-stage recorder graph before and after missing periods.

Stage-discharge relation.- For 1938 defined by current-meter measurements below 4,370 second-feet; extended logarithmically to peak stage. For 1931 defined by current-meter measurements below 663 second-feet.

Maxima.- September 1938: Discharge, 4,470 second-feet 9:55 a.m. Sept. 22 (gage height, 8.65 feet).

January 1930 to September 1931: Discharge observed, 1,780 second-feet April 11, 1931 (gage height, 6.3 feet).

June 1938 to August 1938: Discharge, 120 second-feet Aug. 11, 1938 (gage height, 2.55 feet).

Remarks.- Discharge not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	14	121	9	14	56	17	24	34	25	414	175
2	12	109	10	12	52	18	24	32	26	289	87
3	12	90	11	11	48	19	28	31	27	230	70
4	19	80	12	10	47	20	127	38	28	204	63
5	14	73	13	25	44	21	992	53	29	163	58
6	12	66	14	30	41	22	3,640	48	30	137	55
7	12	61	15	47	40	23	1,530	39	31		53
8	16	58	16	34	37	24	692	84			
Mean monthly discharge, in second-feet										293	62.7
Run-off, in inches										4.02	.771

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.94	24	1.94	24	2.14	50	3.33	334	7.25	2,960	6.66	2,400
2	1.94	24	1.94	24	2.17	54	3.40	359	7.51	3,220	6.54	2,300
3	1.94	24	1.94	24	2.20	59	3.48	389	7.80	3,520	6.45	2,220
4	1.94	24	1.94	24	2.22	62	3.56	419	8.12	3,870	6.35	2,120
5	1.94	24	1.94	24	2.25	67	3.66	460	8.32	4,090	6.23	2,020
6	1.94	24	1.94	24	2.28	72	3.72	484	8.42	4,200	6.12	1,940
7	1.94	24	1.94	24	2.31	77	3.76	501	8.48	4,270	6.02	1,860
8	1.94	24	1.94	24	2.34	82	3.88	553	8.52	4,310	5.90	1,760
9	1.94	24	1.94	24	2.37	87	3.94	580	8.56	4,360	5.78	1,660
10	1.94	24	1.94	24	2.40	92	4.01	612	8.58	4,390	5.66	1,570
11	1.94	24	1.94	24	2.45	101	4.11	658	8.50	4,290	5.55	1,500
N	1.94	24	1.94	24	2.49	108	4.20	700	8.43	4,210	5.44	1,420
1	1.94	24	1.94	24	2.54	118	4.30	748	8.29	4,060	5.33	1,340
2	1.94	24	1.94	24	2.58	126	4.44	817	8.19	3,950	5.23	1,270
3	1.94	24	1.94	24	2.62	134	4.60	901	8.09	3,840	5.13	1,210
4	1.94	24	1.95	25	2.67	145	4.86	1,050	7.94	3,670	5.05	1,160
5	1.94	24	1.98	29	2.72	157	5.10	1,190	7.80	3,520	4.97	1,110
6	1.94	24	2.00	31	2.76	166	5.50	1,460	7.65	3,360	4.90	1,070
7	1.94	24	2.04	36	2.81	179	5.89	1,750	7.50	3,210	4.85	1,040
8	1.94	24	2.05	38	2.87	194	6.06	1,890	7.35	3,060	4.80	1,020
9	1.94	24	2.07	40	2.95	216	6.26	2,050	7.20	2,910	4.75	988
10	1.94	24	2.08	41	3.06	248	6.45	2,220	7.05	2,760	4.71	966
11	1.94	24	2.10	44	3.17	282	6.71	2,450	6.91	2,630	4.67	944
M	1.94	24	2.12	47	3.24	304	6.95	2,660	6.78	2,510	4.63	922
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.54	873	3.71	491	3.26	326	2.99	246	2.88	217	2.71	176
4	4.46	832	3.66	471	3.23	317	2.97	241	2.88	217	2.69	172
6	4.40	801	3.62	455	3.20	307	2.95	236	2.87	214	2.68	170
8	4.31	757	3.58	439	3.17	298	2.92	227	2.87	214	2.67	167
10	4.23	718	3.54	424	3.15	292	2.90	222	2.86	212	2.66	165
N	4.15	681	3.50	409	3.13	286	2.90	222	2.84	207	2.65	163
2	4.07	644	3.46	395	3.11	280	2.91	225	2.82	202	2.64	161
4	4.00	613	3.43	384	3.09	274	2.91	225	2.81	200	2.63	159
6	3.93	583	3.40	373	3.07	269	2.90	222	2.79	195	2.62	156
8	3.87	557	3.36	359	3.05	263	2.90	222	2.77	190	2.61	154
10	3.81	532	3.32	346	3.03	257	2.89	220	2.75	186	2.59	150
M	3.76	512	3.29	336	3.01	252	2.88	217	2.73	181	2.58	148

Supplemental records.- Sept. 22, 9:55 a.m., 8.65 ft., 4,470 sec.-ft.

Charlotte Creek at Davenport Center, N. Y.

Location.- Water-stage recorder, lat. 42°26'30", long. 74°56'05", 1,000 feet below covered highway bridge, three-quarters of a mile below Davenport Center, Delaware County, about 200 feet below mouth of Pumpkin Hollow, and about 5 miles above mouth.

Drainage area.- 163 square miles.

Gage-height record.- Water-stage recorder graph except for periods 7 a.m. Sept. 3 to noon Sept. 5, 1 a.m. Sept. 11 to noon Sept. 12, 11:30 p.m. Sept. 17 to 9 a.m. Sept. 20, and 10 p.m. Sept. 21 to 10:30 a.m. Oct. 27. During periods of missing record graph was drawn based on twice daily readings of staff gage Sept. 25 to Oct. 22 and Oct. 24, observed range of stage, floodmarks, shape of water-stage recorder graph before and after periods of missing record, comparisons with gage-height records of nearby stations, comparisons with shape of observed stage graphs at this station, and study of precipitation records.

Stage-discharge relation.- Defined by current-meter measurements below 2,240 second-feet; extended logarithmically to peak stage on basis of slope-area determination of peak flow.

Maxima.- September 1938: Discharge, 14,000 second-feet at about 12:30 a.m. Sept. 22 (gage height, 9.65 feet, from floodmarks).
June to August 1938: Discharge, 553 second-feet at 11 a.m. Aug. 11, 1938 (gage height, 2.29 feet).

Remarks.- Discharge not affected by storage or diversion.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	33	271	9	31	112	17	76	52	25	770	122
2	36	236	10	25	101	18	82	49	26	568	108
3	31	196	11	22	88	19	78	47	27	469	108
4	28	172	12	21	76	20	412	50	28	438	99
5	24	155	13	93	70	21	3,820	63	29	377	92
6	21	139	14	74	66	22	5,600	72	30	313	88
7	21	124	15	111	61	23	2,700	68	31		84
8	34	119	16	122	57	24	1,300	127			
Mean monthly discharge, in second-feet										591	106
Run-off, in inches										4.05	.75

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	0.84	69	0.90	80	1.00	101	3.37	1,210	9.51	13,500	4.95	2,780
2	.84	69	.89	78	1.04	110	3.56	1,360	8.94	11,500	4.98	2,820
3	.86	72	.89	78	1.09	122	3.74	1,510	8.43	9,890	5.01	2,850
4	.87	74	.89	78	1.14	134	3.94	1,690	8.00	8,600	5.04	2,890
5	.88	76	.88	76	1.23	157	4.04	1,780	7.67	7,680	5.09	2,960
6	.89	78	.87	74	1.29	173	4.12	1,860	7.34	6,870	5.12	3,000
7	.89	78	.86	72	1.35	190	4.24	1,980	7.10	6,320	5.14	3,020
8	.90	80	.86	72	1.43	214	4.37	2,120	6.88	5,860	5.16	3,050
9	.91	82	.85	70	1.52	243	4.44	2,190	6.66	5,420	5.18	3,070
10	.92	84	.85	70	1.64	283	4.46	2,220	6.45	5,030	5.18	3,070
11	.93	86	.85	70	1.73	315	4.48	2,240	6.25	4,680	5.17	3,060
N	.94	88	.86	72	1.88	372	4.54	2,300	6.07	4,370	5.13	3,010
1	.94	88	.86	72	2.00	421	4.65	2,420	5.90	4,100	5.08	2,940
2	.95	90	.86	72	2.16	492	4.81	2,610	5.76	3,890	5.00	2,840
3	.95	90	.87	74	2.26	539	5.00	2,840	5.62	3,680	4.94	2,770
4	.95	90	.87	74	2.33	573	5.29	3,220	5.50	3,510	4.87	2,680
5	.95	90	.88	76	2.39	603	5.69	3,780	5.40	3,370	4.79	2,590
6	.94	88	.89	78	2.41	613	6.29	4,740	5.30	3,230	4.69	2,470
7	.94	88	.90	80	2.44	629	6.87	5,840	5.21	3,110	4.60	2,370
8	.93	86	.91	82	2.50	660	7.23	6,610	5.12	3,000	4.50	2,260
9	.92	84	.92	84	2.60	715	7.64	7,600	5.05	2,900	4.40	2,150
10	.92	84	.94	88	2.74	794	8.30	9,500	5.00	2,840	4.31	2,050
11	.91	82	.95	90	2.94	916	9.10	12,000	4.96	2,790	4.22	1,960
M	.90	80	.97	95	3.16	1,060	9.62	13,900	4.94	2,770	4.13	1,870
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.98	1,720	2.92	803	2.44	629	2.15	487	2.10	464	1.94	394
4	3.85	1,600	2.87	872	2.41	613	2.12	473	2.10	464	1.93	390
6	3.72	1,490	2.82	842	2.39	603	2.11	469	2.10	464	1.92	386
8	3.60	1,390	2.77	812	2.37	593	2.11	469	2.09	460	1.91	381
10	3.50	1,310	2.73	788	2.34	578	2.11	469	2.09	460	1.90	377
N	3.41	1,240	2.70	770	2.31	563	2.11	469	2.06	446	1.90	377
2	3.32	1,170	2.66	748	2.30	558	2.11	469	2.03	433	1.90	377
4	3.24	1,120	2.62	726	2.28	548	2.10	464	2.01	424	1.89	373
6	3.18	1,080	2.59	710	2.25	534	2.10	464	1.99	416	1.88	369
8	3.10	1,020	2.54	682	2.22	520	2.10	464	1.98	411	1.86	361
10	3.04	981	2.50	660	2.20	510	2.10	464	1.97	407	1.84	352
M	2.98	942	2.47	644	2.18	501	2.10	464	1.95	398	1.82	344

Supplemental records.- Sept. 22, 12:30 a.m., 9.65 ft., 14,000 sec.-ft.

Richelieu River (Lake Champlain) at Rouses Point, N. Y.

Location.- Water-stage recorder, lat. 44°59'45", long. 73°21'40", at Rutland Railroad bridge in Rouses Point, Clinton County, 1 mile south of Fort Montgomery. Zero of gage is 92.50 feet above mean sea level. Prior to Oct. 15, 1938, staff gage at same site and datum.
Drainage area.- 8,277 square miles.
Gage-height record.- Prior to Oct. 15, staff gage read daily at 10 a.m. Water-stage recorder graph subsequent to Oct. 15. Mean daily gage heights given for period Oct. 15-31.
Maxima.- September 1938: Maximum gage height observed, 4.00 feet Sept. 28.
1871 to August 1938: Maximum gage height observed, 8.80 feet Mar. 30, 1903; observations at St. Johns, Quebec, indicate a maximum computed gage height of 8.83 feet during April 1869.
Remarks.- Gage-height record furnished by Corps of Engineers, U. S. Army.

Gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1.43	3.82	9	1.20	3.42	17	1.42	3.01	25	3.66	2.71
2	1.46	3.80	10	1.26	3.40	18	1.48	2.96	26	3.95	2.94
3	1.55	3.82	11	1.34	3.50	19	1.52	3.04	27	3.95	2.64
4	1.60	3.75	12	1.45	3.34	20	1.57	2.85	28	4.00	2.61
5	1.32	3.80	13	1.24	3.50	21	1.68	2.81	29	3.80	2.60
6	1.28	3.50	14	1.40	3.30	22	3.30	2.76	30	3.87	2.43
7	1.52	3.55	15	1.55	3.15	23	3.35	2.90	31		2.51
8	1.20	3.65	16	1.35	3.10	24	3.55	2.80			

Lake Champlain at Burlington, Vt.

Location.- Float gage, lat. 44°28'55", long. 73°13'30", in pump house of Burlington Water Department, half a mile north of railroad station in Burlington, Chittenden County. Zero of gage is about 92.5 feet above mean sea level.
Gage-height record.- Gage read daily about 9 a.m.
Maxima.- September 1938: Gage height observed, 3.90 feet 9 a.m. Sept. 29.
1907 to August 1938: Gage height observed, 8.65 feet Mar. 27, 28, 1936.
Remarks.- Water surface area of Lake Champlain is 440 square miles. Record furnished by Water Department, City of Burlington.

Gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	1.54	3.89	9	1.35	3.54	17	1.49	3.08	25	3.72	2.75
2	1.48	3.86	10	1.32	3.48	18	1.52	3.05	26	3.73	2.66
3	1.48	3.83	11	1.28	3.38	19	1.52	2.93	27	3.74	2.66
4	1.38	3.78	12	1.22	3.38	20	1.54	2.90	28	3.86	2.67
5	1.41	3.74	13.	1.30	3.28	21	1.80	2.90	29	3.90	2.67
6	1.41	3.72	14	1.33	3.23	22	2.50	2.84	30	3.89	2.64
7	1.32	3.66	15	1.34	3.21	23	3.50	2.75	31		2.68
8	1.34	3.62	16	1.40	3.12	24	3.60	2.68			

Saranac River at Saranac, N. Y.

Location.- Water-stage recorder, lat. 44°38'45", long. 73°44'40", 500 feet above highway bridge at Saranac, Clinton County.
Drainage area.- 521 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- For 1938 defined by current-meter measurements below 3,640 second-feet. For 1933 defined by current-meter measurements below 2,870 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 3,170 second-feet 12:30 a.m. Sept. 22 (gage height, 5.27 feet).
September 1930 to August 1938: Maximum discharge, 5,780 second-feet Apr. 17, 1933 (gage height, 7.68 feet); maximum gage height, 12.74 feet Dec. 2, 1936 (ice jam).
Remarks.- Considerable diurnal fluctuation caused by operation of power plants. Flow partly regulated by storage in Lower Saranac Lake and elsewhere.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	563	1,220	9	296	624	17	395	650	25	1,850	700
2	578	990	10	282	672	18	450	600	26	1,700	600
3	599	977	11	369	681	19	526	600	27	1,580	460
4	436	926	12	348	654	20	614	500	28	1,510	420
5	310	780	13	466	651	21	1,360	500	29	1,430	420
6	410	774	14	402	524	22	2,280	600	30	1,310	500
7	426	679	15	422	636	23	2,150	420	31		550
8	391	671	16	406	530	24	2,180	500			
Mean monthly discharge, in second-feet										868	645
Run-off, in inches										1.86	1.43

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.91	718	2.37	364	2.92	725	3.22	962	5.24	3,140	4.27	2,000
2	2.93	732	2.44	404	2.87	688	3.24	979	5.11	2,980	4.29	2,020
3	2.92	725	2.49	433	2.79	628	3.19	937	4.95	2,790	4.30	2,030
4	2.83	658	2.50	439	2.67	546	3.12	881	4.79	2,600	4.29	2,020
5	2.71	572	2.50	439	2.57	482	3.08	849	4.69	2,480	4.27	2,000
6	2.58	488	2.48	427	2.48	427	3.05	825	4.64	2,420	4.25	1,980
7	2.50	439	2.43	398	2.42	393	3.05	825	4.59	2,360	4.25	1,980
8	2.43	398	2.39	376	2.37	364	3.05	825	4.55	2,310	4.27	2,000
9	2.40	381	2.38	370	2.36	359	3.07	841	4.50	2,250	4.30	2,030
10	2.37	364	2.36	359	2.37	364	3.11	873	4.46	2,210	4.33	2,060
11	2.36	359	2.35	354	2.40	381	3.17	921	4.47	2,220	4.36	2,100
N	2.35	354	2.40	381	2.49	433	3.36	1,080	4.49	2,240	4.40	2,140
1	2.36	359	2.62	513	2.83	658	3.50	1,210	4.46	2,210	4.45	2,200
2	2.41	387	2.80	635	2.95	748	3.56	1,260	4.43	2,170	4.47	2,220
3	2.44	404	2.85	672	2.99	778	3.63	1,330	4.40	2,140	4.49	2,240
4	2.44	404	2.87	688	3.02	801	3.68	1,380	4.35	2,080	4.50	2,250
5	2.42	393	2.88	695	3.01	793	3.70	1,400	4.30	2,030	4.52	2,270
6	2.40	381	2.88	695	2.99	778	3.74	1,440	4.25	1,980	4.55	2,310
7	2.39	376	2.88	695	2.98	770	3.88	1,580	4.21	1,930	4.57	2,330
8	2.38	370	2.88	695	2.94	740	4.23	1,950	4.20	1,920	4.59	2,360
9	2.37	364	2.88	695	2.86	680	4.75	2,550	4.21	1,930	4.61	2,380
10	2.37	364	2.87	688	2.97	762	5.03	2,890	4.24	1,960	4.62	2,390
11	2.37	364	2.88	695	3.08	849	5.19	3,080	4.25	1,980	4.63	2,410
M	2.37	364	2.92	725	3.15	905	5.26	3,160	4.26	1,990	4.63	2,410
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.62	2,390	4.34	2,070	4.13	1,840	3.96	1,660	4.02	1,720	3.90	1,600
4	4.60	2,370	4.28	2,010	4.09	1,800	3.87	1,570	3.88	1,580	3.77	1,470
6	4.54	2,300	4.21	1,930	4.02	1,720	3.77	1,470	3.75	1,450	3.67	1,370
8	4.47	2,220	4.14	1,850	3.98	1,680	3.72	1,420	3.68	1,380	3.60	1,300
10	4.41	2,150	4.10	1,810	3.96	1,660	3.72	1,420	3.68	1,380	3.58	1,280
N	4.40	2,140	4.10	1,810	3.97	1,670	3.80	1,500	3.79	1,490	3.70	1,400
2	4.39	2,130	4.09	1,800	3.99	1,690	3.91	1,610	3.87	1,570	3.78	1,480
4	4.39	2,130	4.09	1,800	4.00	1,700	3.97	1,670	3.90	1,600	3.80	1,500
6	4.36	2,100	4.09	1,800	3.99	1,690	4.01	1,710	3.77	1,470	3.80	1,500
8	4.33	2,060	4.07	1,780	3.98	1,680	4.03	1,730	3.73	1,430	3.76	1,460
10	4.32	2,050	4.09	1,800	3.98	1,680	4.03	1,730	3.84	1,540	3.78	1,480
M	4.34	2,070	4.12	1,830	3.99	1,690	4.05	1,760	3.91	1,610	3.80	1,500

Supplemental records.- Sept. 22, 12:30 a.m., 5.27 ft., 3,170 sec.-ft.

West Branch of Ausable River near Newman, N. Y.

Location.- Water-stage recorder, lat. 44°18'40", long. 73°55'00", 4 miles northeast of Newman, Essex County, and 4 miles below mouth of Lake Placid outlet.
Drainage area.- 116 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurement below 3,140 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 10,800 second-feet 3:45 a.m. Sept. 22 (gage height, 12.20 feet).
June 1916 to December 1917, July 1919 to August 1938: Discharge, 6,200 second-feet Oct. 6, 1932 (gage height, 9.61 feet).
Remarks.- Diurnal fluctuation at low and medium stages caused by operation of power plants. Some regulation by operation of gates in logging dam. Flood flows affected by natural storage in Lake Placid and several small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	105	236	9	103	120	17	171	82	25	593	404
2	98	209	10	87	101	18	161	78	26	436	207
3	89	178	11	78	106	19	143	80	27	374	165
4	80	166	12	68	97	20	280	117	28	422	138
5	70	152	13	196	98	21	1,720	116	29	334	122
6	63	142	14	204	90	22	5,660	104	30	272	118
7	84	129	15	208	86	23	1,510	85	31		118
8	127	123	16	213	86	24	844	147			
Mean monthly discharge, in second-feet										493	135
Run-off, in inches										4.74	1.34

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.21	187	3.24	196	3.18	179	4.76	881	10.26	7,240	6.29	2,070
2	3.24	196	3.17	176	3.21	187	4.85	938	11.33	9,160	6.22	2,010
3	3.25	198	3.07	150	3.22	190	4.94	998	12.03	10,500	6.14	1,940
4	3.25	198	2.97	125	3.23	193	5.05	1,080	12.16	10,800	6.05	1,860
5	3.25	198	2.92	114	3.23	193	5.16	1,150	11.88	10,200	5.98	1,790
6	3.25	198	2.89	108	3.15	170	5.22	1,190	11.47	9,420	5.92	1,740
7	3.23	193	2.87	104	3.05	144	5.25	1,220	10.98	8,510	5.85	1,680
8	3.13	165	2.86	102	2.98	128	5.23	1,200	10.53	7,700	5.79	1,630
9	3.03	140	2.85	100	2.95	121	5.21	1,190	10.06	6,910	5.73	1,580
10	2.96	123	2.85	100	2.94	119	5.22	1,190	9.57	6,140	5.68	1,540
11	2.92	114	3.01	134	2.94	119	5.24	1,210	9.12	5,460	5.62	1,500
N	2.90	110	3.17	176	2.95	121	5.27	1,230	8.75	4,930	5.57	1,460
1	2.89	108	3.21	187	3.02	137	5.35	1,280	8.42	4,480	5.52	1,420
2	2.90	110	3.22	190	3.30	213	5.48	1,380	8.15	4,120	5.47	1,380
3	3.09	154	3.22	190	3.47	269	5.64	1,510	7.90	3,810	5.42	1,340
4	3.14	168	3.22	190	3.52	286	5.81	1,650	7.67	3,530	5.37	1,300
5	3.07	150	3.18	179	3.66	338	5.99	1,800	7.46	3,290	5.33	1,270
6	2.99	130	3.08	152	3.74	371	6.21	2,000	7.27	3,080	5.29	1,240
7	2.94	119	3.01	134	3.81	400	6.47	2,240	7.10	2,890	5.25	1,220
8	3.02	137	2.96	123	3.92	448	6.68	2,450	6.94	2,710	5.21	1,190
9	3.17	176	2.92	114	4.08	522	7.13	2,920	6.78	2,550	5.17	1,160
10	3.22	190	2.89	108	4.27	615	7.56	3,400	6.65	2,420	5.13	1,130
11	3.24	196	2.87	104	4.48	720	8.16	4,140	6.50	2,270	5.09	1,100
M	3.24	196	3.05	144	4.62	797	9.06	5,370	6.38	2,150	5.05	1,080
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.96	1,010	4.40	680	4.01	489	3.74	371	3.90	439	3.73	367
4	4.89	964	4.36	660	3.98	475	3.71	359	3.90	439	3.70	355
6	4.83	924	4.32	640	3.95	462	3.69	351	3.90	439	3.69	351
8	4.76	881	4.28	620	3.93	452	3.69	351	3.90	439	3.67	343
10	4.71	851	4.25	605	3.90	439	3.68	347	3.90	439	3.65	336
N	4.66	821	4.22	590	3.89	435	3.70	355	3.89	435	3.64	332
2	4.62	797	4.19	575	3.87	426	3.70	355	3.87	426	3.62	324
4	4.58	774	4.15	556	3.85	418	3.74	371	3.85	418	3.60	316
6	4.55	758	4.12	541	3.83	409	3.76	380	3.81	400	3.59	312
8	4.52	741	4.09	526	3.80	396	3.80	396	3.80	396	3.58	309
10	4.48	720	4.07	517	3.78	388	3.85	418	3.78	388	3.57	305
M	4.44	700	4.04	503	3.76	380	3.89	435	3.75	376	3.56	301

Supplemental records.- Sept. 22, 3:45 a.m., 12.20 ft., 10,800 sec.-ft.

Ausable River near Ausable Forks, N. Y.

Location.- Water-stage recorder, lat. 44°27'05", long. 73°38'35", 1 3/4 miles below junction of East and West Branches of Ausable River at Ausable Forks, Clinton County.
Drainage area.- 448 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 9,040 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 24,200 second-feet 3:30 a.m. Sept. 22 (gage height, 11.65 feet). Maximum gage height at former site and datum, 12.6 feet, from flood-marks, 2:45 a.m. Sept. 22.

September 1924 to August 1938: Maximum discharge, 21,200 second-feet Oct. 1, 1924 (gage height, 11.15 feet); maximum gage height, 14.0 feet Mar. 27, 1934 (ice jam). Maximum gage height at former site and datum, 9.5 feet, from constructed graph, Oct. 1, 1924.

August 1910 to August 1924: (At chain gage 1½ miles upstream) Maximum gage height, 10.2 feet Mar. 27, 1913 (revised discharge not determined).
Remarks.- Flow partly regulated by storage principally in Taylor Pond and Fern Lake. Diurnal fluctuations caused by operation of power plants upstream. Flood peak also affected by some natural storage in Lake Placid and several small ponds.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	236	533	9	252	308	17	465	245	25	1,360	947
2	228	476	10	234	293	18	397	241	26	972	659
3	213	444	11	215	284	19	360	230	27	847	480
4	194	408	12	181	273	20	592	258	28	920	423
5	184	378	13	294	266	21	5,840	301	29	740	382
6	205	363	14	449	262	22	14,300	322	30	599	360
7	214	335	15	432	262	23	3,790	280	31		354
8	268	318	16	599	248	24	2,070	328			
Mean monthly discharge, in second-feet										1,255	363
Run-off, in inches										3.12	0.93

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.02	444	1.87	368	1.97	418	3.66	1,880	10.95	21,400	5.81	5,350
2	2.03	449	1.85	358	1.99	428	3.86	2,140	11.34	23,000	5.71	5,150
3	2.03	449	1.84	354	1.99	428	4.09	2,460	11.60	24,000	5.59	4,910
4	2.00	433	1.83	349	1.98	423	4.29	2,740	11.62	24,100	5.47	4,680
5	1.95	408	1.83	349	1.96	413	4.42	2,940	11.38	23,100	5.38	4,510
6	1.93	397	1.83	349	1.94	402	4.56	3,150	11.00	21,600	5.30	4,370
7	1.91	387	1.95	408	1.94	402	4.64	3,270	10.65	20,200	5.22	4,230
8	1.88	373	1.93	397	1.94	402	4.71	3,390	10.32	18,900	5.13	4,070
9	1.86	363	2.14	510	1.95	408	4.78	3,500	9.92	17,300	5.06	3,950
10	1.91	387	2.00	433	1.96	413	4.85	3,610	9.49	15,600	4.99	3,830
11	1.95	408	1.94	402	2.03	449	4.90	3,690	9.12	14,300	4.93	3,740
N	1.98	423	1.92	392	2.20	545	4.96	3,790	8.68	12,900	4.86	3,630
1	1.99	428	1.83	349	2.20	545	5.07	3,970	8.42	12,200	4.81	3,550
2	1.99	428	1.86	363	2.20	545	5.24	4,260	8.07	11,100	4.76	3,470
3	1.99	428	1.83	349	2.23	563	5.51	4,760	7.80	10,300	4.71	3,390
4	1.97	418	1.81	340	2.27	587	5.77	5,270	7.52	9,500	4.65	3,290
5	1.93	397	1.67	280	2.26	581	6.08	5,910	7.27	8,810	4.58	3,180
6	1.91	387	1.66	276	2.40	670	6.45	6,740	7.02	8,140	4.54	3,120
7	1.87	368	1.71	296	2.47	719	6.85	7,700	6.80	7,580	4.47	3,020
8	1.84	354	1.75	314	2.51	748	7.60	9,720	6.62	7,140	4.43	2,960
9	1.83	349	1.76	318	2.64	847	8.42	12,200	6.42	6,670	4.38	2,880
10	1.82	344	1.77	322	2.71	904	9.18	14,400	6.26	6,300	4.33	2,800
11	1.81	340	1.93	397	3.19	1,350	10.05	17,800	6.10	5,950	4.28	2,730
M	1.80	335	1.93	397	3.44	1,620	10.58	19,900	5.96	5,660	4.24	2,670
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.15	2,540	3.41	1,590	2.93	1,100	2.62	831	2.76	946	2.61	823
4	4.06	2,410	3.36	1,540	2.90	1,070	2.57	792	2.77	954	2.58	800
6	3.99	2,320	3.32	1,490	2.88	1,050	2.57	792	2.78	963	2.56	785
8	3.91	2,200	3.27	1,440	2.84	1,020	2.57	792	2.78	963	2.54	770
10	3.83	2,100	3.23	1,390	2.81	989	2.56	785	2.76	946	2.52	755
N	3.77	2,020	3.19	1,350	2.78	963	2.58	800	2.75	938	2.49	733
2	3.72	1,960	3.14	1,300	2.76	946	2.64	847	2.74	929	2.47	719
4	3.66	1,880	3.11	1,270	2.74	929	2.65	855	2.72	912	2.46	712
6	3.60	1,810	3.08	1,240	2.71	904	2.72	912	2.70	895	2.44	698
8	3.56	1,760	3.04	1,200	2.66	863	2.72	912	2.69	887	2.42	684
10	3.50	1,690	3.00	1,160	2.66	863	2.74	929	2.66	863	2.40	670
M	3.46	1,650	2.96	1,120	2.64	847	2.76	946	2.63	839	2.38	657

Supplemental records.- Sept. 22, 3:30 a.m., 11.65 ft., 24,200 sec.-ft.

Black Brook at Black Brook, N. Y.

Location.- Water-stage recorder, lat. 44°26'50", long. 73°44'45", 100 feet below hydroelectric plant of Associated Gas & Electric System and three-quarters of a mile south of Black Brook, Clinton County. (Prior to Oct. 24, 1937, staff gage at same site and datum).

Drainage area.- 49.4 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 449 second-feet; extended logarithmically to peak stage. Affected by faulty intake for periods noon Sept. 16 to 10 a.m. Sept. 19 and 1 a.m. Sept. 23 to 10 a.m. Sept. 24.

Maxima.- September 1938: Discharge, 694 second-feet 1 p.m. Sept. 22 (gage height, 5.60 feet).

September 1924 to August 1938: Discharge, 1,050 second-feet Apr. 6, 1937 (gage height, 6.95 feet).

Remarks.- Flows regulated by storage in Taylor Pond and Fern Lake. No regulation during flood period by power plant, which was not operating.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	8.7	28	9	9.1	19	17	10	15	25	52	61
2	8.1	26	10	7.5	17	18	9.1	17	26	36	34
3	7.0	23	11	7.2	17	19	10	14	27	33	22
4	6.4	21	12	7.0	16	20	20	15	28	48	43
5	6.4	20	13	17	16	21	117	21	29	42	57
6	5.8	19	14	19	16	22	494	59	30	33	55
7	7.5	17	15	15	15	23	213	54	31		54
8	12	18	16	13	15	24	88	55			
Mean monthly discharge, in second-feet										45.4	28.4
Run-off, in inches										1.03	.66

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	-	-	-	-	1.58	12	2.20	54	3.61	249	4.20	367
2	-	-	1.52	9.5	1.59	12	2.24	58	3.74	274	4.10	346
3	-	-	-	-	1.59	12	2.29	63	3.90	305	4.00	325
4	-	-	1.52	9.5	1.61	13	2.32	66	4.07	340	3.90	305
5	-	-	-	-	1.62	14	2.35	69	4.20	367	3.80	285
6	1.52	9.5	1.52	9.5	1.62	14	2.39	73	4.31	390	3.70	266
7	-	-	-	-	1.62	14	2.44	78	4.40	410	3.62	251
8	-	-	1.52	9.5	1.62	14	2.49	84	4.57	447	3.53	234
9	-	-	-	-	1.62	14	2.55	90	4.81	502	3.45	220
10	-	-	1.52	9.5	1.63	14	2.60	96	5.19	593	3.38	208
11	-	-	1.53	9.9	1.64	15	2.64	101	5.41	646	3.33	199
N	1.51	9.1	1.53	9.9	1.66	16	2.67	104	5.54	679	3.28	191
1	-	-	1.53	9.9	1.67	16	2.73	112	5.60	694	3.22	181
2	-	-	1.53	9.9	1.69	17	2.79	119	5.57	686	3.16	172
3	-	-	1.53	9.9	1.72	19	2.84	125	5.49	666	3.12	165
4	-	-	1.54	10	1.74	20	2.87	129	5.39	642	3.07	158
5	-	-	1.54	10	1.77	22	2.92	136	5.26	609	3.03	152
6	1.51	9.1	1.55	11	1.80	24	2.98	144	5.12	576	2.99	146
7	-	-	1.55	11	1.80	24	3.07	158	4.99	545	2.96	141
8	-	-	1.56	11	1.84	26	3.24	184	4.87	516	2.92	136
9	-	-	1.57	12	1.90	30	3.37	206	4.77	493	2.89	132
10	-	-	1.57	12	2.03	39	3.36	204	4.66	468	2.87	129
11	-	-	1.58	12	2.12	47	3.39	209	4.54	441	2.85	126
M	1.51	9.1	1.58	12	2.16	50	3.49	227	4.44	419	2.83	124
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.78	118	2.28	62	2.05	41	1.91	31	2.10	45	2.11	46
4	2.72	110	2.26	60	2.04	40	1.90	30	2.12	47	2.11	46
6	2.66	103	2.24	58	2.03	39	1.89	29	2.13	48	2.10	45
8	2.60	96	2.22	56	2.02	39	1.89	29	2.14	49	2.09	44
10	2.55	90	2.19	53	2.00	37	1.88	29	2.15	50	2.08	43
N	2.50	85	2.17	51	1.99	36	1.95	34	2.15	50	2.06	42
2	2.45	80	2.15	50	1.97	35	1.96	34	2.15	50	2.06	42
4	2.42	76	2.13	48	1.95	34	1.95	34	2.14	49	2.02	39
6	2.39	73	2.10	45	1.95	34	1.97	35	2.13	48	2.01	38
8	2.36	70	2.10	45	1.94	33	2.00	37	2.13	48	2.01	38
10	2.33	67	2.08	43	1.93	32	2.05	41	2.12	47	2.00	37
M	2.30	64	2.06	42	1.92	31	2.08	43	2.12	47	1.99	36

227907 O—40——24

East Branch of Ausable River at Ausable Forks, N. Y.

Location.- Water-stage recorder, lat. 44°26'20", long. 73°40'55", on left bank on outside of river bend, 700 feet above Jersey Bridge in village of Ausable Forks, Essex County, and half a mile above junction of East and West Branches of Ausable River. Zero of gage is 545.32 feet above mean sea level and zero of former gage 0.4 mile downstream is 541.78 feet above mean sea level (general adjustment of 1912).

Drainage area.- 198 square miles.

Gage-height record.- Water-stage recorder graph Oct. 7-31. Hook gage read twice daily Sept. 24 to Oct. 7. Hook gage read 19 times 3-12 p.m. Sept. 21, 29 times Sept. 22, and 4 times Sept. 23. Twice daily readings of staff gage at former site Sept. 18 to 3 p.m. Sept. 21 converted to equivalent readings at upper gage by gage-height relationship based on comparative observations.

Stage-discharge relation.- Defined at new site by current-meter measurements below 5,780 second-feet, extended logarithmically to peak stage on basis of area-velocity studies and study of flow in Ausable River near Ausable Forks, N. Y., and in adjacent streams. Defined at former site by current-meter measurements below 4,910 second-feet; extended logarithmically to peak stage.

Maxima.- September 1938: Discharge observed, 20,100 second-feet 2:30 a.m. Sept. 22 (gage height, 12.91 feet); gage height at former site and datum, 11.2 feet, from floodmarks.

September 1924 to August 1938: Maximum discharge, 11,000 second-feet Oct. 1, 1924 (gage height, 7.3 feet, from graph based on twice daily staff gage observations at former site and datum); maximum gage height, 11.4 feet Mar. 28, 1925, from floodmarks at former site and datum (probably backwater from West Branch of Ausable River).

Remarks.- Discharge Sept. 1-20 based on discharge at former site, which is practically the same. Upper gage not affected by backwater from West Branch of Ausable River.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	88	199	9	88	124	17	220	99	25	537	505
2	94	184	10	82	120	18	165	101	26	379	324
3	88	166	11	79	115	19	145	96	27	324	236
4	82	154	12	76	113	20	330	106	28	336	188
5	76	150	13	124	109	21	4,000	115	29	259	166
6	71	139	14	145	108	22	7,830	111	30	216	150
7	71	128	15	173	104	23	1,530	104	31		137
8	110	128	16	272	102	24	825	122			
Mean monthly discharge, in second-feet										627	152
Run-off, in inches										3.54	0.89

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.92	197	1.74	152	1.78	161	3.46	960	12.34	18,600	4.72	2,120
2	1.91	194	1.74	152	1.78	161	3.60	1,070	12.82	19,900	4.65	2,040
3	1.90	191	1.74	152	1.79	164	3.75	1,190	12.78	19,800	4.58	1,970
4	1.89	188	1.74	152	1.80	166	3.89	1,310	12.09	17,900	4.52	1,900
5	1.87	184	1.73	150	1.82	171	4.02	1,430	10.60	14,000	4.46	1,840
6	1.84	176	1.73	150	1.83	174	4.14	1,540	9.48	11,200	4.39	1,770
7	1.83	174	1.73	150	1.85	178	4.24	1,630	8.68	9,260	4.33	1,710
8	1.82	171	1.73	150	1.88	186	4.36	1,740	8.10	7,970	4.28	1,660
9	1.80	166	1.72	148	1.91	194	4.44	1,820	7.66	7,040	4.23	1,620
10	1.79	164	1.71	145	1.95	205	4.51	1,890	7.28	6,270	4.17	1,560
11	1.78	161	1.70	143	1.99	216	4.59	1,980	6.96	5,620	4.12	1,520
N	1.76	157	1.70	143	2.04	231	4.70	2,100	6.68	5,070	4.07	1,470
1	1.75	154	1.70	143	2.09	247	4.86	2,290	6.43	4,610	4.03	1,440
2	1.74	152	1.69	141	2.15	268	5.08	2,570	6.20	4,220	3.98	1,390
3	1.74	152	1.68	139	2.21	289	5.35	2,940	6.00	3,900	3.94	1,360
4	1.74	152	1.68	139	2.28	315	5.66	3,380	5.80	3,590	3.90	1,320
5	1.74	152	1.68	139	2.36	347	6.04	3,960	5.64	3,350	3.86	1,280
6	1.74	152	1.68	139	2.45	384	6.48	4,700	5.48	3,120	3.82	1,250
7	1.74	152	1.69	141	2.56	432	7.04	5,780	5.33	2,910	3.78	1,210
8	1.74	152	1.70	143	2.69	493	8.03	7,820	5.20	2,730	3.75	1,190
9	1.74	152	1.70	143	2.83	564	8.67	9,240	5.08	2,570	3.71	1,160
10	1.74	152	1.72	148	3.00	655	9.59	11,400	4.98	2,440	3.67	1,130
11	1.74	152	1.74	152	3.15	746	10.75	14,400	4.88	2,320	3.64	1,100
M	1.74	152	1.77	159	3.31	851	11.65	16,700	4.80	2,220	3.61	1,080
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.53	1,010	2.95	628	2.55	428	2.30	323	2.39	359	2.19	282
4	3.47	968	2.91	606	2.53	418	2.28	315	2.39	359	2.18	278
6	3.41	922	2.87	584	2.49	401	2.26	308	2.39	359	2.16	271
8	3.35	880	2.83	564	2.47	392	2.26	308	2.38	355	2.14	264
10	3.30	844	2.80	548	2.44	380	2.26	308	2.37	351	2.13	260
N	3.25	810	2.77	533	2.42	371	2.27	312	2.35	343	2.12	257
2	3.20	777	2.74	518	2.41	367	2.28	315	2.33	335	2.11	254
4	3.15	746	2.71	503	2.39	359	2.30	323	2.31	327	2.10	250
6	3.11	720	2.67	484	2.38	355	2.32	331	2.28	315	2.09	247
8	3.07	696	2.64	469	2.37	351	2.36	347	2.25	304	2.08	244
10	3.02	667	2.62	460	2.35	343	2.37	351	2.23	296	2.06	238
M	2.98	644	2.58	441	2.32	331	2.38	355	2.22	293	2.03	228

Supplemental records.- Sept. 22, 2:30 a.m., 12.91 ft., 20,100 sec.-ft.

Bouquet River at Willsboro, N. Y.

Location.- Lat. 44°21'30", long. 73°23'50", half a mile southwest of Willsboro, Essex County.
Drainage area.- 275 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 4,590 second-feet; extended logarithmically to peak discharge.
Maxima.- September 1938: Discharge, 7,640 second-feet noon Sept. 22 (gage height, 8.77 feet).
July 1923 to August 1938: Discharge, 11,800 second-feet Oct. 1, 1924 (gage height, 10.85 feet).
Remarks.- Records of gage heights and discharge measurements only available August to September 1904 and August to November 1908.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	107	235	9	85	155	17	138	135	25	550	337
2	104	218	10	75	155	18	110	185	26	410	296
3	92	201	11	73	155	19	107	131	27	344	231
4	78	193	12	70	152	20	247	138	28	334	201
5	70	189	13	125	148	21	2,180	141	29	291	185
6	63	178	14	135	145	22	5,800	141	30	253	178
7	68	166	15	145	141	23	1,430	135	31		163
8	87	159	16	163	138	24	747	154			
Mean monthly discharge, in second-feet										483	175
Run-off, in inches										1.96	0.73

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.59	118	2.54	104	2.62	128	3.52	584	7.56	5,540	5.51	2,540
2	2.59	118	2.54	104	2.62	128	3.56	612	7.51	5,460	5.31	2,280
3	2.58	115	2.54	104	2.62	128	3.60	640	7.49	5,420	5.17	2,110
4	2.58	115	2.54	104	2.62	128	3.64	668	7.50	5,440	5.01	1,920
5	2.58	115	2.54	104	2.63	131	3.69	703	7.59	5,580	4.90	1,800
6	2.57	112	2.54	104	2.65	138	3.75	748	7.75	5,860	4.80	1,690
7	2.57	112	2.54	104	2.66	141	3.85	822	7.98	6,250	4.71	1,600
8	2.57	112	2.54	104	2.67	145	4.01	948	8.28	6,760	4.63	1,520
9	2.56	109	2.54	104	2.69	152	4.21	1,120	8.44	7,040	4.55	1,440
10	2.56	109	2.55	106	2.71	159	4.40	1,290	8.65	7,420	4.49	1,380
11	2.56	109	2.55	106	2.75	174	4.60	1,490	8.73	7,560	4.43	1,320
N	2.56	109	2.55	106	2.79	189	4.80	1,690	8.77	7,640	4.37	1,260
1	2.55	106	2.55	106	2.84	210	4.98	1,890	8.65	7,420	4.31	1,210
2	2.55	106	2.55	106	2.89	231	5.17	2,110	8.52	7,190	4.27	1,170
3	2.55	106	2.55	106	2.95	258	5.34	2,320	8.30	6,790	4.24	1,150
4	2.55	106	2.55	106	3.00	281	5.52	2,560	8.05	6,360	4.20	1,110
5	2.55	106	2.55	106	3.06	311	5.72	2,820	7.77	5,890	4.16	1,080
6	2.55	106	2.55	106	3.13	347	5.90	3,060	7.47	5,390	4.13	1,050
7	2.55	106	2.56	109	3.19	380	6.17	3,440	7.15	4,880	4.10	1,020
8	2.55	106	2.56	109	3.25	414	6.67	4,160	6.85	4,420	4.07	1,000
9	2.55	106	2.57	112	3.30	443	7.15	4,880	6.53	3,940	4.04	974
10	2.55	106	2.58	115	3.35	474	7.40	5,280	6.25	3,550	4.01	948
11	2.55	106	2.60	121	3.41	512	7.52	5,470	5.98	3,170	3.99	932
M	2.55	106	2.61	124	3.47	550	7.56	5,540	5.72	2,820	3.96	908
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.92	876	3.58	626	3.32	455	3.16	363	3.11	336	3.05	306
4	3.87	838	3.55	605	3.30	443	3.15	358	3.11	336	3.05	306
6	3.82	800	3.53	591	3.29	437	3.15	358	3.12	342	3.05	306
8	3.79	778	3.51	577	3.27	426	3.14	353	3.12	342	3.04	301
10	3.75	748	3.49	564	3.25	414	3.13	347	3.13	347	3.03	296
N	3.73	732	3.47	550	3.24	408	3.12	342	3.12	342	3.02	291
2	3.71	718	3.44	531	3.22	397	3.11	336	3.11	336	3.00	281
4	3.69	703	3.42	518	3.21	391	3.10	331	3.10	331	3.00	281
6	3.66	682	3.40	505	3.20	385	3.10	331	3.10	331	3.00	281
8	3.64	668	3.37	486	3.19	380	3.10	331	3.09	326	2.99	276
10	3.61	647	3.35	474	3.18	374	3.10	331	3.08	321	2.98	272
M	3.59	633	3.33	462	3.17	369	3.10	331	3.07	316	2.98	272

Lake George at Rogers Rock, N. Y.

Location.- Water-stage recorder, lat. 43°48'10", long. 73°27'25", about 500 feet north of Hooper's dock, on south side of Stones Bay, Rogers Rock, Essex County. Zero of gage is 315.93 feet above mean sea level.
Gage-height record.- Water-stage recorder graph. Prior to Nov. 11, 1936, staff gage at same site and datum.
Maxima.- September 1938: Gage height, 4.37 feet 1:30 a.m. Sept. 22.
July 1913 to August 1938: Gage height, 5.09 feet Apr. 9, 1936.
Remarks.- Elevation of lake surface regulated by power operations and flood gates at Ticonderoga. Mean daily gage heights estimated for period October 29-31.

Mean daily gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	3.36	4.01	9	3.10	3.73	17	3.20	3.65	25	4.15	3.65
2	3.30	3.96	10	3.10	3.71	18	3.19	3.64	26	4.17	3.65
3	3.30	3.94	11	3.08	3.72	19	3.22	3.66	27	4.15	3.58
4	3.31	3.92	12	3.10	3.70	20	3.33	3.63	28	4.12	3.52
5	3.22	3.88	13	3.13	3.70	21	3.58	3.62	29	4.05	3.53
6	3.20	3.78	14	3.12	3.69	22	4.19	3.57	30	4.03	3.52
7	3.19	3.78	15	3.21	3.69	23	4.17	3.60	31		3.51
8	3.11	3.77	16	3.21	3.69	24	4.19	3.61			

Gage height, in feet, at indicated time, September 1938

Hour	September 19		September 20		September 21		September 22		September 23	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
1	3.19	3.20	3.29	3.33	3.39	3.54	4.21	4.20	4.20	4.15
2	3.21	3.21	3.31	3.32	3.36	3.66	4.19	4.18	4.17	4.17
3	3.22	3.21	3.28	3.30	3.42	3.58	4.07	4.28	4.18	4.16
4	3.20	3.22	3.32	3.32	3.42	3.46	4.22	4.19	4.19	4.16
5	3.21	3.22	3.31	3.34	3.45	3.41	4.12	4.21	4.17	4.17
6	3.21	3.23	3.31	3.32	3.48	3.42	4.17	4.24	4.18	4.16
7	3.20	3.25	3.34	3.36	3.43	3.54	4.24	4.22	4.16	4.19
8	3.22	3.28	3.33	3.39	3.46	4.07	4.14	4.22	4.16	4.19
9	3.21	3.26	3.32	3.35	3.51	3.99	4.24	4.20	4.17	4.18
10	3.20	3.27	3.33	3.39	3.49	3.96	4.24	4.20	4.16	4.21
11	3.21	3.30	3.32	3.39	3.52	4.26	4.16	4.18	4.17	4.18
12	3.20	3.27	3.32	3.37	3.56	4.02	4.22	4.16	4.16	4.20

Supplemental records.- Sept. 21, 8:30 p.m., 4.12 ft.; 9:30 p.m., 3.89 ft. Sept. 22, 1:30 a.m., 4.37 ft.; 6:30 a.m., 4.27 ft.; 9:20 a.m., 4:28 ft.; 1:30 p.m., 4.17 ft.; 2:30 p.m., 4:29 ft.; 4:20 p.m., 4.17 ft.; 5:30 p.m., 4.28 ft.

Poultney River below Fair Haven, Vt.

Location.- Water-stage recorder, lat. 43°37'40", long. 73°18'50", a third of a mile below Carver Falls, 1.9 miles above mouth of Hubbardton River, and 3¼ miles northwest of Fair Haven, Rutland County.
Drainage area.- 187 square miles.
Gage-height record.- Water-stage recorder graph except for periods 12 a.m. Sept. 24 to Sept. 29, Oct. 2, 3, and 29, records for which were based on shape of stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 1,190 second-feet; extended to peak stage on basis of determinations of flood flows over dam.
Maxima.- September 1938: Discharge, 10,300 second-feet 5 a.m. Sept. 22 (gage height, 21.40 feet).
1928 to August 1938: Maximum discharge, 6,190 second-feet Mar. 18, 1936 (gage height, 16.50 feet); maximum gage height, 22.90 feet Mar. 12, 1936 (ice jam).
Remarks.- Flood run-off affected by storage in Lake Bomoseen.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	42	411	9	63	188	17	360	148	25	895	279
2	39	370	10	60	224	18	282	158	26	660	253
3	26	350	11	17	202	19	241	110	27	595	244
4	13	349	12	63	189	20	632	180	28	580	226
5	29	332	13	231	207	21	1,880	168	29	545	206
6	51	314	14	270	170	22	6,880	156	30	472	165
7	50	293	15	308	164	23	2,540	95	31		154
8	72	251	16	620	52	24	1,450	173			
Mean monthly discharge, in second-feet										666	219
Run-off, in inches										3.97	1.35

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.71	268	3.74	276	4.48	466	6.40	952	16.60	6,320	12.25	3,450
2	3.70	266	3.73	273	4.48	466	6.43	960	17.90	7,320	12.00	3,300
3	3.70	266	3.70	266	4.48	466	6.45	966	20.50	9,450	11.75	3,180
4	3.70	266	3.70	266	4.00	340	6.46	968	21.10	9,990	11.55	3,080
5	3.70	266	3.70	266	4.42	450	6.50	979	21.40	10,300	11.33	2,960
6	3.70	266	3.60	244	4.48	466	6.53	987	21.10	9,990	11.15	2,880
7	3.70	266	1.80	10	4.48	466	6.56	993	20.75	9,680	10.98	2,790
8	3.70	266	1.70	7.4	4.48	466	6.62	1,010	20.40	9,360	10.83	2,720
9	3.70	266	1.67	6.8	4.49	469	6.72	1,040	19.60	8,680	10.67	2,640
10	3.70	266	3.00	117	4.50	472	6.90	1,090	19.10	8,280	10.55	2,580
11	3.68	262	3.40	200	5.18	655	7.20	1,180	18.50	7,800	10.43	2,520
N	3.81	292	3.40	200	5.30	685	7.50	1,280	17.90	7,320	10.30	2,450
1	3.81	292	3.40	200	5.48	730	7.82	1,390	17.25	6,800	10.15	2,380
2	3.81	292	3.34	187	5.49	732	8.10	1,490	16.65	6,360	10.05	2,320
3	3.81	292	3.38	196	5.50	735	8.50	1,650	16.00	5,900	9.95	2,280
4	3.85	302	3.38	196	5.50	735	9.10	1,900	15.65	5,660	9.85	2,230
5	1.90	13	3.40	200	5.50	735	9.50	2,080	15.20	5,340	9.75	2,190
6	4.63	509	4.03	348	5.50	735	10.00	2,300	14.75	5,020	9.65	2,140
7	4.33	425	4.03	348	5.60	758	10.60	2,600	14.25	4,680	9.58	2,110
8	3.85	302	4.03	348	5.80	804	11.20	2,900	13.85	4,410	9.48	2,070
9	3.80	290	4.04	350	5.98	845	12.70	3,720	13.50	4,200	9.40	2,030
10	3.78	285	4.05	352	6.13	882	13.80	4,380	13.15	3,990	9.30	1,980
11	3.77	283	4.80	558	6.25	912	14.70	4,990	12.80	3,780	9.15	1,920
M	3.75	278	4.48	466	6.35	938	15.70	5,690	12.50	3,600	9.05	1,870
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.85	1,790	-	-	-	-	-	-	-	-	-	-
4	8.60	1,690	-	-	-	-	-	-	-	-	-	-
6	8.42	1,620	-	-	-	-	-	-	-	-	-	-
8	8.20	1,530	-	-	-	-	-	-	-	-	-	-
10	8.05	1,470	-	-	-	-	-	-	-	-	-	-
N	7.94	1,430	-	a895	-	a660	-	a595	-	a580	-	a545
2	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
6	-	b1,270	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-	-

a Mean for the day.
b Mean for 12 hours.

Otter Creek at Center Rutland, Vt.

Location.- Water-stage recorder, lat. 43°36'15", long. 73°00'50", at highway bridge in Center Rutland, Rutland County, 100 feet below dam and 1 mile below mouth of East Creek.
Drainage area.- 307 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 3,450 second-feet; extended to peak stage on basis of determination of flood flow over dam.
Maxima.- September 1938: Discharge, 13,700 second-feet 1 a.m. Sept. 22 (gage height, 12.45 feet).
1928 to August 1938: Discharge, 8,580 second-feet Mar. 18, 19, 1936 (gage height, 10.84 feet).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	276	576	9	304	346	17	819	297	25	1,650	1,090
2	256	540	10	204	334	18	756	315	26	1,190	693
3	182	494	11	134	362	19	787	324	27	966	519
4	202	494	12	216	376	20	1,910	316	28	921	476
5	173	436	13	1,660	374	21	5,520	430	29	775	388
6	220	416	14	944	342	22	10,100	445	30	668	346
7	261	396	15	1,250	324	23	4,790	404	31		337
8	376	388	16	1,410	330	24	2,620	467			
Mean monthly discharge, in second-feet										1,385	431
Run-off, in inches										5.03	1.61

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.71	631	2.87	707	3.21	876	5.47	2,580	12.45	13,700	8.55	6,330
2	2.63	594	2.78	664	3.26	906	5.52	2,630	12.37	13,600	8.44	6,160
3	2.62	589	2.73	640	3.39	984	5.61	2,710	12.24	13,300	8.32	5,980
4	2.65	603	2.72	635	3.64	1,140	5.70	2,800	12.24	13,300	8.21	5,820
5	2.67	612	2.70	626	3.92	1,330	5.76	2,860	11.99	12,800	8.10	5,650
6	2.68	617	2.69	621	4.17	1,510	5.88	2,980	11.78	12,300	8.00	5,500
7	2.70	626	2.72	635	4.47	1,740	6.02	3,120	11.62	12,000	7.89	5,350
8	2.72	635	2.64	598	4.66	1,890	6.09	3,190	11.36	11,500	7.80	5,220
9	3.03	785	2.93	735	4.69	1,910	6.25	3,360	11.11	11,000	7.70	5,080
10	3.15	845	3.02	780	4.72	1,940	6.50	3,630	10.87	10,500	7.59	4,940
11	3.21	876	3.10	820	4.77	1,980	6.74	3,890	10.72	10,200	7.49	4,810
N	3.24	894	3.10	820	4.84	2,030	7.00	4,200	10.50	9,750	7.40	4,690
1	3.25	900	3.12	830	4.95	2,120	7.22	4,460	10.31	9,390	7.30	4,560
2	3.25	900	3.12	820	5.02	2,180	7.51	4,830	10.15	9,080	7.22	4,460
3	3.15	845	3.14	840	5.09	2,240	7.97	5,460	9.97	8,750	7.13	4,360
4	2.96	750	3.15	845	5.12	2,270	8.41	6,120	9.82	8,480	7.02	4,220
5	2.91	726	3.19	865	5.15	2,300	8.73	6,620	9.70	8,260	6.94	4,130
6	2.99	765	3.23	888	5.21	2,350	9.13	7,270	9.55	7,990	6.84	4,010
7	2.93	736	3.25	900	5.23	2,370	9.55	7,990	9.41	7,750	6.73	3,880
8	3.15	845	3.27	912	5.27	2,400	9.98	8,760	9.22	7,420	6.65	3,800
9	3.19	865	3.29	924	5.32	2,450	10.72	10,200	9.08	7,190	6.59	3,730
10	3.19	865	3.32	942	5.41	2,530	11.42	11,600	8.94	6,950	6.52	3,650
11	3.18	860	3.38	978	5.47	2,580	12.07	13,000	8.80	6,730	6.42	3,540
M	3.09	815	3.25	900	5.51	2,620	12.37	13,600	8.68	6,540	6.32	3,430
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.16	3,260	4.72	1,940	3.90	1,320	3.48	1,040	3.40	990	3.12	830
4	6.00	3,100	4.63	1,860	3.84	1,280	3.45	1,020	3.38	978	3.10	820
6	5.84	2,940	4.56	1,810	3.80	1,250	3.40	990	3.36	966	3.08	810
8	5.70	2,800	4.48	1,740	3.76	1,220	3.38	978	3.34	954	3.05	795
10	5.58	2,680	4.40	1,680	3.72	1,194	3.32	942	3.31	936	3.02	780
N	5.43	2,550	4.33	1,620	3.71	1,187	3.29	924	3.28	918	2.98	760
2	5.35	2,480	4.28	1,590	3.69	1,170	3.29	924	3.25	900	2.98	760
4	5.27	2,400	4.20	1,530	3.65	1,140	3.25	900	3.24	894	2.97	755
6	5.12	2,270	4.13	1,480	3.62	1,120	3.30	930	3.21	876	2.94	741
8	4.97	2,140	4.08	1,450	3.58	1,100	3.32	942	3.19	865	2.94	741
10	4.88	2,060	4.01	1,400	3.55	1,080	3.37	972	3.18	860	2.92	731
M	4.80	2,000	3.96	1,360	3.51	1,060	3.40	990	3.14	840	2.89	716

Otter Creek at Middlebury, Vt.

Location.- Water-stage recorder, lat. 44°00'45", long. 73°10'05", 150 feet above highway bridge at Middlebury, Addison County, 3½ miles below Middlebury River.
Drainage area.- 628 square miles.
Gage-height record.- Water-stage recorder graph except for period 7 a.m. Oct. 16 to 10 a.m. Oct. 20, record for which was based on shape of stage graph at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 8,790 second-feet; extended logarithmically to maximum flood stage.
Maxima.- September 1938: Discharge, 6,630 second-feet 6 p.m. Sept. 25 (gage height, 7.55 feet).
1903 to August 1938: Discharge, 13,600 second-feet Nov. 4, 1927 (gage height, 13.3 feet, at site of chain gage 1,800 feet upstream, present datum).
Remarks.- Flood run-off affected by some artificial and natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	624	3,550	9	787	1,010	17	2,280	710	25	6,540	1,190
2	604	3,210	10	704	874	18	2,190	660	26	6,410	1,460
3	582	2,940	11	604	815	19	2,060	680	27	5,820	1,230
4	553	2,670	12	378	787	20	2,400	671	28	5,170	984
5	453	2,310	13	1,610	774	21	3,030	741	29	4,500	866
6	402	1,850	14	2,030	774	22	3,720	882	30	3,960	748
7	566	1,460	15	2,220	734	23	3,670	836	31		688
8	815	1,160	16	2,330	700	24	5,310	767			
Mean monthly discharge, in second-feet										2,411	1,250
Run-off, in inches										4.28	2.29

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.74	2,260	3.60	2,090	3.70	2,220	4.06	2,610	5.30	3,810	5.04	3,530
2	3.73	2,250	3.60	2,090	3.71	2,230	4.07	2,620	5.34	3,850	5.04	3,530
3	3.73	2,250	3.60	2,090	3.75	2,280	4.08	2,630	5.35	3,860	5.04	3,530
4	3.72	2,240	3.59	2,080	3.77	2,300	4.10	2,650	5.36	3,880	5.04	3,530
5	3.72	2,240	3.58	2,070	3.78	2,310	4.14	2,690	5.36	3,880	5.04	3,530
6	3.71	2,230	3.57	2,050	3.79	2,320	4.17	2,710	5.35	3,860	5.04	3,530
7	3.70	2,220	3.57	2,050	3.80	2,330	4.21	2,750	5.33	3,840	5.04	3,530
8	3.70	2,220	3.57	2,050	3.80	2,330	4.24	2,780	5.31	3,820	5.04	3,530
9	3.70	2,220	3.56	2,040	3.81	2,340	4.27	2,800	5.29	3,800	5.05	3,540
10	3.69	2,210	3.57	2,050	3.82	2,350	4.34	2,860	5.29	3,800	5.07	3,560
11	3.68	2,190	3.57	2,050	3.84	2,370	4.39	2,900	5.29	3,800	5.08	3,570
N	3.68	2,190	3.57	2,050	3.85	2,380	4.42	2,930	5.23	3,730	5.10	3,590
1	3.68	2,190	3.56	2,040	3.86	2,400	4.52	3,020	5.20	3,700	5.12	3,610
2	3.67	2,180	3.56	2,040	3.88	2,420	4.54	3,040	5.18	3,680	5.14	3,630
3	3.66	2,170	3.56	2,040	3.91	2,450	4.57	3,060	5.16	3,660	5.16	3,660
4	3.66	2,170	3.55	2,030	3.92	2,460	4.65	3,140	5.15	3,640	5.20	3,700
5	3.65	2,160	3.55	2,030	3.94	2,480	4.75	3,240	5.13	3,620	5.23	3,730
6	3.65	2,160	3.55	2,030	3.96	2,510	4.84	3,330	5.12	3,610	5.26	3,770
7	3.65	2,160	3.56	2,040	3.97	2,520	4.92	3,410	5.10	3,590	5.31	3,820
8	3.64	2,140	3.56	2,040	3.98	2,530	4.98	3,470	5.09	3,580	5.36	3,880
9	3.63	2,130	3.57	2,050	4.00	2,550	5.08	3,570	5.07	3,560	5.42	3,940
10	3.63	2,130	3.58	2,070	4.02	2,570	5.12	3,610	5.06	3,550	5.47	4,000
11	3.62	2,120	3.60	2,090	4.03	2,580	5.17	3,670	5.06	3,550	5.52	4,050
M	3.61	2,100	3.64	2,140	4.04	2,590	5.25	3,760	5.05	3,540	5.61	4,150
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.76	4,320	7.36	6,360	7.51	6,570	7.16	6,080	6.67	5,430	6.15	4,790
4	5.95	4,550	7.42	6,450	7.49	6,550	7.13	6,040	6.63	5,380	6.11	4,740
6	6.12	4,750	7.46	6,500	7.48	6,530	7.09	5,990	6.59	5,330	6.06	4,680
8	6.32	4,990	7.46	6,500	7.44	6,480	7.05	5,930	6.55	5,280	6.00	4,610
10	6.46	5,160	7.50	6,560	7.42	6,450	7.01	5,870	6.50	5,210	5.94	4,540
N	6.63	5,380	7.53	6,600	7.41	6,430	6.97	5,820	6.46	5,160	5.89	4,480
2	6.79	5,590	7.54	6,620	7.39	6,410	6.93	5,770	6.43	5,130	5.84	4,420
4	6.92	5,760	7.54	6,620	7.36	6,360	6.89	5,720	6.38	5,070	5.80	4,370
6	7.00	5,860	7.55	6,630	7.33	6,320	6.83	5,640	6.32	4,990	5.76	4,320
8	7.12	6,030	7.54	6,620	7.30	6,280	6.80	5,600	6.29	4,960	5.72	4,270
10	7.20	6,140	7.54	6,620	7.24	6,200	6.76	5,550	6.24	4,900	5.68	4,230
M	7.29	6,270	7.53	6,600	7.21	6,150	6.71	5,480	6.20	4,850	5.64	4,180

Winooski River at Montpelier, Vt.

Location.- Water-stage recorder, lat. 44°15'25", long. 72°35'35", three-eighths of a mile above mouth of Dog River and 1 mile downstream from depot in Montpelier, Washington County. Zero of gage is 499.97 feet above mean sea level.
Drainage area.- 433 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Rating curve defined by current-meter measurements below 6,880 second-feet; extended to peak stage of November 1927 on basis of determination of flood flow by slope-area method.
Maxima.- September 1938: Discharge, 14,000 second-feet 1 a.m. Sept. 22 (gage height, 14.11 feet).
1909 to August 1938: Discharge, 57,000 second-feet Nov. 3, 1927 (gage height, 27.1 feet).
Remarks.- Flood run-off affected by artificial storage in reservoirs on Mollys Brook (24 square miles), North Branch of Winooski River, and Jail Branch. For information on storage see records for Wrightsville Detention Reservoir on North Branch of Winooski River at Wrightsville, Vt., and for East Barre Detention Reservoir on Jail Branch at East Barre, Vt.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	250	218	9	212	273	17	457	222	25	1,580	858
2	275	462	10	180	272	18	543	258	26	1,410	576
3	192	388	11	111	309	19	463	334	27	1,200	430
4	114	402	12	129	300	20	1,150	248	28	1,120	360
5	130	376	13	520	253	21	4,280	350	29	930	310
6	168	338	14	433	250	22	6,040	342	30	718	244
7	217	314	15	736	228	23	2,120	208	31		250
8	232	259	16	819	172	24	1,770	344			
Mean monthly discharge, in second-feet										950	327
Run-off, in inches										2.44	.87

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.04	411	4.18	502	4.46	697	5.98	1,890	14.11	14,000	6.63	2,530
2	4.06	424	4.17	496	4.51	732	6.22	2,120	14.00	13,800	6.58	2,480
3	4.10	450	4.15	482	4.56	767	6.35	2,250	13.45	12,500	6.51	2,410
4	4.19	508	4.12	463	4.59	788	6.40	2,300	12.68	11,000	6.47	2,370
5	4.21	522	4.11	456	4.60	795	6.42	2,320	11.75	9,250	6.42	2,320
6	4.23	536	4.10	450	4.65	830	6.44	2,340	10.92	7,840	6.38	2,280
7	4.26	557	4.19	508	4.76	907	6.49	2,390	10.21	6,780	6.15	2,050
8	4.29	578	4.20	515	4.79	928	6.51	2,410	9.71	6,090	6.01	1,920
9	4.30	585	4.20	515	4.80	935	6.60	2,500	9.26	5,510	6.22	2,120
10	4.31	592	4.10	450	4.81	942	6.76	2,660	8.81	4,920	6.22	2,120
11	4.31	592	4.14	476	4.85	970	7.00	2,900	8.54	4,600	6.21	2,110
N	4.31	592	4.05	418	5.01	1,090	7.24	3,140	8.31	4,320	6.16	2,060
1	4.30	585	4.17	496	5.11	1,150	7.42	3,340	8.11	4,100	6.19	2,090
2	4.30	585	4.15	482	5.22	1,240	7.69	3,640	7.94	3,910	6.14	2,040
3	4.30	585	4.11	456	5.28	1,280	8.00	3,980	7.87	3,840	6.10	2,000
4	4.30	585	4.01	392	5.29	1,290	8.38	4,410	7.61	3,550	6.09	1,990
5	4.29	578	3.86	310	5.35	1,340	8.41	4,440	7.47	3,400	6.04	1,950
6	4.29	578	3.70	236	5.46	1,430	8.42	4,450	7.28	3,190	6.06	1,960
7	4.28	571	3.91	336	5.57	1,520	8.64	4,720	7.19	3,090	6.07	1,970
8	4.27	564	4.07	430	5.68	1,620	9.51	5,830	7.08	2,980	6.06	1,960
9	4.25	550	4.19	508	5.79	1,710	11.10	8,140	6.98	2,880	6.05	1,960
10	4.23	536	4.28	571	5.82	1,750	12.49	10,600	6.89	2,790	6.04	1,950
11	4.21	522	4.30	585	5.83	1,760	13.40	12,400	6.78	2,680	6.03	1,940
M	4.20	515	4.38	641	5.85	1,780	13.88	13,500	6.71	2,610	6.01	1,920
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.99	1,900	5.74	1,680	5.50	1,460	5.30	1,300	5.20	1,220	4.93	1,020
4	5.93	1,850	5.71	1,650	5.50	1,460	5.26	1,270	5.17	1,190	4.91	1,010
6	5.89	1,810	5.70	1,640	5.50	1,460	5.21	1,230	5.10	1,150	4.87	984
8	5.88	1,800	5.69	1,630	5.53	1,490	5.21	1,230	5.15	1,180	4.92	1,010
10	5.84	1,770	5.66	1,600	5.49	1,450	5.14	1,170	5.11	1,150	4.85	970
N	5.80	1,730	5.64	1,590	5.45	1,420	5.10	1,140	5.13	1,160	4.81	942
2	5.81	1,740	5.61	1,560	5.41	1,390	5.11	1,150	5.00	1,080	4.71	872
4	5.78	1,710	5.60	1,550	5.39	1,370	5.08	1,140	5.01	1,090	4.71	914
6	5.78	1,710	5.57	1,520	5.31	1,310	5.04	1,110	4.96	1,040	4.60	795
8	5.79	1,720	5.55	1,500	5.38	1,360	5.13	1,160	4.89	998	4.62	809
10	5.79	1,720	5.53	1,490	5.40	1,380	5.20	1,220	4.97	1,050	4.70	865
M	5.76	1,690	5.52	1,480	5.36	1,350	5.21	1,230	4.98	1,060	4.72	879

Winooski River near Essex Junction, Vt.

Location.- Water-stage recorder, lat. 44°28'40", long. 73°08'20", half a mile below mouth of Muddy Brook, 2 miles southwest of Essex Junction, Chittenden County.
Drainage area.- 1,079 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 21,800 second-feet; extended to peak stage on basis of determinations of flood flow over dam and by slope-area method.
Maxima.- September 1938: Discharge, 34,300 second-feet 1 p.m. Sept. 22 (gage height, 18.72 feet).
1928 to August 1938: Discharge, 45,300 second-feet Mar. 19, 1936 (gage height, 23.54 feet).
Maximum discharge known, 113,000 second-feet Nov. 4, 1927 (gage height, 50.4 feet, from floodmarks).
Remarks.- Flood run-off from 232 square miles affected by artificial storage in reservoirs on Mollys Brook, Jail Branch, North Branch of Winooski River, and Waterbury River. For information on storage see records for East Barre Detention Reservoir on Jail Branch at East Barre, Vt., for Wrightsville Detention Reservoir on North Branch of Winooski River at Wrightsville, Vt., and for Waterbury Reservoir on Waterbury River near Waterbury, Vt.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	530	1,380	9	623	506	17	1,650	562	25	4,520	1,680
2	576	1,160	10	464	760	18	1,520	563	26	3,830	1,930
3	557	1,150	11	450	766	19	1,260	611	27	3,370	1,420
4	372	890	12	521	816	20	1,410	737	28	3,150	1,260
5	164	964	13	1,190	810	21	10,400	730	29	2,600	857
6	492	911	14	1,510	689	22	29,800	794	30	1,770	488
7	684	1,040	15	1,840	619	23	8,750	698	31		822
8	852	759	16	2,670	408	24	5,340	954			
Mean monthly discharge, in second-feet										3,096	895
Run-off, in inches										3.20	0.96

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.41	1,500	2.30	1,370	2.31	1,380	4.06	4,240	14.46	25,100	10.64	17,300
2	2.42	1,510	2.30	1,370	2.30	1,370	4.14	4,410	15.08	26,400	9.60	15,200
3	2.42	1,510	2.20	1,260	1.50	605	4.22	4,580	15.66	27,600	8.70	13,400
4	2.42	1,510	1.00	305	.65	190	4.39	4,950	16.24	28,800	7.85	11,800
5	2.42	1,510	.62	181	.65	190	4.47	5,120	16.72	29,900	7.30	10,800
6	2.42	1,510	1.25	432	.72	211	4.62	5,420	17.10	30,700	7.00	10,200
7	2.48	1,590	2.20	1,260	2.31	1,380	4.72	5,620	17.46	31,500	6.55	9,280
8	2.48	1,590	2.36	1,440	2.34	1,420	5.03	6,240	17.76	32,200	6.22	8,620
9	2.47	1,570	2.37	1,450	2.25	1,320	5.10	6,380	18.04	32,800	5.98	8,140
10	2.46	1,560	2.37	1,450	2.34	1,420	5.26	6,700	18.30	33,400	5.80	7,780
11	2.45	1,550	2.37	1,450	2.34	1,420	5.50	7,180	18.50	33,800	5.68	7,540
N	2.43	1,530	2.36	1,440	2.22	1,280	6.29	8,760	18.65	34,100	5.57	7,320
1	2.42	1,510	2.36	1,440	2.32	1,390	6.52	9,220	18.72	34,300	5.47	7,120
2	2.42	1,510	2.35	1,430	2.34	1,420	7.00	10,200	18.69	34,200	5.37	6,920
3	2.35	1,430	2.34	1,420	2.36	1,440	7.40	11,000	18.52	33,800	5.27	6,720
4	2.34	1,420	2.34	1,420	2.38	1,470	7.80	11,700	18.25	33,200	5.15	6,480
5	2.47	1,570	2.33	1,410	2.40	1,490	9.10	14,200	17.85	32,400	5.03	6,240
6	2.47	1,570	2.33	1,410	2.43	1,530	9.47	14,900	17.30	31,200	5.03	6,240
7	2.46	1,560	2.32	1,390	2.48	1,590	9.97	15,900	16.60	29,600	5.02	6,220
8	2.45	1,550	2.32	1,390	2.53	1,650	10.66	17,300	15.80	27,900	5.01	6,200
9	2.45	1,550	2.32	1,390	2.67	1,830	11.56	19,100	14.85	25,900	4.98	6,140
10	2.44	1,540	2.32	1,390	3.00	2,300	12.49	21,000	13.85	23,800	4.85	5,880
11	2.33	1,410	2.32	1,390	3.33	2,830	13.18	22,400	12.75	21,500	4.87	5,920
M	2.31	1,380	2.32	1,390	3.98	4,070	13.84	23,800	11.68	19,400	4.85	5,880
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.79	5,760	4.35	4,860	3.99	4,090	3.70	3,500	3.50	3,130	3.38	2,920
4	4.74	5,660	4.31	4,780	3.96	4,030	3.69	3,480	3.51	3,150	3.32	2,810
6	4.74	5,660	4.30	4,760	3.93	3,960	3.68	3,460	3.60	3,310	3.33	2,830
8	4.68	5,540	4.32	4,800	4.08	4,280	3.81	3,720	3.72	3,540	3.58	3,270
10	4.60	5,380	4.24	4,630	3.91	3,920	3.68	3,460	3.62	3,350	3.32	2,810
N	4.56	5,300	4.20	4,540	3.85	3,800	3.65	3,400	3.26	2,710	3.20	2,610
2	4.48	5,140	4.13	4,390	3.84	3,780	3.62	3,350	3.62	3,350	3.32	2,810
4	4.48	5,140	4.03	4,170	3.62	3,350	3.57	3,260	3.58	3,270	3.11	2,470
6	4.46	5,100	4.20	4,540	3.81	3,720	3.59	3,290	3.51	3,150	3.04	2,360
8	4.42	5,010	4.08	4,280	3.77	3,640	3.61	3,330	3.52	3,170	2.92	2,180
10	4.40	4,970	3.96	4,030	3.73	3,560	3.42	2,990	3.40	2,950	2.70	1,870
M	4.35	4,860	4.00	4,110	3.69	3,480	3.35	2,860	3.18	2,580	2.66	1,820

East Barre Detention Reservoir on Jail Branch at East Barre, Vt.

Location.- Staff gage, lat. 44°10', long. 72°27', in East Barre, Washington County, about three-quarters of a mile above gaging station on Jail Branch and 3½ miles above confluence with Stevens Branch. Zero of gage is 1,127.9 feet above mean sea level.
Drainage area.- 32.2 square miles.
Gage-height record.- Graph based on one or more readings daily.
Remarks.- Capacity of reservoir, 522,720,000 cubic feet. Capacity curve developed from areas furnished by Corps of Engineers, U. S. Army.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	+0.16	-0.04	9	-0.33	+0.10	17	-0.24	-0.03	25	-18.15	-0.96
2	-.06	-.16	10	-.05	-.06	18	+.20	-.03	26	-16.42	-1.08
3	+.06	-.40	11	-.04	+.06	19	-.04	.00	27	-3.45	-.17
4	+.03	-.06	12	+.30	+.03	20	+11.33	+.22	28	-1.83	-.03
5	-.26	-.09	13	+1.56	-.19	21	+60.33	+.45	29	-.43	-.06
6	+.17	-.13	14	+1.56	.00	22	+5.46	-.50	30	-.14	-.12
7	+.40	-.06	15	+.87	.00	23	-18.55	+.64	31		-.10
8	-.22	+.06	16	-2.87	-.03	24	-18.11	+1.78			
Gain or loss in storage, in millions of cubic feet										+1.24	-0.90
Gain or loss in storage, in equivalent mean second-feet										+0.4	-0.3

Gage height, in feet, and contents, in millions of cubic feet, at indicated time, 1938

Hour	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents
	September 11		September 12		September 13		September 14		September 15	
6	0.60	6.40	0.50	6.35	2.50	7.58	3.40	8.31	5.50	10.52
N	.60	6.40	.50	6.35	4.60	9.47	3.90	8.75	5.90	11.03
6	.55	6.38	.55	6.38	5.80	10.91	4.40	9.26	6.05	11.24
M	.52	6.36	1.10	6.66	3.30	8.22	4.90	9.78	5.60	10.65
	September 16		September 17		September 18		September 19		September 20	
6	4.50	9.36	2.50	7.58	2.55	7.62	2.50	7.58	3.50	8.40
N	3.60	8.49	2.30	7.44	2.70	7.74	2.30	7.44	4.90	9.78
6	3.10	8.05	2.30	7.44	2.80	7.81	2.25	7.40	6.70	12.25
M	2.75	7.78	2.45	7.54	2.70	7.74	2.65	7.70	9.70	19.03
	September 21		September 22		September 23		September 24		September 25	
6	13.20	37.72	18.55	101.02	17.10	80.73	15.65	62.60	13.90	43.88
N	13.40	39.48	18.40	98.84	16.80	76.82	15.20	57.38	13.40	39.48
6	13.70	42.12	17.95	92.34	16.40	71.74	14.80	53.00	12.90	35.26
M	17.00	79.36	17.40	84.82	15.97	66.27	14.33	48.16	12.15	30.01
	September 26		September 27		September 28		September 29		September 30	
6	11.50	26.36	6.00	11.16	4.50	9.36	3.20	8.14	2.80	7.81
N	10.50	21.84	4.20	9.05	3.90	8.75	3.00	7.96	2.75	7.78
6	9.35	18.00	3.60	8.49	3.60	8.49	2.90	7.88	2.75	7.78
M	7.46	13.59	5.20	10.14	3.40	8.31	2.90	7.88	2.70	7.74
	October 1		October 2		October 3		October 4		October 5	
6	2.70	7.74	2.70	7.74	2.30	7.44	1.95	7.18	1.85	7.12
N	2.70	7.74	2.60	7.66	2.10	7.28	1.90	7.15	1.85	7.12
6	2.70	7.74	2.60	7.66	2.00	7.21	1.90	7.15	1.75	7.06
M	2.70	7.74	2.50	7.58	1.95	7.18	1.85	7.12	1.70	7.03
	October 6		October 7		October 8		October 9		October 10	
6	1.60	6.97	1.50	6.90	1.40	6.84	1.55	6.94	1.60	6.97
N	1.55	6.94	1.45	6.87	1.40	6.84	1.60	6.97	1.60	6.97
6	1.50	6.90	1.40	6.84	1.40	6.84	1.60	6.97	1.55	6.94
M	1.50	6.90	1.40	6.84	1.50	6.90	1.65	7.00	1.55	6.94
	October 11		October 12		October 13		October 14		October 15	
6	1.50	6.90	1.75	7.06	1.60	6.97	1.40	6.84	1.40	6.84
N	1.50	6.90	1.80	7.09	1.50	6.90	1.40	6.84	1.40	6.84
6	1.50	6.90	1.80	7.09	1.40	6.84	1.40	6.84	1.40	6.84
M	1.65	7.00	1.70	7.03	1.40	6.84	1.40	6.84	1.40	6.84

Jail Branch at East Barre, Vt.

Location.- Water-stage recorder, lat. 44°10', long. 72°27', in East Barre, Washington County, just below highway bridge, three-quarters of a mile below East Barre Detention Reservoir, and 2 3/4 miles above confluence with Stevens Branch. Zero of gage is 1,071.59 feet above mean sea level.

Drainage area.- 33.0 square miles.

Gage-height record.- Water-stage recorder graph except for period 1 p.m. Sept. 6 to 10 a.m. Sept. 22, record for which was based on relationship with stage in East Barre Detention Reservoir.

Stage-discharge relation.- For 1938 defined by current-meter measurements below 391 second-feet. For 1936 defined by current-meter measurements below 131 second-feet; extended to peak stage on basis of determinations of flood flow over dam.

Maxima.- September 1938: Mean daily discharge adjusted for storage, 1,080 second-feet Sept. 21.

1920-1923, 1934 to August 1938: Mean daily discharge adjusted for storage, 1,920 second-feet Mar. 18, 1936.

Maximum discharge known, 11,500 second-feet November 1927.

Remarks.- Mean daily and monthly discharges adjusted for storage in East Barre Detention Reservoir (capacity, 522,720,000 cubic feet). For information on storage see record for East Barre Detention Reservoir on Jail Branch at East Barre, Vt.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	10	11.9	53	53	16	84	51	23	23
2	15	14.3	50	48	17	47	44	22	22
3	9.6	10.3	40	35	18	53	55	20	20
4	15	15.3	32	31	19	48	48	19	19
5	7.6	4.6	30	29	20	134	265	22	25
6	6.6	8.6	25	23	21	382	1,080	52	57
7	25	30	23	22	22	362	425	34	28
8	25	22	23	24	23	337	122	26	33
9	9.6	5.8	26	27	24	317	107	71	92
10	4.5	3.9	26	25	25	290	80	124	113
11	4.2	3.7	24	25	26	243	53	50	38
12	4.5	8	26	26	27	100	60	38	36
13	96	114	23	21	28	78	57	33	33
14	112	130	23	23	29	60	55	31	30
15	140	150	23	23	30	55	53	29	28
					31			25	24
Mean monthly discharge, in second-feet						102	103	34.4	34.1
Run-off, in inches						-	3.48	-	1.19

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
2	0.91	50	0.93	53	0.99	63	1.64	295	1.82	404	1.72	341
4	.91	50	.92	51	1.02	69	1.69	323	1.79	385	1.73	348
6	.92	51	.91	50	1.07	80	1.71	335	1.74	354	1.73	348
8	.92	51	.90	48	1.15	99	1.75	360	1.74	354	1.72	341
10	.93	53	.89	47	1.21	115	1.78	379	1.74	354	1.72	341
N	.93	53	.88	45	1.26	129	1.81	397	1.74	354	1.71	335
2	.94	55	.87	44	1.30	140	1.83	410	1.74	354	1.71	335
4	.95	56	.86	42	1.35	158	1.85	423	1.74	354	1.71	335
6	.95	56	.87	44	1.39	172	1.87	436	1.73	348	1.70	329
8	.95	56	.90	48	1.47	207	1.89	449	1.73	348	1.70	329
10	.94	55	.92	51	1.51	225	1.88	442	1.73	348	1.70	329
M	.94	55	.95	56	1.56	251	1.85	423	1.73	348	1.70	329
	September 24		September 25		September 26		September 27		September 28		September 29	
2	1.70	329	1.65	300	1.60	272	1.37	165	1.12	91	0.99	63
4	1.70	329	1.65	300	1.59	267	1.31	144	1.10	86	.98	62
6	1.69	323	1.64	295	1.59	267	1.17	104	1.08	82	.98	62
8	1.69	323	1.64	295	1.58	262	1.10	86	1.07	80	.98	62
10	1.69	323	1.64	295	1.57	256	1.06	78	1.06	78	.98	62
N	1.68	318	1.63	289	1.56	251	1.03	71	1.06	78	.97	60
2	1.67	312	1.63	289	1.55	246	1.02	69	1.05	76	.97	60
4	1.67	312	1.62	283	1.53	236	1.05	76	1.04	73	.97	60
6	1.66	306	1.62	283	1.50	220	1.07	80	1.03	71	.96	58
8	1.66	306	1.62	283	1.48	211	1.12	91	1.02	69	.95	56
10	1.66	306	1.61	278	1.44	194	1.15	99	1.01	67	.95	56
M	1.65	300	1.61	278	1.41	180	1.14	96	1.00	65	.95	56

Supplemental records.- Sept. 19, 7 p.m., 0.90 ft., 48 sec.-ft. Sept. 21, 9 p.m., 1.90 ft., 455 sec.-ft. Sept. 23, 1 a.m., 1.74 ft., 354 sec.-ft.

Wrightsville Detention Reservoir on North Branch of Winooski River at Wrightsville, Vt.

Location.- Staff gage, lat. 44°18'35", long. 72°34'30", in Wrightsville, Washington County, three-quarters of a mile above gaging station on North Branch of Winooski River and 4¼ miles above confluence with Winooski River. Zero of gage is 612.75 feet above mean sea level.
Drainage area.- 66.5 square miles.
Gage-height record.- Graph based on one or more readings daily.
Remarks.- Capacity of reservoir, 893,000,000 cubic feet. Capacity curve developed from areas furnished by Corps of Engineers, U. S. Army.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	+1.26	-3.17	9	-0.09	-0.35	17	-2.82	-0.15	25	-39.66	+2.94
2	.00	-1.38	10	-.16	+.35	18	-5.53	-.26	26	-37.69	-.33
3	.00	-.70	11	-.25	-.35	19	+3.50	.00	27	-34.05	-3.55
4	-.34	-.62	12	+.25	-.16	20	+25.92	+.26	28	-28.80	-2.12
5	-.42	-.53	13	+5.35	-.34	21	+157.83	+2.37	29	-21.36	-1.13
6	-.50	-.53	14	+2.19	+.43	22	+58.93	.00	30	-9.94	-.83
7	+.75	-.42	15	+9.88	-.34	23	-33.33	-1.87	31		-.83
8	.00	-.41	16	-3.72	-.35	24	-38.18	+6.89			
Gain or loss in storage, in millions of cubic feet										+9.02	-7.48
Gain or loss in storage, in equivalent mean second-feet.										+3	-3

Gage height, in feet, and contents, in millions of cubic feet, at indicated time, 1938

Hour	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents
	September 11		September 12		September 13		September 14		September 15	
6	1.70	12.62	1.40	11.86	2.20	13.93	4.20	19.83	4.40	20.49
N	1.70	12.62	1.40	11.86	2.40	14.49	4.60	21.14	5.20	23.15
6	1.70	12.62	1.50	12.12	3.00	16.15	4.60	21.14	6.20	26.69
M	1.60	12.37	1.70	12.62	3.60	17.97	4.30	20.16	7.10	30.04
	September 16		September 17		September 18		September 19		September 20	
6	7.50	31.60	5.70	24.90	4.90	22.12	3.60	17.97	5.50	24.20
N	7.30	30.82	5.60	24.55	4.00	19.18	3.70	18.27	5.90	25.60
6	6.50	27.80	5.50	24.20	3.80	18.57	4.00	19.18	8.70	36.42
M	6.10	26.32	5.30	23.50	3.60	17.97	4.70	21.47	11.20	47.39
	September 21		September 22		September 23		September 24		September 25	
6	14.30	62.98	36.20	254.69	36.60	259.42	33.10	219.94	29.30	181.15
N	16.80	77.92	37.00	264.15	35.80	250.03	32.20	210.41	28.30	171.54
6	20.40	103.56	37.20	266.58	35.00	240.85	31.30	201.10	27.30	162.15
M	31.70	205.22	37.00	264.15	34.10	230.82	30.46	192.64	26.30	152.98
	September 26		September 27		September 28		September 29		September 30	
6	25.20	143.13	20.80	106.62	16.10	73.44	11.20	47.39	6.30	27.06
N	24.10	133.55	19.60	97.55	14.80	65.74	9.80	41.09	5.50	24.20
6	23.00	124.25	18.40	88.85	13.60	59.23	8.60	36.01	5.00	22.45
M	21.90	115.29	17.30	81.24	12.26	52.44	7.37	31.08	4.60	21.14
	October 1		October 2		October 3		October 4		October 5	
6	4.20	19.83	3.40	17.36	2.70	15.32	2.50	14.76	2.00	13.38
N	4.00	19.18	3.30	17.06	2.50	14.76	2.30	14.21	2.00	13.38
6	3.80	18.57	3.20	16.76	2.70	15.32	2.50	14.76	2.20	13.93
M	3.60	17.97	3.15	16.59	2.91	15.89	2.68	15.27	2.49	14.74
	October 6		October 7		October 8		October 9		October 10	
6	2.50	14.76	2.10	13.66	2.00	13.38	2.00	13.38	1.80	12.87
N	2.50	14.76	2.00	13.38	2.00	13.38	1.90	13.13	1.90	13.13
6	2.40	14.49	2.00	13.38	2.00	13.38	1.80	12.87	2.00	13.38
M	2.30	14.21	2.15	13.79	2.00	13.38	1.86	13.03	2.00	13.38
	October 11		October 12		October 13		October 14		October 15	
6	2.00	13.38	1.70	12.62	1.80	12.87	1.70	12.62	1.50	12.12
N	2.00	13.38	1.70	12.62	1.80	12.87	1.80	12.87	1.60	12.37
6	1.80	12.87	1.80	12.87	1.60	12.37	1.80	12.87	1.70	12.62
M	1.66	12.53	1.80	12.87	1.66	12.53	1.84	12.97	1.70	12.62

North Branch of Winooski River at Wrightsville, Vt.

Location.- Water-stage recorder, lat. 44°18'00", long. 72°34'45", in Wrightsville, Washington County, three-quarters of a mile below Wrightsville Detention Reservoir and 3½ miles above confluence with Winooski River. Zero of gage is 550.53 feet above mean sea level.

Drainage area.- 69.2 square miles.

Gage-height record.- Water-stage recorder graph.

Stage-discharge relation.- Defined by current-meter measurements below 813 second-feet; extended to peak stage by determination of maximum flow through tunnel.

Maxima.- September 1938: Mean daily discharge adjusted for storage, 2,340 second-feet Sept. 21.

1933 to August 1938: Mean daily discharge adjusted for storage, 3,300 second-feet Mar. 18, 1936.

Maximum discharge known, 17,200 second-feet Nov. 3, 1927.

Remarks.- Mean daily and monthly discharges adjusted for storage in Wrightsville Detention Reservoir (capacity, 893,000,000 cubic feet). For information on storage see record for Wrightsville Detention Reservoir on North Branch of Winooski River at Wrightsville, Vt.

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	25	40	102	65	16	267	224	29	25
2	32	32	68	52	17	169	136	27	25
3	31	31	54	46	18	109	45	27	24
4	28	24	48	41	19	82	123	26	26
5	27	22	44	38	20	209	509	26	29
6	26	20	40	34	21	511	2,340	34	61
7	23	32	37	32	22	725	1,410	43	43
8	29	29	35	30	23	714	328	40	18
9	27	26	34	30	24	682	240	44	124
10	24	22	34	38	25	641	182	152	186
11	22	19	36	32	26	590	154	150	146
12	18	21	31	29	27	533	139	109	68
13	60	122	31	27	28	458	125	81	56
14	106	131	29	34	29	355	108	63	50
15	169	283	31	27	30	204	89	53	43
					31			47	37
Mean monthly discharge, in second-feet						230	233	51.8	48.9
Run-off, in inches						-	3.76	-	0.82

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
2	1.43	127	1.22	90	1.27	99	2.51	371	3.54	706	3.58	722
4	1.40	122	1.20	87	1.34	111	2.58	390	3.56	714	3.58	722
6	1.37	117	1.19	85	1.44	129	2.70	423	3.58	722	3.57	718
8	1.35	113	1.16	81	1.56	151	2.75	438	3.59	726	3.57	718
10	1.33	109	1.16	81	1.67	174	2.85	467	3.60	730	3.57	718
N	1.32	108	1.15	79	1.80	202	2.94	494	3.60	730	3.56	714
2	1.30	104	1.15	79	1.93	231	3.03	522	3.61	734	3.55	710
4	1.28	101	1.14	77	2.05	257	3.12	551	3.62	738	3.55	710
6	1.27	99	1.14	77	2.20	291	3.15	560	3.61	734	3.55	710
8	1.26	97	1.15	79	2.27	308	3.40	650	3.60	730	3.54	706
10	1.24	94	1.16	81	2.38	336	3.67	758	3.60	730	3.53	702
M	1.23	92	1.18	84	2.44	352	3.53	702	3.59	726	3.53	702
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.52	698	3.43	662	3.30	612	3.15	560	2.94	494	2.63	403
4	3.51	694	3.42	658	3.28	605	3.13	554	2.92	488	2.58	390
6	3.50	690	3.41	654	3.27	602	3.11	547	2.90	482	2.55	382
8	3.50	690	3.40	650	3.26	598	3.10	544	2.88	474	2.52	373
10	3.49	686	3.39	646	3.25	594	3.09	541	2.85	467	2.48	363
N	3.48	682	3.38	642	3.24	591	3.07	534	2.82	458	2.46	357
2	3.47	678	3.37	639	3.23	588	3.05	528	2.80	452	2.42	346
4	3.46	674	3.36	635	3.21	580	3.03	522	2.78	446	2.38	336
6	3.45	670	3.34	627	3.20	577	3.01	515	2.75	438	2.35	328
8	3.45	670	3.33	623	3.18	570	2.99	509	2.71	426	2.32	321
10	3.45	670	3.32	620	3.17	567	2.98	506	2.68	417	2.26	306
M	3.43	662	3.31	616	3.16	564	2.96	500	2.66	412	2.23	298

Supplemental records.- Sept. 20, 5 p.m., 2.14 ft., 277 sec.-ft.; 9 p.m., 2.36 ft., 331 sec.-ft. Sept. 21, 1 a.m., 2.46 ft., 357 sec.-ft.; 5 a.m., 2.61 ft., 398 sec.-ft.; 7 p.m., 3.20 ft., 577 sec.-ft.; 9 p.m., 3.60 ft., 730 sec.-ft.; 9:40 p.m., 3.75 ft., 790 sec.-ft.; 11 p.m., 3.57 ft., 718 sec.-ft.

Dog River at Northfield Falls, Vt.

Location.- Water-stage recorder, lat. 44°10'55", long. 72°38'30", 1 mile below Northfield Falls, Washington County, and 1¼ miles below mouth of Cox Branch. Zero of gage is 603.00 feet above mean sea level.
Drainage area.- 76.1 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Rating curve defined by current-meter measurements below 950 second-feet; extended to peak stage on basis of determinations of flood flow over dam and by slope-area method.
Maxima.- September 1938: Discharge, 9,750 second-feet 10 p.m. Sept. 21 (gage height, 11.53 feet).
1934 to August 1938: Discharge, 5,700 second-feet 8 p.m. Mar. 18, 1936 (gage height, 8.49 feet).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	29	114	9	29	64	17	71	46	25	255	105
2	30	106	10	20	60	18	84	43	26	204	72
3	20	93	11	19	58	19	80	41	27	187	64
4	30	89	12	25	57	20	347	43	28	172	59
5	25	82	13	89	48	21	2,660	60	29	140	57
6	22	76	14	53	49	22	1,880	53	30	123	54
7	27	71	15	161	49	23	511	47	31		52
8	34	66	16	115	48	24	340	76			
Mean monthly discharge, in second-feet										259	64.6
Run-off, in inches										3.79	0.98

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	1.40	74	1.41	76	1.74	142	2.90	590	8.75	6,050	3.02	650
2	1.41	76	1.41	76	1.84	168	2.98	630	7.65	4,730	2.99	635
3	1.42	77	1.40	74	1.96	203	3.00	640	6.75	3,720	2.95	615
4	1.44	81	1.40	74	2.06	234	3.03	655	6.10	3,050	2.93	605
5	1.45	82	1.40	74	2.15	264	3.05	665	5.60	2,550	2.90	590
6	1.47	86	1.40	74	2.19	278	3.13	706	5.20	2,180	2.87	575
7	1.49	89	1.40	74	2.20	282	3.20	745	4.90	1,910	2.85	565
8	1.50	91	1.40	74	2.25	301	3.31	806	4.65	1,710	2.82	550
9	1.51	93	1.46	84	2.22	290	3.48	899	4.42	1,530	2.79	536
10	1.51	93	1.42	77	2.23	293	3.70	1,030	4.22	1,380	2.77	526
11	1.51	93	1.41	76	2.24	297	3.92	1,170	4.08	1,290	2.75	518
N	1.51	93	1.41	76	2.27	309	4.02	1,240	3.96	1,200	2.70	495
1	1.50	91	1.40	74	2.30	320	4.30	1,440	3.83	1,110	2.70	495
2	1.49	89	1.42	77	2.40	360	4.67	1,730	3.71	1,040	2.68	486
3	1.49	89	1.45	82	2.47	392	4.97	1,970	3.61	976	2.64	468
4	1.48	88	1.44	81	2.52	414	5.35	2,320	3.51	916	2.60	450
5	1.47	86	1.39	72	2.59	446	5.65	2,600	3.45	882	2.60	450
6	1.46	84	1.42	77	2.63	464	5.93	2,880	3.37	838	2.59	446
7	1.45	82	1.46	84	2.66	477	6.75	3,720	3.30	800	2.56	432
8	1.44	81	1.47	86	2.70	495	8.55	5,810	3.25	772	2.54	423
9	1.43	79	1.49	89	2.74	513	10.48	8,270	3.19	740	2.52	414
10	1.43	79	1.52	95	2.76	522	11.53	9,750	3.14	712	2.51	410
11	1.42	77	1.57	104	2.79	536	11.13	9,180	3.10	690	2.50	405
M	1.42	77	1.64	119	2.52	550	10.28	8,010	3.06	670	2.49	400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.44	378	2.20	282	2.01	218	1.89	182	1.92	191	1.77	150
4	2.42	369	2.19	278	2.00	215	1.87	177	1.90	185	1.76	147
6	2.41	364	2.17	272	1.99	212	1.86	174	1.89	182	1.76	147
8	2.39	356	2.15	264	1.99	212	1.86	174	1.88	179	1.75	144
10	2.36	344	2.13	258	1.99	212	1.85	171	1.85	171	1.75	144
N	2.34	336	2.12	254	1.98	209	1.85	171	1.84	168	1.69	130
2	2.32	328	2.11	250	2.00	215	1.90	185	1.87	177	1.72	137
4	2.31	324	2.09	244	1.94	197	1.91	188	1.82	163	1.72	137
6	2.30	320	2.07	237	1.92	191	1.97	206	1.80	157	1.72	137
8	2.27	309	2.06	234	1.90	185	1.99	212	1.80	157	1.71	134
10	2.25	301	2.04	228	1.90	185	1.99	212	1.79	154	1.70	132
M	2.22	290	2.02	221	1.89	182	1.95	200	1.78	152	1.70	132

Mad River near Moretown, Vt.

Location.- Water-stage recorder, lat. 44°16'40", long. 72°44'35", at highway bridge 2.4 miles below Moretown, Washington County.
Drainage area.- 139 square miles.
Gage-height record.- Water-stage recorder graph, except for period 2 a.m. Sept. 17 to 10 a.m. Sept. 28, record for which was based on two or more gage readings daily and on floodmarks.
Stage-discharge relation.- Defined by current-meter measurements below 2,690 second-feet; extended to peak stage on basis of determinations of flood flows over dam.
Maxima.- September 1938: Discharge, 18,400 second-feet 12:30 a.m. Sept. 22 (gage height, 16.34 feet).

1928 to August 1938: Maximum discharge, 8,120 second-feet (revised) Apr. 12, 1934 (gage height, 10.20 feet); maximum gage height, 11.20 feet Mar. 17, 1935 (ice jam).

Maximum discharge known, 23,000 second-feet Nov. 3, 1927 (gage height, 19.4 feet, revised, from floodmarks).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	94	200	9	83	116	17	237	89	25	474	349
2	83	190	10	66	110	18	190	77	26	366	202
3	65	164	11	57	108	19	267	78	27	305	160
4	65	152	12	55	100	20	803	80	28	307	139
5	61	140	13	336	93	21	5,540	173	29	240	126
6	55	135	14	182	89	22	4,620	132	30	211	117
7	77	125	15	608	90	23	987	100	31		112
8	153	120	16	409	82	24	659	165			
Mean monthly discharge, in second-feet										588	133
Run-off, in inches										4.72	1.07

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.89	206	3.83	178	4.44	542	5.16	1,160	16.20	18,200	5.28	1,280
2	3.88	201	3.82	174	4.47	566	5.24	1,240	14.00	14,400	5.25	1,250
3	3.88	201	3.81	170	4.50	590	5.32	1,320	12.20	11,300	5.20	1,200
4	3.87	196	3.81	170	4.53	614	5.41	1,420	10.50	8,600	5.18	1,180
5	3.87	196	3.82	174	4.56	638	5.55	1,590	8.80	5,950	5.15	1,150
6	3.87	196	3.82	174	4.59	662	5.75	1,830	8.00	4,800	5.11	1,110
7	3.86	192	3.83	178	4.63	694	5.93	2,050	7.53	4,140	5.08	1,080
8	3.85	188	3.84	183	4.66	718	6.50	2,780	7.20	3,690	5.05	1,060
9	3.85	188	3.85	188	4.68	734	7.00	3,430	6.90	3,300	5.02	1,030
10	3.85	188	3.87	196	4.70	750	7.20	3,690	6.50	2,780	4.99	1,000
11	3.85	188	3.89	206	4.73	774	7.31	3,830	6.35	2,580	4.97	983
N	3.85	188	3.91	214	4.75	790	7.48	4,070	6.20	2,390	4.95	965
1	3.85	188	3.95	232	4.78	814	7.67	4,340	6.10	2,260	4.92	938
2	3.85	188	3.99	250	4.81	839	7.82	4,550	5.98	2,110	4.90	920
3	3.85	188	4.03	272	4.83	857	8.02	4,830	5.84	1,940	4.88	902
4	3.85	188	4.08	299	4.88	902	8.25	5,150	5.76	1,840	4.86	884
5	3.85	188	4.12	323	4.90	920	8.62	5,680	5.70	1,770	4.84	866
6	3.85	188	4.17	356	4.93	947	9.10	6,400	5.62	1,670	4.81	839
7	3.85	188	4.20	375	4.96	974	9.90	7,640	5.57	1,610	4.80	830
8	3.85	188	4.24	401	4.98	992	11.30	9,880	5.52	1,550	4.78	814
9	3.84	183	4.28	427	5.01	1,020	13.10	12,900	5.47	1,490	4.76	798
10	3.83	178	4.32	454	5.04	1,050	14.80	15,800	5.42	1,430	4.75	790
11	3.83	178	4.36	482	5.08	1,080	15.90	17,600	5.37	1,380	4.73	774
M	3.82	174	4.40	510	5.11	1,110	16.32	18,300	5.32	1,320	4.72	766
	September 24		September 25		September 26		September 27		September 28		September 29	
2	4.69	742	4.45	550	4.23	394	4.10	310	4.13	330	4.00	255
4	4.68	734	4.43	534	4.22	388	4.10	310	4.14	336	3.99	250
6	4.65	710	4.40	510	4.21	382	4.08	299	4.13	330	3.99	250
8	4.62	686	4.38	496	4.20	375	4.08	299	4.12	323	3.98	246
10	4.60	670	4.37	489	4.20	375	4.08	299	4.11	316	3.98	246
N	4.58	654	4.34	468	4.19	368	4.08	299	4.11	316	3.95	232
2	4.56	638	4.32	454	4.18	362	4.08	299	4.08	299	3.96	237
4	4.54	622	4.30	440	4.18	362	4.08	299	4.10	310	3.98	246
6	4.52	606	4.28	427	4.17	356	4.09	304	4.06	288	3.92	219
8	4.51	598	4.27	420	4.15	342	4.10	310	4.03	272	3.95	232
10	4.49	582	4.25	408	4.13	330	4.11	316	4.02	266	3.94	228
M	4.48	574	4.24	401	4.11	316	4.12	323	4.02	266	3.93	224

Supplemental records.- Sept. 22, 12:30 a.m., 16.34 ft., 18,400 sec.-ft.

Waterbury Reservoir on Waterbury River near Waterbury, Vt.

Location.- Staff gage, lat. 44°22'55", long. 72°46'15", about one mile above gaging station on Waterbury River, 2 2/3 miles above mouth, and 3½ miles north of Waterbury, Washington County. Gage heights are elevations above mean sea level.
Drainage area.- 109 square miles.
Gage-height record.- Graph based on several readings daily.
Remarks.- Capacity of reservoir, 2,807,440,000 cubic feet. Capacity curve developed from areas furnished by Corps of Engineers, U. S. Army.

Gain or loss in storage, in millions of cubic feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-0.87	+6.71	9	+6.53	0	17	-21.54	+6.53	25	-71.84	-7.84
2	+3.05	+6.53	10	-14.11	-2.09	18	--5.30	+4.27	26	-75.14	+0.87
3	+6.79	-19.25	11	-12.89	-2.44	19	+10.96	-8.36	27	-78.49	+5.05
4	+3.36	+1.22	12	+8.71	-2.05	20	+8.87	+.61	28	-70.14	-12.36
5	0	+7.58	13	+18.73	+5.54	21	+277.07	+17.42	29	-28.14	+9.05
6	-6.23	-8.50	14	-17.10	+5.27	22	+159.36	+.87	30	-2.09	+3.31
7	-10.28	+.62	15	-.86	-13.55	23	-52.93	-3.92	31		0
8	+2.44	+7.18	16	+17.96	0	24	-65.20	+10.02			
Gain or loss in storage, in millions of cubic feet										-9.32	+18.29
Gain or loss in storage, in equivalent mean second-feet										-4	+7

Gage height, in feet, and contents, in millions of cubic feet, at indicated time, 1938

Hour	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents	Gage height	Contents
	September 11		September 12		September 13		September 14		September 15	
6	503.10	29.06	501.50	25.05	506.40	39.73	511.00	59.24	504.45	33.17
N	502.60	27.71	501.90	25.92	507.60	44.17	511.30	60.68	505.82	37.70
6	502.30	26.92	503.40	29.97	508.70	48.78	509.50	52.27	505.80	37.63
M	502.00	26.14	505.00	34.85	509.80	53.58	505.47	36.48	505.22	35.62
	September 16		September 17		September 18		September 19		September 20	
6	504.60	33.63	510.70	57.80	502.96	28.65	502.15	26.53	507.76	44.80
N	506.70	40.77	509.53	52.40	502.52	27.49	502.94	28.59	509.39	51.79
6	508.45	47.70	505.41	36.28	502.28	26.87	504.14	32.22	508.61	48.39
M	509.80	53.58	504.08	32.04	502.23	26.74	505.82	37.70	508.19	46.57
	September 21		September 22		September 23		September 24		September 25	
6	508.38	47.39	546.98	448.36	548.33	471.84	544.77	414.67	540.18	346.63
N	515.30	82.85	549.12	485.61	547.56	458.42	543.70	398.36	538.88	328.51
6	524.44	157.54	549.43	491.01	546.68	443.79	542.59	381.61	537.52	309.56
M	538.53	323.64	548.97	483.00	545.78	430.07	541.46	364.87	536.29	293.03
	September 26		September 27		September 28		September 29		September 30	
6	535.00	276.17	528.20	195.24	520.00	117.61	506.50	40.08	502.70	27.97
N	533.50	257.00	526.20	174.93	517.70	99.27	504.40	33.02	501.70	25.49
6	531.90	237.53	524.30	156.20	515.40	83.46	506.90	41.47	503.20	29.36
M	530.20	217.89	522.50	139.40	513.00	69.26	506.80	41.12	506.20	39.03
	October 1		October 2		October 3		October 4		October 5	
6	505.30	35.89	508.70	48.78	510.90	58.76	502.50	27.44	505.90	37.98
N	506.00	38.33	509.20	50.96	511.40	61.16	503.10	29.06	506.50	40.08
6	507.00	41.82	509.30	51.40	508.40	47.48	503.90	31.50	506.80	41.12
M	508.00	45.74	509.50	52.27	504.40	33.02	504.80	34.24	507.00	41.82
	October 6		October 7		October 8		October 9		October 10	
6	508.40	47.48	502.60	27.71	505.60	36.94	508.00	45,74	505.00	34.85
N	508.90	49.66	503.10	29.06	506.10	38.68	508.50	47.92	505.20	35.55
6	507.80	44.96	503.90	31.50	506.50	40.08	508.70	48.78	505.70	37.29
M	504.50	33.32	504.70	33.94	506.80	41.12	506.80	41.12	506.20	39.03
	October 11		October 12		October 13		October 14		October 15	
6	507.00	41.82	503.10	29.06	505.30	35.89	507.30	43.00	509.10	50.53
N	507.60	44.17	503.10	29.06	505.70	37.29	507.90	45.35	509.10	50.53
6	507.80	44.96	504.10	32.10	506.10	38.68	507.20	42.60	506.80	41.12
M	505.50	36.59	504.90	34.54	506.50	40.08	507.90	45.35	504.00	31.80

Waterbury River near Waterbury, Vt.

Location.- Water-stage recorder and concrete control, lat. 44°22'10", long. 72°46'10", 1 2/3 miles above mouth and 2½ miles north of Waterbury, Washington County.
Drainage area.- 111 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 4,100 second-feet; extended logarithmically to peak stage.
Maxima.- September 1938: Discharge, 1,190 second-feet 5 p.m. Sept. 22 to 1 a.m. Sept. 23 (gage height, 8.94 feet).
1935 to August 1938: Discharge, 6,520 second-feet Mar. 18, 1936 (gage height, 19.38 feet).
Remarks.- Mean daily and monthly discharges adjusted for storage in Waterbury Reservoir (capacity 2,807,440,000 cubic feet). For information on storage see record for Waterbury Reservoir on Waterbury River near Waterbury, Vt.

Mean daily discharge, in second-feet, 1938

Day	September		October		Day	September		October	
	Observed	Adjusted	Observed	Adjusted		Observed	Adjusted	Observed	Adjusted
1	88	78	2.6	81	16	139	347	59	59
2	78	113	2.0	78	17	345	96	1.4	77
3	1.0	80	303	80	18	155	94	1.3	50
4	39	78	65	79	19	54	181	151	54
5	48	48	1.7	90	20	360	463	81	88
6	103	31	183	85	21	694	3,900	2.9	205
7	180	61	81	88	22	437	2,280	132	142
8	85	113	1.6	85	23	1,180	567	169	124
9	1.1	76	81	81	24	1,140	385	177	293
10	207	44	101	77	25	1,100	269	400	309
11	178	29	103	75	26	1,060	190	236	246
12	25	126	96	72	27	1,000	92	100	158
13	148	365	1.6	66	28	924	112	267	124
14	472	274	1.4	62	29	420	94	2.6	108
15	471	461	232	75	30	111	87	66	104
					31			103	103
Mean monthly discharge, in second-feet						375	371	103	110
Run-off, in inches						-	3.73	-	1.14

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.	Feet	Sec.Ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
2	6.79	213	6.31	118	4.99	4.5	8.15	745	5.62	36	8.93	1,190
4	6.68	189	6.30	116	4.98	4.3	8.15	745	5.50	27	8.93	1,190
6	6.60	172	6.31	118	4.97	4.1	8.20	770	5.43	23	8.93	1,190
8	6.54	160	6.31	118	4.97	4.1	8.24	792	5.36	19	8.92	1,180
10	6.49	150	6.25	108	4.99	4.5	8.25	798	5.32	17	8.91	1,180
N	6.45	142	5.10	7.5	5.04	5.8	8.46	913	5.28	15	8.91	1,180
2	6.43	139	5.00	4.7	8.16	750	8.56	968	5.24	13	8.90	1,170
4	6.40	133	4.94	3.5	8.15	745	8.57	974	8.93	1,190	8.90	1,170
6	6.37	128	4.92	3.1	8.15	745	8.67	1,030	8.94	1,190	8.90	1,170
8	6.35	124	4.92	3.1	8.15	745	6.78	211	8.94	1,190	8.89	1,160
10	6.34	123	4.95	3.7	8.15	745	6.20	101	8.94	1,190	8.89	1,160
M	6.33	121	4.99	4.5	8.15	745	5.81	53	8.94	1,190	8.88	1,160
	September 24		September 25		September 26		September 27		September 28		September 29	
2	8.88	1,160	8.82	1,120	8.75	1,080	8.66	1,030	8.55	962	8.35	852
4	8.87	1,150	8.81	1,120	8.75	1,080	8.65	1,020	8.54	957	8.32	836
6	8.86	1,150	8.80	1,110	8.74	1,070	8.65	1,020	8.53	952	8.05	695
8	8.86	1,150	8.80	1,110	8.73	1,070	8.64	1,010	8.51	940	7.66	507
10	8.85	1,140	8.80	1,110	8.73	1,070	8.63	1,010	8.50	935	7.38	393
N	8.85	1,140	8.79	1,100	8.72	1,060	8.62	1,000	8.48	924	7.15	314
2	8.85	1,140	8.78	1,100	8.71	1,060	8.62	1,000	8.47	918	6.92	246
4	8.85	1,140	8.78	1,100	8.70	1,050	8.60	990	8.45	908	5.15	9.2
6	8.84	1,130	8.77	1,090	8.70	1,050	8.60	990	8.44	902	6.95	254
8	8.84	1,130	8.77	1,090	8.69	1,040	8.58	979	8.42	891	6.82	220
10	8.83	1,130	8.76	1,090	8.68	1,040	8.57	974	8.40	880	6.70	193
M	8.82	1,120	8.75	1,080	8.67	1,030	8.56	968	8.37	864	6.62	176

Supplemental records.- Sept. 19, 9 a.m., 6.32 ft., 119 sec.-ft.; 11 a.m., 5.30 ft., 16 sec.-ft.; 1 p.m., 5.03 ft., 5.5 sec.-ft. Sept. 20, 1 p.m., 8.15 ft., 745 sec.-ft. Sept. 21, 5 a.m., 8.16 ft., 750 sec.-ft.; 11 a.m., 8.41 ft., 886 sec.-ft.; 1 p.m., 8.54 ft., 957 sec.-ft.; 5 p.m., 8.60 ft., 990 sec.-ft.; 7 p.m., 7.23 ft., 340 sec.-ft.; 9 p.m., 6.55 ft., 162 sec.-ft.; 11 p.m., 5.98 ft., 72 sec.-ft. Sept. 22, 1 a.m., 5.70 ft., 42 sec.-ft.; 9 a.m., 5.35 ft., 18 sec.-ft.; 3 p.m., 5.22 ft., 12 sec.-ft.

227907 O—40——25

Lamoille River at Johnson, Vt.

Location.- Water-stage recorder, lat. 44°37'20", long. 72°40'50", at falls 0.9 mile above original site at bridge in Johnson, Lamoille County, and 1 1/8 miles above mouth of Gihon River.
Drainage area.- 335 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Rating curve defined by current-meter measurements below 4,460 second-feet; extended to peak stage on basis of determinations of flood flow over dam and by critical-depth method at control.
Maxima.- September 1938: Discharge, 9,120 second-feet 1 a.m. Sept. 22 (gage height, 13.58 feet).
1910-13, 1928 to August 1938: Discharge, 13,000 second-feet Mar. 18, 1936 (gage height, 16.48 feet).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	222	350	9	183	130	17	368	185	25	588	787
2	297	79	10	95	200	18	274	170	26	492	595
3	147	103	11	44	173	19	355	175	27	403	399
4	104	127	12	205	161	20	521	218	28	368	339
5	148	167	13	584	196	21	3,910	260	29	289	218
6	173	190	14	500	178	22	5,180	224	30	268	231
7	200	190	15	618	119	23	1,370	174	31		287
8	184	171	16	721	53	24	833	299			
Mean monthly discharge, in second-feet										655	231
Run-off, in inches										2.19	.796

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.42	310	2.35	276	2.09	158	4.20	1,140	13.58	9,120	6.09	2,070
2	2.41	305	2.35	276	2.02	130	4.50	1,270	13.48	8,990	5.92	1,980
3	2.40	300	2.35	276	2.05	142	5.16	1,600	13.28	8,730	5.78	1,910
4	2.39	295	2.35	276	2.18	196	5.75	1,900	13.00	8,370	5.62	1,830
5	2.38	290	2.36	280	2.28	242	5.81	1,920	12.65	7,920	5.50	1,770
6	2.37	285	2.36	280	2.35	276	5.88	1,960	12.28	7,470	5.39	1,720
7	2.35	276	2.36	280	2.40	300	6.08	2,060	11.86	6,960	5.28	1,660
8	2.33	266	2.36	280	2.45	325	6.50	2,300	11.42	6,440	5.18	1,610
9	2.32	261	2.45	325	2.65	426	7.40	2,860	10.95	5,920	5.02	1,530
10	2.32	261	2.74	473	2.89	554	8.20	3,430	10.48	5,420	4.86	1,450
11	2.32	261	2.83	522	2.95	585	8.41	3,590	10.05	4,990	4.75	1,400
N	2.32	261	2.80	505	2.97	595	8.48	3,640	9.64	4,600	4.15	1,100
1	2.32	261	2.76	484	2.99	605	8.55	3,700	9.25	4,260	3.69	866
2	2.32	261	2.70	452	3.00	610	8.78	3,870	8.82	3,910	3.71	875
3	2.32	261	2.66	431	3.01	614	9.10	4,130	8.46	3,620	3.91	975
4	2.32	261	2.61	405	3.02	619	9.40	4,380	8.14	3,390	4.05	1,040
5	2.32	261	2.59	395	3.11	660	9.64	4,600	7.83	3,160	4.12	1,080
6	2.32	261	2.57	385	3.21	704	9.80	4,750	7.54	2,960	4.15	1,100
7	2.32	261	2.56	380	3.35	768	10.14	5,080	7.27	2,780	4.17	1,105
8	2.33	266	2.55	375	3.48	826	11.16	6,160	7.03	2,620	4.17	1,105
9	2.34	271	2.54	370	3.55	855	12.20	7,370	6.80	2,480	4.12	1,080
10	2.35	276	2.42	310	3.48	826	12.91	8,250	6.62	2,370	4.07	1,060
11	2.35	276	2.28	242	3.64	891	13.34	8,810	6.41	2,250	4.00	1,020
M	2.35	276	2.19	201	3.93	1,010	13.50	9,020	6.25	2,160	3.98	1,010
	September 24		September 25		September 26		September 27		September 28		September 29	
2	3.90	970	3.26	672	2.87	496	2.51	334	2.70	420	2.39	280
4	3.84	940	3.18	636	2.84	483	2.45	308	2.67	406	2.32	249
6	3.76	900	3.14	618	2.82	474	2.52	339	2.61	380	2.31	244
8	3.69	866	3.17	632	2.81	470	2.57	362	2.58	366	2.31	244
10	3.60	825	3.16	627	2.84	483	2.62	384	2.47	316	2.31	244
N	3.56	807	3.12	609	3.16	627	2.71	424	2.65	398	2.61	380
2	3.59	821	3.09	596	3.01	560	2.72	429	2.71	424	2.63	388
4	3.54	798	3.05	578	2.92	519	2.84	483	2.61	380	2.59	370
6	3.45	758	2.84	483	2.86	492	2.79	460	2.54	348	2.57	362
8	3.40	735	2.86	492	2.71	424	2.77	452	2.48	321	2.30	240
10	3.37	722	2.90	510	2.69	416	2.75	442	2.42	294	2.23	208
M	3.31	695	2.89	506	2.66	402	2.73	434	2.41	290	2.28	231

Lamoille River at East Georgia, Vt.

Location.- Water-stage recorder, lat. 44°40'45", long. 73°04'20", 0.5 mile above railroad bridge at East Georgia, Franklin County, Vermont.
Drainage area.- 711 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 8,380 second-feet; extended to peak stage on basis of determinations of flood flows over dams.
Maxima.- September 1938: Discharge, 20,200 second-feet 10 a.m. Sept. 22 (gage height, 11.76 feet).
1929 to August 1938: Discharge, 23,200 second-feet Mar. 19, 1936 (gage height, 12.52 feet, former site and datum).
Remarks.- Flood run-off not materially affected by artificial or natural storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	566	896	9	604	562	17	1,330	439	25	1,980	1,950
2	889	878	10	489	520	18	968	446	26	1,520	1,670
3	675	628	11	348	556	19	928	474	27	1,380	1,200
4	460	544	12	398	526	20	1,340	551	28	1,550	918
5	460	504	13	1,760	510	21	6,880	819	29	1,170	805
6	443	634	14	1,960	489	22	17,000	868	30	982	694
7	406	640	15	844	489	23	6,920	670	31		646
8	718	568	16	1,880	431	24	2,750	640			
Mean monthly discharge, in second-feet										1,987	715
Run-off, in inches										3.11	1.15

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	3.96	1,040	3.75	875	4.06	1,120	5.19	2,280	10.76	15,860	9.79	12,200
2	3.95	1,030	3.71	847	4.09	1,140	5.29	2,400	10.68	15,690	9.61	11,600
3	3.95	1,030	3.68	826	4.09	1,140	5.39	2,530	10.65	15,400	9.43	11,000
4	3.93	1,010	3.68	826	4.10	1,150	5.47	2,630	10.68	15,600	9.23	10,400
5	3.89	982	3.69	833	4.11	1,160	5.55	2,740	10.86	16,300	9.04	9,820
6	3.87	966	3.71	847	4.11	1,160	5.66	2,880	11.17	17,600	8.84	9,270
7	3.87	966	3.72	854	4.11	1,160	5.81	3,080	11.47	18,900	8.62	8,670
8	3.87	966	3.76	882	4.14	1,190	6.02	3,380	11.67	19,800	8.41	8,130
9	3.88	974	3.82	926	4.18	1,220	6.23	3,720	11.74	20,100	8.20	7,630
10	3.88	974	3.83	934	4.19	1,230	6.48	4,120	11.76	20,200	7.95	7,040
11	3.88	974	3.82	926	4.18	1,220	6.73	4,560	11.71	20,000	7.74	6,580
N	3.87	966	3.82	926	4.17	1,210	7.11	5,270	11.62	19,600	7.53	6,120
1	3.85	950	3.80	910	4.17	1,210	7.47	5,990	11.52	19,100	7.35	5,750
2	3.84	942	3.75	875	4.18	1,220	7.91	6,950	11.40	18,600	7.19	5,430
3	3.84	942	3.76	882	4.23	1,270	8.30	7,870	11.29	18,100	7.03	5,110
4	3.83	934	3.82	926	4.27	1,300	8.62	8,670	11.13	17,400	6.90	4,870
5	3.83	934	3.86	958	4.32	1,350	8.88	9,380	11.00	16,800	6.77	4,640
6	3.83	934	3.88	974	4.39	1,410	9.12	10,100	10.87	16,300	6.65	4,420
7	3.84	942	3.89	982	4.49	1,510	9.51	11,200	10.71	15,700	6.54	4,220
8	3.86	958	3.92	1,010	4.60	1,620	10.01	12,900	10.56	15,100	6.43	4,040
9	3.86	958	3.97	1,050	4.69	1,710	10.20	13,700	10.40	14,500	6.32	3,860
10	3.84	942	4.01	1,080	4.81	1,840	10.38	14,400	10.23	13,800	6.21	3,690
11	3.82	926	4.05	1,110	4.94	1,980	10.64	15,400	10.08	13,200	6.11	3,530
M	3.79	903	4.06	1,120	5.08	2,150	10.78	15,940	9.95	12,700	6.03	3,400
	September 24		September 25		September 26		September 27		September 28		September 29	
2	5.89	3,200	5.17	2,250	4.64	1,660	4.37	1,390	4.62	1,640	4.27	1,300
4	5.80	3,070	5.11	2,180	4.59	1,610	4.34	1,370	4.65	1,670	4.23	1,270
6	5.73	2,970	5.07	2,130	4.56	1,580	4.31	1,340	4.65	1,670	4.21	1,250
8	5.68	2,900	5.01	2,060	4.55	1,570	4.31	1,340	4.65	1,670	4.20	1,240
10	5.60	2,800	4.96	2,010	4.52	1,540	4.27	1,300	4.61	1,630	4.16	1,200
N	5.53	2,710	4.93	1,970	4.48	1,500	4.26	1,290	4.56	1,580	4.09	1,140
2	5.47	2,630	4.88	1,920	4.45	1,470	4.28	1,310	4.50	1,520	4.08	1,130
4	5.40	2,540	4.84	1,870	4.45	1,470	4.30	1,330	4.46	1,480	4.84	1,100
6	5.35	2,480	4.82	1,850	4.41	1,430	4.32	1,350	4.43	1,450	4.01	1,080
8	5.32	2,440	4.77	1,800	4.41	1,430	4.43	1,450	4.39	1,410	3.99	1,060
10	5.27	2,370	4.73	1,750	4.39	1,410	4.55	1,570	4.35	1,380	3.96	1,040
M	5.22	2,310	4.68	1,700	4.37	1,390	4.59	1,610	4.31	1,340	3.93	1,010

Missisquoi River near North Troy, Vt.

Location.- Water-stage recorder, lat. 44°58'20", long. 72°23'15", just above Big Falls, 1½ miles below mouth of Jay Branch, and 2½ miles above North Troy, Troy County.
Drainage area.- 131 square miles.
Gage-height record.- Water-stage recorder graph.
Stage-discharge relation.- Defined by current-meter measurements below 1,650 second-feet; extended to peak stage on basis of determinations of flood flows over dam.
Maxima.- September 1938: Discharge, 2,540 second-feet 10 a.m. Sept. 22 (gage height, 7.72 feet).
1931 to August 1938: Discharge, 5,140 second-feet Oct. 7, 1932 (gage height, 12.26 feet).
Remarks.- Flood run-off not materially affected by storage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	194	113	9	76	74	17	202	76	25	230	478
2	169	108	10	56	90	18	158	62	26	172	242
3	96	104	11	46	74	19	149	67	27	175	169
4	77	98	12	60	76	20	210	132	28	240	134
5	72	90	13	302	67	21	1,260	184	29	159	117
6	57	108	14	235	72	22	2,000	151	30	126	104
7	64	104	15	316	62	23	517	104	31		101
8	98	92	16	344	55	24	301	148			
Mean monthly discharge, in second-feet										272	118
Run-off, in inches										2.32	1.04

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	2.29	162	2.21	145	2.22	147	3.28	445	7.35	2,340	4.13	772
2	2.28	160	2.20	143	2.24	151	3.43	500	7.31	2,320	4.02	728
3	2.28	160	2.20	143	2.26	156	3.58	556	7.32	2,320	3.92	688
4	2.28	160	2.19	141	2.27	158	3.76	625	7.33	2,330	3.85	660
5	2.28	160	2.18	139	2.28	160	3.95	700	7.38	2,350	3.78	633
6	2.28	160	2.18	139	2.28	160	4.13	772	7.42	2,370	3.70	602
7	2.28	160	2.18	139	2.29	162	4.32	848	7.50	2,420	3.64	579
8	2.28	160	2.19	141	2.31	166	4.48	912	7.60	2,480	3.62	571
9	2.28	160	2.24	151	2.37	180	4.57	952	7.68	2,520	3.58	556
10	2.28	160	2.25	154	2.38	182	4.70	1,010	7.72	2,540	3.50	526
11	2.28	160	2.25	154	2.38	182	4.90	1,100	7.65	2,510	3.44	504
N	2.28	160	2.24	151	2.38	182	5.10	1,190	7.55	2,450	3.40	489
1	2.28	160	2.23	149	2.39	185	5.29	1,280	7.40	2,360	3.36	474
2	2.28	160	2.22	147	2.40	187	5.46	1,370	7.15	2,230	3.32	459
3	2.28	160	2.24	151	2.47	204	5.63	1,460	6.90	2,090	3.30	452
4	2.28	160	2.27	158	2.51	214	5.92	1,600	6.60	1,940	3.26	438
5	2.28	160	2.28	160	2.56	227	5.97	1,620	6.23	1,760	3.22	424
6	2.27	158	2.28	160	2.61	240	5.99	1,640	5.86	1,570	3.17	406
7	2.26	156	2.25	154	2.68	258	6.07	1,680	5.50	1,390	3.10	382
8	2.25	154	2.24	151	2.77	282	6.22	1,750	5.15	1,220	3.09	379
9	2.24	151	2.25	154	2.87	311	6.72	2,000	4.87	1,090	3.10	382
10	2.23	149	2.26	156	2.95	335	7.47	2,400	4.61	970	3.07	372
11	2.22	147	2.23	149	2.99	347	7.64	2,500	4.41	884	3.02	356
M	2.21	145	2.21	145	3.12	389	7.45	2,390	4.26	824	3.00	350
	September 24		September 25		September 26		September 27		September 28		September 29	
2	2.97	341	2.69	260	2.41	190	2.18	139	2.75	276	2.37	180
4	2.92	326	2.67	255	2.40	187	2.19	141	2.80	290	2.35	176
6	2.89	317	2.65	250	2.38	182	2.19	141	2.77	282	2.32	169
8	2.87	311	2.62	242	2.37	180	2.18	139	2.72	268	2.30	164
10	2.87	311	2.60	237	2.42	192	2.21	145	2.74	274	2.34	173
N	2.81	293	2.58	232	2.38	182	2.24	151	2.63	245	2.31	166
2	2.76	279	2.55	224	2.30	164	2.25	154	2.55	224	2.23	149
4	2.78	285	2.52	217	2.30	164	2.45	200	2.54	222	2.21	145
6	2.79	287	2.50	212	2.29	162	2.59	234	2.51	214	2.24	151
8	2.77	282	2.48	207	2.20	143	2.58	232	2.41	190	2.18	139
10	2.74	274	2.45	200	2.25	154	2.60	237	2.40	187	2.20	143
M	2.69	260	2.43	194	2.20	143	2.61	240	2.38	182	2.15	134

Missisquoi River near Richford, Vt.

Location.- Water-stage recorder, lat. 44°57'30", long. 72°41'55", 1 2/3 miles above mouth of Trout River, 3 miles south of Richford, Franklin County, and 3 3/4 miles below mouth of North Branch.
Drainage area.- 479 square miles.
Gage-height record.- Water-stage recorder graph except for periods Sept. 1 to 1 p.m. Sept. 15 and 11 a.m. Oct. 14 to 4 p.m. Oct. 29, record for which was based on shape of stage graphs at nearby stations.
Stage-discharge relation.- Defined by current-meter measurements below 7,240 second-feet; extended logarithmically to maximum flood stage.
Maxima.- September 1938: Discharge, 12,200 second-feet 12 p.m. Sept. 21 (gage height, 12.90 feet).
1909 to August 1938: Discharge, 45,000 second-feet November 1927 (gage height, 23.1 feet).
Remarks.- Flood run-off not materially affected by artificial storage or natural pondage.

Mean daily discharge, in second-feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	700	540	9	330	335	17	955	230	25	1,260	1,100
2	550	493	10	270	312	18	695	250	26	929	850
3	450	448	11	230	308	19	727	280	27	842	650
4	350	403	12	300	282	20	926	450	28	922	500
5	320	381	13	1,100	272	21	5,070	660	29	754	450
6	260	434	14	850	251	22	7,080	540	30	605	430
7	300	416	15	990	230	23	3,810	400	31		368
8	400	360	16	1,330	220	24	1,810	500			
Mean monthly discharge, in second-feet										1,170	430
Run-off, in inches										2.72	1.04

Gage height, in feet, and discharge, in second-feet, at indicated time, 1938

Hour	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.	Feet	Sec.ft.
	September 18		September 19		September 20		September 21		September 22		September 23	
1	4.18	778	3.90	620	4.21	796	5.00	1,370	12.82	12,000	8.29	4,780
2	4.16	766	3.90	620	4.20	790	5.06	1,420	12.61	11,600	8.27	4,750
3	4.14	754	3.89	615	4.20	790	5.15	1,490	12.31	11,100	8.23	4,700
4	4.13	748	3.88	610	4.20	790	5.29	1,600	12.01	10,500	8.20	4,660
5	4.12	742	3.88	610	4.20	790	5.42	1,720	11.68	9,920	8.15	4,600
6	4.11	736	3.88	610	4.20	790	5.60	1,880	11.22	9,120	8.10	4,540
7	4.10	730	3.89	615	4.20	790	5.84	2,100	10.80	8,430	8.02	4,440
8	4.09	724	3.89	615	4.21	796	6.33	2,570	10.32	7,660	7.96	4,370
9	4.08	718	3.90	620	4.23	808	7.03	3,290	9.95	7,080	7.88	4,280
10	4.06	706	3.93	635	4.24	814	7.62	3,960	9.55	6,480	7.79	4,170
11	4.05	700	3.97	655	4.28	838	8.00	4,420	9.24	6,040	7.68	4,040
N	4.03	688	4.00	670	4.30	850	8.30	4,790	9.01	5,710	7.57	3,900
1	4.01	676	4.07	712	4.31	857	8.53	5,090	8.88	5,540	7.45	3,760
2	4.00	670	4.22	802	4.35	885	8.90	5,570	8.77	5,400	7.34	3,630
3	4.00	670	4.33	871	4.40	920	9.33	6,160	8.67	5,270	7.22	3,500
4	3.99	665	4.36	892	4.43	941	9.62	6,580	8.59	5,170	7.12	3,390
5	3.98	660	4.35	885	4.49	983	9.69	6,680	8.51	5,060	7.00	3,260
6	3.97	655	4.34	878	4.55	1,020	9.69	6,680	8.47	5,010	6.90	3,150
7	3.96	650	4.32	864	4.63	1,080	9.78	6,820	8.43	4,960	6.79	3,030
8	3.95	645	4.30	850	4.70	1,130	10.42	7,820	8.40	4,920	6.67	2,910
9	3.94	640	4.28	838	4.78	1,190	11.60	9,780	8.38	4,890	6.55	2,790
10	3.93	635	4.26	826	4.82	1,230	12.35	11,200	8.34	4,840	6.45	2,690
11	3.92	630	4.24	814	4.89	1,280	12.80	12,000	8.32	4,820	6.34	2,580
M	3.90	620	4.22	802	4.95	1,330	12.90	12,200	8.30	4,790	6.23	2,470
	September 24		September 25		September 26		September 27		September 28		September 29	
2	6.02	2,260	5.10	1,450	4.59	1,050	4.22	802	4.43	941	4.29	844
4	5.86	2,110	5.03	1,390	4.55	1,020	4.20	790	4.42	934	4.27	832
6	5.70	1,970	4.99	1,360	4.52	1,000	4.18	778	4.41	927	4.24	814
8	5.55	1,840	4.94	1,320	4.48	976	4.16	766	4.40	920	4.20	790
10	5.43	1,730	4.90	1,290	4.44	948	4.13	748	4.40	920	4.17	772
N	5.37	1,670	4.86	1,260	4.41	927	4.14	754	4.40	920	4.12	742
2	5.35	1,660	4.81	1,220	4.37	899	4.20	790	4.40	920	4.09	724
4	5.36	1,660	4.78	1,190	4.33	871	4.32	864	4.40	920	4.07	712
6	5.37	1,670	4.73	1,150	4.30	850	4.42	934	4.40	920	4.05	700
8	5.31	1,620	4.70	1,130	4.29	844	4.50	990	4.39	913	4.02	682
10	5.24	1,560	4.67	1,110	4.26	826	4.50	990	4.38	906	4.00	670
M	5.17	1,510	4.62	1,070	4.23	808	4.48	976	4.33	871	3.99	665

Lake Memphremagog at Newport, Vt.

Location.- Chain gage, lat. 44°56'10", long. 72°12'15", on concrete highway bridge in Newport, Orleans County. Zero of gage is 673.15 feet above mean sea level.
Gage-height record.- Gage read daily in the afternoon.
Maxima.- September 1938: Gage height observed, 9.36 feet 5 p.m. Sept. 28, 29.
1931 to August 1938: Gage height observed, 12.92 feet Apr. 20, 1933.
Remarks.- No record on days for which no gage heights shown. Water surface area of Lake Memphremagog is 38.4 square miles.

Gage height, in feet, 1938

Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.	Day	Sept.	Oct.
1	-	9.38	9	-	9.26	17	-	9.02	25	9.22	8.88
2	8.80	9.40	10	-	9.23	18	-	9.00	26	9.28	8.86
3	-	9.42	11	-	9.20	19	-	8.98	27	9.34	8.84
4	-	9.40	12	-	9.18	20	8.62	8.97	28	9.36	8.84
5	-	9.40	13	-	9.14	21	8.74	8.94	29	9.36	8.83
6	-	9.32	14	-	9.10	22	8.80	8.91	30	9.35	8.82
7	-	9.33	15	-	9.07	23	9.04	-	31		8.82
8	-	9.30	16	-	9.04	24	9.16	8.88			

The results of the determinations of maximum flood flows at existing stream-gaging stations and other places on streams in the area covered by this report are summarized and presented in table 10, "Summary of flood discharges." Generally, the time of day in this table is for standard time or has been adjusted to standard time when possible. The map reference number in this table is applicable to plate 11 (in pocket) and will aid in identifying the place where the discharge was determined.

The discharges for the existing stream-gaging stations were determined by methods described in greater detail in the presentation of the record for the respective stations in the section "Stages and discharges at stream-gaging stations." For existing stream-gaging stations the method of determination is designated "Stage-discharge relation," because the determination is based on the comprehensive studies of that subject that are conducted at such stations. Where the recorded discharge was not measured at a regular station a brief reference is made to the method of determination. For general information, some discharges are presented for streams in basins adjoining or near those most affected by the floods.

At some places information of maximum stages only is available, and that information is presented with an appropriate footnote in order to show the relative magnitudes of the flood of 1938 and previous floods. For other places, pertinent information regarding stages antedating the period of record of discharge is shown by a footnote. Although the tabulation is intended to be reasonably complete, the reader is referred to the section "Records of previous floods" in this report and in Water-Supply Papers 798 and 799, which cover the floods of March 1936 in the affected regions, for possible additional references to notable floods not included in the summary table. Explanatory footnotes on other features of the table are also included.

Figure 41 shows the flood discharges, in second-feet per square mile, which are listed in table 10, plotted against the corresponding drainage areas. In this connection it should be understood that except for a small number of items as indicated in the table the discharges are given as observed and many are affected by artificial storage, release of water resulting from failure of dams, or other similar factors, on which available information is presented in the preceding section, "Stages and discharges at stream-gaging stations during the flood period."

The basic data and computations for the determinations of discharge are filed in the district offices of the Geological Survey in the several districts where the floods occurred and may be examined in those offices.

Table 10.--Summary of flood discharges

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Androscoggin River Basin										
1	Androscoggin River at Errol Dam, N. H.	1,095	1905-1938	May 10, 1929	15,300	14.0	22	--	a4,450	4.1	Gates in dam.
2	Androscoggin River near Gorham, N. H.	1,390	1929-1938	Mar. 22, 1936	19,900	14.3	22	6 to 8 p.m.	10,300	7.4	Stage-discharge relation.
	Saco River Basin										
3	Saco River near Conway, N. H.	386	1903-1910 1929-1938	Mar. 19, 1936	40,600	105	21	11:45 a.m.	20,800	53.9	Do.
	Piscataqua River Basin										
4	Salmon Falls River near South Lebanon, Maine	147	1928-1938	Mar. 19, 1936	5,490	37.3	20	10 p.m.	403	2.7	Do.
5	Lamprey River near Newmarket, N. H.	183	1934-1938	Mar. 20, 1936	5,490	30.0	22	12 p.m.	1,180	6.4	Do.
	Merrimack River Basin										
6	East Branch of Pemigewasset River near Lincoln, N. H.	104	1928-1938	Mar. 19, 1936	17,000	163	21	9 p.m.	16,200	156	Do.
7	Pemigewasset River at Livermore Falls, N. H.	406	--	Mar. 19, 1936	54,000	133	21	--	44,900	111	Dam.
8	Pemigewasset River at Plymouth, N. H.	622	1903-1938	Mar. 19, 1936	65,400	105	21	9 p.m.	50,900	81.8	Stage-discharge relation.
9	Pemigewasset River at Ayers Island, near Bristol, N. H.	746	--	Mar. 19, 1936	71,400	95.7	22	5 a.m.	49,700	66.6	Do.
10	Pemigewasset River at Eastman Falls, at Franklin, N. H.	1,000	--	--	--	--	22	4 to 9 a.m.	54,400	54.4	Do.
11	Merrimack River at Franklin Junction, N. H.	1,507	1903-1938	Mar. 19, 1936	83,000	55.1	22	9 a.m.	59,200	39.3	Do.
12	Merrimack River at Garvins Falls, N. H.	2,427	--	Mar. 20, 1936	122,000	50.3	22	11 p.m.	86,900	35.8	Do.
13	Merrimack River at Amoskeag Dam, Manchester, N. H.	2,854	1924-1938	Mar. 20, 1936	144,000	50.5	23	2 a.m.	97,600	34.2	Dam.
14	Merrimack River at Goffs Falls, below Manchester, N. H.	3,092	--	Mar. 20, 1936	150,000	48.5	23	4 a.m.	102,500	33.2	Stage-discharge relation.
15	Merrimack River below Concord River, Lowell, Mass.	4,635	1848-1938	Mar. 20, 1936	173,000	37.3	23	11 to 12 a.m.	121,100	26.1	Do.
16	Bakers River near Rumney, N. H.	143	1928-1938	Nov. 3, 1927	25,900	181	21	3 p.m.	15,900	111	Do.
17	Smith River at Danbury Novelty Co. Dam, 1½ miles northeast of Elmwood, N. H.	64.7	--	Mar. 19, 1936	6,070	93.8	22	--	2,580	39.9	Dam.

18	Smith River near Bristol, N. H.	85.8	1918-1938	Mar. 19, 1936	8,100	94.4	22	5 a.m.	5,070	59.1	Stage-discharge relation.
19	Winnipesaukee River at Tilton, N. H.	471	1937-1938	May 17, 1937	3,120	6.6	21	6:15 p.m.	3,810	8.1	Do.
20	Contoocook River near East Jaffrey, N. H.	36.1	--	Mar. 18, 1936	2,580	71.5	21	--	3,560	98.6	Slope area.
21	Contoocook River near Hadley, N. H.	36.9	--	--	--	--	21	--	3,390	91.9	Do.
22	Contoocook River at North Village, below Peterboro, N. H.	124	--	--	--	--	21	12 m.	10,400	83.9	Contracted opening.
23	Contoocook River near Hillsboro, N. H.	367	--	--	--	--	21	--	22,170	60.4	Dam.
24	Contoocook River near West Hopkinton, N. H.	416	--	Mar. 19, 1936	25,200	60.6	21	--	22,300	53.6	Do.
25	Contoocook River at Penacook, N. H.	766	1928-1938	Mar. 20, 1936	46,800	61.1	23	3 a.m.	42,400	55.4	Stage-discharge relation.
26	Nubanusit Brook at dam, at West Peterboro, N. H.	45.2	--	Mar. 19, 1936	4,140	91.6	21	12 a.m.	4,100	90.7	Dam.
27	North Branch of Contoocook River near Antrim, N. H.	54.8	1924-1938	Mar. 19, 1936	b4,680	85.4	22	7 a.m.	3,850	70.3	Stage-discharge relation.
28	North Branch of Contoocook River at Jackman Dam, near Hillsboro, N. H.	63.9	--	Mar. 20, 1936	8,300	130	22	--	3,090	48.4	Dam.
29	Warner River at dam, at Bradford, N. H.	19.7	--	Mar. 18, 1936	2,370	120	21	--	1,730	87.8	Do.
30	Blackwater River near Webster, N. H.	129	1918-1938	Mar. 19, 1936	b11,000	85.3	22	6 p.m.	6,880	53.3	Stage-discharge relation.
31	Suncook River at North Chichester, N. H.	157	1918-1938	Mar. 19, 1936	12,900	82.2	21	10 a.m.	2,110	13.4	Do.
32	Piscataquog River at Greggs Falls, near Goffstown, N. H.	201	--	--	--	--	21	10:30 to 11:45 p.m.	21,900	109	Dam.
33	Clark Brook near Auburn, N. H.	27.7	1938	July 30, 1938	290	10.5	21	Noon to 5 p.m.	218	7.9	Stage-discharge relation.
34	Souhegan River at Otis Mill Dam, at Greenville, N. H.	29.9	--	Mar. 18, 1936	6,160	206	21	--	4,970	166	Dam.
35	Souhegan River at Merrimack, N. H.	171	1909-1938	Mar. 19, 1936	16,900	98.8	21	11:45 p.m.	10,800	63.2	Stage-discharge relation.
36	Stony Brook at dam ½ mile above mouth, at Wilton, N. H.	33.2	--	Mar. 18, 1936	5,780	174	21	11:30 a.m.	4,880	147	Dam.
37	North Nashua River near Leominster, Mass.	107	1935-1938	Mar. 18, 1936	16,300	152	21	3 p.m.	10,300	96.3	Stage-discharge relation.
38	Nashua River at East Pepperell, Mass.	433	1935-1938	Mar. 20, 1936	20,900	48.3	23	8 to 10 a.m.	10,200	23.6	Do.
39	South Branch of Nashua River at Clinton, Mass.	117	1896-1938	Mar. 18, 1936	c11,100	94.9	21	--	d4,150	--	Do.
40	Round Meadow Pond (Merrimack Pond) at Westminster, Mass.	4.6	--	--	--	--	21	--	580	126	Dam.
41	Concord River at Lowell, Mass.	405	1936-1938	July 29, 1938	3,790	9.4	24	2 p.m.	3,210	7.9	Stage-discharge relation.

a Mean daily discharge; records furnished by Union Water Power Co.
b Revised.
c Adjusted for storage.
d Mean daily discharge adjusted for storage.

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Merrimack River Basin--Continued										
42	Sudbury River at Framingham Center, Mass.	75.2	1875-1938	Feb. 14, 1886	e2,050	--	21	--	e1,120	--	Stage-discharge relation.
43	Lake Cochituate Outlet at Cochituate, Mass.	17.4	1898-1936	Mar. 22, 1936	e248	--	21	--	e211	--	Do.
	Ipswich River Basin										
44	Ipswich River at South Middletown, Mass.	43.4	1938	July 24, 1938	609	14.0	21	8 a.m.	378	8.7	Do.
45	Ipswich River near Ipswich, Mass.	124	1930-1938	Mar. 15, 1936	2,610	21.0	22	11 to 12 p.m.	1,080	8.7	Do.
	Charles River Basin										
46	Charles River at Charles River Village, Mass.	182	1936-1938	March 1936	3,170	10.1	24	1 to 5 p.m.	881	4.8	Do.
47	Charles River at Waltham, Mass.	251	1931-1938	Mar. 19, 1936	2,540	10.2	26	11 a.m.	f795	3.2	Do.
48	Mother Brook at Dedham, Mass.	--	1931-1938	July 29, 1938	909	--	26	8 a.m.	225	--	Do.
	Taunton River Basin										
49	Taunton River at State Farm, Mass.	260	1929-1938	Apr. 14, 1935	3,050	11.7	21	8 p.m.	1,040	4.0	Do.
50	Wading River near Norton, Mass.	42.4	1925-1938	Mar. 12, 13, 1936	1,030	24.3			200	4.7	Do.
	Providence River Basin										
51	Blackstone River at Worcester, Mass.	31.3	1923-1938	Mar. 18, 1936	2,520	80.5	21	4:30 p.m.	1,280	40.9	Do.
52	Blackstone River at Woonsocket, R. I.	416	1929-1938	July 24, 1938	15,100	36.3	22	12:30 p.m.	6,130	14.7	Do.
	Thames River Basin										
53	Square Pond Brook at West Stafford, Conn.	6.5	--	--	--	--	--	--	470	72.3	Dam.
54	Willimantic River at Eagleville, Conn.	110	--	Mar. 12, 1936	7,620	69.3	--	--	g12,900	117	Dam.
55	Willimantic River near South Coventry, Conn.	121	1931-1938	Mar. 12, 1936	7,880	65.1	21	11 a.m.	15,500	128	Stage-discharge relation.
56	Willimantic River at Willimantic, Conn.	224	--	Mar. 12, 1936	11,200	50.0	21	--	21,000	93.8	Dam.

57	Shetucket River near Willimantic, Conn.	401	1904-1905 1933-1938	Mar. 12, 1936	23,900	59.6	21	2 to 3 p.m.	52,200	130	Stage-discharge relation.
58	Shetucket River at Scotland Station, Conn.	418	--	--	--	--	21	--	54,100	129	Dam.
59	Shetucket River at Baltic, Conn.	445	--	Mar. 12, 1936	25,800	58.0	21	4 to 8 p.m.	58,400	131	Do.
60	Shetucket River at Greenville, Conn.	1,260	--	Mar. 19, 1936	47,600	37.8	21	7 p.m.	77,700	61.7	Do.
61	Middle River at Ellithorpe, Conn.	11.4	--	--	--	--	--	--	1,230	108	Do.
62	Furnace Brook at Stafford, Conn.	14.4	--	--	--	--	--	--	2,290	159	Do.
63	Furnace Brook at Stafford Springs, Conn.	16.8	--	--	--	--	--	--	2,110	126	Do.
64	Hop River at Hop River, Conn.	75.8	--	--	--	--	21	4 p.m.	6,440	85.0	Do.
65	Hop River near Columbia, Conn.	76.2	1932-1938	Mar. 12, 1936	3,300	43.3	21	4 p.m.	6,450	84.6	Stage-discharge relation.
66	Natchaug River below Mansfield Hollow, Conn.	161	--	Mar. 12, 1936	h10,000	--	21	--	g25,300	--	Dam.
67	Natchaug River at Willimantic, Conn.	169	1930-1938	Mar. 18, 1936	14,200	84.0	21	2 p.m.	32,000	189	Stage-discharge relation.
68	Mount Hope River above Warrenville, Conn.	6.3	--	Mar. 12, 1936	575	91.3	--	--	g860	137	Dam.
69	Fenton River at Gurleyville, Conn.	b25.1	--	Mar. 12, 1936	1,450	b57.8	21	--	2,580	103	Do.
70	Little River at Versailles, Conn.	45.3	--	March, 1936	1,940	42.8	21	5 p.m.	2,800	61.8	Do.
71	Quinebaug River at Fiskdale, Mass.	68.0	--	Mar. 18, 1936	2,390	35.1	--	--	17,000	103	Do.
72	Quinebaug River at Quinebaug, Conn.	157	1931-1938	Mar. 18, 1936	b10,500	66.9	21	10:30 a.m.	14,100	89.8	Stage-discharge relation.
73	Quinebaug River at dam of Nightingale-Morse Mills, Inc., at Putnam, Conn.	291	--	Mar. 19, 1936	16,000	55.0	21	1:30 p.m.	19,100	65.6	Dam.
74	Quinebaug River at Putnam, Conn.	331	1929-1938	Mar. 19, 1936	17,200	52.0	21	1:30 p.m.	20,900	63.1	Stage-discharge relation.
75	Quinebaug River at Williamsville, Conn.	377	--	Mar. 19. 1936	21,400	56.8	21	--	19,900	52.8	Dam.
76	Quinebaug River at Dyer Dam, Conn.	465	--	Mar. 19, 1936	22,800	49.0	21 to 22	12 p.m. 6 a.m.	19,700	42.4	Do.
77	Quinebaug River at Jewett City, Conn.	711	1918-1938	Mar. 19, 1936	29,200	41.1	22	2 to 5 p.m.	22,800	32.1	Stage-discharge relation.
78	Quinebaug River at Taftville, Conn.	743	--	Mar. 19, 1936	30,100	40.5	22	12 a.m. to 9 p.m.	23,100	31.1	Dam.
79	French River at Rochdale, Mass.	19.3	--	March 1936	1,480	76.7	--	--	670	34.7	Do.

b Revised.
e Mean daily discharge.
f Caused by regulation.
g Prior to failure of dam.
h Not absolute peak.
i Includes estimated flow through canal.

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Thames River Basin--Continued										
80	French River at North Oxford, Mass.	24.1	--	Mar. 18, 1936	2,030	84.2	--	--	985	40.9	Dam.
81	French River at Webster, Mass.	85.6	--	Mar. 19, 1936	4,700	54.9	--	--	2,700	31.5	Do.
82	French River at North Grosvenordale, Conn.	98.5	--	Mar. 19, 1936	5,990	60.8	--	--	3,190	32.4	Do.
83	Muddy Brook at Harrisville, Conn. j/	36.4	--	Mar. 19, 1936	2,920	80.2	21	7 p.m.	2,010	55.2	Do.
84	Five Mile River at Killingly, Conn.	58.2	1937-1938	July 24, 1938	2,480	42.6	21	11:20 p.m.	1,060	18.2	Stage-discharge relation.
85	Five Mile River at Danielson, Conn.	77.6	--	Mar. 12, 1936	1,990	25.6	--	--	1,420*	18.3	Dam.
86	Moosup River at Moosup, Conn.	83.5	1932-1938	July 24, 1938	4,100	49.1	21	7 a.m.	686	8.2	Stage-discharge relation.
87	Pachaug River at Jewett City, Conn.	59.0	--	March 1936	1,500	25.4	21	--	2,240	38.0	Dam.
88	Yantic River at Fitchville, Conn.	69.1	--	Mar. 12, 1936	5,250	76.0	--	--	9,700	140	Do.
89	Yantic River at Yantic, Conn.	88.6	1930-1938	July 24, 1938	6,980	78.8	21	8 a.m.	13,500	152	Stage-discharge relation.
90	Yantic River at Norwichtown, Conn.	96.9	--	--	--	--	--	--	17,000	175	Dam.
	Connecticut River Basin										
91	Connecticut River at First Connecticut Lake, near Pittsburg, N. H.	83.0	1917-1938	May 27, 1930	1,810	21.8	21	8 p.m.	2,000	24.1	Stage-discharge relation.
92	Connecticut River at North Stratford, N. H.	796	1930-1938	Mar. 19, 1936	28,400	35.7	22	10:45 a.m.	12,800	16.1	Do.
93	Connecticut River near Dalton, N. H.	1,538	1927-1938	Mar. 20, 1936	48,300	31.4	22	7 a.m.	19,600	12.7	Do.
94	Connecticut River at outlet of Fifteenmile Falls Reservoir, near Barnet, Vt.	1,650	--	Mar. 20, 1936	55,000	33.3	22	--	28,000	17.0	Do.
95	Connecticut River at McIndoes Falls, Vt.	2,200	--	Mar. 20, 1936	68,000	30.9	22	--	33,000	15.0	Do.
96	Connecticut River at South Newbury, Vt.	2,825	1918-1938	Mar. 19, 20, 1936	77,800	27.5	22	3 p.m.	43,700	15.5	Do.
97	Connecticut River at White River Junction, Vt.	4,068	1911-1938	Nov. 4, 1927	136,000	33.4	22	5 to 6 a.m.	82,400	20.3	Do.
98	Connecticut River at Vernon, Vt.	6,240	--	Mar. 19, 20, 1936	176,000	28.2	22	5 to 9 a.m.	132,500	21.2	Do.

99	Connecticut River at Turners Falls, Mass.	7,138	1915-1938	Mar. 19, 20, 1936	210,000	29.4	22	8 a.m. to 3 p.m.	174,000	24.4	Stage-discharge relation.
100	Connecticut River at Montague City, Mass.	7,840	1904-1938	Mar. 19, 1936	236,000	30.1	22	11:30 a.m.	195,000	24.9	Do.
101	Connecticut River at Holyoke, Mass.	8,284	1860-1938	Mar. 19, 20, 1936	244,000	29.5	22 to 23	11 p.m. 5 a.m.	189,000	22.8	Do.
102	Connecticut River at Springfield, Mass.	9,587	1801-1938	Mar. 19, 20, 1936	281,000	29.3	22 to 23	10 p.m. 1 p.m.	235,000	24.5	Do.
103	Connecticut River at Thompsonville, Conn.	9,637	1928-1938	Mar. 20, 1936	282,000	29.3	22 to 23	11 p.m. 2 a.m.	236,000	24.5	Do.
104	Connecticut River at Hartford, Conn.	10,480	1639-1938	Mar. 20, 1936	313,000	29.9	22 to 23	12 p.m. 4 a.m.	251,000	24.0	Do.
105	Israel River at upper Twin State Gas & Electric Co. dam, at Lancaster, N. H.	132	--	November 1927	k8,840	k71.3	--	--	5,340	40.5	Dam.
106	Johns River at F. P. Spaulding Co. dam, at Whitefield, N. H.	34.6	--	March 1936	1,540	44.5	--	--	1,110	32.1	Do.
107	Passumpsic River at Bay St. hydroelectric plant, at St. Johnsbury, Vt.	371	--	--	--	--	21	night	6,200	16.7	Do.
108	Passumpsic River at Passumpsic, Vt.	423	1928-1938	Mar. 18, 1936	16,000	37.8	22	1 a.m.	7,710	18.2	Stage-discharge relation.
109	Moose River at St. Johnsbury, Vt.	126	1928-1938	Apr. 30, 1929	5,220	41.4	21	3:15 p.m.	2,030	16.1	Do.
110	Ammonoosuc River at Saranac Glove Co. dam at Littleton, N. H.	133	--	November 1927	k16,600	k134	--	--	10,500	78.9	Dam.
111	Ammonoosuc River near Bath, N. H.	393	1935-1938	Mar. 18, 1936	27,900	71.0	21	6 p.m.	26,800	68.2	Stage-discharge relation.
112	Waits River at Bradford Electric Light Co. dam, at Bradford, Vt.	162	--	November 1927	10,500	64.8	22	2 p.m.	4,260	26.3	Dam.
113	White River at Stockbridge, Vt.	143	--	--	--	--	21	--	12,500	87.4	Slope area.
114	White River near Bethel, Vt.	241	1931-1938	Mar. 18, 1936	16,100	66.8	21	12 p.m.	32,200	134	Stage-discharge relation.
115	White River at Central Vermont Public Service dam, below Bethel, Vt.	411	--	March 1936	27,600	67.2	21	10 p.m.	39,600	96.4	Dam.
116	White River at West Hartford, Vt.	690	1915-1938	Nov. 4, 1927	120,000	174	22	3:30 a.m.	47,600	69.0	Stage-discharge relation.
117	Tweed River near Stockbridge, Vt.	50.1	--	--	--	--	21	11 p.m.	6,860	137	Dam.
118	West Branch of Tweed River near Pittsfield, Vt.	17.0	--	--	--	--	21	--	5,660	333	Slope area.

j Published as Little River on page 319 of Water-Supply Paper 798.

k Drainage area 124 square miles, in near vicinity of dam used in 1938.

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Connecticut River Basin--Continued										
119	Stony Brook near Gaysville, Vt.	24.1	--	--	--	--	21	--	4,640	193	Contracted opening.
120	Third Branch of White River above Randolph, Vt.	54.6	--	--	--	--	21	--	9,720	178	Slope area.
121	Second Branch of White River at Hyde Mill dam, at East Bethel, Vt.	63.8	--	March 1936	3,030	47.5	21	11 p.m.	1,590	24.9	Dam.
122	First Branch of White River at Ralston Co. dam, at South Royalton, Vt.	114	--	March 1936	4,990	43.8	--	--	2,060	18.1	Do.
123	Mascoma River at Mascoma, N. H.	153	1923-1938	Mar. 19, 1936	5,840	38.2	22	8 p.m.	4,400	28.8	Stage-discharge relation.
124	Mascoma River at Plant no. 2, Granite State Gas & Electric Co. dam, at West Lebanon, N. H.	193	--	March 1936	6,600	34.2	22	--	5,240	27.2	Dam.
125	Ottauquechee River above Bridgewater, Vt.	99.7	--	--	--	--	21	--	18,100	182	Slope area.
126	Ottauquechee River at Taftsville, Vt.	190	--	November 1927	25,400	134	21	--	24,400	128	Dam.
127	Ottauquechee River at Deweys Mills, Vt.	208	--	November 1927	27,200	131	21	--	23,200	112	Do.
128	Ottauquechee River at North Hartland, Vt.	221	1930-1938	November 1927	30,400	138	21	11:45 p.m.	24,400	110	Stage-discharge relation.
129	Sugar River at West Claremont, N. H.	269	1928-1938	Mar. 19, 1936	14,000	52.0	21	8:30 p.m.	13,100	48.7	Do.
130	Black River at Slate Mill dam, at Perkinsville, Vt.	116	--	March 1936	10,900	94.0	--	--	13,400	116	Dam.
131	Black River at North Springfield, Vt.	168	1930-1938	Mar. 18, 1936	14,700	93.0	22	12:30 a.m.	15,500	98.1	Stage-discharge relation.
132	Black River at Lovejoy Tool Co. dam, at Springfield, Vt.	191	--	--	--	--	22	--	16,800	88.0	Dam.
133	Great Brook above North Springfield, Vt.	11.3	--	March 1936	1,110	98.2	21	10 p.m.	2,450	217	Contracted opening.
134	Williams River above Chester, Vt.	23.5	--	--	--	--	21	--	8,690	370	Slope area and contracted opening.
135	Middle Branch of Williams River above Simonsville, Vt.	3.4	--	--	--	--	21	Between 5 and 8 p.m.	3,050	897	Slope area.
136	Middle Branch of Williams River above Chester, Vt.	27.4	--	--	--	--	21	--	12,200	445	Contracted opening.

137	Cold River at outlet of Vilas Pond above Alstead, N. H.	60.3	--	--	--	--	21	--	5,300	87.9	Dam.
138	West River near South Londonderry, Vt.	89.3	--	--	--	--	21	--	25,200	282	Slope area.
139	West River at Newfane, Vt.	308	1919-1938	Nov. 3, 1927	45,000	146	21	11 p.m.	52,300	170	Stage-discharge relation.
140	West River at West Dummerston, Vt.	410	--	November 1927	54,000	132	21	10-11 p.m.	65,000	159	Dam.
141	Winhall River above Rawsonville, Vt.	32.0	--	--	--	--	21	6 p.m.	10,400	325	Slope area.
142	Whetstone Brook at East Jamaica, Vt.	36.2	--	--	--	--	21	--	15,500	428	Do.
143	Rook River at Williamsville, Vt.	42.6	--	--	--	--	21	--	27,200	638	Do.
144	Ashuelot River near Gilsum, N. H.	71.1	1922-1938	Mar. 18, 19, 1936	4,400	61.9	21	6 p.m.	5,220	73.4	Stage-discharge relation.
145	Ashuelot River at Hinsdale, N. H.	420	1907-1938	Mar. 29, 1920	18,000	42.9	22	12 p.m.	16,200	38.6	Do.
146	Otter Brook near Keene, N. H.	41.8	1923-1938	Mar. 18, 1936	3,580	85.6	21	1 p.m.	6,130	147	Do.
147	South Branch of Ashuelot River at Webb, near Marlboro, N. H.	36.6	1920-1938	Mar. 18, 1936	3,880	106	21	10:15 a.m.	5,960	163	Do.
148	Millers River near Winchendon, Mass.	83.8	1916-1938	Mar. 19, 1936	5,530	66.0	22	2 a.m.	8,500	101	Do.
149	Millers River at Erving, Mass.	370	1914-1938	Mar. 19, 1936	19,700	53.2	22	8 a.m.	29,000	78.4	Do.
150	Millers River at Millers Falls Paper Co. dam, at Millers Falls, Mass.	386	--	March 1936	20,100	52.1	22	--	32,100	83.2	Dam.
151	Sip Pond Brook near Winchendon, Mass.	19.0	1916-1938	Mar. 18, 19, 1936	1,430	75.3	21	10 a.m.	2,630	138	Stage-discharge relation.
152	Priest Brook near Winchendon, Mass.	18.8	1916-1938	Mar. 18, 1936	1,840	97.9	21	Noon.	3,000	160	Do.
153	Otter River below Wait Chair Co., at Baldwinville, Mass.	43.6	--	March 1936	2,880	66.1	21	--	11,600	266	Slope area.
154	Pew Brook near Gardner, Mass.	8.9	--	--	--	--	21	--	1,280	144	Contracted opening.
155	East Branch of Tully River near Athol, Mass.	49.9	1916-1938	Mar. 18, 19, 1936	3,700	74.1	21	4 p.m.	5,140	103	Stage-discharge relation.
156	Moss Brook at Wendell Depot, Mass.	12.2	1916-1938	Mar. 19, 1936	b1,540	b126	21	5 p.m.	1,070	87.7	Do.
157	Falls River at sawmill dam, at Bernardston, Mass.	27.3	--	--	--	--	21	--	2,550	93.4	Dam.
158	Deerfield River at outlet of Harriman Reservoir, at Davis Bridge, Vt.	m154	--	Nov. 4, 1927	c30,800	c200	21	--	c44,400	c288	Rate of storage.
159	Deerfield River at covered bridge, at Charlemont, Mass.	n159	--	--	--	--	21	--	n56,000	n352	Contracted opening.

b Revised. c Adjusted for storage. m Exclusive of drainage area above Somerset Reservoir.
n Exclusive of drainage area above Harriman Reservoir.

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Connecticut River Basin--Continued										
160	Deerfield River at Charlemont, Mass.	n178	1913-1938	July 8, 1915	38,200	o115	21	6:45 p.m.	n56,300	n316	Stage-discharge relation.
161	East Branch of Deerfield River at outlet of Somerset Reservoir, near Somerset, Vt.	30.0	--	Mar. 18, 1936	o5,200	o173	21	--	o7,500	o250	Rate of storage.
162	Pelham Brook at outlet of Pelham Lake, at Rowe, Mass.	4.4	--	--	--	--	21	6:30 p.m.	1,580	359	Dam.
163	Cold River above Black Brook, near Charlemont, Mass.	23.4	--	--	--	--	21	--	14,600	624	Slope area.
164	Cold River below Black Brook, near Charlemont, Mass.	30.1	--	--	--	--	21	--	16,900	561	Do.
165	Tannery Pond at C.C.C. dam, near Savoy, Mass.	1.5	--	--	--	--	21	--	725	483	Dam.
166	Chickley River near West Hawley, Mass.	25.1	--	--	--	--	21	--	17,800	709	Slope area.
167	Unnamed tributary of Chickley River near West Hawley, Mass.	6.2	--	--	--	--	21	--	3,660	590	Contracted opening.
168	Mill Brook at dam, near Charlemont, Mass.	11.3	--	--	--	--	21	6 p.m.	5,460	483	Dam.
169	Clark Brook near Shelburne Falls, Mass.	2.9	--	--	--	--	21	6:20 p.m.	1,600	552	Contracted opening.
170	East Branch of North River at Foundry Village, Mass.	51.3	--	March 1936	8,640	168	21	6:45 p.m.	19,800	386	Dam.
171	West Branch of North River at Hillman Bridge, near Adamsville, Mass.	19.8	--	--	--	--	21	6:30 p.m.	7,200	364	Contracted opening.
172	Green River at Greenfield Water Supply dam, near Greenfield, Mass.	51.8	--	--	--	--	21	--	13,400	259	Dam.
173	Glen Brook at Greenfield Water Supply upper dam, near Greenfield, Mass.	5.2	--	--	--	--	21	--	1,800	346	Do.
174	Mill Brook at W.P.A. dam, at Greenfield, Mass.	11.2	--	--	--	--	21	--	1,090	97.3	Do.
175	Cranberry Pond at outlet, in Mount Toby Forest, near Montague, Mass.	2.4	--	--	--	--	21	--	300	125	Do.
176	Puffer Pond at North Amherst, Mass.	16.1	--	--	--	--	21	--	1,230	76.4	Do.

177	Fort River at Sanctuary Dam, at Mill Valley, near Amherst, Mass.	41.3	--	March 1936	2,360	57.1	--	--	1,640	39.7	Dam.
178	Mill River at Haydenville Mill dam, in Haydenville, Mass.	29.8	--	March 1936	4,130	139	21	--	7,330	246	Do.
179	Manhan River at Southampton, Mass.	27.6	--	--	--	--	21	6:30 p.m.	2,870	104	Do.
180	Ware River at Cold Brook, Mass.	96.8	1928-1938	Mar. 19, 1936	5,990	61.9	21	10:15 a.m.	14,000	145	Stage-discharge relation.
181	Ware River at Wool Combing Mills dam, at South Barre, Mass.	104	--	March 1936	6,220	59.8	21	--	13,800	133	Dam.
182	Ware River at Gibbs Crossing, Mass.	199	1912-1938	Mar. 19, 1936	11,200	56.3	21	12 m.	22,700	114	Stage-discharge relation.
183	Ware River at Wipples, Mass.	216	--	--	--	--	--	--	23,100	107	Slope area.
184	Chicopee River at Boston Duck Co. dam, at Three Rivers, Mass.	646	--	--	--	--	22	2 a.m.	40,400	62.5	Dam.
185	Chicopee River at Bircham Bend, Mass.	703	1928-1938	Mar. 19, 1936	20,400	29.0	21	--	45,200	64.3	Stage-discharge relation.
186	Swift River at West Ware, Mass.	186	1910-1938	Mar. 19, 1936	7,590	40.8	22	11 a.m.	5,540	29.8	Do.
187	East Branch of Swift River at Dana, Mass.	43.7	1937-1938	Jan. 26, 1938	900	20.6	21	12:45 p.m.	6,780	155	Do.
188	Quaboag River at West Brimfield, Mass.	151	1909-1938	Mar. 18, 1936	3,620	24.0	21	7 p.m.	8,470	56.1	Do.
189	Quaboag River at Central Massachusetts Electric Co. dam at Blanchardville, Mass.	179	--	March 1936	4,120	23.0	21	7 p.m.	12,800	71.5	Dam.
190	Five Mile River at outlet of Millers Reservoir, near Oakhum, Mass.	3.0	--	--	--	--	--	--	259	86.3	Do.
191	Dye River at C. F. Church Manufacturing Co. dam at North Monson, Mass.	20.6	--	--	--	--	21	--	2,440	118	Do.
192	Conant Brook at Plumby Falls, near South Monson, Mass.	4.5	--	--	--	--	--	--	1,560	347	Falls.
193	Conant Brook at Conant Pond dam, near South Monson, Mass.	6.3	--	--	--	--	--	--	1,230	195	Dam.
194	Westfield River near West Cummington, Mass.	40.0	--	--	--	--	21	--	15,700	392	Slope area.
195	Westfield River at Knightville, Mass.	162	1909-1938	Mar. 18, 1936	25,700	159	21	9 p.m.	37,900	234	Stage-discharge relation.
196	Westfield River near Westfield, Mass.	497	1914-1938	Mar. 18, 1936	48,200	97.0	21 to 22	12 p.m. 1 a.m.	55,500	112	Do.

c Adjusted for storage. n Exclusive of drainage area above Harriman Reservoir. o For 332 square miles of drainage area below Somerset Reservoir.

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Table 10.—Summary of flood discharges—Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Connecticut River Basin--Continued										
197	Westfield River at Strathmore Paper Co. dam, at West Springfield, Mass.	513	--	March 1936	49,800	97.1	22	--	55,000	107	Dam.
198	Pond Brook at Norwich, Mass.	2.6	--	--	--	--	21	--	875	337	Contracted opening.
199	Middle Branch of Westfield River at Goss Heights, Mass.	52.6	1910-1938	Mar. 18, 1936	8,400	160	21	6:30 p.m.	19,900	378	Stage-discharge relation.
200	West Branch of Westfield River at Huntington, Mass.	93.7	1935-1938	Mar. 18, 1936	14,400	154	21	7 p.m.	21,800	233	Do.
201	Westfield Little River at outlet of Cobble Mountain Reservoir, near Westfield, Mass.	45.8	1905-1938	Nov. 3, 1927	6,100	133	21	--	d4,760	--	Do.
202	Scantic River at Somersville, Conn.	62.8	--	--	--	--	21	11:30 a.m. to 2:30 p.m.	4,500	71.7	Dam.
203	Scantic River at Scitico, Conn.	66.3	--	--	--	--	21	9:30 to 10 a.m.	11,000	166	Do.
204	Scantic River at Broad Brook, Conn.	98.4	1928-1938	Mar. 13, 1936	b1,820	18.5	21	2:30 p.m.	7,360	74.8	Stage-discharge relation.
205	Broad Brook at Broad Brook, Conn.	14.0	--	--	--	--	--	--	900	64.3	Dam.
206	Farmington River near New Boston, Mass.	92.0	1913-1938	Mar. 18, 1936	9,080	98.7	21	6 p.m.	p18,500	201	Stage-discharge relation.
207	Farmington River at Riverton, Conn.	216	1929-1938	Mar. 18, 1936	19,900	92.1	21	6:30 p.m.	37,100	172	Do.
208	Farmington River at Collinsville, Conn.	354	--	Mar. 18, 1936	21,000	59.3	21	10 p.m.	q54,000	153	Dam.
209	Farmington River at Tariffville, Conn.	578	1928-1938	Mar. 19, 1936	b26,900	46.5	22	3 to 4 p.m.	29,900	51.7	Stage-discharge relation.
210	Farmington River at dam of Hartford Electric Light Co. at Tariffville, Conn.	578	--	Mar. 19, 1936	22,000	38.1	22	3 to 4 p.m.	29,800	51.6	Dam.
211	Farmington River at Rainbow, Conn. r/	590	--	Mar. 19, 1936	26,600	45.1	22	1 p.m.	25,500	43.2	Do.
212	Still River at Winsted, Conn.	42.6	--	March 1936	3,060	71.8	21	evening	3,700	86.9	Do.
213	Burlington Brook near Burlington, Conn.	4.1	1931-1938	Mar. 12, 1936	503	123	21	6:30 p.m.	645	157	Stage-discharge relation.
214	South Branch of Park River at Hartford, Conn.	40.6	1936-1938	Jan. 25, 1938	2,860	70.4	21	10 p.m.	3,600	88.7	Do.
215	Park River at Hartford, Conn.	74.0	1936-1938	Jan. 25, 1938	5,650	76.4	21	3:15 p.m.	5,320	71.9	Do.

216	North Branch of Park River at Hartford, Conn.	25.3	1936-1938	Jan. 25, 1938	1,640	64.8	21	10 p.m.	1,350	53.4	Stage-discharge relation.
217	Hockanum River at outlet of Shenipsit Lake, at Rockville, Conn.	16.5	--	--	--	--	21	5:30 p.m.	1,500	90.9	Dam.
218	Hockanum River near East Hartford, Conn.	74.5	--	--	--	--	21	2 p.m.	5,160	69.3	Do.
219	Hockanum River near East Hartford, Conn.	74.5	1919-1921 1928-1938	Jan. 25, 1938	2,140	28.7	21	2 p.m.	5,160	69.3	Stage-discharge relation.
220	Hockanum River near East Hartford, Conn.	75.3	--	--	--	--	21	--	5,220	69.3	Dam.
221	Tancanhoosen River at Vernon, Conn.	11.4	--	--	--	--	--	--	2,220	195	Do.
222	Roaring Brook near Buckingham, Conn.	4.7	--	--	--	--	--	--	471	100	Do.
223	Cold Brook near East Glastonbury, Conn.	6.2	--	--	--	--	--	--	513	82.7	Do.
224	Portland Reservoir outlet near Portland, Conn.	3.4	--	--	--	--	--	--	880	259	Do.
225	Great Hill Pond Brook near Portland, Conn.	s1.3	--	--	--	--	--	--	196	151	Do.
226	Mine Brook at Middle Haddam, Conn.	1.6	--	--	--	--	--	--	628	392	Do.
227	Salmon River at Lyman Viaduct, Conn.	105	--	--	--	--	21	--	12,400	118	Do.
228	Salmon River near East Hampton, Conn.	105	1905-1906 1928-1938	Mar. 12, 1936	6,250	59.5	21	8 a.m.	12,400	118	Stage-discharge relation.
	Quinnipiac River Basin										
229	Quinnipiac River at Wallingford, Conn.	107	--	--	--	--	21	--	5,140	48.0	Dam.
230	Quinnipiac River at Wallingford, Conn.	109	1930-1938	Mar. 12, 1936	b3,240	29.7	21	9 p.m.	5,230	48.0	Stage-discharge relation.
	Housatonic River Basin										
231	Housatonic River at Byron Weston Co. dam, at Dalton, Mass.	55.1	--	Mar. 18, 1936	4,650	84.4	21	--	6,290	114	Dam.
232	Housatonic River at Pioneer Mill dam, at Dalton, Mass.	55.5	--	--	--	--	21	--	6,550	118	Do.
233	Housatonic River at Coltsville, Mass.	57.1	1936-1938	Mar. 18, 1936	b6,000	105	21	8:30 p.m.	6,400	112	Stage-discharge relation.
234	Housatonic River at Monument Mill dam, at Glendale, Mass.	276	--	March 1936	8,710	31.6	22	--	11,000	39.9	Dam.
235	Housatonic River near Great Barrington, Mass.	280	1913-1938	Mar. 19, 1936	8,990	32.1	22	2 p.m.	11,520	41.1	Stage-discharge relation.

b Revised.
d Mean daily discharge adjusted for storage.
p From drainage area of 74.8 square miles below Otis Reservoir.
q Condition of flashboards uncertain at time of peak.
r Record furnished by Stanley Works, New Britain, Conn.
s Pond is 9 percent of drainage area.

Table 10.—Summary of flood discharges--Continued

No. on pl 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Housatonic River Basin--Continued										
236	Housatonic River at South Berkshire Power & Electric Co. dam at Great Barrington, Mass.	333	--	Mar. 19, 1936	9,600	28.8	22	--	11,700	35.1	Dam.
237	Housatonic River at Falls Village, Conn.	632	1912-1938	Mar. 20, 1936	14,500	22.9	23	2 to 6 a.m.	19,900	31.5	Stage-discharge relation.
238	Housatonic River at Bulls Bridge, Conn. t/	782	--	--	--	--	22	8 a.m.	24,000	30.7	Dam.
239	Housatonic River at Stevenson, Conn. t/	1,544	--	Mar. 12, 1936	69,400	44.9	22	1 a.m.	60,000	38.9	Do.
240	Housatonic River at Stevenson, Conn.	1,545	1928-1938	Mar. 12, 1936	69,500	45.0	21 to 22	12 p.m. 1 a.m.	59,500	38.5	Stage-discharge relation.
241	Housatonic River at Derby, Conn.	1,581	--	Mar. 12, 1936	69,600	44.0	21 to 22	12 p.m. 2 a.m.	58,100	36.7	Dam.
242	East Branch of Housatonic River near Windsor, Mass.	3.6	--	--	--	--	21	--	1,290	358	Contracted opening.
243	Tenmile River near Gaylordsville, Conn.	204	1929-1938	Mar. 12, 1936	10,200	50.0	22	4 to 5 a.m.	12,500	61.3	Stage-discharge relation.
244	Still River near Lanesville, Conn.	68.5	1931-1938	Mar. 12, 1936	b3,930	57.4	22	8 a.m.	4,410	64.4	Do.
245	Shepaug River at Woodville, Conn. u/	38.0	1935-1938	Mar. 12, 1936	4,070	107	21	7 p.m.	6,000	158	Dam.
246	Shepaug River at Roxbury Station, Conn.	132	--	March 1936	v8,440	63.9	21	--	w11,800	89.4	Do.
247	Shepaug River near Roxbury, Conn.	133	1930-1938	Mar. 12, 1936	7,000	52.6	21	7 p.m.	10,500	78.9	Stage-discharge relation.
248	Pomperaug River at Southbury, Conn.	75.3	1932-1938	Mar. 12, 1936	b5,990	79.5	21	9 p.m.	7,420	98.5	Do.
249	Pomperaug River at South Britain, Conn.	87.4	--	March 1936	6,720	76.9	--	--	7,950	91.0	Dam.
250	Naugatuck River near Thomaston, Conn.	71.9	1930-1938	Jan. 25, 1938	6,830	95.0	21	9:40 p.m.	9,970	139	Stage-discharge relation.
251	Naugatuck River near Naugatuck, Conn.	246	1918-1924 1928-1938	November 1927	18,300	74.4	21	10 p.m.	17,000	69.1	Do.
252	Leadmine Brook near Thomaston, Conn.	24.0	1930-1938	Sept. 17, 1934	2,800	117	21	6:30 p.m.	3,050	127	Do.
253	Branch of Naugatuck River near Thomaston, Conn. u/	18.0	--	Mar. 12, 1936	2,700	150	21	6 p.m. x/	x3,610	x201	Dam.

	Saugatuck River Basin										
254	Saugatuck River near Westport, Conn.	65.4	--	--	--	--	--	--	3,850	58.9	Dam.
255	Saugatuck River near Westport, Conn.	77.5	1932-1938	Mar. 12, 1936	5,310	68.5	21	12 p.m.	4,420	57.0	Stage-discharge relation.
	Streams on Long Island										
256	Mill Neck Creek at Mill Neck, N. Y.	y10	1937-1938	Sept. 13, 1937	49	4.9	21	4:45 p.m.	86	8.6	Do.
257	Massatayun Creek at Massapequa, N. Y.	y37	1936-1938	Nov. 28, 1937	64	1.7	21	3:20 p.m.	90	2.4	Do.
258	Wantagh Stream at Wantagh, N. Y.	y17	1937-1938	Nov. 28, 1937	55	3.2	21	9:20 a.m.	74	4.4	Do.
259	East Meadow Brook at Freeport, N. Y.	y31	1937-1938	July 20, 1938	92	3.0	21	3 p.m.	149	4.8	Do.
260	Pines Brook at Malverne, N. Y. z/	y10	1936-1938	July 24, 1938	37	3.7	21	4:50 p.m.	74	7.4	Do.
	Hudson River Basin										
261	Hudson River near Newcomb, N. Y. z/	192	1925-1938	Apr. 9, 1928	6,250	32.6	22	11 p.m.	4,970	25.9	Do.
262	Hudson River at Gooley, near Indian Lake, N. Y. z/	419	1916-1938	Apr. 12, 1922	13,900	33.2	22	10 a.m.	9,980	23.8	Do.
263	Hudson River at North Creek, N. Y. aa/	792	1907-1938	Mar. 27, 1913	27,400	34.6	22	10 a.m.	16,700	21.1	Do.
264	Hudson River at Hadley, N. Y. ab/	1,664	1921-1938	Mar. 18, 1936	41,200	24.8	22	11 a.m.	23,200	13.9	Do.
265	Hudson River at Spier Falls, N. Y. ab/ ac/	2,779	1903-1938	Mar. 28, 1913	89,100	32.1	22	11 a.m.	ad26,600	9.6	Dam and through plant.
266	Hudson River at Moreau, N. Y. ab/ac/	2,810	1930-1938	--	--	--	22	2 p.m.	ae306.4	--	--
267	Hudson River at Mechanicville, N. Y. af/	4,500	1903-1938	Mar. 28, 1913	ae15.8	--	22	8 a.m.	ae56.0	--	--
268	Hudson River at Mechanicville, N. Y. ab/ ag/	4,500	1887-1938	Mar. 28, 1913	120,000	26.7	22	3 p.m.	78,000	17.3	Dam and through plant.
269	Hudson River at Waterford, N. Y.	--	--	--	--	--	23	2 a.m.	ae29.6	--	--
270	Hudson River at Troy Dam, N. Y. ah/	--	--	--	--	--	22	7:30 p.m.	ai27.1	--	--

b Revised.
t Records furnished by Connecticut Light & Power Co.
u Records furnished by Bureau of Engineering, City of Waterbury, Conn.
v Includes 1,900 second-feet estimated by-passing left abutment.
w Includes 1,700 second-feet by-passing dam as determined on basis of cross-sectional area of scoured by-pass channel. It is possible that scour had not been completed at the time of peak stage at the dam, thus 1,700 second-feet of overflow may be as much as 10 percent too large.
x Observed maximum.
y Approximate; effective drainage basin not well defined.
z Slight regulation by small reservoirs.
aa Not adjusted for storage in Indian Lake and small reservoirs.
ab Affected by storage.
ac Records furnished by New York Power & Light Corporation.
ad Altitude 436.8 feet.
ae Altitude in feet.
af Records furnished by U. S. Weather Bureau.
ag Records furnished by West Virginia Pulp & Paper Co.
ah Records furnished by Corps of Engineers, U. S. Army.
ai Altitude of headwater; tailwater, altitude 23.53 feet.

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Hudson River Basin--Continued										
271	Hudson River at Albany, N. Y. af/	8,304	1903-1938	Mar. 28, 1913 Feb. 9, 1857	ae22.4 ae22.5	--	22	6:30 p.m.	aj16.5	--	--
272	Cedar River below Chain Lakes, near Indian Lake, N. Y. ab/	160	1930-1938	Oct. 7, 1932	6,050	37.8	22	7 a.m.	4,800	30.0	Stage-discharge relation.
273	Indian Lake Reservoir near Indian Lake, N. Y.	131	1900-1938	Mar. 28, 1913	ak38.8	--	30	8 a.m.	ak24.1	--	--
274	Indian River near Indian Lake, N. Y. ab/	132	1912-1914 1915-1938	Mar. 28, 1913	3,460	26.2	21	8:30 p.m.	58	--	Stage-discharge relation.
275	The Branch of Schroon River at Blue Ridge, N. Y.	65	--	1919-1925	ae868.6	--	21	8 p.m.	ae868.0	--	--
276	Schroon River at Riverbank, N. Y.	527	1907-1938	Mar. 21, 1936	12,100	23.0	24	1 a.m.	3,850	7.3	Stage-discharge relation.
277	East Branch of Sacandaga River at Griffin, N. Y.	114	1933-1937	Mar. 18, 1936	8,830	77.5	21	12 p.m.	6,400	56.1	Do.
278	Sacandaga River near Hope, N. Y.	491	1911-1938	Mar. 27, 1913	32,000	65.2	22	1 a.m.	16,200	33.0	Do.
279	Sacandaga Reservoir at Conklingville, N. Y.	1,044	1930-1938	July 11, 1935	ae769.34	--	25	8 p.m.	ae759.3	--	--
280	Sacandaga River at Conklingville, N. Y. ab/	1,044	1932-1938	May 16, 1937	7,800	7.5	23	9 a.m.	5,040	4.8	Stage-discharge relation.
281	West Stony Creek near Northville, N. Y.	88	1933-1937	Mar. 18, 1936	8,470	96.2	--	--	8,680	98.6	Do.
282	Glens Falls feeder at Glens Falls, N. Y.	--	1927-1938	--	--	--	--	--	--	--	--
283	Batten Kill at Arlington, Vt.	152	1928-1938	Mar. 18, 1936	11,100	73.0	21	9 p.m.	8,430	55.5	Stage-discharge relation.
284	Batten Kill at Battenville, N. Y.	394	1922-1938	Nov. 4, 1927	21,300	54.1	22	9 a.m.	16,000	40.6	Do.
285	Batten Kill at Middle Falls, N. Y. ac/	435	1927-1938	--	--	--	22	3 to 5 a.m.	ae101.2	--	--
286	Kayaderosseras Creek near West Milton, N. Y.	90	1927-1938	Mar. 18, 1936	3,590	39.9	21	12 p.m.	1,700	18.9	Stage-discharge relation.
287	Hoosic River at Hoosic Lake outlet, at Cheshire, Mass.	15.1	--	March 1936	447	29.6	21	--	341	22.6	Dam.
288	Hoosic River at Adams, Mass.	46.3	1931-1938	Mar. 18, 1936	3,670	79.3	21	5 p.m.	5,080	110	Stage-discharge relation.
289	Hoosic River near Eagle Bridge, N. Y. ab/	510	1910-1922 1923-1938	Nov. 4, 1927	29,800	58.4	22	2:45 a.m.	am35,300	69.2	Do.

290	Hoosic River at Johnsonville, N. Y. ab/	604	1909-1938	--	--	--	22	6 a.m.	an39,000	64.6	Dam and through plant.
291	Hoosic River at Schaghticoke, N. Y. ab/ ac/	635	1908-1938	Nov. 4, 1927	40,000	63.0	22	8 a.m.	39,600	62.4	Do.
292	North Branch of Hoosic River near Stamford, Vt.	8.8	--	--	--	--	21	--	1,800	205	Slope area.
293	North Branch of Hoosic River at North Adams, Mass.	39.0	1931-1938	November 1927	9,980	256	21	7 p.m.	8,950	229	Stage-discharge relation.
294	Birch Brook near Williamstown, Mass.	ap0.3	--	--	--	--	--	--	67	223	Dam.
295	Walloomsac River near North Bennington, Vt.	111	1931-1938	Mar. 18, 1936	6,600	59.5	21	8 p.m.	8,450	76.1	Stage-discharge relation.
296	City Stream at Sawmill dam, at Woodford, Vt.	2.8	--	--	--	--	21	--	450	161	Dam.
297	Paran Creek at Vermont Gravure Co. dam, at North Bennington, Vt.	15.1	--	--	--	--	21		750	49.7	Do.
298	Delta Reservoir at Delta Dam, near Rome, N. Y.	145	--	--	--	--	26,28	--	aq542.5	--	--
299	Mohawk River below Delta Dam, near Rome, N. Y. ab/	150	1927-1938	Mar. 9, 1921	4,210	28.1	26	10:30 a.m.	464	3.1	Stage-discharge relation.
300	Mohawk River near Little Falls, N. Y. ab/	1,348	1927-1938	Mar. 18, 1936	23,200	17.2	22	12:45 a.m.	ar22,700	16.8	Do.
301	Mohawk River at Tribes Hill, N. Y. af/	3,131	1903-1938	Mar. 9, 1904	ar30.0	--	22	8 a.m.	as23.5	--	--
302	Mohawk River at General Electric Co. pump house, Schenectady, N. Y.	--	--	--	--	--	22	8 p.m.	at227.8	--	--
303	Mohawk River at Great Western Gateway, Schenectady, N. Y.	--	--	--	--	--	22	4 p.m.	at226.5	--	--
304	Mohawk River at Locomotive Works, Schenectady, N. Y.	--	--	--	--	--	22	6 p.m.	at225.0	--	--
305	Mohawk River at Rexford Bridge, N. Y.	3,375	--	--	--	--	22	4 to 8 p.m.	at220.6	--	--
306	Mohawk River at Vischer Ferry, N. Y.	3,385	--	--	--	--	22	4 p.m.	at216.5	--	--
307	Mohawk River at Crescent Dam, above Cohoes, N. Y.	3,453	--	--	--	--	22	9 to 10 p.m.	at190.6	--	--
308	Mohawk River at New York Power & Light Corporation dam, near Cohoes, N. Y.	--	--	--	--	--	22	11 p.m.	--	--	--

ab Affected by storage.
ac Records furnished by New York Power & Light Corporation.
ae Altitude in feet.
af Records furnished by U. S. Weather Bureau.
aj Altitude in feet. Predicted high tide 3:30 p.m.; low tide at 10:09 p.m.
ak Observed gage height in feet.
am Stage at former site about 2 inches higher than in November 1927.
an From basic data furnished by New York Power & Light Corporation.
ap Furnished by U. S. Forest Service, Hopkins Memorial Forest.
aq Altitude in feet (Barge Canal datum); mean of two readings daily.
ar Diversions through Barge Canal not included.
as Gage height in feet; altitude of zero of gage is 255.0 feet.
at Altitude in feet (Barge Canal datum).

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Hudson River Basin--Continued										
309	Mohawk River at Cohoes, N. Y. ab/	3,456	1917-1938	Mar. 19, 1936	130,000	37.6	22	9:15 p.m.	102,000	29.5	Stage-discharge relation.
310	Hinckley Reservoir at Hinckley Dam, Hinckley, N. Y.	373	--	--	--	--	24	--	aul,227.3	--	--
311	West Canada Creek at Hinckley, N. Y. ab/	375	1919-1938	Apr. 12, 1922	10,800	28.8	23	10:30 to 11:30 p.m.	5,190	13.8	Stage-discharge relation.
312	West Canada Creek at East Bridge, N. Y. ab/	--	1905-1909 1912-1913	Mar. 26, 1913	av23,300	41.9	--	--	--	--	Do.
		556	1920-1938	June 21, 1922	16,500	29.7	21	7:45 p.m.	12,700	22.8	Do.
313	Ninemile feeder near Holland Patent, N. Y.	--	--	--	--	--	--	--	0	--	--
314	East Canada Creek at Dolgeville, N. Y. z/	261	1927-1938	Mar. 26, 1913	14,500	55.6	22	12:45 a.m.	9,920	38.0	Stage-discharge relation.
315	East Canada Creek at Inghams, N. Y. ab/ ac/	276	1912-1938	March 1913	17,500	63.4	22	2 to 3 a.m.	12,800	46.4	Dam and through plant.
316	East Canada Creek at Beardslee, N. Y. ab/ac/	288	1924-1938	March 1936	12,500	43.4	21 to 22	11 p.m. 3 a.m.	12,700	44.1	Do.
317	Sprite Creek at Sprite Creek, N. Y. ab/ ac/	41	1924-1938	1926	1,510	36.8	22	9 a.m.	1,256	30.6	Do.
318	Caroga Creek at Ephratah, N. Y. ab/ ac/	54	1911-1938	March 1936	1,870	34.6	21 to 22	9 p.m. 4 a.m.	1,170	21.7	Do.
319	Schoharie Creek at Prattsville, N. Y.	236	1902-1938	Nov. 16, 1926	42,300	179	21	9 p.m.	45,000	191	Stage-discharge relation.
320	Schoharie Reservoir at Gilboa Dam at Gilboa, N. Y.	314	1927-1938	Mar. 18, 1936	ael,134.4	--	21	10:40 p.m.	ael,134.3	--	--
321	Schoharie Creek at Gilboa Dam at Gilboa, N. Y. aw/	314	1927-1938	Mar. 18, 1936	32,000	102	21	10:40 p.m.	31,300	99.7	Stage-discharge relation.
322	Schoharie Creek at Middleburg, N. Y. aw/	532	1927-1938	Mar. 18, 1936	47,800	89.8	22	2 a.m.	40,600	76.3	Do.
323	Poesten Kill near Troy, N. Y.	84	--	--	--	--	22	12:30 a.m.	10,500	125	Slope area.
324	Poesten Kill near Troy, N. Y.	89	1923-1938	Nov. 4, 1927	7,030	79.0	22	12:30 a.m.	11,900	134	Stage-discharge relation.
325	Poesten Kill at Earl Wilson Dam at Troy, N. Y.	94	--	--	--	--	22	About 1 a.m.	11,000	117	Dam.
326	Poesten Kill at Lower Dam at Troy, N. Y.	94	--	--	--	--	22	About 1 a.m.	12,800	136	Do.

327	Kinderhook Creek at Stuyvesant Falls, N. Y. ac/	325	--	March 1936	15,000	46.2	22	2 a.m.	29,000	89.2	Do.
329	Kinderhook Creek at Rossman, N. Y.	329	1906-1914 1928-1938	Mar. 12, 1936	12,900	39.2	22	2:30 a.m.	27,800	84.5	Stage-discharge relation.
331	Catskill Creek at Oak Hill, N. Y. ax/	98	1910-1938	Nov. 9, 1913	12,300	126	21	6:45 p.m.	7,900	80.6	Stage-discharge relation.
332	Esopus Creek at Coldbrook, N. Y. aw/	192	1914-1938	Aug. 24, 1933	55,000	286	21	8 p.m.	19,900	104	Do.
333	Rondout Creek near Lowes Corners, N. Y.	38.	1937-1938	July 22, 1938	7,600	197	21	6 p.m.	3,060	79.5	Do.
334	Rondout Creek near Lackawack, N. Y.	100	1906-1938	Aug. 26, 1928	26,700	267	21	7:45 p.m.	5,930	59.3	Do.
335	Rondout Creek at Rosendale, N. Y.	386	1901-1903 1906-1919 1926-1938	Aug. 27, 1928	27,300	70.7	22	12:15 a.m.	18,100	46.9	Do.
336	Chestnut Creek above Red Brook, at Grahamsville, N. Y.	12.2	1937-1938	July 22, 1938	2,600	213	21	5 p.m.	965	79.1	Do.
337	Wallkill River near Unionville, N. Y.	144	1937-1938	Jan. 26, 1938	1,680	11.7	22	10 to 12 p.m.	3,120	21.7	Do.
338	Wallkill River at Pellets Island Mountain, N. Y.	385	1919-1938	Mar. 14, 1936	12,400	32.2	23	7:45 a.m.	6,210	16.1	Do.
339	Wallkill River near Phillipsburg, N. Y.	432	1936-1938	July 23, 1938	5,180	12.0	21	10:40 p.m.	7,090	16.4	Do.
340	Wallkill River at Gardiner, N. Y.	711	1924-1938	Mar. 12, 1936	18,000	25.3	22	1:15 a.m.	17,500	24.6	Do.
341	Wallkill River at Newpaltz, N. Y.	739	1901-1903	Mar. 3, 1902	24,500	33.2	--	--	19,800	26.8	Do.
342	Pochuck Creek at Newport, near Pine Island, N. Y.	98	1937-1938	Jan. 26, 1938	1,150	11.7	22	8:30 to 10 p.m.	2,070	21.1	Do.
343	Quaker Creek at Florida, N. Y.	9.7	1937-1938	Jan. 25, 1938	387	39.9	21	5 p.m.	650	67.0	Do.
344	Shawangunk Kill at Pine Bush, N. Y.	102	1924-1932	Sept. 1, 1927	4,310	42.3	--	--	3,760	36.9	Do.
345	Wappinger Creek at Red Oak Bridge, N. Y.	182	--	--	--	--	--	--	16,000	87.9	Contracted opening.
346	Wappinger Creek near Wappinger Falls, N. Y.	182	1928-1938	Mar. 12, 1936	6,880	37.8	22	2 a.m.	15,900	87.4	Stage-discharge relation.
347	Wappinger Creek at dam, at Wappinger Falls, N. Y.	194	--	--	--	--	22	11:30 a.m.	15,700	80.9	Dam.

z Slight regulation by small reservoirs.
ab Affected by storage.
ac Records furnished by New York Power & Light Corporation.
ae Altitude in feet.
au Observed altitude in feet (Barge Canal datum).
av One-eighth of a mile upstream from present site.
aw Affected by storage and diversions.
ax Records of New York City Board of Water Supply, 1910-1928.

Table 10.--Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Hudson River Basin--Continued										
348	Croton River at New Croton Dam, near Croton, N. Y. aw/	377	--	--	--	--	22	11 a.m.	10,240	27.2	Stage-discharge relation.
349	Croton River below New Croton Dam, near Croton, N. Y. aw/	378	1933-1938	Mar. 19, 1936	4,570	12.1	--	--	--	--	Do.
350	Croton River at Quaker Bridge, near Croton, N. Y. aw/	379	1933-1938	Mar. 19, 1936	4,530	12.0	22	12 m.	8,410	22.2	Do.
351	Bird Brook near Croton, N. Y.	.36	1933-1938	Mar. 12, 1936	21	58.3	21	4:30 p.m.	27	75.0	Do.
	Hackensack River Basin										
352	Hackensack River at New Milford, N. J. aw/	113	1921-1938	Mar. 12, 13, 1936	2,800	24.8	21	6 p.m.	2,190	19.4	Do.
353	Pascack Brook at Westwood, N. J. ab/	29.6	1934-1938	Mar. 12, 1936	1,190	40.2	22	2 a.m.	1,120	37.8	Do.
	Passaic River Basin										
354	Passaic River near Millington, N. J.	55.4	1903-1906 1921-1938	Mar. 8, 1904	2,000	36.1	22	4 to 10 a.m.	1,040	18.8	Do.
355	Passaic River near Chatham, N. J.	100	1903-1911 1937-1938	Jan. 9, 1905	2,990	29.6	21	6 p.m.	1,910	19.1	Do.
356	Passaic River at Paterson, N. J. aw/	785	1898-1938	Oct. 10, 1903	e28,000	35.7	23	7 to 12 p.m.	9,350	11.9	Stage-discharge and power output-discharge relations.
357	Rockaway River above reservoir at Boonton, N. J.	116	1937-1938	July 24, 1938	2,120	18.3	22	9:15 to 10 a.m.	2,220	19.1	Stage-discharge relation.
358	Rockaway River below reservoir at Boonton, N. J. aw/	119	1903-1904 1906-1938	Oct. 10, 1903	e7,560	63.5	22	1 to 2 p.m.	1,870	15.7	Do.
359	Beaver Brook at outlet of Splitrock Pond, N. J. ab/	5.5	1925-1938	Mar. 12, 1936	126	22.9	22 to 23	11 a.m. 2 a.m.	75	13.6	Do.
360	Whippany River at Morristown, N. J.	29.4	1921-1938	Aug. 26, 1928 Mar. 12, 1936	1,500	51.0	22	4 a.m.	1,170	39.8	Do.
361	Ramapo River near Mahwah, N. J.	118	1903-1906 1922-1938	Oct. 9, 1903	12,400	105	22	--	5,500	46.6	Do.
362	Ramapo River at Pompton Lakes, N. J.	160	1921-1938	Mar. 12, 1936	12,300	76.9	22	6 to 7:30 a.m.	6,620	41.4	Do.

363	Wanaque River at Monks, N. J. ab/	40.4	1935-1938	Mar. 12, 1936	1,920	47.5	21	12 p.m.	1,260	31.2	Do.
364	Wanaque River at Wanaque, N. J. ab/	90.4	1903-1905 1912-1915 1919-1938	Apr. 7, 1924	e3,630	40.2	23	12:40 p.m.	912	10.1	Do.
365	Pequannock River at Macopin intake dam, N. J. ab/	63.7	1892-1938	Oct. 10, 1903	6,100	95.8	22	6 a.m.	1,300	20.4	Do.
366	Saddle River at Lodi, N. J.	54.6	1923-1938	Mar. 12, 1936	2,200	40.3	22	11 a.m.	2,150	39.4	Do.
	Elizabeth River Basin										
367	Elizabeth River at Irvington, N. J.	2.79	1930-1938	July 23, 1938	1,750	627	21	--	1,150	412	Do.
368	Elizabeth River at Elizabeth, N. J. ay/	18.0	1921-1938	July 23, 1938	2,720	151	21	5:15 p.m.	2,020	112	Do.
	Rahway River Basin										
369	Rahway River near Springfield, N. J. ay/	25.5	1938	July 23, 1938	1,940	76.1	21	7:30 p.m.	1,590	62.4	Do.
370	Rahway River at Rahway, N. J. ay/	40.9	1908-1915 1921-1938	July 24, 1938	3,140	76.8	22	6 to 7 a.m.	1,780	43.5	Do.
	Raritan River Basin										
371	South Branch of Raritan River near High Bridge, N. J.	65.3	1919-1938	Feb. 2, 1922	3,600	55.1	21	11 p.m.	2,650	40.6	Do.
372	South Branch of Raritan River at Clinton, N. J.	110	--	--	--	--	21	--	6,110	55.5	Dam.
373	South Branch of Raritan River at Stanton, N. J.	147	1903-1906 1919-1938	July 9, 1935	b8,280	56.3	21	7:30 p.m.	8,130	55.3	Stage-discharge relation.
374	Raritan River at Manville, N. J.	490	1903-1907 1921-1938	July 23, 1938	26,000	53.1	22	2 a.m.	36,100	73.7	Do.
375	Neshanic River at Reaville, N. J.	25.7	1930-1938	Aug. 23, 1933	4,370	170	21	4:30 p.m.	4,300	167	Do.
376	North Branch of Raritan River near Far Hills, N. J.	26.2	1922-1938	July 23, 1919	7,000	267	21	8 p.m.	2,700	103	Do.
377	North Branch of Raritan River at Milltown, N. J.	190	1923-1938	Jan. 3, 1936	14,400	75.8	21	8:40 p.m.	16,500	86.8	Do.
378	Black River near Pottersville, N. J.	32.8	1921-1938	Nov. 17, 1927	1,600	48.8	21	4:40 p.m.	760	23.2	Do.
379	Millstone River near Kingston, N. J. ab/	171	1933-1938	July 23, 1938	8,600	50.3	21	about 10 p.m.	9,820	57.4	Do.
380	Millstone River at Blackwells Mills, N. J.	258	1903-1904 1921-1938	July 23, 1938	12,400	48.1	21	12 p.m.	18,300	70.9	Do.

b Revised.
e Mean daily discharge.
ab Affected by storage.

aw Affected by storage and diversions.
ay Affected by diversions.

Table 10.—Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Raritan River Basin--Continued										
381	Green Brook at Plainfield, N. J.	9.75	1938	July 23, 1938	2,890	296	21	3:40 p.m.	1,740	178	Stage-discharge relation.
382	Lawrence Brook at Farrington Dam, N. J. ab/	34.4	1922-1926 1927-1938	July 6, 1928	1,900	55.2	21	8 p.m.	2,660	77.3	Do.
383	Deep Run near Browntown, N. J.	8.07	1932-1938	Sept. 9, 1934	917	114	21	6:15 p.m.	1,240	154	Do.
	Coastal Basins										
384	Swimming River near Red Bank, N. J.	48.5	1922-1938	Sept. 9, 1934	2,930	60.4	21	7:30 p.m.	az7,370	152	Do.
385	Manasquan River at Squankum, N. J.	43.4	1931-1938	June 28, 1938	1,550	35.7	21	--	2,940	67.7	Do.
386	Toms River near Toms River, N. J.	124	1928-1938	June 29, 1938	1,240	10.0	23	7 to 10 a.m.	1,540	12.4	Do.
387	Great Egg River at Folsom, N. J.	56.3	1925-1938	Sept. 8, 1935	599	10.6	23	6 a.m. to 1 p.m.	718	12.8	Do.
388	Manantico Creek near Millville, N. J.	22.3	1931-1938	Sept. 7, 1935	566	25.4	22	7 a.m.	413	18.5	Do.
	Delaware River Basin										
389	East Branch of Delaware River at Margaretville, N. Y.	163	1937-1938	May 15, 1937	6,000	36.8	21	8:15 p.m.	13,200	81.0	Do.
390	East Branch of Delaware River at Harvard, N. Y.	443	1934-1938	Mar. 18, 1936	26,200	59.1	22	6:10 a.m.	31,400	70.9	Do.
391	East Branch of Delaware River at Fishs Eddy, N. Y.	783	1912-1938	Aug. 24, 1933 Oct. 9, 1903	53,300 about 70,000	68.1 89.4	22	12:45 a.m.	41,000	52.4	Do.
392	East Branch of Delaware River at Hancock, N. Y.	838	1902-1912	Oct. 9, 1903	ba25.2	--	22	Morning	ba16.4	--	--
393	Delaware River at Port Jervis, N. Y.	3,076	1904-1938	Oct. 10, 11, 1903	about 155,000	50.4	22	12 m.	z101,000	32.8	Stage-discharge relation.
394	Delaware River at Belvidere, N. J.	4,542	1922-1938	Oct. 10, 1903	220,000	48.4	22	10 p.m.	z116,000	25.5	Do.
395	Delaware River at Riegelsville, N. J.	6,344	1906-1938	Oct. 10, 1903	275,000	43.3	23	1 a.m.	z123,000	19.4	Do.
396	Delaware River at Trenton, N. J.	6,796	1913-1938	Mar. 19, 1936	z227,000	33.4	23	6 to 7 a.m.	z125,000	18.4	Do.
397	Mill Brook at Arena, N. Y.	25.0	1937-1938	Oct. 23, 1937	1,550	62.0	21	About 7 p.m.	4,500	180.0	Do.

398	Tremper Kill near Shavertown, N. Y.	33.0	1937-1938	Oct. 23, 1937	1,800	54.5	21	6 p.m.	4,250	129	Do.
399	Terry Clove Kill near Pepacton, N. Y.	14.1	1937-1938	Jan. 25, 1938	850	60.3	21	8 p.m.	1,700	121	Do.
400	Beaver Kill at Craigie Clair, N. Y.	82	1937-1938	Aug. 11, 1938	9,530	116	21	8 p.m.	8,360	102	Do.
401	Beaver Kill at Cooks Falls, N. Y.	241	1913-1938	Aug. 24, 1933	19,000	78.8	21	9:15 p.m.	15,300	63.5	Do.
402	Willowemoc Creek near Livingston Manor, N. Y.	63	1937-1938	Aug. 11, 1938	6,200	98.4	21	6 p.m.	3,730	59.2	Do.
403	Little Beaver Kill near Livingston Manor, N. Y.	19.8	1924-1938	Aug. 26, 1928	2,500	126	21	5:30 p.m.	2,070	105	Do.
404	West Branch of Delaware River at Delhi, N. Y.	142	1937-1938	Jan. 25, 1938	4,290	30.2	21	11 p.m.	8,940	63.0	Do.
405	West Branch of Delaware River at Hale Eddy, N. Y.	593	1912-1938	Oct. 10, 1903	about 46,000	77.6	22	11:30 a.m.	25,600	43.2	Do.
406	Little Delaware River near Delhi, N. Y.	49.8	1937-1938	Jan. 25, 1938	2,180	43.8	21	8 p.m.	3,280	65.9	Do.
407	Cold Spring Brook at China, N. Y.	about 2.0	1934-1938	Oct. 30, 1935	119	59.5	21	5:15 p.m.	77	38.5	Do.
408	Neversink River at Halls Mills, near Curry, N. Y.	68	1937-1938	Oct. 23, 1937	13,000	191	21	7 p.m.	10,000	147	Do.
409	Neversink River at Woodbourne, N. Y.	113	1937-1938	July 22, 1938	12,300	109	21	10:15 p.m.	8,300	73.5	Do.
410	Neversink River at Oakland Valley, N. Y.	222	1928-1938	Aug. 24, 1933	20,000	90.1	22	2 a.m.	11,100	50.0	Do.
411	Neversink River at Godeffroy, N. Y. bb/	302	1937-1938	July 22, 1938	16,100	53.3	22	3 a.m.	13,400	44.4	Do.
412	Flat Brook near Flatbrookville, N. J.	65.1	1923-1938	Apr. 7, 1924 Feb. 11, 1925	3,470	53.3	22	3 a.m.	3,350	51.5	Do.
413	Paulins Kill at Blairstown, N. J.	126	1921-1938	Mar. 12, 1936	3,480	27.6	22	3 a.m.	4,480	35.6	Do.
414	Pequest River at Pequest, N. J.	108	1921-1938	Mar. 14, 1936	1,810	16.8	22	1 to 2 a.m.	948	8.78	Do.
415	Musconetcong River at outlet of Lake Hopatcong, N. J. ab/	25.6	1928-1938	Mar. 19, 1936	534	20.9	23	12 m.	275	10.7	Do.
416	Musconetcong River near Bloomsbury, N. J. ab/	143	1903-1907 1921-1938	Oct. 10 or 11, 1903	--	--	21	10 to 12 p.m.	1,890	13.2	Do.
417	Assunpink Creek at Trenton, N. J.	89.4	1923-1938	Apr. 7, 1924	2,400	26.8	22	3 a.m.	3,320	37.1	Do.
418	North Branch of Rancocas Creek at Pemberton, N. J. ab/	111	1921-1938	Oct. 20, 1927	e1,310	11.8	22	6 to 10 p.m.	1,680	15.1	Do.

e Mean daily discharge.
z Slight regulation by small reservoirs.

ab Affected by storage.
az Failure of dam.

ba Gage height in feet; 3.5 feet over crest of dam.
bb Gage heights and discharge measurements only are available for 1903, 1909-10, 1913-14.

Table 10.—Summary of flood discharges—Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Susquehanna River Basin										
419	Susquehanna River at Colliersville Dam, N. Y.	--	--	--	--	--	22	6 p.m.	bc33.5	--	--
420	Susquehanna River at Colliersville, N. Y.	351	1924-1938	Mar. 19, 1936	8,740	24.9	22	7:30 p.m.	bd6,300	17.9	Stage-discharge relation.
421	Susquehanna River at Oneonta, N. Y. af/	680	1907-1938	Mar. 27, 1913	bf19.9	--	22	5 a.m.	bf21.30	--	--
422	Susquehanna River at highway bridge, Otego, N. Y.	--	--	--	--	--	--	--	bg1,049.0	--	--
423	Susquehanna River at bridge, Wells Bridge, N. Y.	--	--	--	--	--	--	--	bg1,043.0	--	--
424	Susquehanna River at Unadilla, N. Y.	984	1938	--	--	--	22	3:30 p.m.	bh23,700	24.1	Stage-discharge relation.
425	Susquehanna River at highway bridge, Sidney, N. Y.	--	--	--	--	--	--	--	bg984.0	--	--
426	Susquehanna River 2.3 miles east of Delaware & Hudson R. R. bridge, Bainbridge, N. Y.	--	--	--	--	--	--	--	bg975.0	--	--
427	Susquehanna River at Bainbridge, N. Y. af/	1,618	1907-1908	Mar. 18, 1936	21.5	--	22	7 p.m.	16.5	--	--
428	Susquehanna River at highway bridge, at Afton, N. Y.	--	--	--	--	--	--	--	bg964.0	--	--
429	Susquehanna River below highway bridge, at Ninevah, N. Y.	--	--	--	--	--	--	--	bg957.5	--	--
430	Susquehanna River at highway bridge, at Windsor, N. Y.	--	--	--	--	--	--	--	bg914.5	--	--
bk/	Susquehanna River at highway bridge, at Susquehanna, Pa.	--	--	--	--	--	--	--	bg894.5	--	--
bk/	Susquehanna River at Great Bend, Pa.	--	--	--	--	--	--	--	bg870.0	--	--
431	Susquehanna River at Conklin, N. Y.	2,240	1912-1938	Mar. 18, 1936	61,600	27.5	23	5 p.m.	bm34,100	15.2	Stage-discharge relation.
432	Susquehanna River at Binghamton, N. Y. af/	2,293	1902-1938	Mar. 18, 1936 Mar. 17, 1865	bn22.85 bn23.5	--	23	--	bn12.9	--	--
433	Susquehanna River at Vestal, N. Y.	3,960	1937-1938	Apr. 8, 1937	47,500	12.0	23	7 p.m.	bp47,600	12.0	Stage-discharge relation.
434	Susquehanna River at highway bridge, at Owego, N. Y.	--	--	--	--	--	--	--	bg802.5	--	--
435	Susquehanna River near Waverly, N. Y.	4,780	1937-1938	Oct. 24, 1937	53,300	11.2	23	9 to 10 a.m.	bq54,900	11.5	Stage-discharge relation.

436	Oaks Creek at Index, N. Y. ab/	103	1929-1932 1937-1938	Apr. 12, 1932	1,060	10.3	22	3:30 a.m.	1,460	14.2	Do.
437	Cherry Valley Creek at Westville, N. Y.	81.3	1930-1931 1938	Apr. 11, 1931	1,780	21.9	22	9:55 a.m.	4,470	55.0	Do.
438	Charlotte Creek at Davenport Center, N. Y.	163	1938	Aug. 11, 1938	553	3.4	22	12:30 a.m.	14,000	85.9	Do.
439	Unadilla River near New Berlin, N. Y.	196	1924-1938	Mar. 18, 1936	6,320	32.2	23	4 a.m.	3,280	16.7	Stage-discharge relation.
440	Unadilla River at Rockdale, N. Y.	518	1929-1933 1937-1938	Oct. 7, 1932	10,400	20.1	22	6:50 p.m.	6,650	12.8	Do.
441	Sage Brook near South New Berlin, N. Y.	.69	1932-1938	July 8, 1935	201	291	21	7:40 p.m.	38	55.1	Do.
442	Butternut Creek at Morris, N. Y.	59.6	1938	--	--	--	22	12:30 a.m.	1,900	31.9	Do.
443	Chenango River at Sherburne, N. Y.	264	1907-1938	Mar. 28, 1914	bell.2	--	22	3 a.m.	br2,440	9.2	Do.
444	Chenango River near Greene, N. Y. af/	--	1936-1938	--	--	--	22	7 a.m.	bs9.00	--	--
445	Chenango River at Greene, N. Y.	598	1937-1938	Apr. 7, 1937	6,900	11.5	22	7 a.m.	bt5,590	9.3	Stage-discharge relation.
446	Chenango River near Chenango Forks, N. Y.	1,492	1912-1938	July 8, 1935	82,800	55.5	22	9 a.m.	17,500	11.7	Do.
447	Chenango River at Binghamton, N. Y. af/	1,553	1901-1911 1933-1938	Mar. 18, 1936	bu26.74	--	22	4 p.m.	bu16.75	--	--
448	Genegantslet Creek at Smithville Flats, N. Y.	83.1	1938	--	--	--	22	2 a.m.	2,430	29.2	Stage-discharge relation.
449	Tioughnioga River at Cortland, N. Y.	296	1938	--	--	--	23	9 a.m.	2,430	8.2	Do.
450	Tioughnioga River at Whitney Point, N. Y. af/	--	1937-1938	--	--	--	22	7 a.m.	bv13.3	--	--
451	Tioughnioga River at Itaska, N. Y.	735	1929-1938	July 8, 1935	44,700	60.8	22	10 a.m.	bw8,640	11.8	Stage-discharge relation.
452	Shackham Brook near Truxton, N. Y.	3.12	1932-1938	Mar. 12, 1936	153	49.0	21	9:45 p.m.	133	42.6	Do.

ab Affected by storage.
af Records furnished by U. S. Weather Bureau.
bc Gage height in feet; 3.5 feet over crest of dam.
bd Altitude 1,118.0 feet.
be Gage height in feet, U. S. Weather Bureau datum.
bf Gage height in feet; zero of gage at altitude 1,065.85 feet, U. S. Weather Bureau datum.
bg Altitude in feet, Corps of Engineers, U. S. Army, datum.
bh Altitude 1,009.8 feet, Corps of Engineers, U. S. Army.
bk Location not shown on plate 11.
bm Altitude 856.8 feet, Corps of Engineers, U. S. Army, datum.
bn Gage height in feet; zero of gage at altitude 821.5 feet, U. S. Weather Bureau datum.
bp Altitude 818.3 feet, Corps of Engineers, U. S. Army, datum.
bq Altitude 756.5 feet, Corps of Engineers, U. S. Army, datum.
br Gage height 8.39 feet, U. S. Weather Bureau datum.
bs Altitude 903.0 feet, U. S. Weather Bureau datum.
bt Altitude 903.5 feet, Corps of Engineers, U. S. Army, datum.
bu Gage height in feet; zero of gage at altitude 817.92 feet, U. S. Weather Bureau datum.
bv Altitude 947.8 feet, U. S. Weather Bureau datum.
bw Altitude 925.4 feet.

Table 10.—Summary of flood discharges--Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Susquehanna River Basin--Continued										
453	Dudley Creek at Lisle, N. Y.	30.0	1938	July 8, 1935	bx16,200	bx540	21	9 p.m.	1,730	57.7	Stage-discharge relation.
454	Otselic River at Cincinnatus, N. Y.	148	1938	--	--	--	22	2 a.m.	2,850	19.3	Do.
455	Otselic River near Upper Lisle, N. Y.	216	1937-1938	July 8, 1935	by15,400	by71.3	22	8 a.m.	3,750	17.4	Do.
456	Owego Creek near Owego, N. Y.	186	1930-1938	July 8, 1935	23,500	126	22	4:30 a.m.	3,910	21.0	Do.
457	Owego Creek below Lower Owego Power Plant, N. Y.	--	--	Mar. 19, 1936	ae811.5	--	23	8 to 10 a.m.	ae801.1	--	--
bk/	Chemung River at Chemung, N. Y.	2,530	1903-1938	Mar. 12, 1936	92,300	36.5	24	1 a.m.	7,170	2.8	Stage-discharge relation.
	Streams tributary to Lake Ontario										
458	Oswego River at Lock 7, Oswego, N. Y. ab/	5,121	1933-1938	Mar. 28, 1936	37,500	7.3	25	7:30 a.m.	9,780	1.9	Do.
bk/	Cayuga Inlet near Ithaca, N. Y.	36.7	1937-1938	Aug. 27, 1937	2,100	57.2	21	10:15 p.m.	302	8.2	Do.
459	Fall Creek near Ithaca, N. Y.	124	1925-1938	July 8, 1935	15,500	125	22	4 a.m.	3,040	24.5	Do.
bk/	Owasco Lake outlet near Auburn, N. Y. ab/	208	1912-1938	Mar. 19, 1936	2,090	10.0	25	10:20 a.m.	333	1.6	Do.
460	East Branch of Fish Creek at Taberg, N. Y.	189	1923-1938	Oct. 6, 1932	16,500	87.3	22	4:30 a.m.	4,700	24.9	Do.
461	Black River near Boonville, N. Y. ab/	295	1911-1938	Mar. 28, 1913	10,000	33.9	22.	10 p.m.	6,080	20.6	Do.
462	Black River at Watertown, N. Y. ab/	1,876	1920-1938	Apr. 9, 1928	33,900	18.1	25	10 a.m.	15,600	8.3	Do.
463	Moose River at Moose River, N. Y. ab/	370	1900-1922	Mar. 27, 1913	16,500	44.6	--	--	--	--	Do.
464	Moose River at McKeever, N. Y. ab/	365	1922-1938	June 22, 1922	11,000	30.1	22	11:30 a.m.	9,410	25.8	Do.
465	Middle Branch of Moose River at Old Forge, N. Y. ab/	52	1911-1938	Mar. 23, 1921	862	16.6	25 26	--	e340	6.5	Do.
466	Middle Branch of Moose River near McKeever, N. Y. ab/	148	1925-1938	Apr. 27, 1926	2,100	14.2	25	6 to 10 p.m.	1,010	6.8	Do.
467	Independence River at Sperryville, N. Y.	85	1927-1938	Oct. 6, 1932	4,700	55.3	22	9 p.m.	2,300	27.1	Do.
468	Stillwater Reservoir near Beaver River, N. Y.	172	1925-1938	May 4, 1929	bz79.46	--	Oct. 4	8 a.m.	bz72.82		--

469	Beaver River below Stillwater Dam, near Beaver River, N. Y. ab/	172	1908-1938	May 3, 1926	3,700	21.5	22-27	--	e13	.08	Stage-discharge relation.
470	Beaver River at Croghan, N. Y. ab/	294	1930-1938	Apr. 19, 1933	3,390	11.5	23	5:50 p.m.	1,560	5.3	Do.
471	Deer River at Copenhagen, N. Y. z/	89	1929-1938	Apr. 6, 1937	4,560	51.2	22	1:20 a.m.	3,330	37.4	Do.
	Streams tributary to St. Lawrence River										
472	East Branch of Oswegatchie River at Cranberry Lake, N. Y. ab/	144	1923-1938	Apr. 17-20, 1933	1,620	11.2	23-30	--	e102	0.7	Do.
473	East Branch of Oswegatchie River near Oswegatchie, N. Y. ab/	263	1924-1938	Apr. 6, 1928	4,010	15.2	23	12:40 a.m.	2,740	10.4	Do.
474	Oswegatchie River near Heuvelton, N. Y. ab/	973	1916-1938	Jan. 11, 1930	15,600	16.0	25	11 a.m. to 5 p.m.	3,650	3.8	Do.
475	West Branch of Oswegatchie River near Harrisville, N. Y.	258	1916-1938	Jan. 9, 1930	6,920	26.8	24	1 to 3:30 a.m.	2,390	9.3	Do.
476	Grass River at Pyrites, N. Y.	335	1924-1938	Nov. 18, 1927	8,300	24.8	23	12:30 to 2:30 p.m.	2,420	7.2	Do.
477	Raquette River at Piercefield, N. Y.	722	1908-1938	Apr. 17, 1922	7,580	10.5	27	10 to 12 a.m.	3,670	5.1	Do.
478	St. Regis River at Brasher Center, N. Y.	616	1910-1917 1919-1938	Apr. 6, 1937	16,800	27.3	22	10:30 to 11:30 p.m.	2,390	3.9	Do.
479	Salmon River at Chasm Falls, N. Y.	132	1925-1938	Apr. 25, 1926	2,890	21.9	22	3 to 6 p.m.	599	4.5	Do.
480	Chateaugay River near Chateaugay, N. Y.	112	1926-1938	Apr. 8, 1928	2,060	18.4	21	10:10 p.m.	330	2.9	Do.
481	Richelieu River (Lake Champlain) at Rouses Point, N. Y.	8,277	1871-1938	Mar. 30, 1903 April 1869	ca8.80 ca8.83	-- --	28	10 a.m.	ca4.00	--	--
482	Great Chazy River at Perry Mills, N. Y. z/	247	1928-1938	Apr. 7, 1937	6,000	24.3	22	1:15 p.m.	2,190	8.9	Stage-discharge relation.
483	Saranac River at Saranac, N. Y. ab/	521	1930-1938	Apr. 17, 1933	5,780	11.1	22	12:30 a.m.	3,170	6.1	Do.
484	Saranac River at Cadyville, N. Y. ab/ cb/	566	--	--	--	--	--	--	3,036	53.6	Dam.
485	Saranac River at Kents Falls, N. Y. ab/	567	--	Mar. 20, 1936	4,610	81.3	22	3 a.m.	3,178	56.0	Do.

e Mean daily discharge.
z Slight regulation by small reservoirs.
ab Affected by storage.
ae Altitude in feet.
bk Location not shown on plate 11.
bx Page 259, Water-Supply Paper 773-E.
by Page 259, Water-Supply Paper 773-E.
bz Gage height observed.
ca Observed gage height in feet; zero of gage is at altitude 92.50 feet.
cb Records furnished by System Properties.

92907 O—10——27

Table 10.—Summary of flood discharges—Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Streams tributary to St. Lawrence River--Continued										
486	Chubb River at Lake Placid, N. Y.	about 20	--	--	--	--	--	--	670	33.5	Dam.
487	West Branch of Ausable River near Newman, N. Y.	116	1916-1917 1919-1938	Oct. 6, 1932	6,200	53.4	22	3:45 a.m.	10,800	93.1	Stage-discharge relation.
488	West Branch of Ausable River at Wilmington Dam, N. Y.	140	--	--	--	--	22	4 to 6 a.m.	13,000	92.9	Dam.
489	West Branch of Ausable River at Rogers Mill, at Ausable Forks, N. Y.	236	--	--	--	--	22	8:30 a.m.	10,200	43.2	Do.
490	Ausable River at Ausable Forks, N. Y.	444	1910-1924	Mar. 27, 1913	ba10.2	--	22	2:45 a.m.	ba12.6	--	--
491	Ausable River near Ausable Forks, N. Y.	448	1924-1938	Oct. 1, 1924	21,200	47.3	22	3:30 a.m.	24,200	54.0	Stage-discharge relation.
492	Ausable River at Keeseville, N. Y.	477	--	--	--	--	22	6 a.m.	25,300	53.0	Dam.
493	Ausable River at Ausable Chasm, N. Y.	502	--	--	--	--	22	7 a.m.	25,800	51.4	Do.
494	Black Brook at Black Brook, N. Y. ab/	49.4	1924-1938	Apr. 6, 1937	1,050	21.3	22	1 p.m.	694	14.0	Stage-discharge relation.
495	East Branch of Ausable River at Keene, N. Y.	about 90	--	--	--	--	22	12 p.m. to 2 a.m.	12,000	133	Dam.
496	East Branch of Ausable River at Ausable Forks, N. Y.	198	1938	--	--	--	22	2:30 a.m.	20,100	101.5	Stage-discharge relation.
497	East Branch of Ausable River at Ausable Forks, N. Y.	198	1924-1938	Oct. 1, 1924	11,000	55.6	22	2:30 a.m.	20,100	101.5	cc/
498	Bouquet River at Willsboro, N. Y.	275	1923-1938	Oct. 1, 1924	11,800	42.9	22	12 m.	7,640	27.8	Stage-discharge relation.
499	Bouquet River at Willsboro, N. Y. (Upper dam)	276	--	1913	cd	--	--	--	7,640	27.7	Dam.
500	Bouquet River at Willsboro, N. Y. (Lower dam)	276	--	1913	cd	--	--	--	7,640	27.7	Do.
501	Lake George at Rogers Rock, N. Y.	about 220	1913-1938	Apr. 9, 1936	ce5.09	--	22	1:30 a.m.	ce4.37	--	--
502	Poultney River below Fair Haven, Vt.	187	1928-1938	Mar. 18, 1936	6,190	33.1	22	5 a.m.	10,300	55.1	Stage-discharge relation.
503	Castleton River at Vermont Structural Slate Co. dam, at Fair Haven, Vt.	97.8	--	March 1936	2,210	22.6	22	5 a.m.	2,050	21.0	Dam.

504	Otter Creek at Center Rutland, Vt.	307	1928-1938	Mar. 18, 19, 1936	8,580	27.9	22	1 a.m.	13,700	44.6	Stage-discharge relation.
505	Otter Creek at Middlebury, Vt.	628	1903-1907 1910-1920 1928-1938	Nov. 4, 1927	13,600	21.7	25	6 p.m.	6,630	10.6	Do.
506	Mill River at East Clarendon, Vt.	67.0	--	--	--	--	21	9 p.m.	18,800	281	Dam.
507	East Creek at Central Vermont Public Service Corporation dam, 2 miles above Rutland, Vt.	cf51.2	--	November 1927	4,750	182	21	--	5,300	203	Do.
508	Middlebury River above Ripton, Vt.	17.2	--	--	--	--	21	--	4,700	273	Slope area.
509	North Branch of Middlebury River near Ripton, Vt.	9.2	--	--	--	--	21	--	3,990	434	Do.
510	New Haven River above Lincoln, Vt.	21.3	--	--	--	--	21	--	7,400	347	Do.
511	New Haven River at New Haven Mills, Vt.	88.1	--	--	--	--	21	11 p.m.	16,000	182	Contracted opening.
512	Baldwin Brook near Bristol, Vt.	17.1	--	--	--	--	21	--	2,690	157	Slope area.
513	Lewis Creek above Starksboro, Vt.	8.1	--	--	--	--	21	--	4,440	548	Do.
514	Winooski River at Montpelier, Vt.	433	1909-1938	Nov. 3, 1927	57,000	132	22	1 a.m.	14,000	32.3	Stage-discharge relation.
515	Winooski River near Essex Junction, Vt.	1,079	1928-1938	Nov. 4, 1927	113,000	105	22	1 p.m.	34,300	31.8	Do.
516	Jail Branch at East Barre, Vt.	33.0	1920-1923 1934-1938	November 1927	11,500	348	21	--	d1,080	32.7	Do.
517	North Branch of Winooski River at Wrightsville, Vt.	69.2	1933-1938	Nov. 3, 1927	17,200	249	21	--	d2,340	--	Do.
518	Dog River near Northfield Falls, Vt.	76.1	1934-1938	Mar. 18, 1936	5,700	74.9	21	10 p.m.	9,750	128	Do.
519	Mad River near Moretown, Vt.	139	1928-1938	Nov. 3, 1927	23,000	165	22	12:30 a.m.	18,400	132	Do.
520	Waterbury River near Waterbury, Vt.	111	1935-1938	Mar. 18, 1936	6,520	58.7	21	--	d3,900	--	Do.
521	Huntington River above Hanksville, Vt.	14.0	--	--	--	--	21	--	4,860	347	Slope area.
522	Huntington River at Huntington, Vt.	45.3	--	--	--	--	21	--	10,600	234	Contracted opening.
523	Lamoille River at Johnson, Vt.	335	1910-1913 1928-1938	Mar. 18, 1936	13,000	38.8	22	1 a.m.	9,120	27.2	Stage-discharge relation.
524	Lamoille River at Fairfax Falls, Vt.	559	--	Nov. 4, 1927	66,900	120	22	12 m.	19,200	34.3	Dam.

d Mean daily discharge adjusted for storage.
ab Affected by storage.
ba Gage height in feet, from flood marks.
cc From stage-discharge relation at new site ¼ mile upstream.
cd Greater than September 1938.
ce Gage height in feet.
cf Net drainage area, 26.1 square miles.

Table 10.—Summary of flood discharges—Continued

No. on pl. 11	Stream and place of determination	Drainage area (sq. mi.)	Period of record	Maximum discharge previously known			Maximum discharge during floods of September 1938				
				Date	Second-feet	Sec.-ft. per sq. mi.	Day	Hour	Second-feet	Sec.-ft. per sq. mi.	Method of determination
	Streams tributary to St. Lawrence River--Continued										
525	Lamoille River at East Georgia, Vt.	711	1929-1938	Mar. 19, 1936	og23,200	32.1	22	10 a.m.	20,200	28.4	Stage-discharge relation.
526	Lamoille River at Public Electric Co. upper and lower dams, at Milton, Vt.	726	--	Mar. 19, 1936	23,300	32.1	22	2 p.m.	18,800	25.9	Dams (2).
527	Gihon River at Stearns dam, at Johnson, Vt.	64.4	--	March 1936	2,500	38.8	22	1 a.m.	2,260	35.1	Dam.
528	Missisquoi River near North Troy, Vt.	131	1931-1938	Oct. 7, 1932	5,140	39.2	22	10 a.m.	2,540	19.4	Stage-discharge relation.
529	Missisquoi River near Richford, Vt.	479	1909-1938	November 1927	45,000	93.9	21	12 p.m.	12,200	25.5	Do.
530	Missisquoi River at Missisquoi Co. dam, at Sheldon Springs, Vt.	812	--	November 1927	62,900	77.5	22	--	21,400	26.4	Dam.
531	Missisquoi River at Swanton dam, at Hygate Falls, Vt.	826	--	March 1936	23,800	28.8	22	11 a.m.	21,200	25.7	Do.
532	Tomifobia River at Butterfield Co. dam, at Rock Island, Quebec	58.0	--	November 1927	8,700	150	--	--	2,530	43.6	Do.

og At former site near Milton, Vt., drainage area 723 square miles.

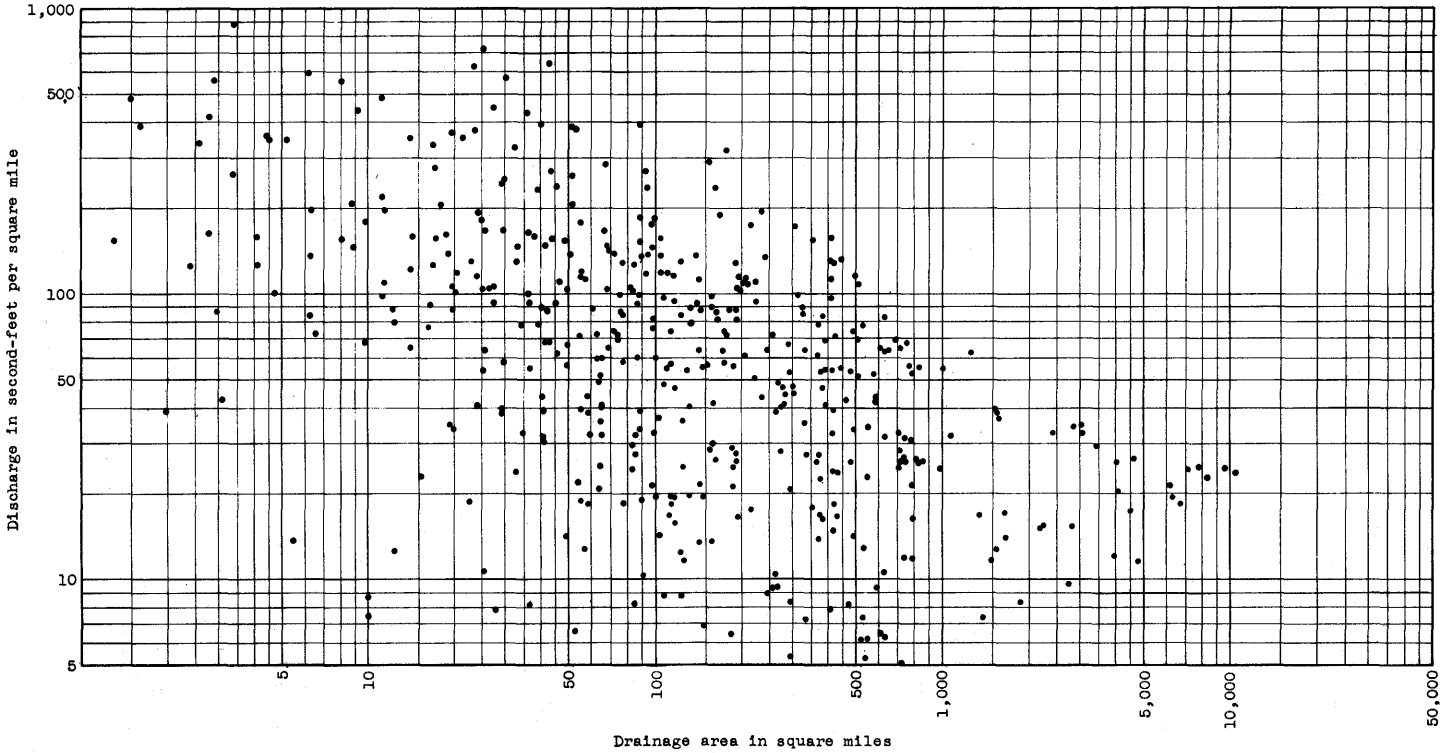


Figure 41.--Chart showing flood discharges, in second-feet per square mile, for numerous drainage areas as given in table 10.

STORAGE

Scope and Utility

Basic information on storage and discussion of the effect of storage on flood run-off are presented in the section "Stages and discharges at stream-gaging stations during the flood period." Treatment of the subject in this section is limited to a brief discussion of some of the outstanding examples of storage regulation and to an outline of available storage facilities in some of the river basins.

The development of storage reservoirs has been general throughout the region covered by this report, first in connection with the use of water for industrial purposes, later in connection with municipal water supply and with hydroelectric power systems, and more recently in some basins primarily for flood control. These storage reservoirs, both natural and artificial, contributed measurably to the lowering of flood peaks in September 1938 below what they would otherwise have been.

Records of storage operations are included in this report insofar as they are available. Reference is made to the notes on upstream storage under the "remarks" paragraph accompanying each station record. Special efforts have been made to incorporate all records of storage for all of the larger reservoirs. There was, of course, storage in many small reservoirs, lakes, and ponds of which no records are available. These reservoirs probably did not have any appreciable influence individually on flood behavior although collectively they may have had a measurable effect. In basins where such reservoirs are situated, a statement is given in the station descriptions that the flood run-off is not materially affected by storage or that it is affected by unregulated storage in several lakes and ponds. Many lakes and ponds in New England have been controlled in the past for storage for small mill operation or for recreational purposes by building dams across the outlet streams. Some of the dams have no control works and others have gates of various kinds, sometimes used and sometimes not used. Under these circumstances it is a question whether the storage may be termed artificial, semiartificial, or natural. Many of the dams are so old that any "artificial" effect is now accepted as "natural" by the riparian owners downstream. However, the effect is not natural in the strictest sense of the term as the lakes and ponds are capable of withholding more water than in their natural state of perhaps a century or more ago. The fact that there is sometimes considerable storage in such lakes and

ponds is demonstrated by the discharge record of Hop River at Columbia, Conn., by which it may be shown that there is a decided "hump" on the recession side of the flood hydrograph caused by the breaking of the dam at Holton Lake (Willimantic Reservoir on topographic maps of the Geological Survey).

During great floods these ponds and lakes rapidly fill up and generally are discharging freely at the highest stages. It seems probable that this storage is not greatly in excess of the storage that would have accumulated in the natural state of the pond or lake when there were no dams at the outlets. Except during the early stages of a flood it is generally considered that these ponds and lakes have very little "artificial" effect.

Merrimack River Basin

Records of storage in lakes in the Merrimack River Basin are available only for Lake Winnipesaukee, although appreciable storage exists in several other lakes, notably Newfound, Squam, and Winnisquam Lakes. Although the rainfall was considerably less over the Lake Winnipesaukee Basin than over the basins farther west, the records may be cited as an index to the effect of storage in reducing peak flows at points downstream.

Control works built about 1845 in the outlet of Lake Winnipesaukee at Lakeport, N. H., permit the use of about 7,000,000,000 cubic feet of the storage by lowering the water surface of the lake 44 inches below the full regulation level.

During the flood of September 1938 storage of water in Lake Winnipesaukee began on September 17 and continued through September 23. During this period 1,257,000,000 cubic feet of water was stored, which is equivalent to 1.49 inches over the entire basin of 363 square miles above Lakeport, N. H. During the peak days September 21 and 22 water was stored in the lake at an average rate of 5,700 second-feet. Records indicate that had this water been released naturally it would have reached the Pemigewasset River synchronously with the maximum flow of that stream to produce greater mean daily flows at points downstream. During the 14-day interval September 17-30, the average rate of storage in Lake Winnipesaukee was equivalent to 860 second-feet or 6.7 percent of the mean discharge of the Merrimack River at Franklin Junction, N. H., or 2.3 percent of the discharge at Lowell, Mass., during the same period.

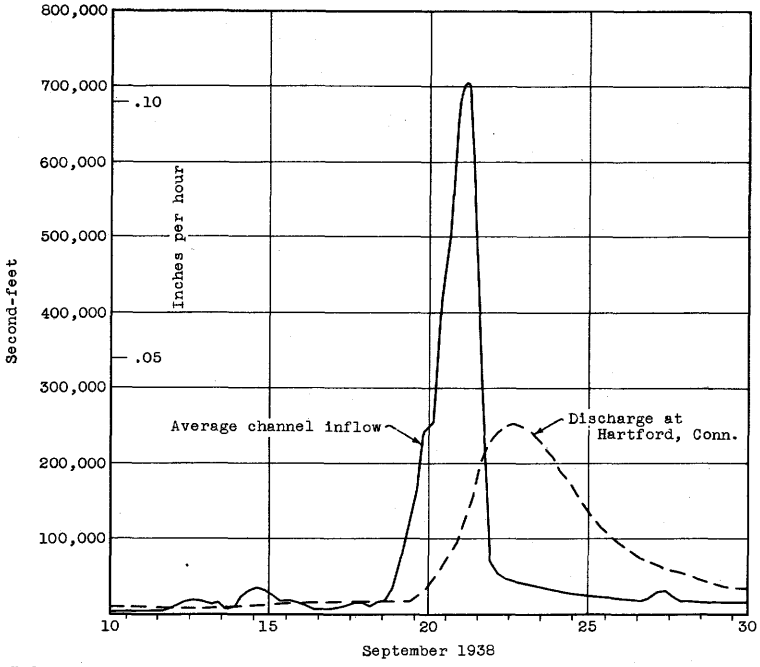
Connecticut River Basin

Soon after the beginning of the storm, the rivers began to rise, and as the rivers were deepening and widening in response to the increased demands upon their capacity, the volume of water in the channels of the streams and over adjacent flood plains was also increasing. With respect to downstream points such volume was effective in reducing peak rates of flow, because at the downstream points the average rate of flow during any interval is less than it might otherwise have been by the average rate of increase in the total upstream storage during the same interval, whether the storage is in the natural channels of flow, over their associated flood plains, or otherwise.

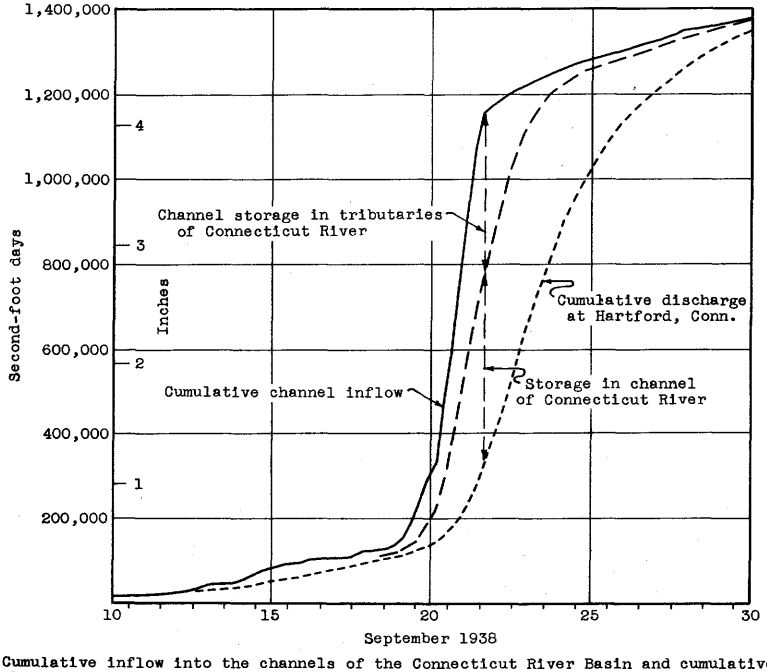
Study has been made of volume of storage in the Connecticut River Basin during the floods of September 1938 with the object of demonstrating its influence on flood behavior. Three evaluations of the volumes of storage during the flood were made; first, the amount of channel and artificial storage in the entire basin above Hartford, Conn., at 6-hour intervals, second, the storage in the main channel of the Connecticut River at the end of each calendar day, and third, the storage in the principal artificial reservoirs.

The total storage in the Connecticut River Basin has been determined by the comparison of the measured discharge at Hartford, with a derived graph of average inflow into the upstream channel system. These graphs are shown in the upper part of figure 42. The hydrograph of channel inflow has been derived by the following method.

It was considered that the hydrographs of discharge of the small flashy unregulated streams are nearly representative of channel inflow conditions, and if the hydrographs of these streams are adjusted, even approximately, for the relatively small volume of storage in their channels, a still closer approach to the regimen of inflow may be obtained. Accordingly, the following six unregulated streams in the Connecticut River Basin were selected as representative of the distribution of the inflow into the channel system: White River near Bethel, Vt., Ottauquechee River at North Hartland, Vt., Otter Brook near Keene, N. H., Black River at North Springfield, Vt., Priest Brook at Winchendon, Mass., and Burlington Brook near Burlington, Conn. The discharge hydrographs of these streams were adjusted for channel storage through the application to the observed hydrograph of discharge-storage curves derived according



Hydrograph of average inflow into the channels of the Connecticut River Basin, and hydrograph of discharge at Hartford, Conn.



Cumulative inflow into the channels of the Connecticut River Basin and cumulative discharge at Hartford, Conn.; volume of storage in the entire channel system and storage in main channel of the Connecticut River.

Figure 42.--Channel storage in the Connecticut River Basin.

to methods described by Horton[7]. The hydrographs were then converted to flow in terms of second-feet per square mile and the six results were averaged, so as to give equal weight to each as a sample of inflow conditions in its region irrespective of the size of its drainage area. The ordinates of the average hydrograph so computed were multiplied by a factor so that the enclosed volume was equivalent to the total volume of flood run-off of the Connecticut River at Hartford, Conn. The resulting hydrograph is shown on figure 42 together with the discharge hydrograph of the Connecticut River at Hartford. The peak inflow shown on the graph is about 700,000 second-feet, about 2.75 times as great as the peak outflow at Hartford. This reduction shows the effect of storage, the greater part of which is in the channel system. The peak rate of inflow thus determined is, of course, not the total of all the maximum instaneous inflow rates into the channel which may have occurred at somewhat different times and whose average would be much greater, but rather the maximum simultaneous inflow to the channel system.

The lower part of figure 42 presents the cumulative inflow into the upstream channels based on the hydrograph in the upper part of the figure and a graph of cumulative outflow at Hartford. The difference between the two graphs at any given time represents the volume of storage. The maximum storage occurred at about 6 a.m. on September 22 when there was about 71,000,000,000 cubic feet of storage, equivalent to an average depth of 2.90 inches over the basin, or about 72 percent of the total direct run-off associated with the storm of September 17-21.

Figure 42 also shows the storage in the main channel of the Connecticut River in relation to the storage in the entire basin. The storage in the main river channel was computed by the use of diagrams derived by study of measured inflow to and the outflow from reaches of the river between the river-measurement stations, with allowance for unmeasured inflow.

The storage at 12 p.m. on September 22 was about 45,000,000,000 cubic feet, equivalent to 1.85 inches over the basin above Hartford and about 45 percent of the total direct run-off associated with the storm of September 17-21, and 64 percent of the maximum total storage in the entire basin. The Corps of Engineers, United States Army, reported that during the flood of March 1936 there was a total volume of about 74,000,000,000 cubic feet of storage in the valley of the Connecticut River, which was

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7/ Horton, R. E., Natural stream channel storage: Am. Geophys. Union Trans., pt. 2, July 1936, pp. 406-15.

more than 40 percent of the total flood run-off. Obviously any studies of flood behavior and the effect of potential reservoir storage must be based on thorough knowledge of the action of channel storage.

There are 12 reservoirs and pondage in the Connecticut River Basin with a combined capacity of 19,260,000,000 cubic feet for which records of contents during the floods are available and are included in this report. Although storage in these reservoirs is maintained by various agencies primarily to provide for the economical use of the stream flow for power or water supply, they also afford flood control to the extent that the flood waters are retarded in their passage downstream. Thus the storage in two reservoirs and one pondage above White River Junction, Vt., at 12 p.m., September 21, when river stages were near their peak, was 260,000,000 cubic feet in excess of the storage at 12 p.m., September 16. At 12 p.m., September 22, four reservoirs between White River Junction and Montague City contained 2,600,000,000 cubic feet of water and at the same time the five reservoirs between Montague City and Hartford contained 1,300,000,000 cubic feet in excess of their storage on September 16. The total detention in artificial reservoirs in the basin between 12 p.m. September 16, and 12 p.m. September 22, was 4,150,000,000 cubic feet which, although equivalent to only 0.17 inch over the basin, contributed measurably to the reduction of flood heights during the critical period. The total detention of such reservoirs between September 16 and 30 was 30,500,000,000 cubic feet, equivalent to 2,500 second-feet, or 2.7 percent of the average discharge of the Connecticut River at Hartford during the same 14-day period.

Hudson River Basin

Table 11 shows the reservoirs in the Hudson River Basin in New York for which records of operation are included in this report.

The greatest regulation of the flood water in the Hudson River Basin was provided by the Sacandaga Reservoir above Conklingville, N. Y., which affected the Sacandaga River and the upper Hudson River below the mouth of the Sacandaga River, and the Schoharie Reservoir, which affected Schoharie Creek and the lower Mohawk River. During September 21 and 22, the 2 days of maximum flow, the Sacandaga Reservoir stored 1,560,000,000 and 1,710,000,000 cubic feet, respectively. On the same days the Schoharie Reservoir stored 1,540,000,000 and 640,000,000 cubic feet, respectively. Between September 18 and 29 the average flow of the river below these

reservoirs was reduced by 4,200 second-feet and 2,900 second-feet respectively. The total average reduction effected by the Sacandaga and Schoharie Reservoirs between September 18 and 29 was 5,000 second-feet, equivalent to 23 percent of the mean flow at Mechanicville. The reduction effected by the four reservoirs in the Mohawk River Basin averaged 4,600 second-feet for the same period, which was 22 percent of the mean flow at Cohoes, N. Y.

Table 11.--Summary of storage, in millions of cubic feet, in reservoirs in the Hudson River Basin

Reservoir	Capacity	Storage in excess of that at 12 p.m. Sept. 16	
		12 p.m. Sept. 21	12 p.m. Sept. 30
Upper Hudson River Basin:			
Indian Lake Reservoir near Indian Lake, N. Y.	4,700	327	851
Sacandaga Reservoir at Conklingville, N. Y.	33,120	1,720	4,100
Mohawk River Basin:			
Delta Reservoir at Delta Dam near Rome, N. Y.	2,800	165	500
Hinckley Reservoir at Hinckley, N. Y.	3,320	628	1,470
Schoharie Reservoir at Gilboa Dam, at Gilboa, N. Y.	2,618	536	720
Lower Hudson River Basin:			
Ashokan Reservoir near Kingston, N. Y.	17,459	800	1,210
New Croton Reservoir at New Croton Dam, near Croton, N. Y.	3,758	452	431
TOTAL	67,775	4,628	9,282

These findings indicate that these reservoirs produced significant lowering of the flood heights and consequent savings in damage to property. They point to a valuable incidental service rendered by these reservoirs, all of which serve other primary functions.

Eastern New Jersey basins

The Passaic River Basin contains appreciable volumes of channel storage over the low-lying lands between the Watchung Ridges of central New Jersey. No computation has been made of the amount of such natural storage. Artificial storage of 6,814,000,000 cubic feet has been developed in this basin in the reservoirs listed in table 12 essentially for municipal water supply. Records of operations at these reservoirs are included in this report.

The total storage in these reservoirs between September 16 and 30 was 568,000,000 cubic feet, the equivalent of a mean reduction in flow of 470 second-feet or about 11 percent of the mean discharge at Paterson, N. J., during the 14-day period.

Table 12.--Summary of storage, in millions of cubic feet, in reservoirs in the Passaic River Basin

Reservoir	Capacity	Storage in excess of that at 12 p.m. Sept. 16	
		12 p.m. Sept. 21	12 p.m. Sept. 30
Boonton Reservoir at Boonton, N. J.	870	118	97
Greenwood Lake at The Glens, N. J.	919	136	32
Wanaque Reservoir at Wanaque, N. J.	3,476	232	331
Oak Ridge Reservoir at Oak Ridge, N. J.	532	27	14
Canistear Reservoir near Stockholm, N. J.	322	5	2
Clinton Reservoir near Newfoundland, N. J.	470	32	51
Echo Lake Reservoir near Charlotteburg, N. J.	225	16	41
TOTAL	6,814	566	568

The only storage reservoir in the Raritan River Basin was Lake Carnegie at Princeton, N. J., which effected only slight regulation of the lower Millstone River. At peak stage Kingston Dam, which impounds the water in Lake Carnegie, was substantially drowned out, and the lake levels rose and fell with those of the river downstream.

Oradell Reservoir at Oradell, N. J., and Woodcliff Lake at Hillsdale, N. J., in the Hackensack River Basin are both operated for municipal water supply needs. The effect of storage in these reservoirs on flood heights downstream was not appreciable.

St. Lawrence River Basin

In the Winooski River Basin are three flood-control reservoirs constructed in 1935-1938 by the Corps of Engineers, United States Army. The operation of these reservoirs under flood conditions in March 1936 is described by Curran[8]. Based on reservoir records included in this report, it has been computed that during the floods of September 1938 the three

8/ Curran, C. D., Spring floods test Winooski flood-control system: Eng. News-Record, pp. 510-513, Oct. 8, 1936.

reservoirs reduced the daily rates of flow as indicated in table 13. The manner in which these reservoirs operated during the flood can be illustrated by constructing hydrographs of observed and computed natural flow for each reservoir from data given in the section "Stages and discharges at stream-gaging stations during the flood period."

Table 13.--Summary of storage data for reservoirs in Winooski River Basin

Reservoir	Capacity (millions of cubic feet)	Maximum contents during flood		Maximum daily	
		Millions of cubic feet	inches over basin	Computed inflow (second-feet)	Observed outflow (second-feet)
East Barre Detention	523	101	1.35	1,080	382
Wrightsville Detention	893	267	1.73	2,340	725
Waterbury	2,807	491	1.94	3,901	694

RAINFALL AND RUN-OFF STUDIES

Methods of analysis

To a very considerable extent the satisfactory solution of the flood problems in any drainage basin depends on an understanding of the relations between rainfall and run-off in that basin. With the objective of advancing such understanding the significant features of rainfall and run-off during the floods of September 1938 are presented and analyzed in this report. The plan of study was first, to determine the mean areal precipitation over the respective areas tributary to the river-measurement stations within the flood area; second, to determine the flood run-off directly attributable to such precipitation; and finally, to compare the precipitation with its associated direct run-off.

As explained in the section on meteorologic and hydrologic conditions, the total storm period comprised two distinct storm or rainfall periods. The first or antecedent period included the rains between September 12 and 16, and the second--the major storm period--included the heavy rains of September 17-21. Rainfall subsequent to September 21 has not been considered except to the small extent indicated later in this section. The first step was the preparation of isohyetal maps based on all available records as listed in tables 4 and 5 (pp. 46-61). The amounts of precipitation measured at the respective gages during the first or antecedent period have been plotted in their proper locations on 1:1,000,000 scale base maps of the Geological Survey and lines of equal precipitation drawn to conform as closely as practicable to the plotted points. The map thus prepared has been reduced for publication in figure 2 on page 9.

The total precipitation measured and reported during the period September 17-21 was similarly treated. The total amounts listed in tables 4 Page 46 and 5 were appropriately plotted on 1:500,000 scale maps and lines of equal precipitation drawn so as to conform with the plotted points, giving some attention to storm characteristics and influence of altitude as developed by the records. The map has been reduced to 1:1,000,000 scale for purposes of detailed study and appears as plate 1, in pocket. Precipitation is also shown on a smaller scale in figure 3 page 10 for ready comparison with that for other periods shown in associated figures on the same scale.

The areas between isohyetal lines on the original base map were measured by planimeter for all the drainage basins above each river-measurement station for which flood records were available. The results of the determinations of mean precipitation are shown in table 14 Page 424 for each basin during the two selected periods.

The direct run-off associated with each storm period as given in table 14 page 424 was computed by the following procedure, which was based on records of discharge at the gaging stations as published in this report.

Figure 43 page 422 is a discharge hydrograph of Black River at North Springfield, Vt., that illustrates the typical stream behavior in this region prior to and during the floods. On September 11, most streams were at low stage as at A on this figure. As a result of the rains of September 12-16 river levels generally rose moderately to two minor peaks B associated with rains of September 13 and 15 respectively. On September 16 when there was no rain and during the light rains of September 17 and 18 the streams receded as shown in figure 43 to point C. During the heavy rains of late September 18 or early September 19, the streams rose steadily and culminated in peak D, which on the tributary streams occurred during the afternoon or evening of September 21. On some of the smaller streams in Connecticut and Massachusetts the peaks occurred during the morning of September 21. On the larger streams the peak occurred later in accordance with the characteristics of concentration.

After the abrupt cessation of rainfall later on September 21, the streams receded along the recession curve DEF, with a small rise on September 27 associated with some light rains on that day, which are not analyzed in this study.

As shown in figure 4 (p. 11), light rain fell in central New York September 22-24 after the cessation of the main storm and while the streams in that area were receding. Inasmuch as the direct run-off from these

rains was not readily separable from that associated with the main storm period, the rainfall of September 22-24 in these areas, mainly in the Mohawk River Basin, was added to that of the main period.

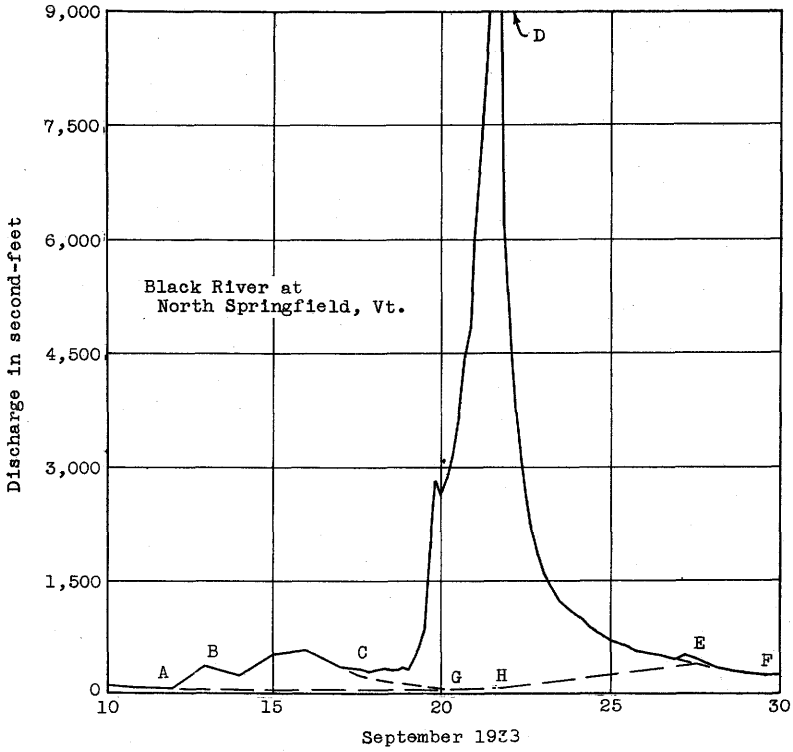

Figure 43.--Method of analyses used in determining the direct run-off associated with the rains of September 12-16 and 17-21, 1938.

The total area under the hydrograph represents the run-off that reached the stream channels both as surface and as ground water run-off resulting from the storm precipitation, plus the run-off that would have been maintained if there had been no increment of supply after September 11. The increase in stream flow directly attributable to the rains between September 12 and 21 has been estimated by making an approximation of the position of the line AGHE on the graph, the area below which representing ground water flow, and assuming that the area above that line represents the increment in stream flow resulting from the direct run-off associated with the precipitation that occurred after September 11. The area above line AGHE is believed to include essentially all the surface run-off resulting from the storm precipitation and may include some ground water that was discharged into stream channels with a promptness

approaching that of the surface run-off. This increment has been further analyzed to show, within reasonable limits, the run-off directly attributable to the precipitation during each storm period. This analysis has involved an estimation of the short recession curve CG. It follows that the area ABCG represents the direct run-off resulting from the rains of the antecedent period September 12-16, and the area CDEHG represents the direct run-off resulting from the major storm period September 17-21.

For the computation of direct run-off all discharge records have been adjusted for the effects of artificial storage of those reservoirs or lakes for which records of storage operation are included in this report. Some storage exists for which no records are available, and therefore the data given in table 14 may be in error to the extent of such unadjusted storage. The adjustments have been made on a daily basis. For those river-measurement stations that are situated immediately below storage reservoirs the daily discharge has been adjusted for the contemporaneous change in storage; that is, the midnight to midnight gain or loss in storage has been applied algebraically to the measured mean discharge during the intervening calendar day. Where appreciable distance intervened between the place of storage and the river-measurement station, the daily changes in artificial storage were apportioned to the downstream gaging station over a period and in daily amounts estimated to conform to the natural regimen of the stream.

An important characteristic of flood run-off is the degree to which it is concentrated with respect to time. The concentration may be conveniently evaluated in the form of a ratio between discharge during a selected short interval of time and the discharge during the flood period. The last column of table 14 page 424 lists the ratio between the run-off during the maximum 24 hours and the total run-off associated with the rains of September 17-24. The factors that are believed to be of greatest influence upon these concentration ratios are as follows: duration and intensity of storm, direction of storm movement, channel characteristics, and shape and slope of drainage basin. As the characteristics of the September 17-21 storm were fairly uniform over the entire area variations in the concentration ratio between different basins may be largely ascribed to the inherent basin characteristics. Reference to these concentration ratios is made in the discussions of rainfall and run-off relations in the several major basins.

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See preceding page.

Table 14.--Precipitation and associated run-off of floods of September 1938

No. on pl. 11	Stream and point of measurement	Drainage area (sq. mi.)	September 12 to 16			September 17 to 21			Concentration ratio (percent)
			Precipitation	Run-off	Difference	Precipitation	Run-off	Difference	
	Merrimack River Basin								
6	East Branch of Pemigewasset River near Lincoln, N. H.	104	1.9	a	--	7.6	a	--	--
8	Pemigewasset River at Plymouth, N. H.	622	2.5	0.4	2.1	7.65	5.4	2.25	47
9	Pemigewasset River at Bristol, N. H.	746	2.4	.4	2.0	7.7	5.0	2.7	44
10	Pemigewasset River at Eastman Falls, at Franklin, N. H.	1,000	2.4			7.85			
11	Merrimack River at Franklin Junction, N. H.	1,507	2.2	.3	1.9	7.35	4.25	3.1	--
12	Merrimack River at Garvins Falls, N. H.	2,427	2.3	.25	2.05	8.4	4.25	4.15	27
13	Merrimack River at Amoskeag Dam, Manchester, N. H.	2,854	2.3			7.95			
14	Merrimack River near Goffs Falls, below Manchester, N. H.	3,092	2.3	.25	2.05	8.05	4.45	3.60	26
15	Merrimack River below Concord River, at Lowell, Mass.	b4,424	2.1	.2	1.9	7.95	3.7	4.25	25
16	Bakers River near Rumney, N. H.	143	2.7	.4	2.3	7.2	5.1	2.1	58
18	Smith River near Bristol, N. H.	85.8	2.5	.25	2.25	7.8	5.0	2.8	40
19	Winnipesaukee River at Tilton, N. H.	471	1.9	.2	1.7	6.1	2.25	3.85	--
25	Contoocook River at Penacook, N. H.	766	2.5	.15	2.35	10.4	7.0	3.4	28
27	North Branch of Contoocook River near Antrim, N. H.	54.8	2.2	.05	2.15	9.4	7.35	2.05	31
30	Blackwater River near Webster, N. H.	129	2.5	.2	2.3	8.9	5.0	4.9	36
31	Suncook River at North Chichester, N. H.	157	2.5	.1	2.4	5.15	1.6	3.55	29
33	Clark Brook at Auburn, N. H.	27.7	1.9	.15	1.75	5.7	1.75	3.95	15
35	Souhegan River at Merrimack, N. H.	171	1.4	.05	1.35	10.0	4.0	6.0	48
37	North Nashua River near Leominster, Mass.	107	2.0	.1	1.9	10.4	4.5	5.9	50
38	Nashua River at East Pepperell, Mass.	b315	1.9	.15	1.75	8.5	3.1	4.4	--
39	South Branch of Nashua River at Clinton, Mass.	b108	2.0	.25	1.75	8.95	4.85	4.1	--
41	Concord River below Meadow Brook, at Lowell, Mass.	b312	1.5	.15	1.35	7.6	2.7	4.9	--
	Thames River Basin								
55	Willimantic River near South Coventry, Conn.	121	1.5	.15	1.35	14.5	8.7	5.8	47
57	Shetucket River near Willimantic, Conn.	401	1.5	.05	1.45	14.0	7.7	6.3	48
65	Hop River near Columbia, Conn.	76.2	1.6	.05	1.55	15.4	7.25	8.15	34
67	Natchaug River at Willimantic, Conn.	169	1.6	.1	1.5	13.25	8.25	5.0	51
72	Quinebaug River at Quinebaug, Conn.	157	1.3	.1	1.2	13.25	7.2	6.05	37
74	Quinebaug River at Putman, Conn.	331	1.4	.1	1.3	11.7	5.4	6.3	34
77	Quinebaug River at Jewett City, Conn.	711	1.2	.05	1.15	8.9	4.3	4.6	25
84	Five Mile River at Killingly, Conn.	58.2	1.4	.1	1.3	7.35	2.4	4.95	23
86	Moosup River at Moosup, Conn.	83.5	1.1	.1	1.0	4.55	1.15	3.40	21
89	Yantic River at Yantic, Conn.	88.6	.9	.1	.8	10.7	7.9	2.8	46

	Connecticut River Basin								
91	Connecticut River at First Connecticut Lake, near Pittsburg, N. H.	83.0	2.2	.7	1.5	2.8	2.15	.65	--
92	Connecticut River at North Stratford, N. H.	796	1.8	.45	1.35	3.1	1.75	1.35	--
93	Connecticut River near Dalton, N. H.	1,538	2.0	.45	1.55	3.8	2.05	1.75	22
94	Connecticut River at outlet of Fifteenmile Falls Reservoir, near Barnet, Vt.	1,650	2.0	.35	1.65	3.85	1.95	1.9	22
95	Connecticut River at McIndoes Falls, Vt.	2,200	2.0	.4	1.6	3.85	1.95	1.9	24
96	Connecticut River at South Newbury, Vt.	2,825	2.0	.35	1.65	4.2	2.2	2.0	24
97	Connecticut River at White River Junction, Vt.	4,068	2.3	.35	1.95	4.6	2.35	2.25	26
98	Connecticut River at Vernon, Vt.	6,240	2.3	.3	2.0	5.5	3.1	2.4	25
99	Connecticut River at Turners Falls, Mass.	7,138	2.3	.3	2.0	6.1	3.5	2.6	25
100	Connecticut River at Montague City, Mass.	7,840	2.2	.3	1.9	6.4	3.7	2.7	25
101	Connecticut River at Holyoke, Mass.	8,284	2.2	.3	1.9	6.65	3.7	2.95	23
102	Connecticut River at Springfield, Mass.	9,587	2.2	.25	1.95	7.3	4.05	3.25	22
103	Connecticut River at Thompsonville, Conn.	9,637	2.2	.25	1.95	7.3	4.05	3.25	22
104	Connecticut River at Hartford, Conn.	10,480	2.1	.25	1.85	7.55	4.05	3.5	--
108	Passumpsic River at Passumpsic, Vt.	423	2.2	.35	1.85	3.75	1.65	2.10	34
109	Moose River at St. Johnsbury, Vt.	126	2.7	.45	2.25	4.35	1.4	2.95	22
111	Ammonoosuc River near Bath, N. H.	393	2.0	.2	1.8	5.9	3.5	2.4	58
114	White River near Bethel, Vt.	241	2.9	.65	2.25	6.05	3.85	2.20	56
116	White River at West Hartford, Vt.	690	2.8	.4	2.4	5.5	3.1	2.4	48
123	Mascoma River at Mascoma, N. H.	153	2.8	.5	2.3	6.7	3.9	2.8	--
128	Ottauquechee River at North Hartland, Vt.	221	2.6	.25	2.35	6.5	3.75	2.75	48
129	Sugar River at West Claremont, N. H.	269	2.7	.3	2.4	7.45	4.9	2.55	--
131	Black River at North Springfield, Vt.	158	2.8	.4	2.4	7.35	4.35	3.0	47
139	West River at Newfane, Vt.	308	2.3	.2	2.1	8.4	5.05	3.35	53
144	Ashuelot River near Gilsum, N. H.	71.1	2.3	.25	2.05	7.95	5.95	2.0	41
145	Ashuelot River at Hinsdale, N. H.	420	2.1	.15	1.95	8.5	5.35	3.15	25
146	Otter Brook near Keene, N. H.	41.8	2.3	.25	2.05	8.5	7.85	.65	48
147	South Branch of Ashuelot River at Webb, near Marlboro, N. H.	36.6	2.3	.2	2.1	9.5	6.25	3.25	50
148	Millers River near Winchendon, Mass.	83.8	2.0	.25	1.75	13.4	8.1	5.3	39
149	Millers River at Erving, Mass.	370	2.3	.25	2.05	12.35	7.9	4.45	28
151	Sip Pond Brook near Winchendon, Mass.	19.0	2.1	.05	2.05	11.5	7.25	4.25	51
152	Priest Brook near Winchendon, Mass.	18.8	2.3	.05	2.25	10.6	9.15	1.45	51
155	East Branch of Tully River near Athol, Mass.	49.9	2.5	.25	2.25	10.7	7.5	3.2	40
156	Moss Brook at Wendell Depot, Mass.	12.2	2.5	.1	2.4	10.65	4.8	5.85	41
158	Deerfield River at outlet of Harriman Reservoir, at Davis Bridge, Vt.	184	1.6	.35	1.25	8.7	7.7	1.0	--
160	Deerfield River at Charlemont, Mass.	362	2.0	.25	1.75	8.8	7.1	1.7	--
161	East Branch of Deerfield River at outlet of Somerset Reservoir, near Somerset, Vt.	30	1.7	.45	1.25	8.2	6.85	1.35	--
180	Ware River at Cold Brook, Mass.	96.8	2.0	.15	1.85	13.5	8.2	5.3	--
182	Ware River at Gibbs Crossing, Mass.	199	2.0	.2	1.8	13.0	8.1	4.9	39
185	Chicopee River at Bircham Bend, Mass.	703	2.0	.15	1.85	12.15	7.85	4.3	--

a Not determined.

b Net area; exclusive of diverted parts of basin.

Table 14.--Precipitation and associated run-off of floods of September 1938--Continued

No. on pl. 11	Stream and point of measurement	Drainage area (sq. mi.)	September 12 to 16			September 17 to 21			Concentration ratio (percent)
			Precipitation	Run-off	Difference	Precipitation	Run-off	Difference	
	Connecticut River Basin--Continued								
186	Swift River at West Ware, Mass.	186	2.3	0.15	2.15	11.4	6.4	5.0	16
187	East Branch of Swift River near Dana, Mass.	43.7	1.8	.2	1.6	12.6	8.15	4.45	52
188	Quaboag River at West Brimfield, Mass.	151	2.0	.2	1.8	11.9	9.25	2.65	21
195	Westfield River at Knightville, Mass.	162	1.5	.15	1.35	9.75	5.8	3.95	35
196	Westfield River near Westfield, Mass.	497	1.3	.1	1.2	10.05	5.3	4.75	50
199	Middle Branch of Westfield River at Goss Heights, Mass.	52.6	1.4	.1	1.3	10.2	5.95	4.25	56
200	West Branch of Westfield River at Huntington, Mass.	93.7	1.7	.1	1.6	10.1	5.9	4.2	43
201	Westfield Little River at outlet of Cobble Mountain Reservoir, near Westfield, Mass.	45.8	1.0	.05	.95	11.0	6.8	4.2	--
204	Scantic River at Broad Brook, Conn.	98.4	1.3	.05	1.25	12.65	5.55	7.1	38
206	Farmington River near New Boston, Mass.	92.0	1.9	.2	1.7	11.0	7.9	3.1	--
207	Farmington River at Riverton, Conn.	216	1.7	.15	1.55	11.35	6.5	4.85	--
209	Farmington River at Tariffville, Conn.	578	1.1	.1	1.0	10.85	5.2	5.65	--
c/	Otis Reservoir at Cold Spring, Mass.	17.2	1.8	.1	1.7	11.1	6.9	4.2	--
c/	Barkhamsted Reservoir near Barkhamsted, Conn.	50.5	1.0	a	--	12.25	a	--	--
c/	East Branch Reservoir at New Hartford, Conn.	61.2	1.0	a	--	12.15	a	--	--
c/	Nepaug Reservoir near Collinsville, Conn.	32	.7	a	--	10.54	a	--	--
213	Burlington Brook near Burlington, Conn.	4.1	.8	0	.8	10.1	3.15	6.95	62
214	South Branch of Park River at Hartford, Conn.	40.6	.9	.05	.85	10.75	6.4	4.35	48
215	Park River at Hartford, Conn.	74.0	.9	.05	.85	10.5	5.35	5.15	46
216	North Branch of Park River at Hartford, Conn.	25.3	.8	0	.8	10.15	4.15	6.0	45
217	Hockanum River at outlet of Shenipsit Lake, at Rockville, Conn.	16.5	1.2	a	--	14.8	9.9	4.9	--
219	Hockanum River near East Hartford, Conn.	74.5	1.1	.15	.95	14.7	6.75	7.95	39
228	Salmon River near East Hampton, Conn.	105	1.0	.05	.95	13.9	6.8	7.1	44
c/	East Branch of Eightmile River near North Lyme, Conn.	22.0	.8	.1	.7	11.85	6.75	5.1	42
c/	West Branch of Eightmile River near North Lyme, Conn.	19.2	.9	.05	.85	12.15	7.0	5.15	38
	Quinnipiac River Basin								
230	Quinnipiac River at Wallingford, Conn.	109	1.7	.1	1.6	12.05	4.65	7.4	35
	Housatonic River Basin								
233	Housatonic River at Coltsville, Mass.	57.1	2.0	.3	1.7	8.4	4.6	3.8	51
235	Housatonic River near Great Barrington, Mass.	280	2.2	.25	1.95	8.1	5.05	3.05	29
237	Housatonic River at Falls Village, Conn.	632	2.1	.2	1.9	8.65	4.95	3.7	23
240	Housatonic River at Stevenson, Conn.	1,545	1.7	.1	1.6	9.2	5.25	3.95	23
243	Tenmile River at Gaylordsville, Conn.	204	1.5	0	1.5	8.45	4.45	4.0	41

c/	Rocky River at outlet of Candlewood Lake, near New Milford, Conn.	40.4	1.1	a	--	9.8	4.95	4.85	--
244	Still River near Lanesville, Conn.	68.5	1.1	.05	1.05	10.5	4.6	5.9	40
c/	Shepaug River at outlet of Shepaug Reservoir, at Woodville, Conn.	38.0	1.3	.1	1.2	10.85	7.65	3.2	--
247	Shepaug River near Roxbury, Conn.	133	1.3	.05	1.25	10.6	5.7	4.9	38
248	Pomperaug River at Southbury, Conn.	75.3	1.5	.05	1.45	9.8	3.2	6.6	46
250	Naugatuck River near Thomaston, Conn.	71.9	1.0	0	1.0	10.95	5.55	5.4	53
251	Naugatuck River near Naugatuck, Conn.	246	1.2	.05	1.15	10.3	3.85	6.45	45
252	Leadmine Brook near Thomaston, Conn.	24.0	.8	.05	.75	10.45	4.25	6.2	51
c/	Branch of Naugatuck River at outlet of Wigwam Reservoir, near Thomaston, Conn.	18.0	1.6	.05	1.55	10.2	6.8	3.4	--
	Saugatuck River Basin								
255	Saugatuck River near Westport, Conn.	77.5	1.6	.05	1.55	10.95	4.5	6.45	38
	Streams on Long Island								
256	Mill Neck Creek at Mill Neck, N. Y.	10	.8	0	.8	11.55	.6	10.95	32
257	Massatayan Creek at Massapaqua, N. Y.	37	1.0	0	1.0	10.85	.15	10.7	35
258	Wantagh Stream at Wantagh, N. Y.	17	1.0	0	1.0	10.65	.2	10.45	50
259	East Meadow Brook at Freeport, N. Y.	31	1.0	0	1.0	11.0	.3	10.7	42
260	Pines Brook at Malverne, N. Y.	10	1.0	0	1.0	10.75	.3	10.45	47
	Hudson River Basin								
261	Hudson River near Newcomb, N. Y.	192	2.2	.6	1.6	4.5	3.1	1.4	28
262	Hudson River at Gooley, near Indian Lake, N. Y.	419	2.0	.35	1.65	4.5	2.85	1.65	29
263	Hudson River at North Creek, N. Y.	792	1.9	.3	1.6	4.75	2.6	2.15	--
264	Hudson River at Hadley, N. Y.	1,664	1.8	.2	1.6	5.0	2.1	2.9	--
268	Hudson River at Mechanicville, N. Y.	4,500	1.9	.15	1.75	5.6	2.4	3.2	25
272	Cedar River below Chain Lakes, near Indian Lake, N. Y.	160	1.6	.15	1.45	4.6	2.5	2.1	38
274	Indian River near Indian Lake, N. Y.	132	1.8	.2	1.6	4.9	2.45	2.45	--
276	Schroon River at Riverbank, N. Y.	527	1.5	.05	1.45	5.1	1.85	3.25	14
278	Sacandaga River near Hope, N. Y.	491	1.8	.1	1.7	4.95	2.5	2.45	37
280	Sacandaga River at Conklingville, N. Y.	1,044	2.0	.15	1.85	5.15	2.45	2.70	--
283	Batten Kill at Arlington, Vt.	152	1.8	.4	1.4	6.85	4.1	2.75	33
284	Batten Kill at Battenville, N. Y.	394	1.8	.25	1.55	6.55	3.25	3.30	38
286	Kayaderosseras Creek near West Milton, N. Y.	90	2.0	.1	1.9	5.85	1.4	4.45	39
288	Hoosic River at Adams, Mass.	46.3	1.8	.7	1.1	7.7	4.35	3.35	44
289	Hoosic River near Eagle Bridge, N. Y.	510	2.15	.25	1.9	7.0	4.4	2.6	43
293	North Branch of Hoosic River at North Adams, Mass.	39.0	2.3	.8	1.5	7.75	6.65	1.1	50
295	Walloomsac River near North Bennington, Vt.	111	2.2	.45	1.75	7.0	4.0	3.0	43
299	Mohawk River below Delta Dam, near Rome, N. Y.	145	1.7	.4	1.3	d3.05	1.6	1.45	--
300	Mohawk River near Little Falls, N. Y.	1,348	2.2	.25	1.95	d4.45	2.2	2.25	--
309	Mohawk River at Cohoes, N. Y.	e3,142	1.9	.2	1.7	d5.35	2.7	2.65	40

a Not determined.
c Location not shown on plate 11.
d Includes precipitation of Sept. 23, 24.
e Does not include drainage area of Schoharie Creek above Gilboa Dam, at Gilboa, N. Y.

Table 14.--Precipitation and associated run-off of floods of September 1938--Continued

No. on pl. 11	Stream and point of measurement	Drainage area (sq. mi.)	September 12 to 16			September 17 to 21			Concentration ratio (percent)
			Precipitation	Run-off	Difference	Precipitation	Run-off	Difference	
	Hudson River Basin--Continued								
311	West Canada Creek at Hinckley, N. Y.	375	2.5	0.55	1.95	d4.9	2.85	2.05	--
312	West Canada Creek at East Bridge, N. Y.	556	2.5	.5	2.0	d4.8	2.65	2.15	--
314	East Canada Creek at Dolgeville, N. Y.	261	2.4	.5	1.9	d5.6	3.1	2.5	36
319	Schoharie Creek at Prattsville, N. Y.	236	1.2	0	1.2	d7.5	3.6	3.9	69
321	Schoharie Creek at Gilboa Dam, at Gilboa, N. Y.	314	1.2	0	1.2	d7.4	3.7	3.7	--
322	Schoharie Creek at Middleburg, N. Y.	e218	1.2	0	1.2	d5.8	3.1	2.7	--
324	Poesten Kill near Troy, N. Y.	89	1.7	.2	1.5	7.1	6.7	.4	52
329	Kinderhook Creek at Rossman, N. Y.	329	1.7	.2	1.5	7.5	4.65	2.85	41
331	Catskill Creek at Oak Hill, N. Y.	98	.8	0	.8	5.95	2.45	3.5	62
332	Esopus Creek at Coldbrook, N. Y.	192	1.1	.1	1.0	6.75	3.15	3.6	--
o/	Esopus Creek at outlet of Ashokan Reservoir, near Kingston, N. Y.	257	.9	.05	.85	7.0	3.05	3.95	--
333	Rondout Creek at Lowes Corners, N. Y.	39.4	1.0	.1	.9	6.85	2.85	4.00	60
334	Rondout Creek near Lackawack, N. Y.	100	1.1	.05	1.05	6.4	2.35	4.05	45
335	Rondout Creek at Rosendale, N. Y.	386	1.1	.05	1.05	6.75	2.95	3.8	45
336	Chestnut Creek above Red Brook, at Grahamsville, N. Y.	12.2	1.2	.05	1.15	5.9	1.8	4.1	--
337	Wallkill River near Unionville, N. Y.	144	1.1	.05	1.05	7.65	4.05	3.6	19
338	Wallkill River at Pellets Island Mountain, N. Y.	385	1.1	.05	1.05	8.1	3.45	4.65	18
339	Wallkill River near Phillipsburg, N. Y.	432	1.1	.05	1.05	8.05	3.75	4.3	18
340	Wallkill River at Gardiner, N. Y.	711	1.1	0	1.1	7.95	3.65	4.3	23
342	Pochuck Creek at Newport, near Pine Island, N. Y.	98.0	1.0	0	1.0	8.75	3.25	5.5	23
343	Quaker Creek at Florida, N. Y.	9.74	1.1	0	1.1	8.6	3.3	5.3	45
346	Wappinger Creek near Wappinger Falls, N. Y.	182	1.3	.05	1.25	7.75	3.9	3.85	44
348	Croton River at New Croton Dam, near Croton, N. Y.	377	.9	.1	.8	9.8	4.8	5.0	--
350	Croton River at Quaker Bridge, near Croton, N. Y.	379	.9	.15	.75	9.8	4.2	5.6	--
	Hackensack River Basin								
352	Hackensack River at New Milford, N. J.	113	.7	.05	.65	8.15	2.3	5.85	--
353	Pascack Brook at Westwood, N. J.	29.6	.7	.05	.65	7.8	2.35	5.45	--
	Passaic River Basin								
354	Passaic River near Millington, N. J.	55.4	.2	0	.2	8.1	3.2	4.9	21
355	Passaic River near Chatham, N. J.	100	.25	0	.25	8.5	3.5	5.0	16
356	Passaic River at Paterson, N. J.	785	.4	.05	.35	8.1	2.9	5.2	16
357	Rockaway River above reservoir at Boonton, N. J.	116	.4	0	.4	7.7	2.5	5.2	25
358	Rockaway River below reservoir at Boonton, N. J.	119	.4	0	.4	7.7	2.45	5.25	--

359	Beaver Brook at outlet of Splitrock Pond, N. J.	5.5	.5	a	--	8.75	a	--	--
360	Whippany River at Morristown, N. J.	29.4	.2	0	.2	6.6	1.95	4.65	55
361	Ramapo River near Mahwah, N. J.	118	.7	0	.7	8.75	3.4	5.35	39
362	Ramapo River at Pompton Lakes, N. J.	160	.6	0	.6	8.5	3.35	5.15	39
363	Wanaque Reservoir at Monks, N. J.	40.4	.5	a	--	8.15	3.7	4.45	--
364	Wanaque River at Wanaque, N. J.	90.4	.5	a	--	7.8	3.2	4.6	--
365	Pequannock River at Macopin intake dam, N. J.	63.7	.6	.05	.55	8.35	3.1	5.25	--
366	Saddle River at Lodi, N. J.	54.6	.7	.15	.55	7.4	2.45	4.95	46
	Elizabeth River Basin								
368	Elizabeth River at Elizabeth, N. J.	20.2	.4	0	.4	7.75	2.15	5.60	64
	Rahway River Basin								
369	Rahway River near Springfield, N. J.	25.5	.3	0	.3	8.75	2.25	6.5	65
370	Rahway River at Rahway, N. J.	40.9	.3	0	.3	8.7	2.65	6.05	54
	Raritan River Basin								
371	South Branch of Raritan River near High Bridge, N. J.	65.3	.6	.05	.55	7.5	1.6	5.9	54
373	South Branch of Raritan River at Stanton, N. J.	147	.5	0	.5	7.55	2.0	5.55	53
374	Raritan River at Manville, N. J.	490	.5	0	.5	8.15	3.45	4.7	56
375	Neshanic River at Reaville, N. J.	25.7	.5	0	.5	8.65	3.7	4.95	61
376	North Branch of Raritan River near Far Hills, N. J.	26.2	.3	0	.3	7.5	2.15	5.35	57
377	North Branch of Raritan River at Milltown, N. J.	190	.5	0	.5	7.95	2.95	5.0	55
378	Black River near Pottersville, N. J.	32.8	.5	0	.5	7.5	1.45	6.05	27
379	Millstone River near Kingston, N. J.	171	.8	0	.8	9.3	f3.65	5.65	47
380	Millstone River at Blackwells Mills, N. J.	258	.6	0	.6	9.2	f4.5	4.7	49
381	Green Brook at Plainfield, N. J.	9.75	.35	0	.35	9.7	2.65	7.05	72
382	Lawrence Brook at Farrington Dam, N. J.	34.4		0		9.2	3.2	6.0	--
	Swimming River Basin								
384	Swimming River near Red Bank, N. J.	48.5	.5	0	.5	10.0	3.1	6.9	67
	Manasquan River Basin								
385	Manasquan River at Squankum, N. J.	43.4	.4	0	.4	10.4	3.4	7.0	--
	Toms River Basin								
386	Toms River at Toms River, N. J.	124	.2	0	.2	10.1	1.6	8.5	26

a Not determined.
c Location not shown on plate 11.
d Includes precipitation of Sept. 23, 24.
e Does not include drainage area of Schoharie Creek above Gilboa Dam, at Gilboa, N. Y.
f Not adjusted for inflow from Delaware River Basin through Delaware and Raritan Canal.

Table 14.--Precipitation and associated run-off of floods of September 1938--Continued

No. on pl. 11	Stream and point of measurement	Drainage area (sq. mi.)	September 12 to 16			September 17 to 21			Concentration ratio (percent)
			Precipitation	Run-off	Difference	Precipitation	Run-off	Difference	
	Great Egg River Basin								
387	Great Egg River at Folsom, N. J.	56.3	0.1	0	0.1	7.6	2.2	5.4	20
	Delaware River Basin								
389	East Branch of Delaware River at Margaretville, N. Y.	163	1.75	.05	1.7	6.2	3.65	2.55	50
390	East Branch of Delaware River at Harvard, N. Y.	443	1.5	.05	1.45	6.1	3.75	2.35	49
391	East Branch of Delaware River at Fishs Eddy, N. Y.	783	1.4	.05	1.35	5.95	3.7	2.25	43
393	Delaware River at Port Jervis, N. Y.	3,076	1.4	a	--	5.4	a	--	--
397	Mill Brook at Arena, N. Y.	25	1.4	.05	1.35	6.8	4.3	2.5	--
398	Tremper Kill near Shaverton, N. Y.	33	1.85	.1	1.75	5.9	3.85	2.05	59
399	Terry Clove Kill near Pepacton, N. Y.	14.1	1.5	.15	1.35	6.1	4.25	1.85	--
400	Beaver Kill at Craigie Clair, N. Y.	82	1.5	0	1.5	6.5	3.35	3.15	55
401	Beaver Kill at Cooks Falls, N. Y.	241	1.3	0	1.3	6.1	2.95	3.15	48
402	Willowemoc Creek near Livingston Manor, N. Y.	65	1.2	.05	1.15	6.0	2.65	3.35	48
403	Little Beaver Kill near Livingston Manor, N. Y.	19.8	2.05	.05	2.0	6.1	3.8	2.3	--
404	West Branch of Delaware River at Delhi, N. Y.	142	2.1	.15	1.95	5.7	3.0	2.7	44
405	West Branch of Delaware River at Hale Eddy, N. Y.	593	2.0	.25	1.75	5.15	3.45	1.7	42
406	Little Delaware River near Delhi, N. Y.	49.8	2.0	.15	1.85	6.0	4.3	1.7	--
408	Neversink River at Halls Mills, near Curry, N. Y.	68	1.25	.1	1.15	6.3	3.4	2.9	57
409	Neversink River at Woodbourne, N. Y.	113	1.2	.1	1.1	6.1	3.05	3.05	53
410	Neversink River at Oakland Valley, N. Y.	222	1.2	.05	1.15	5.95	2.45	3.5	47
411	Neversink River at Godeffroy, N. Y.	302	1.2	.05	1.15	6.1	2.4	3.7	44
	Susquehanna River Basin								
420	Susquehanna River at Colliersville, N. Y.	351	1.55	.05	1.50	4.9	1.75	g3.15	31
436	Oaks Creek at Index, N. Y.	103	1.65	a	--	5.2	a	--	--
437	Cherry Valley Creek at Westville, N. Y.	81.3	1.55	.05	1.50	5.2	3.25	1.95	50
438	Charlotte Creek at Davenport Center, N. Y.	163	1.8	.05	1.75	5.6	2.65	2.95	58
	Streams tributary to St. Lawrence River								
483	Saranac River at Saranac, N. Y.	521	1.1	a	--	4.25	1.2	3.05	--
487	West Branch of Ausable River near Newman, N. Y.	116	1.4	.2	1.2	5.1	3.2	1.9	57
491	Ausable River near Ausable Forks, N. Y.	448	1.4	.1	1.3	5.0	2.3	2.7	56
494	Black Brook at Black Brook, N. Y.	49.4	1.1	.05	1.05	4.35	.7	3.65	52
496	East Branch of Ausable River at Ausable Forks, N. Y.	198	1.5	.1	1.4	5.35	2.65	2.7	68
498	Bouquet River at Willsboro, N. Y.	275	1.5	.05	1.45	4.9	1.35	3.55	57
502	Poultney River at Fair Haven, Vt.	187	3.4	.35	3.05	4.85	2.65	2.2	52

504	Otter Creek at Center Rutland, Vt.	307	3.5	.6	2.9	6.3	3.1	3.2	41
505	Otter Creek at Middlebury, Vt.	628	3.5	.9	2.6	5.7	2.95	2.75	12
514	Winooski River at Montpelier, Vt.	433	1.9	.2	1.7	4.0	1.4	2.6	19
515	Winooski River near Essex Junction, Vt.	1,079	2.0	.25	1.75	4.5	2.15	2.35	--
516	Jail Branch at East Barre, Vt.	33	2.1	.5	1.6	4.4	2.0	2.4	--
517	North Branch of Winooski River at Wrightsville, Vt.	69.2	2.0	.35	1.65	3.95	2.8	1.15	--
518	Dog River at Northfield Falls, Vt.	76.1	1.9	.15	1.75	5.2	2.7	2.5	65
519	Mad River near Moretown, Vt.	139	2.1	.4	1.7	5.5	3.35	2.15	64
520	Waterbury River near Waterbury, Vt.	111	2.1	.5	1.6	4.25	2.65	1.60	--
523	Lamoille River at Johnson, Vt.	335	1.9	.3	1.6	3.4	1.4	2.0	50
525	Lamoille River at East Georgia, Vt.	712	1.9	.35	1.55	3.85	1.9	1.95	46
528	Missisquoi River near North Troy, Vt.	131	1.8	.4	1.4	2.5	1.15	1.35	53
529	Missisquoi River near Richford, Vt.	479	1.8	.35	1.45	2.7	1.4	1.3	46

a Not determined.

g Probably affected by storage.

Estimates of the ground-water recharge attributable to the rains of September 17-21 were made by the following method. An average ground-water depletion curve has been derived and a relation developed between the rate of ground-water discharge and the associated volume of storage. The storage relation has been applied to the estimated base flow at both the beginning (point G on figure 43 page 422) and the end (point E) of the period of the ground-water accretion produced by the rains of September 17-21, thereby determining the increase in ground-water storage represented by the rise in base flow from G to E. To this increment in storage has been added the estimated base run-off during the flood period, represented by the area below the line GHE in figure 43, the total being approximately equivalent to the ground-water effluent that may be ascribed to meteorologic events of September 17-21. The amount of effluent so computed is not equivalent to the total ground-water recharge, being less by the amount of the recharge that is transpired by vegetation in those areas where the ground-water surface is at or above the root-zone, instead of being discharged into the streams.

The relation of the amount of water retained to the storm rainfall in the several basins, as shown in figures 44 to 55 pages 437 to 469, indicates a tendency for the retention to increase with the rainfall, thus signifying that under given conditions the retention increases with the amount of the supply available for such retention. The ratio of such increases in retention to increases in rainfall intensities may tend to decrease as such rainfall intensities vary from light to heavy. The study of the relation of the rainfall at different stations for a given storm, shows that in general greater depths of rainfall are associated with longer periods of significant rainfall and with greater intensity rates. Graphical representations of the relations of precipitation with the retention and of precipitation and the duration of significant rainfall are similar in shape and their similarity suggests a basis for comparing the retention in areas of differing rainfall amounts.

In order to relate the retention more closely to the capacity of the ground to absorb rainfall, the values of the retention, as indicated by difference between precipitation and run-off given in table 14, may be divided by the duration in hours of significant rainfall in a manner similar to that followed in Water-Supply Paper 838 (pp. 492-3), significant rainfall being defined as rain that falls at a rate approximately equal to or greater than one-half the maximum rate of absorption or the infiltration capacity. Discussion and definitions of these latter

concepts have been given by Houk[9] and more recently by Horton[10]. The quotient so obtained in this report has been termed the infiltration index. As explained in Water-Supply Paper 838 the intensity of rainfall that may be considered significant with respect to run-off depends in large part on the infiltration or absorptive capacity of the ground. The term "capacity" as used in this report refers to its general sense as the power to receive, contain, or absorb and not to any specific limiting rate of retention.

For a constant rate of absorption, the duration of significant rainfall during a storm has been found in earlier studies[11] to vary geographically and with the total rainfall. Studies based on data given in table 15 indicate that the geographical variation could safely be neglected during the September 1938 storm and that an acceptable graphical relation could be derived between the total rainfall during September 17-21 and the duration in hours of rainfall at rates corresponding to selected intensities of significant rainfall. These selected intensities were converted into terms of the infiltration index by a formula given by Langbein[12]. As the infiltration index by definition equals the quotient found by dividing the retention by the duration in hours of significant rainfall the above graphical relation of precipitation, duration of significant rainfall, and selected values of the infiltration index could readily be transformed into a relation between the precipitation, the retention, and the infiltration index. Figure 44 shows a diagram that expresses this relation during the September 1938 storm. Total precipitation is given as ordinate and the retention as abscissas with the infiltration indices corresponding to the several values of precipitation and retention represented by a family of curves designated 0.06, 0.10, 0.14, 0.20, and 0.26 inch per hour. This graph has been used in computing values of the infiltration index as determined by the values of precipitation and retention for each basin listed in table 14.

Although analagous with the infiltration capacity as used by Horton[13] in a study of the 1927 flood in New England, it is not implied that the infiltration index as derived above corresponds to any limiting rate of absorption. It is used rather as a statistical measure of the absorptive

9/ Houk, I. E., Rainfall and run-off in the Miami Valley: Tech. Repts., Miami Conservancy District, pt. 8, pp. 81-82, 1921.

10/ Horton, R. E., Surface run-off phenomena, pt. 1, analysis of the hydrograph: Pub. 101, Horton Hydrological Laboratory, Voorheesville, N. Y.

11/ Floods of Ohio and Mississippi Rivers, January-February 1937: U. S. Geol. Survey Water-Supply Paper 838, pp. 492-523, 1938.

12/ Langbein, W. B., Some channel storage studies and their application to the determination of infiltration: Am. Geophys. Union Trans., 1938, pt. 1, pp. 435-447.

13/ Horton, R. E., Determination of infiltration capacity for large drainage basins: Am. Geophys. Union Trans. 1937, pp. 371-385.

Table 15.-- Rate and duration of precipitation September 17-21, based on hourly record

No. on pl.1	Station	Total precipitation, in inches, during period indicated		Total time, in hours, in which precipitation equalled or exceeded indicated rate, in inches per hour									Maximum hourly precipitation	
		Inches	Period	0.01	0.02	0.03	0.05	0.10	0.20	0.30	0.40	0.50	Inches	Hour ending
	Merrimack River Basin													
4	Concord, N. H.	7.30	7 p.m. Sept. 17 to 6 p.m. Sept. 21	52	41	39	32	20	10	6	5	3	1.18	9 a.m. Sept. 21
19	Manchester, N. H.	6.43	6 p.m. Sept. 17 to 5 p.m. Sept. 21	61	50	40	30	20	9	6	5	4	.64	2 a.m. Sept. 21
	Connecticut River Basin													
75	Hanover, N. H.	5.43	8 p.m. Sept. 17 to 11 p.m. Sept. 21	60	48	43	33	19	8	4	1	-	.48	7 a.m. Sept. 21
103	St. Johnsbury, Vt.	4.17	10 p.m. Sept. 17 to 9 p.m. Sept. 21	51	43	33	28	16	5	2	2	1	.50	9 a.m. Sept. 21
117	Amherst, Mass.	11.96	7 p.m. Sept. 17 to 9 p.m. Sept. 21	68	57	52	45	32	19	14	7	6	1.05	1 p.m. Sept. 19
162	Springfield, Mass.	10.43	6 p.m. Sept. 17 to 6 p.m. Sept. 21	66	55	50	45	37	19	9	4	3	.92	11 p.m. Sept. 20
188	Bills Brook, Conn.	10.19	4 p.m. Sept. 17 to 5 p.m. Sept. 21	71	57	52	48	36	17	10	4	3	.97	4 p.m. Sept. 21
189	Bloomfield, Conn.	9.71	3 p.m. Sept. 17 to 5 p.m. Sept. 21	67	53	49	41	31	21	13	7	2	.60	4 p.m. Sept. 21
192	Burlington, Conn.	9.95	4 p.m. Sept. 17 to 5 p.m. Sept. 21	69	57	55	45	36	19	7	3	2	.85	5 p.m. Sept. 21
204	Hartford, Conn.	13.17	4 p.m. Sept. 17 to 5 p.m. Sept. 21	62	50	47	44	36	20	12	10	10	1.33	9 p.m. Sept. 20
205	Hartland Hollow, Conn.	11.53	4 p.m. Sept. 17 to 6 p.m. Sept. 21	68	56	52	47	37	17	10	6	5	1.90	5 p.m. Sept. 21
208	New Britain, Conn.	11.41	5 p.m. Sept. 17 to 6 p.m. Sept. 21	61	54	54	50	27	a	a	a	a	a	a
210	Newington, Conn.	11.88	4 p.m. Sept. 17 to 4 p.m. Sept. 21	63	51	45	40	32	20	12	6	5	1.44	10 p.m. Sept. 20
213	South Meadows, Conn.	12.58	3 p.m. Sept. 17 to 3 p.m. Sept. 21	65	58	52	40	31	18	15	10	5	1.89	9 p.m. Sept. 20
216	West Hartford, Conn.	10.31	4 p.m. Sept. 17 to 5 p.m. Sept. 21	70	54	52	44	32	15	12	9	4	.86	12 p.m. Sept. 20
	Housatonic River Basin													
250	Woodville, Conn.	11.00	4 p.m. Sept. 17 to 8 p.m. Sept. 21	71	58	52	45	39	22	9	4	3	1.36	2 p.m. Sept. 19
	Hudson River Basin													
255	Albany, N. Y.	7.49	6 p.m. Sept. 17 to 10 p.m. Sept. 21	66	60	52	39	25	11	6	4	3	.67	11 p.m. Sept. 19
256	Albany, N. Y. (Airport)	6.54	6 p.m. Sept. 17 to 11 p.m. Sept. 21	69	60	54	40	21	8	4	2	1	.64	2 a.m. Sept. 19
294	Kingston, N. Y.	7.92	11 p.m. Sept. 18 to 9 p.m. Sept. 21	59	58	55	45	28	11	5	4	2	.71	11 p.m. Sept. 19
320	Schenectady, N. Y.	5.13	4 p.m. Sept. 17 to 11 p.m. Sept. 21	67	57	53	40	16	4	2	-	-	.37	5 p.m. Sept. 21
337	Voorheesville, N. Y.	7.65	7 p.m. Sept. 17 to 9 p.m. Sept. 21	64	57	52	42	23	9	8	5	2	.89	3 p.m. Sept. 19
345	West Point, N. Y.	8.93	5 p.m. Sept. 17 to 8 p.m. Sept. 21	60	49	43	34	24	14	9	5	4	1.32	2 p.m. Sept. 19

	Hackensack, Passaic, and Raritan River Basins													
348	Palisades Park, N. Y.	8.94	5 p.m. Sept. 17 to 10 p.m. Sept. 21	71	47	41	36	29	15	10	5	2	.83	3 p.m. Sept. 21
349	Southfield, N. Y.	9.40	3 p.m. Sept. 17 to 8 p.m. Sept. 21	64	58	52	44	31	12	8	5	5	1.30	2 p.m. Sept. 19
351	Bowling Green, N. J.	8.22	4 p.m. Sept. 17 to 9 p.m. Sept. 21	64	52	42	35	27	12	9	8	5	.71	3 p.m. Sept. 21
352	Brook Valley, N. J.	8.54	3 p.m. Sept. 17 to 7 p.m. Sept. 21	70	54	46	38	24	15	9	6	5	.80	7 a.m. Sept. 20
362	Freehold, N. J.	7.53	1 p.m. Sept. 17 to 5 p.m. Sept. 21	54	47	40	29	23	13	8	6	3	.86	1 p.m. Sept. 21
373	Mahwah, N. J.	8.06	3 p.m. Sept. 17 to 10 p.m. Sept. 21	57	49	44	40	25	15	9	3	2	1.50	2 p.m. Sept. 19
374	Millington, N. J.	8.36	8 p.m. Sept. 17 to 10 p.m. Sept. 21	64	45	37	33	23	15	10	8	5	1.05	2 p.m. Sept. 19
376	Morristown, N. J.	6.17	3 p.m. Sept. 17 to 4 p.m. Sept. 21	51	47	39	23	15	7	6	5	3	1.00	2 p.m. Sept. 19
377	Morristown, N. J. Res.	7.15	4 p.m. Sept. 17 to 8 p.m. Sept. 21	64	51	42	33	21	8	7	6	5	.90	3 p.m. Sept. 21
387	Rockaway, N. J.	7.10	4 p.m. Sept. 17 to 7 p.m. Sept. 21	61	54	47	40	23	13	6	2	2	1.00	1 p.m. Sept. 19
390	Woodcliff Lake, N. J.	7.69	5 p.m. Sept. 17 to 7 p.m. Sept. 21	67	47	38	36	25	12	6	5	3	.75	3 p.m. Sept. 19
	Delaware River Basin													
398	China, N. Y.	3.86	12 a.m. Sept. 17 to 12 p.m. Sept. 21	62	51	40	25	10	3	1	1	1	.74	5 p.m. Sept. 21
407	Harvard, N. Y.	4.91	3 p.m. Sept. 17 to 11 p.m. Sept. 21	69	56	48	33	22	5	2	-	-	.32	4 p.m. Sept. 21
415	Oakland Valley, N. Y.	5.93	1 p.m. Sept. 17 to 9 p.m. Sept. 21	69	49	45	38	23	8	3	1	-	.48	3 p.m. Sept. 21
438	Trenton No. 1, N. J.	8.12	1 p.m. Sept. 17 to 5 p.m. Sept. 21	61	48	40	34	26	15	5	4	1	1.33	12 a.m. Sept. 19
	Susquehanna River Basin													
443	Binghamton, N. Y.	3.20	11 a.m. Sept. 17 to 11 p.m. Sept. 21	59	41	37	27	9	2	-	-	-	.24	3 p.m. Sept. 21
458	Hunts Corners, N. Y.	2.29	12 a.m. Sept. 17 to 11 p.m. Sept. 21	36	36	28	20	9	-	-	-	-	.18	4 p.m. Sept. 21
464	North Edmeston, N. Y.	3.64	1 p.m. Sept. 17 to 2 a.m. Sept. 22	61	56	39	28	9	3	-	-	-	.28	5 p.m. Sept. 21
469	Richford, N. Y.	2.95	12 a.m. Sept. 17 to 11 p.m. Sept. 21	39	37	31	26	10	3	-	-	-	.23	7-9 p.m. Sept. 21
471	Smithville Flats, N. Y.	2.85	2 p.m. Sept. 17 to 12 p.m. Sept. 21	46	42	31	22	12	2	-	-	-	.27	3 p.m. Sept. 19
472	Smyrna, N. Y.	2.97	12 a.m. Sept. 17 to 12 p.m. Sept. 21	54	39	31	21	12	-	-	-	-	.18	4-6 p.m. Sept. 21
479	Worcester, N. Y.	5.67	4 p.m. Sept. 17 to 9 p.m. Sept. 21	59	56	46	33	19	8	5	2	2	.60	6 p.m. Sept. 21
	St. Lawrence Basin													
481	Burlington, Vt.	4.10	6 p.m. Sept. 17 to 12 p.m. Sept. 21	58	45	38	24	12	6	1	1	1	.51	7 p.m. Sept. 21
490	Northfield, Vt.	4.59	6 p.m. Sept. 17 to 10 p.m. Sept. 21	64	51	43	28	11	5	4	2	1	.58	7 p.m. Sept. 21
492	Waterbury, Vt.	4.28	4 a.m. Sept. 19 to 10 p.m. Sept. 21	53	43	38	24	11	7	2	1	-	.45	8 p.m. Sept. 21
505	Canton, N. Y.	2.76	11 p.m. Sept. 19 to 5 a.m. Sept. 22	35	21	17	14	8	5	2	1	-	.48	7 p.m. Sept. 21
520	Ithaca, N. Y.	2.19	11 a.m. Sept. 17 to 11 p.m. Sept. 21	43	29	20	15	9	-	-	-	-	.19	7 p.m. Sept. 21

a Not determined.

Table 15.-- Rate and duration of precipitation September 17-21, based on hourly record--Continued

No. on pl.1	Station	Total precipitation, in inches, during period indicated		Total time, in hours, in which precipitation equalled or exceeded indicated rate, in inches per hour									Maximum hourly precipitation	
		Inches	Period	0.01	0.02	0.03	0.05	0.10	0.20	0.30	0.40	0.50	Inches	Hour ending
	St. Lawrence Basin--Continued													
533	Oswego, N. Y.	1.36	8 p.m. Sept. 19 to 4 a.m. Sept. 22	25	16	14	12	7	-	-	-	-	0.17	11 p.m. Sept. 21
545	Syracuse, N. Y.	2.14	12 a.m. Sept. 17 to 12 p.m. Sept. 21	41	23	17	16	9	-	-	-	-	.19	8 p.m. Sept. 21
	Coastal and minor basins													
567	Blue Hill, Mass.	4.01	6 p.m. Sept. 17 to 8 p.m. Sept. 21	69	44	35	27	9	3	2	1	1	.70	1 p.m. Sept. 20
568	Boston, Mass.	4.02	6 p.m. Sept. 17 to 5 p.m. Sept. 21	51	34	32	23	13	4	1	1	1	.84	2 p.m. Sept. 20
594	Nantucket, Mass.	2.35	5 p.m. Sept. 17 to 4 p.m. Sept. 21	19	14	14	9	9	5	3	2	1	.54	2 a.m. Sept. 18
596	New Bedford, Mass.	2.19	5 p.m. Sept. 17 to 5 a.m. Sept. 21	37	26	23	14	8	3	-	-	-	.29	12 p.m. Sept. 19
625	Worcester, Mass.	8.19	5 p.m. Sept. 17 to 6 p.m. Sept. 21	63	52	48	43	27	11	7	5	3	.73	3 a.m. Sept. 21
736	Worcester, Mass.	9.03	5 p.m. Sept. 17 to 5 p.m. Sept. 21	58	55	50	43	35	14	6	4	4	.83	12 a.m. Sept. 20
627	Block Island, R. I.	3.46	4 p.m. Sept. 17 to 7 p.m. Sept. 21	41	34	26	16	9	5	3	1	1	.74	4 p.m. Sept. 21
635	Providence, R. I.	3.09	5 p.m. Sept. 17 to 7 p.m. Sept. 21	44	33	27	23	15	3	1	-	-	.30	1 p.m. Sept. 20
654	New Haven, Conn.	11.64	3 p.m. Sept. 17 to 9 p.m. Sept. 21	68	53	49	45	30	15	9	7	5	1.29	9 a.m. Sept. 20
665	Brooklyn (Ave. V), N. Y.	8.69	2 p.m. Sept. 17 to 5 p.m. Sept. 21	54	46	42	35	30	16	8	5	4	.65	1 p.m. Sept. 21
666	Brooklyn (Eagle), N. Y.	7.92	1 p.m. Sept. 17 to 5 p.m. Sept. 21	62	50	41	32	22	14	7	4	3	.94	2 p.m. Sept. 21
668	Flushing, N. Y.	8.67	2 p.m. Sept. 17 to 4 p.m. Sept. 21	54	47	42	37	23	14	7	5	4	.84	1 p.m. Sept. 21
669	Freeport, N. Y.	9.93	2 p.m. Sept. 17 to 5 p.m. Sept. 21	63	50	44	43	35	17	12	8	2	.73	8 a.m. Sept. 20
671	Long Beach, N. Y.	8.77	2 p.m. Sept. 17 to 5 p.m. Sept. 21	64	53	47	39	26	16	8	5	3	1.01	10 p.m. Sept. 18
672	Manhasset, N. Y.	11.79	2 p.m. Sept. 17 to 6 p.m. Sept. 21	58	49	46	41	27	17	13	8	8	1.28	10 p.m. Sept. 18
673	Mineola, N. Y.	11.00	2 p.m. Sept. 17 to 5 p.m. Sept. 21	63	53	48	38	28	23	15	8	6	.90	11 p.m. Sept. 18
676	New York(Bat. Pl.), N.Y.	7.75	2 p.m. Sept. 17 to 5 p.m. Sept. 21	59	48	43	36	24	14	7	3	3	.88	2 p.m. Sept. 21
677	New York(Cen. Pk.), N.Y.	8.13	2 p.m. Sept. 17 to 6 p.m. Sept. 21	63	55	45	39	26	14	7	6	3	.87	2 p.m. Sept. 21
682	Westerleigh, N. Y.	7.75	2 p.m. Sept. 17 to 5 p.m. Sept. 21	68	50	39	33	25	13	6	4	3	.87	2 p.m. Sept. 21
683	Atlantic City, N. J.	10.04	10 a.m. Sept. 17 to 4 p.m. Sept. 21	67	58	50	43	30	15	9	6	5	1.01	12 a.m. Sept. 21
686	Colts Neck, N. J.	11.10	1 p.m. Sept. 17 to 5 p.m. Sept. 21	58	49	45	35	28	17	10	7	7	1.06	8 p.m. Sept. 18
694	Long Branch, N. J.	10.36	2 p.m. Sept. 17 to 5 p.m. Sept. 21	60	53	44	38	27	18	9	5	4	1.76	8 p.m. Sept. 18
695	Marlboro, N. J.	8.81	1 p.m. Sept. 17 to 5 p.m. Sept. 21	59	45	39	33	25	15	9	6	4	.96	1 p.m. Sept. 21
698	Newark, N. J.(Kresge's)	8.49	5 p.m. Sept. 17 to 7 p.m. Sept. 21	81	56	52	44	29	12	7	3	2	1.20	1 p.m. Sept. 21
702	Sandy Hook, N. J.	9.51	2 p.m. Sept. 17 to 6 p.m. Sept. 21	50	46	41	35	29	18	12	6	5	.85	12 p.m. Sept. 18

capacity that is more nearly independent of the amount of rainfall, and thus suitable as a basis for comparison and discussion. In those areas where the retention is large in proportion to the rainfall the value of the infiltration index becomes uncertain because small variations in the retention produce disproportionate changes in the infiltration index..

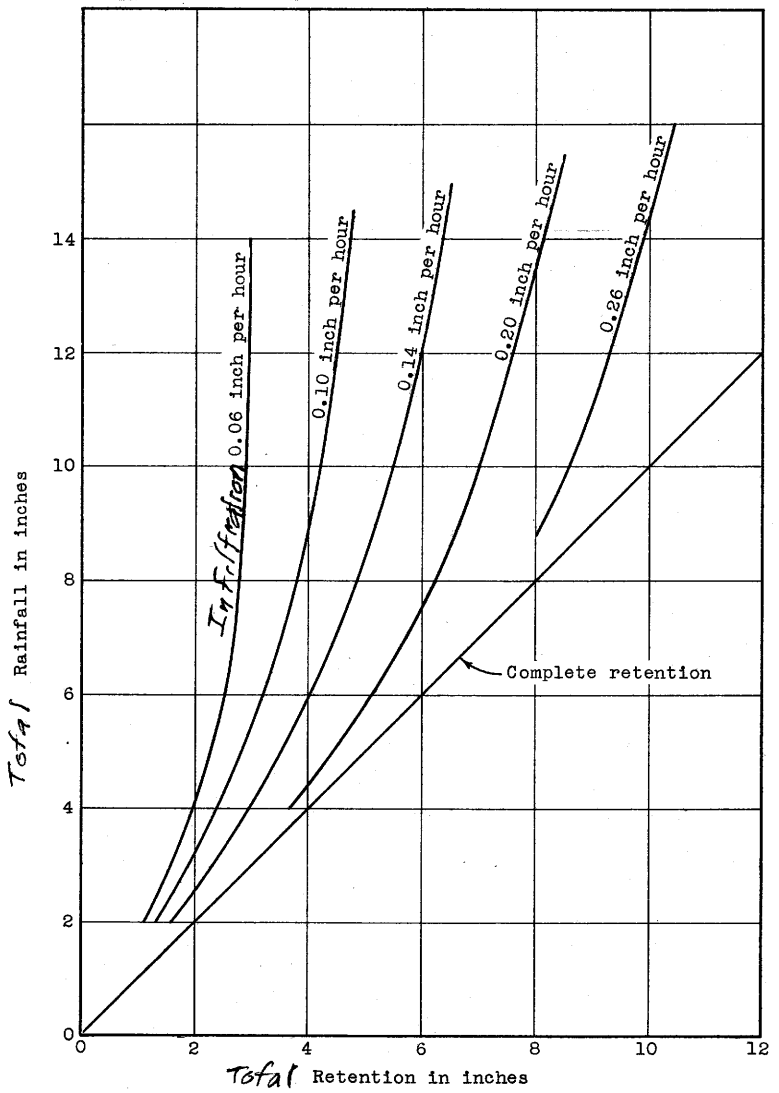

Figure 44.--Chart showing relation of total precipitation and retention, Sept. 17-21, 1938, to indicated infiltration indices.

These disproportionate changes are a result of the sharp curvature of the higher portion of the infiltration index-retention relation. For this reason all computed figures of the infiltration index in excess of 0.26

inch per hour were designated "over 0.26 inch per hour", no attempt being made toward further refinement.

Engineers and hydrologists readily realize the approximations that have been necessary with respect to the many items presented in the rainfall and run-off studies. Wide departures from the average may be indicative of either corresponding variations in the meteorologic and hydrologic conditions or errors in base data. Users are cautioned to apply the results to specific flood problems only after a thorough understanding of the nature of the basic data and of the methods of derivation.

Discussion of results

The data compiled in table 14 afford a basis for appraisal of the effects of rainfall and other hydrologic factors on the flood run-off.

In the first three columns of table 14 are listed the river-measurement stations where records were available for the entire flood period and the corresponding drainage areas. The next three columns list in inches the mean areal precipitation September 12-16, the resulting direct run-off, and the difference between these factors. The next three columns in the table list similar data for the major storm period of September 17-21. The last column shows the degree to which the run-off was concentrated with respect to time. Detailed discussion of these rainfall and run-off characteristics is given later in this section for each of the separate basins. This discussion is limited to generalized conclusions based on the accumulated evidence.

The objectives of this study of the relation of rainfall and run-off are three: first, the appraisal of the absorptive or retentive capacity of the ground and vegetation; second, the appraisal of storage and the estimation of the utility of the stream channels for accommodating and discharging flood waters; and third, the utilization of the results of the analyses, so far as practicable, in checking the accuracy and adequacy of the basic data published in the report. Detailed studies of channel conveyance and storage are beyond the scope of this report; the discussion herein is general and is limited to the major basins, attention being directed mainly to the retention of water on an areal basis.

Under given rainfall conditions the factors that determine the amount of retention are: (a) the initial abstraction of the rainfall, equivalent to the volume of water intercepted by vegetation, required to wet the ground, and to fill surface depressions, (b) the absorption or infiltration in the ground, equivalent to the water absorbed by the ground through the

continuing process of infiltration during the storm, and (c) evaporation and transpiration losses.

The difference between rainfall and the associated direct run-off as listed in table 14 represents total retention of the storm rainfall as closely as may be determined from the available data. During the first storm period, September 12-16, under relatively light rainfall, which generally ranged between 1 and 2 inches but reached as high as 4 inches in local areas in Vermont, there was very little direct run-off and the retention is largely accounted for by initial abstraction and possible increments in soil moisture in areas of 1 inch or more of rain. Little if any of the water represented by the retention reached the ground-water table as most ground-water levels showed no rise during this period and there is little evidence of an increase in ground-water flow in the streams (see pl. 20). Page 543

This period prior to the major storm was of significance in the development of the floods to the extent that the rainfall increased soil moisture and moistened ground surfaces, thereby occupying some of the retentive capacity that would otherwise have been available for the rain of the major storm. It is believed, however, that during the short rainless interval between September 15 and 17, evaporation and transpiration disposed of some of the retained water and to that extent restored the retentive capacity.

The extraordinary storm of September 17-21 (see pl. 1 in pocket) brought rainfall that exceeded 17 inches in some areas in central Connecticut and Massachusetts and in the central storm area resulted in volumes of flood run-off of 9 to 10 inches. In the northeastern United States the run-off from single storms not associated with snow has very rarely exceeded these amounts.

The total retention during the major storm period varied materially, being influenced by factors which, although they cannot be exactly delineated, probably relate to the total amount of precipitation (the source of supply available for retention), the local soil and vegetal conditions, and temperature. The maximum retention of 10 inches occurred on Long Island, where there was heavy precipitation over areas of very favorable absorptive conditions. It is believed that dissimilarities in the character of the rainfall were not sufficient to have produced material variations in the retention. Comparison of the rate and duration of hourly rainfall at recording rain gages listed in table 15 indicates appreciable uniformity at locations with equal total rainfall.

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In the discussions by basins, the retention of rainfall has been studied in relation to the total rainfall and as explained in the preceding section converted into terms of an infiltration index, in order to obtain a convenient measure of the average absorptive rate of the soil that is as nearly independent as possible of the amount of rainfall. For several of the basins a bihourly inventory of the retention has been made with appropriate discussion. These detailed studies seem to indicate (1) that during the periods of most intense rainfall, water was apparently being absorbed at rates considerably in excess of the average rates, (2) that after the beginning of active run-off, nearly all rates of rainfall were productive of run-off, and (3) that run-off fluctuated in response to the variation in rainfall intensities.

Figure 45, next page, a map of the region, gives the generalized values of the infiltration index in inches per hour in the areas covered by the data listed in table 14. This map shows that the infiltration index ranged from 0.06 inch per hour in central Vermont and New Hampshire to 0.26 inch and more per hour in Long Island, N. Y. The values of infiltration index as shown on figure 45 have the following distribution according to area.

Table 16.--Areal variation of infiltration index

Infiltration index	Area (square miles)
Over 0.26 inch per hour	160
Between .20 and .26 inch per hour	240
Between .14 and .20 inch per hour	6,600
Between .10 and .14 inch per hour	9,700
Between .06 and .10 inch per hour	19,700
Between .02 and .06 inch per hour	3,800
Total area	40,200

A tendency is disclosed for the infiltration index to increase in a downstream direction and for a predominance of higher values along the coastal plain. The high infiltration index shown in the upper Hudson River Basin and areas in New York tributary to Lake Champlain may be due in part to the large amount of surface storage available in swamps and lakes rather than to ordinary ground retention. A brief study of the infiltration index in relation to the mean land slope as computed by the Geological Survey from its topographic maps discloses a tendency for the infiltration index to increase with decrease in the mean land slope. Although the slope of the land itself might influence the retentive capacity of the

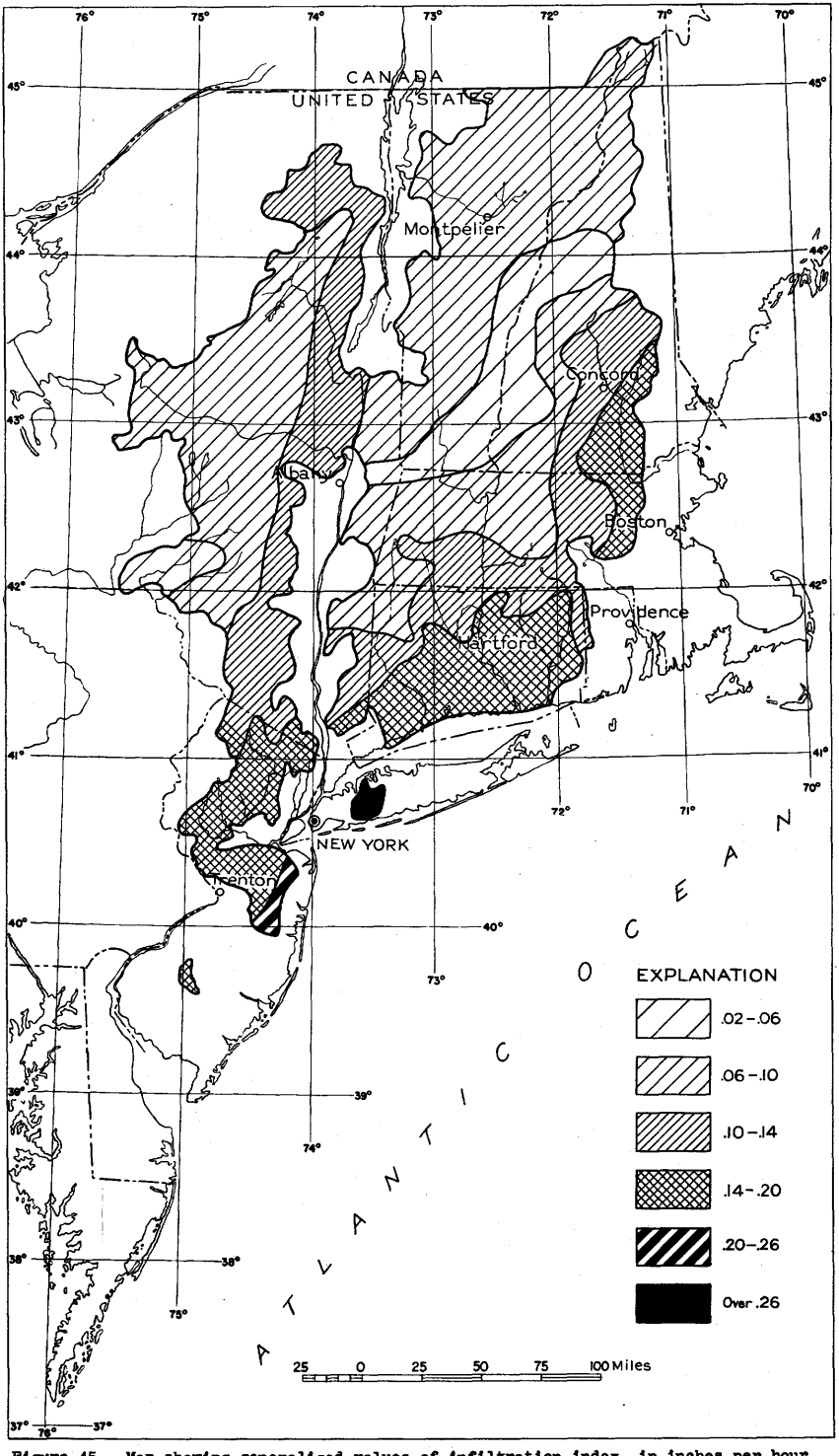

Figure 45.--Map showing generalized values of infiltration index, in inches per hour, September 17-21, 1938.

ground, this tendency may be due to other factors related to slope, such as depth of soil cover. No study has been made of soil type or cover.

The data shown on figure 45 correspond to a general average of 0.10 inch per hour. The data are based on basin averages and are merely intended to show generalized tendencies and not to indicate actual infiltration rates at particular points on the map.

Merrimack River Basin

The storm of September 17-21 crossed the Merrimack River Basin as shown on plate 1 in a course that extended from the Contoocook River in the southwestern part, where the precipitation reached 15 inches, northward over the central basin to the northern watershed line, where the precipitation was about 8 inches. The precipitation decreased east and west of this central path. Measurable precipitation fell during a period of about 56 hours. Little information is available, however, concerning precipitation intensities. The maximum rates in inches per hour recorded at automatic rain gages in the basin were as follows: at Manchester, N. H., 0.64 inch; at Concord, N. H., 1.18 inches; and at Lowell, Mass., 0.57 inch. The maximum rainfall recorded in a 1-day period was 6.85 inches at Webster, N. H., on September 21. The observer at Wilton, N. H., measured 6.12 inches during the 24-hour period ending at 5 p.m. on September 21. A total storm rainfall of 15 inches was recorded at Peterboro, N. H., (situated in the path of maximum precipitation), by Mr. Charles L. Whittle, who also reported very intense rainfall during the evening of September 20.

The antecedent rains of September 12-16 were fairly uniform, averaging 2.1 inches over the basin. The resultant rise in stream flow was small, the direct run-off averaging about 0.2 inch, left 1.9 inches in the basin which, partially utilizing the absorptive capacity of the basin, had a significant effect on the rainfall and run-off relations during the major storm period.

The volume of direct run-off resulting from the rains of September 17-21 listed in table 14 ranged between 1.6 inches and 7.35 inches for different drainage areas and averaged 3.7 inches over the basin above Lowell, Mass. The volume of run-off was generally a function of the total rainfall. The direct run-off has been adjusted for all known artificial storage for which records were available, and of which the principal amount was in Lake Winnipesaukee. The average precipitation over the Merrimack Basin above Lowell, Mass., was 7.95 inches, thus indicating an

average retention of 4.25 inches. As shown in table 14 the retention in the smaller basins ranged from 2.05 to 6.0 inches and no significant geographical trend can be observed. The variations of the retention in the basin with respect to rainfall are shown on figure 46. The scattered plotting may be ascribed to differences in the retentive capacities of the several basins and to errors or deficiencies in base data, particularly with respect to the determination of the mean precipitation over

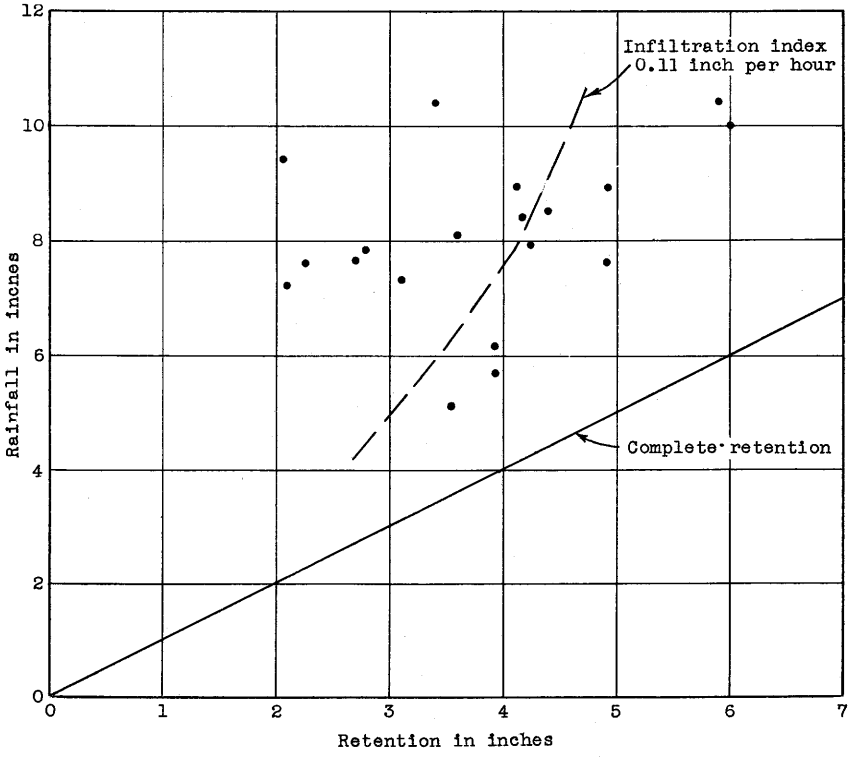

Figure 46.--Relation of total rainfall September 17-21, 1938, to difference between total rainfall and direct run-off, Merrimack River Basin.

the smaller drainage basins in the mountainous headwater areas. Based on figure 44, figure 46 shows a line representing an infiltration index of 0.11 inch per hour. In general the retention in drainage areas in the headwater areas and along the western part of the Merrimack Basin from the Contoocook River northward plot to the left of this index line, indicating relatively less absorptive capacity for those areas, the lowest values of the corresponding indices being about 0.05 inch per hour. Also, in general, the retention in the lower basins plot to the right, thus indicating relatively greater absorptive capacity, the maximum value being about 0.15 inch per hour.

Based on an analysis of the hydrographs of eight basins as described in the section "Methods of analysis", there was an accretion to ground water from the rains of the major storm period of 0.58 to 1.7 inches, which on the average amounts to about 35 percent of the total retention. This accretion represents that portion of the retention that appeared as ground-water effluent during and subsequent to the flood.

During the storm of March 1936, there was an average rainfall during 12 days of 8.2 inches in the Merrimack River Basin above Lowell, Mass.[14] Antecedent snow cover contained an equivalent of 4 inches of water, thus making the total supply of water 12.2 inches, of which about 11.5 inches appeared as direct run-off, leaving a retention of 0.7 inch. Although as discussed in Water-Supply Paper 798, rainfall observations in the western parts of the Merrimack River Basin were inadequate for very accurate deductions, the low retention indicated during that storm and flood probably signifies the prevalence of very unfavorable absorptive conditions.

In contrast, there was during less than 24 hours on September 16-17, 1932, an average rainfall of 5.2 inches over 3,930 square miles of contributing area above Lawrence, Mass., of which only 0.35 inch appeared as direct run-off, indicating a retention of about 4.85 inches[15]. During the same storm there was an average rainfall of about 6.7 inches over the basin of the Suncook River above North Chichester, N. H., with associated run-off of 0.7 inch and a residual of 6.0 inches. This storm followed a dry period and apparently the conditions for absorption and other abstractions were extraordinarily favorable.

In November 1927 there was an average rainfall of 4.95 inches over the basin above Lawrence, Mass., of which 2.0 inches appeared as direct run-off. The retention of 2.95 inches is comparable with those of the storm and flood of September 1938.

The degree to which the direct run-off associated with the storm of September 17-21, 1938, was concentrated with respect to time, as measured by the ratio between the direct run-off during the maximum 24 hours and the total direct run-off ranged between 15 and 58 percent. For the main stem of the Pemigewasset-Merrimack Rivers, these ratios are shown in table 14 to decrease in a downstream direction, indicative of the increased effect of channel storage. Comparisons of these ratios are also

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14/ Floods of March 1936, pt. 1, New England Rivers: U. S. Geol. Survey Water-Supply Paper 798, pp. 350-351, 1937.

15/ Kinnison, H. B., in White, G. V., The great storm of Sept. 16 and 17, 1932: New England Water Works Assoc. Jour., vol. 47, no. 2, p. 181, 1933.

indicative of the relative storage effects of the tributary streams. The lowest ratio of 15 percent was obtained on Clark Brook at Auburn, N. H. This stream drains a relatively flat basin that contains several small natural ponds and swamps and has a main channel slope of about 22 feet per mile. The Bakers River near Rumney, N. H., which has the highest ratio, 58 percent, is in the upper mountainous region and has a mean slope in its tributary streams of 326 feet per mile and a mean slope in its main channel of 55 feet per mile.

Thames River Basin

The storm of September 17-21 was noted for the steep precipitation gradient along its easterly front as shown on plate 1. This front covered the Thames River Basin where it was most clearly defined. Near the mouth of the Thames River the precipitation apparently increased in a westward direction from 4 to 11 inches in the short distance of 5 miles. Northward or upstream from the mouth the steepness of this gradient decreased, although the front continued to be sharply defined. Thus in this basin the storm precipitation at the southeasterly divide was only about 3.5 inches, but at the southwesterly divide it reached 16 inches.

The antecedent rains of September 12-16 were light, averaging only about 1.4 inches over the basin, of which only about 0.1 inch appeared as direct run-off, thus leaving a retention that averaged 1.3 inches. This amount was probably disposed of by evaporation, transpiration, and absorption, and was insufficient to exercise material effect on the rainfall and run-off relations during the major storm that followed. Inspection of the stream-flow records discloses that significant run-off did not begin until late on September 18, or until September 19 in some places, after 1 to 2 inches of rain had fallen. This large amount of the initial abstraction seems to indicate that soil and vegetal conditions prevailing immediately prior to the major storm were quite favorable for the retention of water.

The direct run-off that followed the initiation of the active run-off ranged between 1.15 inches and 8.7 inches (table 14), the smaller amount being in the southeastern part of the basin and the higher amount in the northwestern part of the basin near the area of maximum precipitation. The maximum run-off of 8.7 inches approaches closely the heretofore measured upper limit of direct run-off for a single flood rise in the northeastern part of the country without snow melt.

The difference between precipitation and direct run-off ranged from 2.8 to 8.15 inches, the magnitude corresponding generally to the depth of rainfall as shown in figure 47. The minimum retention of 2.8 inches for the basin of the Yantic River at Yantic, Conn., was computed for a

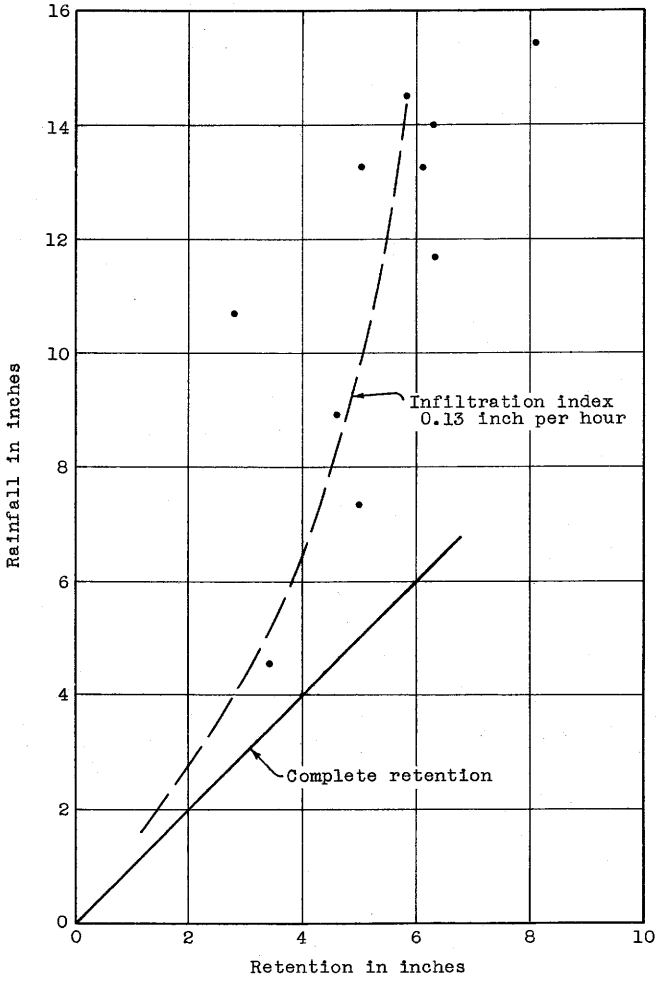


Figure 47.--Relation of total rainfall September 17-21, 1938, to difference between total rainfall and direct run-off, Thames River Basin.

region of intense rainfall along the storm front where the gradient was particularly steep. It is, therefore, likely that the indicated precipitation for this basin is inaccurate. The observed precipitation of 9.96 inches at Colchester, just west of the basin, on which record the position of the isohyetal lines in the Yantic River Basin has been mainly based, may not have been given appropriate weight in the determination of the

precipitation over the basin. Disregarding this value, the remaining points on figure 47 seem to be satisfactorily consistent. Figure 47 shows a plot of the retention in relation to the precipitation. Based on the method explained in the section on "Methods of analysis" a line representing an infiltration index of 0.13 inch per hour is also shown in figure 47. The plotted points group close to the indicated infiltration index of 0.13 inch per hour. Variations of the points probably relate to the differences in soil and vegetal conditions as well as to inadequacies in base data. Figure 45, showing the geographical variation of the infiltration index, indicates that the Thames River Basin is situated in a region of more than average retentive capacity. There were only eight records of precipitation in the basin, none of which were from automatic recorders, an insufficient number for defining satisfactorily the variations of precipitation during outstanding storm periods.

The relatively high absorption in the area resulted in proportionately large contributions to the ground water. Based on analysis of hydrographs as previously explained, it is estimated that the portion of the ground-water accretions that later appeared as stream flow ranged between 1 and 3 inches and averaged about 40 percent of the residual.

In the outstanding storm of September 16 and 17, 1932, which centered just east of the Thames River Basin, there was an average precipitation of about 7 inches in the Quinebaug River Basin above Jewett City, Conn. The associated direct run-off following this storm was about 0.7 inch, leaving a difference of 6.3 inches. During the storm of November 2-4, 1927, there was a rainfall of about 5.9 inches over the same basin followed by direct run-off of 1.7 inches. The indicated retention of 4.2 inches is comparable with that of the storm of September 1938. Between March 9 and 22, 1936, there was a rainfall of 8.1 inches over the Quinebaug River Basin above Jewett City, Conn., and 2.6 inches of water on the ground in the form of snow. The resultant direct run-off was 9.4 inches from the total supply of 10.7 inches, indicating a retention of only 1.3 inches. Although the total supply, and therefore the retention, may have been greater than reported, this flood, due mainly to the season and the presence of frost in the ground, occurred under highly unfavorable conditions for absorption and retention. The soil and vegetation in the storm of September 1932, on the other hand, were apparently in a very absorptive and retentive condition.

The base flow or rate of outflow from the ground-water reservoir during nonwinter periods may be used as an index of the receptive capacity of the soil on the assumption that there is a significant relation between such base flow, the state of the ground-water reservoir, and soil-moisture conditions. Thus prior to the 1932 storm, the base flow of the Quinebaug River at Jewett City was about 300 second-feet; prior to the 1927 storm, 850 second-feet; and prior to the 1938 storm, 640 second-feet. The magnitudes of these base flows are in inverse order from those of the retention found for the respective storms.

The degree to which direct run-off was concentrated with respect to time as measured by the ratio between the direct run-off during the maximum 24 hours and the total direct run-off associated with the storm of September 17-21, 1938, ranged between 21 and 51 percent, as shown in table 14. Under uniform storm conditions, this ratio may be presumed to be definitive of the topographic characteristics of the basin. On this basis, the following streams appeared to be relatively sluggish: Hop River, Five Mile River, and Moosup River. The remaining basins do not appear to be markedly different from the other basins of the region if allowance is made for the normal variation of the concentration ratio with the size of the drainage area.

Connecticut River Basin

The eastern divide of the Connecticut River Basin in Massachusetts and Connecticut was in the approximate center of the area of heaviest precipitation. In fact, the maximum precipitation at any station in the entire storm area for the period September 17-21 was recorded at two points in the easterly part of this basin, namely, 17.07 inches at Camp Buck near Portland, Conn., and 17.03 inches at Barre, Mass. This high rainfall resulted in equally outstanding volumes of run-off, which in some basins in the central storm area reached nearly 10 inches, so marking a new high record for run-off during a single flood rise in the northeastern United States in which melting snow was not involved.

The major storm period was preceded by an average precipitation of 2.2 inches over the basin during September 12-16, generally ranging between limits of 1 and 3 inches, as shown in figure 2. As discussed in the section on "Meteorologic and hydrologic conditions", this precipitation fell mainly during two general rains and served to raise stream levels moderately as shown in figure 43 and to some degree utilized the

absorptive capacity of the soil. Table 14 indicates that the direct run-off averaged about 0.3 inch and the volume retained in the basin up to September 16 averaged nearly 2 inches. The greater part of this retention is accounted for by vegetal interception, ground wetting, depression storage, soil-moisture accretion, and evaporation. As shown in figure 43 it is estimated that relatively little rainfall reached the ground-water table during the antecedent storm period.

The major storm period began with the rains of the afternoon of September 17 and ended before midnight of the 21st. Figure 49 shows the general distribution of rainfall and run-off at Burlington, Conn., in the lower Connecticut River Basin with respect to time during this storm period. The rain of September 17 was separated from the succeeding rains and produced inappreciable run-off. Between the afternoon of September 18 and the end of the storm there was almost continual rain (an average of about 57 hours of measurable rainfall) generally increasing in intensity from the beginning to the end of the storm period, although there was considerable variation in this respect. Thus, the greatest hourly rainfall occurred at 9 p.m. on September 20 at Hartford, Conn., whereas the greatest hourly rainfall at Burlington, Conn., only 15 miles west of Hartford, occurred at 5 p.m., September 21. The maximum hourly rates of precipitation recorded in the storm area occurred in the Connecticut River Basin and were as follows: 1.90 inches at Hartland Hollow, Conn., and 1.89 inches at South Meadows, Conn. No hourly records of precipitation are available in the area of maximum total precipitation but at Barre, Mass., 11.83 inches of rain was recorded during the 24 hours ending at 8 a.m., September 21, indicating an average rate of about 0.5 inch per hour. It is estimated that about 8 inches of rain fell at Barre between 5 and 11 p.m., September 21. Although rain was nearly continual during the last 24-hour period of the storm, the hourly rates were probably greatly in excess of the indicated average. At nearby recording gages the ratio between the maximum hourly precipitation and the average hourly precipitation during the maximum 24 hours was about 5 to 1, and accordingly, the indicated maximum hourly precipitation at Barre may have been as high as 2½ inches per hour.

The total storm precipitation, as shown in table 14, ranged from 2.8 inches over the basin above Pittsburg, N. H., to 14.8 inches over the Hockanum River Basin above Rockville, Conn. The average precipitation over the basin above Hartford, Conn., was 7.55 inches, based on 153 records within the basin as well as those adjacent thereto.

Direct run-off averaged 4.05 inches over the Connecticut River Basin above Hartford, Conn., and reached a maximum of 9.9 inches in the Hockanum River Basin above the outlet of Shenipsit Lake at Rockville, Conn., with two other basins, namely, Priest Brook above Winchendon, Mass., and Quaboag River above West Brimfield, having run-off in excess of 9 inches. (See pls. 12, 13, and 14.) As shown in table 14, seven basins draining 513 square miles had 8 inches or more of direct run-off. The data on direct run-off listed in table 14 are based on stream-flow records adjusted for storage in all upstream reservoirs where records of daily changes in volume were available. In addition to known storage there are numerous small regulated ponds and reservoirs for which records of changes in storage are not available. The effects of known artificial storage on the flood run-off in the lower Connecticut River were not appreciable although the tendency was to reduce the flood peak.

The difference between total precipitation and total direct run-off averaged 3.5 inches over the basin above Hartford, Conn., and ranged between 7.95 inches in the Hockanum River Basin in Connecticut and an indicated 0.65 inch in the Otter Brook Basin above Keene, N. H. Although these two extremes are very likely indicative of local conditions inherent in the respective basins it is possible that some error due to inadequate base data may be involved. Both of the last two basins were located near places where the precipitation gradient was steep, making the accurate determination of mean areal precipitation for such small areas very difficult. Figure 48 shows the relation between the mean areal precipitation and the total retention and indicates substantial scattering of the plotted points. This scattering results from differences in soil and vegetal conditions in the several basins and to deficiencies in base data particularly with respect to areal precipitation in small areas near the storm centers. Based on the duration of significant rainfall as previously defined, there are shown on figure 48 two lines, one representing an infiltration index of 0.07 inch per hour and the other an index of 0.10 inch per hour. Most of the computed values of the retention for upper basins in Vermont and New Hampshire plot close to or toward the left of the index of 0.07 inch, indicating average rates of absorption of 0.07 inch per hour or less. Most of the basins in Connecticut plot toward the right of the figure indicating rates of 0.10 inch per hour or greater. The data in table 14 and shown in figure 48 indicate a seemingly significant downstream increase in the retention, particularly with respect to the areas tributary to gaging stations on the main river; in

figure 45 the mean infiltration index shows a similar tendency to increase. It may be further noted that the basins with drainage areas in excess of 500 square miles tend to plot close to or between the two index lines. It may be assumed that the indicated mean precipitation

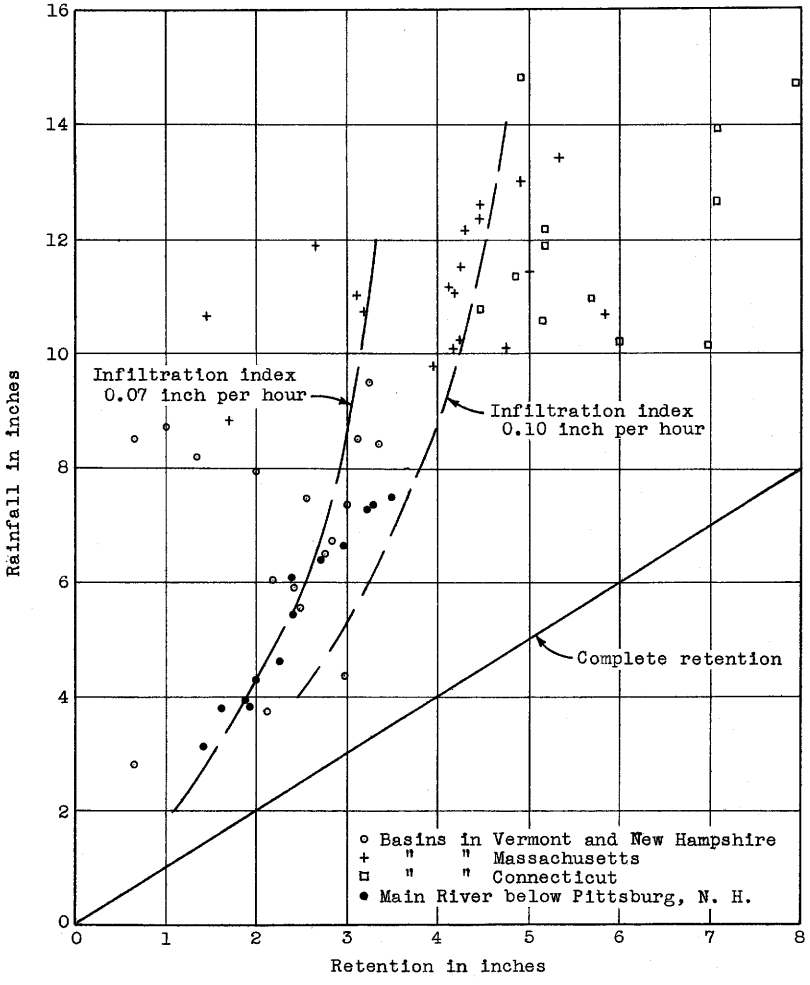


Figure 48.--Relation of total rainfall September 17-21, 1938, to difference between total rainfall and direct run-off, Connecticut River Basin.

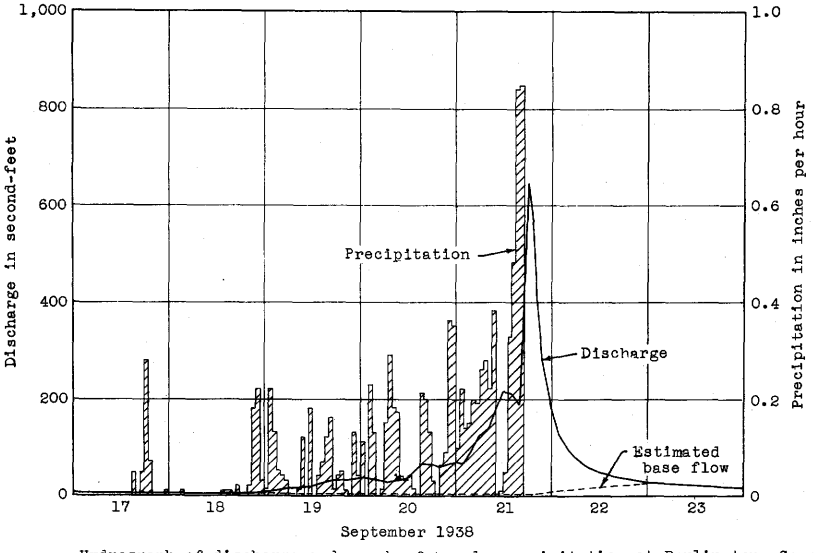
for the larger basins is less subject to error than that for the smaller drainage basins and furthermore that integration of the effects of variable soil and vegetal conditions on the larger drainage areas, comprising the Connecticut Basin, would tend to produce uniformity in the values of the infiltration index. It has been shown that an average of about 2 inches was held back in the basin from the rains of September 12-16. Ground-water

accretion during September 17-21 as computed by the method explained previously, ranged between 0.5 and 2.5 inches, which amounts to about one-third of the retention.

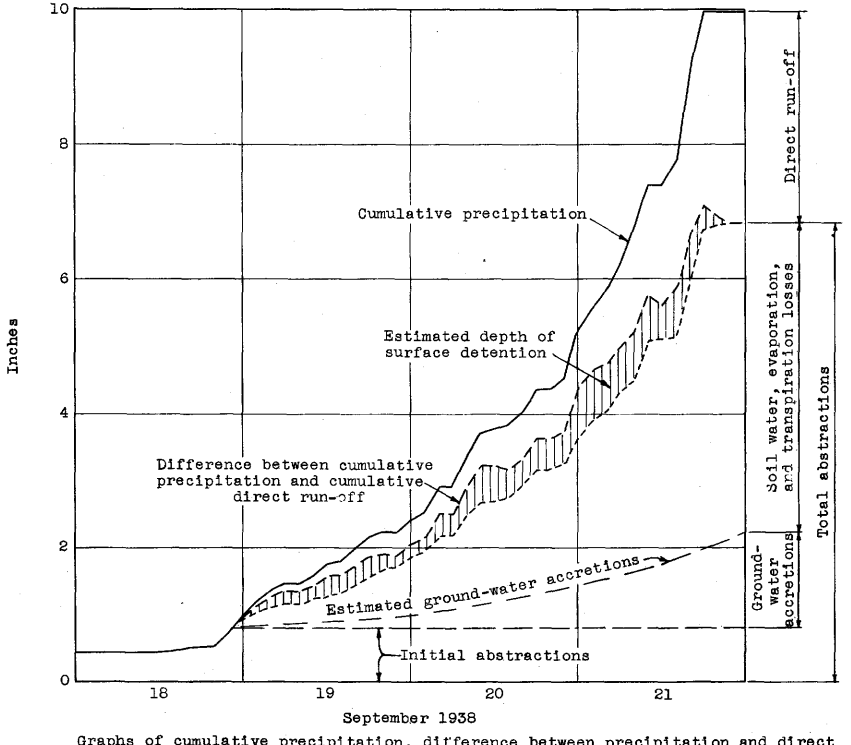
As discussed in Water-Supply Paper 798, the total retention in the Connecticut River Basin above Thompsonville, Conn., during the storm of March 1936 was about 1.6 inches over the basin from 6.4 inches of rain and 6.3 inches of water in the form of snow. This retention may represent the lower limits of basin retention during very unfavorable conditions with respect to soil absorption and evaporation. On the other hand, in the storm of September 16-17, 1932, in a different season and following a long dry period there was an average of about 2.4 inches of precipitation, of which only 0.13 inch ran off, indicative of relatively high absorption and evaporation. During the storm of November 2-5, 1927, there was an average of 5.75 inches of rainfall followed by 2.95 inches of run-off, leaving a retention of 2.8 inches. The latter is closely comparable with the retention indicated for equal rainfall during the storm period of September 1938.

The results of a more detailed analysis of rainfall and run-off from the rain of September 18-21 for Burlington Brook above Burlington, Conn., a small basin in the lower Connecticut River Basin, is presented in figure 49. The upper part of the figure shows the hourly rainfall in inches per hour at Burlington, Conn., and the continuous graph of stream flow in second-feet at the Burlington Brook weir nearby. The rains of September 17 produced no rise in the flow. Beginning with the afternoon of September 18, the rainfall at Burlington, Conn., increased in intensity until it ended at 5 p.m., September 21. The graph of stream flow shows a like increase, reaching a peak immediately after the intense rain that marked the termination of the storm. Inspection of the graph also shows that as the storm progressed, the stream flow became increasingly greater in proportion to the rainfall, indicating a decreased rate of retention. The discharge following the peak was largely composed of channel storage and ground-water effluent.

There was no appreciable increase in stream flow until near midnight of September 18, after a total rain of about 0.75 inch, which represents the depth of initial abstraction from rain for this flood period. The amount is shown graphically in the lower part of figure 49. The figure also shows the cumulative rainfall and its computed segregation and disposal. First there is the initial abstraction just mentioned. As the rain increased in amount and intensity, direct run-off into stream channels



Hydrograph of discharge and graph of hourly precipitation at Burlington, Conn., Sept. 17-23, 1938.



Graphs of cumulative precipitation, difference between precipitation and direct run-off, and estimated ground-water accretion, Sept. 18-21, 1938.

Figure 49.--Analyses of rainfall and run-off in basin of Burlington Brook near Burlington, Conn.

became appreciable and continued to increase in amount and rate as determined by the rain and the absorption by the ground. Accumulative direct run-off, adjusted for channel storage, has been computed at 2-hour intervals and deducted from the cumulative rainfall at like intervals. The accumulative difference so obtained is shown on figure 49. The total precipitation was 9.95 inches, the total direct run-off 3.05 inches, and the retention 6.9 inches. Of this retention, initial abstraction accounted for 0.75 inch, leaving 6.15 inches predominantly for the ground-water and soil-water accretions and evaporation. Based on the assumption that the stream flow after September 22 was derived from ground-water storage as shown in the upper part of figure 49, it has been computed by the methods previously explained that the total ground-water accretion was 1.6 inches, leaving 4.25 inches for soil-water accretions and losses by evaporation and transpiration. The total accretion to ground-water storage was distributed with respect to time during the storm period in figure 49 in proportion to the difference between rainfall and direct run-off as indicative of the supply available for such accretion. During a storm there may be a certain depth of water in transit toward stream channels. Although this water is effective in producing run-off, it is at the same time being absorbed by the ground and receiving contribution from the continuing rainfall. This depth of water which has been termed surface detention but which perhaps can also be appropriately defined as water in transit to stream channels, was estimated essentially by methods explained by Sherman[16/] and is shown in figure 49. The result obtained by deducting this quantity from the difference between cumulative rainfall and cumulative direct run-off is also shown.

Thus, at any time, figure 49 shows an inventory of the total depth of rainfall, its segregation into initial abstraction, the estimated accretion to ground water, soil moisture, and evaporation, the surface detention (marking the indefinite boundary between the abstraction and run-off), and ultimately the remainder of the precipitation available for direct run-off.

From figure 49 may be computed the infiltration rates that correspond to the slope of the line represented by the difference between precipitation and direct run-off minus the estimated depth of surface detention. The maximum rate of infiltration was about 0.43 inch per hour and was

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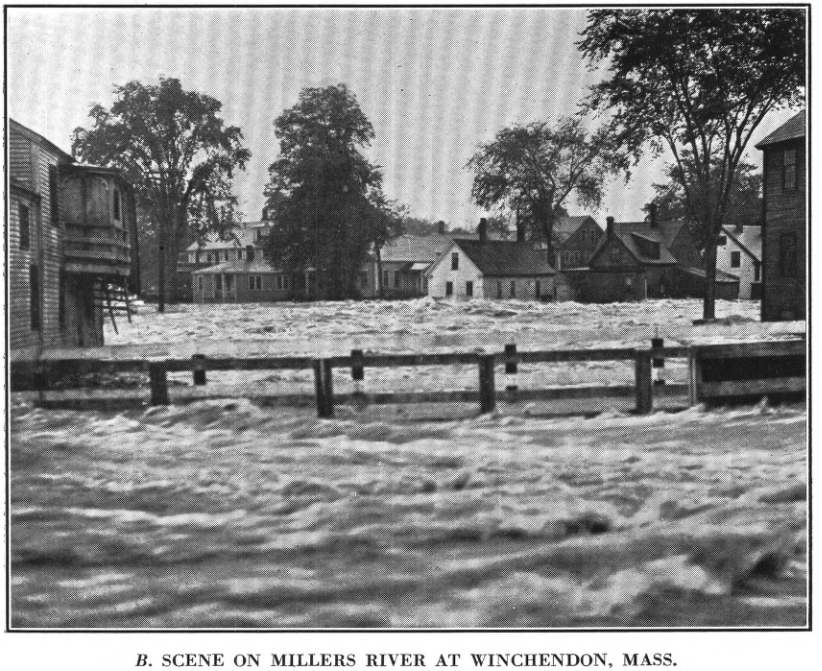
16/ Sherman, L. K., Determination of infiltration rates from run-off: Am. Geophys. Union Trans., 1938, pp. 430 et seq.

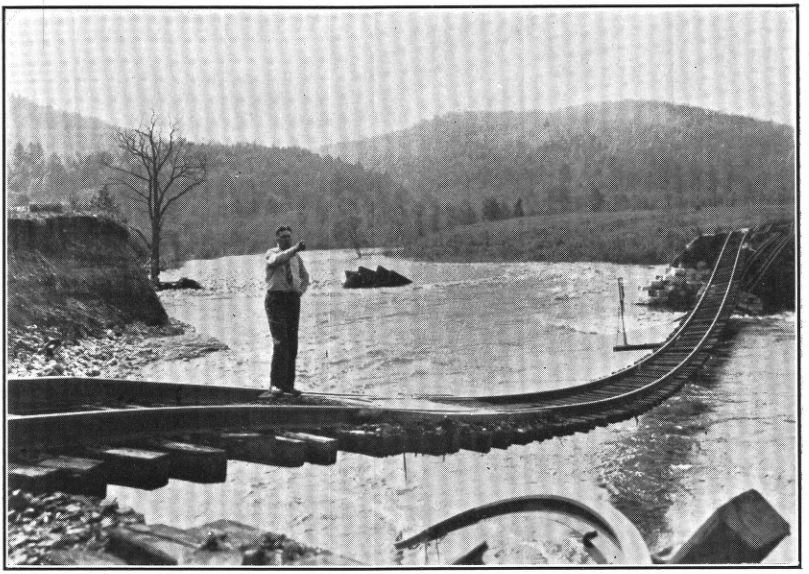
A. SCENE ON QUINEBAUG RIVER AT SOUTHBRIDGE, MASS.

Water passing around end of dam and destroying a street.



B. SCENE ON MILLERS RIVER AT WINCHENDON, MASS.

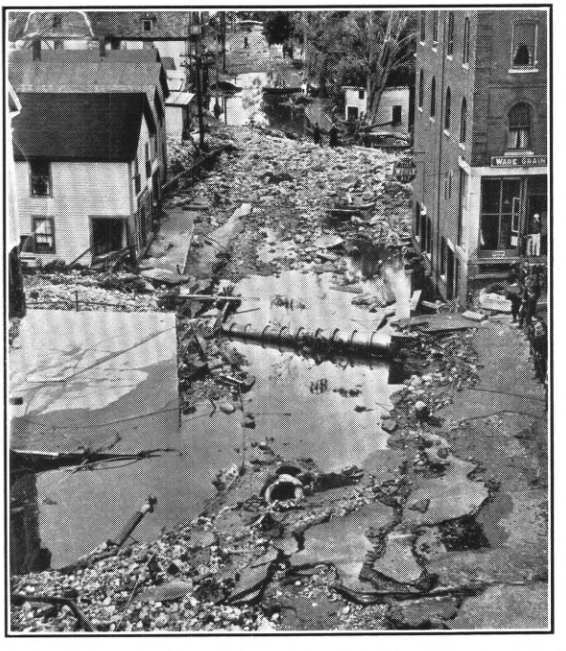
Courtesy of International News Photo.



A. APPROACH TO BOSTON & MAINE RAILROAD BRIDGE DESTROYED BY FLOOD AT WENDELL, MASS.

B. VIEW ON BOSTON & MAINE RAILROAD AT MILLERS FALLS, MASS.

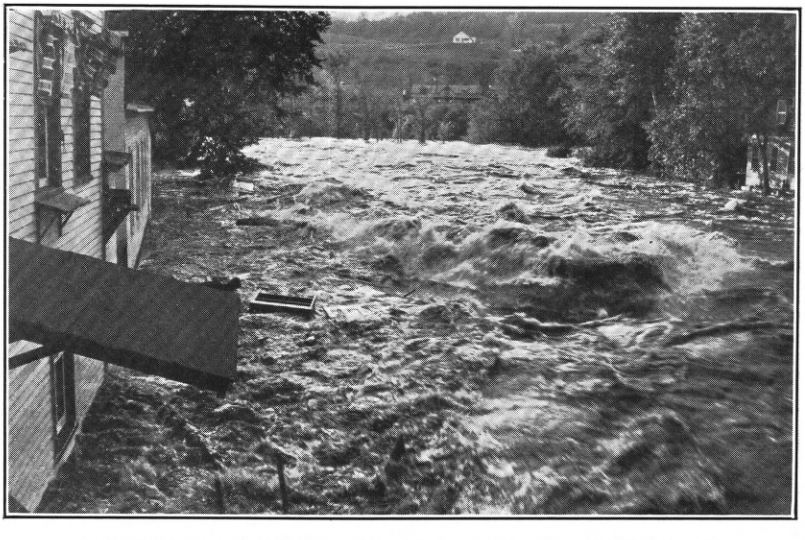
WASH-OUTS ON MILLERS RIVER.



A. CITY STREETS IN WARE, MASS., DESTROYED BY FLOOD OF WARE RIVER

B. CHICOPEE RIVER AT CHICOPEE FALLS, MASS.

A. WAPPINGER CREEK AT WAPPINGER FALLS, N. Y., AT HEIGHT OF FLOOD.
Photograph by George Pettit.



B. WEST BRANCH OF AUSABLE RIVER AT AUSABLE FORKS, N. Y.

closely associated with the period of maximum rainfall intensity. The average rate was 0.20 inch per hour, from data given in table 14 and figure 44. The decrease in the ability of the basin to absorb water as the storm continued is indicated by the increasing ratio between direct run-off and rainfall as follows: 19 percent on September 18, 26 percent on September 19, 27 on September 20, and 38 on September 21.

Housatonic River Basin

The rainfall during the antecedent period September 12-16 was comparatively light, averaging about 1.7 inches over the basin, and the resulting direct run-off ranged from zero to 0.35 inch. Basins with less than 1.5 inches of precipitation had 1 inch or less of direct run-off, indicating about 1.4 inches as the amount of initial detention required to start active run-off under the existing conditions. The average detention of about 1.5 inches probably only partly utilized the absorptive capacity of the basin.

Two continuous records of precipitation in the Housatonic River Basin are available, one at Woodville, Conn., and the other at Waterbury, Conn., (a fragmentary record at Candlewood Lake has been excluded).[17] The Woodville gage recorded 11.0 inches of rainfall during 71 hours between 4 p.m. September 17, and 8 p.m., September 21, and the Waterbury gage recorded 9.10 inches of rainfall during 59 hours in nearly the same interval. The maximum hourly rate of precipitation registered during the storm at Woodville was 1.36 inches for the hour ending at 2 p.m., September 19. The maximum 24-hour precipitation recorded in the basin was 5.42 inches at Salisbury, Conn., for the 24 hours ending at 5 p.m., September 21, as compared with a total storm rainfall of 8.9 inches, thus indicating that more than 60 percent of the rain fell during the last 24 hours of the storm.

Based on 29 records in the basin and adjoining areas, the precipitation during September 17-21 ranged from 7 to nearly 12 inches. The associated direct run-off as shown in table 14 ranged from 3.2 to 7.65 inches, generally varying with the rainfall. The difference between the total storm precipitation and the total direct run-off ranged between 3.05 and 6.6 inches and represents the depth of water disposed of by vegetal interception, surface storage, absorption, and evaporation. Figure 50

17/ The automatic record at Waterbury, Conn., was received too late to permit its inclusion in this report although the daily record of rainfall is published as no. 248 in table 4.

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shows the retention for the several basins listed in table 14 in relation to the storm rainfall. Estimates made by methods described in a previous section indicate that the average accretion to ground water was about 1.6 inches or about one-third of the total retention.

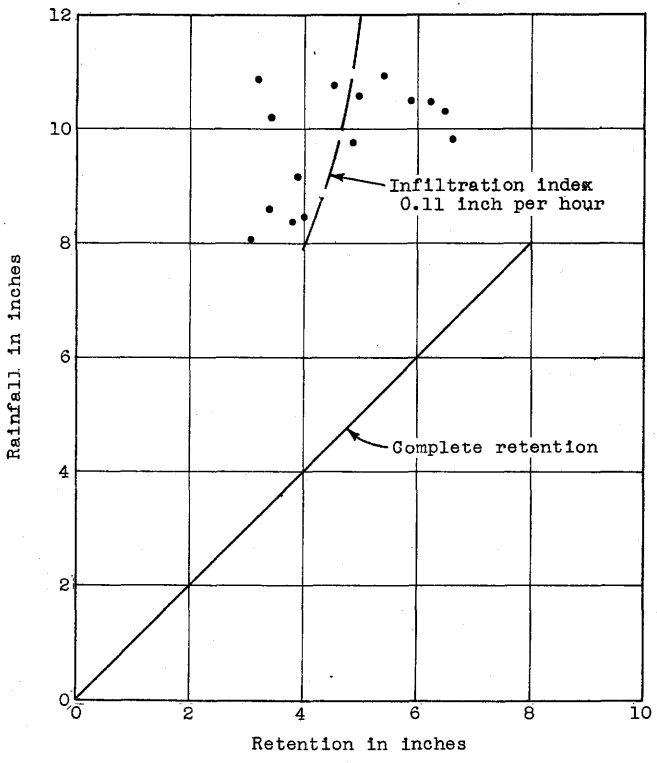


Figure 50.--Relation of total rainfall September 17-21, 1938, to difference between total rainfall and direct run-off, Housatonic River Basin.

Based on the number of hours of significant rainfall, as defined in the section on "Method of analysis", a line representing an infiltration index of 0.11 inch per hour is shown in figure 50. There is some scattering of the plotted points with respect to the index line which may be ascribed to variations in retentive capacity of the various basins, difference in storm characteristics, and deficiencies in base data. Figure 45 shows that the infiltration index increases in a downstream direction in a manner similar to those of adjoining basins.

In the storm of March 9-22, 1936, there was an average rainfall of 5.45 inches over the Housatonic River Basin above Stevenson, Conn., upon an antecedent snow cover with a water content of about 4.0 inches. The average direct run-off was 8.4 inches, leaving a retention of 1.05 inches,

from the total supply of 9.45 inches. The small retention reflects the effects of frost and other adverse factors in restricting infiltration.

The storm of September 1932 was of negligible intensity in this basin. During the storm of November 1927, however, there was about 6.15 inches of precipitation in the Housatonic River Basin above Falls Village, Conn., of which 3.05 inches appeared as direct run-off, leaving a retention of 3.1 inches, an amount comparable with that of the storm of September 1938.

The ratio between the direct run-off during the maximum 24 hours and the total direct run-off ranged between 29 and 53 percent. Study of this percentage in relation to drainage area indicates that most of the drainage basins are consistent with respect to concentration characteristics. The results for the Naugatuck River Basin indicate that it is more flashy.

Streams on Long Island

Western Long Island received about 11 inches of rainfall, but in contrast with other regions on the mainland, there were no severe freshets in the streams. Inspection of table 14 reveals that the direct run-off from the 1-inch rainfall of September 12-16 was negligible and that the 11 inches of rainfall on September 17-21 resulted in but 0.2 to 0.6 inch of direct run-off, leaving a retention of about 10.6 inches.

The surface of Long Island is composed of unconsolidated materials of glacial origin, and rock is not to be found except at the extreme western edge or at great depths, generally beneath sea level. The low relief and high porosity of the thick, unconsolidated deposits combine to provide very high absorptive and retentive capacities and rapid passage of infiltrated water to the ground-water table. Consequently in an inventory of the water resources of Long Island the ground-water storage is an item of great importance.

The average retention following the rains of September 17-21, which nearly equalled the rainfall, may be segregated as follows: (a) initial losses, such as vegetal interception; (b) soil-water accretion; (c) evaporation and transpiration losses; and (d) addition to the ground-water storage from which it reaches stream channels, discharges directly to the ocean or is pumped for domestic or industrial uses.

Although no definite quantitative segregation of the residual can be made, if it is assumed that the first three items above are similar to those in the Thames River Basin or in the Lower Connecticut River Basin (soil moisture capacities of the two regions may differ somewhat), where

under like rainfall they averaged about 3.9 inches, then of the retention of 10.6 inches remaining after the rains of September 17-21, it is estimated that about 6.7 inches or about 63 percent of the retention was available for ground-water run-off or pumpage. Based on an interpretation of ground-water levels and an estimation of the specific yield of the material in the zone of ground-water fluctuation, as discussed in the section "Ground-water recharge on Long Island", it was estimated that the recharge in the area south of the glacial moraine was 7.2 inches.

Largely as a result of the high rates of infiltration that are characteristic of this region and of the flat channel slopes bordered by marshy ground, peak rates of surface flow were low, the maximum being 8.6 second-feet per square mile (0.013 inch per hour) compared with rates of rainfall in the area which reached a maximum of 1.28 inches per hour at Manhasset, N. Y., during the hour ending at 10 p.m., September 18. At Setauket the Weather Bureau observer reported 1.64 inches of rain in 75 minutes on the morning of September 20, equivalent to 1.31 inches per hour.

Hourly records of rainfall on Long Island indicate irregular rainfall distribution with respect to time. Table 6 shows that the maximum rate occurred on September 21 at Brooklyn, in Flushing, N. Y., on September 20 at Freeport, and on September 18 at Long Beach, Manhasset, and Mineola, N. Y. Inspection of the daily amounts at the several gages on Long Island likewise does not disclose any great measure of similarity of distribution with respect to time. This condition makes any hourly correlation of rainfall and run-off in this area more difficult than might be presumed from the relatively large number of recording gages available. It may also indicate that generalizations with respect to rainfall characteristics without adequate continuous records may lead to error.

Figure 51 shows a hydrograph of stream flow of Pines Brook at Malverne, N. Y., together with a graph of hourly precipitation at Mineola, N. Y. The hydrograph may be seen to conform rather closely with the rainfall distribution, the two principal peaks following, respectively, the two periods of intensive rainfall. The hydrograph of direct run-off for this drainage area of 10 square miles, which is superimposed upon a proportionately large discharge from ground water, shows the effects of modification by stream channel and swamp storage, of which there are considerable amounts. Stream flow became greater in proportion to the rainfall as the storm continued.

In the low pervious areas of Long Island there is great difficulty in sharply tracing the basin divides, particularly with respect to the division of ground water, inasmuch as the phreatic and topographic divides are not necessarily coincident. Consequently the mean depths in inches of direct run-off given in table 14 may be in error from this source, but by amounts of relatively small magnitude. Any determination of ground-water run-off, in inches, may, however, be subject to material error.

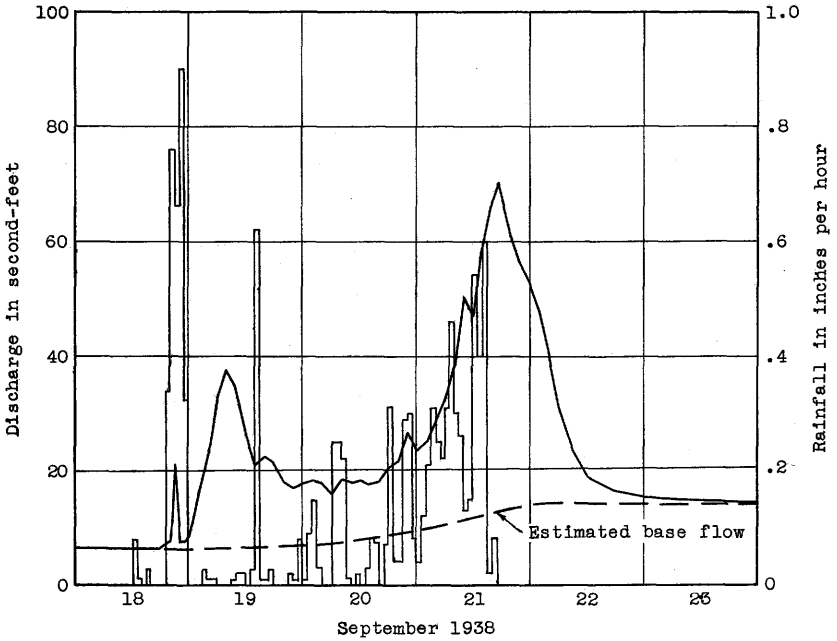


Figure 51.--Hydrograph of discharge, Pines Brook at Malverne, N. Y., and graph of hourly rainfall at Mineola, N. Y.

The average of the differences between rainfall and direct run-off as listed in table 14 is about 10.6 inches, which corresponds with an infiltration index of more than 0.26 inch per hour and greatly in excess of the index of infiltration obtained for areas on the mainland during this storm, which generally averaged between 0.08 and 0.12 inch per hour.

Hudson River Basin

The Hudson River Basin, although west of the central storm area, received fairly sizeable amounts of precipitation during September 17-21, ranging from more than 9 inches in the lower basin and in the upper Hoosic River Basin to less than 3 inches in the upper Mohawk River Basin. In

general, the rainfall decreased from the southern and eastern portions toward the north and west. An example of the flood conditions in the eastern part of the basin on Wappinger Creek is shown in plate 15, A.

Rainfall began during the late afternoon of September 17 and continued with about 65 hours of measurable rainfall until nearly midnight of September 21. The maximum precipitation during any one hour, 1.32 inches, was recorded during the hour ending at 2 p.m., September 19, at West Point, N. Y., where a total storm rainfall of 8.93 inches was recorded. Although most of the recording gages indicated that the maximum hourly rate occurred on September 19, the major portion of the rain fell on September 21. Thus the greatest daily amount recorded in the basin was 6.00 inches at Bedford Hills, N. Y. (in the lower basin), for the 24-hour period ending at 5 p.m., September 21, as compared with the total storm rainfall at Bedford Hills of 9.83 inches. The storm of September 17-21 was preceded by an average of 1.9 inches of rain during the period September 12-16, distributed somewhat irregularly as shown in figure 2. There were moderate rises in stream flow following the storm. There was practically no direct run-off in areas of 1 inch or less or rain, but the direct run-off was as much as 0.8 inch in the upper Hoosic River Basin, where there was more than 2 inches of rainfall. The retention from the first storm was generally proportional to the rainfall and averaged about 1.7 inches. It tended to relieve surface dryness and undoubtedly had a significant effect on the rainfall and run-off relations during the major storm that followed.

Run-off associated with the storm of September 17-21 as shown in table 14 ranged from 1.5 to 6.7 inches and left a retention that averaged about 3½ inches. The retention, being limited by the supply, was generally greater in those areas where precipitation was heaviest. It was also influenced by other factors, principally rainfall rates and soil and vegetal conditions. Figure 52 has been prepared in order to study the variation of the residual with respect to the total rainfall. Based on procedure explained in the section on "Method of analysis", lines of equal infiltration index have been drawn on figure 52. These lines show that most points lie within the 0.08 and 0.13 inch per hour indices and that there was a tendency for the average rates of infiltration to increase with the amount of rainfall. The geographical distribution of the infiltration index shown in figure 45 indicates a general tendency towards greater infiltration in the lower basins. An infiltration index of 0.10 to 0.14

inch is indicated for parts of the upper Hudson River Basin. This relatively high retentive capacity in this region may be due in large part to the surface storage available in swamps rather than to ordinary ground retention.

The Portion of the difference between rainfall and run-off that resulted in accretion to ground water has been estimated to average about 1 inch or about 33 percent of the total retention.

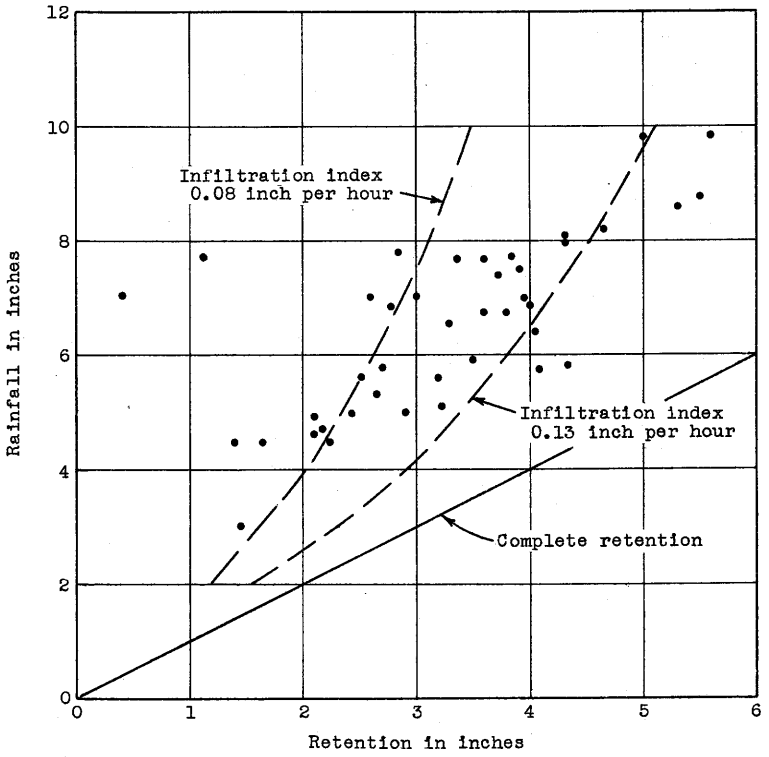


Figure 52.--Relation of total rainfall September 17-21, 1938, to difference between total rainfall and direct run-off, Hudson River Basin.

With an average rain of about 4.8 inches, March 9-22, 1936, falling upon a snow cover having an average water content of about 4.4 inches, there was a total direct run-off of 7.7 inches from the Hudson River Basin above Albany, leaving an average residual of about 1.5 inch. As reported in Water-Supply Paper 799, this small retention, associated with a 13-day storm period, largely reflects the restrictive influence of frost and other adverse factors on infiltration. It is believed the conditions at the time approached the most unfavorable that may be expected in this area in respect to basin retention.

Concentration of the run-off with respect to time as indicated by the ratio of direct run-off during the maximum 24-hour period and the total direct run-off for the flood ranged between 18 and 69 percent. Study of the relation between the concentration ratio and the size of the drainage area indicates that the Schoharie Creek at Prattsville, N. Y., is a stream of more than normal flashiness, whereas the run-off of the upper Wallkill River Basin, owing to the effects of large volumes of storage over wide flood plains, is characteristically sluggish. It is of interest to note that the concentration ratio of Wallkill River at Phillipsburg is only 18 percent, whereas, downstream at Gardiner, N. Y., the ratio increases to 23 percent, reflecting the effect of the prompt discharge of inflow from the 279 square miles of intervening drainage.

Eastern New Jersey basins

During the storm of September 17-21, eastern New Jersey as shown on plate 1 received 7 to nearly 12 inches of rainfall in 50 to 81 hours. The maximum rainfall in an hour, 1.76 inches, was recorded on the sea coast at Long Branch, N. J., during the hour ending at 8 p.m., September 18. The automatic gage at Mahwah, N. J., recorded 1.50 inches during an isolated shower at 2 p.m., September 19. Nine recording gages reported rainfall in 1 hour in excess of 1 inch. There was, however, much divergence in the time during which the maximum intensity of precipitation occurred. In common with other areas the greater part of the rain fell during the 24 hours ending on the evening of September 21, as evidenced by the maximum 24-hour amount (6.35 inches out of the total of 10.29 inches) recorded at Lakewood, N. J., during the 24 hours ending at 5 p.m., September 21.

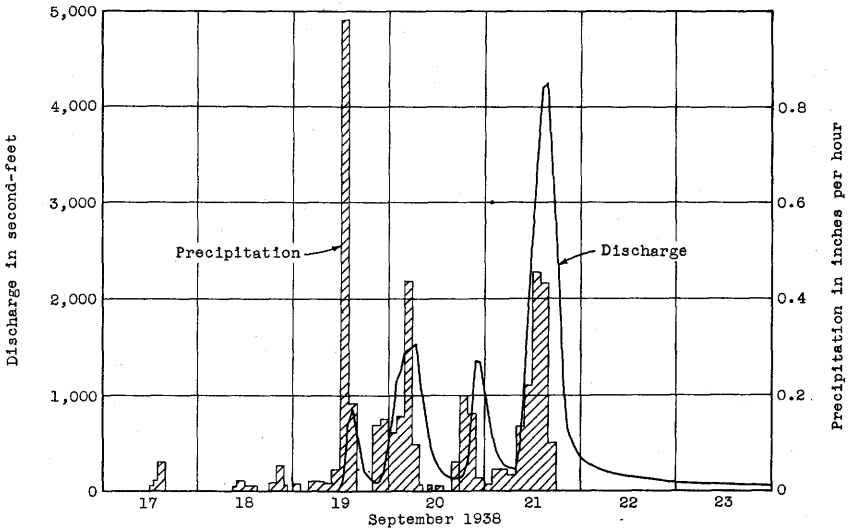
In general, the rivers in the area began to rise about noon on September 19 in response to comparatively heavy rains following light separate rainfalls on September 17-18. There was nearly continual rainfall of measurable amounts between noon on September 19 and the evening of the 21st. All the larger streams rose steadily to a single peak, which was reached late on September 21 or early on September 22. Some of the smaller streams had two or more well defined rises in response to the variations in the rainfall form. However, in all rivers, the final peak of September 21 was the greatest. Peak rates of run-off are given in table 10. The maximum for Green Brook at Plainfield, N. J., was 178 second-feet per square mile, corresponding to nearly 0.28 inch per hour. Indicative of the degree to which the run-off was concentrated in respect

to time, table 14 lists the ratio between the direct run-off during the maximum 24 hours and the total direct run-off, for all unregulated streams. Study of this ratio with respect to size of the drainage area indicates that the streams in the Raritan River Basin are generally more directly responsive to the rainfall than are those in the Passaic River Basin. The relatively sluggish character of the Passaic River is mainly due to the large volume of storage over the lowlands lying between the Watchung Ridges in central New Jersey. Thus the discharge hydrograph of the Neshanic River in the upper Raritan River Basin, which has the greatest concentration ratio (61 percent), faithfully displays the variations in rainfall intensity shown in figure 53. The lowest concentration ratio was that of the Passaic River at Chatham (15 percent), whose basin is affected by large flood-plain storage described above. The basins in the southern part of the State as exemplified by the Great Egg River above Folsom, which has a concentration ratio of 20 percent, are sluggish, owing to low relief and flat channel slopes.

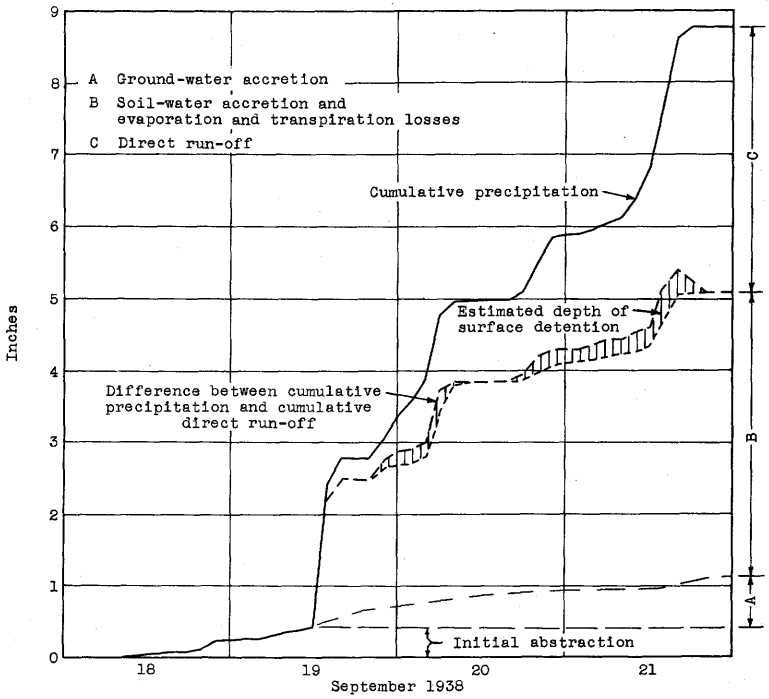
Table 14 lists the rainfall and run-off over the several basins in eastern New Jersey during the periods September 12-16 and 17-21. Rainfall during the first period was generally less than 1 inch and produced inappreciable run-off. The storm of September 17-21, with 5 to 11 inches of rain, resulted in direct run-off that ranged between 1.6 and 4.5 inches, as determined by the rainfall and other factors peculiar to each basin. The difference between rainfall and direct run-off ranged from 4.45 inches for the Wanaque River Basin in northern New Jersey to 8.5 inches for the Toms River Basin in southern New Jersey.

As determined by the infiltration index computed by methods previously explained, the infiltration capacity in the Passaic and Hackensack River Basins ranged between 0.13 and 0.17 inch, with an average of 0.15 inch per hour. In the Raritan River Basin, the index ranged between 0.14 and 0.20 inch with an average of 0.16 inch per hour. In the southern part of the State, the Toms River and Great Egg River Basins had infiltration indices of 0.26 and 0.17 inch per hour respectively. As shown in figure 45 there is a tendency for the retentive capacity to increase from the northern to the southern part of the state and toward the coast.

Based on continuous records of stream flow and records of rainfall at Millington, N. J., and Trenton, N. J., figure 53 has been prepared to show a detailed analysis of the rainfall and run-off of the Neshanic River Basin above Reaville, N. J. The upper part of figure 53 presents a hydrograph of stream flow in second-feet and 2-hour rainfall in inches per hour.



Hydrograph of discharge and graph of precipitation, September 17-23, 1938.



Graphs of cumulative precipitation, direct run-off, and estimated infiltration, September 18-21, 1938.

Figure 53.--Analyses of rainfall and run-off in basin of Neshanic River at Reaville, N. J.

The responsiveness of the stream flow of this basin to the rainfall variation has already been mentioned. The stream-flow graph shows that the run-off increased in proportion to the rainfall as the storm continued.

The lower part of figure 53 shows a graph of cumulative rainfall (total, 8.65 inches) and its computed segregation. First are the initial abstractions, which amounted to about 0.4 inch. It may be noted that the 0.5 inch of rainfall on September 12-16 produced no appreciable run-off. It is quite likely that the apparently and relatively low value of the initial losses may be in error as a result of the early beginning of the direct run-off due to the intense rainfall about noon of September 19, which probably quickly completed the remaining abstractions. The total direct run-off following the satisfaction of the initial demands was 3.7 inches, leaving a total retention of 5 inches, of which 0.4 inch was accounted for by the initial abstractions. Of the remaining 4.6 inches, an estimated 0.8 inch was added to the ground water, from which it was discharged into stream channels either during or subsequent to the storm, leaving 3.8 inches for soil-water accretion and losses by evaporation and transpiration. The rate of accumulation of these component parts of the retention, or difference between precipitation and direct run-off is shown on the lower part of figure 53. The cumulative direct run-off has been adjusted for channel storage and subtracted for contemporaneous intervals from the cumulative rainfall graph to obtain a cumulative graph of the difference. During a storm, water in a basin both on the surface and in many places immediately beneath it is in transit towards the stream channels. This water in transit, which is being simultaneously diminished by percolation and increased by the continuing rainfall, has been termed surface detention and is shown on figure 53. Surface detention marks the indefinite zone that exists during a storm between direct run-off and retention. The estimated ground-water accretion has been distributed with respect to time approximately in proportion to the difference between rainfall and run-off minus the estimated depth of surface detention, as indicative of the source of supply for such accretion.

The decrease in the rate at which the basin absorbed water through the storm period is indicated by the increasing ratio between the direct run-off and the rainfall as follows:

Ratio (percent)	Time (September)
11	18th, midnight - 19th, 8 p.m.
38	19th, 8 p.m. - 20th, 4 p.m.
59	20th, 4 p.m. - 21st, 8 a.m.
71	21st, 8 a.m. - 21st, 6 p.m.

Delaware River Basin

The precipitation over the Delaware River Basin during the antecedent storm period September 12-16 ranged from 1.2 to 2.0 inches and was nearly all retained in the basin or evaporated, the direct run-off from the first storm averaging less than 0.1 inch. As in other basins, the general effect of the antecedent storm was to lower the retention capacity during the main storm period and thus to increase the resulting flood run-off.

The central path of the storm of September 17-21 was east of the Delaware River Basin and consequently there was a tendency for the precipitation in the basin to increase from west to east. On an areal basis the precipitation ranged from about 5.15 to 6.8 inches over the tributary drainage areas. Most of the rain fell on September 21, although there was a total of 65 hours of significant rainfall. A maximum intensity of 0.74 inch per hour was recorded at China, N. Y., in the West Branch of the Delaware River Basin during the hour ending at 5 p.m., September 21. The flood run-off was marked by a single peak, the maximum stage occurring generally during the afternoon or evening of September 21. The total direct run-off ranged from 2.4 to 4.3 inches, and 43 to 59 percent ran off during a 24-hour period ending during the afternoon of September 22.

The basin differences between rainfall and direct run-off ranged from 1.7 to 3.7 inches and averaged about 2.65 inches. Using the described method of analysis, the infiltration index was computed to be about 0.075 inch per hour. Figure 45 showing the geographical distribution of the infiltration index in the region studied indicates that the retention capacity in the upper Delaware River Basin in New York is lower than the average found elsewhere. The average accretion to ground water, recovered as stream flow, is estimated to have been about 1 inch or 40 percent of the average residual.

St. Lawrence River Basin

Although not in the center of the storm area, some of the streams in northern New York and Vermont tributary to the St. Lawrence River experienced extraordinary floods, as shown on plate 15, B, facing page 454. As shown on plate 1 the greatest precipitation in this area was about 7 inches in the upper Otter Creek Basin. Other Basins did not receive nearly so much, as for example, the Missisquoi River Basin above North Troy, Vt., where the period rainfall was only 2.5 inches. Precipitation during the antecedent period September 12-16 ranged from 1 inch in New York to more than 4 inches in the Otter Creek Basin in Vermont, where the greatest amount during this storm was recorded. Direct run-off, however, was small, ranging from about 0.05 to 0.9 inch and tending toward the lowest amounts in areas where the precipitation ranged from 1 to 1.5 inches and reaching the greatest amounts in the Otter Creek Basin, where the precipitation averaged 3.5 inches. The net retention resulting from the antecedent storm ranged from 1 to 2.9 inches. It is unlikely that there were large contributions to ground water. Inspection of run-off amounts shown in table 14 in relation to rainfall indicates that about 1 inch of rain was required to produce a sensible increase in run-off.

September 16 was generally clear and rainfall on September 17 and 18 was negligible. In vermont the main storm was confined to the period between 4 a.m., September 19, and midnight, September 21. Table 6 shows that all stations in the area tributary to the St. Lawrence River recorded their maximum precipitation rate on September 21 towards the end of the storm period.

The direct run-off associated with the rain of September 17-21, as shown in table 14, ranged from 0.7 inch in the Black Brook Basin in New York to more than 3 inches in three basins in New York and Vermont. The retention, or the difference between the total precipitation and the total direct run-off ranged between 1.15 and 3.65 inches The retention affords a measure of the quantity of water absorbed by the ground, intercepted and transpired by vegetation, or evaporated.

Figure 54 shows a plot of the differences between storm rainfall and direct run-off in relation to corresponding rainfall. The scattering shown may be ascribed to variations in the retentive capacity of respective areas and to differences in rainfall characteristics as well as to possible deficiencies in the base data. Based on the information shown on figure 44, a line representing an infiltration index of 0.08 inch per

hour has been drawn on figure 54. The lowest value of the retention, 1.15 inches for the North Branch of the Winooski River above Wrightsville, Vt., with 3.9 inches of precipitation, corresponds to an average infiltration index during the storm of 0.05 inch per hour; and the greatest value of the retention, 3.65 inches for Black Brook above Black Brook, N. Y., with 4.35 inches of precipitation, corresponds to an average infiltration index of 0.18 inch per hour. In general, as shown by figure 45,

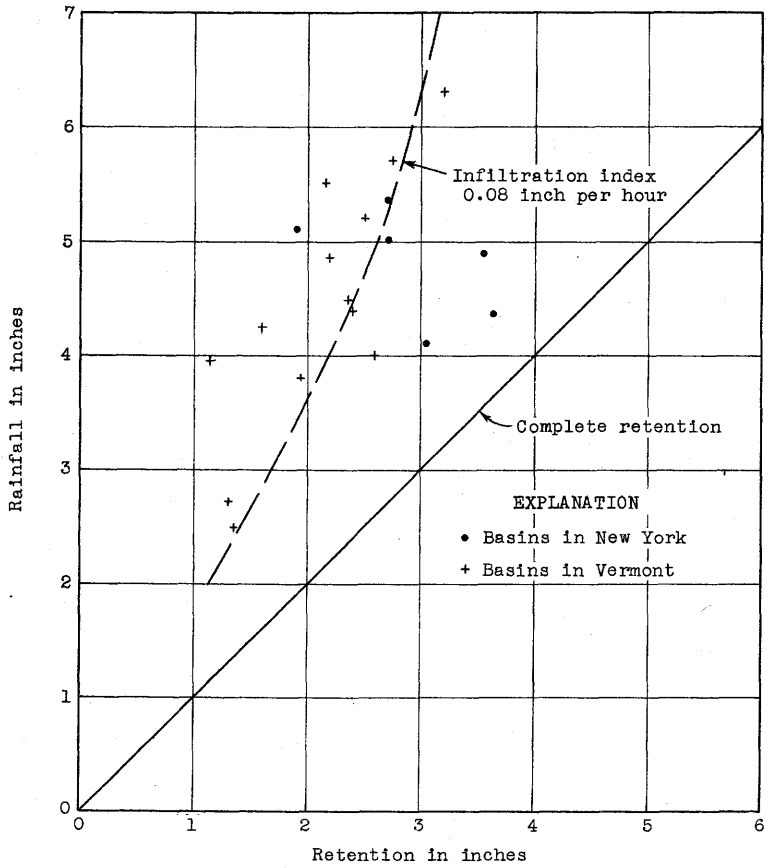
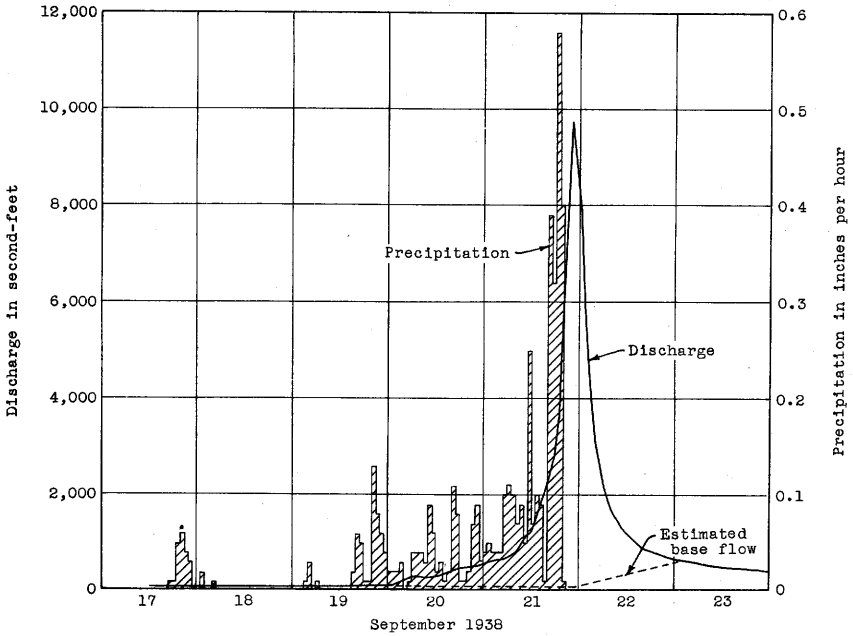


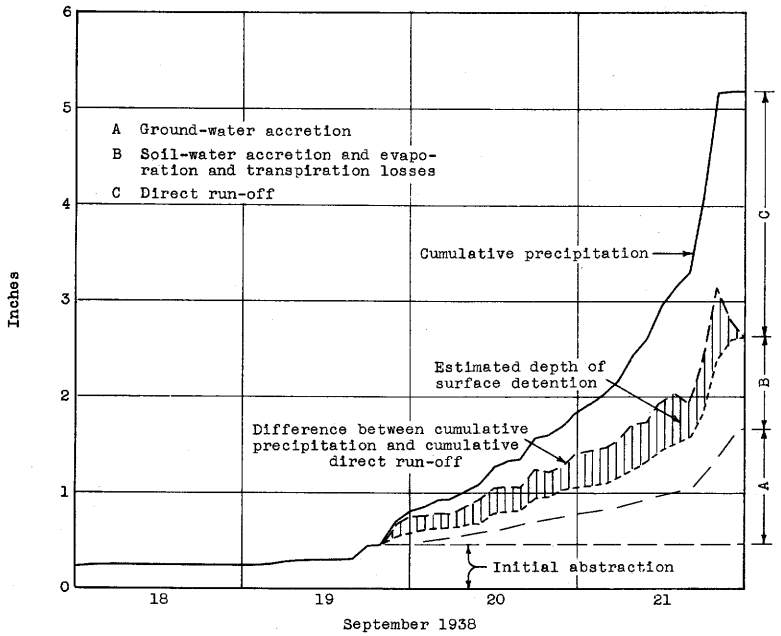
Figure 54.--Relation of total rainfall September 17-21, 1938, to difference between total rainfall and direct run-off, St. Lawrence River Basin.

higher retention capacities were found in the basins in New York. This condition may be due in part to the difference between the basins in New York and Vermont in respect to soil characteristics and swamp and lake storage.

Figure 55 shows the results of a detailed analysis of the rainfall and run-off of the Dog River above Northfield Falls, Vt. The upper part of the figure shows the hourly rainfall at Northfield, Vt., and hydrograph



Hydrograph of discharge and graph of hourly precipitation at Northfield, Vt., September 17-23, 1938.



Graphs of cumulative precipitation, direct run-off, and estimated infiltration, September 18-21, 1938.

Figure 55.--Analyses of rainfall and run-off in basin of Dog River at Northfield Falls, Vt.

of discharge at Northfield Falls, Vt., for the period September 17-23. There was no material rise in stream flow until nearly midnight on September 19, and from that time the stream flow continuously increased until the peak was reached on September 21. The stream flow appears to have become increasingly greater in proportion to the rainfall as the storm continued. The peaks of both the rainfall and run-off intensities came together at the close of the storm. The highest rainfall intensities occurred at the end of the storm, when the absorptive capacity of the ground was least, thus contributing further to the intensity of the flood run-off.

The lower part of figure 55 shows the cumulative rainfall and the segregation thereof. By 8 p.m., September 19, vegetal interception, surface wetting, and depression storage had caused an initial abstraction of about 0.5 inch, after which there was direct surface run-off into the stream channels. The rainfall was totaled at 2-hour intervals, from which the cumulative direct run-off (adjusted for channel storage) was subtracted at corresponding intervals, the difference at any time representing total ground and soil-water accretion, surface detention, and evaporation and transpiration. During the progress of the storm there was an indefinite accumulation of water in temporary storage, which was effective in producing direct run-off and at the same time, was being diminished by absorption and increased by the continuing rains. The amount of this water in transit to stream channels, termed the surface detention, was computed essentially by the methods explained by Sherman[18/] and subtracted from the difference between rainfall and run-off, as shown on the lower part of figure 55. The surface detention delimits the indefinite zone that exists between the direct run-off and the retention during a storm. Immediately after the cessation of rainfall the surface detention, as shown on figure 55, decreases to zero through absorption and surface drainage. On the assumption that after September 22, all flow at this station, as shown on the upper part of figure 55, was from ground water, it is estimated that the ground-water accretion was about 1.2 inches (45 percent of the total residual), leaving 1.05 inches of the 2.25 inches of the net residual (0.5 had already been abstracted by the initial losses) to represent soil-water accretion and losses by evaporation and transpiration. The total ground-water accretion during the storm has been distributed in proportion to the difference between

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18/ Sherman, L. K., Determination of infiltration rates from surface run-off: Am. Geophys. Union Trans., 1938, p. 430.

cumulative rainfall and cumulative direct run-off minus initial abstractions, as indicative of the source of supply for such accretion.

The maximum rate of mean areal rainfall over the basin of the Dog River above Northfield Falls, Vt., was about 0.6 inch per hour and the maximum rate of direct run-off into stream channels was 0.19 inch per hour. The maximum rate of infiltration as indicated by the slope of the line represented by the difference between rainfall and direct run-off minus the estimated depth of the surface detention was 0.30 inch per hour. This value should be compared with the average rate of absorption of 0.08 inch per hour determined by referring to figure 44, with a retention of 2.6 inches and a total rainfall of 5.2 inches.

The rate of absorption decreased materially during the storm period as indicated by the decreased ratio between direct run-off and rainfall into stream channels as follows: On September 17 and 18 the ratio was virtually zero; on September 19, 20 percent; September 20, 42 percent; and on September 21, 60 percent.

The only two records of run-off available in this region for the storm of November 2-5, 1927, were those of Green River at Garfield, Vt., and Dog River at Northfield, Vt. The total storm precipitation over these basins as listed in table 17 averaged 8.2 inches and the associated direct run-off averaged 4.75 inches, indicating an average retention of 3.45 inches, which is comparable with the difference between rainfall and run-off in this region during September 1938. The Green River gaging station was not in operation in September 1938. From March 9-22, 1936, the total rain ranged from 3.5 to 5.5 inches over the St. Lawrence River Basin in Vermont, falling on 3 to 8 inches of water in the form of snow. The resultant direct run-off ranged from 8.5 to 11 inches, leaving an average retention of only about 1.75 inches, a value very much less than resulted from the hydrologic conditions that prevailed either in September 1938 or November 1927, which indicates the effects of frost and other restrictive factors upon absorption.

The ratios between the direct run-off during the maximum day and the total direct run-off, as listed in table 14, ranged between 12 and 68 percent, being generally inversely related to the sizes of the drainage areas. These ratios indicate that the Ausable River Basin in New York is comparatively responsive to rainfall rates and that the Otter Creek Basin in Vermont is very sluggish, particularly the reach between Center Rutland and Middlebury. The center of mass of direct run-off passed Center Rutland 1.8 days after the center of mass of rainfall, whereas 40.9 miles downstream at Middlebury the lag was 7.0 days.

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Rainfall and run-off of storm of November 1927

The storm and flood of November 1927 was one of the greatest on record in parts of New England[19]. A comparison of this storm with other major storms is given in table 8. In common with the storm of September 17-21, 1938, the storm of November 2-4, 1927, was preceded by considerable antecedent precipitation, and the absorptive capacity of the ground (as shown by fig. 9) may have been fairly comparable during the two storm periods. The amount of storm rainfall during the storm of November 1927 was materially less than during the storm of September 1938, averaging 8.9 inches over 1,000 square miles in comparison with 14.8 inches over 1,000 square miles during the later storm. The duration of significant rainfall in 1927 was likewise much less than that in 1938. Table 17 shows for several basins within the storm area in which the run-off was not materially affected by the artificial storage, the precipitation for the period November 2-5, 1927, the direct run-off, and the difference between the rainfall and the run-off, all expressed in depth in inches over the drainage area. In the discussions of rainfall and run-off relations during the storm and floods of September 1938 it was indicated that the total precipitation and associated retention for the 1927 and 1938 storms were of comparable magnitude. In other words, in both storms for the same total precipitation about the same amount of water was retained in the basins. On the basis that the total retention divided by the number of hours of significant rainfall gives a measure of the rate of absorption, such rate must have been greater during the storm of 1927 than during that of 1938, as the retention was the same but the duration of rainfall was much less.

Based on the duration of rainfall at rates equal to or greater than 0.09 inch per hour it has been computed that the retention listed in table 17 correspond to an average infiltration index of about 0.18 inch per hour. Ten areas had infiltration indices in excess of 0.2 inch per hour, 13 between 0.1 and 0.2, and 5 less than 0.1.

The storm and rainfall and run-off relations are also described by Horton[20].

19/ Kinnison, H. B., New England flood of November 1927: U. S. Geol. Survey Water-Supply Paper 636, pp. 45-100, 1930.

20/ Horton, R. E., Infiltration capacity for large drainage basins: Am. Geophys. Union Trans., 1937, pp. 371-385.

Table 17.--Mean areal rainfall and associated direct run-off, November 2-5, 1927

Stream and place	Drainage area (square miles)	Rain-fall (inches)	Direct run-off (inches)	Differ-ence (inches)
Pemigewasset River at Plymouth, N. H.	622	5.5	4.8	0.7
Smith River near Bristol, N. H.	78.5	6.0	3.05	2.95
Nubanusit Brook near Peterboro, N. H.	48.1	4.6	2.05	2.55
North Branch of Contoocook River near Antrim, N. H.	54.8	4.9	3.15	1.75
Blackwater River near Contoocook, N. H.	131	5.6	2.4	3.2
Souhegan River at Merrimack, N. H.	171	4.45	2.05	2.4
Quinebaug River at Jewett City, Conn.	a711	5.7	1.8	3.9
Ashuelot River near Gilsum, N. H.	71.1	4.85	3.35	1.5
Ashuelot River at Hinsdale, N. H.	420	4.8	2.25	2.55
Otter Brook near Keene, N. H.	41.8	4.7	3.0	1.7
South Branch of Ashuelot River at Webb, near Marlboro, N. H.	36.6	4.8	3.2	1.6
Millers River near Winchendon, Mass.	83.8	5.0	1.4	3.6
Millers River at Erving, Mass.	370	5.0	2.2	2.8
Sip Pond Brook near Winchendon, Mass.	19.0	5.0	1.75	3.25
Priest Brook near Winchendon, Mass.	18.8	5.0	4.0	1.0
East Branch of Tully River near Athol, Mass.	49.9	5.1	2.9	2.2
Moss Brook at Wendell Depot, Mass.	12.2	5.0	1.65	3.35
Ware River at Gibbs Crossing, Mass.	199	4.6	1.65	2.95
Swift River at West Ware, Mass.	186	4.9	1.7	3.2
Westfield River at Knightsville, Mass.	162	6.5	3.65	2.85
Westfield River near Westfield, Mass.	497	6.6	3.8	2.8
Middle Branch of Westfield River at Goss Heights, Mass.	52.6	6.7	3.45	3.25
Housatonic River near Great Barrington, Mass.	280	5.95	3.85	2.1
Housatonic River at Falls Village, Conn.	632	6.15	3.05	3.1
Batten Kill at Battenville, N. Y.	394	5.8	3.7	2.1
Hoosic River near Eagle Bridge, N. Y.	510	6.75	3.65	3.1
Poesten Kill near Troy, N. Y.	89	5.15	4.55	.6
Green River at Garfield, Vt.	18	7.9	4.6	3.3
Dog River at Northfield, Vt.	52	8.5	4.9	3.6

a Revised.

Table 18.--Mean areal rainfall and associated direct run-off, September 16-17, 1932

Stream and place	Drainage area (square miles)	Rain-fall (inches)	Direct run-off (inches)	Differ-ence (inches)
Piscataquis River near Foxcroft, Maine	286	7.2	2.5	4.7
Pleasant River near Milo, Maine	322	8.1	3.9	4.2
Austin Stream at Bingham, Maine	92	6.5	3.4	3.1
Carrabasset River near North Anson, Maine	351	5.5	2.45	3.05
Sandy River near Mercer, Maine	a514	6.0	1.45	4.55
Little Androscoggin River near South Paris, Maine	76.2	6.6	1.65	4.95
Saco River near Conway, N. H.	a386	6.2	1.4	4.8
East Branch of Pemigewasset River near Lincoln, N. H.	104	4.6	1.4	3.2
Pemigewasset River at Plymouth, N. H.	622	4.0	.7	3.3
Merrimack River at Lawrence, Mass.	b3,930	5.2	.35	4.85
Bakers River near Rumney, N. H.	143	2.9	.3	2.6
Smith River near Bristol, N. H.	c83.6	3.2	.25	2.95
Contoocook River at Penacook, N. H.	a766	3.5	.1	3.4
Suncook River at North Chichester, N. H.	157	6.7	.7	6.0
Souhegan River at Merrimack, N. H.	171	5.0	.3	4.7
Wading River near Norton, Mass.	42.4	5.0	.2	4.8
Quinebaug River at Putnam, Conn.	a331	4.9	.45	4.45
Quinebaug River at Jewett City, Conn.	a711	6.4	.7	5.7
Willimantic River near South Coventry, Conn.	121	3.5	.4	3.1
Shetucket River at South Windham, Conn.	406	3.5	.35	3.15
Natchaug River at Willimantic, Conn.	169	4.0	.4	3.6
Yantic River at Yantic, Conn.	88.6	3.9	.3	3.6
Passumpsic River at Passumpsic, Vt.	423	2.0	.3	1.7
Moose River at St. Johnsbury, Vt.	a126	2.3	.3	2.0
Salmon River near East Hampton, Conn.	105	3.15	.35	2.8

a Revised.
b Contributing area only.
c Revised in 1931. After Nov. 25, 1933, drainage area 85.8 square miles.

Rainfall and run-off of storm of September 1932

White[21] describes the storm of September 16-17, 1932, as surpassing all preceding storms in New England since that occurring October 3-4, 1869, and points out that it followed an extended drought period with the result that flood run-off was so small as to be of little consequence. All the basic rainfall data are contained in the paper by White and the meteorology of the storm is described by Brooks[22].

During a period of about 18 hours between 6 a.m. and midnight, September 16, more than 8 inches of rain fell over an area exceeding 1,500 square miles centering near Westerly, R. I., where a maximum of 12.13 inches in 19½ hours was recorded. A maximum hourly rate of 1.34 inches was recorded at Pawtucket, R. I. During the severe drought that preceded this storm the ground water and soil moisture had become seriously depleted, as shown by figure 23 on page 44, resulting in a high absorptive capacity. Table 18 shows the rainfall, direct run-off, and retention in inches over the area for basins in which there was no material storage and situated within the general storm area but not necessarily within the area of greatest precipitation. The outstanding feature is the relatively small amount of direct run-off following the storm and the large retention, or difference between rainfall and run-off.

It would appear that the rates of absorption indicated by the differences between rainfall and run-off for the storm of September 1932 approached the maximum that could be expected during a major storm period, in contrast to the rates during the storm and flood of March 1936, which are indicative of minimum values.

FLOOD CRESTS

During or immediately after the floods of September 1938 various agencies of the Federal and State governments, together with public service companies and individuals, began the work of locating and marking crest stages reached by the rivers in the flood areas. Field parties examined important streams to obtain comprehensive and systematic information from existing flood marks. The Corps of Engineers, United States Army, the Connecticut State Water Commission (Ground-water Project), and in New Jersey the Riparian Survey of the Works Progress Administration and Union

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21/ White, G. V., The great storm of September 16 and 17, 1932: New England Water Works Assoc. Jour., vol. 42, no. 2, pp. 164-183, 1933.

22/ Brooks, C. F., Rain storm of September 16-17, 1932, in New England: Am. Meteorol. Soc. Bull., January 1933, pp. 26-27.

County Park Commission contributed in a notable way in these activities. Except as otherwise noted, the flood marks were referred to the mean sea level datum of the United States Coast and Geodetic Survey. Their relative positions were identified by distances along the rivers.

Table 19 presents records of flood crest stages for the major river systems in the region covered by this report. These records are of special interest in presenting a limiting factor with respect to future developments along the rivers and in furnishing basic information as to velocity of transmission of flood crests, valley or flood-channel storage, the effects of natural or artificial channel constrictions, and other aspects of river behavior. The table shows the observation points by reference to local features and river distances, date and time of crest (where known), and altitude of crest at available observation points, generally sufficient in number for satisfactory definition of the profile of the flood crest along the river. Where observations were more plentiful than needed for adequate definition of a flood profile, selection for publication has been limited to those that are essential for that purpose. Some of the observations that were close together have been combined and the mean recorded as of one point. Certain observations that were obviously unreliable or that were impracticable of reference to mean sea level are not included. In the Merrimack River Basin the crest stages have generally been taken from profiles prepared by the Corps of Engineers, United States Army, on the basis of their surveys and investigations.

The times of crest at river-measurement stations and at certain other points, such as power dams, are in general well established, but at many other points this information is approximate. It has been found that the crests of floods within the building limits of cities and towns and at other places more or less distant from a river may, for various reasons, be materially different from those along the main river channel and seemingly inconsistent if consideration is not given to the effect of the slope. Consequently such inconsistencies may appear to exist between local information and the records as herein published. Flood crests on opposite banks of a stream may differ materially because of the effects of bends and obstructions in the channel.

In the table, "upstream" signifies that the observation was made at the upstream side of a bridge or other structure; "downstream" signifies that the observation was made at the downstream side of the structure.

Table 19.--Flood crest stages

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin			
Pemigewasset River:			
Livermore Falls, N. H., dam, headwater	149.05		b521.0
Livermore Falls, N. H., dam, tailwater	149.05		493.2
Livermore Falls, N. H., bridge below dam	149.0		493.0
Livermore Falls, N. H., 0.08 mile below bridge	148.92		492.4
Livermore Falls, N. H., 0.1 mile below bridge	148.9		487.8
Livermore Falls, N. H., 0.4 mile below bridge	148.6		484.9
Bakers River, mouth of	147.25		481.0
Plymouth, N. H., U. S. Geological Survey gage, right bank	146.9	Sept. 21 9pm	479.9
Plymouth, N. H., 0.35 mile below U. S. Geological Survey gage	146.55		479.8
Glove Hollow Brook, 0.55 mile above mouth of	145.2		479.0
Glove Hollow Brook, mouth of	144.65		475.1
Plymouth and Ashland, N. H., bridge on Highway 3 between	142.75		473.9
Boston & Maine R.R. bridge	142.7		473.6
Squam River, 0.1 mile above mouth of	140.95		468.9
Squam River, 1.35 miles below mouth of	139.50		465.0
Woodman and Fogg Brooks, 1.15 miles below mouth of	137.4		465.0
Harpers Brook, mouth of	136.55		461.9
Bagoon Brook, 0.2 mile below mouth of	135.9		459.2
New Hampton, N. H., 0.1 mile below bridge	134.5		457.5
Bristol, N. H., dam, headwater	130.95	Sept. 22 5am	c457.1
Bristol, N. H., dam, tailwater	130.95		388.3
Bristol, N. H., 0.1 mile below dam	130.85		388.3
Bristol, N. H., 0.2 mile below dam	130.75		382.5
Bristol, N. H., 0.1 mile above bridge	130.1		370.5
Bristol, N. H., just above bridge	130.0		360.9
Newfound River, mouth of	129.9		360.9
Newfound River, 0.7 mile below mouth of	129.2		344.0
Blake Brook, 0.15 mile above mouth of	128.85		338.2
Smith River, 0.6 mile above mouth	128.0		332.8
Smith River, 0.1 mile above mouth of	127.5		332.6
Dyer Brook, 0.2 mile above mouth of	127.0		330.7
Prescott Brook, 0.1 mile above mouth of	125.7		327.0
Prescott Brook, 0.6 mile below mouth of	125.0		324.6
Needle Shop Brook, 0.75 mile above mouth of	124.3		322.5
Knox Brook, mouth of, bridge	123.4		321.3
Knox Brook, 0.15 mile below mouth of	123.25		320.0
Bennett Brook, 0.2 mile below mouth of	122.8		319.4
Weeks Brook, 1.05 miles above mouth of	122.0		318.8
Weeks Brook, 0.15 mile above mouth of	121.1		317.8
Salmon Brook, 0.25 mile below mouth of	119.7		317.1
Salmon Brook, 1.15 miles below mouth of	118.8		316.1
Franklin, N. H., 0.85 mile above dam at Eastman Falls	117.5		314.8
Franklin Falls, N. H., dam at Eastman Falls, headwater	116.65	Sept. 22 4-9am	312.4
Franklin Falls, N. H., dam at Eastman Falls, tailwater	116.6		288.8
Franklin, N. H., 0.2 mile below mouth of Chance Pond Brook	116.3		287.8
Confluence of Pemigewasset and Winnipesaukee Rivers, 0.1 mile above	115.8		284.04
Merrimack River:			
Confluence of Pemigewasset and Winnipesaukee Rivers, 0.1 mile below	115.6		283.2
Franklin Junction, N. H., U. S. Geological Survey gage, left bank	114.65	Sept. 22 9am	279.9
Franklin Junction, N. H., Boston & Maine R.R. bridge, upstream	114.6		279.7
Franklin Junction, N. H., Boston & Maine R.R. bridge, downstream	114.6		279.2
Punch Brook, mouth of	113.7		278.3
Cross Brook, 0.25 mile below mouth of	111.3		275.1
Stirrup Iron Brook, mouth of	110.5		272.5
Glines Brook, mouth of	109.2		271.0
Bryant Brook, mouth of	107.6		268.6
Tannery Brook, 0.1 mile above mouth of	105.3		265.3
Boscawen, N. H., highway bridge, upstream	105.05		264.9
Boscawen, N. H., highway bridge, downstream	105.0		264.6
Penacook, N. H., bridge 0.1 mile above south mouth of Contoocook River	100.85		262.8
Penacook, N. H., south mouth of Contoocook River	100.75		260.6

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
b Altitude of crest of dam, 511.0 feet, with flashboards, 514.0 feet.
c Altitude of crest of dam, 445.3 feet, with flashboards, 452.3 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin--Continued			
Merrimack River--Continued.			
Burnham Brook, 0.2 mile below mouth of	99.9		258.3
Sewalls Falls, N. H., highway bridge 0.9 mile above dam, upstream	98.75		257.5
Sewalls Falls, N. H., highway bridge 0.9 mile above dam, downstream	98.75		256.8
Sewalls Falls, N. H., dam, headwater	97.85		d254.6
Sewalls Falls, N. H., dam, tailwater	97.85		246.4
Beaver Meadow Brook, 0.05 mile above mouth of	97.5		246.0
Rattlesnake Brook, 0.7 mile above mouth of	96.1		243.7
East Concord, N. H., highway bridge	94.35		243.1
East Concord, N. H., 0.35 mile below highway bridge	94.0		242.6
East Concord, N. H., 1.35 miles below highway bridge	93.0		242.6
Concord, N. H., highway bridge upstream	91.6		241.2
Concord, N. H., highway bridge, downstream	91.6		240.5
Concord, N. H., 0.6 mile below highway bridge	91.0		240.6
Concord, N. H., bridge on U. S. Highway 3	90.25		237.9
Boston & Maine R.R. bridge, 1.1 miles above	89.0		235.0
Boston & Maine R.R. bridge	87.9		232.5
Garvins Falls, N. H., dam, headwater	86.8	Sept. 22 11pm	e228.6
Garvins Falls, N. H., 0.05 mile below dam, tailwater	86.75		213.0
Soucook River, mouth of	85.8		210.8
Soucook River, 0.7 mile below mouth of	85.1		209.2
Suncook River, mouth of	82.9		205.2
Hooksett, N. H., dam, headwater	81.05		f202.2
Hooksett, N. H., dam, tailwater	81.05		196.0
Hooksett, N. H., 0.3 mile below dam	80.75		195.7
Hooksett, N. H., Boston & Maine R.R. bridge	80.55		194.3
Peters Brook, 0.8 mile above mouth of	79.0		192.6
Peters Brook, 0.2 mile below mouth of	78.0		191.6
Messer Brook, 0.05 mile above mouth of	76.85		189.9
Manchester, N. H., 0.9 mile above Amoskeag Dam	74.05		185.1
Manchester, N. H., Amoskeag Dam, headwater	73.15	Sept. 23 2am	g184.1
Manchester, N. H., 0.1 mile below Amoskeag Dam	73.05		145.8
Manchester, N. H., 0.3 mile below Amoskeag Dam	72.85		144.6
Manchester, N. H., 0.4 mile below Amoskeag Dam	72.75		144.0
Manchester, N. H., McGregor highway bridge, upstream	72.55		143.1
Manchester, N. H., 0.25 mile below McGregor highway bridge	72.3		143.1
Manchester, N. H., 0.25 mile below McGregor highway bridge	72.3		142.5
Manchester, N. H., Granite Street highway bridge, upstream	71.95		142.0
Manchester, N. H., Granite Street highway bridge, downstream	71.95		141.0
Manchester, N. H., 0.45 mile below Granite Street highway bridge	71.50		140.1
Manchester, N. H., Boston & Maine R.R. bridge, upstream	71.45		140.1
Manchester, N. H., Boston & Maine R.R. bridge, downstream	71.45		139.6
Piscataquog River, mouth of	71.3		138.9
Piscataquog River, mouth of	71.3		138.3
Manchester, N. H., Queen City Avenue highway bridge, upstream	71.1		138.2
Manchester, N. H., Queen City Avenue highway bridge, downstream	71.05		137.6
Manchester, N. H., 0.1 mile below Queen City Avenue highway bridge	70.95		137.8
Baker Brook, 0.1 mile above mouth of	70.8		137.6
Baker Brook, 0.25 mile below mouth of	70.45		137.5
Bowman Brook, mouth of	69.85		135.7
Bowman Brook, 0.95 mile below mouth of	68.9		134.5
Boston & Maine R.R. bridge	68.05		133.6
Cohas Brook, mouth of	67.7		132.6
Stebbins Brook, 0.2 mile above mouth of	66.5		129.4
Stebbins Brook, 1.15 miles below mouth of	65.15		127.6
Sawmill Brook, 0.3 mile above mouth of	64.5		125.1
Merrimack, N. H., mouth of Souhegan River	62.35		122.5
Merrimack, N. H., 1.0 mile below mouth of Souhegan River	61.35		121.5
Nesenkeag Brook, 0.7 mile below mouth of	59.65		119.6
Nashua River, 0.2 mile above mouth of	55.0		118.4
Nashua, N. H., Boston & Maine R.R. bridge, upstream	54.3		117.6
Nashua, N. H., Boston & Maine R.R. bridge, downstream	54.3		117.1
Massachusetts-New Hampshire State line, 1.15 miles above	50.95		114.0
Massachusetts-New Hampshire State line, 0.2 mile above	50.0		111.6

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
d Altitude of crest of dam, 240.9 feet.
e Altitude of crest of dam, 216.8 feet, with flashboards 218.8 feet.
f Altitude of crest of dam, 187.0 feet.
g Altitudes of crest of dam, 173.0 feet and 171.0 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin--Continued			
Merrimack River--Continued.			
Tyngsborough, Mass., highway bridge	47.35		107.7
Lawrence Brook, 0.1 mile below mouth of	46.55		106.8
Scarlet Brook, mouth of	44.05		102.7
North Chelmsford, Mass., 0.6 mile below mouth of Stony Brook	42.55		100.1
Lowell, Mass., 0.8 mile above Pawtucket Dam	41.35		98.7
Lowell, Mass., Pawtucket Dam, headwater	40.55		h97.4
Lowell, Mass., 0.05 mile below Pawtucket Dam	40.5		91.1
Lowell, Mass., 0.2 mile below Pawtucket Dam	40.35		89.9
Lowell, Mass., Moody Street Bridge, upstream	40.15		84.2
Lowell, Mass., 0.15 mile below Moody Street Bridge	40.0		76.5
Lowell, Mass., mouth of Beaver Brook	39.8		72.4
Lowell, Mass., Aiken Street Bridge	39.6		71.3
Lowell, Mass., Boott Mill gage	38.95		68.5
Lowell, Mass., 0.05 mile below Centralville bridge	38.8		67.8
Lowell, Mass., U. S. Geological Survey gage	38.55		65.8
Lowell, Mass., 0.15 mile below U. S. Geological Survey gage	38.4		65.3
Richardson Brook, 0.2 mile above mouth of	36.55		60.5
Trull Brook, 0.6 mile below mouth of	35.35		58.8
Fish Brook, 0.25 mile above mouth of	33.3		52.5
Bartletts Brook, mouth of	31.9		52.5
Lawrence, Mass., Essex Co. dam, headwater	29.0		j49.0
Lawrence, Mass., Boston & Maine R.R. bridge, 0.5 mile below Essex Co. dam	28.5		39.2
Shawsheen River, 0.3 mile below mouth of	27.15		36.2
Hawkes Brook, 0.45 mile above mouth of	23.3		30.1
Hawkes Brook, mouth of	22.85		28.3
Creek Brook, mouth of	21.85		28.1
Haverhill, Mass., County highway bridge	19.15		22.2
Haverhill, Mass., Boston & Maine R.R. bridge	19.1		22.0
Haverhill, Mass., highway bridge	18.5		18.6
Groveland highway bridge	15.7		18.0
Neal Pond Brook, 0.55 mile below mouth of	14.0		17.5
Rocks Village, Mass., 0.2 mile above highway bridge	12.0		16.6
Cobblers Brook, Mass., 0.1 mile below mouth of	10.0		14.0
Artichoke River, 0.2 mile above mouth of	8.0		13.0
Pow Wow River, 0.7 mile above mouth of	7.1		11.6
Pow Wow River, mouth of	6.4		10.8
Amesbury, Mass., Deer Island chain bridge	5.15		8.9
Newfound River:			
Newfound Lake, outlet of	3.1		590.5
Public Service Co. of New Hampshire dam, headwater	3.0		590.0
Public Service Co. of New Hampshire dam, tailwater	3.0		587.5
Highway bridge, 0.05 mile above	2.7		577.0
Highway bridge	2.65		572.0
Public Service Co. of New Hampshire dam, 0.25 mile above	2.25		554.0
Public Service Co. of New Hampshire dam, headwater	2.0		553.5
Public Service Co. of New Hampshire dam, tailwater	2.0		539.0
Concrete highway bridge	1.95		538.0
Dam (old)	1.75		499.0
Highway bridge, 0.1 mile above	1.6		489.5
Dodge Davis Mfg. Co. dam, headwater	1.45		488.5
Dodge Davis Mfg. Co. dam, tailwater	1.45		485.0
Dam	1.25		464.0
Bristol, N. H., 0.05 mile below highway bridge	.95		457.0
Bristol, N. H., highway bridge	.45		454.5
Bristol, N. H. highway bridge on road to Hill, upstream	.2		454.5
Bristol, N. H., Cawley Dam, headwater	.2		k452.5
Bristol, N. H., Cawley Dam, tailwater	.2		439.0
Bristol, N. H., Public Service Co. of New Hampshire dam, headwater	.1		425.0
Bristol, N. H., Public Service Co. of New Hampshire dam, tailwater	.1		420.0
Bristol, N. H., Depot Street highway bridge	.1		407.0
Bristol, N. H., Confluence of Pemigewasset and Newfound Rivers	0		361.0
Contoocook River:			
East Jaffrey, N. H., U. S. Highway 202 bridge just above mouth of Contoocook Lake	67.4		m1,013.7
East Jaffrey, N. H., 0.8 mile below highway bridge	66.6		1,003.7
East Jaffrey, N. H., dam 0.5 mile above Tyler Brook Bridge, headwater	66.25		n992.0

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
h Altitude of crest of dam, 87.2 feet.
j Altitude of crest of dam, 39.2 feet.
k Altitude of crest of dam, 446.6 feet.
m Altitude of crest of dam, 1,008.25 feet.
n Altitude of crest of dam, 983.75 feet.

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Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin--Continued			
Contoocook River--Continued.			
East Jaffrey, N. H., 0.5 mile above Tyler Brook Bridge, tailwater	66.25		988.0
East Jaffrey, N. H., highway bridge 0.05 mile below dam, upstream	66.2		986.0
East Jaffrey, N. H., highway bridge 0.05 mile below dam, downstream	66.2		984.0
Tyler Brook Dam, headwater	65.75		p981.6
Tyler Brook Dam, tailwater	65.75		977.0
Tyler Brook Bridge	65.7		973.0
Cheshire Pond Bridge and Dam, headwater	64.9		q962.2
Cheshire Pond Bridge and Dam, tailwater	64.9		955.5
East Jaffrey, N. H., Boston & Maine R.R. bridge, 0.15 mile below Cheshire Pond Bridge	64.75		949.0
East Jaffrey, N. H., Boston & Maine R.R. bridge, 0.35 mile below Cheshire Pond Bridge	64.55		946.5
East Jaffrey, N. H., Boston & Maine R.R. bridge, 0.75 mile below Cheshire Pond Bridge	64.15		940.5
East Jaffrey, N. H., Boston & Maine R.R. bridge, 1.25 miles below Cheshire Pond Bridge	63.65		928.8
East Jaffrey, N. H., Boston & Maine R.R. bridge, 1.6 miles below Cheshire Pond Bridge	63.3		918.5
Jaffrey-Peterboro town line, wooden bridge (destroyed), 0.3 mile above	62.55		890.5
Drury, N. H., 0.25 mile above mouth of Meadow Brook	61.25		794.0
Drury, N. H., highway bridge	60.9		786.6
Peterboro, N. H., highway bridge 0.7 mile below mouth of Meadow Brook	60.3		773.9
Peterboro, N. H., 0.1 mile above highway bridge and dam (destroyed)	59.8		r769.2
Peterboro, N. H., highway bridge and dam (destroyed)	59.7		749.0
Peterboro, N. H., 0.35 mile above highway bridge	59.65		744.0
Peterboro, N. H., highway bridge	59.3		735.0
Peterboro, N. H., 0.2 mile above bridge	58.45		730.6
Peterboro, N. H., bridge 0.35 mile above mouth	58.25		727.8
Peterboro, N. H., Transcript Dam and bridge	57.75		s726.0
Peterboro, N. H., Boston & Maine R.R. bridge	57.6		722.0
Peterboro, N. H., 0.1 mile below Boston & Maine R.R. bridge	57.5		719.4
Peterboro, N. H., 0.35 mile below Boston & Maine R.R. bridge	57.25		717.0
North Village, N. H., 0.25 mile above dam at	56.3		714.0
North Village, N. H., dam, headwater	56.05		t708.6
North Village, N. H., dam, tailwater	56.05		704.1
Ferguson Brook, bridge 0.2 mile above mouth of, upstream	51.35		695.0
Ferguson Brook, bridge 0.2 mile above mouth of, downstream	51.35		693.0
Elmwood, N. H., Boston & Maine R.R. bridge	48.25		685.3
Powder Mill Dam, headwater	46.75		u682.6
Powder Mill Dam, tailwater	46.75		677.9
Bennington, N. H., Monadnock Power Dam, headwater	45.95		v674.8
Bennington, N. H., highway bridge, 0.1 mile below Monadnock Power Dam, upstream	45.85		662.5
Bennington, N. H., highway bridge, 0.1 mile below Monadnock Power Dam, downstream	45.85		660.0
Bennington, N. H., 0.05 mile above Pierce power dam	45.8		656.6
Bennington, N. H., Pierce power dam, tailwater	46.75		w653.8
Bennington, N. H., 0.1 mile below Pierce power dam	45.65		637.0
Bennington, N. H., 0.05 mile above Monadnock Paper Co. dam	45.5		x636.7
Bennington, N. H., just below Boston & Maine R.R. bridge, 0.05 mile below dam	45.4		632.2
Bennington, N. H., 0.15 mile below Monadnock Paper Co. dam	45.3		612.0
Bennington, N. H., 0.4 mile below Monadnock Paper Co. dam	44.05		610.6
Great Brook, highway bridge just below mouth of, upstream	42.75		610.1
Great Brook, highway bridge just below mouth of, downstream	42.75		609.0
Cochran Brook, highway bridge 0.1 mile below mouth of, upstream	40.30		605.5

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
p Altitude of crest of dam, 974.67 feet.
q Altitude of crest of dam, 957.92 feet, with flashboards 958.57 feet.
r Altitude of crest of dam, 763.29 feet.
s Altitude of crest of dam, 714.9 feet, with flashboards, 715.9 feet.
t Altitude of crest of dam, 702.6 feet.
u Altitude of crest of dam, 675.4 feet, with flashboards, 677.0 feet.
v Altitude of crest of dam, 865.8 feet, with flashboards, 667.8 feet.
w Altitude of crest of dam, 651.4 feet.
x Altitude of crest of dam, 627.6 feet, with flashboards, 629.6 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin--Continued			
Contoocook River--Continued.			
Cochran Brook, highway bridge 0.1 mile below mouth of, downstream	40.30		605.0
Holton, N. H., highway bridge 2.75 miles above Beards Brook	37.1		600.7
Beards Brook, mouth of	34.35		598.0
Hillsboro, N. H., 0.5 mile above Gordon Woolen Co. dam	33.4		597.8
Hillsboro, N. H., 0.4 mile above Gordon Woolen Co. dam	33.3		594.0
Hillsboro, N. H., Gordon Woolen Co. dam, headwater	32.9		y593.3
Hillsboro, N. H., Gordon Woolen Co. dam, tailwater	32.9		586.2
Hillsboro Mfg. Co. dam, headwater	32.65		z586.0
Hillsboro Mfg. Co. dam, tailwater	32.65		572.5
Hillsboro Mfg. Co. dam, 0.05 mile below	32.6		567.2
Hillsboro Mfg. Co. dam, 0.3 mile below	32.35		562.0
New Hampshire Power Co. dam, 1.3 miles above, highway bridge, upstream	30.05		562.0
New Hampshire Power Co. dam, 1.3 miles above, highway bridge, downstream	30.05		561.5
New Hampshire Power Co. dam, headwater	28.75		aa560.8
New Hampshire Power Co. dam, 0.1 mile below	28.65		542.4
New Hampshire Power Co. dam, 0.9 mile below	27.85		490.5
Contoocook Valley Paper Co. dam, 1.0 mile above	27.45		476.0
West Henniker, N. H., 0.25 mile above Contoocook Valley Paper Co. dam	26.7		442.0
West Henniker, N. H., Contoocook Valley Paper Co. dam, headwater	26.45		ab439.1
West Henniker, N. H., double-span highway bridge	26.4		434.8
West Henniker, N. H., single-span highway bridge	26.3		431.1
Boston & Maine R.R. bridge, 0.05 mile below	25.5		429.0
Henniker, N. H., highway bridge	24.8		427.1
Henniker, N. H., 0.05 mile below highway bridge	24.75		420.5
Henniker, N. H., K & C Dam, headwater	24.6		ac418.5
Henniker, N. H., K & C Dam, tailwater	24.6		410.6
Henniker, N. H., Morton Mfg. Co. dam, headwater	24.25		410.0
Henniker, N. H., 0.05 mile below Morton Mfg. Co. dam, tailwater	24.2		405.3
Chase Brook, 0.55 mile above mouth of	23.05		404.3
Chase Brook, 0.25 mile above mouth of	22.75		400.4
Chase Brook, 0.25 mile below mouth of	22.25		400.2
Amey Brook, 0.55 mile below mouth of	21.3		400.2
Boston & Maine R.R. bridge, 0.6 mile above	21.0		399.8
Boston & Maine R.R. bridge	20.45		399.0
Boston & Maine R.R. bridge, 0.05 mile below	20.4		397.0
West Hopkinton, N. H., dam, headwater	17.9		384.3
West Hopkinton, N. H., 0.05 mile below dam	17.85		378.5
Covered highway bridge, upstream	17.65		378.3
Covered highway bridge, downstream	17.65		376.2
West Hopkinton, N. H., 0.1 mile below covered highway bridge	17.55		376.0
Elm Brook, 0.1 mile above mouth of	17.15		373.6
Contoocook, N. H., dam, headwater	12.65		369.8
Contoocook, N. H., 0.05 mile below dam	12.6		369.0
Contoocook, N. H., highway bridge	12.55		368.2
Warner River, mouth of	11.6		368.2
Tyler, N. H., highway bridge	10.05		368.7
Blackwater River, 0.4 mile above mouth of	9.25		367.5
Blackwater River, mouth of	8.85		367.0
Deer Meadow Brook, mouth of	8.55		366.5
Boston & Maine R.R. bridge, upstream	7.15		365.0
Boston & Maine R.R. bridge, downstream	7.15		364.5
Dolf Brook, 0.7 mile below mouth	5.45		362.0
Riverhill, N. H., 0.7 mile above Boston & Maine R.R. bridge	4.85		359.7
Riverhill, N. H., 0.1 mile above Boston & Maine R.R. bridge	4.25		357.7
Riverhill, N. H., highway bridge, upstream	3.95		357.7
Riverhill, N. H., highway bridge, downstream	3.95		356.9
Riverhill, N. H., 0.65 mile below highway bridge	3.3		356.5
Riverhill, N. H., 0.85 mile below highway bridge	3.1		356.0
Dam, 0.35 mile above	2.7		355.0
Dam, 0.05 mile above	2.4		352.2
Dam, tailwater	2.35		346.2
Penacook, N. H., 0.4 mile above highway bridge	1.45		323.0
Penacook, N. H., highway bridge, upstream	1.05		307.6
Penacook, N. H., Boscawen Mfg. Co. dam	.95		306.8

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
y Altitude of crest of dam, 582.2 feet, with flashboards, 584.2 feet.
z Altitude of crest of dam, 568.6 feet.
aa Altitude of crest of dam, 549.0 feet, with flashboards 551.0 feet.
ab Altitude of crest of dam, 427.7 feet.
ac Altitude of crest of dam, 409.4 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin--Continued			
Contoocook River--Continued.			
Penacook, N. H., 0.1 mile below Boscawen Mfg. Co. dam	0.85		296.0
Penacook, N. H., U. S. Geological Survey gage, right bank	.7	Sept. 23 3am	293.1
Penacook, N. H., 0.1 mile above steel highway bridge	.55		282.0
Penacook, N. H., dam	.45		277.8
Penacook, N. H., Harris-Emory Co. dam	.2		264.0
Penacook, N. H., mouth of Contoocook River	0		262.8
Blackwater River:			
Burbank Mill Dam, tailwater	9.4		532.7
Swetts Mills, N. H., highway bridge, upstream	8.6		532.7
Swetts Mills, N. H., highway bridge, downstream	8.6		509.0
Swetts Mills, N. H., highway bridge, 0.05 mile downstream	8.55		492.5
Swetts Mills Bridge, 0.8 mile downstream	7.8		459.0
Dingit Corner, N. H., highway bridge above, upstream	6.6		450.8
Dingit Corner, highway bridge above, downstream	6.6		449.0
Dingit Corner, N. H., 0.2 mile below highway bridge above	6.4		442.7
Dingit Corner, N. H., 0.8 mile below highway bridge above	5.8		442.0
Dingit Corner, N. H., 0.9 mile below highway bridge above	5.7		434.8
Snyders Mill, N. H., highway bridge (destroyed), upstream	4.65		377.0
Snyders Mill, N. H., highway bridge (destroyed), downstream	4.65		374.0
Snyders Mill, N. H., 0.05 mile below highway bridge	4.6		373.5
Highway bridge, upstream	1.35		368.5
Highway bridge, downstream	1.35		367.0
Confluence of Blackwater and Contoocook Rivers	0		366.1
Souhegan River:			
Ward Pond, 0.15 mile below outlet of	33.30		1,094.0
Watatic Pond, 0.05 mile below inlet of	33.15		1,093.0
Watatic Pond, 0.25 mile below outlet of	32.80		1,092.0
Watatic Pond, 0.60 mile below outlet of	32.45		1,061.5
Dam, 0.5 mile above	31.95		1,045.0
Dam, 0.43 mile above	31.88		1,041.5
Dam, 0.40 mile above	31.85		1,036.0
Dam, 0.28 mile above	31.73		1,030.5
Dam, headwater	31.45		1,027.1
Dam, 0.02 mile below	31.43		1,021.0
Dam, 0.10 mile below	31.35		1,013.0
Wooden bridge, 0.35 mile above Massachusetts-New Hampshire State line, upstream	30.55		987.8
Wooden bridge, downstream	30.55		987.8
Gibson's Four Corners, 100 feet below bridge near,	28.70		934.0
Wooden bridge, 50 feet downstream	27.0		932.0
"Waterloom Dam", 180 feet above	26.9		931.0
"Waterloom Dam", 200 feet below	26.8		914.5
High Bridge, N. H., 200 feet above bridge	26.35		893.5
High Bridge, N. H., 200 feet above stone dam	26.3		885.8
High Bridge, N. H., dam, tailwater	26.25		874.5
High Bridge, N. H., 75 feet below stone dam	26.25		866.0
High Bridge, N. H., 75 feet below Greenville Road Bridge	26.25		861.2
Furnace Brook, 0.1 mile above mouth of	25.9		843.0
Greenville, N. H., 0.6 mile upstream from dam above Main Street	25.1		834.0
Greenville, N. H., 200 feet upstream from dam above Main Street	24.55		829.5
Greenville, N. H., below dam, 200 feet above Main Street bridge	24.5		815.5
Greenville, N. H., 80 feet below Main Street bridge	24.45		808.5
Greenville, N. H., 100 feet downstream from dam below Main Street	24.4		797.0
Greenville, N. H., 150 feet above Otis Dam	24.4		793.0
Greenville, N. H., 200 feet below Otis Dam	24.35		774.5
Greenville, N. H., Taft Dam, headwater	24.3		757.2
Greenville, N. H., 0.15 mile below Taft Dam	24.15		745.9
Concrete bridge and dam, 150 feet upstream	23.65		735.0
Concrete bridge and dam, 100 feet downstream	23.6		729.2
Boston & Maine R.R. bridge, 500 feet above	23.35		727.5
Boston & Maine R.R. bridge, 100 feet below	23.25		726.5
"High Falls Dam", 100 feet above	23.05		725.1
"High Falls Dam", 100 feet below	23.05		705.8
Stone arch bridge on Highway 31	22.0		611.0
Stone arch bridge on Highway 31, 0.3 mile below	21.7		588.0
Stone arch bridge on Highway 31, 0.6 mile below	21.4		571.5
Stone arch bridge on Highway 31, 1 mile below	21.0		544.2
Blood Brook, 0.7 mile above mouth of	19.85		499.5

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Merrimack River Basin--Continued			
Souhegan River--Continued.			
Blood Brook, 0.6 mile above mouth of	19.75		a488.5
Wooden bridge, 80 feet above	18.95		a454.5
Wooden bridge, 140 feet below	18.9		a447.5
Concrete arch bridge on Highway 31, 200 feet above	17.7		a419.8
Concrete arch bridge on Highway 31, 80 feet below	17.65		a416.5
Wilton, N. H., 0.3 mile above mouth of Stony Brook	17.0		a362.5
Wilton, N. H., 150 feet below Abbott Dam	16.9		a358.0
Wilton, N. H., 150 feet above concrete arch bridge	16.75		a347.9
Wilton, N. H., 100 feet above lower Boston & Maine R.R. bridge	16.6		a346.8
Wilton, N. H., 50 feet below lower Boston & Maine R.R. bridge	16.6		a342.5
Wilton, N. H., 75 feet above Abbott Machine Co. dam	16.45		a340.8
Wilton, N. H., 150 feet below Abbott Machine Co. dam	16.4		a331.5
Wilton, N. H., 50 feet above Pine Valley Mill dam	16.0		a328.9
Wilton, N. H., 200 feet below Pine Valley Mill dam	15.95		a316.8
Boston & Maine R.R. bridge, 0.05 mile above	15.55		a302.5
Stone arch highway bridge, 30 feet above	15.4		a300.6
Stone arch highway bridge, 0.1 mile below	15.3		a294.5
Highway bridge, 20 feet above	14.85		a278.5
Highway bridge, 180 feet below	14.8		a274.5
Purgatory Brook, 0.1 mile above mouth of	13.35		a253.5
Tucker Brook, 0.1 mile above mouth of	12.75		a247.2
Milford, N. H., stone arch highway bridge, 0.1 mile below mouth of Great Brook	11.25		a246.1
Milford, N. H., 40 feet above Goldsmith Linen Mill dam	11.2		a244.8
Milford, N. H., 250 feet below Goldsmith Linen Mill dam	11.15		a237.8
Milford, N. H., 120 feet above suspension foot bridge	11.1		a237.5
Milford, N. H., 150 feet below Milford Light Co. dam	11.0		a230.5
Highway bridge	8.70		a219.5
Highway bridge, 0.05 mile above	7.25		a216.0
Highway bridge, 200 feet below	7.2		a215.1
Fields Bridge	5.65		a214.0
Fields Bridge, 0.5 mile below	5.15		a210.5
Fields Bridge, 0.8 mile below	4.85		a202.5
Fields Bridge, 1.2 miles below	4.45		a189.2
Turkey Hill Bridge, 1.35 miles above	3.85		a186.5
Turkey Hill Bridge	2.5		a185.2
Turkey Hill Bridge, 125 feet below	2.5		a184.2
Turkey Hill Bridge, 0.75 mile below	1.75		a181.1
U. S. Geological Survey gage, 1.25 miles above confluence with Merrimack River	1.25		a173.4
Merrimack, N. H., highway bridge, 0.85 mile above	1.20		a151.0
Merrimack, N. H., highway bridge, 0.4 mile above	.75		a131.0
Merrimack, N. H., 200 feet above dam, 0.4 mile above confluence with Merrimack River	.4		a124.0
Merrimack, N. H., 150 feet below highway bridge	.3		a124.2
Merrimack, N. H., 150 feet above Boston & Maine R.R. bridge	.05		a124.5
Confluence of Souhegan and Merrimack Rivers	0		a123.8
North Nashua River:			
Fitchburg, Mass., Daniels Street Bridge, 0.25 mile above	15.75		ad497.5
Fitchburg, Mass., Daniels Street Bridge, 0.2 mile above	15.7		ad497.1
Fitchburg, Mass., Daniels Street Bridge, 360 feet above	15.55		ad496.5
Fitchburg, Mass., Daniels Street Bridge, 50 feet below	15.5		ad489.9
Fitchburg, Mass., Kimball Street Bridge and dam, 50 feet above	15.45		ad489.4
Fitchburg, Mass., Kimball Street Bridge and dam, 400 feet below	15.35		ad480.9
Fitchburg, Mass., Sheldon Street Bridge (destroyed), 0.10 mile above	15.25		ad480.1
Fitchburg, Mass., Sheldon Street Bridge (destroyed), 100 feet above	15.15		ad479.5
Fitchburg, Mass., Sheldon Street Bridge (destroyed), 50 feet below	15.15		ad473.0
Fitchburg, Mass., Sheldon Street Bridge (destroyed), 0.15 mile below	15.00		ad472.1
Fitchburg, Mass., Sheldon Street Bridge (destroyed), 0.15 mile below	15.00		ad469.6
Fitchburg, Mass., River Street Bridge, 0.10 mile above	14.90		ad469.4
Fitchburg, Mass., River Street Bridge, 110 feet below	14.80		ad464.6
Fitchburg, Mass., Circle Street Bridge, 60 feet below	14.7		ad459.0
Fitchburg, Mass., Rollstone Street Bridge, 40 feet above	14.55		ad456.2
Fitchburg, Mass., Rollstone Street Bridge, 0.15 mile below	14.40		ad449.8
Fitchburg, Mass., Rollstone Street Bridge, 0.20 mile below	14.35		ad450.3

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Merrimack River Basin--Continued			
North Nashua River--Continued.			
Fitchburg, Mass., Rollstone Street Bridge, 0.25 mile below, average both banks	14.30		ad448.5
Fitchburg, Mass., Rollstone Street Bridge, 0.35 mile below	14.20		ad446.8
Fitchburg, Mass., Water Street Bridge, 0.35 mile above	14.05		ad436.9
Fitchburg, Mass., Water Street Bridge, 0.25 mile above	13.95		ad433.0
Fitchburg, Mass., Water Street Bridge, 0.25 mile above	13.95		ad432.5
Fitchburg, Mass., Water Street Bridge, 0.10 mile above	13.80		ad428.8
Fitchburg, Mass., Water Street Bridge, 0.15 mile below	13.55		ad421.5
Fitchburg, Mass., Fifth Street Bridge, 0.20 mile above	13.40		ad407.6
Fitchburg, Mass., Fifth Street Bridge, 30 feet above	13.20		ad403.0
Fitchburg, Mass., Fifth Street Bridge, 0.15 mile below	13.05		ad400.3
Fitchburg, Mass., Fifth Street Bridge, 0.20 mile below	13.00		ad399.6
Fitchburg, Mass., Fifth Street Bridge, 0.25 mile below	12.95		ad390.5
Fitchburg, Mass., Fifth Street Bridge, 0.25 mile below	12.95		ad387.2
Fitchburg, Mass., Fifth Street Bridge, 0.35 mile below	12.85		ad385.2
Fitchburg, Mass., Fifth Street Bridge, 0.50 mile below	12.70		ad382.1
Fitchburg, Mass., Fifth Street Bridge, 0.50 mile below	12.70		ad375.8
Fitchburg, Mass., Fifth Street Bridge, 0.75 mile below	12.45		ad371.0
Fitchburg, Mass., Falulah Street Bridge, 0.60 mile above	12.35		ad359.8
Fitchburg, Mass., Falulah Street Bridge, 0.35 mile above	12.10		ad355.2
Fitchburg, Mass., Falulah Street Bridge, 0.20 mile above	11.95		ad352.5
Fitchburg, Mass., Falulah Street Bridge, 0.10 mile above	11.85		ad345.9
Fitchburg, Mass., Falulah Street Bridge, 25 feet above	11.75		ad344.6
Fitchburg, Mass., Falulah Street Bridge, 100 feet below	11.75		ad341.6
Fitchburg, Mass., Falulah Street Bridge, 0.25 mile below	11.50		ad339.7
Leominster, Mass., U. S. Geological Survey gage, just above Worcester Consolidated Street Railway dam, headwater, right bank	6.5	Sept. 21 3pm	ad284.6
Leominster, Mass., Ponikin Mill dam, tailwater	3.3		ad247.8
Leominster, Mass., Ponikin Mill Bridge, downstream	3.1		ad244.2
Nashua River:			
Lancaster, Mass., Boston & Maine R.R. bridge, downstream	29.25		a227.0
Harvard, Mass., highway bridge at Still River Station, upstream	29.1		a227.0
Harvard, Mass., highway bridge at Still River Station, downstream	29.1		a225.0
Ayer, Mass., 300 feet below Engineers Bridge	26.95		a222.5
Ayer, Mass., abandoned street-railway bridge, upstream	24.55		a222.0
Ayer, Mass., Ayer Ice Co. dam, headwater	24.45		a221.5
Ayer, Mass., Ayer Ice Co. dam, tailwater	24.45		a219.0
Ayer, Mass., Boston & Maine R.R. bridge	24.0		a215.0
Ayer, Mass., Boston & Maine R.R. bridge, just below mouth of Squannacook River, upstream	21.7		a212.5
	21.7		a212.5
Ayer, Mass., Boston & Maine R.R. bridge, just below mouth of Squannacook River, downstream	21.7		a210.5
	21.7		a210.5
Ayer, Mass., highway bridge 1.05 miles below mouth of Squannacook River, upstream	20.7		a208.0
Ayer, Mass., highway bridge 1.05 miles below mouth of Squannacook River, downstream	20.7		a207.0
	20.7		a207.0
Groton, Mass., highway bridge 0.3 mile above mouth of Robinson Brook	18.2		a206.0
East Pepperell, Mass., Nashua River Paper Co. dam, headwater	13.65		a202.0
East Pepperell, Mass., Nashua River Paper Co. dam, tailwater	13.65		a187.0
East Pepperell, Mass., U. S. Geological Survey gage, 0.1 mile below dam, right bank	13.55		a183.1
East Pepperell, Mass., 0.15 mile below Nashua River Paper Co. dam	13.5		a181.5
Runnels Falls Dam, headwater	9.3		a175.0
Runnels Falls Dam, tailwater	9.3		a167.0
Mine Falls Dam, headwater	5.2		a161.0
Mine Falls Dam, tailwater	5.2		a149.0
Dam, 0.1 mile below Mine Falls Dam	5.1		a129.0
Dam, 0.9 mile below Mine Falls Dam	4.3		a122.0
Nashua, N. H., Jackson Mills dam, headwater	1.3		a122.0
Nashua, N. H., 0.15 mile below Boston & Maine R.R. bridge	0.9		a119.0
Nashua, N. H., Confluence of Nashua River and Merrimack River	0		a118.5
Concord River:			
Confluence of Assabet and Sudbury Rivers	15.4		a117.1
Concord, Mass., old North Bridge, upstream	14.8		a116.7
Concord, Mass., Monument Street bridge, downstream	14.7		a116.2
Carlisle Road bridge on Highway 2, 75 feet upstream	10.9		a117.1

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet a/
Merrimack River Basin--Continued			
Concord River--Continued.			
Nashua Road bridge (Chelmsford Bridge) on Highway 4	8.85		117.0
River Street bridge, 330 feet below	7.1		116.4
Bridge on Boston road (Highway 3), upstream	5.9		116.3
Bridge Street bridge (abandoned), upstream, center pier	5.7		116.4
Fordway Bridge on Pollard Street	5.15		116.4
Faulkner Street bridge and dam, headwater	4.65		113.2
Faulkner Street dam, tailwater	4.65		105.8
Lowell, Mass., Boston & Maine R.R. bridge (Southern Division) 0.2 mile upstream	2.3		103.4
Lowell, Mass., Boston & Maine R.R. bridge	1.7		103.3
Lowell, Mass., Lawrence Street bridge	1.45		103.1
Lowell, Mass., Wamesit Power Co. dam (Waterhead Dam), headwater	1.3		101.9
Lowell, Mass., Wamesit Power Co. dam (Waterhead Dam), tailwater	1.3		100.3
Lowell, Mass., footbridge at Bay State Mills, 50 feet above	1.1		83.9
Lowell, Mass., footbridge at Bay State Mills, 220 feet below	1.05		82.5
Lowell, Mass., Rogers Street bridge	.8		76.6
Lowell, Mass., Church Street bridge	.4		69.9
Lowell, Mass., Middlesex Dam, headwater	.3		69.9
Lowell, Mass., East Merrimack Street bridge	.2		68.2
Lowell, Mass., confluence of Concord and Merrimack Rivers, at rear of Massachusetts Mill	0		68.0
Sudbury River:			
Southville, Mass., highway bridge, 0.7 mile above Highway 85 bridge	27.15		257.9
Cordaville dam, 0.15 mile above Highway 85 bridge, headwater	26.6		254.4
Cordaville dam, 100 feet below, tailwater	26.6		246.9
Cordaville dam, 225 feet below	26.55		241.8
Highway bridge (abandoned) 0.05 mile above Highway 85 bridge, upstream	26.5		241.1
Cordaville, Mass., Highway 85 bridge, 100 feet above	26.45		234.8
Old mill dam, 0.8 mile below Highway 85 bridge	25.65		222.8
Boston & Albany R.R. bridge, 0.95 mile below Highway 85 bridge, 275 feet above	25.55		211.5
Boston & Albany R.R. bridge, upstream	25.50		209.6
Hopkinton Road bridge, 1.35 miles below Highway 85 bridge, upstream	25.1		204.4
Pleasant Street bridge, upstream	24.4		198.1
Dam, 0.1 mile below Pleasant Street bridge	24.3		197.4
Ashland, Mass., Lombard Governor Co. dam off Myrtle Street (2 spillways), headwater	23.8		196.9
Ashland, Mass., Lombard Governor Co. dam off Myrtle Street (2 spillways), tailwater	23.8		185.1
Ashland, Mass., Concord Street bridge 0.25 mile below Lombard Governor Co. dam, upstream	23.55		181.2
Ashland, Mass., westerly bridge on Highway 135, upstream	23.1		174.7
Ashland, Mass., easterly bridge on Highway 135, upstream	22.8		173.2
Above dam between Metropolitan water-supply basins Nos. 2 and 1	21.0		172.1
Dam at outlet of Metropolitan water-supply basin No. 1, just above Winter Street, headwater	20.15		164.3
Dam at outlet of Metropolitan water-supply basin No. 1, just above Winter Street, tailwater	20.15		159.7
Framingham Center, Mass., Union Avenue bridge, upstream	19.3		158.1
Framingham Center, Mass., Highway 9 bridge	18.85		154.8
Framingham, Mass., Gordon Bridge, 0.45 mile below Highway 9 bridge, 100 feet below	18.4		151.5
Framingham, Mass., Francis Street bridge, 1.7 miles below Highway 9 bridge, upstream	17.15		150.9
Framingham, Mass., Francis Street bridge, 1.7 miles below Highway 9 bridge, 50 feet below	17.15		149.4
Saxonville, Mass., dam at outlet of Sudbury Pond, just above Central Street bridge	15.5		148.2
Saxonville, Mass., Central Street bridge, downstream	15.5		128.0
Saxonville, Mass., Concord Street bridge, upstream	15.05		127.0
Stone bridge, 2.1 miles below Concord Street bridge, 50 feet above	12.95		122.2
Highway 20 bridge, downstream	10.0		119.7
Stone Road bridge, Wayland Inn, upstream	8.95		119.8
Concord-Lincoln town line, Highway 117 bridge (Lees Bridge)	4.6		118.7
Route 2 bridge, upstream	1.75		118.1

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Merrimack River Basin--Continued			
Sudbury River--Continued.			
Concord, Mass., Highway 62 bridge (Main Street bridge) 50 feet above	1.0		a118.5
Concord, Mass., Highway 2A bridge (Elm Street bridge) 200 feet below	.85		a118.0
Concord, Mass., Nashawtuc Road bridge, 50 feet upstream	.55		a118.1
Concord, Mass., Nashawtuc Road bridge, 250 feet below	.5		a118.0
Confluence of Sudbury and Assabet Rivers	0		a117.1
Thames River Basin			
Willimantic and Shetucket Rivers:			
Stafford Springs, Conn., at Rhode Island Worsted Co. dam on Square Pond Brook	57.2	Sept. 21 4am	ad502.2
Stafford Springs, Conn., 700 feet below Rhode Island Worsted Co. dam on Square Pond Brook	57.05		ad492.1
Stafford Springs, Conn., 1,330 feet below Stafford Worsted Co. dam on Square Pond Brook	56.45		ad477.1
Stafford Springs, Conn., 1,420 feet below Stafford Worsted Co. dam on Square Pond Brook	56.45		ad477.0
Stafford Springs, Conn., inside New London Northern R.R. station, 1,850 feet below Stafford Worsted Co. dam on Square Pond Brook	56.35	Sept. 21 3-4pm	ad475.9
Stafford Springs, Conn., cornerstone of church 1,850 feet below Stafford Worsted Co. dam on Square Pond Brook	56.35		ad478.7
Stafford Springs, Conn., 250 feet below T. F. Mullen Co. dam	55.8		ad461.9
Stafford Springs, Conn., 750 feet below T. F. Mullen Co. dam	55.65		ad459.8
West Willington, Conn., 6.4 miles above McCollum Dam, left bank	50.4		ad371.9
West Willington, Conn., 6.4 miles above McCollum Dam, left bank	50.4	Sept. 21 1pm	ad372.5
West Willington, Conn., 6.4 miles above McCollum Dam, left bank	50.4		ad372.3
Mansfield Depot, Conn., at McCollum Dam, left bank	44.0	Sept. 21 1:30pm	ad294.6
Eagleville, Conn., at Eagleville Mills Co. dam, right bank	41.7	Sept. 21 about 1pm	ad283.6
Eagleville, Conn., 125 feet below Eagleville Mill Co. dam, left bank	41.7	Sept. 21 about 1pm	ad276.5
South Coventry, Conn., inside New London Northern R.R. station 1.7 miles below Eagleville Mill Co. dam, right bank	40.0		ad264.8
Willimantic, Conn., at highway bridge 2.0 miles above American Thread Co. building at Windham Road bridge, right bank	35.9		ad251.3
Willimantic, Conn., at American Thread Co. building just below Windham Road bridge, left bank	33.9		ad191.5
Baltic, Conn., 600 feet below Baltic Mills dam	23.1		ad88.8
Baltic, Conn., 900 feet below Baltic Mills dam, right bank	23.0		ad89.2
Baltic, Conn., 1,200 feet below Baltic Mills dam, right bank	23.0		ad88.7
Baltic Conn., 0.7 mile below Baltic Mills dam, right bank	22.5		ad84.5
Baltic, Conn., 0.9 mile below Baltic Mills dam, right bank	22.3		ad84.3
Baltic, Conn., 1.0 mile below Baltic Mills dam, right bank	22.2		ad83.4
Occum, Conn., 400 feet below City of Norwich dam, right bank	20.8		ad70.4
Occum, Conn., 0.5 mile below City of Norwich dam, right bank	20.4		ad66.2
Taftville, Conn., just above highway bridge, 0.05 mile above mouth of Quinebaug River, right bank	17.95		ad44.4
Norwich, Conn., 600 feet below Greenville dam 0.4 mile above Eighth Street highway bridge, right bank	16.4		ad33.4
Norwich, Conn., 960 feet below Greenville dam, right bank	16.3		ad32.6
Norwich, Conn., 960 feet below Greenville dam, right bank	16.3		ad31.4
Norwich, Conn., 1.0 mile below Greenville dam, right bank	15.5		ad27.2
Norwich, Conn., 0.3 mile above Main Street bridge, right bank	15.15		ad26.7

a From profiles prepared by Corps of Engineers, U. S. Army, on basis of their surveys and investigations.
ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood ceest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Thames River Basin--Continued			
Willimantic and Shetucket Rivers--Continued.			
Norwich, Conn., 0.1 mile above Main Street bridge, left bank	14.95		26.3
Norwich, Conn., 300 feet above Main Street bridge, right bank	14.90		26.8
Norwich, Conn., 60 feet above Main Street bridge	14.85		26.1
Norwich, Conn., 140 feet below Main Street bridge	14.85		25.6
Norwich, Conn., New York, New Haven & Hartford R.R. depot 0.1 mile below Main Street bridge	14.75		25.4
Norwich, Conn., Franklin Square	14.6		25.0
Norwich, Conn., corner of Franklin Street and Bath Street	14.6		25.0
Norwich, Conn., in shop on City Landing	14.5		24.8
Norwich, Conn., in theater on City Landing	14.5		24.9
Norwich, Conn., on building on City Landing	14.5		24.9
Norwich, Conn., intersection of Broadway and Main Street	14.5		23.6
Norwich, Conn., on store #42 Market Street	14.4		14.7
Norwich, Conn., on market #56 Market Street	14.4		14.9
Norwich, Conn., at New York, New Haven & Hartford R.R. freight station	14.4		14.9
Still and Natchaug Rivers:			
Mansfield, Conn., at City of Willimantic dam	ae35.0	Sept. 21	191.9
Mansfield, Conn., 40 feet below City of Willimantic dam	ae35.0		180.7
Willimantic, Conn., building just above highway bridge below railroad bridge, right bank	ae33.55		167.3
Willimantic, Conn., house #79 Main Street just above highway bridge 0.2 mile above confluence of Natchaug and Willimantic Rivers, right bank	ae33.2		166.3
Willimantic, Conn., house #55 Main Street, just above highway bridge, right bank	ae33.2		166.2
Willimantic, Conn., over highway bridge	ae33.2		166.2
Willimantic, Conn., house at highway bridge, left bank	ae33.2		166.1
Willimantic, Conn., building at highway bridge, left bank	ae33.2		166.0
Willimantic, Conn., just below highway bridge, left bank	ae33.2		165.4
Willimantic, Conn., just south of highway, left bank	ae33.0		165.1
Quinebaug River:			
Southbridge, Mass., at Ames Worsted Co. dam, left bank (right abutment destroyed 6:30am Sept. 21)	71.3	Sept. 21	519.1
Southbridge, Mass., 650 feet below Ames Worsted Co. dam, left bank	71.2		492.2
Southbridge, Mass., 1,300 feet below Ames Worsted Co. dam, left bank	71.05		485.7
Southbridge, Mass., 1,600 feet below Ames Worsted Co. dam, left bank	71.0		484.2
Southbridge, Mass., at Russell Harrington Cutlery Co. dam	71.0		480.4
Southbridge, Mass., 2,600 feet above American Optical Co. dam, right bank	70.0		426.8
Southbridge, Mass., 2,100 feet above American Optical Co. dam, right bank	69.9		426.5
Southbridge, Mass., 1,200 feet above American Optical Co. dam, right bank	69.75		425.7
Southbridge, Mass., 1,150 feet above American Optical Co. dam, right bank	69.7		424.2
Southbridge, Mass., at American Optical Co. dam, right bank	69.5	Sept. 21 10:15am	423.1
Southbridge, Mass., 530 feet below American Optical Co. dam, right bank	69.4		414.7
Sandersdale, Mass., highway bridge, upstream, left bank	68.7		400.3
West Dudley, Mass., 300 feet above West Dudley Paper Co. dam (dam failed)	66.65		385.0
West Dudley, Mass., at West Dudley Paper Co. dam (dam failed)	66.6	Sept. 21 10-11am	384.6
Dudley, Mass., at Intervale Mills dam (dam failed Sept. 21, 11am), left bank	64.6		369.4
Dudley, Mass., 120 feet below Intervale Mills dam (dam failed), left bank	64.6		361.5
Dudley, Mass., 300 feet below Intervale Mills dam (dam failed), right bank	64.55		364.1
Quinnebaug, Conn., just above highway bridge 0.5 mile below Intervale Mills dam	64.1		356.7
Fabyan, Conn., 180 feet below Fabyan Woolen Co. dam, left bank	63.0		345.6

ad From surveys and investigations by Corps of Engineers, U. S. Army.
ae Measured along middle of river valley.

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Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Thames River Basin--Continued			
Quinebaug River--Continued.			
Putnam, Conn., 90 feet above Nightingale-Morse Mills Inc. dam	54.8		297.8
Putnam, Conn., 250 feet below Nightingale-Morse Mills Inc. dam	54.8		280.3
Putnam, Conn., just below Providence Street highway bridge, left bank	54.8		266.5
Putnam, Conn., just below Providence Street highway bridge, left bank	54.8		267.1
Putnam, Conn., 1,800 feet above Putnam Woolen Co. dam, left bank	54.75		264.0
Putnam, Conn., 1,600 feet above Putnam Woolen Co. dam, left bank	54.7		264.5
Putnam, Conn., 1,550 feet above Putnam Woolen Co. dam, left bank	54.7		264.1
Putnam, Conn., 1,240 feet above Putnam Woolen Co. dam, left bank	54.65		262.4
Putnam, Conn., 1,190 feet above Putnam Woolen Co. dam, left bank	54.65		262.9
Putnam, Conn., 1,100 feet above Putnam Woolen Co. dam, right bank	54.6		262.9
Putnam, Conn., 900 feet above Putnam Woolen Co. dam, left bank	54.55		262.6
Putnam, Conn., 850 feet above Putnam Woolen Co. dam, left bank	54.55		262.5
Putnam, Conn., 10 feet above Putnam Woolen Co. dam, right bank	54.4		262.3
Putnam, Conn., 600 feet below Putnam Woolen Co. dam, right bank	54.3		238.4
Putnam, Conn., 600 feet below Putnam Woolen Co. dam, left bank	54.3		236.8
Putnam, Conn., 1,400 feet below Putnam Woolen Co. dam, left bank	54.15		238.2
Putnam, Conn., 1,750 feet below Putnam Woolen Co. dam, left bank	54.05		236.6
Putnam, Conn., 400 feet above U. S. Geological Survey gage, left bank	54.0		236.5
Putnam, Conn., 0.25 mile below U. S. Geological Survey gage, left bank	53.65		234.7
Putnam, Conn., 0.45 mile below U. S. Geological Survey gage, right bank	53.45		233.7
Goodyear, Conn., 100 feet above Goodyear Cotton Mills Inc. dam	47.4	Sept. 21 3pm	212.3
Goodyear, Conn., 0.3 mile below Goodyear Cotton Mills Inc. dam	47.1		204.7
Danielson, Conn., 260 feet above Wauregan-Quinebaug Mills Inc. dam, right bank	42.4		196.1
Danielson, Conn., just above Wauregan-Quinebaug Mills Inc. dam, right bank	42.4		196.0
Danielson, Conn., at Wauregan-Quinebaug Mills Inc. dam	42.4		197.1
Danielson, Conn., at Dyer Dam of Connecticut Light & Power Co., headwater (dam broke during night of Sept. 23, 1938)	40.6		170.6
Danielson, Conn., 40 feet below Dyer Dam of Connecticut Light & Power Co., tailwater	40.6		159.8
Packersville, Conn., highway bridge 1.8 miles below Mill Brook, downstream, right bank	28.5		103.4
Jewett City, Conn., 150 feet above Aspinook Dam, left bank	25.4		102.2
Jewett City, Conn., just above highway bridge 0.7 mile below Aspinook Dam, left bank	24.7	Sept. 23 9-10pm	87.6
Yantic River:			
Bozrahville, Conn., 900 feet below Bozrah Electric Co. dam	24.0		204.5
Franklin, Conn., just above highway bridge 0.05 mile above Franklin-Norwichtown line, right bank	19.1		114.3
Norwichtown, Conn., 0.6 mile below Glen Woolen Mills Paper Co.	16.6		83.3
Connecticut River Basin			
Connecticut River:			
Holyoke, Mass., Holyoke Dam, headwater	81.85		112.3
Holyoke, Mass., 400 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.8		74.9
Holyoke, Mass., 280 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.75		74.3
Holyoke, Mass., 200 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.75		74.5
Holyoke, Mass., 200 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.75		74.0

ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Connecticut River--Continued.			
Holyoke, Mass., 150 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.75		74.6
Holyoke, Mass., 100 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.7		74.4
Holyoke, Mass., 50 feet above No. 2 Wasteway, Holyoke Water Power Co.	81.7		75.1
Holyoke, Mass., No. 2 Wasteway, Holyoke Water Power Co.	81.7		74.9
Holyoke, Mass., Morart Building	81.6		74.8
Holyoke, Mass., Corps of Engineers, U. S. Army, gage above South Hadley Falls Bridge	81.6		74.5
Holyoke, Mass., Corps of Engineers, U. S. Army, gage below South Hadley Falls Bridge (set during flood)	81.5		74.0
Holyoke, Mass., Valley Paper Co.	81.5		74.3
Holyoke, Mass., Crocker Division, American Writing Paper Co.	81.4		73.7
Holyoke, Mass., Albion Division, American Writing Paper Co.	81.3		73.2
Holyoke, Mass., North Side of Albion Division, American Writing Paper Co.	81.3		73.4
Holyoke, Mass., between Albion and Mount Tom Division American Writing Paper Co.	81.2		73.7
Holyoke, Mass., Mount Tom Division, American Writing Paper Co.	81.1		72.6
Holyoke, Mass., between Mount Tom and Nonotuck Divisions, American Writing Paper Co.	81.1		72.9
Holyoke, Mass., Nonotuck Division, American Writing Paper Co.	81.1		72.4
Holyoke, Mass., rear of Nonotuck Division, American Writing Paper Co.	81.1		72.3
Holyoke, Mass., J. C. Gill Division, American Writing Paper Co.	81.0		72.2
Holyoke, Mass., No. 1 wasteway, Holyoke Water Power Co.	80.6		71.6
Holyoke, Mass., near Hampden Glazed Paper Co.	80.2		70.7
Holyoke, Mass., Corps of Engineers, U. S. Army, gage (set during flood)	80.0		70.7
Holyoke, Mass., Corps of Engineers, U. S. Army, gage (set during flood)	80.0		70.4
Holyoke, Mass., Corps of Engineers, U. S. Army, gage (set during flood)	79.8		70.1
Holyoke, Mass., No. 4 wasteway, Holyoke Water Power Co.	79.8		70.2
Holyoke, Mass., gage No. 48 Chemical Paper Co.	79.5		70.1
Holyoke, Mass., Corps of Engineers, U. S. Army, gage (set during flood)	79.1		69.6
Chicopee, Mass., mouth of Chicopee River	75.75		
Chicopee, Mass., Chicopee bridge	75.45		66.4
Chicopee, Mass., 0.5 mile below Chicopee bridge	74.95		66.1
Chicopee, Mass., 0.85 mile below Chicopee bridge	74.6		65.8
Chicopee, Mass., 1.20 miles below Chicopee bridge	74.25		65.7
Springfield, Mass., 4,300 feet above North End bridge	73.6		65.1
Springfield, Mass., 3,350 feet above North End bridge	73.4		64.9
Springfield, Mass., 2,000 feet above North End bridge	73.1		64.4
Springfield, Mass., 1,000 feet above North End bridge	72.9		64.4
Springfield, Mass., 100 feet below North End bridge	72.75		64.2
Springfield, Mass., 800 feet below North End bridge	72.65		64.0
Springfield, Mass., 1,850 feet below North End bridge	72.4		63.7
Springfield, Mass., 3,400 feet below North End bridge	72.1		63.6
Springfield, Mass., 4,300 feet below North End bridge	71.9		63.6
Springfield, Mass., Boston & Albany R.R. bridge	71.85		63.5
Springfield, Mass., Memorial Highway bridge	71.65		62.8
Springfield, Mass., upper mouth of Westfield River	71.05		
Springfield, Mass., 4,300 feet below Memorial Highway bridge	70.8		62.8
Springfield, Mass., 5,150 feet below Memorial Highway bridge	70.7		62.6
Springfield, Mass., 700 feet above South End bridge	70.5		62.1
Westfield River, lower mouth of	70.45		
Springfield, Mass., South End bridge	70.35		62.0
Springfield, Mass., 0.8 mile below South End bridge	69.55		60.8
Springfield, Mass., 1.8 miles below South End bridge	68.55		60.4
Springfield, Mass., 3.0 miles below South End bridge	67.35		59.5
Springfield, Mass., 4.15 miles below South End bridge	66.20		59.2
Thompsonville, Conn., 1.3 miles above bridge at	65.7		58.3
Thompsonville, Conn., 0.6 mile above bridge at	65.0		57.0
Thompsonville, Conn., bridge at	64.40		56.0
Enfield Dam, 2,100 feet above	63.95		55.6
Enfield Dam, 1,600 feet above	63.85		55.2
Enfield Dam, 1,300 feet above	63.8		54.2
Enfield Dam, 900 feet above	63.7		52.7
Enfield Dam, U. S. Geological Survey gage above	63.55		52.9
Enfield Dam, 300 feet below	63.5		49.4
Enfield Dam, 500 feet below	63.45		49.3

ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Connecticut River Basin--Continued			
Connecticut River--Continued.			
Enfield, Conn., left bank	60.3		af40.1
East Windsor, Conn., left bank	59.3		af38.6
East Windsor, Conn., left bank	59.25		ag38.6
Windsor Locks, Conn., right bank	59.19		ah38.8
Windsor Locks, Conn., right bank	59.16		aj38.7
Windsor Locks, Conn., right bank	59.15		ak38.8
East Windsor, Conn., left bank	59.15		af38.7
Windsor Locks, Conn., right bank	59.0		ak38.8
East Windsor, Conn., left bank	58.95		af38.9
East Windsor, Conn., left bank	58.85		af38.2
Windsor Locks, Conn., gage, right bank	58.7		am38.1
Windsor, Conn., railroad overpass at Broad St. south of Farmington River, right bank	53.55		ad36.6
Windsor, Conn., gage, right bank	53.45		ag36.5
Windsor, Conn., right bank	53.3		ak36.9
Windsor, Conn., gage, right bank	53.3		ag36.8
South Windsor, Conn., left bank	53.2		ag37.1
Windsor, Conn., right bank	52.7		ak36.8
Windsor, Conn., right bank	52.7		ag36.6
South Windsor, Conn., left bank	51.5		ag36.3
Windsor (Wilson), Conn., gage, right bank	51.2		ag36.5
Windsor (Wilson), Conn., right bank	51.2		ag36.4
Windsor (Wilson), Conn., gage, right bank	50.65		ag36.2
Windsor (Wilson), Conn., right bank	50.65		ak35.8
Hartford-Windsor town line, Windsor Avenue at Meadow Brook, right bank	50.3		ad35.8
East Hartford, Conn., gage, left bank	49.7		af35.9
Hartford, Conn., right bank	48.7		ak35.7
Hartford, Conn., New York, New Haven & Hartford R.R. bridge	48.05		ad35.4
Hartford, Conn., right bank	47.95		ak35.7
Hartford, Conn., right bank	47.9		ak35.6
Hartford, Conn., right bank	47.8		ak35.6
Hartford, Conn., right bank	47.6		ak35.4
Hartford, Conn., Memorial Bridge	47.45		ad35.2
Hartford, Conn., right bank	47.4		ak35.2
Hartford, Conn., right bank	47.25		ak35.2
East Hartford, Conn., left bank	47.05		af34.5
Hartford, Conn., right bank	46.95		ak34.6
Hartford, Conn., Park River gage, right bank	46.7		ad34.6
East Hartford, Conn., gage, left bank	46.5		af34.3
Hartford, Conn., right bank	46.4		ak34.5
East Hartford, Conn., left bank	46.2		ag34.1
East Hartford, Conn., left bank	45.6		ag33.8
East Hartford, Conn., sidewalk bridge over Willow Brook, left bank	45.6		ad33.6
East Hartford, Conn., left bank	45.6		ag33.6
Hartford-Wethersfield line, South Meadow pumping station, right bank	44.1		ad33.0
East Hartford, Conn., left bank	44.0		ag33.0
Wethersfield, Conn., right bank	43.7		ak33.1
Wethersfield, Conn., right bank	42.7		ag32.8
Wethersfield, Conn., right bank	42.7		ag32.7
Wethersfield, Conn., right bank	42.7		ak32.5
Glastonbury, Conn., left bank	42.5		ag33.1
Wethersfield, Conn., center of, right bank	42.2		ad32.6
Glastonbury, Conn., left bank	41.8		ag33.1
Glastonbury, Conn., left bank	41.8		ag33.0
Glastonbury, Conn., left bank	41.7		ag33.0
Glastonbury, Conn., left bank	41.7		ag33.0
Glastonbury, Conn., left bank	41.7		ag32.0
Glastonbury, Conn., left bank	41.4		ag32.6
Wethersfield, Conn., right bank	41.1		ag32.4
Wethersfield, Conn., right bank	40.1		ag32.5
Wethersfield, Conn., right bank	39.5		ag32.4
Wethersfield-Rocky Hill town line, right bank	39.4		ad32.5
Rocky Hill, Conn., right bank	39.05		ag32.6
Glastonbury, Conn., left bank	37.35		ag32.6
Glastonbury, Conn., left bank	37.0		ag31.8
Glastonbury, Conn., left bank	37.0		ag31.7
Rocky Hill, Conn., right bank	36.9		ag32.0
Rocky Hill, Conn., gage, right bank	36.9		ag31.9
Rocky Hill, Conn., right bank	36.85		ag31.8
Rocky Hill, Conn., right bank	36.85		ag31.8

ad From surveys and investigations by Corps of Engineers, U. S. Army.
af From surveys and investigations by Works Progress Administration.
ag From surveys and investigations by Connecticut State Water Commission (Ground Water Project).
ah From surveys and investigations by the Horton Co.
aj From surveys and investigations by Middletown Department of Public Works.
ak From surveys and investigations by Hartford City Engineer.
am From surveys and investigations by Connecticut Light & Power Co.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Connecticut River Basin--Continued			
Connecticut River--Continued.			
Rocky Hill, Conn., right bank	36.8		ak31.4
Glastonbury, Conn., left bank	36.25		ag31.2
Rocky Hill, Conn., right bank	35.7		ak30.6
Rocky Hill, Conn., right bank	35.7		ag30.6
Cromwell, Conn., right bank	33.6		ag29.7
Portland (Gildersleeve), Conn., left bank	33.4		ag30.6
Portland (Gildersleeve), Conn., 0.2 mile north of four corners at Fogelmark's Restaurant	33.0		ad30.6
Portland (Gildersleeve), Conn., left bank	32.25		ag30.2
Cromwell, Conn., right bank	31.2		ag29.1
Cromwell, Conn., center of, right bank	31.25		ad29.0
Cromwell, Conn., right bank	31.0		ag28.5
Portland, Conn., left bank	29.8		ag27.1
Middletown, Conn., right bank	29.6		ag27.2
Middletown, Conn., at new Connecticut River bridge	29.55		ad27.5
Middletown, Conn., at new Connecticut River bridge, left end	29.5		ad27.1
Middletown, Conn., gage, right bank	29.3		ag27.4
Middletown, Conn., right bank	28.8		an27.3
Middletown, Conn., right bank	28.0		ag26.2
Middletown, Conn., gage, right bank	27.95		ag26.2
Middletown (Narrows), Conn., right bank	27.5		ag26.4
Portland, Conn., left bank	27.45		ag26.6
Portland, Conn., left bank	27.45		ag26.5
Middletown (Narrows), Conn., right bank	27.12		ag25.6
Middletown (Narrows), Conn., gage, right bank	27.07		ag25.8
Middletown (Narrows), Conn., right bank	27.07		ag25.7
Middletown (Narrows), Conn., right bank	26.80		ag25.5
Middletown (Narrows), Conn., right bank	26.55		ag25.3
Portland, Conn., left bank	26.0		ag24.7
Middletown (Narrows), Conn., right bank	25.85		ag24.8
Middletown (Laurel), Conn., right bank	25.85		ag24.4
East Hampton (Cobalt), Conn., left bank	24.75		ag24.1
East Hampton (Middle Haddam), Conn., left bank	24.1		ag22.8
Middletown (Narrows), Conn., right bank	23.9		ag23.2
Haddam (Higganum), Conn., right bank	20.7		ag21.3
Haddum (Higganum), Conn., right bank	20.7		ag21.3
Haddam (Higganum), Conn., right bank	20.7		ag21.3
Haddam (Higganum), Conn., right bank	20.5		ag21.1
Haddam (Higganum), Conn., right bank	20.45		ag21.0
Haddam (Rock Landing), Conn., left bank	19.7		ag20.3
Haddam (Rock Landing), Conn., left bank	19.7		ag19.6
Haddam, Conn., right bank	18.80		ag19.2
Haddam, Conn., right bank	18.75		ag19.5
East Haddam, Conn., left bank	15.65		ag17.7
Haddam, Conn., right bank	15.05		ag16.6
East Haddam, Conn., left bank	15.05		ag16.6
East Haddam, Conn., left bank	15.05		ag16.5
Haddam, Conn., right bank	15.05		ag16.2
East Haddam, Conn., left bank	15.01		ag16.2
East Haddam, Conn., left bank	15.01		ag15.9
Chester, Conn., right bank	12.0		ag13.0
Chester, Conn., right bank	11.8		ag13.3
Saybrook (Deep River), Conn., right bank	10.5		ag12.5
Saybrook (Deep River), Conn., right bank	10.45		ag12.4
Saybrook (Deep River), Conn., right bank	10.1		ag12.7
Lyme (Brockways), Conn., left bank	7.8		ag10.8
Lyme (Ely's Landing), Conn., left bank	6.8		ag 8.9
Essex, Conn., right bank	6.0		ag 8.8
Essex, Conn., right bank	6.0		ag 8.8
Old Saybrook, Conn., right bank	3.3		ag 5.8
Old Saybrook, Conn., right bank	0		ag 3.6
West River:			
Weston, Vt., about 1,000 feet above highway bridge at "The Island", both banks	40.4		ad1,185.6
Weston, Vt., 150 feet below highway bridge at "The Island", right bank	40.2		ad1,179.8
Londonderry, Vt., about 700 feet below Windsor-Windham county line, left bank	39.2		ad1,170.6
Londonderry, Vt., 1.4 miles below Windsor-Windham county line, right bank	37.9	Sept. 21 10 pm	ad1,154.9
Londonderry, Vt., 900 feet above Williams Bros. dam, right bank	37.2	Sept. 21 10 pm	ad1,153.4
Londonderry, Vt., 500 feet above Williams Bros. dam, left bank	37.1		ad1,153.2

ad From surveys and investigations by Corps of Engineers, U. S. Army.
ag From surveys and investigations by Connecticut State Water Commission (Ground water Project).
ak From surveys and investigations by Hartford City Engineer.
an From surveys and investigations by Montgomery Co.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
West River--Continued.			
Londonderry, Vt., 300 feet above Williams Bros. dam, left bank	37.1	Sept. 21 10pm	1,153.0
Londonderry, Vt., 100 feet above Williams Bros. dam, right bank	37.0	Sept. 21 10pm	1,152.4
Londonderry, Vt., 600 feet below Williams Bros. dam, right bank	36.9	Sept. 21 10pm	1,136.6
Londonderry, Vt., 1,000 feet below Williams Bros. dam, right bank	36.8		1,135.8
Londonderry, Vt., 1,400 feet below Williams Bros. dam, right bank	36.7		1,135.8
Londonderry, Vt., 1,600 feet below Williams Bros. dam, right bank	36.7	Sept. 21 10pm	1,135.7
Londonderry, Vt., 1,900 feet below Williams Bros. dam, right bank	36.6	Sept. 21 10pm	1,135.6
Londonderry, Vt., about 2,000 feet below Williams Bros. dam, right bank	36.6	Sept. 21 10pm	1,135.6
South Londonderry, Vt., 300 feet above Londonderry Co. dam, right bank	33.9		1,049.9
South Londonderry, Vt., 15 feet above the Londonderry Co. dam, left bank	33.8	Sept. 21 10:30pm	1,049.0
South Londonderry, Vt., 150 feet below Londonderry Co. dam, left bank	33.8		1,044.6
South Londonderry, Vt., about 550 feet below Londonderry Co. dam, left bank	33.7	Sept. 21 9-10pm	1,041.1
South Londonderry, Vt., 100 feet above Hewlett dam, left bank	33.2	Sept. 21 9-10pm	1,032.1
South Londonderry, Vt., 1.9 miles above junction of Winhall River and West River, left bank	32.8		1,004.2
South Londonderry, Vt., about 600 feet above junction of Winhall River and West River, left bank	31.0		950.6
Jamaica, Vt., at highway bridge over West River	24.7	Sept. 21 10pm	672.5
East Jamaica, Vt., 0.3 mile below junction of Turkey Mountain Brook and West River, left bank	21.8		548.5
West Townshend, Vt., 1.6 miles below junction of Turkey Mountain Brook and West River, left bank	20.5	Sept. 21 10pm	518.6
West Townshend, Vt., 2.0 miles below junction of Turkey Mountain Brook and West River, left bank	20.1		506.4
Townshend, Vt., 2.1 miles below junction of Turkey Mountain Brook and West River, left bank	20.0		502.6
Townshend, Vt., 1.0 mile above junction of Fair Brook and West River, left bank	19.2		486.0
Townshend, Vt., 90 feet above highway bridge below junction of Fair Brook and West River, left bank	17.9		469.1
Townshend, Vt., about 150 feet below highway bridge, left bank	17.9		465.8
Townshend, Vt., 0.3 mile above junction of Mill Brook and West River at Harmonyville, left bank	15.9		438.4
Townshend, Vt., 0.7 mile below junction of Mill Brook and West River and about 500 feet above highway bridge, left bank	14.9	Sept. 21 7-8pm	428.0
Townshend, Vt., about 250 feet below highway bridge, right bank	14.7		427.2
Newfane, Vt., about 600 feet above railroad bridge, right bank	13.8		424.6
Newfane, Vt., 350 feet below railroad bridge, right bank	13.6		420.5
Newfane, Vt., 300 feet above highway bridge at U. S. Geological Survey gaging station, right bank	12.3	Sept. 21 11pm	410.3
Newfane, Vt., 1.1 miles above junction of Williamsville Branch and main branch of West River, right bank	9.2		382.2
Newfane, Vt., about 200 feet above junction of Williamsville Branch and main branch of West River, right bank	8.1		361.6
Dummerston, Vt., about 300 feet below junction of Williamsville Branch and main branch of West River, right bank	8.0		359.3
Dummerston, Vt., 10 feet above the Twin State Gas & Electric Co. dam, right bank	7.0		353.9
Dummerston, Vt., 100 feet below Twin State Gas & Electric Co. dam, right bank	7.0		332.1
Dummerston, Vt., about 550 feet below Twin State Gas & Electric Co. dam, right bank	6.9		329.4
Dummerston, Vt., about 300 feet above covered highway bridge above West Dummerston, Vt., right bank	6.1		316.5
Dummerston, Vt., about 250 feet below covered highway bridge above West Dummerston, Vt., right bank	6.0		312.4
Dummerston, Vt., about 80 feet above railroad bridge at West Dummerston, Vt., right bank	5.5		302.6
Dummerston, Vt., about 300 feet below railroad bridge at West Dummerston, Vt., right bank	5.4		300.3
Dummerston, Vt., 250 feet above highway bridge below West Dummerston, Vt., right bank	4.7		290.9

ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
West River--Continued.			
Dummerston, Vt., about 150 feet below highway bridge below West Dummerston, Vt., right bank	4.6		289.5
Dummerston, Vt., about 600 feet below highway bridge below West Dummerston, Vt., right bank	4.5		286.0
Dummerston, Vt., right bank	3.5		265.4
Brattleboro, Vt., right bank	2.3		248.6
Brattleboro, Vt., right bank	1.6		238.2
Brattleboro, Vt., right bank	1.1		233.4
Brattleboro, Vt., right bank	1.0		232.0
Brattleboro, Vt., confluence with Connecticut River	0		
Orcutt Brook:			
Landgrove, Vt., about 75 feet above North Landgrove highway bridge, right bank	3.1		1,377.0
Londonderry, Vt., 200 feet above highway bridge, left bank	1.5		1,208.6
Londonderry, Vt., 400 feet below highway bridge, right bank	1.3		1,199.9
Londonderry, Vt., 100 feet above highway bridge over Orcutt Brook near mouth, left bank	.2	Sept. 21 10pm	1,138.5
Londonderry, Vt., 300 feet below highway bridge and about 400 feet above mouth of Orcutt Brook, left bank	.1	Sept. 21 10pm	1,135.6
Junction of Orcutt Brook and West River 0.3 mile below Williams Bros. dam	.0		
Ashuelot River:			
Marlow, N. H., 250 feet below Watson & Williams Manufacturing Co. dam, left bank	51.0		1,157.6
Marlow, N. H., 0.3 mile below mouth of Abbott Brook, left bank	49.3		1,153.9
Marlow, N. H., 0.9 mile below mouth of Abbott Brook, left bank	48.7		1,134.0
Marlow, N. H., 100 feet above private bridge, left bank	47.80		1,093.3
Marlow, N. H., 100 feet above ruins of old dam, left bank	47.65		1,079.5
Gilsum, N. H., 200 feet above private bridge 0.3 mile above mouth of Trout Brook, left bank	46.85		1,026.0
Gilsum, N. H., 300 feet below private bridge, left bank	46.75		1,022.4
Gilsum, N. H., 0.45 mile below mouth of Trout Brook, left bank	46.0		1,008.7
Gilsum, N. H., just above mouth of Heminway Brook, left bank	44.6		909.4
Gilsum, N. H., 100 feet below highway bridge on Route 10, right bank	43.9		862.2
Gilsum, N. H., 0.25 mile above U. S. Geological Survey gage, left bank	43.15		808.0
Gilsum, N. H., U. S. Geological Survey gage	42.9	Sept. 21 6pm	786.7
Gilsum, N. H., 0.6 mile below U. S. Geological Survey gage, right bank	42.3		741.9
Gilsum, N. H., 0.8 mile below U. S. Geological Survey gage, right bank	42.1		726.3
Gilsum, N. H., 0.95 mile below U. S. Geological Survey gage, right bank	41.95		722.9
Gilsum, N. H., 200 feet above mouth of Dart Brook, right bank	40.7		673.3
Gilsum, N. H., 300 feet below mouth of Dart Brook, right bank	40.6		671.5
Surry, N. H., 400 feet below mouth of Cannon Brook, right bank	40.05		650.7
Surry, N. H., 400 feet above mouth of Thompson Brook, right bank	38.95		603.2
Surry, N. H., 0.7 mile below mouth of Thompson Brook, right bank	38.15		566.4
Goose Pond Brook, highway bridge, 2.95 miles above, left bank	33.35		493.9
Goose Pond Brook, 50 feet above highway bridge 0.25 mile below, left bank	30.15		486.1
Goose Pond Brook, 200 feet below highway bridge 0.25 mile below, left bank	30.1		485.5
Keene, N. H., 0.9 mile above highway bridge on Route 9, left bank	28.2		477.0
Keene, N. H., 0.6 mile above highway bridge on Route 9, left bank	27.9		477.7
Keene, N. H., 0.15 mile above highway bridge on Route 9, left bank	27.45		477.7
Keene, N. H., Faulkner & Colony Manufacturing Co. dam	27.35		477.8
Keene, N. H., 400 feet below Faulkner & Colony Manufacturing Co. dam	27.25		475.8
Keene, N. H., Boston & Maine R.R. bridge, west of station, right bank	27.2		474.4

ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Ashuelot River--Continued.			
Keene, N. H., 0.15 mile below railroad bridge, left bank	27.05		471.4
Keene, N. H., just above highway bridge between Route 9 and Route 10, left bank	26.9		474.7
Keene, N. H., highway bridge 0.9 mile above mouth of Otter Brook, downstream, left bank	26.8		475.3
Keene, N. H., Boston & Maine R.R. bridge, south of station	26.6		474.2
Keene, N. H., 0.55 mile above mouth of Otter Brook, left bank	26.45		473.3
Keene, N. H., 0.40 mile above mouth of Otter Brook, left bank	26.3		472.2
Keene, N. H., 0.3 mile above mouth of Otter Brook, left bank	26.2		475.0
Keene, N. H., 0.15 mile above mouth of Otter Brook, right bank	26.05		473.3
Swanzey, N. H., 0.3 mile above mouth of Ash Swamp Brook, left bank	24.8		468.4
Swanzey, N. H., 0.05 mile below mouth of Ash Swamp Brook, right bank	24.45		472.8
Swanzey, N. H., 0.4 mile below mouth of Ash Swamp Brook, right bank	24.1		474.2
Swanzey, N. H., just above mouth of Wilson Pond Brook	23.8		469.4
West Swanzey, N. H., 0.3 mile above M. A. Dickinson dam, left bank	18.6		468.1
West Swanzey, N. H., 150 feet above M. A. Dickinson dam, just below highway bridge, left bank	18.3		464.5
West Swanzey, N. H., 115 feet below M. A. Dickinson dam, left bank	18.3		462.2
West Swanzey, N. H., 0.2 mile below M. A. Dickinson dam, right bank	18.1		463.4
Westport, N. H., highway bridge, upstream, left bank	14.9		457.8
Winchester, N. H., highway bridge 0.1 mile below mouth of Forest Lake Brook, right bank	10.6		450.0
Winchester, N. H., 0.25 mile below highway bridge, right bank	10.35		444.5
Winchester, N. H., 0.65 mile below highway bridge, right bank	9.95		449.4
Winchester, N. H., 0.85 mile below highway bridge, right bank	9.75		446.4
Winchester, N. H., 1.2 miles below highway bridge, right bank	9.4		450.0
Winchester, N. H., 1.3 miles below highway bridge, left bank	9.3		445.2
Winchester, N. H., 1.4 miles below highway bridge, left bank	9.2		446.4
Winchester, N. H., 0.45 mile above highway bridge, left bank	9.05		446.7
Winchester, N. H., 0.3 mile above highway bridge, left bank	8.9		444.4
Winchester, N. H., 0.05 mile above highway bridge, right bank	8.65		447.6
Winchester, N. H., highway bridge, upstream, left bank	8.6		447.7
Winchester, N. H., 0.1 mile below highway bridge	8.5		447.0
Winchester, N. H., private bridge	8.35		446.1
Winchester, N. H., highway bridge, right bank	8.0		445.0
Winchester, N. H., 0.1 mile below highway bridge, left bank	7.9		444.7
Winchester, N. H., 0.3 mile above Snow Brook, left bank	7.5		444.6
Winchester, N. H., 0.05 mile below Snow Brook, left bank	7.15		445.3
Winchester, N. H., 0.65 mile below Snow Brook, left bank	6.55		444.6
Ashuelot, N. H., Boston & Maine R.R. bridge 0.9 mile below Snow Brook, upstream, left bank	6.3		446.5
Ashuelot, N. H., 0.25 mile below Boston & Maine R.R. bridge, left bank	6.05		439.1
Ashuelot, N. H., 0.5 mile below Boston & Maine R.R. bridge, right bank	5.8		438.2
Ashuelot, N. H., 0.15 mile above covered highway bridge, left bank	5.35		433.0
Ashuelot, N. H., covered highway bridge, upstream, left bank	5.2		432.2
Ashuelot, N. H., 0.05 mile below covered highway bridge, right bank	5.15		430.0
Ashuelot, N. H., 0.15 mile below covered highway bridge	5.05		422.2
Ashuelot, N. H., covered highway bridge 0.1 mile above Public Service Co. of New Hampshire dam	4.0		396.1
Ashuelot Paper Co. dam, headwater, left bank	3.15		345.2
Ashuelot Paper Co. dam, private bridge 750 feet below, right bank	3.0		325.2
Hinsdale, N. H., The Canal Co. dam, headwater, right bank	2.1		264.5

ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Ashuelot River--Continued.			
Hinsdale, N. H., Hinsdale Paper Co. and Fisk Paper Co. dam, headwater	1.5		233.2
Hinsdale, N. H., 0.1 mile below Hinsdale Paper Co. and Fisk Paper Co. dam	1.4		217.8
Hinsdale, N. H., 0.05 mile above U. S. Geological Survey gage at highway bridge	1.3	Sept. 22 12pm	216.5
Hinsdale, N. H., 0.2 mile below highway bridge, right bank	1.05		213.7
Hinsdale, N. H., 0.3 mile below highway bridge, right bank	.95		217.0
Hinsdale, N. H., 0.4 mile below highway bridge, right bank	.85		221.5
Hinsdale, N. H., 0.6 mile below highway bridge, right bank	.65		210.8
Hinsdale, N. H., 0.7 mile below highway bridge	.55		204.1
Confluence with Connecticut River	0		
Otter Brook:			
East Sullivan, N. H., steel highway bridge in center of village	9.55		995.5
East Sullivan, N. H., 0.1 mile below steel highway bridge in center of village, right bank	9.45		993.9
East Sullivan, N. H., 100 feet above new concrete highway bridge, right bank	9.4		997.2
East Sullivan, N. H., new concrete highway bridge, downstream	9.4		993.2
East Sullivan, N. H., Route 9, 0.4 mile below new concrete highway bridge, right bank	9.0		954.9
Roxbury, N. H., 50 feet above Hubbard Brook	8.5		896.6
Roxbury, N. H., steel highway bridge, upstream, left bank	7.95		840.7
Keene, N. H., Route 9 below Roxbury-Keene town line, right bank	7.25		786.6
Keene, N. H., highway bridge at town line, right bank	6.65		746.4
Keene, N. H., below U. S. Geological Survey gage, left bank	6.35		727.1
Roxbury, N. H., highway bridge, upstream, left bank	4.85		673.8
Roxbury, N. H., 0.35 mile above Boston & Maine R.R. bridge, left bank	4.45		650.4
Roxbury, N. H., Boston & Maine R.R. bridge, upstream, left bank	4.1		634.7
Roxbury, N. H., 0.1 mile below highway bridge, left bank	3.85		623.8
Roxbury, N. H., just above Roaring Brook, left bank	3.7		621.0
South Keene, N. H., 0.75 mile below Roaring Brook, left bank	2.95		580.4
South Keene, N. H., 50 feet downstream from junction with Minnewawa Brook, left bank	2.55		564.6
South Keene, N. H., 0.05 mile below Minnewawa Brook, left bank	2.5		560.1
South Keene, N. H., Keene Chair Co., below ruins of dam	2.05		535.3
South Keene, N. H., 100 feet above new masonry highway bridge, left bank	1.9		527.8
South Keene, N. H., 0.05 mile below new masonry highway bridge, left bank	1.85		518.2
Keene, N. H., Boston & Maine R.R. masonry arch bridge, upstream, right bank	1.6		511.7
Keene, N. H., 0.1 mile above concrete highway bridge, right bank	.4		473.9
Keene, N. H., concrete highway bridge, upstream, right bank	.3		475.0
Keene, N. H., between Beaver Brook and Otter Brook, highway bridge, right bank	.15		471.3
Confluence with Ashuelot River	0		
Minnewawa Brook:			
Marlboro, N. H., between highway bridge and small dam upstream from Robbins Brook, left bank	2.6		754.6
Marlboro, N. H., 50 feet above highway bridge near ruins of old dam	2.35		738.0
Marlboro, N. H., Monadnock Blanket Co. dam, right abutment	2.2		727.6
Marlboro, N. H., below highway bridge and 350 feet downstream from Monadnock Blanket Co. dam	2.15		714.9
Marlboro, N. H., at dam, left bank	2.05		704.8
Marlboro, N. H., 300 feet below dam, left bank	2.0		693.8
Marlboro, N. H., 75 feet above Marlboro Box Co. dam	1.9		690.1
Marlboro, N. H., 750 feet below Marlboro Box Co. dam, right bank	1.75		677.9
Marlboro, N. H., at highway bridge near road fork	1.5		666.4
Marlboro, N. H., Knowlton St. bridge, upstream, right bank	1.3		648.7

ad From surveys and investigations by Corps of Engineers, U. S. Army.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Minnewawa Brook--Continued.			
Keene, N. H., just below Keene-Marlboro town line, left bank	1.1		629.7
Keene, N. H., 0.5 mile above junction with Otter Brook, left bank	.5		589.1
Keene, N. H., 0.1 mile above junction with Otter Brook	.1		565.8
Confluence with Otter Brook	0		
Beaver Brook:			
Keene, N. H., above concrete highway bridge on Route 10, right bank	2.6		556.0
Keene, N. H., below concrete highway bridge on Route 9, left bank	2.5		548.2
Keene, N. H., at Kafelt Manufacturing Co. plant below junction of Routes 9 and 10	2.4		533.5
Keene, N. H., below ruins of old dam, right bank	2.25		508.7
Keene, N. H., above George St. bridge, left bank	2.1		488.6
Keene, N. H., off Greenwood Court above cemetery, right bank	1.90		479.5
Keene, N. H., Beaver Street bridge, below	1.55		479.0
Keene, N. H., Spring Street bridge	1.45		478.3
Keene, N. H., Roxbury Street bridge, below	1.35		475.6
Keene, N. H., near concrete bridge at lower end of Railroad Street	1.25		474.9
Keene, N. H., 500 feet above Water Street bridge, left bank	1.1		471.0
Keene, N. H., Water Street bridge, upstream, right bank	1.0		472.6
Keene, N. H., Boston & Maine R.R. bridge, upstream	.95		472.4
Keene, N. H., Kingsbury Manufacturing Co., right bank	.85		471.0
Keene, N. H., first house on Dartmouth Street, left bank	.65		475.3
Keene, N. H., No. 475 Main Street	.15		472.7
Confluence with Otter Brook	0		
South Branch of Ashuelot River:			
East Swanzey, N. H., highway bridge, left bank, downstream	ae5.0		484.6
East Swanzey, N. H., about 0.35 mile below highway bridge, left bank	ae4.6		485.0
East Swanzey, N. H., covered highway bridge, upstream, left bank	ae3.9		479.6
Swanzey Center, N. H., near The Wee Store, left bank	ae3.3		474.9
Swanzey, N. H., 0.3 mile above bridge on road to Spragueville, right bank	ae1.7		470.0
Swanzey, N. H., highway bridge, downstream, right bank	ae1.4		474.3
Swanzey, N. H., 0.3 mile below highway bridge	ae1.1		469.1
Swanzey, N. H., highway bridge, downstream, right bank	ae.4		467.0
Confluence with Ashuelot River	ae0		
Millers River:			
Ashburnham, Mass., Naukeg dam site 5.2 miles above Whitney Pond, Winchendon, Mass., upstream	41.9		1,062.8
Ashburnham, Mass., Naukeg dam site 5.2 miles above Whitney Pond, Winchendon, Mass., downstream	41.7		1,060.6
Ashburnham, Mass., concrete bridge 5.0 miles above Whitney Pond, Winchendon, Mass., Corps of Engineers, U. S. Army, gaging station	41.5		1,058.8
Ashburnham, Mass., broken mill dam 3.6 miles above Whitney Pond, Winchendon, Mass., 200 feet downstream, left bank	40.1		1,033.7
Winchendon, Mass., Cheshire R.R. bridge 3.3 miles above Whitney Pond, upstream, left bank	39.8		1,031.1
Winchendon, Mass., Route 12, highway bridge 3.2 miles above Whitney Pond, 50 feet upstream, right bank	39.7		1,028.8
Winchendon, Mass., Route 12, highway bridge 3.2 miles above Whitney Pond, downstream at pool below rapids	39.65		1,023.1
Winchendon, Mass., Route 12, highway bridge 2.1 miles above Whitney Pond	38.6		1,010.3
Winchendon, Mass., 50 feet below Boston & Maine R.R. bridge 2.0 miles above Whitney Pond	38.5		1,009.5
Winchendon, Mass., near Boston & Maine R.R. bridge 1.1 miles above Whitney Pond	37.6		987.1
Winchendon, Mass., 75 feet above Boston & Maine R.R. bridge 0.6 miles above Whitney Pond, at stone wall, left bank	37.1		985.4
Winchendon, Mass., Winchendon water works station 0.5 mile above Whitney Pond	37.0		984.6
Winchendon, Mass., Whitney Pond above Glen Allen Street bridge	36.2		980.4
Winchendon, Mass., Whitney Pond Dam of Winchendon Electric & Power Co. at Boston & Maine R.R. bridge	35.6		ap977.5

ad From surveys and investigations by Corps of Engineers, U. S. Army.
ae Measured along middle of river valley.
ap Altitude of crest of dam, 966.20 feet, with flashboards 973.10 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Millers River--Continued.			
Winchendon, Mass., Whitney Pond Dam of Winchendon Electric & Power Co., tailwater	35.6		961.3
Winchendon, Mass., Baxter Whitney Manufacturing Co. 400 feet below Whitney Pond Dam, right bank	35.5		960.4
Winchendon, Mass., railroad bridge 400 feet below Baxter Whitney Manufacturing Co. plant	35.4		958.7
Winchendon, Mass., house at 11 Beech St.	35.25		958.4
Winchendon, Mass., Mason and Parker Dam, 200 feet above High Street Bridge, left bank	35.2		aq955.0
Winchendon, Mass., 200 feet below Mason and Parker Co. dam, left bank	35.1		951.9
Winchendon, Mass., storehouse of Mason and Parker Manufacturing Co., right bank	35.1		944.1
Winchendon, Mass., 100 feet above Mason and Parker lower dam, right bank	34.9		ar944.4
Winchendon, Mass., 100 feet below Mason and Parker lower dam, right bank	34.8		937.2
Winchendon, Mass., 200 feet above Winchendon Electric & Power Co. dam (washed out in 1936)	34.6		924.0
Winchendon, Mass., 150 feet below Winchendon Electric & Power Co. dam (washed out in 1936)	34.5		920.1
Waterville, Mass., 100 feet above George M. Whitney bridge	34.45		918.0
Waterville, Mass., 125 feet below George M. Whitney bridge	34.4		911.7
Waterville, Mass., 200 feet above New England Woodenware Co. dam No. 2	34.2		as908.5
Waterville, Mass., highway bridge 200 feet below New England Woodenware Co. dam No. 2, right bank	34.2		903.4
Waterville, Mass., 100 feet above New England Woodenware Co. dam No. 1, right bank	34.1		894.8
Waterville, Mass., 150 feet below New England Woodenware Co. dam No. 1, right bank	34.1		889.6
Waterville, Mass., old mill site off River St., Maple tree near retaining wall	33.9		873.2
Sip Pond Brook, 300 feet above bridge at U. S. Geological Survey gage 0.35 mile below mouth of	32.45		849.1
Sip Pond Brook, U. S. Geological Survey gage 0.35 mile below mouth of	32.4		848.2
Sip Pond Brook, 200 feet below bridge at U. S. Geological Survey gage 0.35 mile below mouth of, left bank	32.35		847.7
Priest Brook, just below highway bridge 2.1 miles above mouth of, right bank	31.4		843.8
Priest Brook, 300 feet above old bridge site 0.7 mile above mouth of	30.0		840.0
New Boston Road, wooden bridge, downstream, left bank	29.5		838.7
Royalston-Winchendon town line, 25 feet east of, right bank	27.6		831.2
South Royalston, Mass., 500 feet above Birch Hill dam site	26.4		829.6
South Royalston, Mass., Birch Hill dam site, right bank	26.3		at829.9
South Royalston, Mass., 300 feet below Birch Hill dam site, right bank	26.25		828.6
South Royalston, Mass., Riverside Cemetery, 500 feet above Main St. bridge	26.1		829.0
South Royalston, Mass., 250 feet above Main St. bridge, left bank	26.0		828.7
South Royalston, Mass., Main Street bridge	25.9		826.4
South Royalston, Mass., 400 feet above American Woolen Co. dam, right bank	25.8		821.5
South Royalston, Mass., American Woolen Co. dam above King Street bridge, right bank	25.7		au820.1
South Royalston, Mass., 100 feet below King Street bridge, left bank	25.6		811.4
South Royalston, Mass., 500 feet below King Street bridge, right bank	25.5		806.6
Athol-Phillipston town line, 150 feet above Boston & Maine R.R. bridge, left bank	25.0		777.4
Athol-Phillipston town line, 125 feet below Boston & Maine R.R. bridge, left bank	25.0		771.0
Buckman Brook, 0.7 mile above, right bank	24.3		750.6
Buckman Brook, 0.25 mile below, 200 feet above Boston & Maine R.R. bridge, left bank	23.4		707.7
Buckman Brook, 0.25 mile below, 100 feet below Boston & Maine R.R. bridge, left bank	23.4		706.5

ad From surveys and investigations by Corps of Engineers, U. S. Army.
aq Altitude of crest of dam 948.2 feet, with flashboards 953.5 feet.
ar Altitude of crest of dam 936.6 feet, with flashboards 938.3 feet.
as Altitude of crest of dam 899.7 feet.
at Altitude of crest of dam 816.8 feet, with flashboards 817.2 feet.
au Altitude of crest of dam 812.4 feet, with flashboards 813.9 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Millers River--Continued.			
Athol, Mass., 200 feet above Athol Manufacturing Co. dam, right bank	20.1		av578.3
Athol, Mass., 200 feet below Athol Manufacturing Co. dam, near power house, right bank	20.0		566.7
Athol, Mass., 100 feet above highway bridge on Chestnut Hill Road 1.1 miles above mouth of Tully River	19.9		564.0
Athol, Mass., 100 feet above highway bridge on Chestnut Hill Road 1.1 miles above mouth of Tully River, right bank	19.9		566.0
Athol, Mass., small dam and canal at Union Twist Drill Co., left bank	19.9		aw562.6
Athol, Mass., 100 feet below small dam at Union Twist Drill Co., right bank	19.9		560.9
Athol, Mass., Union Twist Drill building, 70 feet above canal outlet, left bank	19.7		553.4
Athol, Mass., 0.8 mile above mouth of Tully River, Boston & Maine R.R. overpass	19.6		553.3
Athol, Mass., L. C. Starrett Tool Co. dam 0.7 mile above mouth of Tully River, headwater	19.5		ax554.0
Athol, Mass., Town Hall 0.65 mile above mouth of Tully River	19.45		530.9
Athol, Mass., Fuller's Garage on Marble Street 0.6 mile above mouth of Tully River	19.4		529.4
Athol, Mass., Exchange Street bridge 0.5 mile above mouth of Tully River	19.3		528.5
Athol, Mass., 700 feet below Exchange Street bridge 0.4 mile above mouth of Tully River, left bank	19.2		527.6
Athol, Mass., mouth of Tully River	18.8		527.4
Athol, Mass., 200 feet above Main Street bridge 0.4 mile below mouth of Tully River	18.4		527.2
Athol, Mass., Main Street bridge 0.4 mile below mouth of Tully River	18.4		527.2
Athol, Mass., Route 2, 100 feet below Main Street bridge 0.4 mile below mouth of Tully River	18.4		525.9
Boston & Maine R.R. bridge, upstream, right bank	17.4		524.9
Athol, Mass., Route 202 highway bridge	16.6		524.4
Orange, Mass., house 2.6 miles above South Main Street bridge	15.8		522.2
Orange, Mass., Bogin-Hopert Building just below mouth of Shingle Swamp Brook, right bank	14.7		520.2
Orange, Mass., barn above South Main Street bridge, right bank	13.3		519.7
Orange, Mass., New Home Sewing Machine Co. dam at South Main Street	13.2		ay519.3
Orange, Mass., New Home Sewing Machine Co. Mill Building fence near railroad underpass	13.1		516.2
Orange, Mass., 200 feet below Real Silk Mill	12.9		515.0
Orange, Mass., concrete building above Minute Tapioca Co. loading platform	12.8		514.8
Orange, Mass., 300 feet above Boston & Maine R.R. bridge, right bank	12.6		514.4
Orange, Mass., half way between Boston & Maine R.R. bridges, right bank	12.2		511.9
West Orange, Mass., below Boston & Maine R.R. bridge, right bank	11.9		507.6
West Orange, Mass., 350 feet above Hultshire Bridge, left bank	11.3		506.5
West Orange, Mass., Boston & Maine R.R. overpass at Hultshire Bridge at Orcutt Brook, right bank	11.2		505.9
Wendell Depot, Mass., 100 feet above Boston & Maine R.R. bridge	10.45		499.6
Wendell Depot, Mass., 100 feet below Boston & Maine R.R. bridge, right bank	10.4		498.4
Wendell Depot, Mass., concrete highway bridge on Wendell Road, upstream	10.2		498.4
Wendell Depot, Mass., concrete highway bridge on Wendell Road, downstream	10.2		491.8
Wendell Depot, Mass., 200 feet below Boston & Maine R.R. bridge at Wendell Dam	10.1		az483.7
Erving, Mass., Erving Paper Co. dam (breached), at covered bridge, headwater	8.8		ba476.2
Erving, Mass., 800 feet below Erving Paper Co. dam (breached)	8.65		468.2

ad From surveys and investigations by Corps of Engineers, U. S. Army.
av Altitude of crest of dam 569.1 feet, with flashboards 571.3 feet.
aw Altitude of crest of dam 553.2 feet.
ax Altitude of crest of dam 542.25 feet.
ay Altitude of crest of dam 501.3 feet.
az Altitude of crest of dam 488.2 feet.
ba Altitude of crest of dam 466.8 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Millers River--Continued.			
Erving, Mass., 100 feet above United Shoe Machine Co. dam 0.2 mile above U. S. Geological Survey gage	7.9		bb461.0
Erving, Mass., Fred W. Meirs Shoe Factory 0.1 mile above U. S. Geological Survey gage	7.8		460.0
Erving, Mass., U. S. Geological Survey gage, right bank	7.7	Sept. 22 8am	451.6
Wickett Brook, 2.5 miles above, Boston & Maine R.R. bridge, right bank, upstream (bridge destroyed)	6.9		443.6
Wickett Brook, 2.5 miles above, 150 feet below Boston & Maine R.R. bridge (bridge destroyed)	6.9		442.6
Wickett Brook, 2.5 miles above, 200 feet below Boston & Maine R.R. bridge, right bank (bridge destroyed)	6.9		440.6
Farley, Mass., Athol Gas & Electric Co. dam, headwater	5.5		bc400.8
Farley, Mass., Athol Gas & Electric Co. dam, tailwater	5.5		391.0
Millers Falls, Mass., Millers Falls Paper Co. upper dam, headwater, right bank	2.4		bd286.0
Millers Falls, Mass., 150 feet above Millers Falls Paper Co. lower dam, right bank	2.1		be258.0
Millers Falls, Mass., above Millers Falls Paper Co. dam and highway bridge, left bank	2.1		257.9
Millers Falls, Mass., under Boston & Maine R.R. trestle, left bank	2.0		243.0
Millers Falls, Mass., 150 feet above Millers Falls Tool Co. dam and highway bridge	1.9		bf242.9
Millers Falls, Mass., 500 feet below Millers Falls Tool Co. dam, right bank	1.8		225.4
Millers Falls, Mass., 1,800 feet below highway bridge and dam at Millers Falls Tool Co., right bank	1.6		214.0
Millers Falls, Mass., 0.1 mile above highway bridge just south of French King highway bridge, right bank	.3		200.2
Millers Falls, Mass., upstream side of highway bridge just south of French King highway bridge	.2		198.4
Confluence with Connecticut River	0		
Priest Brook:			
Priest Brook near Winchendon, Mass., U. S. Geological Survey gage	3.2	Sept. 21 12am	859.6
Winchendon, Mass., near church at New Boston, Mass.	.85		844.6
Winchendon, Mass., stone wall above highway bridge at Otter River State Forest, left bank	.4		844.4
Winchendon, Mass., 150 feet below highway bridge at Otter River State Forest, left bank	.4		839.7
Confluence with Millers River	0		
Otter River:			
Gardner, Mass., Route 2, above highway near Gardner Brick Co., right bank	9.1		928.0
Gardner, Mass., Route 2, below highway near Gardner Brick Co., left bank	9.1		926.8
Gardner, Mass., concrete highway bridge, retaining wall, right bank	8.2		926.4
Templeton, Mass., 100 feet above Boston & Maine R.R. bridge, left bank	6.1		920.4
Templeton, Mass., 150 feet below Boston & Maine R.R. bridge above Otter River Yarn Co. dam, left bank	6.1		918.4
Templeton, Mass., 200 feet above breached Otter River Yarn Co. dam	5.8		918.1
Templeton, Mass., southwest corner of concrete bridge below breached Otter River Yarn Co. dam	5.7		908.3
Templeton, Mass., dike at wrecked power house at Hamlet Mills Co., right bank	5.3		897.8
Templeton, Mass., at highway bridge 150 feet below Hamlet Mills Co. dam, right bank	5.3		893.0
Otter River, Templeton, Mass., near highway bridge on Route 64 and 0.1 mile above Otter River Board Co. dam	5.05		890.9
Otter River, Templeton, Mass., Otter River Board Co. dam	4.95		bh890.7
Otter River, Templeton, Mass., Otter River Board Co. mill building at highway bridge 200 feet below dam, left bank	4.9		887.4
Otter River, Templeton, Mass., 100 feet below highway bridge at Otter River mills (bridge washed out), right bank	4.9		884.3

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bb Altitude of crest of dam 452.0 feet.
bc Altitude of crest of dam 390.5 feet.
bd Altitude of crest of dam 271.7 feet, with flashboards 274.2 feet.
be Altitude of crest of dam 243.6 feet.
bf Altitude of crest of dam 229.8 feet.
bh Altitude of crest of dam 879.2 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Otter River--Continued.			
Otter River, Templeton, Mass., Boston & Maine R.R. bridge, upstream, right bank	4.7		883.3
Otter River, Templeton, Mass., Boston & Maine R.R. bridge, downstream, right bank	4.7		874.0
Baldwinville, Mass., gate at B., H. & F. Furniture Co. dam (destroyed)	3.5		869.2
Baldwinville, Mass., Adams Paper Co. storage plant	3.4		861.7
Baldwinville, Mass., first building north of Boston & Maine R.R. trestle, right bank	3.2		861.3
Baldwinville, Mass., barn behind fire station	3.2		860.9
Baldwinville, Mass., Waite Chair Co. dam (washed out)	3.1		bj850.9
Baldwinville, Mass., 450 feet below Waite Chair Co. dam, right bank	3.0		842.7
Baldwinville, Mass., Kenney Manufacturing Co. factory at dam (washed out)	2.8		838.3
Baldwinville, Mass., 300 feet below Kenney Manufacturing Co.	2.75		838.2
Winchendon, Mass., Boston & Maine R.R. bridge, downstream, left bank	.3		837.9
Confluence with Millers River	0		
East Branch of Tully River:			
Royalston, Mass., highway bridge at U. S. Geological Survey gage, upstream, left bank	2.7		639.8
Royalston, Mass., U. S. Geological Survey gage at highway bridge, downstream, right bank	2.7	Sept. 21 4 pm	636.7
Royalston, Mass., Tully dam site, right bank	2.6		629.5
Athol, Mass., 100 feet above Packard Pond diversion dam	2.1		597.4
Athol, Mass., 100 feet above Fryville dam, left bank	1.8		584.1
Athol, Mass., 100 feet above highway bridge at Fryville sawmill	1.6		560.4
Athol, Mass., abutment old highway bridge at Pinedale (bridge out), left bank	.65		532.6
Athol, Mass., 150 feet above concrete highway bridge at Pinedale, right bank	.2		529.0
Confluence with Tully River	0		
Deerfield River:			
Somerset, Vt., highway bridge, left bank	66.4	Sept. 22 1 am	1,909.6
Somerset, Vt., 0.2 mile below Rake Branch, right bank	65.1	Sept. 22 1 am	1,866.6
Searsburg, Vt., 0.2 mile below Windham-Bennington County line, right bank	64.1	Sept. 22 1 am	1,848.2
Searsburg, Vt., 0.5 mile above mouth of East Branch of Deerfield River, right bank	62.9	Sept. 22 1 am	1,802.1
Searsburg, Vt., abandoned bridge 0.1 mile above mouth of East Branch of Deerfield River, right bank	62.5	Sept. 22 1 am	1,782.2
Searsburg, Vt., at mouth of East Branch of Deerfield River, 0.9 mile above Searsburg Dam, right bank	62.4	Sept. 22 1 am	1,770.2
Searsburg, Vt., 0.4 mile below mouth of East Branch of Deerfield River, right bank	62.1	Sept. 22 1 am	1,766.5
Searsburg, Vt., headwater on Searsburg Dam, 0.9 mile below mouth of East Branch of Deerfield River, left bank	61.5	Sept. 22 1 am	bk1,765.8
Searsburg, Vt., 175 feet downstream from spillway of Searsburg Dam	61.5	Sept. 22 1 am	1,737.1
Searsburg, Vt., 0.9 mile below Searsburg Dam, right bank	60.1	Sept. 22 1 am	1,672.0
Searsburg, Vt., concrete highway bridge, left bank	59.95	Sept. 22 1 am	1,632.2
Searsburg, Vt., 2.3 miles above mouth of North Branch of Deerfield River	59.3	Sept. 22 1 am	1,590.4
Searsburg, Vt., 1.4 miles above mouth of North Branch of Deerfield River	58.4	Sept. 22 1 am	1,531.9
Wilmington, Vt., highway bridge 0.9 mile above mouth of North Branch of Deerfield River, right bank	57.9	Sept. 22 1 am	1,519.0
Wilmington, Vt., at mouth of North Branch of Deerfield River, right bank	57.0	Sept. 22 1 am	1,498.2
Whitingham, Vt., intake of Harriman Dam 0.6 mile below Davis Bridge	48.55	Sept. 22 1 am	bm1,496.0
Whitingham, Vt., 1.2 miles below Harriman Dam, left bank	47.45	Sept. 22 1 am	1,270.7
Readsboro, Vt., 1.8 miles below Harriman Dam, left bank	46.65	Sept. 22 1 am	1,252.5
Readsboro, Vt., 2.0 miles below Harriman Dam, left bank	46.35	Sept. 22 1 am	1,240.5

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bj Altitude of crest of dam about 848 feet.
bk Altitude of crest of spillway 1,754 feet.
bm Altitude of crest of spillway 1,491.9 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Deerfield River--Continued.			
Readsboro, Vt., 2.3 miles below Harriman Dam, left bank	46.15	Sept. 22 1 am	1,224.0
Readsboro, Vt., about 50 feet below Heartwellville Branch of Deerfield River	45.14	Sept. 22 1 am	1,177.6
Readsboro, Vt., highway bridge, right bank	45.15	Sept. 22 1 am	1,175.1
Readsboro, Vt., 1.8 miles above Vermont-Massachusetts State line, left bank	44.1	Sept. 22 1 am	1,130.4
Readsboro, Vt., tailrace of Harriman hydroelectric station 1.0 mile above Vermont-Massachusetts State line, left bank	43.30	Sept. 22 1:30 am	1,116.1
Rowe, Mass., penstock intake at Sherman Dam, 0.7 mile below Vermont-Massachusetts State line	41.25	Sept. 22 12-1 am	bn1,115.2
Rowe, Mass., just below Sherman Dam at New England Power Co. automatic power station, 0.7 mile below Vermont-Massachusetts State line	41.25	Sept. 22 12-1 am	1,043.0
Rowe, Mass., at Monroe Bridge, dam just above highway bridge, 1.4 miles below Vermont-Massachusetts State line, left bank	40.65	Sept. 22 2 am	bp1,031.6
Rowe, Mass., 0.7 mile above mouth of Dunbar Brook, left bank	39.85	Sept. 22 2 am	964.6
Rowe, Mass., 300 feet below mouth of Dunbar Brook, left bank	39.0	Sept. 22 2 am	917.5
Rowe, Mass., at New England Power Co. station no. 5, 0.8 mile above mouth of Smith Brook, left bank	37.3	Sept. 22 2 am	797.5
Rowe, Mass., 0.4 mile above mouth of Smith Brook, left bank	36.8	Sept. 22 2 am	789.6
Rowe, Mass., at mouth of Smith Brook, left bank	36.4	Sept. 21 6-12 pm	782.3
Monroe, Mass., at mouth of Fife Brook, right bank	35.9	Sept. 21 6-12 pm	771.6
Hoosac Tunnel, Mass., 0.4 mile below mouth of Fife Brook, left bank	35.5	Sept. 21 6-12 pm	762.2
Hoosac Tunnel, Mass., west pier of B. & M. R.R. bridge, about 0.6 mile west of Hoosac Tunnel Station, right bank	34.4	Sept. 21 6 pm	739.6
Hoosac Tunnel, Mass., south abutment of highway bridge at Hoosac Tunnel Station, right bank	34.1	Sept. 21 5:30-6pm	715.7
Hoosac Tunnel, Mass., 0.3 mile below highway bridge at Hoosac Tunnel Station, left bank	33.8	Sept. 21 5:30-6pm	711.2
Hoosac Tunnel, Mass., 1.1 miles below highway bridge at Hoosac Tunnel Station, left bank	33.0	Sept. 21 5:30-6pm	695.5
Hoosac Tunnel, Mass., 2.2 miles above mouth of Pelham Brook, left bank	32.3	Sept. 21 6 pm	677.7
Zoar, Mass., 1.6 miles above mouth of Pelham Brook, left bank	31.6	Sept. 21 6 pm	668.3
Zoar, Mass., 1.6 miles above mouth of Pelham Brook, right bank	31.6	Sept. 21 6 pm	666.0
Zoar, Mass., just upstream from highway bridge opposite Negus Mountain, 1.0 mile above mouth of Pelham Brook, left bank	31.0	Sept. 21 5:30 pm	644.0
Zoar, Mass., 0.5 mile above mouth of Pelham Brook, left bank	30.6	Sept. 21 6 pm	627.6
Zoar, Mass., 0.5 mile below mouth of Pelham Brook, left bank	29.6	Sept. 21 6:30 pm	625.3
Charlemont, Mass., at mouth of Cold River, right bank	28.8	Sept. 21 7 pm	612.5
Charlemont, Mass., just downstream from west end of B. & M. R.R. bridge, 0.1 mile below mouth of Cold River, left bank	28.7	Sept. 21 7 pm	603.2
Charlemont, Mass., north end of highway bridge, 0.6 mile above mouth of Chickley River, left bank, upstream	27.6	Sept. 21 7 pm	575.1
Charlemont, Mass., at mouth of Chickley River, left bank	27.05	Sept. 21 7 pm	563.8
Charlemont, Mass., 0.5 mile below mouth of Chickley River, left bank	26.5	Sept. 21 7:30 pm	558.4
Charlemont, Mass., 0.5 mile below junction of Chickley River, left bank	26.5	Sept. 21 7:30 pm	558.2
Charlemont, Mass., at Charlemont station, 1.1 miles below mouth of Chickley River, right bank	25.9	Sept. 21 7:30 pm	554.1
Charlemont, Mass., at mouth of Mill Brook, right bank	25.5	Sept. 21 7:30 pm	550.3
Charlemont, Mass., 0.7 mile below mouth of Mill Brook, right bank	24.8	Sept. 21	542.4
Charlemont, Mass., 90 feet upstream from U. S. Geological Survey gaging station, 1.1 miles below mouth of Mill Brook, left bank	24.4	Sept. 21	537.8

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bn Altitude of crest of spillway 1,103.7 feet.
bp Altitude of crest of dam 1,022.9 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Deerfield River--Continued.			
Charlemont, Mass., U. S. Geological Survey gage, left bank	24.4	Sept. 21 6:45 pm	537.5
Charlemont, Mass., 0.4 mile below U. S. Geological Survey gaging station, left bank	24.0	Sept. 21	527.2
Charlemont, Mass., 1.4 miles above mouth of Avery Brook, left bank	23.3	Sept. 21 6:45 pm	524.8
Charlemont, Mass., 0.4 mile above mouth of Avery Brook, left bank	22.3	Sept. 21	515.0
Charlemont, Mass., 300 feet below mouth of Avery Brook, left bank	21.9	Sept. 21 6:50 pm	506.2
Charlemont, Mass., 0.6 mile below mouth of Avery Brook, left bank	21.3	Sept. 21 7 pm	495.6
Charlemont, Mass., 1.2 miles below mouth of Avery Brook, left bank	20.7	Sept. 21	495.3
Charlemont, Mass., 1.5 miles above Scotts Bridge, above New England Power Co. dam no. 4, left bank	20.3	Sept. 21 7:55 pm	489.2
Charlemont, Mass., 0.7 mile above Scotts Bridge, above New England Power Co. dam no. 4, left bank	19.4	Sept. 21 8 pm	484.6
Buckland, Mass., near tunnel intake of New England Power Co. dam no. 4, 0.8 mile above mouth of North River	18.6	Sept. 21 8 pm	bq479.4
Shelburne, Mass., 600 feet below mouth of North River, left bank	17.7	Sept. 21 8 pm	436.9
Buckland, Mass., 0.6 mile below mouth of North River, right bank	17.2	Sept. 21 8:10 pm	431.8
Buckland, Mass., 0.5 mile upstream from Shelburne Falls highway bridge, right bank	16.7	Sept. 21	425.5
Buckland, Mass., 30 feet above New England Power Co. dam no. 3, right bank	16.1	Sept. 21	br411.5
Buckland, Mass., just above New England Power Co. dam no. 3, right bank	16.1	Sept. 21	411.1
Buckland, Mass., 0.5 mile below New England Power Co. dam no. 3, right bank	15.6	Sept. 21 9 pm	353.4
Buckland, Mass., about 90 feet above Gardner Falls Dam, right bank	14.95	Sept. 21	bs348.3
Conway, Mass., about 700 feet below Gardner Falls Dam, right bank	14.8	Sept. 21 9 pm	316.8
Buckland, Mass., 0.5 mile below Gardner Falls Dam, right bank	14.4	Sept. 21	311.7
Conway, Mass., 0.7 mile above New England Power Co. dam no. 2, right bank	13.6	Sept. 21	301.9
Conway, Mass., west wing wall, New England Power Co. dam no. 2, right bank	12.9	Sept. 21 9:20 pm	bt301.9
Conway, Mass., just below New England Power Co. dam no. 2, right bank	12.9	Sept. 21 9:20 pm	254.3
Conway, Mass., 0.9 mile below New England Power Co. dam no. 2, right bank	12.0		232.6
Conway, Mass., 0.6 mile above B. & M. R.R. bridge above Bardwell Ferry, right bank	11.4		220.9
Shelburne, Mass., east pier B. & M. R.R. bridge above Bardwell Ferry, left bank	10.8	Sept. 21 9:15 pm	214.6
Shelburne, Mass., Bardwell Ferry highway bridge, left bank	10.3	Sept. 21 9:15 pm	212.7
Deerfield, Mass., 0.6 mile above mouth of South River, left bank	9.6		189.3
Deerfield, Mass., 0.2 mile above mouth of South River, left bank	9.2		187.1
Deerfield, Mass., 0.6 mile below mouth of South River, left bank	8.4		180.0
Deerfield, Mass., 1.0 mile below mouth of South River, left bank	8.0		178.5
Deerfield, Mass., West Deerfield highway bridge above Mill Village, right bank	7.3	Sept. 21 10 pm	161.6
Deerfield, Mass., 0.6 mile below West Deerfield highway bridge, left bank	6.7		151.6
Deerfield, Mass., below Mill Village, left bank	5.8		149.7
West Deerfield, Mass., left bank	5.0		148.8
West Deerfield, Mass., left bank	4.1		148.4
Deerfield, Mass., left bank	3.2		145.9
Greenfield, Mass., approach to highway bridge at Cheapside, left bank	1.2		145.9
Deerfield, Mass., B. & M. R.R. bridge at Cheapside, right bank, downstream	1.1		145.9
Deerfield, Mass., about 100 feet upstream from B. & M. R.R. bridge below Cheapside, right bank	.5		145.5

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bq Altitude of crest of dam 465.9 feet.
br Altitude of crest of dam 396.7 feet.
bs Altitude of crest of dam 332.2 feet.
bt Altitude of crest of dam 284.6 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Deerfield River--Continued.			
Greenfield, Mass., at confluence of Deerfield River and Connecticut River, left bank	0.0	Sept. 21 10 pm	144.8
East Branch of North River:			
Colrain, Mass., about 100 feet below Vermont-Massachusetts State line, left bank	bu9.8	Sept. 21 7 pm	751.2
Colrain, Mass., 0.5 mile below Vermont-Massachusetts State line, left bank	bu9.3	Sept. 21 7 pm	731.6
Colrain, Mass., 1.2 miles below Vermont-Massachusetts State line, right bank	bu8.6	Sept. 21 7 pm	698.4
Colrain, Mass., 1.8 miles below Vermont-Massachusetts State line, right bank	bu8.0	Sept. 21 7 pm	681.7
Colrain, Mass., 2.6 miles below Vermont-Massachusetts State line, left bank	bu7.2	Sept. 21 7 pm	643.3
Colrain, Mass., highway bridge, right bank	bu6.5	Sept. 21 7 pm	629.5
Colrain, Mass., right bank	bu5.8	Sept. 21	609.2
Colrain, Mass., just above highway bridge, 0.15 mile above Colrain Center, left bank	bu5.2	Sept. 21 7:45 pm	602.6
Colrain, Mass., 1.5 miles above junction of West and East Branches of North River, left bank	bu4.8	Sept. 21 7:45 pm	600.1
Colrain, Mass., 600 feet above dam of Kendall Mfg. Co. plant no. 2, left bank	bu4.2	Sept. 21 8 pm	584.8
Colrain, Mass., 500 feet below dam of Kendall Mfg. Co. plant no. 2, left bank	bu4.0	Sept. 21 8 pm	551.0
Colrain, Mass., 0.4 mile above junction of West and East Branches of North River, left bank	bu3.7	Sept. 21 8 pm	533.9
North River:			
Colrain, Mass., above Kendall dam no. 1 in Griswoldville	3.0	Sept. 21 7 pm	521.7
Colrain, Mass., highway bridge, downstream side, 0.1 mile below Kendall dam no. 1, left bank	2.9	Sept. 21 7 pm	518.9
Colrain, Mass., 0.6 mile below Kendall dam no. 1, left bank	2.4	Sept. 21 8 pm	504.1
Colrain, Mass., right bank	1.9	Sept. 21	489.3
Colrain, Mass., right bank	1.5	Sept. 21	476.3
Colrain, Mass., about 25 feet above Shattuckville highway bridge, right bank	1.4	Sept. 21 8:10 pm	468.9
Colrain, Mass., highway bridge, upstream side, left bank	.8	Sept. 21 8:40 pm	461.1
Colrain, Mass., about 600 feet below highway bridge, left bank	.6	Sept. 21 8:40 pm	453.0
Shelburne, Mass., highway bridge, upstream side, left bank, about 80 feet upstream from mouth of river	.0	Sept. 21 8:40 pm	439.8
Green River:			
Greenfield, Mass., at mouth of Workman Brook, right bank	6.7	Sept. 21	266.1
Greenfield, Mass., pumping station dam, upstream side, left bank	6.1	Sept. 21	251.1
Greenfield, Mass., at mouth of Glen Brook, right bank	5.0	Sept. 21	194.5
Greenfield, Mass., 50 feet below mouth of Punch Brook, right bank	4.1	Sept. 21	183.3
Greenfield, Mass., about 400 feet below mouth of Allen Brook, right bank	3.3	Sept. 21	165.4
Greenfield, Mass., left bank	2.5	Sept. 21	163.5
Greenfield, Mass., about 180 feet above highway bridge, right bank	1.9	Sept. 21	159.4
Greenfield, Mass., highway bridge, upstream side, left bank	1.6	Sept. 21 11:45 pm	159.1
Greenfield, Mass.	1.1	Sept. 21 11:30 pm	155.6
Greenfield, Mass., power house of Western Massachusetts Electric Co. at Mill St. Dam	1.0	Sept. 21 11:30 pm	150.4
Greenfield, Mass., brass tag on wall of Greenfield Tap & Die Corporation plant no. 1	.5	Sept. 21 11:30 pm	146.5
Greenfield, Mass., Burke's filling station on Deerfield St., left bank	.4	Sept. 21 9:20 pm	146.3
Confluence of Green River and Deerfield River	.0		
Ware and Chicopee Rivers:			
Cold Brook, Mass., Ware River intake dam, headwater	44.6		
Dennyville, Mass., highway bridge 300 feet below Barre Wool Combing Co. dam	42.6		590.1
Barre Plains, Mass., highway bridge in center of	41.9		589.8
Wheelwright Mills dam, San-Nap-Pak Mfg. Co. pump room, tailwater	39.1		578.7
Old Furnace, Mass., highway bridge	37.6		569.2
Gilbertville, Mass., Gilbert Manufacturing Co. dam, headwater	33.1		548.8

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bu Miles above mouth of North River.

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Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Ware and Chicopee Rivers--Continued.			
Gilbertville, Mass., old wooden bridge 1,500 feet below George Gilbert dam	32.6		529.8
Ware, Mass., Highway 9 bridge below Otis Co. dam	28.95		452.4
Ware, Mass., South Street bridge, upstream	28.2		418.0
Ware, Mass., South Street bridge, downstream	28.2		415.2
Muddy Brook, mouth of	27.8		412.5
Muddy Brook, Highway 32 bridge 1.55 miles below mouth of	26.25		411.9
U. S. Geological Survey gage	25.35		398.0
Gibbs Crossing, highway bridge	25.0		bv391.4
Wipples, Mass., highway bridge	21.0		375.0
Thorndyke, Mass., Church Street Bridge	19.7		363.6
Thorndyke, Mass., Main Street Bridge, upstream	19.1		343.1
Thorndyke, Mass., upper concrete highway bridge	18.9		342.3
Three Rivers, Mass., Bridge Street Bridge (Chicopee River)	17.1		bv319.7
Three Rivers, Mass., Otis Co. power plant dam about 0.5 mile west of center of, headwater	16.4		311.3
Three Rivers, Mass., Otis Co. power plant dam about 0.5 mile west of center of, tailwater	16.4		288.0
Red Bridge, Mass., Ludlow Manufacturing Co. dam, headwater	14.3		282.7
Red Bridge, Mass., Ludlow Manufacturing Co. dam, tailwater	14.3		246.7
Red Bridge, Mass., highway bridge 0.11 mile below Ludlow Manufacturing Co. dam	14.2		244.6
Red Bridge, Mass., highway bridge 0.11 mile below Ludlow Manufacturing Co. dam	14.2		242.8
North Wilbraham, Mass., Route 20, 0.9 mile upstream from Collins Manufacturing Co. dam	12.5		233.8
North Wilbraham, Mass., dam above Miller Street Bridge near Collins station, headwater	11.55		230.5
North Wilbraham, Mass., 400 feet below dam near Collins station, tailwater	11.45		227.2
Ludlow, Mass., 1 mile east of, Boston & Albany R.R. bridge	9.5		219.7
Indian Orchard, Mass., 200 feet above Ludlow Manufacturing Co. dam, right bank, headwater	8.40		214.8
Ludlow, Mass., 275 feet above Ludlow Manufacturing Co. dam, left bank, headwater	8.40		214.0
Ludlow, Mass., below bridge and 675 feet below Ludlow Manufacturing Co. dam, left bank	8.2		180.6
Indian Orchard, Mass., 0.2 mile below Ludlow Manufacturing Co. dam, right bank	8.15		176.7
Indian Orchard, Mass., 0.5 mile above Hodges dam, right bank	7.6		168.2
Indian Orchard, Mass., United Electric Light Co. dam	7.45		169.8
Indian Orchard, Mass., 600 feet below Hodges Carpet Co. dam, right bank	6.95		145.7
Indian Orchard, Mass., United Electric Light Co. power plant, 0.2 mile below Hodges dam	6.85		143.1
Bircham Bend, Mass., 3,000 feet above United Electric Light Co. dam	5.8		135.2
Bircham Bend, Mass., 900 feet above United Electric Light Co. dam	5.4		135.2
Chicopee Falls, Mass., Chicopee Manufacturing Co. dam just above Bridge Street	2.7		bv116.5
Chicopee, Mass., 175 feet above Dwight Manufacturing Co. dam, headwater	1.05		bv 85.4
Chicopee, Mass., 200 feet below Dwight Manufacturing Co. dam, tailwater	1.0		78.0
Chicopee, Mass., confluence of Chicopee and Connecticut Rivers	0		
Swift River:			
Between Belchertown and Ware, Mass., Route 9, highway bridge 0.5 mile below Quabbin Dam	7.5		384.3
West Ware, Mass., U. S. Geological Survey gage	7.25		378.9
Bondsville, Mass., Otis Co. upper dam, headwater	3.5		368.4
Bondsville, Mass., Depot Street Bridge	3.0		345.0
Bondsville, Mass., Otis Co. lower dam, headwater	2.8		345.0
Bondsville, Mass., Otis Co. lower dam, tailwater	2.8		333.1
Confluence of Swift and Ware Rivers near Three Rivers, Mass.	0		
Quaboag River:			
Quaboag Pond, outlet of	22.9		--
Brookfield, Mass., above road bridge, two-story frame dwelling, left bank	21.7		607.0
Brookfield, Mass., Brookfield Grain Co., scale house	21.7		609.1

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bv Average of several observations.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Quaboag River--Continued.			
West Brookfield, Mass., Varnum Yeast Co., road bridge	18.7		609.4
Warren, Mass., Route 19, Warren Cleaners and Dyers store, downstream, left bank	17.9		598.7
Warren, Mass., Main Street Bridge	15.4		597.9
Warren, Mass., Boston & Albany R.R. bridge above Fannie Jane Mill	15.4		585.6
Warren, Mass., Fannie Jane Mill dam, tailwater	14.6		583.1
West Warren, Mass., 0.8 mile above, dam, headwater	13.7		568.4
West Warren, Mass., 0.8 mile above, below bridge	13.6		561.2
West Warren, Mass., 0.4 mile above, dam, headwater	13.4		556.0
West Warren, Mass., 0.4 mile above, dam, tailwater	13.3		548.3
West Warren, Mass., W. E. Wright Co.	13.0		528.4
West Warren, Mass., Boston & Albany R.R. bridge, upstream and downstream	12.6		521.6
West Warren, Mass., Crossman Dam, headwater	12.4		505.1
West Warren, Mass., bridge below Crossman Dam	12.3		497.2
West Warren, Mass., bridge below Crossman Dam	12.3		496.5
West Brimfield, Mass., U. S. Geological Survey gage at highway bridge	9.0		399.2
West Brimfield, Mass., 2.7 miles above Cooley's Crossing, wooden bridge abutments	8.9		387.7
West Brimfield, Mass., 1.5 miles above Cooley's Crossing, one family house, left bank	8.0		373.8
Palmer, Mass., Central Massachusetts Light & Power Co. dam, headwater	5.05		345.2
Palmer, Mass., Route 32, concrete bridge 1.3 miles above, upstream	4.5		325.1
Palmer, Mass., Route 32, concrete bridge 1.3 miles above, downstream	4.5		323.9
Palmer, Mass., Gulf Oil Co., Water Street	3.3		bv322.8
Palmer, Mass., Route 20, highway bridge 1.1 miles below	2.2		320.4
Palmer, Mass., Route 20, Boston & Albany R.R. underpass 1.2 miles below	2.1		317.1
Three Rivers, Mass., Burleigh Bridge, 1.4 miles above	1.4		319.2
Confluence of Quaboag and Ware Rivers	0		bv319.9
Sevenmile River:			
Between Spencer and East Brookfield, Mass., bridge, upstream	2.8		639.2
Between Spencer and East Brookfield, Mass., bridge, downstream	2.8		636.7
Confluence of Sevenmile and Fivemile Rivers 2.6 miles above Quaboag River at outlet of Quaboag Pond	0		
Fivemile River:			
East Brookfield, Mass., Route 9, frame dwelling above bridge at Furnace Pond, left bank	.5		623.5
East Brookfield, Mass., Maclan Hat Factory, freight entrance	.45		617.9
East Brookfield, Mass., Boston & Albany R.R. bridge, 0.2 mile below	.3		614.0
Confluence of Fivemile and Sevenmile Rivers 2.6 miles above Quaboag River at outlet of Quaboag Pond	0		
Westfield River:			
West Cummington, Mass., 0.2 mile below mouth of Westfield Brook, right bank	49.5	Sept. 21 4:30 pm	1,192.8
West Cummington, Mass., 1.05 miles below mouth of Westfield Brook, right bank	48.65		1,144.0
West Cummington, Mass., 2.1 miles below mouth of Westfield Brook	47.6		1,102.5
Mill Brook, 1.2 miles above mouth of, just below highway bridge, right bank	46.9	Sept. 21 4:50 pm	1,075.9
Mill Brook, 0.5 mile above mouth of, right bank	46.2	Sept. 21 5 pm	1,048.0
Mill Brook, mouth of, left bank	45.7		1,038.7
Mill Brook, 0.55 mile below mouth of, right bank	45.15		1,024.7
Cummington Center, Mass., highway bridge west of, 1.0 mile below mouth of Mill Brook	44.7		1,004.0
Cummington Center, Mass., 0.05 mile below mouth of Meadow Brook, right bank	44.25		993.1
Cummington, Mass., 0.8 mile below mouth of Meadow Brook, left bank	43.5	Sept. 21 5 pm	985.2
Cummington, Mass., 1.5 miles above mouth of Swift River, left bank	43.2		958.8
Swift River, 0.6 mile above mouth of, left bank	42.3		942.9
Swift River, 0.05 mile below mouth of, right bank	41.65		922.0

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bv Average of several observations.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin -Continued			
Westfield River--Continued.			
Swift River, 0.5 mile below mouth of, left bank	41.2		908.4
Swift River, 0.9 mile below mouth of, left bank	40.8		896.0
Swift River, 1.3 miles below mouth of, right bank	40.4		877.5
Swift River, 1.6 miles below mouth of, left bank	40.1		856.5
Swift River, 2.0 miles below mouth of, right bank	39.7		825.8
Chesterfield, Mass., 1.0 mile above mouth of West Branch of Westfield River, right bank	38.9		793.1
Chesterfield, Mass., 0.55 mile above mouth of West Branch of Westfield River, left bank	38.45		774.9
Chesterfield, Mass., highway bridge 0.25 mile above mouth of West Branch of Westfield River	38.15		767.3
Chesterfield, Mass., 0.35 mile below mouth of West Branch of Westfield River, right bank	37.55		738.7
Chesterfield, Mass., 0.9 mile below mouth of West Branch of Westfield River, right bank	37.0		701.2
Chesterfield, Mass., 1.7 miles below mouth of West Branch of Westfield River, right bank	36.2		670.2
Chesterfield, Mass., 2.1 miles below mouth of West Branch of Westfield River, right bank	35.8		654.0
Chesterfield, Mass., 2.4 miles below mouth of West Branch of Westfield River, left bank	35.5		639.0
Chesterfield, Mass., 2.8 miles below mouth of West Branch of Westfield River, left bank	35.1		628.6
Chesterfield, Mass., 3.2 miles below mouth of West Branch of Westfield River, north end of island	34.7		622.9
Huntington, Mass., 1.9 miles above mouth of East Branch of Westfield River, left bank	34.1		608.7
Huntington, Mass., 1.1 miles above mouth of East Branch of Westfield River, right bank	33.3		591.7
Huntington, Mass., Taylor Bridge, 0.05 mile above mouth of East Branch of Westfield River	32.25		575.5
Huntington, Mass., 0.4 mile below mouth of East Branch of Westfield River, right bank	31.8		562.2
Huntington, Mass., 1.2 miles below mouth of East Branch of Westfield River, right bank	31.0		551.3
Huntington, Mass., 1.0 mile above mouth of Westfield Little River, right bank	30.5		536.1
Huntington, Mass., 0.3 mile above mouth of Westfield Little River, right bank	29.8		525.6
Huntington, Mass., 1.1 miles above U. S. Geological Survey gage, right bank	28.9	Sept. 21 9 pm	517.1
Huntington, Mass., U. S. Geological Survey gage 0.6 mile above mouth of Pond Brook	27.8	Sept. 21 9 pm	501.4
Huntington, Mass., 0.05 mile below U. S. Geological Survey gage	27.75	Sept. 21 10 pm	500.4
Huntington, Mass., 0.3 mile below U. S. Geological Survey gage	27.5		479.4
Huntington, Mass., 1.1 miles below U. S. Geological Survey gage	26.7		463.4
Middle Branch of Westfield River, 0.15 mile above mouth of	25.65		406.6
Middle Branch of Westfield River, 0.7 mile below mouth, left bank, just above Norwich Bridge	24.8		400.2
West Branch of Westfield River, dam, 0.8 mile above mouth of	24.1		386.1
West Branch of Westfield River, 0.3 mile above mouth of, Livingston Fiber Board Co., Inc., building	23.6		365.8
West Branch of Westfield River, mouth of, left bank	23.3		359.9
West Branch of Westfield River, 0.1 mile below mouth of, right bank	23.2		355.6
Russell, Mass., Chapin-Gould Paper Co. dam, headwater	22.3		bw345.8
Russell, Mass., 0.4 mile below Chapin-Gould Paper Co. dam, left bank	21.9		317.4
Russell, Mass., 0.9 mile below Chapin-Gould Paper Co. dam, left bank	21.4		304.6
Russell, Mass., 1.6 miles below Chapin-Gould Paper Co. dam, left bank	20.7		295.1
Russell, Mass., 0.4 mile above highway bridge above Westfield River Paper Co. dam, left bank	20.3		283.8
Russell, Mass., highway bridge above Westfield River Paper Co. dam, left bank	19.9		bx283.5
Russell, Mass., 0.8 mile below highway bridge above Westfield Paper Co. dam, left bank	19.1		259.3
Russell, Mass., 1.3 miles above Strathmore Paper Co. dam, left bank	18.5		251.5
Russell, Mass., 0.7 mile above Strathmore Paper Co. dam, left bank	17.9		238.6

ad From surveys and investigations by Corps of Engineers, U. S. Army.
bw Altitude of crest of dam 329.6 feet.
bx Altitude of crest of dam 267.9 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet ad/
Connecticut River Basin--Continued			
Westfield River--Continued.			
Russell, Mass., Strathmore Paper Co. dam, headwater	17.2		by241.5
Russell, Mass., 0.5 mile below Strathmore Paper Co. dam, left bank	16.7		195.1
Russell, Mass., 1.0 mile below Strathmore Paper Co. dam, left bank	16.2		186.6
Russell, Mass., 1.6 miles below Strathmore Paper Co. dam, left bank	15.6		176.2
Westfield, Mass., 0.95 mile above mouth of Moose Meadow Brook, left bank	14.9		167.4
Westfield, Mass., 0.3 mile above mouth of Moose Meadow Brook, left bank	14.25		163.6
Westfield, Mass., 0.15 mile below mouth of Moose Meadow Brook, left bank	13.8		159.5
Westfield, Mass., 0.95 mile below mouth of Moose Meadow Brook, left bank	13.0		153.6
Westfield, Mass., railroad bridge 2.1 miles above mouth of Powder Mill Brook	11.5		146.3
Westfield, Mass., 2.0 miles above mouth of Powder Mill Brook	11.4		139.6
Westfield, Mass., 1.8 miles above mouth of Powder Mill Brook	11.2		138.4
Westfield, Mass., 1.5 miles above mouth of Powder Mill Brook	10.9		137.3
Westfield, Mass., 0.3 mile above mouth of Powder Mill Brook	9.7		133.5
Westfield, Mass., 0.6 mile below mouth of Powder Mill Brook	8.8		130.7
Westfield, Mass., U. S. Geological Survey gage 0.8 mile above mouth of Black Brook	7.8	Sept. 21 12 pm to Sept. 22 1 am	127.6
West Springfield, Mass., 0.2 mile below mouth of Black Brook, left bank	6.8		124.8
West Springfield, Mass., 1.2 miles below mouth of Black Brook, left bank	5.8		120.1
West Springfield, Mass., 0.1 mile below mouth of Black Brook, left bank	4.45		102.7
Confluence of Westfield and Connecticut Rivers	0		
Middle Branch of Westfield River:			
Worthington, Mass., highway bridge 0.05 mile below mouth of Fidler Brook	12.55		1,047.2
Worthington, Mass., 0.5 mile below mouth of Fidler Brook	12.1		1,008.6
Worthington, Mass., 0.2 mile above mouth of Turtle Brook	11.5		966.4
Worthington, Mass., 0.4 mile below mouth of Turtle Brook	10.9		911.9
Worthington, Mass., 1.0 mile below mouth of Turtle Brook	10.3		884.9
Worthington, Mass., 0.6 mile above mouth of Den Stream	9.6		852.8
Worthington, Mass., 0.05 mile below mouth of Den Stream	8.95		812.7
Worthington, Mass., 0.2 mile below Shewster dam, right bank	8.5		bz785.0
Chester, Mass., 0.6 mile above A. E. Day dam, right bank	7.7		748.9
Chester, Mass., A. E. Day dam, tailwater	7.1		ca717.7
Chester, Mass., 0.4 mile below A. E. Day dam	6.7		705.5
Chester, Mass., 1.1 miles below A. E. Day dam, right bank	6.0		667.8
Chester, Mass., 1.05 miles above mouth of Kinney Brook	5.35		638.4
Chester, Mass., 0.7 mile above mouth of Kinney Brook, right bank	5.0		627.9
Chester, Mass., 0.3 mile above mouth of Kinney Brook, right bank	4.6		598.5
Chester, Mass., 0.2 mile below mouth of Kinney Brook	4.1		575.9
Chester, Mass., 1.1 miles above dam, right bank	3.8		549.7
Huntington, Mass., 0.6 mile above dam	3.3		525.9
Huntington, Mass., just above dam, left bank	2.7	Sept. 21 6:30 pm	cb504.5
Huntington, Mass., 0.15 mile below dam, right bank	2.55		491.9
Huntington, Mass., 1.5 miles above U. S. Geological Survey gage, right bank	1.9		469.3
Huntington, Mass., 0.6 mile above U. S. Geological Survey gage, right bank	1.0		436.9

ad From surveys and investigations by Corps of Engineers, U. S. Army.
by Altitude of crest of dam 229.1 feet.
bz Altitude of crest of dam 800.6 feet.
ca Altitude of crest of dam 711.2 feet.
cb Altitude of crest of dam 494.3 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Connecticut River Basin--Continued			
Middle Branch of Westfield River--Continued.			
Huntington, Mass., U. S. Geological Survey gage 0.4 mile above confluence with Westfield River	0.4	Sept. 21 6:30 pm	ad413.5
Confluence with Westfield River	0		
West Branch of Westfield River:			
Becket, Mass., just above Boston & Albany R.R. bridge	16.9		ad1,193.9
Becket, Mass., just above Boston & Albany R.R. bridge 1.2 miles above Center Pond Brook, right bank	16.5		ad1,161.2
Becket, Mass., opposite centerline of Boston & Albany R.R. bridge 0.8 mile above Center Pond Brook, left bank	16.1		ad1,128.2
Becket, Mass., mouth of Center Pond Brook	15.3		ad1,083.7
Becket, Mass., just above Boston & Albany R.R. bridge 0.45 mile above Coles Brook, left bank	14.75		ad1,032.6
Becket, Mass., Boston & Albany R.R. bridge 0.15 mile below Coles Brook, left bank	14.15		ad969.1
Bancroft, Mass., just above Balkby-Dutton Co. dam 0.6 mile below Coles Brook, left bank	13.7		adcc932.1
Bancroft, Mass., highway bridge	13.3		ad909.0
Bancroft, Mass., just below Boston & Albany R.R. bridge 0.4 mile below Factory Brook, left bank	12.5		ad836.1
Bancroft, Mass., 0.1 mile above Boston & Albany R.R. bridge 1.8 miles below Factory Brook	11.2		ad770.9
Bancroft, Mass., just below Boston & Albany R.R. bridge 3.2 miles above mouth of Walker Brook, left bank	10.4		ad738.7
Chester, Mass., just above Boston & Albany R.R. bridge 2.8 miles above mouth of Walker Brook	10.0		ad718.1
Chester, Mass., at Boston & Albany R.R. bridge 2.1 miles above mouth of Walker Brook	9.3		ad680.8
Chester, Mass., on highway bridge abutment 1.7 miles above mouth of Walker Brook, left bank	8.9		ad662.0
Chester, Mass., 1.3 miles above mouth of Walker Brook, right bank	8.5		ad654.3
Chester, Mass., Hamilton Carbon Co., 0.6 miles above mouth of Walker Brook	7.8		ad620.5
Chester, Mass., Main Street bridge	7.4		ad601.9
Chester, Mass., 0.15 mile below mouth of Walker Brook	7.05		ad585.1
Chester, Mass., 0.7 mile below mouth of Walker Brook, right bank	6.5		ad559.0
Chester, Mass., 1.1 miles above mouth of Sanderson Brook	5.9		ad539.1
Chester, Mass., highway bridge 0.8 mile above mouth of Sanderson Brook	5.6		ad532.6
Chester, Mass., Boston & Albany R.R. bridge at mouth of Sanderson Brook	4.8		ad507.4
Chester, Mass., just above highway bridge 1.0 mile below mouth of Sanderson Brook	3.8		ad482.8
Chester, Mass.. 2.1 miles above U. S. Geological Survey gage	3.5		ad464.8
Chester, Mass., 1.3 miles above U. S. Geological Survey gage	2.7		ad441.8
Huntington, Mass., Huntington pumping plant, 0.65 mile above U. S. Geological Survey gage	2.05		ad415.3
Huntington, Mass., U. S. Geological Survey gage 0.35 mile below mouth of Roaring Brook, left bank	1.4	Sept. 21 7 pm	ad404.1
Huntington, Mass., 0.7 mile below U. S. Geological Survey gage	.7		ad379.0
Huntington, Mass., new highway bridge, upstream	.45		ad365.3
Confluence with Westfield River	0		
Farmington River:			
Colebrook, Conn., Route 8 at State line	58.5		ag655.5
Colebrook, Conn., Route 8, 300 feet north of inn	58.0		ag644.4
Colebrook, Conn., Route 8, 0.5 mile below bridge	57.6		ag625.9
Colebrook, Conn., Route 8 at bridge	56.8		ag604.2
Colebrook, Conn., Route 8, 0.1 mile below bridge	56.7		ag603.5
Colebrook, Conn., Route 8, 0.4 mile below bridge	56.4		ag601.1
Barkhamsted (Riverton), Conn., Grocock House	52.2		ag506.7
Barkhamsted, Conn., Route 20 one-eighth mile north of Riverton	52.1		ag506.5
Barkhamsted, Conn., Route 20, Riverton	52.0		ag504.2
Barkhamsted, Conn., Pleasant Valley	48.0		ag421.7
New Hartford, Conn., New Hartford fire house	45.5		ag389.0
New Hartford, Conn., New Hartford garage	45.3		ag387.2
New Hartford, Conn., Route 44 at Wickett Road	44.7		ag378.7
New Hartford, Conn., Route 44, Pine Meadow Center	44.4		ag372.4
New Hartford, Conn., Route 44, Satan's Kingdom Grill	42.6		ag358.8
Canton (Collinsville), Conn., Barnes House	39.1		ag300.5
Canton (Collinsville), Conn., C. H. D. garage	38.9		ag299.5
Canton (Collinsville), Conn., Smith House	38.4		ag299.8

ad From surveys and investigations by Corps of Engineers, U. S. Army.
ag From surveys and investigations by Connecticut State Water Commission (Ground Water Project).
cc Altitude of crest of dam 926.3 feet.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Connecticut River Basin--Continued			
Farmington River--Continued.			
Burlington, Conn., Route 4, 0.2 mile north of railroad station	36.3		ag261.1
Burlington, Conn., intersection of Route 4 and Route 116	36.1		ag258.1
Burlington, Conn., Route 4, 0.8 mile south of railroad station	35.3		ag243.5
Avon, Conn., Connecticut Power Co. dam, Collinsville	34.6		ag238.4
Farmington (Unionville), Conn., Lawton's gristmill	33.8		ag217.4
Farmington (Unionville), Conn., Lawton's bridge	33.7		ag217.6
Farmington (Unionville), Conn., Republic Steel Co.	32.8		ag203.9
Farmington (Unionville), Conn., Myrtle Mill	32.7		ag203.3
Farmington (Unionville), Conn., Pine Tree	32.6		ag203.7
Farmington (Unionville), Conn., Clancey Store	32.5		ag202.7
Farmington, Conn., Winchell Smith gristmill	28.5		ag172.0
Farmington, Conn., Fred's Diner	28.3		ag171.8
Avon, Conn., Avon Diner	22.7		ag166.2
Simsbury, Conn., Butler Weatogue	19.7		ag161.6
Simsbury, Conn., Ensign-Bickford Co.	18.5		ag159.1
Simsbury, Conn., Desmond Riverside Road	18.2		ag159.1
Simsbury, Conn., Tariffville Lace Co.	12.3		ag150.8
East Granby, Conn., Hartford Electric Light Co. dam	12.0		ag142.9
Windsor, Conn., Poquonock	6.1		ag37.8
Confluence with Connecticut River	0		
Still River:			
Torrington, Conn., Route 8, 3.5 miles north of	10.9		ag730.6
Torrington, Conn., Route 8, 4 miles north of	10.4		ag725.0
Winchester, Conn., 0.8 mile south of Winsted	5.6		ag699.0
Winchester, Conn., North Main Street, Winsted	5.1		ag693.9
Confluence with Farmington River	0		
Mad River:			
Winchester (Winsted), Conn., 31 Front Street	1.0		ag753.1
Winchester (Winsted), Conn., 787 Main Street	1.0		ag751.9
Winchester (Winsted), Conn., 489 Main Street	.8		ag730.1
Winchester (Winsted), Conn., Gas Co. building	.5		ag705.2
Winchester (Winsted), Conn., C. H. D. Tar Plant	.1		ag699.8
Confluence with Still River	0		ag699.0
Sandy Brook:			
Norfolk, Conn., Route 183, 1.7 miles north of North Colebrook	7.7		ag1,210.6
Colebrook, Conn., Route 183, 1.2 miles north of North Colebrook	7.1		ag1,185.4
Colebrook, Conn., Route 183, 0.3 mile north of North Colebrook	6.3		ag1,081.8
Colebrook, Conn., Route 183, north of bridge	5.0		ag1,058.8
Confluence with Still River	0		
Hudson River Basin			
Hudson River and Barge Canal:			
Above Comstock, N. Y., above Lock No. 11	-	Sept. 22 2pm	cd128.6
Above Comstock, N. Y., below Lock No. 11	-	Sept. 22 8am-1pm	cd119.5
Northumberland, N. Y., above Lock No. 5	-	Sept. 22 7pm	cd107.9
Northumberland, N. Y., below Lock No. 5	-	Sept. 22 8pm	cd96.1
Stillwater, N. Y., above Lock No. 4	-	Sept. 22 6pm	cd89.6
Stillwater, N. Y., below Lock No.4	-	Sept. 22 12pm	cd77.4
Above Mechanicville, N. Y., above Lock No. 3	-	Sept. 22 3:30pm	cd76.6
Above Mechanicville, N. Y., below Lock No. 3	-	Sept. 22	cd60.3
Below Mechanicville, N. Y., above Lock No. 2	-	Sept. 22 1pm	cd56.6
Below Mechanicville, N. Y., below Lock No. 2	-	Sept. 22 2:30pm	cd41.2
Waterford, N. Y., above Lock No. 1	-	Sept. 22 4pm	cd35.3
Waterford, N. Y., below Lock No. 1	-	Sept. 22 2:40pm	cd32.8
Mohawk River and Barge Canal:			
Canajoharie, N. Y., above Lock No. 14	-	Sept. 22 6am	cd300.9

ag From surveys and investigations by Connecticut State Water Commission (Ground Water Project).
cd Barge Canal datum. Records furnished by New York State Department of Public Works.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Hudson River Basin--Continued			
Mohawk River and Barge Canal--Continued.			
Canajoharie, N. Y., below Lock No. 14	-	Sept. 22 6am	cd300.5
Above Fonda, N. Y., above Lock No. 13	-	Sept. 21 12pm	cd291.5
Above Fonda, N. Y., below Lock No. 13	-	Sept. 22 6am	cd289.0
Above Amsterdam, N. Y., above Lock No. 12	-	Sept. 22 12am	cd288.0
Above Amsterdam, N. Y., below Lock No. 12	-	Sept. 22 6pm	cd278.9
Amsterdam, N. Y., above Lock No. 11	-	Sept. 22 6am	cd274.0
Amsterdam, N. Y., below Lock No. 11	-	Sept. 21 12pm	cd268.7
Above Schenectady, N. Y., above Lock No. 9	-	Sept. 22 4pm	cd248.3
Schenectady, N. Y., above Lock No. 8	-	Sept. 22 5pm	cd231.5
Schenectady, N. Y., General Electric Co. pump house	-	Sept. 22 8pm	cd227.8
Schenectady, N. Y., Great Western Gateway	-	Sept. 22 4pm	cd226.5
Schenectady, N. Y., Locomotive Works	-	Sept. 22 6pm	cd225.0
Rexford, N. Y., bridge	-	Sept. 22 4-8pm	cd220.6
Vischer Ferry, N. Y., above Lock No. 7	-	Sept. 22 4pm	cd216.5
Crescent Dam, N. Y., above Lock No. 6	-	Sept. 22 9-10pm	cd190.6
Hackensack River Basin			
Hackensack River:			
Oradell, N. J., above Oradell Dam	22.6	Sept. 20 12pm	22.2
New Milford, N. J., U. S. Geological Survey gaging station above dam of Hackensack Water Co.	21.8	Sept. 21 6pm	11.0
Pascack Brook:			
Hillsdale, N. J., above Woodcliff Lake Dam	5.7	Sept. 21 12pm	96.5
Westwood, N. J., U. S. Geological Survey gaging station 75 feet above Sand Road Bridge, below mouth of Musquapsink Creek	2.3	Sept. 22 2am	34.0
Passaic River Basin			
Passaic River:			
Basking Ridge, N. J., 2 miles north of Van Doren's Mill, State Highway 32 bridge, upstream	81.8	Sept. 22	ce250.9
Basking Ridge, N. J., 1½ miles northeast of Osborne Mill Bridge, upstream	80.5	Sept. 22	ce242.3
Millington, N. J., 1 mile northwest of Davis Bridge, upstream	76.5	Sept. 22	ce225.1
Millington, N. J., U. S. Geological Survey gaging station 150 feet below Davis Bridge	76.4	Sept. 22 4-10am	ce223.7
Millington, N. J., Haas Road Bridge, upstream	75.8	Sept. 22	ce218.6
Millington, N. J., Springfield Avenue Bridge, upstream	73.0	Sept. 22	ce215.1
Stirling, N. J., three-quarters of a mile east of Plainfield Avenue Bridge, downstream	69.6	Sept. 21 or 22	ce211.2
Gillette, N. J., Mountain Avenue Bridge, upstream	68.4	Sept. 21 or 22	ce210.5
Gillette, N. J., Delaware, Lackawanna & Western R.R. bridge, upstream	67.2	Sept. 21 or 22	ce209.9
Berkeley Heights, N. J., highway bridge, upstream	66.0	Sept. 21 or 22	ce209.2
New Providence, N. J., near, Central Avenue Bridge, upstream	64.9	Sept. 21	ce208.2
New Providence, N. J., Passaic Avenue Bridge, upstream	63.5	Sept. 21	ce206.0
Chatham, N. J., upstream from, Mount Vernon Avenue Bridge, downstream	62.3	Sept. 21	ce202.0
Chatham, N. J., U. S. Geological Survey gaging station 100 feet below Stanley Avenue Bridge	61.8	Sept. 21	ce199.9
Chatham, N. J., Watchung Avenue Bridge, upstream	61.2	Sept. 21	ce193.4
Chatham, N. J., River Road (Chatham Road Bridge), upstream	60.6	Sept. 21	ce184.8
Chatham, N. J., Morris Turnpike bridge (Days Bridge), upstream	59.9		ce176.2

cd Barge Canal datum. Records furnished by New York State Department of Public Works.
ce New Jersey Geological Survey mean sea level datum.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Passaic River Basin--Continued			
Passaic River--Continued.			
Chatham, N. J., near, Lower Chatham Bridge, upstream	57.9		ce172.6
Florham Park, N. J., Columbia Bridge, upstream	54.9		ce172.0
Hanover, N. J., State Highway 10 bridge (Cook Bridge), upstream	53.2		ce171.2
Hanover Neck, N. J., near Swinefield Bridge, upstream	50.4		ce169.9
Pine Brook, N. J., State Highway 6 bridge, upstream	47.6		ce168.7
Pine Brook, N. J., 1½ miles northwest of Horseneck Bridge, upstream	43.3	Sept. 23	ce165.8
Little Falls, N. J., above Beattie Dam	30.4	Sept. 23 4pm and 12pm	cf161.9
Little Falls, N. J., at tailrace of filter plant	30.0	Sept. 23 4pm and 12pm	cf129.6
Paterson, N. J., U. S. Geological Survey gaging station just above Spruce Street Bridge	26.1	Sept. 23 7-12pm	ce119.2
Clifton, N. J., above Dundee Dam	18.1	Sept. 23 1pm to Sept. 24 6:30pm	cf28.8
Rockaway River:			
Berkshire Valley, N. J., 2 miles north of County Highway 69 bridge, downstream	30.4	Sept. 21 or 22	ce703.0
Berkshire Valley, N. J., County Highway 32 bridge, downstream	28.1	Sept. 21 or 22	ce693.0
Wharton, N. J., 1½ miles west of Delaware, Lackawanna & Western R.R. bridge	25.2	Sept. 21 or 22	ce672.2
Wharton, N. J., 1½ miles west of County Highway 67, downstream	25.0	Sept. 21 or 22	ce671.6
Wharton, N. J., bridge on road to Spicertown, just below Washington Pond, downstream	24.0	Sept. 21 or 22	ce631.6
Dover, N. J., Rutgers Street Bridge, downstream	22.2	Sept. 22	ce582.9
Dover, N. J., Sussex Street Bridge, downstream	21.7	Sept. 22	ce561.9
Dover, N. J., Morris Street Bridge, downstream	21.7	Sept. 22	ce559.7
Dover, N. J., Essex Street Bridge, downstream	21.6	Sept. 22	ce557.3
Dover, N. J., Bergen Street Bridge, downstream	21.6	Sept. 22	ce556.7
Dover, N. J., Union Street Bridge, downstream	21.4	Sept. 22	ce554.2
Dover, N. J., Mercer Street Bridge, downstream	21.4	Sept. 22	ce554.3
Dover, N. J., East Blackwell Street Bridge, downstream	21.1	Sept. 22	ce550.0
Rockaway, N. J., Dickerson Road Bridge, upstream	21.9	Sept. 22	ce542.8
Rockaway, N. J., State Highway 6 bridge, upstream	18.9	Sept. 22	ce534.6
Rockaway, N. J., Beach Street Bridge, upstream	17.6	Sept. 22	ce506.6
Denville, N. J., 1 mile northwest of Savage Road Bridge, upstream	16.5	Sept. 22	ce504.8
Denville, N. J., north of, 0.2 mile above mouth of Den Brook, Diamond Spring Road Bridge, upstream	15.5	Sept. 22	ce503.0
Denville, N. J., mouth of Den Brook, State Highway 6 bridge	15.3	Sept. 22	ce501.1
Denville, N. J., 0.6 mile below mouth of Den Brook, Pocono Road Bridge, upstream	14.6	Sept. 22	ce500.4
Mountain Lakes, N. J., 1 mile west of, just above mouth of Cedar Lake outlet, sewer crossing, upstream	13.9	Sept. 22	ce499.9
Mountain Lakes, N. J., 1½ miles west of, 0.6 mile below mouth of Cedar Lake outlet, Cook Lane Bridge, upstream	13.2	Sept. 22	ce498.6
Powerville, N. J., upper bridge, upstream	10.8	Sept. 22	ce494.4
Powerville, N. J., above dam of Powerville Lake	10.5	Sept. 22	ce493.9
Powerville, N. J., lower bridge, upstream	10.5	Sept. 22	ce486.2
Boonton, N. J., Pond Bridge, Main Street, upstream	9.6	Sept. 22	ce483.5
Boonton, N. J., dam at Main Street	9.6	Sept. 22	ce478.6
Boonton, N. J., U. S. Geological Survey gaging station just below Morris Avenue	9.0	Sept. 22 9:15-10 am	ce370.0
Boonton, N. J., Monroe Avenue Bridge, upstream	8.9	Sept. 22	ce365.4
Boonton, N. J., high bridge over Boonton Reservoir	8.1	Sept. 22	ce308.3
Boonton Reservoir at Boonton, N. J.	7.2	Sept. 22	ce308.5
Boonton, N. J., U. S. Geological Survey gaging station 1,500 feet below Boonton Reservoir	6.8	Sept. 22 1-2pm	ce201.7
Boonton, N. J., Vreeland Avenue, above dam	6.4	Sept. 22	ce199.8
Boonton, N. J., Vreeland Avenue, old concrete bridge, upstream	6.4	Sept. 22	ce195.4
Lake Hiawatha, N. J., northwest of, 2 miles downstream from Boonton Reservoir, highway bridge, upstream	5.1	Sept. 22	ce179.5
Lake Hiawatha, N. J., above dam	4.0	Sept. 22	ce176.4
Pine Brook, N. J., 1½ miles west of Vail Road Bridge, upstream	3.2	Sept. 22	ce173.7
Pine Brook, N. J., State Highway 6, girder bridge, upstream	1.9	Sept. 22	ce172.1

ce New Jersey Geological Survey mean sea level datum.
cf At time of reading. Peak stage may have been higher. New Jersey Geological Survey mean sea level datum.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Passaic River Basin--Continued			
Whippany River:			
Morristown, N. J., U. S. Geological Survey gaging station at sewage disposal plant, 300 feet below Monroe-Morris Plains Road	9.2	Sept. 22 4am	ce265.6
Whippany, N. J., 1 mile above, Upper Eden Mill Dam	7.0	Sept. 22 4-6am	ce240.5
Whippany, N. J., Thomas Street Bridge, downstream	6.0	Sept. 22	ce199.6
Whippany, N. J., Morristown Road Bridge, downstream	5.6	Sept. 22	ce191.2
Whippany, N. J., 1 mile east of, State Highway 10 bridge, downstream	4.4	Sept. 22	ce173.8
Hanover Neck, N. J., near Edwards Road Bridge (north channel), downstream	.3	Sept. 22	ce170.4
Pompton River:			
Pompton Plains, N. J., above Canal Feeder Dam	4.9	Sept. 22	ce178.6
Ramapo River:			
Pompton Lakes, N. J., U. S. Geological Survey gaging station above dam at Pompton Lakes	1.3	Sept. 22 6-7:30am	ce204.1
Wanaque River:			
The Glens, N. J., at U. S. Geological Survey gaging station on Greenwood Lake	16.8	Sept. 22 10am	ce620.4
Greenwood Lake, N. J., U. S. Geological Survey gaging station 600 feet downstream from Greenwood Lake	16.7	Sept. 22	ce605.2
Wanaque, N. J., Wanaque Reservoir at Raymond Dam	4.4	Sept. 23	ce302.2
Wanaque, N. J., U. S. Geological Survey gaging station 50 feet above highway bridge	4.4	Sept. 23 12:40pm	ce214.0
Cupsaw Brook:			
Wanaque, N. J., 5 miles north of U. S. Geological Survey gaging station just above Wanaque Reservoir	0	Sept. 21 5:30pm	ce306.7
Pequannock River:			
Oak Ridge, N. J., Oak Ridge Reservoir	16.9	Sept. 22 6am	cf846.9
Butler, N. J., 3 miles above U. S. Geological Survey gaging station at Macopin intake dam	7.4	Sept. 22	cf585.1
Pacock Brook:			
Stockholm, N. J., Canistear Reservoir near	1.4	Sept. 22 12am	cf1,086.5
Clinton Reservoir Branch of Pequannock River:			
Newfoundland, N. J., Clinton Reservoir near	1.8	Sept. 23 and 24 9am	cf992.4
Saddle River:			
Lodi, N. J., U. S. Geological Survey gaging station just above Outwater Lane	3.3	Sept. 22 11am	28.7
Elizabeth River Basin			
Elizabeth River:			
Irvington, N. J., U. S. Geological Survey gaging station just below Valley Street	9.7	Sept. 21	cg9.0
Hillside, N. J., at Mill Road Bridge, upstream	7.7	Sept. 21	ce78.2
Hillside, N. J., Union Avenue Bridge, upstream	7.3	Sept. 21	ce59.9
Union, N. J., State Highway 29 Bridge, upstream	6.5	Sept. 21	ce46.8
Union, N. J., above Salem Road, above dam	5.5	Sept. 21	ce36.1
Union, N. J., Salem Road Bridge, upstream	5.5	Sept. 21	ce34.0
Union, N. J., Lehigh Valley R.R. bridge, upstream	5.2	Sept. 21	ce29.9
Elizabeth, N. J., Irvington Avenue Bridge, downstream	3.6	Sept. 21	ce13.5
Elizabeth, N. J., U. S. Geological Survey gaging station above Westfield Avenue, above dam	3.3	Sept. 21 5:15pm	cg9.2
West Branch of Elizabeth River:			
Union, N. J., Chestnut Street Bridge, upstream	1.8	Sept. 21	ce55.7
Union, N. J., Morris Avenue Bridge, east, downstream	1.1	Sept. 21	ce54.1
Union, N. J., Sayre Road Bridge, upstream	.6	Sept. 21	ce54.3
Rahway River Basin			
West Branch of Rahway River:			
Springfield, N. J., Springfield Avenue, downstream	18.8	Sept. 21	ce83.9
Rahway River:			
Springfield, N. J., Rahway Valley R.R. bridge upstream	17.5	Sept. 21	ce77.7

ce New Jersey Geological Survey mean sea level datum.
cf At time of reading. Peak stage may have been higher. New Jersey Geological Survey mean sea level datum.
cg Arbitrary datum.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Rahway River Basin--Continued			
Rahway River--Continued.			
Springfield, N. J., Milltown Road Bridge, downstream	16.7	Sept. 21	ce73.0
Springfield, N. J., U. S. Geological Survey gaging station 50 feet below State Highway 29	16.1	Sept. 21 7:30pm	ce71.2
Cranford, N. J., Kenilworth Boulevard Bridge, downstream	14.5	Sept. 21	ce66.5
Cranford, N. J., Springfield Avenue, north bridge, upstream	13.2	Sept. 21 and 22	ce63.9
Cranford, N. J., Eastman Street, south bridge, downstream	12.8	Sept. 21 and 22	ce63.1
Cranford, N. J., above Hansel Dam	12.3	Sept. 21 and 22	ce60.3
Cranford, N. J., Union Avenue Bridge, upstream	12.3	Sept. 22	ce60.8
Cranford, N. J., North Avenue Bridge, upstream	12.1	Sept. 22	ce59.7
Cranford, N. J., South Avenue Bridge, upstream	12.0	Sept. 22	ce58.7
Cranford, N. J., above Droescher Dam	11.7	Sept. 22	ce57.1
Cranford, N. J., High Street Bridge, upstream	11.7	Sept. 22	ce55.4
Cranford, N. J., Lehigh Valley R.R. bridge, downstream	10.8	Sept. 22	ce50.6
Clark Township, N. J., below Sperry Dam	9.7	Sept. 22	ce40.1
Clark Township, N. J., above Bloodgood Dam	8.7	Sept. 22	ce35.9
Clark Township, N. J., below Bloodgood Dam	8.7	Sept. 22	ce32.1
Clark Township, N. J., above Jackson Dam	7.0	Sept. 22	ce26.4
Clark Township, N. J., below Jackson Dam	7.0	Sept. 22	ce21.6
Rahway, N. J., north end of waterworks	6.5	Sept. 22	ce18.5
Rahway, N. J., U. S. Geological Survey gaging station 100 feet above St. George Avenue	6.2	Sept. 22 6-7am	ce13.6
Rahway, N. J., Whittier Street Bridge, east, upstream	5.7	Sept. 22	ce9.9
Rahway, N. J., Grand Street Bridge, upstream	5.3	Sept. 22	ce5.8
Robinson Branch of Rahway River:			
Westfield, N. J., Raritan Road Bridge, upstream	3.8	Sept. 21	ce46.0
Clark Township, N. J., above dam above Madison Hill Road	2.3	Sept. 21	ce45.8
Clark Township, N. J., Madison Hill Road, upstream	2.2	Sept. 21	ce27.0
Rahway, N. J., Maple Avenue Bridge, upstream	1.3	Sept. 21 or 22	ce16.9
Rahway, N. J., Jefferson Avenue Bridge, upstream	1.1	Sept. 21 or 22	ce15.7
Rahway, N. J., Central Avenue Bridge, upstream	.9	Sept. 21 or 22	ce12.6
Rahway, N. J., St. George Avenue Bridge, upstream	.8	Sept. 21 or 22	ce12.9
Rahway, N. J., Hamilton Street Bridge, upstream	.2	Sept. 21 or 22	ce7.4
Raritan River Basin			
South Branch of Raritan River:			
Crestmoore, N. J., lower highway bridge	34.1	Sept. 21	485.5
Califon, N. J., highway bridge	32.4	Sept. 21	466.9
Hoffmans, N. J., highway bridge, upstream	30.7	Sept. 21	441.8
Readingsburgh, N. J., Stone Mill Bridge, upstream	28.1	Sept. 21	340.8
High Bridge N. J., 1 mile north of U. S. Geological Survey gaging station	27.8	Sept. 21 11pm	ce292.3
High Bridge, N. J., 0.3 mile north of, above steel plant dam	27.1	Sept. 21	286.3
High Bridge, N. J., railroad bridge in steel plant, upstream	26.9	Sept. 21	251.8
High Bridge, N. J., Central Railroad of New Jersey arch bridge, upstream	26.2	Sept. 21	241.6
High Bridge, N. J., first highway bridge below Central Railroad of New Jersey, upstream	25.9	Sept. 21	228.2
High Bridge, N. J., 1 mile south of, highway bridge, upstream	25.1	Sept. 21	210.1
Clinton, N. J., half a mile north of, State Highway 30 bridge, upstream	24.0	Sept. 21	196.3
Clinton, N. J., 0.2 mile above Spruce Run, highway bridge, upstream	23.3	Sept. 21	195.4
Clinton, N. J., State Highway 28 bridge, downstream	23.1	Sept. 21	188.6
Landsdowne, N. J., one-quarter of a mile northeast of, Clinton-Hamden road bridge, upstream	21.3	Sept. 21	171.5
Hamden, N. J., Hamden-Clinton road bridge, upstream	20.8	Sept. 21	163.2
Hamden, N. J., Lehigh Valley R.R. bridge, downstream	20.3	Sept. 21	162.8
Hamden, N. J., second highway bridge below railroad bridge	19.6	Sept. 21	156.7
Sunnyside, N. J., upper highway bridge, upstream	18.0	Sept. 21	146.9
Sunnyside, N. J., highway bridge, upstream	17.6	Sept. 21	141.3
Stanton, N. J., U. S. Geological Survey gaging station just below highway bridge near Stanton railroad station	16.5	Sept. 21 7:30pm	135.7
Flemington Junction, N. J., 1 mile north of, State Highway 30 bridge, upstream	14.3	Sept. 21	122.6

ce New Jersey Geological Survey mean sea level datum.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Raritan River Basin--Continued			
South Branch of Raritan River--Continued.			
Flemington Junction, N. J., half a mile northeast of Darts Mills, U. S. Highway 122 bridge, downstream	12.9	Sept. 21	112.5
Flemington Junction, N. J., Lehigh Valley R.R. bridge, downstream	12.3	Sept. 21	107.5
Flemington, N. J., 2 miles northeast of Central Railroad of New Jersey bridge	11.7	Sept. 21	102.2
Flemington, N. J., 2 miles east of Rockafellows Mills highway bridge, upstream	11.2	Sept. 21	99.8
Three Bridges, N. J., highway bridge, downstream	10.0	Sept. 21	93.6
Woodfern, N. J., highway bridge	7.7	Sept. 21	84.1
Neshanic Station, N. J., highway bridge	5.3	Sept. 21	70.5
South Branch, N. J., highway bridge	.8	Sept. 21	66.6
Raritan River:			
Somerville, N. J., just above State Highway 31 bridge	26.1	Sept. 22 1am	44.3
Manville, N. J., U. S. Geological Survey gaging station just below Manville-Finderne highway bridge	23.2	Sept. 22	41.0
Manville, N. J., just above mouth of Millstone River	21.5	Sept. 22	37.5
Bound Brook, N. J., 1 mile west of Calco Chemical Co. plant	20.5	Sept. 22	34.4
Bound Brook, N. J., Main Street opposite bridge to South Bound Brook	19.3	Sept. 22	30.5
Fieldville, N. J., above dam	17.7	Sept. 22	25.2
Neshanic River:			
Reaville, N. J., half a mile southwest of U. S. Geological Survey gaging station at highway bridge to Muirhead	6.4	Sept. 21 4:30pm	cg10.7
Walnut Brook:			
Flemington, N. J., 1¼ miles northwest of U. S. Geological Survey gaging station	3.1	Sept. 21 2pm	cg2.8
North Branch of Raritan River:			
Far Hills, N. J., 2 miles north of U. S. Geological Survey gaging station above Ravine Dam	15.0	Sept. 21 8pm	ce229.8
Far Hills, N. J., 1½ miles south of State Highway 31 bridge	10.1	Sept. 21	111.5
Burnt Mill, N. J., highway bridge, just below mouth of Lamington River	6.7	Sept. 21	85.5
North Branch, N. J., State Highway 28 bridge	3.7	Sept. 21	72.1
Milltown, N. J., U. S. Geological Survey gaging station 400 feet above State Highway 29	1.4	Sept. 21 8:40pm	62.6
South Branch, N. J., three-quarters of a mile north of Old York Road Bridge	.1	Sept. 21	58.4
Black River (head of Lamington River):			
Pottersville, N. J., 1 mile above U. S. Geological Survey gaging station	11.4	Sept. 21 4:40pm	ce288.1
Pottersville, N. J., highway bridge	10.0	Sept. 21	ce215.4
Lamington River:			
Vliettown, N. J., upper highway bridge	8.2	Sept. 21	160.4
Vliettown, N. J., lower highway bridge	7.7	Sept. 21	148.0
Lamington, N. J., highway bridge	6.7	Sept. 21	128.1
Chambers Brook:			
Pluckemin, N. J., half a mile south of State Highway 31 bridge	2.7	Sept. 21	167.9
Peters Brook:			
Somerville, N. J., State Highway 29 bridge	2.1	Sept. 21	60.0
Somerville, N. J., Grove Street bridge	.1	Sept. 21	44.3
Millstone River:			
Princeton, N. J., near, above Kingston Dam of Lake Carnegie	16.2	Sept. 21	56.1
Princeton, N. J., near, below Kingston Dam of Lake Carnegie	16.2	Sept. 21	55.4
Kingston, N. J., State Highway 27 bridge	16.0	Sept. 21	53.4
Kingston, N. J., near U. S. Geological Survey gaging station 1 mile downstream from Heathcots Brook	15.1	Sept. 21	ce52.1
Rocky Hill, N. J., highway bridge	14.1	Sept. 21	47.4
Griggstown, N. J., highway bridge	9.9	Sept. 21	45.5
Blackwells Mills, N. J., U. S. Geological Survey gaging station just below highway bridge	6.2	Sept. 21 12pm	42.3
Millstone, N. J., highway bridge	4.2	Sept. 21 or 22	41.0

ce New Jersey Geological Survey mean sea level datum.
cg Arbitrary datum.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Raritan River Basin--Continued			
Millstone River--Continued.			
Weston, N. J., highway bridge	1.6	Sept. 21 or 22	38.2
Green Brook:			
Scotch Plains, N. J., Union Avenue Bridge, upstream	11.1	Sept. 21	ce157.3
Scotch Plains, N. J., Mountain Avenue Bridge, downstream	10.5	Sept. 21	ce141.6
Plainfield, N. J., Terrill Road Bridge, downstream	10.2	Sept. 21	ce134.2
Plainfield, N. J., Raymond Avenue Bridge, upstream	9.8	Sept. 21	ce127.1
Plainfield, N. J., Farragut Road Bridge, upstream	9.0	Sept. 21	ce111.5
Plainfield, N. J., Norwood Avenue Bridge, upstream	8.5	Sept. 21	ce100.5
Plainfield, N. J., U. S. Geological Survey gaging station 20 feet below Sycamore Avenue	7.5	Sept. 21 3:30pm	cg4.9
Plainfield, N. J., Geraud Avenue Bridge, upstream	7.3	Sept. 21	ce72.8
Plainfield, N. J., West End Avenue Bridge, upstream	7.0	Sept. 21	ce63.7
Ambrose Brook:			
East Bound Brook, N. J., Union and Raritan Avenues	.6	Sept. 21	31.0
Lawrence Brook:			
Milltown, N. J., half a mile southwest of, U. S. Geological Survey gaging station above Farrington Dam	4.8	Sept. 21 8pm	cg26.2
Deep Run:			
Browntown, N. J., 1 3/4 miles south of, U. S. Geological Survey gaging station Spring Valley road bridge	5.0	Sept. 21 6:15pm	cg9.6
Tennent Brook:			
Browntown, N. J., 1¼ miles northwest of, U. S. Geological Survey gaging station	2.4	Sept. 21 7pm	ce20.7
Matawan Creek:			
Matawan, N. J., U. S. Geological Survey gaging station above Lefferts Lake dam	2.5	Sept. 21 4pm	ce18.3
Coastal basin			
Swimming River:			
Red Bank, N. J., U. S. Geological Survey gaging station above dam of Monmouth Consolidated Water Co. near	4.0	Sept. 21 7:30pm	cg7.0
Manasquan River:			
Squankum, N. J., U. S. Geological Survey gaging station just above Farmingdale-Lakewood road bridge	10.5	Sept. 21	cg12.4
Toms River:			
Toms River, N. J., 2½ miles northwest of, U. S. Geological Survey gaging station 1 mile below mouth of Union Branch	9.0	Sept. 23 7-10am	cg12.5
Cedar Creek:			
Lanoka Harbor, N. J., U. S. Geological Survey gaging station at highway bridge	2.2	Sept. 23	5.6
East Branch of Wading River:			
Harrisville, N. J., U. S. Geological Survey gaging station just below highway bridge	.5	Sept. 21 11pm	cg8.2
Great Egg River:			
Folsom, N. J., 1 mile south of, U. S. Geological Survey gaging station highway bridge	29.0	Sept. 23 6am-1pm	cg6.6
Maurice River:			
Norma, N. J., U. S. Geological Survey gaging station at Almond Road bridge	31.4	Sept. 23 8-10am	ce51.2
Manantico Creek:			
Millville, N. J., 4 miles northeast of, U. S. Geological Survey gaging station Millville-Milmay road bridge	7.0	Sept. 22 7am	cg4.2
Delaware River Basin			
Delaware River:			
Milford, Pa., U. S. Geological Survey gaging station, highway bridge, upstream	212.4	Sept. 22 3pm	392.3
Belvidere, N. J., U. S. Geological Survey gaging station just below mouth of Pequest River	163.4	Sept. 22 10pm	245.7
Easton, Pa., U. S. Geological Survey gaging station, highway bridge, upstream	149.5	Sept. 23 12:30am	177.7
Riegelsville, N. J., U. S. Geological Survey gaging station just above suspension bridge	140.6	Sept. 23 1am	148.1

ce New Jersey Geological Survey mean sea level datum.
cg Arbitrary datum.

Table 19.--Flood crest stages--Continued

Stream and location	Miles above mouth	Day and hour	Altitude in feet
Delaware River Basin--Continued			
Delaware River--Continued.			
Trenton, N. J., U. S. Geological Survey gaging station 200 feet above Calhoun Street	100.6	Sept. 23 6-7am	19.2
Flat Brook:			
Flatbrookville, N. J., 1 mile above, U. S. Geological Survey gaging station	1.2	Sept. 22 3am	354.8
Paulins Kill:			
Blairstown, N. J., U. S. Geological Survey gaging station 1,200 feet above bridge on State Highway 8	9.8	Sept. 22 3am	cg7.6
Pequest River:			
Quaker Church, N. J., highway bridge	23.7	Sept. 23 11:40am	cf534.7
Quaker Church, N. J., half a mile south of highway bridge	23.0	Sept. 23 11:30am	cf532.5
Long Bridge, N. J., Lehigh & Hudson R.R. bridge above highway	21.7	Sept. 23 11:15am	cf528.1
Long Bridge, N. J., Lehigh & Hudson R.R. bridge below highway	21.5	Sept. 22 11am	cf529.3
Great Meadows, N. J., Long Bridge road bridge	15.0	Sept. 24 10:45am	cf516.9
Great Meadows, N. J., State highway bridge	13.3	Sept. 24 10:40am	cf514.0
Great Meadows, N. J., half a mile southwest of Lehigh & Hudson R.R. bridge	10.7	Sept. 24 1:55pm	cf506.6
Townsbury, N. J., highway bridge	10.4	Sept. 24 10:10am	cf488.4
Townsbury, N. J., 1 mile southwest of Lehigh & Hudson R.R. bridge	8.9	Sept. 24 2:15pm	cf438.4
Pequest, N. J., highway bridge	7.6	Sept. 24 9:40am	cf406.3
Pequest, N. J., U. S. Geological Survey gaging station 100 feet above Lehigh & Hudson R.R. bridge	7.1	Sept. 22 1am	ce402.6
Buttzville, N. J., Lehigh & Hudson R.R. bridge	5.8	Sept. 24 9:10am	cf383.7
Buttzville, N. J., steel-truss highway bridge	5.5	Sept. 22 9:10am	cf372.8
Bridgeville, N. J., plank highway bridge	4.1	Sept. 22 9:05am	cf342.8
Bridgeville, N. J., stone arch highway bridge	3.9	Sept. 22 9am	cf334.6
Belvidere, N. J., 1 mile northeast of highway bridge	1.5	Sept. 22 9:15am	cf280.9
Belvidere, N. J., at ribbon mill, downstream from Hardwick Street	.4	Sept. 22 9am	cf257.6
Belvidere, N. J., Pennsylvania R.R. bridge	.1	Sept. 22 9am	cf249.5
Beaver Brook:			
Belvidere, N. J., U. S. Geological Survey gaging station 2 miles east of, 2,000 feet above mouth	.4	Sept. 22 8am	ce307.2
Belvidere, N. J., 2 miles east of, State Highway 6 bridge	0	Sept. 22 8:45am	cf298.2
Musconetcong River:			
Landing, N. J., Lake Hopatcong, just above dam	42.4	Sept. 23 2-4pm	ce924.5
Landing, N. J., U. S. Geological Survey gaging station 300 feet downstream from Lake Hopatcong	42.3	Sept. 23 1pm	ce907.3
Hackettstown, N. J., 3 miles above U. S. Geological Survey gaging station just above dam at Saxton Falls	33.1	Sept. 22 5-7am	ce633.9
Hackettstown, N. J., 3 miles above U. S. Geological Survey gaging station 500 feet above Delaware, Lackawanna & Western R.R. bridge	32.7	Sept. 22 6am	ce609.5
Bloomsbury, N. J., 1½ miles above U. S. Geological Survey gaging station just above highway bridge	9.4	Sept. 21 10-12pm	280.0
Assunpink Creek:			
Trenton, N. J., U. S. Geological Survey gaging station at Chambers Street Bridge	1.5	Sept. 22 2:45am and 3:30 am	ce35.5

ce New Jersey Geological Survey mean sea level datum.
cf At time of reading. Peak stage may have been higher. New Jersey Geological Survey mean sea level datum.
cg Arbitrary datum.

Table 19.--Flood crest stages--Continued

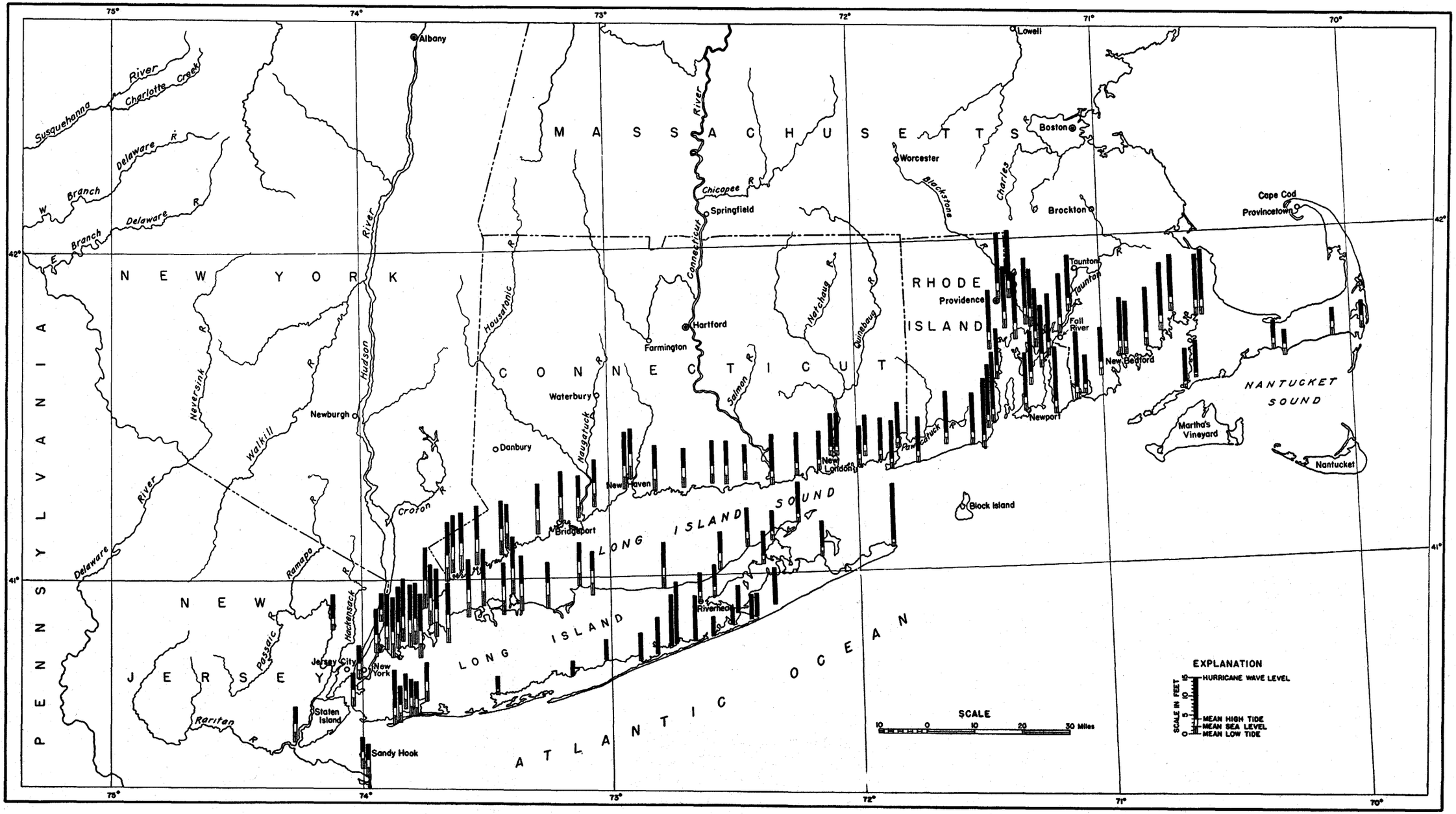
Stream and location	Miles above mouth	Day and hour	Altitude in feet
Delaware River Basin--Continued			
North Branch of Rancocas Creek:			
Pemberton, N. J., U. S. Geological Survey gaging station 600 feet below highway bridge	12.0	Sept. 22 6-10pm	ce35.1
Oldmans Creek:			
Woodstown, N. J., 2 miles north of, U. S. Geological Survey gaging station Woodstown-Swedesboro highway bridge	16.0	Sept. 21 6pm	cg6.2

ce New Jersey Geological Survey mean sea level datum.
cg Arbitrary datum.

OCEAN STORM WAVE IN COASTAL AREAS

Climaxing the events of the storm and the resulting floods, the violent West Indian hurricane that swept in from the Atlantic Ocean on the afternoon of September 21 added appallingly to the general flood havoc. Over the storm area the hurricane force of the winds alone was sufficient to wreck innumerable structures of all types. The beautiful trees in cities, towns, villages, along the highways, and in the parks and forests were uprooted and broken to an unbelievable extent. Along the shores of Long Island and the southern coast of New England, a great wave rolled in from the ocean, augmenting the devastation of the hurricane and in many places leaving hardly a vestige of human occupation. Along several miles of beach frontage the destruction in the short space of a few hours was so complete that there was a near reversion to pristine appearance. This great surge of water was forced into the many bays and tidal estuaries and raised them to record-breaking levels, this being particularly true in the eastern sector of the storm area where the great wave was approximately synchronized with normal high tide. Thus many of the larger towns and cities on the bays and estuaries, some of them a considerable distance from the sea, were engulfed by the highest water of record with a consequent heavy loss of life and property. Perhaps not as awe-inspiring, but no less serious and disastrous, was the like effect of this great storm wave in each of the many smaller, low-lying villages and hamlets so closely spaced along the entire coast line from Cape Cod to Sandy Hook and around Long Island. Although very difficult to appraise, estimates of the destruction of property along the coasts as a result of the hurricane and storm wave reach as high as $80,000,000. Loss of life was serious enough, mounting to the hundreds, but the toll would have been many times greater if the storm had struck only a few weeks earlier, during the height of the summer shore vacation season.

The history of storms in New England (see "Records of previous floods and storms.") demonstrates that the West Indian hurricanes must be placed in the "to-be-expected" class of catastrophe and that there is an established possibility that one may occur in any year. If this be true, then a thorough recording and dissemination of information as to the destructive effects and areal extent of the hurricane winds and great storm waves is warranted as a basis of development of ways and means for protection of human life and property. An interesting and valuable part of such information with particular respect to the present or future location and protection of shore and water-front property is a record of storm-wave



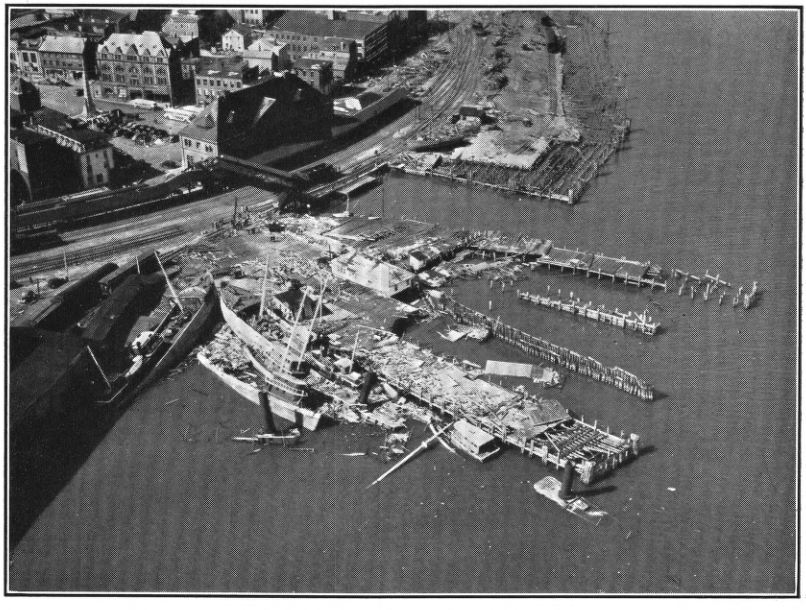
MAP SHOWING HEIGHT OF OCEAN-STORM WAVE FROM CAPE COD, MASS., TO SANDY HOOK, N. J.

A.

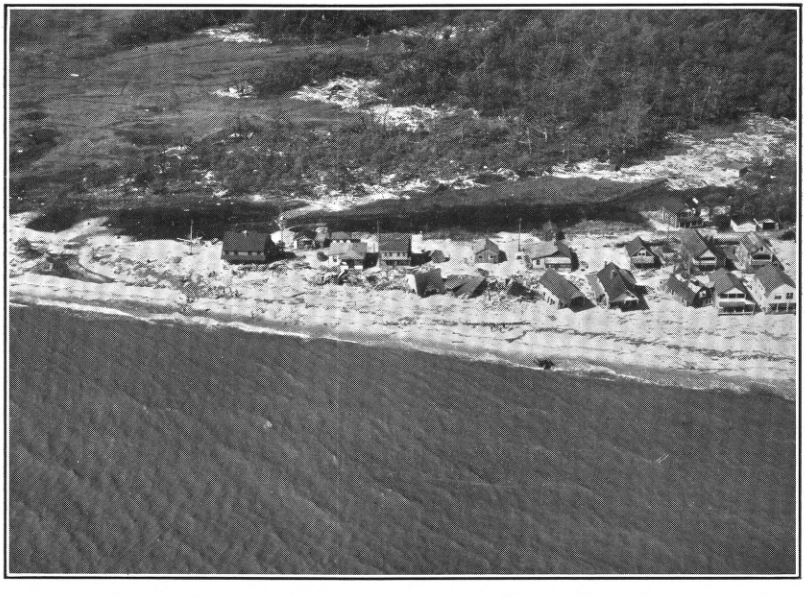
B.

BEVERLY YACHT CLUB AT MARIAN, MASS., BEFORE AND AFTER THE HURRICANE.

Courtesy of Pictures, Inc.



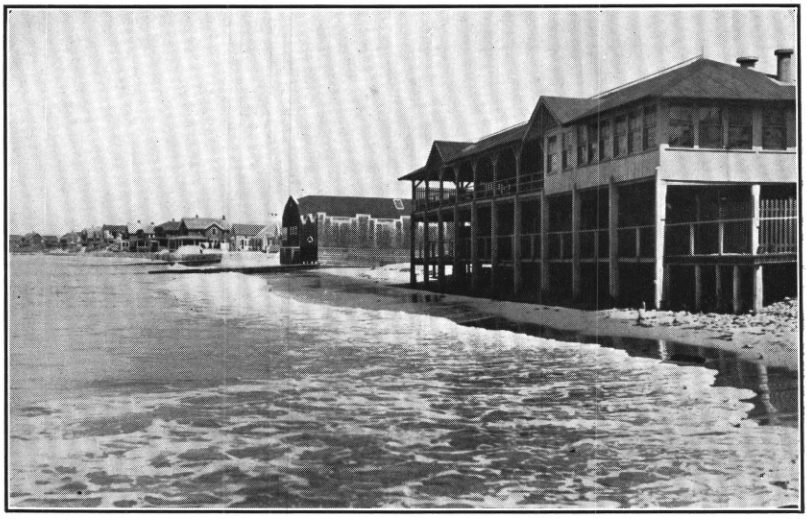
A. PIERS AND BOATS AT NEW LONDON.



B. SUMMER HOMES AND COTTAGES AT HAWKS NEST.

DAMAGE BY STORM WAVE ON CONNECTICUT COAST.

Photographs by 118th Photo Section, Air Corps, Connecticut National Guard.



A.

B.

WATER FRONT AT WATCH HILL, WESTERLY, R. I., BEFORE AND AFTER THE HURRICANE.

Courtesy of Lewis R. Green.

heights along the coastal reaches. Recognizing the need for information on this destructive phase of the hurricane of September 1938, some State and Federal agencies were able to gather considerable factual data. The United States Coast and Geodetic Survey as part of its regular duties maintains tidal stations at several points along the coast. The Corps of Engineers, United States Army, at its Providence, R. I., and New York, N. Y., offices, assembled considerable data on the storm-wave heights, as did also the Massachusetts Department of Public Works at Boston. The Connecticut State Water Commission (Ground-water Project) at Hartford observed and recorded the wave height in the lower Connecticut River, but these records are not used because of the masking effect of rising flood discharges in the river itself. The staff of the Geological Survey office at Hartford, Conn., established the wave height at some additional points on the Connecticut shore. Many interested individuals and agencies within and without the government services evinced a keen interest in the collection and compilation of a record of the storm-wave heights along the coast.

The Providence office of the Corps of Engineers made available a compilation of the records of storm-wave heights along the southern New England coast, and the New York office furnished similar data for the New York and Long Island areas. Through the courtesy and cooperation of the district engineers at these offices these compilations are presented in table 20 on the pages immediately following. This table includes the height records collected by the Massachusetts Department of Public Works. The Coast and Geodetic Survey supplied maximum heights as determined at the several regular tidal stations in the area, which also appear in table 20.

Plate 16 is a graphical picturization of the tabular data and should aid in visualizing the relative heights of the storm wave at various points along the coast lines and in the bays and estuaries. (See also pls. 17, 18, and 19.) The bases of the columns are located on the map as closely as possible to the sites where the field observations of storm-wave height were made and represent mean low water level. The vertical scale of the columns is indicated in the explanation of the map. The first horizontal line above the base represents mean sea level at the place of observation, the second horizontal line represents mean high water level, and the top of the column represents the peak of the storm wave of September 21. At some locations, averages were taken of several observations of storm-wave height made in the vicinity, as listed in table 20. The Coast and Geodetic Survey also furnished hourly tidal heights for September 21 and 22, for

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Table 20.--Storm wave elevations, in feet

Location	Height above mean low water	Adjustment to mean sea level (subtract)	Adjustment to mean high water (subtract)
Massachusetts			
Boston a/	b11.3	4.8	9.4
Chatham, Stage Harbor c/	7.2	1.9	3.8
Harwich, Witchmere Harbor c/	7.0	1.9	3.8
Point Gammon c/	6.7	1.6	3.1
Hyannis Port, Hyannis Harbor, Hyannis Improvement Association Wharf c/	7.5	1.6	3.1
East Falmouth, Bowens Pond, Menanhant Road c/	7.8	.6	1.3
East Falmouth, east of Great Pond, Menanhant Road c/	9.3	.6	1.3
East Falmouth, Great Pond, Menanhant Road c/	8.5	.6	1.3
Falmouth Heights, Little Pond, Menanhant Road c/	8.2	.6	1.3
Falmouth Heights c/	8.6	.6	1.3
Falmouth Heights, Grand Avenue c/	10.9	.6	1.3
Falmouth, Falmouth Harbor c/	7.9	.6	1.3
Falmouth, Salt Pond, Beach Road c/	8.5	.6	1.3
Falmouth, Danesville Road c/	7.4	.6	1.3
Falmouth, Nobska Point, Church Street c/	8.5	.7	1.4
Falmouth, Nobska Point, Nobska Pond c/	9.2	.8	1.5
Woods Hole a/	d9.7	.8	1.7
Woods Hole, Little Harbor c/	10.2	.7	1.4
Woods Hole, Oceanographic Institute c/	9.7	.8	1.7
Woods Hole, Marine Biological Laboratory Supply Bldg., Eel Pond e/	d11.4	.8	1.7
Woods Hole, Marine Biological Laboratory, Great Harbor, grass contour e/	f10.8	.8	1.7
Woods Hole, Bureau of Fisheries Bldg., Great Harbor e/	d9.7	.8	1.7
West Falmouth Harbor, Chappaquart Island c/	15.9	2.0	4.0
North Falmouth, Wild Harbor, New Silver Beach c/	15.6	2.0	4.0
Pocasset, Wings Neck Light e/	d16.6	2.0	4.1
Monument Beach e/	d15.7	2.0	4.1
Monument Beach c/	18.7	2.0	4.0
Bourne, Back River Harbor c/	18.1	2.1	4.2
Bourne, State Pier e/	d15.7	2.0	4.1
Bourne, State Pier c/	15.8	1.8	3.7
Bourne, Cape Cod Canal entrance e/	g12.7	-	-
Onset, Point Independence c/	16.3	2.0	4.1
Wareham, Wareham River, Main Street c/	15.9	2.0	4.1
Wareham, Wareham River, Main Street c/	15.8	2.0	4.1
Wareham, Weweantic River bridge c/	12.5	2.0	4.1
Marion, Great Hill c/	18.8	2.0	4.1
Marion, Sippican Harbor c/	16.8	2.0	4.0
Mattapoisett, Mattapoisett Harbor c/	15.3	2.0	3.9
Fairhaven (Upper end), Sconticut Neck Road c/	13.9	1.8	3.6
Fairhaven, Fairhaven bridge c/	14.1	1.8	3.7
New Bedford, Slocum Street bridge, near head of navigation e/	f15.9	1.8	3.7
New Bedford, Mitchell and Coggeshall Streets, near head of navigation e/	f15.3	1.8	3.7
New Bedford, City Pier No. 3, near head of navigation e/	f14.7	1.8	3.7
New Bedford, Clark Point, Fort Rodman e/	f15.6	1.8	3.7
New Bedford, Clark Point, Rodney French Blvd. c/	14.5	1.8	3.7
New Bedford, Clark Cove, Rodney French Blvd. e/	f13.3	1.8	3.7
South Dartmouth, bridge over Apponagansett Bay c/	12.5	1.8	3.7
Westport, Hix Bridge c/	9.9	1.4	2.7
Acoaxet, Atlantic Ave., outer shore, debris e/	f17.5	-	-
Rhode Island			
Sakonnet, Sakonnet Point, on bluff e/	f19.8	1.6	3.3
Sakonnet, inland at Round Pond e/	f15.4	1.6	3.3
Tiverton, northeast end of Nannaquacket Cove, on rock outcrop e/	f17.3	1.9	3.8
Tiverton, northwest end of Nannaquacket Cove, on slope of road e/	f15.5	1.9	3.8
Tiverton, Sakonnet River, railroad bridge e/	f17.5	1.9	3.8
Tiverton, Sakonnet River, on road at Sinclair Oil Co. depot e/	f14.9	1.9	3.8

a Furnished by U. S. Coast and Geodetic Survey.
b At 8:36 p.m.; normal high tide 9:00 p.m.; measured in stilling well.
c Furnished by Massachusetts Department of Public Works.
d Measured in stilling well or similar enclosure.
e Furnished by Corps of Engineers, U. S. Army, Providence, R. I.
f Measured in the open; subject to wave action.
g Elevation above mean sea level.

Table 20.--Storm wave elevations, in feet--Continued

Location	Height above mean low water	Adjustment to mean sea level (subtract)	Adjustment to mean high water (subtract)
Massachusetts (Taunton River)			
Fall River, Riverside Avenue at bridge on U. S. Highway No. 6 c/	14.6	1.8	3.7
Fall River, Water Street, lower end of City Wharf c/	16.1	2.2	4.4
Fall River, American Linen Mill, head of navigation e/	f15.5	2.2	4.4
Fall River, east side of Taunton River, Shell Oil Co. depot e/	d15.7	2.2	4.4
Rhode Island - Continued			
Portsmouth, on house opposite Bristol Ferry depot e/	16.5	-	-
Portsmouth, debris opposite Bristol Ferry depot e/	16.1	-	-
Middletown, Melville Fuel Depot, boiler room e/	d14.1	-	-
Newport a/	d13.9	1.7	3.5
Newport, Newport Beach, on fence near e/	f14.8	1.8	3.5
Newport, Bailey's Beach, on stone near e/	f15.1	1.8	3.5
Newport, Bailey's Beach, on tree near e/	f15.3	1.8	3.5
Newport, near Price's Neck, tree on Ocean Ave. e/	f16.8	1.8	3.5
Newport, near Price's Neck, Ocean Ave., telephone pole e/	f16.1	1.8	3.5
Newport, Brenton's Point, Ocean Ave., telephone pole e/	f21.6	1.8	3.5
Newport, Brenton's Point, tree on Atlantic Avenue e/	f20.7	1.8	3.5
Newport, Brenton's Point, Country Club, debris e/	f20.3	1.8	3.5
Newport, Brenton's Point, Country Club, sand contour e/	f18.8	1.8	3.5
Newport, Fort Adams, in building, north end of port e/	d13.0	1.8	3.5
Newport, Fort Adams, in building, south end of port e/	d11.4	1.8	3.5
Newport, Newport Harbor, wall on Wellington Ave., e/	f12.1	1.8	3.5
Newport, Newport Harbor, Commercial Wharf building e/	f11.8	1.8	3.5
Newport, Newport Harbor, building on Harrington Street e/	f12.2	1.8	3.5
Newport, Newport Harbor, Wellington Ave., fence e/	f11.9	1.8	3.5
Newport, Newport Harbor, Newport Gas & Light Co.'s shed e/	d11.7	1.8	3.5
Newport, Naval Training Station, mean contour on grass e/	f13.5	1.8	3.5
Warren, on shed near bridge over Kickamuit River e/	f15.2	2.3	4.6
Bristol, Herseshoff Boat Yard, on shed e/	f15.2	2.0	4.1
Bristol, Lighthouse Service Dock, on fence e/	f16.2	2.0	4.1
Bristol, Collins & Aihman Plant, in doorway e/	f15.8	2.0	4.1
Bristol, Perry's Cafe, on wall e/	f15.2	2.0	4.1
Bristol, near railroad yards, on fence e/	f16.0	2.0	4.1
Warren, Burr Hill Park, on fence e/	f17.3	2.3	4.6
Warren, between Warren and Barrington Bridges, on pole e/	f12.8	2.3	4.6
East Barrington, on house on Bay Spring Ave. e/	f17.4	-	-
Barrington, Adams Point, tree on Adams Point Road e/	f16.7	-	-
Rumstick Neck, Rumstick Road, on tree e/	f17.2	-	-
Barrington, Barrington Beach, on telephone pole on Bay Road e/	f17.6	-	-
Barrington, Barrington Beach, on telephone pole, Watson Avenue e/	f18.2	-	-
Barrington, Barrington Beach, grass contour on lawn e/	f18.3	-	-
Riverside, Bullock Cove, on lawn near railroad e/	f17.7	-	-
Riverside, Bullock Cove, washout on tracks e/	f17.2	-	-
Riverside, chafe line on trestle across Bullock Cove e/	f17.9	-	-
Riverside, on walk near trestle across Bullock Neck e/	f18.3	-	-
Riverside, Bullock Neck, Crescent Park Ballroom, debris line e/	f18.2	-	-
Riverside, Bullock Neck, Crescent Park Ballroom, on foundation e/	f18.0	-	-
East Providence, Socony Vacuum Oil Co. dock, in railroad cut e/	f18.0	-	-
East Providence, Watchemolut Cove, on Barrington Parkway e/	f19.0	-	-
East Providence, half a mile north of Red Bridge over Seekonk River, railroad cut e/	f18.0	-	-
East Providence, Tenmile River, on tree inside Crosswood Point e/	f16.1	-	-

a Furnished by U. S. Coast and Geodetic Survey.
c Furnished by Massachusetts Department of Public Works.
d Measured in stilling well or similar enclosure.
e Furnished by Corps of Engineers, U. S. Army, Providence, R. I.
f Measured in the open; subject to wave action.

Table 20.--Storm wave elevations, in feet--Continued

Location	Height above mean low water	Adjustment to mean sea level (subtract)	Adjustment to mean high water (subtract)
Rhode Island--Continued			
Providence, ½ mile north of Red Bridge over Seekonk River, debris e/	f18.0	2.3	4.6
Providence, ¼ mile north of Red Bridge over Seekonk River, on wall e/	f17.7	2.3	4.6
Providence a/	d17.6	2.3	4.6
Providence, Rhode Island Hospital Trust Bldg., inside northwest door e/	d17.6	2.3	4.6
Providence, New Federal Bldg., inside e/	d17.7	2.3	4.6
Providence, Point St. Bridge, Harbor Masters office e/	d18.5	2.3	4.6
Providence, Field Point e/	d18.5	2.3	4.6
Conimicut, Conimicut Point, Bay Ave., in house e/	d16.3	-	-
Rocky Point, building near old wharf e/	d17.4	-	-
Apponaug, Greenwich Bay, on bank near railroad station e/	f16.1	-	-
East Greenwich, Greenwich Cove, in Yacht Club e/	d15.7	2.2	4.4
Wickford, Wickford Harbor, in Reynolds Home e/	d13.6	2.0	4.1
Plum Beach, Hazards Quarry, debris e/	f14.5	-	-
Pattaquamscott River, the narrows, debris and erosion in e/	f18.5	-	-
Narragansett, lower pier, debris and erosion e/	f16.8	1.8	3.5
Point Judith, Lighthouse Service, in whistle house e/	d22.1	-	-
Point Judith, debris 1 mile north of point e/	f14.5	-	-
Matunuck, Matunuck Beach, in house e/	d13.7	-	-
Charlestown, southeast end of Charlestown Pond, in garage e/	d13.4	-	-
Charlestown, southwest end of Charlestown Pond, grass contour e/	f14.2	-	-
Weekapaug, Post Office, debris and sand in rear of e/	f11.9	-	-
Watch Hill, Watch Hill Cove, inside fire station e/	d12.4	1.4	2.7
Westerly, Pawcatuck River, inside garage e/	d12.2	-	-
Connecticut			
Stonington, near station, in railroad switch tower e/	d11.0	1.4	2.7
Mystic, near Murphy Point, in cellar e/	d10.8	-	-
Noank, Mystic River, debris on e/	f10.3	1.3	2.6
Groton, Electric Boat Co. building e/	d11.2	-	-
New London a/	h11.1	1.4	2.5
New London, Shaws Cove, Debris on fence of Standard Oil Co. of New Jersey e/	f11.4	1.2	2.5
New London, Customhouse Wharf, in shop e/	d11.5	1.2	2.5
New London, Dumonts Marine Station, city wharf, inside e/	d11.2	1.2	2.5
New London, New York, New Haven & Hartford Railroad station, on steps e/	f11.6	1.2	2.5
New London, Coast Guard Academy Pier, on pile e/	f11.5	1.2	2.5
New London, Chapman & Scott Co. yard in Merritt e/	f11.3	1.2	2.5
Waterford, near Millstone Point, debris along west side of Jordon Cove	f10.7	1.4	2.7
Waterford, on small pond discharging into Jordan Cove, debris along railroad embankment	d9.9	1.4	2.7
East Lyme, Rocky Neck State Park, debris north of railroad embankment near bath houses	d11.3	1.6	3.2
Saybrook, outer breakwater, in light e/	d13.4	1.8	3.6
Westbrook, Patchogue River south of railroad embankment, debris	d9.3	2.2	4.4
Clinton, south of U. S. Highway No. 1, on Snows Block Bldg.,	d11.5	2.4	4.7
Madison, ⅛ mile east of, debris along south edge of U. S. Highway No. 1 near tidal swamp	d11.5	2.4	4.9
Guilford, just east of abandoned Sachem Head railroad station, debris along south side of railroad embankment	d10.6	2.8	5.5
Branford, Branford Coal & Lumber Co., in shed e/	d12.0	3.0	5.9

a Furnished by U. S. Coast and Geodetic Survey.
d Measured in stilling well or similar enclosure.
e Furnished by Corps of Engineers, U. S. Army, Providence, R. I.
f Measured in the open; subject to wave action.
h At 4:45 p.m. Normal high tide 7:11 p.m. Measured in stilling well.

Table 20.--Storm wave elevations, in feet--Continued

Location	Height above mean low water	Adjustment to mean sea level (subtract)	Adjustment to mean high water (subtract)
Connecticut--Continued			
Branford, in Branford Yacht Club e/	d11.8	3.0	5.9
New Haven, Fort Hall Park, debris e/	f13.8	3.1	6.3
New Haven, Lighthouse Point, in keeper's house e/	d13.4	3.1	6.3
New Haven, Tomlinson Aqueduct. in machine shop e/	d11.9	3.1	6.3
West Haven, Savin Rock, Wilcox Dance Pavilion, on threshold e/	f16.6	-	-
West Haven, Savin Rock, on house in rear of Wilcox Dance Pavilion e/	f13.9	-	-
Milford, at mouth of Wepawaug River, adjacent to sewage disposal plant	d12.3	3.3	6.6
Stratford a/	d11.1	2.7	5.5
Bridgeport, Stratford Bridge, Bridgeport Towing Co. office e/	d13.8	3.4	6.8
Bridgeport, Baunworth Building e/	f13.7	3.4	6.8
Bridgeport, Black Rock Harbor, Fayerweather Yacht Club door e/	f12.8	3.4	6.8
Southport, Pequot Yacht Club, on steps e/	f13.4	-	-
South Norwalk, on building foundation east of river e/	f11.6	3.6	7.1
Rowayton, Five Mile River, on house e/	f14.3	-	-
Stamford, Flemmings Coal Dock, on tank e/	f14.7	3.6	7.2
Stamford, Stamford Yacht Club, on lawn e/	f15.6	3.6	7.2
Coscob, New York, New Haven & Hartford Railroad power plant, on shed e/	f15.3	3.6	7.2
Greenwich, Indian Harbor Yacht Club, on boathouse e/	f15.0	3.7	7.4
New York			
Port Chester, Byram Point i/	15.4	3.6	7.3
Larchmont i/	16.1	3.6	7.3
Throgs Neck, dock at Fort Schuyler i/	16.3	3.6	7.2
Castle Hill Point, mouth of Westchester Creek i/	16.4	3.6	7.1
Bronx, head of navigation on Westchester Creek i/	16.6	3.6	7.1
Hell Gate. Mill Rock, automatic tide gage at i/	11.7	2.6	5.1
Astoria, Lawrence Point i/	14.9	3.2	6.4
Flushing, Long Island Railroad bridge over Flushing Creek i/	14.6	3.5	7.0
Flushing, bridge over Flushing Creek, east of Lawrence Street i/	16.0	3.5	7.0
Flushing, east side of Northern Boulevard i/	16.3	3.5	7.0
College Point, west end of i/	16.2	3.5	7.0
Whitestone, Naval Militia building i/	16.3	3.6	7.2
Willets Point a/	d17.2	3.6	7.2
Willets Point, dock at Fort Totten i/	16.5	3.6	7.2
Bayside, dock of Bayside Yacht Club i/	17.1	3.6	7.2
Bayside, Crocheron Park i/	16.5	3.6	7.2
Port Washington, town dock i/	18.0	3.7	7.4
Sands Point Light i/	16.0	3.6	7.3
Roslyn, head of Hempstead Harbor i/	15.8	3.7	7.4
Mill Neck, Geological Survey gaging station on Mill Neck Creek	j15.1	3.7	7.4
Oyster Bay, Center Island Point i/	14.8	3.6	7.3
Huntington, Huntington Harbor, town dock on i/	13.8	3.7	7.4
Northport, Northport Harbor, town dock on i/	14.6	3.6	7.3
Eatons Neck Point i/	15.2	3.6	7.3
Kings Park, mouth of Sunken Meadow Creek i/	12.2	3.5	7.0
Setauket, Old Field Point i/	11.4	3.2	6.5
Port Jefferson, Port Jefferson Harbor, head of i/	11.4	3.2	6.5
Wading River, mouth of small creek between Herod Point and Roanoke Point i/	12.0	2.8	5.5
Mattituck Inlet, near breakwater i/	10.0	2.2	4.5
Southhold, Horton Point i/	10.1	2.0	4.0

a Furnished by U. S. Coast and Geodetic Survey.
d Measured in stilling well or similar enclosure.
e Furnished by Corps of Engineers, U. S. Army, Providence, R. I.
f Measured in the open; subject to wave action.
i Furnished by Corps of Engineers, U. S. Army, New York, N. Y.
j At 8 p.m. (normal high tide about 9:35 p.m.) measured in stilling well.

Table 20.--Storm wave elevations, in feet--Continued

Location	Height above mean low water	Adjustment to mean sea level (subtract)	Adjustment to mean high water (subtract)
	(feet)	(feet)	(feet)
New York--Continued			
Orient, Orient Point 1/	10.7	1.2	2.5
Greenport, Greenport Harbor 1/	7.6	1.2	2.4
Great Hog Neck, Cedar Beach Point 1/	8.6	1.2	2.3
South Jamesport 1/	8.2	1.4	2.7
Riverhead 1/	7.6	1.4	2.7
Hog Creek Point, east of Three Mile Harbor 1/	9.3	1.2	2.4
Montauk Point, drift line 1/	16.7	1.0	2.0
Mecox Bay, west of Southhampton 1/	9.6	k0	k0
Southhampton, head of Heady Creek 1/	5.8	k0	k0
Southhampton, Shinnecock Indian Reservation, south shore of 1/	6.3	k0	k0
Hampton Bays, south end of Shinnecock Canal near Canoe Place 1/	7.2	k0	k0
Hampton Bays, Ponquogue Point bridge 1/	4.2	k0	k0
Quogue Canal, westerly end 1/	5.3	k0	k0
West Hampton Beach, Potunk Point (Main St.) bridge on Quantuck Canal 1/	11.9	k0	k0
East Moriches, head of Hart Cove 1/	15.7	k0	k0
East Moriches, outer end of Hart Cove 1/	13.5	k0	k0
Mastic Beach, Forge Point 1/	9.8	k0	k0
Mastic Beach, Smith Point 1/	7.6	.4	.7
Patchogue, north end of breakwater 1/	5.2	.4	.7
Nicholl Point, Heckscher State Park 1/	3.9	.3	.6
Biltmore Shores, South Oyster Bay, south shore of 1/	4.9	.7	1.4
Rockaway Beach, at Beach 80th St. 1/	9.0	2.3	4.6
Rockaway Beach, Ostend Baths 1/	9.5	2.3	4.6
Rockaway Beach, Riis Park Coast Guard Station 1/	14.3	2.3	4.6
Rockaway Beach at Beach Channel Drive and Cross Bay Blvd. 1/	9.6	2.6	5.1
Broad Channel, West End, 10th St. 1/	9.4	2.6	5.1
Head of Jamaica Bay, Hook Creek Canal 1/	10.2	2.7	5.4
Fort Hamilton, automatic tide gage on government dock 1/	8.8	2.4	4.7
Spuyten Duyvil, automatic tide gage on Harlem River, at N. Y. Central R.R. bridge 1/	7.2	1.8	3.6
Battery Park, automatic tide gage on ferry slip west of 1/	8.6	2.2	4.4
Battery Park a/	m8.7	2.3	4.4
New Jersey			
Passaic, Gregory Avenue Bridge on Passaic River 1/	9.4	1.6	3.3
Perth Amboy, automatic tide gage 1/	9.2	2.6	5.2
Atlantic Highlands, mouth of Shrewsbury River 1/	8.7	2.4	4.7
Sandy Hook, automatic tide gage at government dock 1/	8.2	2.3	4.6
Sandy Hook a/	n7.7	2.3	4.6

a Furnished by U. S. Coast and Geodetic Survey.
1 Furnished by Corps of Engineers, U. S. Army, New York, N. Y.
k Normal tidal variation slight, if any, prior to hurricane.
m At 4:30 p.m. Normal high tide 6:20 p.m. Measured in stilling well.
n At 4 p.m. Normal high tide at 5:38 p.m. Measured in stilling well.

stations at Sandy Hook, N. J., New York, N. Y., and Boston, Mass., which are presented in table 21 together with a partial record registered at the river-measurement station of the Geological Survey on Mill Neck Creek at Mill Neck, N. Y., near its point of discharge into Long Island Sound.

Table 21.--Heights of storm wave above mean low water, in feet, at indicated time, September 21, 22, 1938. a/

Hour	Sandy Hook, N. J.		The Battery, N. Y.		Boston, Mass.		Mill Neck, N. Y.
	September		September		September		September
	21	22	21	22	21	22	21
1 a.m.	1.3	-1.6	0.9	-0.7	1.0	2.8	-
2	2.8	-1.2	2.4	- .6	- .6	- .1	-
3	3.9	- .1	3.7	- .4	- .1	-1.6	-
4	5.1	1.9	4.8	2.1	1.6	- .4	-
5	5.6	5.0	5.2	4.4	3.8	.8	-
6	5.3	5.7	5.3	5.6	6.3	3.0	-
7	4.4	5.2	4.8	5.6	8.7	6.2	-
8	3.4	3.8	4.0	4.7	10.3	9.2	-
9	2.5	2.5	2.9	3.6	10.5	10.6	-
10	1.6	1.1	2.0	2.0	9.2	10.6	-
11	1.0	.3	1.2	1.1	7.2	9.2	-
12 m.	1.0	0	.5	.3	5.1	7.1	-
1 p.m.	1.8	- .1	.6	0	2.6	4.4	-
2	3.5	.4	1.8	0	.7	1.4	-
3	5.9	1.8	4.4	1.0	.6	- .8	-
4	7.8	3.3	8.1	3.0	3.0	-1.2	-
5	5.1	4.8	6.7	4.5	5.3	.5	-
6	3.0	5.7	3.8	5.4	7.0	2.7	-
7	.8	5.8	3.3	5.7	8.8	5.6	11.6
8	.3	4.7	2.4	5.4	10.6	8.3	15.1
9	2.5	3.2	2.3	4.4	11.0	10.4	13.2
10	2.6	1.9	4.0	3.0	10.0	11.0	12.4
11	.8	.8	1.6	1.7	8.2	10.0	12.1
12	-1.2	0	- .1	.7	6.1	8.0	12.0

a Data furnished by U. S. Coast and Geodetic Survey except that for the U. S. Geological Survey gaging station on Mill Neck Creek.

With respect to the height of the storm wave at stations of the Coast and Geodetic Survey, the director of that Survey states as follows:23/

The extreme height of water in the hurricane of September 21 at the Boston tide station, the most easterly station considered, was 1.9 feet above mean high water. This is only slightly above normal and has been exceeded frequently in the past. At Sandy Hook, most westerly of the tidal stations in the area, the tide reported on September 21 was 3.1 feet above mean high water. This is considerably above normal but is not the highest of record. At Battery Place, New York, N. Y., it was 4.3 feet. At all intermediate stations the observed heights were the greatest of which the Coast and Geodetic Survey has record. These measurements were: at Willets Point, 10 feet above mean high water; at Stratford, 5.6 feet; at New London, 8.6 feet; at Newport, 10.4 feet; at Woods Hole, 8 feet; and at Providence, 13 feet above mean high water.

The following discussion of the storm wave and associated tidal events is based largely on data and information furnished by the Coast and Geodetic Survey and by the Corps of Engineers, United States Army, whose cooperation is hereby acknowledged.

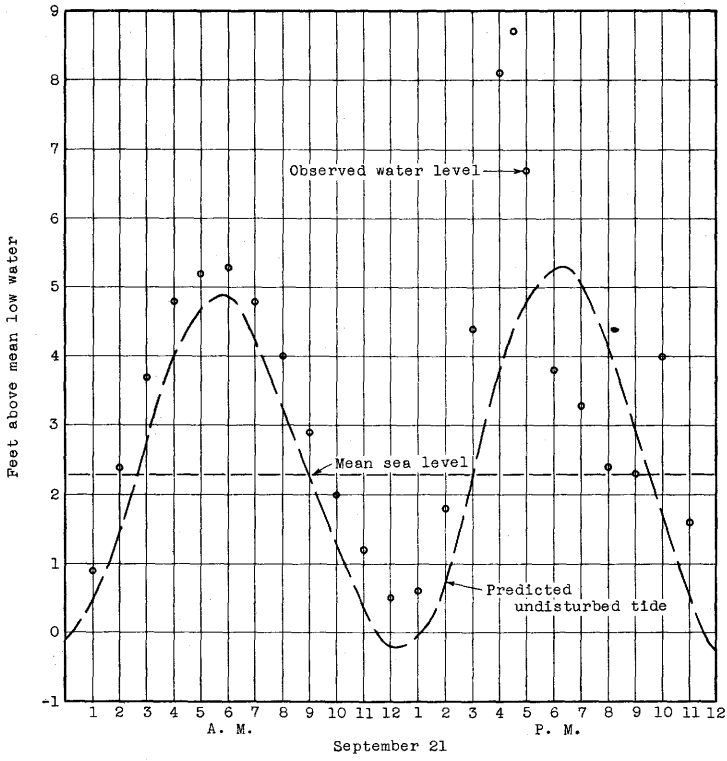
23/ Colbert, L. O., The Coast and Geodetic Survey in relation to our beaches: Shore and Beach, vol. 7, no. 2, pp. 54-56, April 1939.

The time at which the storm wave reached its maximum height is not definitely known except at the five places indicated in table 20. Col. C. L. Hall, of the Corps of Engineers, United States Army, estimated that the storm wave reached the southern Long Island coast at 2:30 p.m., preceding the predicted high tide by about 3 hours. At the places indicated in the table the maximum stage was reached before the time of normal high water, and the storm wave was superimposed upon the rising tide. At Boston, where the storm wave was not exceptional, the time of high water was advanced by about half an hour. At other places the storm wave crest was reached 1½ to 2½ hours before the time of normal high water. Doubtless the fact that the storm wave occurred before the normal tide reached its peak caused the resultant heights to be slightly lower than they might otherwise have been although the timing was far from favorable. Moreover, comparison of the predicted high tide for the afternoon of September 21 with the mean high tide level of record at the Coast and Geodetic Survey tide stations listed in table 20 gives an approximate measure of the rise attributable to the prevailing astronomical conditions, which was about 1 foot.

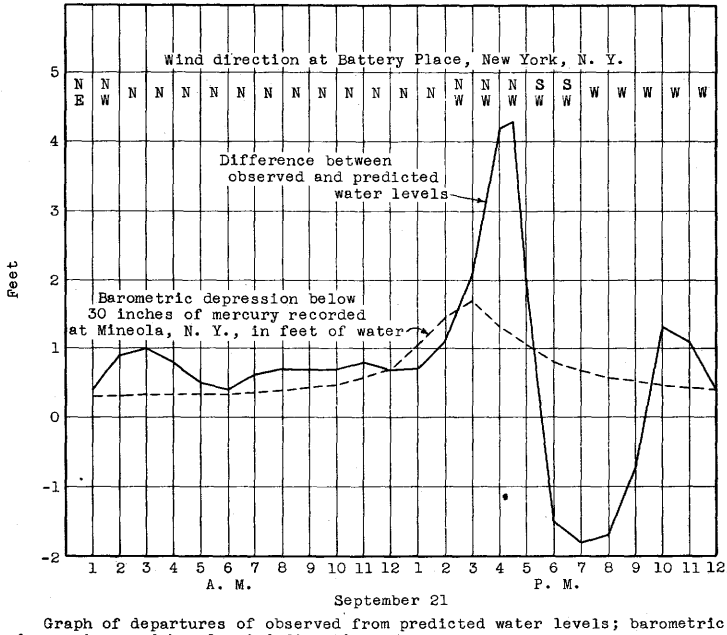
The upper part of figure 56 shows a graph of water levels observed at The Battery, New York, N. Y., together with a graph of the predicted undisturbed tide as derived from data furnished by the Coast and Geodetic Survey.

Beginning soon after low water at about noon September 21, the water level rose rapidly to a peak of 8.7 feet above mean low water at 4:30 p.m., followed by equally rapid recession to a trough below the normal undisturbed tidal level from 8 to 9 p.m. The harbor level again rose to a second but lower peak at 10 p.m., followed by a return to nearly normal tidal regimen on September 22. The records of water level at Sandy Hook, N. J., and in an observation well of the Geological Survey at Rockaway Beach, N. Y., shows similar behavior. These oscillations are portrayed on the graph of the difference between the observed and the predicted water levels at New York shown in the lower part of figure 56. A graph of the barometric lowering, in feet of water, is also shown together with notations of the hourly wind direction at New York.

The departures of the height of the sea from normal tidal regimen shown in figure 56 are probably attributable to three factors, namely, variations in the local barometric pressure gradients produced by the hurricane, the tractive force of the hurricane winds, and the complex effects of shore-line configuration. During the first 14 hours of



Graph of observed and predicted water levels at The Battery, New York, N. Y.



Graph of departures of observed from predicted water levels; barometric depression; and hourly wind direction.

Figure 56.--Study of water levels at The Battery, New York, N. Y., September 21, 1938.

September 21 the observed water levels were above the normal by an amount approximately equivalent to the reduction of the barometric pressure below 30 inches of mercury. After 2 p.m. water levels rose to a stage greatly above that attributable to barometric effects. The maximum depression at New York was reached at 2:43 p.m., but the peak stage did not occur until 4:30 p.m. It is probable that the storm-wave peak at New York was the effect of the hurricane winds upon the water in the open sea to the east, where the storm wave reached its peak nearly simultaneously with the passage of the hurricane. The peak at Sandy Hook, N. J., and at New York Harbor, respectively, occurred about 1½ and 2 hours later than the estimated time of storm-wave crest on the southern Long Island coast. In contrast, high tide at these places generally occurs, respectively, only about 15 and 45 minutes after high tide on the southern Long Island coast. These observations suggest that the storm wave in New York harbor was a reflection of the wave that the hurricane had built on the Long Island shore. The recession and subsequent rise shown in figure 56, that followed the storm-wave peak at New York probably resulted from oscillations set up by the release of the water piled up on the southern Long Island shore. The occurrence of the second peak at 10 p.m. in New York harbor was further complicated by the particular configuration of that harbor and by the inflow of water into the harbor through East River from the westerly end of Long Island Sound, where it had crested at about 8 p.m.

The actual mean water level at The Battery averaged 0.65 foot above the average level of the predicted undisturbed tidal regimen on September 21. On the same day the barometer at Mineola, N. Y., averaged 0.64 foot of water below a mean of 30 inches of mercury, which is close to the September normal atmospheric pressure at sea level in this locality, indicating that the effective rise in the harbor on September 21 was nearly equivalent to the net barometric effect.

A major part of the storm wave impinged on the southern New England coast at about 4:45 p.m. as observed at New London, Conn. The force of the wave was abated by escaping westward through Long Island Sound, where it reached the Geological Survey gaging station on Mill Neck Creek at Mill Neck, N. Y., at 8 p.m. As the wave was constricted in passing through the narrowing Long Island Sound towards the East River, it reached increasing heights, so that at Willets Point, N. Y., the Coast and Geodetic Survey reported a wave crest 10 feet above mean high water. The constrictive effects of Narragansett Bay and Providence River aided in producing a wave crest 13 feet above mean high tide at Providence, R. I.

The coastal aspects of the September 1938 hurricane are further described by Col. C. L. Hall[24/], of the Corps of Engineers, United States Army.

GROUND-WATER RECHARGE ON LONG ISLAND

By R. M. Leggette

Introduction

The hurricane storm of September 1938 was a major factor in producing an exceptionally high water table in the region that it affected. For example, on most parts of Long Island, N. Y., for which records are available, the ground-water levels after the storm were about as high as they had been at any time during the preceding 25 years, although during all that period the region has been subjected to pumping at an average rate of more than 100,000,000 gallons a day. Only in the severely over-pumped area in the Borough of Brooklyn was the recharge insufficient to offset the progressive decline that had occurred.

The records of ground-water levels collected in the western part of Long Island, N. Y., are the most adequate in the region affected by the hurricane. Since about 1932 the Geological Survey, in cooperation with the New York State Water Power and Control Commission and with Nassau and Suffolk Counties, has been carrying on an investigation of the ground-water conditions on Long Island. A part of this investigation has consisted of regular periodic measurements of ground-water levels, chiefly on the western half of the Island. These records form the basis for the analysis here given of the ground-water recharge that took place as a result of the September hurricane storm.

Much of Long Island consists of a gently southward sloping glacial outwash plain, the surface of which is sandy and of relatively high permeability. This plain is bordered on the north by a glacial terminal moraine that extends approximately parallel to the long axis of the Island. The area north of the terminal moraine is considerably smaller than the area south of it. North of the terminal moraine the surface of the Island is composed chiefly of glacial till. In the area north of the outwash plain the water table is more than 100 feet below the surface

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24/ Hall, C. L., The 1938 hurricane and its effect on Long Island beach-protection structures: Civil Eng., vol. 9, no. 3, pp. 169-172, March, 1939.

in some places, and perched water-table conditions commonly occur above the main water table. This produces much more complicated and irregular ground-water conditions than those that occur in the southern parts of the Island. For this reason, and because most of the water-table observation wells are located in the southern half of the Island, this chapter deals only with that part of the Island lying south of the terminal moraine.

The water table underlying the outwash plain slopes southward and lies from a few feet to about 40 feet below the land surface. Recharge of these shallow water-bearing beds takes place by rainfall penetration through the permeable sand and gravel. As pointed out in another part of this section, only a small part of the rain that falls on the Island is disposed of as storm run-off. Underlying these relatively shallow water-bearing beds, there is in most places a considerable thickness of fine sand and clay of Cretaceous age beneath which an artesian aquifer is commonly encountered. This aquifer, known as the Lloyd sand, furnishes the water supply for many communities on Long Island. The Lloyd sand is not exposed at the surface and recharge to it presumably takes place by movement of water from the overlying formations in areas where there is no clay immediately above the aquifer.

Rainfall and fluctuations in ground-water levels

During the latter parts of June and July 1938 as well as during the following September, there were rains on many parts of Long Island that resulted in a rise of the water table. The recharge from the June and July storms produced antecedent conditions that together with the September storm resulted in the abnormally high water table. For this reason and for the purpose of comparison, data is presented for each of the three storms.

Table 22 gives the daily precipitation during each of three storms at four stations on Long Island.

During 1938, water-level observations were being made in many wells on Long Island that end in the shallow water-bearing material in which water-table conditions exist. The location of the wells for which data are here given is shown in figure 57. Water-level observations were made in each of these wells once a week. The water-level measurements from

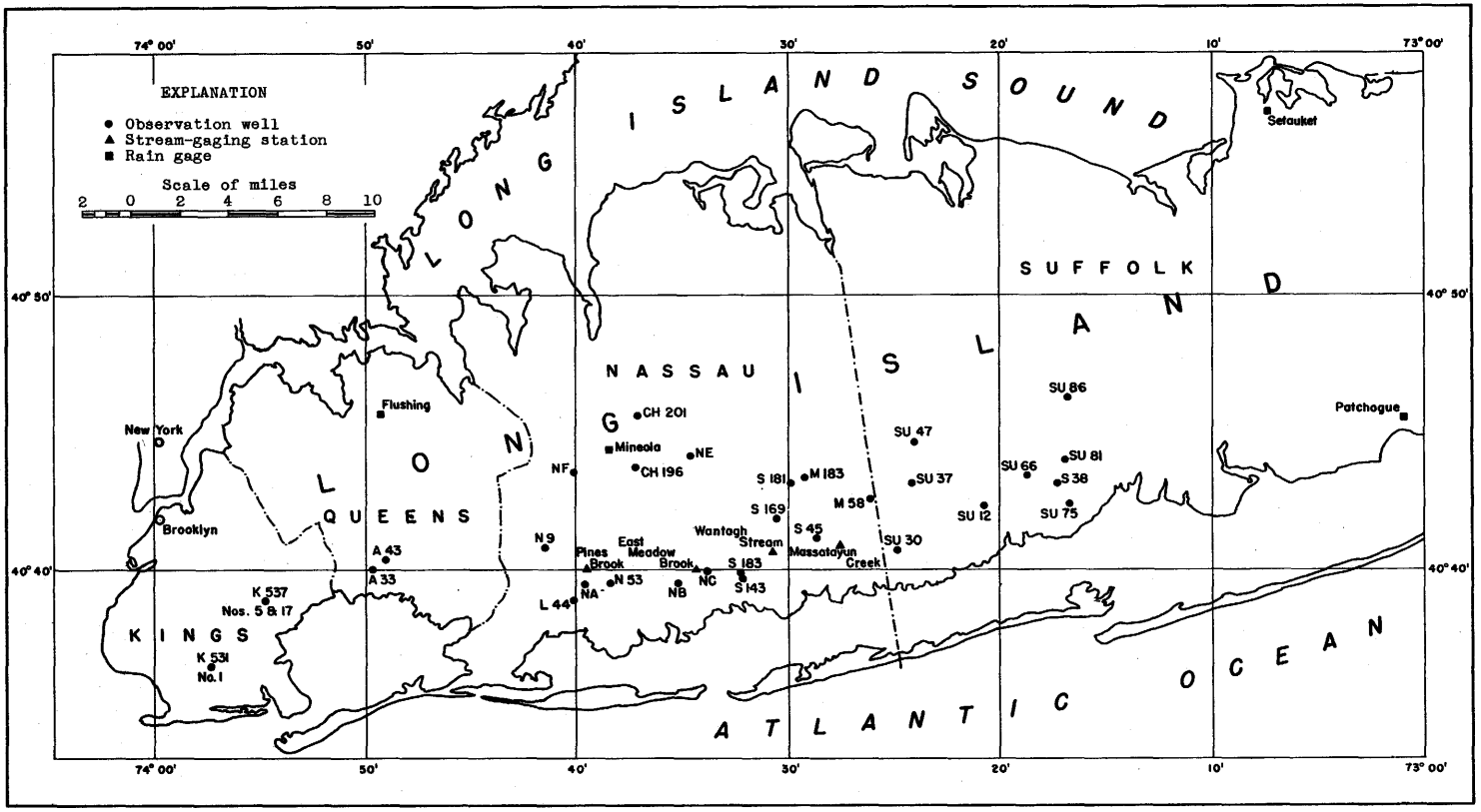

Figure 57.--Index map of the western part of Long Island showing location of observation wells, stream-gaging stations, and rain gages.

about May 28 to November 4 are given in table 23, in which the wells are listed in the same order in which they later appear in table 24 on page 538. Other measurements in these wells are published annually in Geological Survey Water-Supply Papers entitled "Water levels and artesian pressure in observation wells in the United States".[25]

Table 22.--Daily precipitation, in inches, during three storms in 1938 at four stations on western Long Island.

Date 1938	Station				Average of four stations
	Patchogue	Setauket	Mineola	Flushing	
June 26	0	0.21	0.69	0.73	0.41
27	2.07	1.81	1.65	0.82	1.59
28	2.46	2.34	1.31	1.27	1.85
Total for 3 days	4.53	4.36	3.65	2.82	3.84
July 18	1.07	0.68	0.34	0.07	0.54
19	.06	0	.14	.19	.10
20	2.85	1.75	3.17	.90	2.17
21	.25	1.16	.84	.70	.74
22	.40	.56	.33	.23	.38
23	.53	.06	1.69	2.40	1.17
24	1.14	.97	.92	.33	.84
Total for 7 days	6.30	5.18	7.43	4.82	5.93
Sept. 17	0.88	0.48	0.14	0.18	0.42
18	.52	.55	3.10	1.58	1.44
19	2.00	1.65	1.02	.76	1.36
20	3.69	3.98	2.34	1.88	2.97
21	4.22	4.25	4.40	4.27	4.29
Total for 5 days	11.31	10.91	11.00	8.67	10.47

Figure 58 shows the relation between precipitation and average ground-water levels on Long Island since 1932. Most of the observation wells used in determining average ground-water level are in Nassau County, the remainder being in Queens and western Suffolk Counties. Records of ground-water levels in a few observation wells are available as far back as 1903, although there are several breaks in the record. There are not sufficient data for most of these earlier years to provide a basis for determining average water levels. However, the data for 1913 and 1914 are adequate for this purpose. The highest average water level in 1913 was essentially the same as the average water level on September 30, 1938. The general upward trend of the water levels during the first 4 months of 1939 (see fig. 58) was in part the result of abnormal precipitation during this period and in part because of the favorable conditions for recharge in

25/ The records for 1935, 1936, 1937, and 1938 are published in Water-Supply Papers 777, 817, 840, and 845, respectively.

Table 23.- Water levels in observation wells on Long Island, N. Y., in feet, with reference to mean sea level, 1938

Well N-9

Date	Water level	Date	Water level	Date	Water level
May 28	21.93	July 23	22.51	Sept. 16	22.05
June 4	21.86	29	22.77	23	23.62
11	21.84	Aug. 5	22.57	30	23.21
18	22.10	12	22.57	Oct. 7	22.96
25	21.98	19	22.34	14	22.74
July 2	22.31	26	22.18	21	22.64
9	22.20	Sept. 2	22.10	28	22.49
16	22.18	9	21.99	Nov. 4	22.37

Test well SU-66

May 28	21.71	July 22	22.45	Sept. 16	21.77
June 4	21.61	29	22.82	23	23.30
11	21.59	Aug. 5	22.57	30	23.06
17	21.59	12	22.52	Oct. 7	22.69
24	21.59	19	22.26	14	22.48
July 1	22.48	26	22.08	21	22.32
8	22.25	Sept. 2	21.98	28	22.20
15	22.11	9	21.85	Nov. 4	22.07

Test well SU-30

May 28	10.80	July 22	11.14	Sept. 16	10.66
June 4	10.74	29	11.25	23	11.47
11	10.73	Aug. 5	11.09	30	11.29
17	10.72	12	11.08	Oct. 7	11.23
24	10.66	19	10.92	14	11.03
July 1	11.15	26	10.82	21	10.99
8	10.99	Sept. 2	10.75	28	10.96
15	10.90	9	10.67	Nov. 4	10.91

Test well SU-75

May 28	10.83	July 22	11.91	Sept. 16	10.40
June 4	10.55	29	11.77	23	12.94
11	10.51	Aug. 5	11.08	30	11.89
17	10.53	12	11.73	Oct. 7	11.53
24	10.55	19	11.02	14	11.14
July 1	11.93	26	10.64	21	10.99
8	11.02	Sept. 2	10.58	28	10.98
15	10.83	9	10.37	Nov. 4	10.88

Test well SU-12

May 28	15.98	July 22	16.77	Sept. 16	15.87
June 4	15.85	29	17.47	23	18.01
11	15.82	Aug. 5	17.08	30	17.58
17	15.86	12	16.99	Oct. 7	17.25
24	16.11	19	16.64	14	16.95
July 1	17.14	26	16.37	21	16.70
8	16.78	Sept. 2	16.20	28	16.51
15	16.52	9	16.01	Nov. 4	16.32

Test well S-169

May 28	34.60	July 22	35.27	Sept. 16	34.74
June 4	34.38	29	35.54	23	36.00
11	34.37	Aug. 5	35.34	30	35.78
17	34.46	12	35.42	Oct. 7	35.59
24	34.55	19	35.15	14	35.41
July 1	35.10	26	34.97	21	35.36
8	34.91	Sept. 2	34.87	28	35.24
15	34.92	9	34.74	Nov. 4	35.12

Table 23.- Water levels in observation wells on Long Island, N. Y., in feet, with reference to mean sea level, 1938--Continued

Test well S-183

Date	Water level	Date	Water level	Date	Water level
May 28	6.90	July 22	7.19	Sept. 16	5.57
June 4	6.54	29	7.71	23	8.30
11	6.44	Aug. 5	7.02	30	7.58
17	6.85	12	6.97	Oct. 7	7.48
24	6.59	19	6.66	14	7.69
July 1	7.74	26	6.35	21	7.88
8	6.98	Sept. 2	6.04	28	7.98
15	6.64	9	5.75	Nov. 4	8.00

Test well S-143

Date	Water level	Date	Water level	Date	Water level
May 28	6.16	July 22	6.62	Sept. 16	5.05
June 4	5.90	29	7.08	23	7.81
11	5.75	Aug. 5	6.38	30	6.86
17	6.28	12	6.34	Oct. 7	6.67
24	6.01	19	5.94	14	6.67
July 1	7.16	26	5.67	21	6.81
8	6.36	Sept. 2	5.44	28	6.91
15	6.03	9	5.18	Nov. 4	6.91

Test well NE

Date	Water level	Date	Water level	Date	Water level
May 28	66.90	July 22	67.45	Sept. 16	68.09
June 4	66.82	29	68.26	23	69.97
11	66.75	Aug. 5	68.48	30	70.11
17	66.72	12	68.66	Oct. 7	69.99
24	66.65	19	68.49	14	69.86
July 1	66.86	26	68.36	21	69.77
8	66.80	Sept. 2	68.24	28	69.60
15	66.82	9	68.12	Nov. 4	69.43

Test well NC

Date	Water level	Date	Water level	Date	Water level
May 28	13.00	July 22	13.58	Sept. 16	12.25
June 4	12.92	29	14.21	23	14.73
11	12.88	Aug. 5	13.79	30	14.23
17	13.36	12	13.67	Oct. 7	13.84
24	13.32	19	13.29	14	13.53
July 1	14.19	26	12.94	21	13.29
8	13.68	Sept. 2	12.66	28	13.06
15	13.32	9	12.40	Nov. 4	12.91

Test well M-58

Date	Water level	Date	Water level	Date	Water level
May 28	37.12	July 22	38.14	Sept. 16	37.39
June 4	37.09	29	38.99	23	39.39
11	37.06	Aug. 5	38.56	30	38.88
17	36.97	12	38.35	Oct. 7	38.50
24	37.14	19	38.12	14	38.27
July 1	38.34	26	37.90	21	38.10
8	38.05	Sept. 2	37.73	28	37.94
15	37.82	9	37.54	Nov. 4	37.80

Well S-38

Date	Water level	Date	Water level	Date	Water level
May 28	21.97	July 22	22.81	Sept. 16	22.28
June 4	21.80	29	23.99	23	24.56
11	21.70	Aug. 5	23.60	30	24.05
17	21.69	12	23.43	Oct. 7	23.75
24	21.80	19	23.29	14	23.55
July 1	23.30	26	23.04	21	23.37
8	23.07	Sept. 2	22.79	28	23.17
15	22.81	9	22.52	Nov. 4	22.95

Table 23.- Water levels in observation wells on Long Island, N. Y., in feet, with reference to mean sea level, 1938--Continued

Test well SU-81

Date	Water level	Date	Water level	Date	Water level
May 28	28.10	July 22	29.25	Sept. 16	29.31
June 4	28.08	29	30.50	23	30.71
11	28.00	Aug. 5	30.39	30	31.18
17	27.99	12	30.24	Oct. 7	30.88
24	28.11	19	30.08	14	30.70
July 1	29.26	26	29.92	21	30.54
8	29.58	Sept. 2	29.73	28	30.35
15	29.39	9	29.51	Nov. 4	30.11

Well N-53

May 28	13.97	July 22	14.59	Sept. 16	14.32
June 4	13.86	29	15.21	23	15.80
11	13.83	Aug. 5	15.24	30	15.94
17	14.06	12	15.23	Oct. 7	15.66
24	14.15	19	14.97	14	15.50
July 1	14.32	26	14.81	21	15.34
8	14.42	Sept. 2	14.64	28	15.18
15	14.39	9	14.46	Nov. 4	14.98

Test well S-45

May 28	20.79	July 22	21.22	Sept. 16	20.20
June 4	20.71	29	22.51	23	21.12
11	20.64	Aug. 5	22.06	30	21.51
17	20.53	12	21.74	Oct. 7	21.22
24	20.53	19	21.43	14	21.07
July 1	21.75	26	21.09	21	20.97
8	21.59	Sept. 2	20.75	28	20.87
15	21.27	9	20.45	Nov. 4	20.78

Test well NB

May 28	11.31	July 22	11.70	Sept. 16	11.14
June 4	11.25	29	12.20	23	12.20
11	11.16	Aug. 5	12.01	30	12.45
17	11.35	12	11.97	Oct. 7	12.23
24	11.41	19	11.78	14	12.11
July 1	11.68	26	11.61	21	11.96
8	11.76	Sept. 2	11.46	28	11.82
15	11.57	9	11.28	Nov. 4	11.66

Test well NA

May 28	7.53	July 22	8.24	Sept. 16	7.86
June 4	7.58	29	8.97	23	9.77
11	7.49	Aug. 5	8.62	30	9.45
17	7.88	12	8.70	Oct. 7	9.21
24	7.87	19	8.39	14	9.00
July 1	8.12	26	8.17	21	8.85
8	7.86	Sept. 2	8.06	28	8.72
15	7.81	9	7.91	Nov. 4	8.58

Test well SU-37

May 28	42.03	July 22	43.72	Sept. 16	43.84
June 4	41.96	29	45.42	23	46.34
11	41.94	Aug. 5	45.16	30	46.01
17	41.83	12	44.98	Oct. 7	45.67
24	41.94	19	44.77	14	45.43
July 1	42.43	26	44.55	21	45.21
8	43.71	Sept. 2	44.35	28	44.97
15	43.53	9	44.07	Nov. 4	44.71

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Table 23.- Water levels in observation wells on Long Island, N. Y., in feet, with reference to mean sea level, 1938--Continued

Test well S-181

Date	Water level	Date	Water level	Date	Water level
May 28	50.03	July 22	50.32	Sept. 16	51.46
June 4	49.96	29	51.11	23	52.22
11	49.89	Aug. 5	51.39	30	52.41
17	49.85	12	51.63	Oct. 7	52.50
24	49.81	19	51.60	14	52.47
July 1	49.99	26	51.52	21	52.40
8	50.09	Sept. 2	51.42	28	52.26
15	50.19	9	51.31	Nov. 4	52.10

Test well L-44

May 28	7.33	July 22	7.98	Sept. 16	7.26
June 4	7.21	29	9.16	23	9.88
11	7.13	Aug. 5	8.80	30	9.82
17	7.50	12	8.70	Oct. 7	9.43
24	7.57	19	8.34	14	9.13
July 1	7.86	26	8.01	21	8.88
8	7.83	Sept. 2	7.70	28	8.62
15	7.63	9	7.42	Nov. 4	8.39

Test well A-33

May 28	1.75	July 23	2.12	Sept. 16	1.82
June 4	1.76	29	2.72	23	4.04
11	1.79	Aug. 5	2.32	30	3.27
18	1.89	12	2.51	Oct. 7	3.16
25	1.91	19	2.07	14	2.83
July 2	2.49	26	2.20	21	2.77
9	2.06	Sept. 2	1.86	28	2.60
16	1.99	9	1.94	Nov. 4	2.35

Well K-535 No. 1

May 28	1.52	July 23	1.85	Sept. 16	2.10
June 4	1.56	29	2.26	23	2.64
11	1.55	Aug. 5	2.34	30	2.81
18	1.56	12	2.36	Oct. 7	2.73
25	1.54	19	2.34	14	2.67
July 2	1.70	26	2.28	21	2.59
9	1.75	Sept. 2	2.21	28	2.51
16	1.77	9	2.14	Nov. 4	2.45

Test well CH-196

May 28	60.74	July 22	61.57	Sept. 16	62.12
June 4	60.71	29	62.82	23	64.02
11	60.66	Aug. 5	62.88	30	64.51
17	60.63	12	63.07	Oct. 7	64.46
24	60.60	19	62.92	14	64.31
July 1	60.59	26	62.71	21	64.16
9	60.71	Sept. 2	62.49	28	63.98
15	60.69	9	62.28	Nov. 4	63.77

Test well M-183

May 28	51.61	July 22	51.90	Sept. 16	52.81
June 4	51.57	29	52.56	23	53.31
11	51.50	Aug. 5	52.93	30	54.05
17	51.44	12	53.11	Oct. 7	54.11
24	51.40	19	53.18	14	54.06
July 1	51.48	26	53.13	21	53.97
8	51.67	Sept. 2	53.01	28	53.82
15	51.79	9	52.90	Nov. 4	53.68

Table 23.- Water levels in observation wells on Long Island, N. Y., in feet, with reference to mean sea level, 1938--Continued

Date		Water level	Date		Water level	Date		Water level
Well K-537 No. 5								
May	28	-6.06	July	23	-5.72	Sept.	16	-5.47
June	4	-6.08		29	-5.37		23	-4.94
	11	-6.11	Aug.	5	-5.14		30	-4.77
	18	-6.03		12	-5.03	Oct.	7	-4.84
	25	-6.06		19	-5.03		14	-4.95
July	2	-5.87		26	-5.11		21	-5.07
	9	-5.80	Sept.	2	-5.22		28	-5.19
	16	-5.69		9	-5.34	Nov.	4	-5.30
Well K-537 No. 17								
May	28	-5.99	July	23	-5.65	Sept.	16	-5.40
June	4	-6.01		29	-5.22		23	-4.81
	11	-6.04	Aug.	5	-4.98		30	-4.63
	18	-5.95		12	-4.90	Oct.	7	-4.74
	25	-5.98		19	-4.91		14	-4.87
July	2	-5.77		26	-4.91		21	-4.99
	9	-5.59	Sept.	2	-5.13		28	-5.11
	16	-5.70		9	-5.27	Nov.	4	-5.23
Test well A-43								
May	28	4.19	July	23	4.71	Sept.	16	4.82
June	4	4.16		29	5.11		23	5.56
	11	4.12	Aug.	5	5.30		30	6.22
	18	4.40		12	5.42	Oct.	7	6.37
	25	4.40		19	5.37		14	6.34
July	2	4.56		26	5.27		21	6.17
	9	4.65	Sept.	2	5.05		28	6.05
	16	4.68		9	4.95	Nov.	4	5.88
Test well NF								
May	28	57.14	July	22	57.27	Sept.	16	58.36
June	4	57.04		29	57.97		23	59.71
	11	56.98	Aug.	5	58.44		30	60.83
	17	56.95		12	58.64	Oct.	7	60.79
	24	56.85		19	58.68		14	60.70
July	1	57.06		26	58.62		21	60.64
	8	57.02	Sept.	2	58.52		28	60.47
	15	57.00		9	58.42	Nov.	4	60.30
Test well SU-47								
May	28	55.58	July	22	56.40	Sept.	16	57.33
June	4	55.45		29	57.06		23	57.88
	11	55.40	Aug.	5	57.86		30	58.95
	17	55.37		12	58.05	Oct.	7	59.14
	24	55.32		19	57.96		14	59.04
July	1	55.41		26	57.82		21	58.92
	8	55.77	Sept.	2	57.66		28	58.71
	15	56.17		9	57.49	Nov.	4	58.48
Test well CH-201								
May	28	75.84	July	23	75.83	Sept.	17	76.58
June	4	75.84		30	76.22		24	77.29
	11	75.77	Aug.	6	76.47	Oct.	1	77.93
	18	75.75		13	76.48		8	78.13
	25	75.72		20	76.64		15	78.24
July	2	75.79		27	76.66		22	78.27
	9	75.74	Sept.	3	76.64		29	78.32
	16	75.71		10	76.58	Nov.	5	78.30
Test well SU-86								
May	28	49.54	July	22	50.38	Sept.	16	52.34
June	4	49.56		29	50.70		23	52.36
	11	49.56	Aug.	5	51.36		30	53.11
	17	49.59		12	51.95	Oct.	7	53.59
	24	49.60		19	52.23		14	53.84
July	1	49.68		26	52.37		21	53.89
	8	49.75	Sept.	2	52.39		28	53.76
	15	50.08		9	52.35	Nov.	4	53.60

Table 24.- Summary of observation well data and approximate rise of water table

Well No.	Depth of well below measuring point (feet)	Altitude of measuring point (feet)		Water level Sept. 16, 1938 (feet)	
		Above mean sea level	With reference to land surface	Below measuring point	With reference to mean sea level
N-9	138	24.73	+1.5	2.68	+22.05
Test SU-66	12.3	24.67	+ .6	2.90	+21.77
Test SU-30	13.6	14.86	+ .2	4.20	+10.66
Test SU-75	15.4	15.85	+ .7	5.45	+10.40
Test SU-12	13.7	21.69	+ .3	5.82	+15.87
Test S-169	17.8	40.96	+ .7	6.22	+34.74
Test S-183	26.1	13.72	+ .9	8.15	+ 5.57
Test S-143	17.7	13.44	+ .9	8.39	+ 5.05
Test NE	42.8	76.49	+ .2	8.40	+68.09
Test NC	17.1	21.12	+ .3	8.87	+12.25
Test M-58	21.8	48.19	+1.0	10.80	+37.39
S-38	200	31.68	-1.2	9.40	+22.28
Test SU-81	27.6	41.49	+ .6	12.18	+29.31
N-53	46.3	21.21	-5	6.89	+14.32
Test S-45	22.6	32.72	0	12.52	+20.20
Test NB	27.5	23.76	+ .1	12.62	+11.14
Test NA	27.1	20.87	+ .2	13.01	+ 7.86
Test SU-37	33.0	57.13	+ .3	13.29	+43.84
Test S-181	25.4	66.41	+1.3	14.95	+51.46
Test L-44	26.4	21.87	+ .2	14.61	+ 7.26
Test A-33	27.7	17.29	+1.0	15.47	+ 1.82
K 535 No. 1	83.5	9.14	-9	7.04	+ 2.10
Test CH-196	20.3	79.57	+ .4	17.45	+62.12
Test M-183	47.9	78.37	+ .4	25.56	+52.81
K 537 No. 5	154.7	8.13	-13	13.60	- 5.47
K 537 No. 17	66.5	13.30	-8	18.70	- 5.40
Test A-43	37.5	31.55	0	26.73	+ 4.82
Test NF	48.8	86.74	+ .2	28.38	+58.36
Test SU-47	39.9	86.38	+ .2	29.05	+57.33
Test CH-201	43.3	112.53	+ .4	b/ 35.95	b/ +76.58
Test SU-86	48.2	90.10	+ .4	37.76	+52.34
Average					

a Estimated.
b On Sept. 17, 1938.

on Long Island, N. Y., following storms in June, July, and September, 1938

Storm of June 26-28		Storm of July 18-24		Storm of Sept. 17-21		
Net rise of water level (feet)	No. of weeks during which water level rose	Net rise of water level (feet)	No. of weeks during which water level rose	Net rise of water level (feet)	No. of weeks during which water level rose	Well No.
0.33	1	0.59	2	1.57	1	N-9
.89	1	.71	2	1.53	1	Test SU-66
.49	1	.35	2	.81	1	Test SU-30
1.38	1	1.08	1	2.54	1	Test SU-75
1.03	1	.95	2	2.14	1	Test SU-12
.55	1	.62	2	1.26	1	Test S-169
1.15	1	1.07	2	2.73	1	Test S-183
1.15	1	1.05	2	2.76	1	Test S-143
.21	1	1.84	4	2.02	2	Test NE
.87	1	.99	2	2.48	1	Test NC
1.20	1	1.17	2	2.00	1	Test M-58
1.50	1	1.18	2	2.28	1	S-38
1.47	2	1.25	2	1.87	2	Test SU-81
.27	2	.85	3	1.62	2	N-53
1.22	1	1.29	2	1.31	2	Test S-45
.35	2	.63	2	1.31	2	Test NB
.25	1	1.16	2	1.91	1	Test NA
1.77	2	1.89	2	2.50	1	Test SU-37
a/ .25	-	1.44	4	1.04	3	Test S-181
.29	1	1.53	2	2.62	1	Test L-44
.58	1	.73	2	2.22	1	Test A-33
a/ .20	-	.59	4	.71	2	K 535 No. 1
.12	2	2.19	3	2.39	2	Test CH-196
a/ .50	-	1.39	5	1.30	3	Test M-183
.37	3	.69	4	.70	2	K 537 No. 5
.39	2	.80	4	.77	2	K 537 No. 17
a/ .30	-	.74	4	1.55	3	Test A-43
.21	1	1.68	5	2.47	2	Test NF
a/ .85	-	1.88	4	1.81	3	Test SU-47
.07	1	.77	4	1.74	6	Test CH-201
a/ .60	-	2.31	7	1.55	5	Test SU-86
0.67	1.3	1.14	2.9	1.79	1.9	Average

the late fall and in the spring. It is apparent that this rise of water level would have started from much lower levels if there had been no recharge during September 1938. Thus the storm of September 1938 was an important factor in producing the highest ground-water level that had occurred on Long Island in many years.

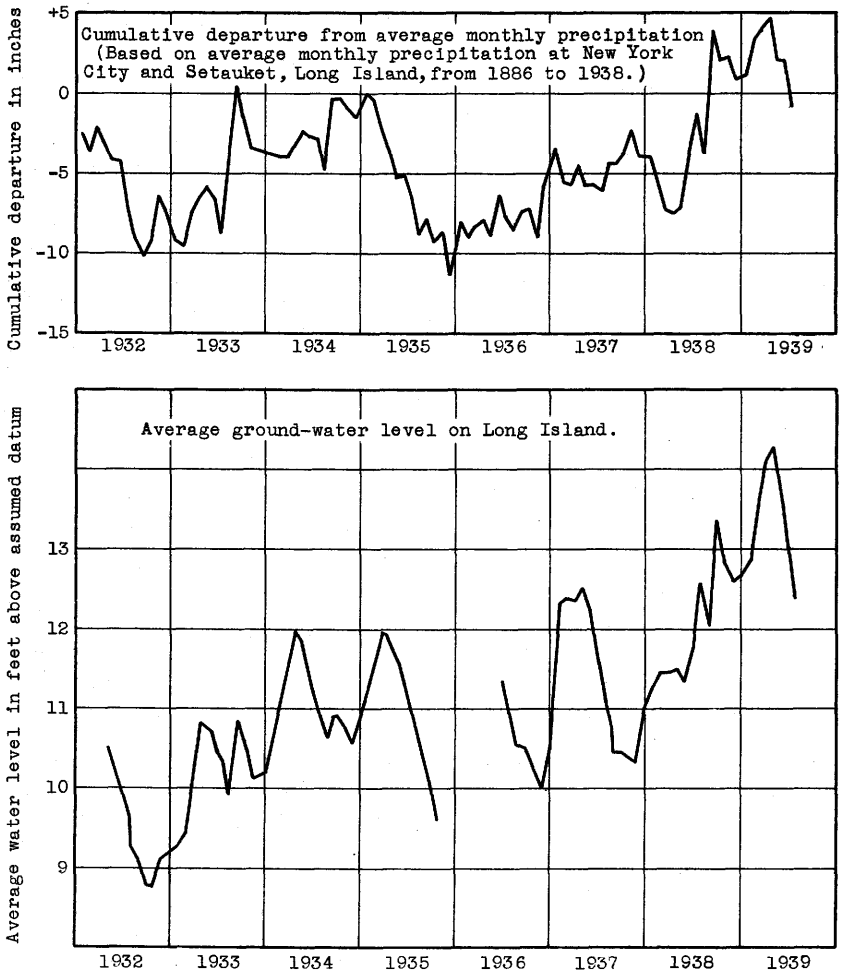


Figure 58.--Graphs showing cumulative departure from average monthly precipitation and average ground-water level on Long Island, N. Y.

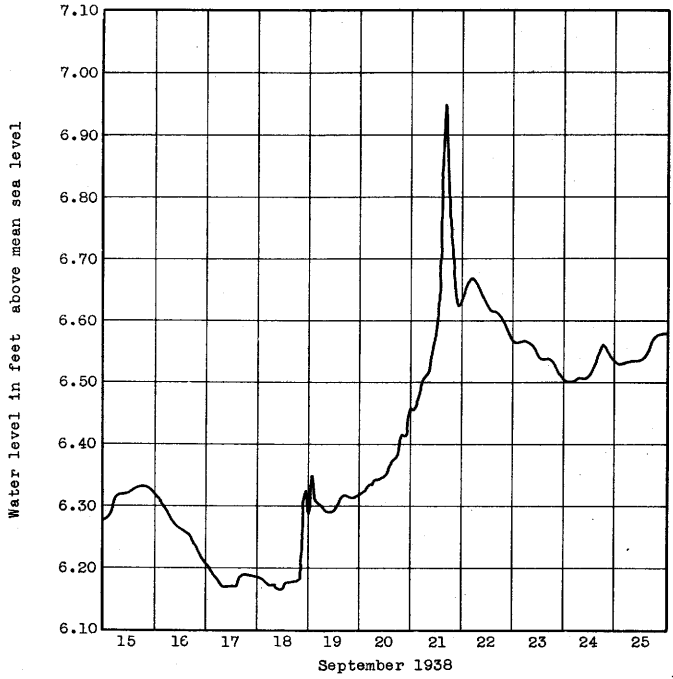
Plate 20 shows graphs of the water-level fluctuation in a selected group of observation wells together with other related data for 1937 and 1938. It is apparent in plate 20 that the hydrographs for 1938 differ radically from those of 1937. On Long Island, 1937 was more or less a normal year, with reference to both precipitation and water-table fluctuations. (See fig. 58) However, in December 1937 began a period

of deficient precipitation that continued until about the middle of May 1938. The recharge that took place during this period was, therefore, less than would have occurred if the precipitation had been normal. The records indicate that moderate rains occurring during the growing season on Long Island do not generally produce ground-water recharge except in areas where the water table is relatively near the land surface. Plate 20 shows that both the June and July storms resulted in ground-water recharge on most parts of Long Island.

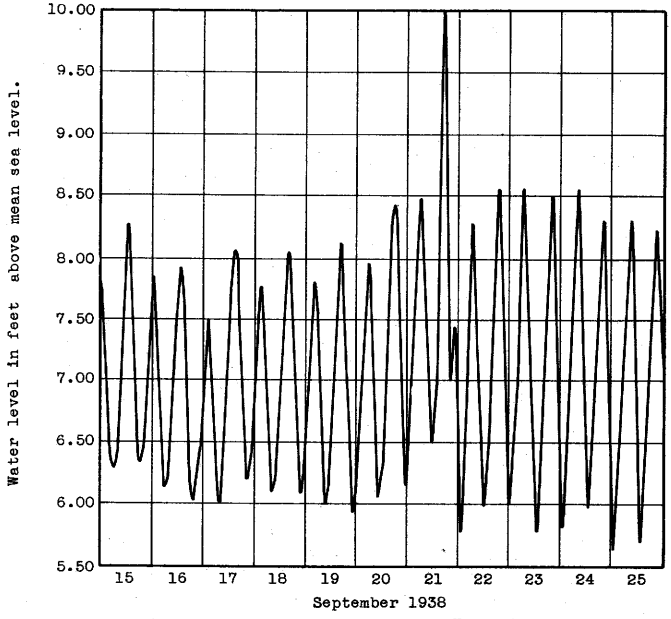
Table 24 gives summary data on 31 observation wells and the length of time and amount of rise of water level following each of the three storms here discussed. In table 24 the wells are listed from top to bottom in order of increasing depth of ground-water level below land surface on September 16, 1938. The figures given in the last six columns of table 24 are based on the hydrographs plotted for each individual well, similar to those shown in plate 20.

The figures given in the table for approximate net rise of water level after each of the three storms is obviously a minimum because the hydrographs, based on weekly measurements, probably do not indicate the lowest levels reached before each storm, nor the highest levels reached after each storm. For the same reason the figures given for approximate number of weeks during which the water level rose after each storm are doubtless for some wells somewhat smaller and in others somewhat larger than would have been indicated if continuous hydrographs were available.

It is apparent from the table that following any one storm, the water table rose for the longest period in those areas where the water table lies farthest below the land surface. In some of the deeper wells recharge was apparently still taking place more than a month after the particular rain. The average period during which the water levels rose was distinctly longer after the July storm than after the June and September storms. This is partly due to the fact that the July storm lasted 7 days whereas the June storm lasted only 3 days and the September storm only 4 or 5 days. It also seems probable that this longer period of recharge after the July storm was in part the result of delayed recharge from the June storm. The hydrographs for some of the wells, particularly the deeper wells, do not show distinct separate up-trends for the June and July storms. This indicates that the recharge resulting from the June storm was delayed enough that the water table was still rising when the recharge resulting from the July storm began. It was,



Well Q-273 at Forest Hills, N. Y., 438 feet deep.

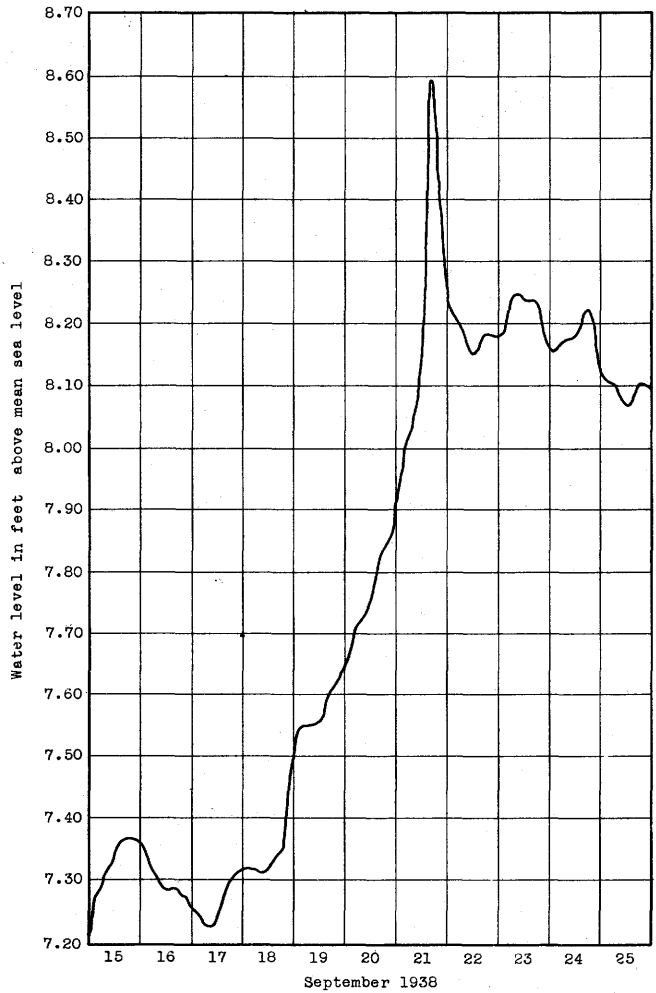


Well Q-543 at Rockaway Park, N. Y., 840 feet deep.

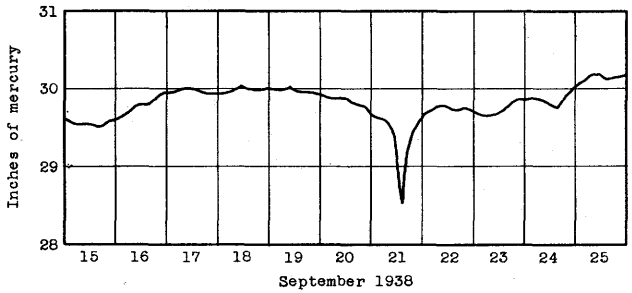
Figure 59.--Graphs showing relation of barometric pressure to water

Ground-water

GRA



Well N-7 at Valley Stream, N. Y., 911 feet deep.



Atmospheric pressure at Jamaica, N. Y. (Altitude, 85 feet above mean sea level.)

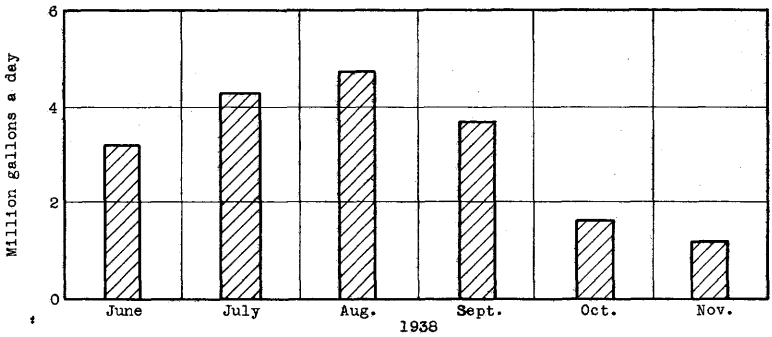
levels in three artesian wells on Long Island during the hurricane.

therefore, not possible to determine accurately from some of the hydrographs the amount and duration of the rise of the water table caused by the June storm.

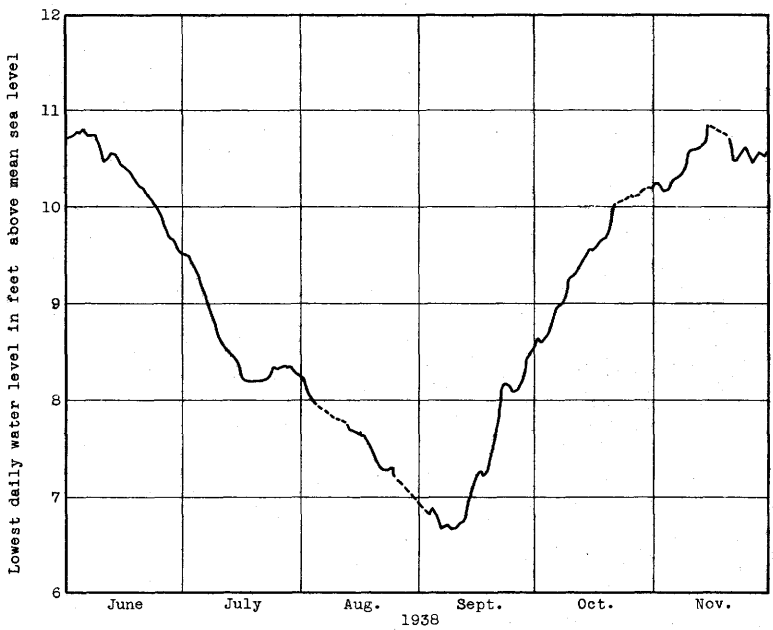
After the June and September storms, the water levels in the wells of the shallower water-table rose slightly more on the average than the water levels in the wells of the deeper water-table. After the July storm the conditions were the reverse, probably because the delayed recharge from the June storm was most prominent in the wells of the deeper water-table.

It is of interest to note that artesian wells on Long Island also showed a considerable increase in head during the September hurricane. However, this increase in head was not the result of recharge to the artesian aquifers but rather the result of rapid decrease in atmospheric pressure during the hurricane. Artesian wells near the ocean normally show tidal fluctuations. In these wells, part of the increase in head during the hurricane was the result of the unusually high storm wave in the ocean. Figure 59 shows a graph of the barometer chart at Jamaica, N. Y., and a tracing of three recorder charts from artesian wells on Long Island. It might appear from two of the hydrographs in figure 59 that there was recharge to the artesian aquifer because the water level remained higher after the hurricane than before it. This, however, is not the case, because the hydrographs for these two wells show a similar uptrend during the fall of each year after the heavy summer pumping from the artesian aquifer has ceased. Figure 60 shows the relation between pumpage and water levels in this artesian aquifer before and after the hurricane. The Long Beach wells are located about 6 miles from well N-7. A study of the records for previous years clearly shows that the major fluctuations of water level in this observation well are the result of changes in rate of withdrawal from the wells at Long Beach. It is apparent from figure 60 that the water level in the observation well began to recover in the first part of September before the hurricane and that if due allowance is made for barometric fluctuations the rate of recovery is about the same before and after the hurricane.

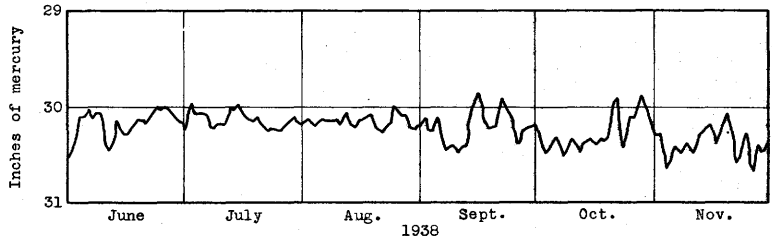
The well at Rockaway Park (see fig. 59) is on a barrier beach and normally shows tidal fluctuations. The highest water level in this well on September 21 occurred about 5:00 p.m., as compared with a high level due to the tide, which normally would have occurred in the well at about 7:00 p.m., indicating an advance of about 2 hours. The maximum ocean level caused by the storm tide was estimated to have been reached at 2:30 p.m., as compared with the predicted normal high tide at about 5:00 p.m.,



Pumpage at Long Beach, N. Y.



Well N-7 at Valley Stream, N. Y., 911 feet deep.



Atmospheric pressure at Jamaica, N. Y. (Based on highest daily barometer.)

Figure 60.--Graphs showing pumpage from the Lloyd sand at Long Beach, N. Y., water level in a well ending in the Lloyd sand, and atmospheric pressure at Jamaica, N. Y.

indicating an advance of about 2½ hours, comparable with the behavior of the water level in the well. The influences of barometric pressure and local characteristics of tidal occurence may also have been involved. Further discussion of this subject is presented in the section "Ocean storm-wave in coastal areas".

Soil-moisture conditions

As is well known, the soil-moisture conditions that exist at the time of a storm determine in large part the amount of recharge that takes place. Unfortunately no data are available as to the soil-moisture conditions preceding the three storms here discussed. However, table 25 shows the average precipitation on Long Island during each of four weekly periods preceding the three storms.

Table 25.--Average precipitation on Long Island during 4 weeks preceding each of the three major rain storms in 1938. a/

Storm	Precipitation during each of four weekly periods preceding the particular storm (inches)				
	7 days	8 to 14 days	15 to 21 days	22 to 28 days	Total 28-day period
June 26 - 28	0.05	1.35	0.80	0.27	2.47
July 18 - 24	.86	.10	3.46	.46	4.88
Sept. 17 - 21	.79	.06	.50	0	1.35

a Figures are averages of precipitation at Patchogue, Setauket, Mineola, and Flushing, N. Y.

In a general way the table indicates the probable soil-moisture conditions preceding each of the three storms. At any one time the soil-moisture conditions depend on the amount of plant growth and amount of precipitation during the preceding period. The relation of these two factors during the first preceding week is probably more largely responsible for the soil-moisture condition at any one time than the conditions during earlier weeks. The periods covered in table 25 are all within the growing season when plant growth was active. As shown in table 25, the first week preceding the June storm had almost no rainfall, whereas the first week preceding both the July and September storms probably had about normal rainfall. However, the second week preceding the June storm had more than average rainfall, whereas the similar periods preceding the July and September storms had very little rainfall. The 4-week period preceding the September storm was considerably below normal in precipitation.

Increase in ground-water storage

On Long Island, the shallow water-bearing beds in which the water table occurs are, in general, relatively uniform. Thus the hydrographs of all of the 31 wells listed in table 24 for both 1937 and 1938 are surprisingly similar in their major form, although there is considerable range in the amplitude of the fluctuations. (See pl. 20.) This fact appears to warrant an attempt to attack quantitatively the recharge problem by using the average rise of ground-water levels after a particular storm.

When water penetrates to the water table only the part of the total pore space that is not already occupied by water is available to receive the recharging water. The specific yield of a material is defined as the ratio of (1) the volume of water it will yield by gravity after being saturated, to (2) its own volume. Within the root zone the moisture content may be further depleted through absorption by the roots of the plants, but below the root zone the specific yield gives an approximate measure of the capacity of the material to store water. Thus, if the specific yield of a sand formation is 25 percent, the water table will rise 4 inches for every inch of water added to the zone of saturation of that sand.

In 1903 the physical properties of several natural and graded sands on Long Island were determined by the Burr-Hering-Freeman Commission[26]. Their determinations included porosity and the amount of retained moisture after the samples were saturated and allowed to drain. Their determinations of the amount of retained moisture may be considered to be the specific retention of the samples, that is, the ratio of (1) the volume of water which the material, after being saturated, will retain against the pull of gravity to (2) its own volume. These data provide a basis for obtaining the specific yield because the porosity minus the specific retention is equal to the specific yield. Their method used in determining the amount of retained moisture was to allow tubes of the saturated samples (3 inches in diameter by 10 feet long) to drain for 20 days, after which the amount of retained moisture was determined for each quarter foot of the entire length of the 10-foot tubes. In no case did the draining completely stop at the end of the experiments, and

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26/ Report of the Commission on additional water supply for the City of New York, Martin B. Brown Co., pp. 584-603, 1904.

the specific yield is therefore somewhat greater than that obtained by subtracting their figures for retained moisture from the porosity. Their experiments were performed on 14 different tubes, the determinations being repeated three or four times in some instances. The materials used in their experiments are believed to be fairly representative of the material that occurs above the water table in the southern part of Long Island. Their data indicate that the average specific retention is about 6 to 7 percent by volume (4 to 5 percent by weight)[27]. The average porosity of their samples was about 44 percent, thus indicating a value of about 37 percent for the average specific yield. This is a rather high value for specific yield, and it is possible that a greater number of determinations on a larger number of samples might give a somewhat lower value. For the purpose of this report it has been assumed that one-third (33-1/3 percent) of the total pore space is available to receive recharging water.

Table 26 gives summary data as to the estimated amount of increase in ground-water storage following each of the three storms, assuming a specific yield of 33-1/3 percent. The table indicates that the increase in storage during the period of rising water table was equal to 69 percent of the rain that fell during the September storm.

Table 26.--Summary of data relating to ground-water recharge on Long Island for three storms in 1938

Date of storm 1938	Average of rainfall at four stations (inches)	Average rise of ground-water level after storm (inches)	Increase in ground-water storage during period of rise, assuming specific yield of 33-1/3 (inches)	Recharge divided by rainfall (percent)
June 26 - 28	3.85	8.0	2.7	70
July 18 - 24	5.95	13.7	4.6	77
Sept. 17 - 21	10.45	21.5	7.2	69

The figures given in the last column of table 26 are based on the measured rise of water level in observation wells at weekly intervals, which is obviously somewhat less than the total rise. For example in test well M-58 (see pl. 20) the water level rose 2.00 feet between September 16 and 23. Most of this rise doubtless took place after September 18, the first day on which heavy rains occurred. The highest water level in this well probably occurred a few days before or a few days after September 23, the high point on the hydrograph in plate 20. The highest actual water

27/ Op. cit., pp. 601-603.

level may have been considerably higher than was measured on September 23. This same feature applies to all the other hydrographs used in computing the average rise of water level, although the difference is probably not large for the deeper water-table wells. In any event, the figures given in the third and fourth columns of table 26 are smaller than the actual average rise of water level that took place after each of the three storms.

It should also be noted that the method utilized above gives the computed increase in ground-water storage after a particular storm. The increase in ground-water storage represents only a part of the total water that reaches the water table. After and during a period of recharge the ground-water reservoir is discharging water by ground-water run-off, ground-water underflow directly into the ocean, transpiration, evaporation, and pumpage. Thus, the last column in table 26 represents increase in ground-water storage and not total recharge.

Direct run-off

During 1938 five stream-gaging stations were being maintained on Long Island by the Geological Survey, in cooperation with the Nassau County Department of Public Works. Four of these stations are on the south shore in the same area discussed in the previous section and one is on the north shore of the Island north of the moraine and outside the area under discussion. The records of the flow of the four south shore streams were studied to determine the amount of direct run-off resulting from the three storms. Figure 61 shows the hydrograph of one of these streams and the precipitation at Mineola, N. Y., for the period of the three storms. A separation of the stream flow of these five streams into direct run-off and ground-water run-off has been made in the general manner described in the section "Rainfall and run-off studies" under "Methods of analysis."

Table 27 indicates the amount of direct run-off resulting from the three storms in each of the four south shore streams. It is apparent that only a very small part of the water that fell during each of these storms was disposed of as direct run-off.

The differences in direct run-off after any one storm for the streams listed in table 27 are doubtless the composite result of numerous factors. The precipitation used in the computation is that recorded at Mineola. The actual precipitation on each of the four drainage areas was probably somewhat different in amount than that recorded at Mineola. The precipitation and direct run-off of each of the streams on Long Island during the storm of September 17-21 is listed in table 14, pages 424-431. The

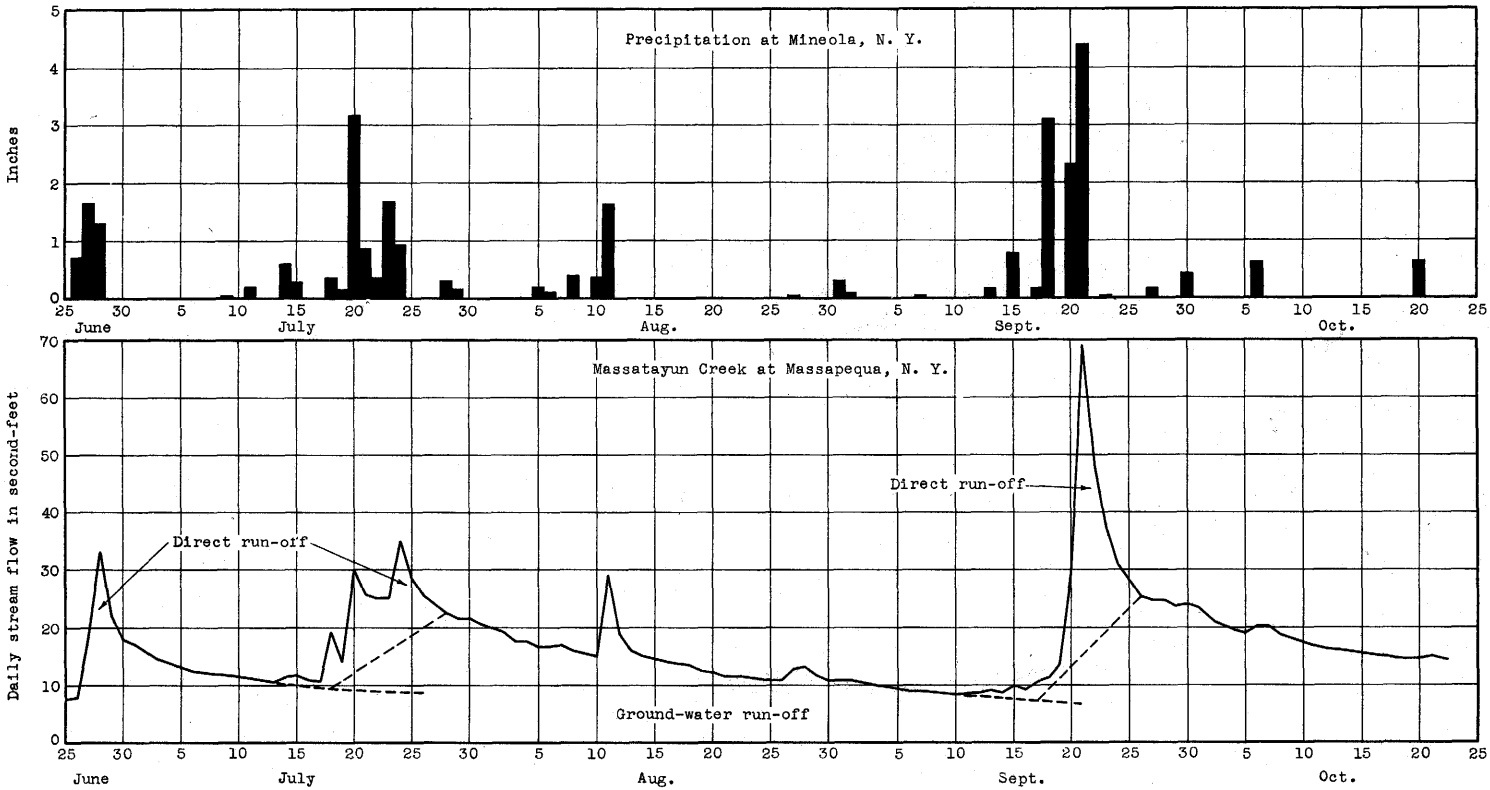

Figure 61.--Graphs showing precipitation at Mineola and stream flow of Massatayun Creek, Long Island, during three storms in 1938.

gaging station on Pines Brook is located a short distance below a pond, and storage in this pond doubtless affects the run-off characteristics of this stream. Above the gaging station on Wantagh Stream are ponds that at times are regulated. It is therefore believed that the records for Massatayun Creek and East Meadow Brook indicate more nearly the natural run-off characteristics. The direct run-off for East Meadow Brook is larger for each of the three storms than that of Massatayun Creek. This

Table 27.--Rainfall, direct run-off, and retention, in inches, resulting from three storms in 1938 on the south shore of Long Island

Stream	Drainage area (square miles)	Storm of June 26-28, rainfall 3.65		Storm of July 18-24, rainfall 7.45		Storm of Sept. 17-21, rainfall 11.00	
		Run-off	Retention	Run-off	Retention	Run-off	Retention
Massatayun Creek	37	0.05	3.6	0.1	7.35	0.15	10.85
East Meadow Brook	31	.06	3.59	.15	7.3	.3	10.7
Wantagh Stream	17	.08	3.57	.2	7.25	.2	10.8
Pines Brook	10	.01	3.64	.15	7.3	.3	10.7
Average	--	.05	3.6	.15	7.3	.25	10.75

probably results from the fact that in the East Meadow Brook area there are numerous construction works for the disposal of storm water as well as a considerable percentage of impervious area, such as pavements, sidewalks, and roofs. The lower parts of the drainage areas of Massatayun Creek and Wantagh Stream are in areas of heavier pumping than those of the other two streams. The rainfall and run-off relation in this area during the hurricane storm of September 1938 are presented in the section "Rainfall and run-off studies" under "Streams on Long Island."

Summary

The storms of June, July, and September, 1938, each produced a large amount of ground-water recharge on Long Island. According to the analysis here given, the increase in ground-water storage caused by the September storm was 7.2 inches (69 percent of the rain that fell during the storm). The stream-flow records indicate that only a small part of the rainfall during these three storms was disposed of by direct run-off, the range for the September storm being 0.15 to 0.3 inches. The remainder of the rain that fell during the September storm, amounting to approximately

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3.6 inches according to the computations, was disposed of in different ways. A part of this remainder reached the water table but was discharged during the period of rise as ground-water run-off or ground-water underflow directly to the ocean, or by pumpage from the shallow water-bearing beds, evaporation, and transpiration. Another part did not reach the water table, either having been intercepted by vegetation, remaining as moisture in the soil, or being discharged into the atmosphere by evaporation from the surface or soil or by transpiration of the plants.

Comparison with recharge in Connecticut

During 1938 periodic water-level measurements were being made in several observation wells in Connecticut by the United States Works Progress Administration under the sponsorship of the Connecticut State Water Commission and under the direction of the United States Geological Survey. These observation wells are located in many different topographic positions and end in a variety of geologic formations having a wide range of water-bearing characteristics. As might be expected, the amount of rise of ground-water level resulting from the recharge of the hurricane storm varied considerably in the observation wells, the range being from a small fraction of a foot to almost 10 feet. On the average, the water level in wells ending in glacial till rose considerably more than that in wells ending in stratified glacial drift. In some of the wells, the high-water level after the hurricane exceeded any previously recorded high-water level, but many of the periods of record are short. The highest recorded water level in several of the wells that were first measured in 1934 occurred, however, at some time other than after the hurricane.

Many of the observation wells in Connecticut end in glacial till or bedrock, both of which have a much lower specific yield than the outwash sand and gravel on the south side of Long Island.

Although the ground-water levels rose on the average considerably more in Connecticut than on Long Island, the rise represented a much smaller quantity of water, and hence the direct run-off was considerably greater in Connecticut than on Long Island. For the same reason, the amount of ground-water run-off after the period of recharge was considerably smaller in Connecticut than on Long Island.

The water-bearing properties of the stratified drift deposits in Connecticut are similar to those of the outwash sand and gravel on the south shore of Long Island, but on the average the water levels rose more in the stratified-drift wells in Connecticut than in the wells on the southern part of Long Island.

Records of or references to historical flood information and summaries of data of record floods for streams in the area covered by this report are presented in Water-Supply Papers 798[28] and 799[29].

The following notes cover comparisons of the hurricane floods of September 1938 with previous floods for a few streams in Connecticut.

In the outstanding flood of March 1876 in the Thames River Basin, a dam 326 feet long on the Shetucket River at Greenville, Conn., was reported to have had 12 to 14 feet of water passing over it. A dam 401 feet long, about 1,200 feet downstream, had water passing over it to a maximum depth of 11.1 feet on March 12, 1936, and of 14.5 feet on September 21, 1938. Unless the dam in 1876 had an extraordinarily high discharge coefficient, on the basis of these figures it appears that the peak flow of September 1938 was the greater.

During September 1938 stages on the lower part of the Connecticut River did not reach the records of the March 1936 flood because the greater discharge from the lower tributaries was more than offset by smaller flows from the upper headwater streams. On the Connecticut River at Hartford, Conn., the United States Weather Bureau recorded a gage height of 35.42 feet September 23, 1938, which was 2.2 feet lower than that of March 21, 1936, but 5.6 feet higher than that of May 1, 1854, which was the maximum recorded previous to 1936.

On the upper dam of the Farmington River at Collinsville, Conn., with all flashboards reported out and all wastegates open, a water-stage recorder maintained by the Collins Co. indicated water passing at a depth of 10.5 feet over the dam on September 21, 1938. As shown in Water-Supply Paper 798, page 457, a maximum depth of 9.0 feet was recorded during March 1936. From 1869 to August 1938 the greatest storm rainfall in the Farmington River Basin occurred during October 1869. At that time a maximum depth of only 10 feet was reported on this upper dam and the spillway was about 4 percent shorter than since 1935. On an interior wall of the Collins Co.'s boiler house, about a quarter of a mile downstream from the upper dam at Collinsville, a highwater mark of the flood of September

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28/ The floods of March 1936, part 1, New England Rivers: U. S. Geological Survey Water-Supply Paper 798, pp. 438-460, 1937.

29/ The floods of March 1936, part 2, Hudson River to Susquehanna River region: U. S. Geological Survey Water-Supply Paper 799, pp. 359-374, 1937.

1938 was found to be at an elevation of 286.7 feet and is 2.9 feet higher than the previous noted maximum of December 1878, which is reported as possibly affected by an ice jam.

On the Hockanum River at the outlet of Shenipsit Lake, Rockville, Conn., the dam is reported to have remained unchanged since 1871 with a total spillway length of 48 feet. A maximum stage of 1.6 feet was reported to have occurred in February 1886, 0.6 foot in March 1896, 0.9 foot in March 1936, and 4.23 feet (by levels from floodmarks) on September 21, 1938. The elevation of the lake was unknown prior to the flood of February 1886 and March 1896. Prior to the flood of March 1936 the lake level was 8 feet below the spillway as compared with 3 feet before the September 1938 flood. The lake has a surface area of about 1 square mile.

Water-Supply Paper 798 on page 458 tabulates maximum depths of water over the dam on the Housatonic River at Derby, Conn. The maximum head noted was 13 feet in October 1869, when the length of spillway was 636 or 637 feet. With a spillway length of 675 feet, a water-stage recorder showed a maximum depth over the dam of 8.4 feet March 1936 and 7.6 feet over the top of about 0.5 foot of flashboards September 1938.

Previous great storms

History records that hurricanes and violent storms have visited the North Atlantic coast rather frequently in the past. The first New England hurricane known to the white man occurred in 1635. The following account is taken from Nathaniel Merton's "New England Memoriall", published in 1669.

> This Year, on Saturday, the fifteenth day of August, was such a mighty storm of Wind and Rain, as none now living in these parts, either English or Indian had seen the like, being like unto those Hirricanes or Tuffins that writers mention to be sometimes in the Indies. It began in the morning a little before day, and grew not by degrees, but came with great violence in the beginning, to the great amazement of many; It blew down sundry houses, and uncovered divers others: divers Vessels were lost at Sea in it, and many more in extream danger. It caused the Sea to Swell in some places to the southward of Plimouth, as that it arose to twenty foot right up and down, and made many of the Indians to climb into Trees for their safety: It threw down all the Corn to the ground, which never rose more; the which through the mercy of God, it being near harvest time, was not lost, though much the worse: and had the wind continued without shifting, in likelihood it would have drowned some part of the Country. It blew down many hundred thousands of Trees, turning up the stronger by the roots, and breaking the high Pine Trees and such like in the midst, and the tall young Oaks and Walnut Trees of good bigness, were wound as a Wyth by it; very strange and fearful to behold: It began in the South-east, and veered sundry wayes, but the greatest force of it at Plimouth, was from the former quarter: It continued not in extremity above five or six hours, ere the violence of it began to abate; the marks of it will remain this many years, in those parts where it was sorest: the Moon suffered a great Eclipse two nights after it.

A storm similar to the hurricane of September 1938 occurred on September 23, 1815. The following account of this "Great blow", as it was called, is given by Tilden[30].

A wonderful hurricane came on this day. The wind the previous night was high. A sensible increase was perceived at 10 a.m. It continued for many hours. Toward night, it became very calm. It began at northeast, and then shifted at its height to south. Its effects were tremendous. Corn was prostrated, the stoutest trees were eradicated, many chimneys fell, sheds were generally blown over, four barns were blown down in this town, many buildings injured, and immense damage sustained. The tide at Providence rose twelve feet higher than ever known before, ships drove into the streets, and losses were estimated at $1,500,000. The wind extended over New England with nearly equal violence. At New York, the wind was moderate and in a contrary direction. Its ravages did not extend far out at sea. In history, we read of a similar wind in 1635.

Severe tropical storms of this character are not as rare in northeastern United States as may commonly be supposed. I. R. Tannehill[31], of the Marine Division of the Weather Bureau in Washington, D. C., described briefly storms that occurred on August 15, 1635; August 19, 1788; September 23, 1815; September 3, 1821; September 8, 1869; October 23-24, 1878; August 24, 1893; August 29, 1893; and September 16, 1903. Dr. Charles F. Brooks[32], of the Blue Hill Meteorological Observatory, Milton, Mass., cites references to a dozen or more additional storms not contained in Tannehill's list and quotes a frequency of 5 to 10 hurricanes per century in this region with "one that is especially fierce and widespread in each century and a half".

Mr. Joseph C. Knox[33], Massachusetts Department of Public Health, Division of Sanitary Engineering, has also compiled records and information relative to previous cyclonic disturbances in New England. Records of historic storms in New England between 1639 and 1891 were taken from Sidney Perley[34], and from 1888 to 1938 from the files of the United States Weather Bureau at Boston, Mass.

30/ Tilden, History of Medfield, 1650-1886.

31/ Tannehill, I. R., Hurricane of September 16 to 22, 1938: Monthly Weather Review, U. S. Weather Bureau, September 1938, vol. 66, no. 9, pp. 286-288.

32/ Brooks, C. F., Hurricanes into New England: Geographical Review, Amer. Geo. Soc. of New York, January 1939, pp. 119-127.

33/ Knox, J. C., Cyclonic storms of Sept. 21, 1938.

34/ Perley, Sidney, Historic storms of New England, Salem, Mass., 1891.

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