DEPARTMENT OF THE INTERIOR
HUBERT WORK, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 541

SURFACE WATER SUPPLY OF THE UNITED STATES

1922

PART I. NORTH ATLANTIC SLOPE DRAINAGE BASINS

NATHAN C. GROVER, Chief Hydraulic Engineer
C. H. PIERCE, C. C. COVERT, A. W. HARRINGTON,
O. W. HARTWELL, and A. H. HORTON
District Engineers

Prepared in cooperation with the States of
MAINE, NEW HAMPSHIRE, VERMONT, MASSACHUSETTS,
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CONTENTS.

ILLUSTRATIONS.

SURFACE WATER SUPPLY OF NORTH ATLANTIC SLOPE DRAINAGE BASINS, 1922.

AUTHORIZATION AND SCOPE OF WORK.

This volume is one of a series of 14 reports presenting records of measurements of flow made on streams in the United States during the year ending September 30, 1922.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat. L., p. 394):

Provided, That this officer [the Director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation in the arid West. Since the fiscal year ending June 30, 1895, successive sundry civil bills passed by Congress have carried the following item and appropriations:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1923.

1895	$12, 500. 00
1896	20, 000. 00
1897 to 1900, inclusive	50, 000. 00
1901 to 1902, inclusive	100, 000. 00
1903 to 1906, inclusive	200, 000. 00
1907	150, 000. 00
1908 to 1910, inclusive	100, 000. 00
1911 to 1917, inclusive	150, 000. 00
1918	175, 000. 00
1919	148, 244. 10
1920	175, 000. 00
1921	180, 000. 00
1922	180, 000. 00
1923	180, 000. 00

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 9.

Measurements of stream flow have been made at about 5,480 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1922, 1,540 gaging stations were being maintained by the Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miners' inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, run-off in inches, and acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

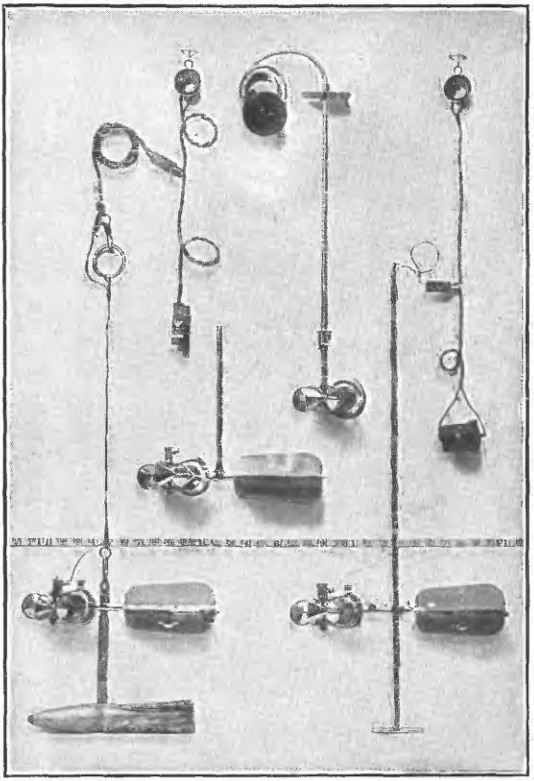
An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

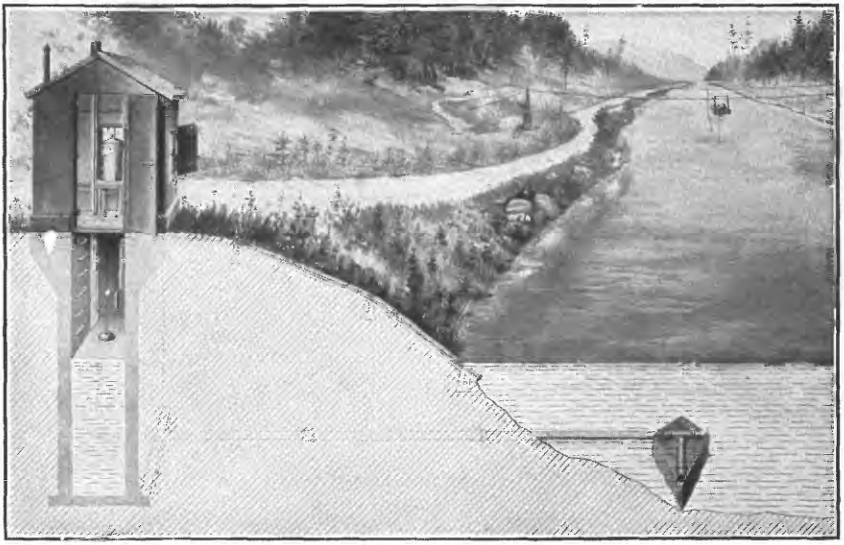
"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the section or sections of the stream channel below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

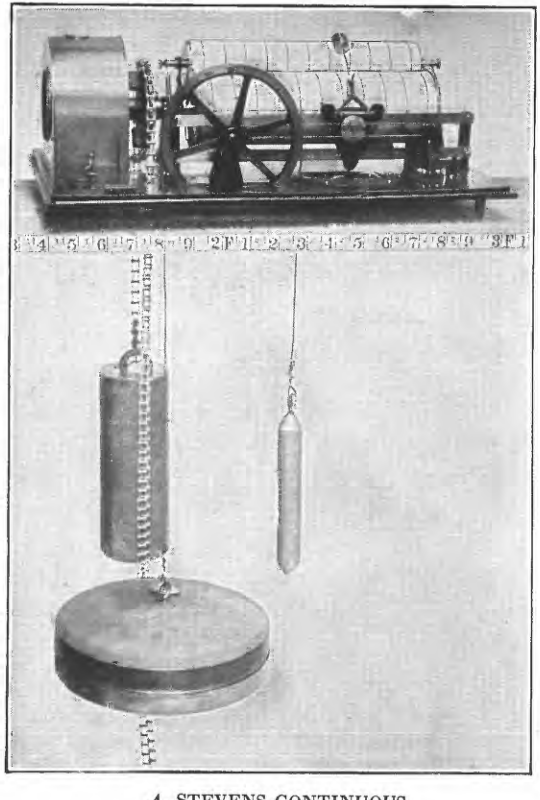
The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over the control.



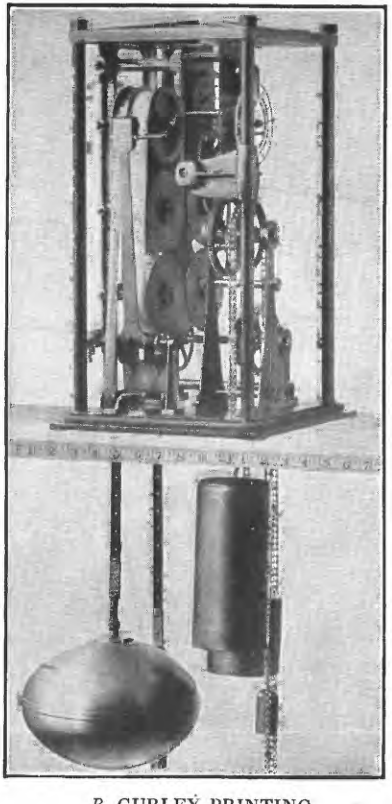
A. PRICE CURRENT METERS.



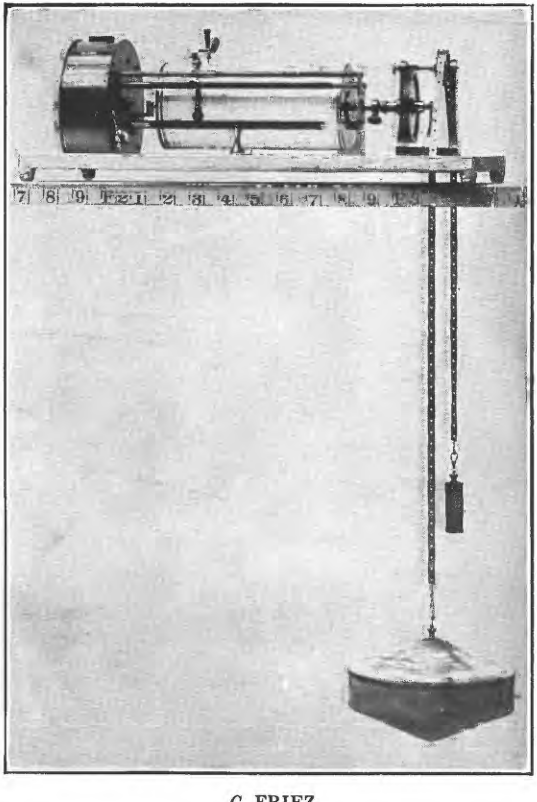
B. TYPICAL GAGING STATION.



A. STEVENS CONTINUOUS.



B. GURLEY PRINTING.



C. FRIEZ.

WATER-STAGE RECORDERS.

EXPLANATION OF DATA.

The data presented in this report cover the year ending September 30, 1922. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice, or in ponds, lakes, and swamps, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter. (See Pls. I, II.) The general methods are outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is computed.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving records of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

If the base data are insufficient to determine the daily discharge, tables giving daily gage height and records of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of control, and the cause and effect of backwater; it gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuations the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders the

90902—25†—WSP 541——2

mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computations recorded in the remaining columns, which are defined on page 2, are based.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS.

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A paragraph in the description of the station gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and run-off in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off in inches" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches. All figures representing "second-feet per square mile" and "run-off in inches" published in the earlier reports by the Survey should be used with caution because of possible inherent sources of error not known to the Survey.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available or further development, as prior appropriations below the stations must first be satisfied. To give an idea of the amount of prior appropriations, a paragraph on diversions is presented in each station description. The figures given can not be considered exact but represent the best information available.

The tables of monthly discharge give only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

PUBLICATIONS.

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, ground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the monographs, bulletins, professional papers, and annual reports.

The results of stream-flow measurements are now published anually in 12 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below:

Part I. North Atlantic slope basins.
II. South Atlantic slope and eastern Gulf of Mexico basins.
III. Ohio River basin.
IV. St. Lawrence River basin.
V. Upper Mississippi River and Hudson Bay basins.
VI. Missouri River basin.
VII. Lower Mississippi River basin.
VIII. Western Gulf of Mexico basins.
IX. Colorado River basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins, in three parts:
A, Pacific slope basins in Washington and upper Columbia River basin.
B, Snake River basin.
C, Lower Columbia River basin and Pacific slope basins in Oregon.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below.

1. Copies may be obtained free of charge by applying to the Director of the Geological Survey, Washington, D. C. The edition printed for free distribution is, however, small and is soon exhausted.

2. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

3. Sets of the reports may be consulted in the libraries of the principal cities of the United States.

4. Complete sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Boston, Mass., 2500 Customhouse.
Albany, N. Y., 704 Journal Building.
Trenton, N. J., State House.
Asheville, N. C., 6 Government Street.
Chattanooga, Tenn., 37 Municipal Building.
Columbus, Ohio, Brown Hall, Ohio State University.
Madison, Wis., c/o Railroad Commission of Wisconsin.
Chicago, Ill., 1404 Kimball Building.
Ames, Iowa, State Highway Commission Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Topeka, Kans., 23 Federal Building.
Austin, Tex., Capitol Building.
Helena, Mont., 52 Montana National Bank Building.
Denver, Colo., 403 Post Office Building.
Tucson, Ariz., 210 Agricultural Building, University of Arizona.
Salt Lake City, Utah, 313 Federal Building.
Boise, Idaho, 615 Idaho Building.
Idaho Falls, Idaho, 228 Federal Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 328 Customhouse.
Los Angeles, Calif., 600 Federal Building.
Honolulu, Hawaii, 25 Capitol Building.

A list of the Geological Survey's publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 5,480 points in the United States, and the data obtained have been published in the reports tabulated on pages 7 and 8.

Stream-flow data in reports of the United States Geological Survey.

[A=Annual Report; B=Bulletin; W=Water-Supply Paper.]

Report.	Character of data.	Year.
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River, and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907–8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919–20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1921. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Maine, 1903 to 1921, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, 401, 431, 451, 471, 501, and 521, which contain records for the New England streams from 1903 to 1921. Results of miscellaneous measurements are published by drainage basins.

Numbers of water-supply papers containing results of stream measurements, 1899–1922.

Year.	I North Atlantic slope basins (St. John River to York River).	II South Atlantic and eastern Gulf of Mexico (James River to the Missis sippi).	III Ohio River basin.	IV St. Lawrence River and Great Lakes basins.	V Hudson Bay and upper Mississippi River basins.	VI Missouri River basin.	VII Lower Mississippi River basin.	VIII Western Gulf of Mexico basins.	IX Colorado River basin.	X Great Basin.	XI Pacific slope basins in California.	XII North Pacific slope basins.		
												Pacific slope basins in Washington and upper Columbia River.	Snake River basin.	Lower Columbia River and Pacific slope basins in Oregon.
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[b] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125, [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166, [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202, [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211	212, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332–A	332–B	332–C
1913	351	352	353	354	355	356	357	358	359	360	361	362–A	362–B	362–C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	500	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, Part IV.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison rivers and Grand River above junction with Gunnison.
[e] Mohave River only.
[f] Kings and Kern rivers and south Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Tables of monthly discharge for 1900 in Twenty-second Annual Report, Part IV.
[h] Wissahickon and Schuylkill rivers to James River.
[i] Scioto River.
[j] Loup and Platte rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries to St. Lawrence River proper.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas rivers.
[r] Great Basin in California except Truckee and Carson river basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz rivers only.

COOPERATION.

Records in Maine were obtained in cooperation with the Maine Water Power Commission, Edward P. Ricker, chairman, and George C. Danforth, chief engineer.

The work in New Hampshire was done in cooperation with the Public Service Commission of New Hampshire, William T. Gunnison, Thomas W. D. Worthen, and John W. Storrs, commissioners.

The work in Massachusetts was carried on in cooperation with the Department of Public Works, division of waterways and public lands, John N. Cole, chairman; Richard K. Hale, commissioner (waterways); and Frank W. Hodgdon, chief engineer (waterways).

The work in Vermont was carried on in cooperation with the State through George A. Reed, State engineer.

The work in New York was carried on in cooperation with the State, Frank M. Williams, State engineer and surveyor, and with the New York Water Power Investigation (Hudson River at North Creek, N. Y.); Indian River Co. (Indian Lake reservoir, Indian River near Indian Lake, N. Y., Hudson River at Hadley, N. Y., and Sacandaga River at Hadley, N. Y.); Adirondack Power & Light Corporation (Hudson River at Spier Falls, N. Y.); West Virginia Pulp & Paper Co. (Hudson River at Mechanicville, N. Y.); Cohoes Light & Power Co. (Mohawk River at Crescent dam, N. Y.); and United Hudson Electric Corporation (Wallkill River at Pellets Island Mountain, N. Y.).

The work in New Jersey was carried on in cooperation with the State through the Department of Conservation and Development, Henry B. Kümmel, director, and H. T. Critchlow, hydraulic engineer.

Valuable assistance was also rendered in New Jersey by the Hackensack Water Co., Weehawken; William H. Frapwell, commissioner of streets and sewers, Morristown; Taylor Wharton Iron & Steel Co., High Bridge; Somerset Lake and Game Club, Far Hills; and the Warren Manufacturing Co., New Milford.

Financial assistance for the work in New England was rendered by the Orono Pulp & Paper Co., New England Power Co., Turners Falls Power & Electric Co., Connecticut Valley Lumber Co., Holyoke Water Power Co., International Paper Co., Eastern Connecticut Power Co., Keene Gas & Electric Co., Profile Falls Power Co., Connecticut Power Co., and New York, New Haven & Hartford Railroad.

Financial assistance for the work in Virginia was rendered by the Spottsylvania Power Co.

DIVISION OF WORK.

Data for stations in New England were collected and prepared for publication under the direction of C. H. Pierce, district engineer. M. R. Stackpole, assistant engineer, had immediate supervision of the work in Maine, with headquarters at the office of the Maine Water Power Commission. The other assistants in New England were J. L. Lamson, W. E. Armstrong, Lillian H. McCarthy, and J. S. S. Jones.

Data for stations in New York were collected and prepared for publication under the direction of C. C. Covert and A. W. Harrington, district engineers, assisted by E. B. Shupe, B. F. Howe, H. I. Granger, J. L. Lamson, and Agnes D. Buchanan.

Data for stations in New Jersey were collected and prepared for publication under the direction of O. W. Hartwell, district engineer, assisted by J. W. Bones, Otto Lauterhahn, Alexander McMillan, Alice Harrison, and M. G. Tracy.

Data for stations in Maryland and Virginia were collected and prepared for publication under the direction of A. H. Horton, district engineer, assisted by J. J. Dirzulaitis, B. J. Peterson, G. C. Stevens, B. L. Bigwood, D. S. Wallace, E. E. R. Dornbach, V. B. Lamoureux, and W. C. Wiggins.

The manuscript was assembled and reviewed by E. E. R. Dornbach.

GAGING-STATION RECORDS.

ST. JOHN RIVER BASIN.

ST. JOHN RIVER AT VAN BUREN, MAINE.

LOCATION.—At international bridge at Van Buren, Aroostook County, 14 miles above Grand Falls.

DRAINAGE AREA.—8,270 square miles.

RECORDS AVAILABLE.—May 4, 1908, to September 30, 1922.

GAGE.—Gage painted vertically on second pier from Van Buren end of bridge; zero of gage, 407.69 feet above sea level. Gage read by W. H. Scott.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Control practically permanent. Banks high, rocky, cleared and not subject to overflow except at very high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 25.2 feet at 6.30 p. m. June 20 (discharge, 108,000 second-feet); minimum stage, 0.7 foot at 6.45 a. m. September 26 (discharge, from extension of rating curve, 1,330 second-feet).

1908–1922: Maximum discharge, 121,000 second-feet May 13, 1909, and May 3–4, 1911; minimum open-water discharge, 1,250 second-feet October 3, 1910; discharge estimated at 875 second-feet December 19–22, 1910; stage-discharge relation affected by ice at the time.

ICE.—Stage-discharge relation seriously affected by ice, usually from December to April.

REGULATION.—The little storage which is used for log driving probably does not seriously affect the flow.

ACCURACY.—Stage-discharge relation practically permanent except when affected by ice. Rating curve well defined. Gage read to tenths once daily, occasionally twice daily. Daily discharge ascertained by applying rating table to daily gage height with corrections for effect of ice during winter. Records good.

Discharge measurements of St. John River at Van Buren, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 2	5.55	10,700
Feb. 15	[a] 3.90	2,200

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of St. John River at Van Buren, Maine, for the year ending Sept. 30, 1922.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3,840	11,600	7,200	4,600	2,400	1,550	4,900	37,200	11,100	44,500	4,920	4,920
2	3,440	11,100	8,000	4,200	2,400	1,550	5,000	33,200	10,800	48,500	4,720	4,130
3	2,880	10,600	8,200	4,200	2,400	1,500	5,400	31,500	10,600	43,000	4,520	4,130
4	3,060	10,000	8,500	4,200	2,300	1,500	6,200	31,900	10,600	35,900	4,520	3,070
5	3,640	10,000	8,200	4,000	2,300	1,500	6,800	33,200	12,200	32,800	5,120	2,590
6	3,840	9,500	7,700	4,000	2,300	1,450	7,400	33,600	13,300	29,400	4,920	2,590
7	3,840	8,980	6,700	3,900	2,400	1,400	8,400	43,000	15,100	25,900	4,320	2,590
8	4,050	8,470	7,000	3,900	2,400	1,800	9,900	50,000	13,600	23,300	4,920	2,440
9	6,050	7,480	7,100	3,500	2,300	2,700	13,000	52,500	12,200	20,800	5,530	2,290
10	7,000	7,720	6,700	3,700	2,300	3,000	17,000	52,500	10,800	18,800	4,920	2,150
11	9,760	8,720	5,800	3,600	2,300	3,200	26,000	47,000	10,600	17,200	4,720	2,010
12	12,800	7,000	6,200	3,600	2,200	3,300	37,000	41,500	12,500	15,400	4,520	2,150
13	23,600	7,480	6,600	3,400	2,200	3,100	53,000	36,800	21,200	14,200	4,520	2,150
14	26,600	7,240	6,600	3,500	2,200	3,200	54,000	32,300	31,900	13,300	3,940	2,150
15	26,200	7,000	6,200	3,500	2,200	3,400	53,500	30,200	30,200	12,200	3,580	2,010
16	24,700	6,520	5,800	3,200	2,200	3,900	50,000	29,800	25,500	11,400	3,410	1,880
17	22,200	6,280	5,300	3,500	2,200	4,400	47,000	27,800	21,200	10,800	3,240	1,760
18	19,800	5,590	5,200	3,300	2,100	4,500	47,500	26,600	22,200	10,000	3,070	1,540
19	18,200	6,280	6,600	3,200	2,000	4,400	56,000	25,900	58,000	9,500	3,240	1,650
20	16,900	7,240	6,600	3,300	1,900	4,400	70,200	26,200	104,000	8,980	3,580	1,650
21	17,200	8,470	6,700	3,300	1,950	4,300	74,400	24,000	103,000	8,470	2,750	1,540
22	20,200	9,760	7,000	3,300	1,900	4,300	69,600	22,600	88,800	7,490	3,070	1,540
23	25,100	13,000	6,300	2,900	1,850	4,400	58,600	21,200	83,600	7,030	3,070	1,650
24	25,100	12,800	6,200	2,900	1,850	4,400	48,500	19,800	78,600	7,030	2,910	1,650
25	24,000	12,200	6,800	2,700	1,800	4,500	42,500	17,900	66,600	6,370	2,910	1,430
26	22,200	11,400	6,700	2,600	1,800	4,600	38,600	16,300	57,500	5,950	2,590	1,330
27	20,200	10,600	6,300	2,600	1,750	4,500	39,100	15,100	48,500	5,320	2,750	1,430
28	16,600	9,800	5,600	2,600	1,650	4,400	43,500	13,900	41,500	5,120	2,290	1,430
29	15,100	9,100	5,400	2,600	-------	4,300	45,000	13,300	37,200	5,530	4,720	1,540
30	13,900	6,700	5,200	2,400	-------	4,500	41,500	12,800	37,200	5,950	5,320	1,540
31	12,500	-------	4,700	2,400	-------	4,600	-------	11,600	-------	5,740	5,320	-------

NOTE.—Stage-discharge relation affected by ice Nov. 25 to Apr. 13; discharge for this period determined from gage heights corrected for effect of ice by means of one discharge measurement and records at Grand Falls.

Monthly discharge of St. John River at Van Buren, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 8,270 square miles.]

Month.	Discharge in second-feet.				
	Maximum.	Minimum.	Mean.	Per square mile.	Run-off in inches.
October	26,600	2,880	14,700	1.78	2.05
November	12,800	5,590	8,950	1.08	1.20
December	8,500	4,700	6,550	.792	.91
January	4,600	2,400	3,370	.407	.47
February	2,400	1,650	2,130	.258	.27
March	4,600	1,400	3,370	.407	.47
April	74,400	4,900	36,000	4.35	4.85
May	52,500	11,600	29,400	3.56	4.10
June	104,000	10,600	36,700	4.44	4.95
July	48,500	5,120	16,600	2.01	2.32
August	5,530	2,290	4,000	.484	.56
September	4,920	1,330	2,160	.261	.29
The year	104,000	1,330	13,700	1.66	22.44

ST. CROIX RIVER BASIN.

ST. CROIX RIVER NEAR BAILEYVILLE, MAINE.

LOCATION.—A short distance below power house of St. Croix Paper Co. at Grand Falls, Baileyville Township, 3½ miles east of Baileyville station of Maine Central Railroad, Washington County.

DRAINAGE AREA.—1,320 square miles (measured on map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—November 25, 1919, to September 30, 1922.

GAGE.—Friez water-stage recorder on right bank referenced to gage datum by a hook gage inside the well; an inclined staff is used for auxiliary readings. Recorder inspected by an employee of St. Croix Paper Co.

DISCHARGE MEASUREMENTS.—Made from cable.

CHANNEL AND CONTROL.—Bed covered with gravel and boulders; control for low and medium stages formed by series of riffles near gage; control for high stages not clearly defined.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 5.88 feet at 7 a.m. August 29 (discharge, 7,900 second-feet); minimum stage recorded, 1.31 feet at 4.30 p.m. March 5 (discharge, from extention of rating curve, 289 second-feet.)

1919–1922: Maximum stage recorded, 8.74 feet at noon April 15, 1920 (discharge, from extension of rating curve, 13,900 second-feet); minimum stage, 1.31 feet at 4.30 p.m. March 5, 1922 (discharge, from extension of rating curve, 289 second-feet).

ICE.—River remains open throughout winter.

REGULATION.—Variations in use of water at the power plant a short distance above the gage cause fluctuations in stage.

ACCURACY.—Stage-discharge relation apparently permanent. Rating curve well defined between 1,000 and 10,000 second-feet. Operations of water-stage recorder satisfactory. Daily discharge ascertained by applying rating table to mean daily gage height determined by inspection of recorder sheets or by averaging discharge for 12 two-hour periods. Records good.

COOPERATION.—Services of gage observer donated by St. Croix Paper Co.

The following discharge measurement was made by M. R. Stackpole:
August 22, 1922: Gage height, 2.62 feet; discharge, 1,900 second-feet.

Daily discharge, in second-feet, of St. Croix River near Baileyville, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	830	600	1,010	737	540	680	3,700	1,960	942	1,130	1,570	5,580
2	660	704	981	854	460	660	2,650	2,100	1,060	1,050	1,470	4,060
3	794	682	1,020	929	442	630	3,120	1,780	942	981	1,450	3,170
4	794	806	916	1,000	424	630	2,830	1,840	916	1,200	1,450	2,830
5	794	968	1,050	1,020	388	510	2,580	1,860	1,050	1,440	1,610	2,580
6	806	671	1,060	1,010	388	630	2,660	1,440	1,050	1,660	1,160	2,340
7	866	854	1,150	1,020	433	737	2,920	770	1,020	2,420	1,440	2,020
8	866	942	1,130	900	460	878	3,520	1,370	1,030	2,660	1,550	2,000
9	737	759	1,090	860	451	1,120	3,030	1,900	1,050	2,260	1,270	1,900
10	550	770	1,020	900	470	1,440	3,810	1,470	1,060	2,340	1,440	1,340
11	460	916	929	866	480	1,610	4,820	1,580	830	2,180	1,230	1,610
12	442	842	992	878	415	978	5,580	1,500	1,020	2,260	1,230	1,740
13	442	794	1,010	942	470	1,520	6,540	1,500	1,090	2,340	1,090	1,740
14	490	968	1,020	968	424	1,940	5,960	1,100	1,050	2,260	1,540	1,740
15	460	929	942	794	370	2,340	5,390	1,160	1,090	2,260	1,340	1,740
16	480	929	903	916	590	2,660	3,970	1,290	1,009	1,090	1,290	1,590
17	770	866	981	854	660	2,660	3,520	1,240	1,080	2,420	1,270	1,580
18	715	955	1,190	759	640	2,580	3,700	1,290	878	2,100	1,200	1,580
19	660	994	1,020	818	580	2,060	3,340	1,200	1,010	2,020	1,370	1,920
20	715	903	981	806	650	1,590	3,080	1,100	1,030	1,870	1,080	1,960
21	715	916	916	770	715	2,020	3,170	1,000	1,060	1,760	1,390	1,860
22	693	916	968	726	737	1,980	2,830	1,500	968	1,800	1,570	1,750
23	560	981	955	640	715	2,020	1,910	1,450	1,090	1,510	1,470	1,720
24	794	929	942	580	660	2,580	2,120	1,440	1,050	1,690	1,590	1,360
25	818	1,020	842	540	660	2,660	2,100	1,230	835	1,720	1,310	1,330
26	737	1,030	854	600	570	2,100	2,000	1,190	1,010	1,720	1,230	1,710
27	682	903	942	480	580	2,910	2,220	1,050	1,100	1,580	1,020	1,570
28	640	903	916	451	660	3,080	2,400	942	1,060	1,580	3,540	1,550
29	580	981	866	590	-------	3,520	2,500	1,020	1,020	1,580	6,540	1,540
30	510	981	878	500	-------	3,790	938	1,090	1,100	1,230	6,540	1,540
31	540	-------	890	520	-------	3,970	-------	1,050	-------	1,540	5,960	-------

NOTE.—Discharge Oct. 2, Jan. 4, 8–10, 24–27, 30, 31, Feb. 17, 24, Mar. 1, May 12, and 21–23 estimated by comparison with kilowatt-hour output of hydroelectric station just above.

Monthly discharge of St. Croix River near Baileyville, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,320 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	866	442	665	0.504	0.58
November	1,030	600	880	.667	.74
December	1,150	842	979	.742	.86
January	1,020	451	782	.592	.68
February	737	370	537	.407	.42
March	3,970	510	1,890	1.43	1.65
April	6,540	938	3,300	2.50	2.79
May	2,100	770	1,370	1.04	1.20
June	1,100	835	1,020	.773	.86
July	2,660	981	1,820	1.38	1.59
August	6,540	1,020	1,910	1.45	1.67
September	5,580	1,330	2,030	1.54	1.72
The year	6,540	370	1,430	1.08	14.76

PENOBSCOT RIVER BASIN.

WEST BRANCH OF PENOBSCOT RIVER AT MILLINOCKET, MAINE.

LOCATION.—At Quakish Lake dam and Millinocket mill of Great Northern Paper Co., Millinocket, Penobscot County.

DRAINAGE AREA.—1,910 square miles (measured on map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—January 11, 1901, to September 30, 1922.

GAGES.—Water-stage recorder at Quakish Lake dam and gages in forebay and tailrace at mill.

CHANNEL AND CONTROL.—Crest of concrete dam.

DISCHARGE.—Flow computed by considering the flow over the dam, the flow through the wheels, and the water used through the log sluices and filters. The wheels were rated at Holyoke, Mass., before being placed in position and were tested later by numerous tube-float and current-meter measurements. Ratings for four new wheels installed in 1917 are based on acceptance test on one unit after installation; the discharge at various gate openings being measured by the use of pitot tubes. When the flow of the river is less than 3,000 second-feet, all the water generally flows through the wheels of the mill.

ICE.—Determination of discharge not seriously affected by ice; Ferguson Pond, just above entrance to canal, eliminates effect from anchor ice.

REGULATION.—Dams at outlet of North Twin and Ripogenus lakes store water on a surface of about 73 square miles, with a capacity of about 41.5 billion cubic feet. Except during the time (usually in August) when excess water has to be supplied for log driving on the river below Millinocket and for a short time during the high-water period, run-off is regulated by storage. Records corrected for storage.

COOPERATION.—Records furnished by engineers of Great Northern Paper Co.

Monthly discharge of West Branch of Penobscot River at Millinocket, Maine, for the year ending Sept. 30, 1924.

[Drainage area, 1,910 square miles.]

Month.	Discharge in second-feet.			Corrected run-off in inches.
	Observed (mean).	Corrected for storage.		
		Mean.	Per square mile	
October	3,020	2,660	1.39	1.60
November	3,080	2,780	1.46	1.63
December	3,000	1,840	.963	1.11
January	2,870	535	.280	.32
February	2,590	654	.342	.36
March	1,960	403	.211	.24
April	2,440	10,800	5.65	6.30
May	2,730	3,750	1.96	2.26
June	2,630	7,550	3.95	4.41
July	2,660	2,590	1.36	1.57
August	2,760	1,250	.654	.75
September	2,680	434	.227	.25
The year	2,700	2,930	1.53	20.80

WEST BRANCH OF PENOBSCOT RIVER NEAR MEDWAY, MAINE.

LOCATION.—Just above Nichatou Rapids, half a mile above mouth of East Branch of Penobscot River and town of Medway, Penobscot County, and 2 miles below East Millinocket.

DRAINAGE AREA.—2,120 square miles (measured on maps compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—February 20, 1916, to September 30, 1922.

GAGES.—Gurley seven-day water-stage recorder on left bank; inspected by Scott Nadeau.

DISCHARGE MEASUREMENTS.—Made from cable.

CHANNEL AND CONTROL.—Bed fairly smooth at measuring section; covered with rocks and boulders above and below gage. Channel divides a few hundred feet below gage, but practically entire flow passes to left of Nichatou Island. Control formed by Nichatou Island and head of Nichatou Rapids; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 5.81 feet at 8 p. m. June 22 (discharge, 7,890 second-feet); minimum discharge, 1,100 second-feet at 9.30 a. m. February 26.

1916–1922: Maximum stage recorded, 9.88 feet at 1 p. m. June 18, 1917 (discharge, from extension of rating curve, about 20,000 second-feet); minimum discharge (from extension of rating curve) 585 second-feet January 7, 1917.

ICE.—Ice forms along both banks, but the main channel remains open; stage-discharge relation not seriously affected.

REGULATION.—Flow at ordinary stages completely regulated by dams and storage reservoirs above station.

ACCURACY.—Stage-discharge relation shifts slightly at times of high water. Rating curve used well defined between 1,000 and 8,000 second-feet. Operation of water-stage recorder generally satisfactory. Daily discharge ascertained by applying rating table to mean daily gage height determined by inspection of recorder sheets, except for days of large fluctuations in stage when the mean of 12 two-hour periods was used. Records good.

The following discharge measurement was made by M. R. Stackpole:
August 24, 1922: Gage height, 3.77 feet; discharge, 3,080 second-feet.

Daily discharge, in second-feet, of West Branch of Penobscot River near Medway, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3,600	3,510	4,000	2,920	3,510	2,690	3,080	3,000	3,400	4,840	3,330	4,500
2	2,620	3,800	4,200	3,700	3,510	2,920	2,410	3,240	3,200	3,800	3,330	4,300
3	2,840	3,800	4,000	4,300	3,420	2,920	2,550	3,330	3,240	3,700	3,600	3,510
4	3,420	3,900	2,840	4,200	3,160	2,920	2,920	3,510	2,690	3,330	3,800	2,840
5	3,510	3,800	3,420	4,500	2,840	2,550	2,920	3,600	3,420	3,510	3,800	2,840
6	3,420	3,160	4,000	4,300	3,000	2,920	2,920	3,700	3,700	4,200	2,920	3,160
7	3,510	3,420	4,200	4,200	3,510	2,840	3,240	3,240	4,000	4,100	3,240	3,240
8	3,700	3,800	4,100	2,840	3,420	3,510	3,510	3,080	3,420	4,000	3,800	3,160
9	2,550	3,900	4,000	3,600	3,510	3,240	3,000	3,240	3,510	4,300	3,900	3,240
10	3,000	4,100	3,900	4,000	3,420	3,160	3,900	3,510	3,240	2,280	3,800	2,220
11	3,600	4,000	2,840	4,000	3,510	3,600	4,600	3,240	2,840	2,550	3,700	2,840
12	3,600	3,800	3,330	4,200	2,410	3,510	4,500	3,240	3,000	3,000	3,800	3,240
13	4,000	3,330	4,000	4,200	3,160	3,420	4,100	3,510	3,420	3,240	3,330	3,510
14	3,700	3,420	4,000	3,700	3,330	3,700	4,200	2,760	3,600	3,700	2,760	3,160
15	3,600	4,100	4,000	2,760	3,420	3,700	3,800	2,480	3,600	3,240	3,160	3,240
16	2,760	4,100	4,000	3,420	3,420	3,160	2,690	3,240	3,510	3,160	3,240	3,080
17	3,000	4,000	3,700	4,000	3,510	3,000	2,920	3,240	3,510	2,550	3,420	2,220
18	3,700	4,100	3,000	4,200	3,420	3,000	3,600	3,330	3,000	2,840	3,240	2,840
19	3,900	4,100	3,700	4,200	2,340	2,550	3,900	3,330	3,900	3,000	3,330	3,240
20	3,900	3,700	4,100	3,700	3,420	2,100	3,800	3,700	4,960	3,000	2,760	3,160
21	4,300	3,900	4,200	3,510	3,420	2,620	3,900	2,920	5,320	3,240	2,760	3,330
22	4,200	4,400	4,300	2,620	3,330	2,690	3,800	2,690	6,950	3,080	3,160	3,240
23	3,000	4,300	4,200	2,920	3,240	2,690	3,420	3,420	7,340	2,620	3,160	3,240
24	3,600	4,300	3,600	3,600	3,240	2,840	3,160	3,080	6,170	2,840	3,240	2,100
25	3,800	4,300	3,160	3,600	3,160	2,550	3,420	3,330	4,720	3,240	3,240	3,330
26	4,100	4,200	3,240	3,510	2,760	2,220	3,510	3,510	4,720	3,160	3,240	3,330
27	4,200	3,330	4,100	3,510	2,840	2,550	3,900	3,240	4,720	3,510	2,480	3,240
28	4,300	3,600	4,400	3,510	3,160	3,080	4,100	2,550	4,200	3,420	2,920	3,330
29	3,800	3,800	4,300	3,240	-------	3,080	3,900	2,690	4,400	3,330	3,900	3,240
30	3,080	4,000	4,300	3,160	-------	2,620	3,510	3,510	5,200	2,760	4,200	3,330
31	3,160	-------	4,200	3,510	-------	2,620	-------	3,330	-------	3,000	4,300	-------

NOTE.—Daily discharge estimated June 1 and 2.

Monthly discharge of West Branch of Penobscot River near Medway, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 2,120 square miles.]

Month.	Discharge in second-feet					Corrected run-off in inches.
	Observed.			Corrected for storage.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
October	4,300	2,550	3,530	3,160	1.49	1.72
November	4,400	3,160	3,870	3,570	1.68	1.87
December	4,400	2,840	3,850	2,690	1.27	1.46
January	4,500	2,620	3,670	1,330	.627	.72
February	3,510	2,340	3,230	1,290	.608	.63
March	3,700	2,100	2,930	1,370	.646	.74
April	4,600	2,410	3,510	11,900	5.61	6.26
May	3,700	2,480	3,220	4,240	2.00	2.31
June	7,340	2,690	4,100	9,020	4.25	4.74
July	4,840	2,280	3,310	3,240	1.53	1.76
August	4,300	2,480	3,380	1,870	.882	1.02
September	4,500	2,100	3,180	940	.443	.49
The year	7,340	2,100	3,480	3,710	1.75	23.72

PENOBSCOT RIVER AT WEST ENFIELD, MAINE.

LOCATION.—At steel highway bridge 1,000 feet below mouth of Piscataquis River and 3 miles west of Enfield railroad station, Penobscot County.

DRAINAGE AREA.—6,600 square miles.

RECORDS AVAILABLE.—January 1, 1902, to September 30, 1922.

GAGES.—Friez water-stage recorder on left bank, downstream side of left abutment, used since December 11, 1912; chain gage on upstream side of bridge, used prior to that date; gages set to same datum. Gage inspected by R. S. Tozier and Maxine Swett.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel at gage broken by four bridge piers; straight above and below gage. Banks high and rocky and not subject to overflow. Control is at Passadumkeag Rips, about 5 miles below gage; a wing dam at this point is overflowed at about gage height 5.5 feet.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 14.15 feet at 5 p. m. June 23 (discharge, 60,400 second-feet); minimum stage during year from water-stage recorder, 1.88 feet at 4 p. m. September 25 (discharge, 3,000 second-feet).

1902–1922: Maximum stage recorded, 17.8 feet September 30, 1909 (discharge, from extension of rating curve, 88,700 second-feet); minimum stage, 1.0 foot at 7 a. m. and 5 p. m. October 29, 1905 (discharge, 1,470 second-feet).

ICE.—Stage-discharge relation usually affected by ice from December to April; discharge ascertained by comparison with records at Sunkhaze Rips, collected by Thomas W. Clark.

REGULATION.—Flow largely controlled by storage, principally in the lakes tributary to the West Branch. Records not corrected for storage.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice and occasionally by logs. Rating curve well defined. Operation of water-stage recorder satisfactory throughout the year. Daily discharge ordinarily ascertained by applying rating table to average gage height taken from recorder sheets; at times of serious fluctuations in stage the daily discharge is ascertained by using the average discharge of 12 two-hour periods. Gage heights corrected for effect of ice and log jams. Records good.

COOPERATION.—Gage-height record furnished by Thomas W. Clark, hydraulic engineer, Old Town, Maine. Occasional discharge measurements made by students of the University of Maine, under the direction of Prof. A. C. Lyon.

Daily discharge, in second-feet, of Penobscot River at West Enfield, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4,500	5,770	9,000	7,000	5,400	4,600	19,300	14,300	7,170	40,700	7,000	10,200
2	4,280	6,020	9,000	6,800	5,400	4,200	17,200	12,600	7,440	33,200	7,000	9,120
3	3,950	6,910	11,000	5,800	5,400	4,300	15,600	12,100	7,440	28,300	7,000	7,840
4	4,060	7,580	12,000	6,800	5,400	4,400	15,400	12,800	9,270	26,200	7,400	6,520
5	4,620	7,710	11,500	7,000	5,200	4,300	15,600	12,800	13,900	25,500	8,400	6,140
6	4,620	7,440	10,500	7,000	4,700	4,500	16,400	13,900	14,600	25,000	7,840	5,890
7	4,390	6,650	10,000	7,200	5,000	5,200	18,200	17,600	12,800	22,800	7,170	6,020
8	4,620	6,780	8,800	6,800	5,400	8,600	19,300	16,800	10,800	19,300	8,120	5,890
9	4,280	6,780	8,600	6,200	5,400	13,000	23,000	14,800	9,880	18,000	8,980	5,770
10	3,740	6,910	8,400	5,600	5,200	17,000	27,200	13,900	9,880	15,200	8,400	5,190
11	4,620	6,520	8,200	5,800	5,400	19,500	35,300	12,300	9,570	13,700	7,980	4,390
12	6,020	6,650	7,800	5,800	5,200	19,000	43,700	11,500	10,200	12,800	7,440	4,960
13	6,910	6,780	7,600	5,800	4,600	18,500	47,800	11,500	11,300	12,300	6,390	5,300
14	9,120	6,390	7,600	6,200	4,800	18,000	44,000	11,000	10,800	13,500	6,020	5,650
15	7,710	7,170	7,400	5,600	5,000	18,000	40,100	9,120	9,720	14,200	5,890	5,650
16	6,780	7,170	7,200	5,600	5,000	18,500	36,500	8,400	8,830	12,800	6,020	5,770
17	5,890	6,910	6,600	4,700	5,000	18,500	31,800	8,830	8,540	11,500	6,020	5,420
18	5,890	6,780	7,400	5,400	5,000	16,500	30,200	8,400	9,570	9,570	6,140	4,620
19	6,260	7,170	9,000	5,600	4,800	15,000	32,700	9,720	22,800	9,570	6,140	5,190
20	6,260	8,830	10,500	5,800	4,600	14,000	32,100	18,400	30,800	9,120	5,890	5,190
21	7,300	15,000	12,000	5,600	5,000	13,500	31,300	17,600	29,400	8,830	5,770	5,190
22	9,570	15,800	11,500	5,200	5,200	16,500	29,400	14,300	41,900	8,680	6,140	4,840
23	9,420	13,900	10,500	4,600	5,000	18,500	25,500	11,800	59,000	7,840	5,770	5,080
24	8,400	11,500	9,000	4,800	5,000	18,500	21,500	9,880	54,500	7,580	5,650	4,840
25	8,260	10,000	8,200	5,000	5,000	18,500	19,000	8,540	44,900	7,400	5,650	3,630
26	7,840	9,420	8,000	5,000	4,600	17,500	17,400	8,540	39,800	7,800	5,890	4,730
27	7,710	9,420	7,600	5,000	4,300	17,500	16,600	9,120	35,300	7,600	5,770	4,730
28	7,440	8,800	7,800	5,000	4,300	21,000	16,800	8,540	29,100	7,400	6,520	4,730
29	7,170	8,800	7,800	5,000	-------	21,300	17,000	8,260	26,800	7,200	10,200	4,730
30	6,520	9,200	7,600	4,800	-------	20,600	16,000	8,540	41,600	8,400	12,800	4,620
31	5,890	-------	7,400	4,700	-------	20,600	-------	7,710	-------	7,000	11,600	-------

NOTE.—Stage-discharge relation affected by ice Nov. 24, 25, 28–30; Dec. 1, 2, Dec. 4 to Mar. 28, and by logs July 25 to Aug. 4. Discharge for these periods computed from gage heights corrected for effect of ice and logs by means of six discharge measurements and other data at Sunkhaze, furnished by Thomas W. Clark.

Monthly discharge of Penobscot River at West Enfield, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 6,600 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	9,570	3,740	6,260	0.948	1.09
November	15,800	5,770	8,360	1.27	1.42
December	12,000	6,600	8,890	1.35	1.56
January	7,200	4,600	5,720	.867	1.00
February	5,400	4,300	5,010	.759	.79
March	21,300	4,200	14,500	2.20	2.54
April	47,800	15,400	25,700	3.89	4.34
May	17,600	7,710	11,700	1.77	2.04
June	59,000	7,170	21,300	3.23	3.60
July	40,700	7,000	14,800	2.24	2.58
August	12,800	5,650	7,190	1.09	1.26
September	10,200	3,630	5,590	.847	.94
The year	59,000	3,630	11,300	1.71	23.16

EAST BRANCH OF PENOBSCOT RIVER AT GRINDSTONE, MAINE.

LOCATION.—At Bangor & Aroostook Railroad bridge half a mile south of railroad station at Grindstone, Penobscot County, one-eighth mile above Grindstone Falls and 8 miles above confluence with West Branch at Medway.

DRAINAGE AREA.—1,070 square miles; includes approximately 240 square miles of Chamberlain Lake drainage (measured on maps compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—October 23, 1902, to September 30, 1922.

GAGE.—Chain attached to railroad bridge; read by R. D. Porter.

DISCHARGE MEASUREMENTS.—Made from railroad bridge.

CHANNEL AND CONTROL.—Practically permanent; stream confined by abutments of bridge and broken by one pier at ordinary stages; velocity of current medium at moderate and high stages but sluggish at low water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.2 feet at 7.20 a. m. June 23 (discharge, 14,400 second-feet); minimum stage, 4.32 feet at 5 p. m., September 15 (discharge, 280 second-feet).

1902–1922: Maximum stage recorded, 14.2 feet September 29, 1909 (discharge, by extension of rating curve, 23,800 second-feet); minimum open-water stage, 3.8 feet October 29–31, 1905 (discharge, 140 second-feet). Estimated minimum discharge of 30 second-feet, February 28, 1904, when stage-discharge relation was affected by ice.

ICE.—Ice forms to a considerable thickness at the gage and down to the head of Grindstone Falls, and although the falls usually remain open during the greater part of the winter, the stage-discharge relation is somewhat affected.

REGULATION.—Dams maintained at outlets of a number of lakes and ponds near source of river are regulated for log driving; during the summer and fall gates are generally left open. The basin of the East Branch since about 1840 includes about 240 (revised) square miles of territory draining into Chamberlain Lake that formerly drained into the St. John River basin, the diversion being made through what is known as the Telos Canal. Records not corrected for storage and diversions.

ACCURACY.—Stage-discharge relation occasionally affected by backwater from log jams at station and at Grindstone Falls immediately below, and by ice during winter. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice during the winter. Records good.

Discharge measurements of East Branch of Penobscot River at Grindstone, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 4	5.62	1,220	Feb. 14	[a] 5.17	379	Aug. 25	4.72	536
Jan. 12	[a] 5.32	643	Mar. 15	[a] 6.28	1,480	Do	4.72	500

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of East Branch of Penobscot River at Grindstone, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	470	1,050	2,400	740	440	310	1,750	3,320	1,360	6,380	1,110	690
2	470	1,100	2,500	740	440	300	1,600	3,490	1,880	5,100	1,060	655
3	470	1,050	2,100	700	430	300	1,540	3,000	2,100	4,650	1,060	620
4	500	1,160	2,400	700	430	290	1,540	3,000	3,670	4,650	975	585
5	590	1,160	2,000	700	420	290	1,740	2,850	4,650	4,870	1,060	585
6	530	1,160	1,900	680	420	290	1,880	2,850	3,670	4,650	1,060	550
7	500	1,100	1,800	660	410	290	1,950	3,320	3,320	4,440	1,060	520
8	470	1,100	1,750	660	400	340	2,550	3,320	3,160	4,440	1,160	490
9	530	950	1,600	660	390	1,950	3,490	3,860	3,160	4,650	1,020	490
10	730	905	1,550	640	390	1,950	4,440	3,490	3,160	4,240	975	490
11	2,180	860	1,460	640	390	1,800	5,590	2,850	3,160	4,050	890	460
12	1,530	1,220	1,300	640	380	1,750	6,380	2,700	3,160	3,670	890	460
13	3,320	1,100	1,200	640	380	1,650	6,380	3,000	2,850	3,490	890	490
14	2,180	1,100	1,100	640	380	1,600	5,590	2,850	2,320	3,320	850	690
15	1,810	1,050	1,050	620	380	1,480	5,100	2,550	2,180	2,700	810	430
16	1,650	1,000	960	620	370	1,550	4,870	2,400	2,180	2,400	770	370
17	1,530	860	900	620	370	1,400	4,240	2,100	2,180	2,400	730	520
18	1,400	1,050	860	620	360	1,100	5,340	1,600	3,700	2,320	730	490
19	1,340	1,050	1,050	600	360	1,050	5,850	1,600	8,100	2,250	770	460
20	1,810	2,850	1,200	600	350	1,000	5,590	1,880	6,930	2,100	730	430
21	3,320	3,670	1,100	600	340	1,050	5,850	2,020	6,380	1,950	690	400
22	3,860	3,000	960	580	340	1,400	4,870	1,880	6,930	1,670	655	400
23	3,490	2,550	900	560	330	1,800	4,440	2,180	14,100	1,670	655	370
24	3,160	2,100	860	540	330	1,750	4,240	2,100	11,100	1,670	620	345
25	2,850	2,100	860	540	320	1,550	3,670	1,540	9,000	1,740	520	370
26	2,550	2,100	820	520	320	1,500	3,860	1,600	9,000	1,670	490	345
27	2,320	2,200	820	500	320	1,500	3,860	1,670	6,930	1,480	550	345
28	2,100	2,400	820	490	320	1,500	4,240	1,740	5,850	1,250	770	320
29	2,020	2,600	760	470	-------	1,700	3,860	1,880	5,590	1,360	1,110	295
30	1,950	2,200	760	470	-------	1,850	3,490	1,360	6,650	1,200	1,110	295
31	1,500	-------	740	450	-------	2,000	-------	1,300	-------	1,160	810	-------

NOTE.—Stage-discharge relation affected by ice Nov. 27 to Apr. 1; discharge for this period computed from gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of East Branch of Penobscot River at Grindstone, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,070 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per sqare mile.	
October	3,860	470	1,710	1.60	1.84
November	3,670	860	1,590	1.49	1.66
December	2,500	740	1,300	1.21	1.40
January	740	450	608	.568	.65
February	440	320	375	.350	.36
March	2,000	290	1,240	1.16	1.34
April	6,380	1,540	3,990	3.73	4.16
May	3,860	1,300	2,430	2.27	2.62
June	14,100	1,360	4,950	4.63	5.17
July	6,380	1,160	3,020	2.82	3.25
August	1,160	490	857	.801	.92
September	690	295	465	.435	.49
The year	14,100	290	1,880	1.76	23.86

MATTAWAMKEAG RIVER AT MATTAWAMKEAG, MAINE.

LOCATION.—At Maine Central Railroad bridge at Mattawamkeag, Penobscot County, half a mile above mouth of river.

DRAINAGE AREA.—1,500 square miles.

RECORDS AVAILABLE.—August 26, 1902, to September 30, 1922.

GAGE.—Chain fastened to railroad bridge; read by W. T. Mincher.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Practically permanent; channel at bridge broken by two piers.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.5 feet at 5 p. m. June 24 (discharge, 17,400 second-feet); minimum stage, 3.82 feet at 5 p. m. October 8 (discharge, 270 second-feet).

1902–1922: Maximum stage recorded, 14.0 feet April 18, 1920 (discharge, by extension of rating curve, 25,600 second-feet); minimum discharge of 86 second-feet occurred on October 4–12, 1905; September 19 and October 6, 1906; September 24–29, 1908; and October 14–17, 1910.

ICE.—Stage-discharge relation usually affected by ice for several months each winter.

REGULATION.—Dams are maintained at outlets of several large lakes and ponds, but the stored water is used only for log driving.

ACCURACY.—Stage-discharge relation occasionally affected by backwater from log jams and during winter by ice. Rating curve well defined below 15,000 second-feet. Gage read to quarter-tenths twice daily, except during winter when it was read once daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for ice and other obstructions. Records good.

Discharge measurements of Mattawamkeag River at Mattawamkeag, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Oct. 6	[a] 3.89	313	Jan. 10	[b] 6.75	793	Mar. 14	[b] 9.20	5,220
Dec. 1	[a] 5.68	2,190	Feb. 13	[b] 6.10	576	Aug. 24	4.10	587

[a] Stage-discharge relation affected by fish trap. [b] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Mattawamkeag River at Mattawamkeag, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	560	570	2,200	1,550	620	310	6,370	4,000	960	9,420	660	2,600
2	430	660	1,950	1,300	620	310	6,140	3,800	910	9,160	615	2,200
3	330	860	1,900	1,200	620	310	5,910	3,610	860	8,380	660	1,600
4	370	1,020	1,900	1,000	620	290	5,460	3,610	1,700	7,860	760	1,200
5	290	1,130	2,000	960	620	380	5,240	3,420	1,960	8,120	860	980
6	310	1,130	2,100	900	620	620	5,460	3,230	2,380	7,350	960	960
7	300	1,020	2,100	860	620	940	5,910	3,610	2,380	6,610	960	900
8	270	910	2,100	800	620	1,850	5,910	3,040	2,090	5,910	1,070	810
9	330	860	1,950	800	620	2,700	6,610	2,700	1,830	5,020	1,250	760
10	360	860	1,900	800	620	2,600	7,860	2,530	1,830	4,000	1,310	710
11	460	810	1,700	780	600	4,700	9,160	2,380	1,570	3,420	1,130	615
12	490	910	1,600	760	600	4,600	11,000	2,090	1,700	3,040	960	570
13	600	860	1,450	700	600	4,900	12,400	1,960	1,700	2,530	860	615
14	760	910	1,400	700	560	5,200	13,300	1,700	1,570	2,090	810	660
15	900	960	1,400	700	540	5,400	13,300	1,640	1,700	2,090	660	615
16	840	860	1,350	660	520	5,300	12,400	1,640	1,700	1,830	615	660
17	620	860	1,350	660	520	4,800	11,300	1,570	1,700	1,700	615	660
18	620	860	1,450	660	480	4,200	10,800	1,380	2,700	1,570	615	615
19	620	910	1,900	660	480	3,900	10,200	1,310	3,230	1,440	760	561
20	640	1,570	2,600	660	480	3,800	9,960	1,310	4,600	1,310	615	480
21	660	2,700	3,000	660	440	3,800	9,690	1,500	5,910	1,190	615	435
22	820	3,200	3,200	660	440	4,000	9,160	1,700	10,200	1,020	615	435
23	900	3,200	3,100	660	440	4,200	8,380	1,570	12,400	960	570	390
24	860	3,200	2,900	660	440	4,400	7,350	1,440	17,000	960	570	390
25	840	3,200	2,800	620	440	4,800	5,910	1,440	16,100	960	660	399
26	860	3,000	2,500	620	390	5,200	4,810	1,440	14,500	960	660	374
27	760	2,800	2,400	620	370	5,910	4,200	1,380	11,600	910	760	390
28	760	2,800	2,200	620	350	5,460	4,000	1,310	11,300	810	660	390
29	700	2,900	2,000	620	-------	5,680	4,000	1,250	10,500	810	1,700	390
30	660	2,500	1,700	620	-------	6,140	4,000	1,070	9,690	760	2,700	390
31	660	-------	1,650	620	-------	6,610	-------	1,020	-------	660	2,700	-------

NOTE.—Stage-discharge relation affected by ice Nov. 21 to Mar. 26; discharge for this period computed from gage heights corrected for effect of ice by means of four discharge measurements, observer's notes, and weather records. Stage-discharge relation affected by fish trap Oct. 1–25 and Aug. 29 to Sept. 7; discharge for these periods computed from gage heights corrected for effect of the obstruction by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of Mattawamkeag River at Mattawamkeag, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,500 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	900	270	599	0.399	0.46
November	3,200	570	1,600	1.07	1.19
December	3,200	1,350	2,060	1.37	1.58
January	1,550	620	777	.518	.60
February	620	350	532	.355	.37
March	6,610	290	3,660	2.44	2.81
April	13,300	4,000	7,870	5.25	5.86
May	4,000	1,020	2,120	1.41	1.63
June	17,000	860	5,280	3.52	3.93
July	9,420	660	3,320	2.21	2.55
August	2,700	570	934	.623	.72
September	2,600	374	758	.505	.56
The year	17,000	270	2,460	1.64	22.26

PISCATAQUIS RIVER NEAR FOXCROFT, MAINE.

LOCATION.—At highway bridge known as Lows Bridge, half-way between Guilford and Foxcroft, Piscataquis County, three-fourths mile above mouth of Black Stream and 3 miles below Mill Stream.

DRAINAGE AREA.—286 square miles.

RECORDS AVAILABLE.—August 17, 1902, to September 30, 1922.

GAGE.—Staff attached to left abutment of bridge; read by A. F. D. Harlow.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Practically permanent; banks are high and are overflowed only during extreme floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.5 feet at 6.30 a. m. June 30 (discharge, 7,350 second-feet); minimum stage, 1.7 feet several times during September (discharge, 31 second-feet).

1902–1922: Maximum stage recorded, 14.3 feet September 29, 1909 (discharge, by extension of rating curve, 21,700 second-feet); minimum discharge, 5 second-feet August 6, 1905, and November 22, 1908 (water held back by dams).

ICE.—Stage-discharge relation affected by ice during winter.

REGULATION.—The stream is used to develop power at several manufacturing plants above station; distribution of flow somewhat affected by operation of wheels.

ACCURACY.—Stage-discharge relation occasionally affected by backwater from log jams and by ice during winter. Rating curve well defined below 5,000 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice during winter. The effect of diurnal fluctuation in stage, was studied by means of temporary use of water-stage recorder during September. Records fair.

Discharge measurements of Piscataquis River near Foxcroft, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 13	[a] 3.84	375	Mar. 16	[a] 5.11	920
Feb. 17	[a] 3.90	191	Aug. 27	3.10	462

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Piscataquis River near Foxcroft, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	67	120	440	430	120	58	925	1,150	240	3,200	380	355
2	40	110	680	330	175	58	1,060	840	240	2,000	440	240
3	51	570	1,060	430	175	40	1,020	970	160	1,700	440	280
4	46	380	1,100	410	200	40	970	970	355	1,600	440	330
5	46	240	925	410	40	46	720	1,060	330	1,510	380	280
6	36	240	720	400	100	80	925	1,420	330	1,510	280	240
7	36	280	570	380	145	130	1,330	1,510	330	1,600	305	175
8	36	280	535	330	145	600	1,600	1,510	380	925	355	175
9	36	355	535	380	145	2,000	2,650	1,420	355	970	380	51
10	58	175	535	380	120	1,700	3,640	1,240	355	640	280	51
11	58	110	330	330	100	1,400	4,590	1,100	380	605	175	110
12	355	175	280	360	90	1,200	5,550	680	720	570	64	132
13	720	260	280	330	50	880	4,590	570	760	500	64	175
14	380	260	330	280	90	720	3,640	380	720	440	100	222
15	175	535	305	240	90	640	3,200	380	500	330	132	175
16	160	380	500	260	100	920	2,320	380	500	280	160	260
17	160	330	500	260	90	840	2,320	380	500	280	205	260
18	160	470	720	220	72	560	2,760	380	2,100	280	260	260
19	120	535	1,700	200	50	560	3,200	3,200	4,110	280	380	240
20	58	1,330	1,510	175	100	640	2,540	2,540	3,090	280	175	175
21	535	1,700	970	145	100	640	2,540	1,600	2,100	280	205	160
22	410	970	840	100	100	560	1,900	1,100	4,230	280	205	160
23	330	640	760	145	100	540	1,510	1,060	3,530	280	175	31
24	305	535	680	100	64	580	1,330	720	2,100	330	160	31
25	222	720	600	110	90	540	1,240	680	1,900	160	110	64
26	190	1,020	540	110	58	380	1,240	640	1,800	145	64	120
27	110	1,020	540	160	40	520	1,240	570	1,900	120	380	132
28	100	720	440	160	46	720	1,240	380	1,150	160	720	110
29	100	800	440	100	-------	2,200	1,240	380	2,650	2,100	1,150	31
30	100	570	440	145	-------	2,100	1,150	330	5,910	1,150	1,150	31
31	120	-------	440	120	-------	2,000	-------	240	-------	970	330	-------

NOTE.—Stage-discharge relation affected by ice Dec. 23 to Mar. 29; discharge for this period computed from gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Piscataquis River near Foxcroft, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 286 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	720	36	172	0.601	0.69
November	1,700	110	528	1.85	2.06
December	1,700	280	653	2.28	2.63
January	430	100	256	.895	1.03
February	200	40	99.8	.349	.36
March	2,200	40	771	2.70	3.11
April	5,550	720	2,140	7.48	8.34
May	3,200	240	961	3.36	3.87
June	5,910	160	1,460	5.10	5.69
July	3,200	120	822	2.87	3.31
August	1,150	64	324	1.13	1.30
September	355	31	169	.591	.66
The year	5,910	31	697	2.43	33.05

PLEASANT RIVER AT MILO, MAINE.

LOCATION.—At highway bridge known locally as Snow's bridge, in Milo, Piscataquis County.

DRAINAGE AREA.—325 square miles (measured on map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—June 4, 1920, to September 30, 1922.

GAGES.—Chain on downstream side of bridge near left abutment. Vertical staff on downstream side of right bridge abutment used prior to April 25, 1921. Read by H. S. Snow.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Bed covered with coarse gravel. Control for low stages is a well-defined riffle 100 feet below gage; control at high stages formed by series of riffles extending a mile below gage.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 7.54 feet at 4.45 p. m. June 30 (discharge, by extension of rating curve, 10,000 second-feet); minimum stage 2.30 feet at 5.30 a. m. September 30 (discharge, 47 second-feet).

1920–1922: Maximum open-water stage recorded, 7.54 feet June 30, 1922 (discharge, by extension of rating curve, 10,000 second-feet). A stage of 9.5 feet was recorded March 25, 1921, but the channel was obstructed by ice at the time. Minimum stage, 2.10 feet July 29, August 2, and September 11, 1921 (discharge, 22 second-feet).

ICE.—Stage-discharge relation affected by ice during winter.

REGULATION.—The flow is partially regulated by a power development at Brownville and by storage dams at the headwaters which are used during the log-driving season.

ACCURACY.—Stage-discharge relation changed at time ice went out March 26. Two curves used during year; curves well defined between 100 and 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Pleasant River at Milo, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 12	[a] 4.30	212	Mar. 14	[a] 5.55	935	Apr. 11	5.29	4,410
Feb. 16	[a] 5.00	241	Apr. 11	5.24	4,260	Aug. 26	2.70	246

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Pleasant River at Milo, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	140	374	820	280	150	120	1,150	745	530	4,180	268	409
2	115	565	820	280	160	145	970	384	580	2,890	312	490
3	160	547	920	280	160	170	855	855	690	1,590	481	245
4	256	920	1,150	250	160	135	1,090	1,150	1,590	1,430	910	232
5	329	466	2,690	250	160	250	910	680	1,920	1,510	1,090	400
6	202	680	1,590	250	160	300	1,430	1,360	1,670	1,750	755	328
7	160	500	1,150	250	160	350	1,750	1,510	640	1,510	490	305
8	130	350	920	250	160	600	1,220	1,670	500	1,030	1,030	268
9	190	422	710	250	160	1,150	2,290	1,430	550	970	855	238
10	280	366	820	220	170	1,100	2,690	1,290	910	910	800	112
11	670	466	820	210	190	920	4,180	855	855	745	600	107
12	538	406	1,150	210	135	760	4,920	800	1,030	660	463	142
13	1,150	382	920	210	160	760	4,420	970	970	500	193	212
14	2,200	390	700	210	160	940	3,510	490	745	490	472	232
15	484	422	660	210	190	900	2,890	500	580	855	500	200
16	274	382	660	210	240	820	2,890	481	418	1,030	454	147
17	484	448	600	210	160	700	1,920	481	392	1,030	384	80
18	511	475	700	195	220	600	2,490	570	2,100	660	400	142
19	502	439	1,300	195	210	520	3,300	1,600	4,920	376	454	164
20	529	1,150	1,050	195	220	600	3,950	2,900	3,950	500	352	174
21	1,090	1,590	820	195	160	920	3,950	1,750	2,890	500	305	120
22	710	1,430	600	190	145	1,050	2,590	1,600	4,180	392	252	136
23	670	690	520	190	130	1,150	1,360	1,150	5,170	282	212	84
24	660	690	430	190	120	1,300	910	400	5,420	336	186	77
25	556	710	390	190	110	1,450	1,670	490	2,200	290	193	130
26	520	740	350	190	110	1,550	970	520	1,840	275	206	94
27	430	760	350	190	110	1,750	1,670	855	1,290	245	212	84
28	406	820	320	190	110	2,000	1,220	360	970	252	400	70
29	760	820	320	190	-------	2,300	1,030	910	2,100	360	910	77
30	406	860	320	160	-------	2,690	910	970	8,670	312	800	67
31	374	-------	320	160	-------	2,590	-------	620	-------	275	550	-------

NOTE.—Stage-discharge relation affected by ice Nov. 26 to Dec. 3; Dec. 10 to Mar. 29; discharge for these periods computed from gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records. Stage-discharge relation affected by logs May 19–25; discharge for this period computed from gage heights corrected for effect of logs by means of observer's notes and rainfall data.

Monthly discharge of Pleasant River at Milo, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 325 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	2,160	115	512	1.58	1.82
November	1,590	350	642	1.98	2.21
December	2,600	320	803	2.47	2.85
January	280	160	215	.662	.76
February	240	110	160	.492	.51
March	2,690	120	987	3.04	3.50
April	4,920	855	2,170	6.68	7.45
May	2,900	360	979	3.01	3.47
June	8,670	392	2,010	6.18	6.90
July	4,180	245	908	2.79	3.22
August	1,090	186	500	1.54	1.78
September	490	67	186	.572	.64
The year	8,670	67	840	2.58	35.11

PASSADUMKEAG RIVER AT LOWELL, MAINE.

LOCATION.—About half a mile below dam and highway bridge at Lowell, Penobscot County, and 10 miles above mouth of river.

DRAINAGE AREA.—301 square miles.

RECORDS AVAILABLE.—October 1, 1915, to September 30, 1922.

GAGES.—Water-stage recorder on right bank half a mile below highway bridge; inspected by M. J. Leard. Chain and staff gages on left bank near highway bridge used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from cable near gage.

CHANNEL AND CONTROL.—Channel rough and somewhat irregular, control about 100 feet below gage, subject to obstruction due to collection of logs and débris from pulp mill.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.15 feet at 4.30 p. m. June 24 (estimated discharge, 1,700 second-feet) (stage-discharge relation affected by mill waste); minimum discharge, 38 second-feet at 8 p. m. September 27.

1916–1922: Maximum discharge, 3,390 second-feet April 19–21, 1920; minimum discharge, estimated as 5 second-feet several times in July and August, 1921, when gates at dam were closed.

ICE.—Stage-discharge relation usually affected by ice from December to April.

REGULATION.—Distribution of flow somewhat affected by use of storage reservoirs above station. A small dam and mill half a mile above gage cause diurnal fluctuations in stage when mill is in operation.

ACCURACY.—Stage-discharge relation seriously affected by logs and débris from pulp mill, and by ice during winter. Operation of water-stage recorder generally satisfactory. Rating curve well defined below 2,600 second-feet. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice, log jams, and débris. Records fair.

COOPERATION.—One discharge measurement was made by T. W. Clark, hydraulic engineer, Old Town, Maine.

Discharge measurements of Passadumkeag River at Lowell, Maine, during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec. ft.*
Oct. 5	M. R. Stackpole	1.21	113	Jan. 10	M R. Stackpole	[b] 1.75	106
28	T. W. Clark	[a] 1.55	86	Feb. 13	do	[b] 1.48	93
Nov. 30	M. R. Stackpole	[a] .68	29.9	Mar. 13	do	[b] 3.65	759
30	do	[a] 2.19	263	Aug. 23	do	2.65	572

[a] Stage-discharge relation affected by logs and mill waste.
[b] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Passadumkeag River at Lowell, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	96	70	90	120	76	78	940	750	900	1,050	286	710
2	96	82	190	120	76	78	880	690	900	1,050	252	605
3	96	82	210	100	76	78	840	635	625	1,050	244	550
4	96	90	200	100	76	78	800	635	578	980	249	630
5	98	100	250	100	76	82	700	546	875	960	249	475
6	101	105	250	100	80	110	560	524	1,020	920	166	476
7	103	125	250	94	90	125	520	519	925	900	246	392
8	108	170	250	94	90	400	540	582	740	840	221	375
9	148	165	250	100	90	620	600	690	640	720	277	430
10	116	165	200	105	90	760	780	775	600	720	255	208
11	109	185	200	100	90	800	1,100	875	420	620	241	319
12	118	170	175	94	90	900	1,400	920	580	591	240	256
13	118	180	165	90	92	760	1,500	880	640	555	170	363
14	120	185	165	86	92	720	1,500	860	520	502	200	194
15	125	165	155	90	88	720	1,450	860	440	460	114	294
16	135	170	150	80	78	720	1,350	860	441	396	188	478
17	125	150	145	80	82	680	1,300	880	418	410	308	340
18	130	150	180	80	82	620	1,150	900	339	388	220	544
19	115	170	210	80	82	600	1,100	940	437	392	259	372
20	135	240	300	80	82	560	1,050	980	810	441	249	450
21	100	380	350	76	82	560	900	960	586	489	376	362
22	95	520	410	80	76	580	980	980	1,200	399	291	356
23	96	380	450	80	76	540	940	940	1,500	367	349	401
24	110	460	310	80	76	520	920	940	1,600	578	267	233
25	125	480	260	80	84	520	860	980	1,550	472	342	320
26	120	480	230	80	76	520	780	960	1,550	452	213	282
27	88	390	180	80	76	560	640	800	1,450	339	235	370
28	82	320	175	80	76	640	580	660	1,350	302	506	183
29	78	300	165	76	-------	720	820	700	1,250	363	555	257
30	74	110	150	76	-------	900	800	980	1,200	319	775	336
31	68	-------	135	76	-------	960	-------	975	-------	325	750	-------

NOTE.—Stage-discharge relation affected by ice Dec. 30 to Apr. 4; discharge for this period computed from gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, weather records, and gage heights from auxiliary gage half a mile above, which was probably not affected by ice.

Stage-discharge relation affected by logs and mill waste Oct. 1–4, 14–21, Oct. 23 to Dec. 29, Apr. 5–30, May 12–30, June 8–15, and June 22 to July 11; discharge for these periods computed from gage heights corrected for effect of logs or mill waste by means of four discharge measurements, observer's notes, and gage heights from auxiliary gage.

Monthly discharge of Passadumkeag River at Lowell, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 301 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	148	68	108	0.359	0.41
November	520	70	225	.748	.83
December	450	90	219	.728	.84
January	120	76	88.9	.295	.34
February	92	76	82.1	.273	.28
March	960	78	533	1.77	2.04
April	1,500	520	943	3.13	3.49
May	980	519	812	2.70	3.11
June	1,600	339	859	2.85	3.18
July	1,050	302	592	1.97	2.27
August	775	114	300	.997	1.15
September	710	183	385	1.28	1.43
The year	1,600	68	430	1.43	19.37

KENNEBEC RIVER BASIN.

MOOSE RIVER NEAR ROCKWOOD, MAINE.

LOCATION.—Three miles above Moosehead Lake and 4 miles west of Kineo station and Rockwood post office, Rockwood Township, Somerset County.

DRAINAGE AREA.—708 square miles (revised from map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—September 7, 1902, to December 31, 1908; May 16, 1910, to September 18, 1912; November 1, 1919, to September 30, 1922.

GAGES.—Stevens continuous water-stage recorder on left bank installed September 27, 1921; referred to gage datum by means of hook gage inside well; inclined staff is used for auxiliary readings. Recorder inspected by W. H. Maynard. Records previous to October 1, 1921, obtained from staff gage at Walter Scott's camp.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel consists of ledge rock and gravel. Control at new location well defined and apparently permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 7.3 feet at 4 a. m. April 20 (discharge, by extension of rating curve, 7,600 second-feet). Minimum stage recorded, 1.62 feet from 4 p. m. September 27 to 10 a. m. September 20 (discharge, 100 second-feet).

1902–1908; 1910–1912; and 1919–1922: Maximum stage recorded, 10.0 feet April 5–7, 1921 (discharge, by extension of rating curve, 10,000 second-feet); minimum stage, 1.30 feet December 16, 1903 (discharge, by extension of rating curve, 70 second-feet).

ICE.—Stage-discharge relation apparently not affected by ice at present location.

REGULATION.—During April, May, and June the operation of Long Pond for log driving causes a small diurnal fluctuation.

ACCURACY.—Stage-discharge relation at present location apparently permanent except when affected by logs. Rating curve well defined between 100 and 5,000 second-feet. Operation of water-stage recorder satisfactory throughout year. Daily discharge ascertained by applying rating table to mean daily gage height with corrections for effect of backwater from logs. Records good.

Discharge measurements of Moose River near Rockwood, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Mar. 21	2.70	580	June 21	5.31	3,770	July 14	3.41	1,100
May 4	c 4.30	1,820	22	5.38	3,810	Aug. 3	2.45	458
5	c 4.41	1,880	July 13	3.80	1,570	Sept. 6	2.01	241

c Stage-discharge relation affected by logs.

90902—25†—WSP 541——3

Daily discharge, in second-feet, of Moose River near Rockwood, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	166	688	1,110	498	233	192	1,150	3,300	1,400	3,800	498	289
2	169	708	1,080	481	233	192	1,190	2,900	1,100	3,540	481	280
3	173	708	1,080	475	233	188	1,240	1,950	858	3,220	459	267
4	188	708	1,090	459	233	185	1,250	1,750	769	2,980	454	263
5	192	749	1,100	454	229	185	1,250	1,850	708	2,820	459	250
6	192	762	1,080	448	237	185	1,250	1,900	681	2,600	443	241
7	185	735	1,070	450	250	188	1,270	2,200	675	2,320	438	225
8	188	714	1,020	448	250	229	1,330	2,500	820	1,780	433	208
9	200	721	1,030	443	246	241	1,660	2,300	959	1,220	438	196
10	212	858	950	433	241	271	2,320	2,300	783	933	443	188
11	250	890	899	417	237	294	3,060	2,200	675	790	438	185
12	334	882	858	427	216	325	4,230	2,000	681	1,180	417	188
13	427	850	835	407	216	353	5,600	1,700	835	1,600	402	204
14	459	805	812	387	216	387	6,000	1,700	950	1,150	382	192
15	464	783	783	382	225	412	6,200	1,850	1,010	1,160	363	185
16	443	749	762	363	225	438	6,200	1,750	1,040	1,290	344	185
17	433	714	742	353	225	464	6,200	1,450	865	1,320	320	181
18	412	688	708	339	221	498	6,600	1,250	1,070	1,290	316	169
19	402	668	701	330	216	538	7,400	1,350	2,180	1,140	312	162
20	412	749	695	316	208	574	7,600	1,300	3,380	950	294	155
21	464	950	695	312	204	592	7,400	1,350	3,710	735	271	151
22	504	1,100	668	302	204	611	6,800	1,300	3,960	605	267	144
23	556	1,160	649	254	208	636	6,400	1,350	4,800	538	254	141
24	562	1,180	624	250	212	642	5,800	1,500	4,900	521	250	144
25	624	1,220	605	250	208	649	5,400	1,450	4,410	538	237	144
26	668	1,220	592	246	204	649	5,000	1,500	3,880	568	267	124
27	675	1,210	574	246	204	668	4,800	2,000	3,540	586	267	115
28	675	1,190	550	241	200	714	4,400	2,100	3,220	598	284	103
29	681	1,180	538	241	-------	790	4,000	2,300	3,540	598	293	112
30	681	1,160	526	237	-------	908	3,600	1,900	3,800	568	298	109
31	681	-------	509	237	-------	1,030	-------	1,650	-------	538	293	-------

NOTE.—Stage-discharge relation affected by logs Apr. 27 to June 2; discharge for this period computed from gage heights corrected for effect of logs by means of two discharge measurements, observer's notes, and rainfall data.

Monthly discharge of Moose River near Rockwood, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 708 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	681	166	409	0.578	0.67
November	1,220	668	890	1.26	1.41
December	1,110	509	804	1.14	1.31
January	498	237	359	.507	.58
February	250	200	223	.315	.33
March	1,030	185	459	.648	.75
April	7,600	1,150	4,220	5.96	6.65
May	3,300	1,250	1,870	2.64	3.04
June	4,900	675	2,040	2.88	3.21
July	3,800	521	1,400	1.98	2.28
August	498	237	359	.507	.58
September	289	103	183	.258	.29
The year	7,600	103	1,100	1.55	21.10

MOOSEHEAD LAKE AT EAST OUTLET, MAINE.

LOCATION.—At wharf at east outlet of lake, 8 miles from Kineo, Piscataquis County.

DRAINAGE AREA.—1,240 square miles.

RECORDS AVAILABLE.—April 1, 1895, to September 30, 1922.

GAGE.—Staff at end of boat landing; two datums have been used at east outlet; the first (or original datum) is 1,011.20 feet above mean sea level and approximately 10 feet below sills of outlet gates; gage is read to this datum; the second, to which all gage readings published to and including 1911 have been referred, is 10 feet higher—that is, the zero is at the sill of the gates. As it is believed that low water may go below the sill of the gates (zero of second datum); gage heights since 1912 are published as read—that is, to original datum.

REGULATION.—The lake is regulated to a capacity of 23,735 million cubic feet. The dam at the east outlet is controlled by 39 gates, the sills of the gates being at elevation varying from 8 feet to 11.4 feet. At extreme low stages the flow from the lake is controlled by a bar above the dam at an approximate gage height of 9 feet. The records show only fluctuations in the level of the lake and are used in the studies of regulation of the lake and in computing the natural flow of Kennebec River at The Forks.

COOPERATION.—Record furnished by Hollingsworth & Whitney Co.

Daily gage height, in feet, of Moosehead Lake at east outlet, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1					11.35	10.75		17.0				14.7
2				11.95					17.3		16.4	
3	11.4	11.3	11.7		11.3	10.75	11.7	17.05				
4		11.35		11.9							16.3	14.6
5	11.3		12.0				11.75		17.4	17.5		
6					11.2	10.75		17.3		17.5		
7	11.2		12.0	11.8					17.3			14.5
8		11.3				10.7					16.1	
9		11.3	12.1	11.8	11.2			17.3	17.3			
10	11.1				11.2	10.8	12.2	17.3		17.4		
11				11.75								14.2
12	11.2		12.0				12.8	17.45	17.3	17.3		
13				11.7	11.1	10.85						14.2
14	11.35	11.4	11.9							17.3	15.75	
15					11.0	11.0	13.6	17.3				14.05
16			11.95	11.8					17.15		15.6	
17	11.3				10.95		14.1	17.3		17.2		
18		11.4		11.75		11.0	14.7				15.5	13.9
19	11.35		12.0					17.25	17.5	17.2		
20					10.9	11.0						13.75
21	11.4	11.45	12.05	11.6			15.3		17.55	17.1	15.35	
22					10.9	11.1		17.3				13.55
23		11.6		11.6					17.5		15.25	
24	11.4					11.2	16.0	17.3		16.95		
25		11.7		11.55								13.55
26	11.3		12.1				16.2	17.3	17.5			
27				11.45	10.7	11.3				16.7		13.2
28	11.2	11.8	12.1						17.5		14.95	13.2
29						11.4	16.7	17.35				
30		11.75		11.45					17.55		14.8	
31	11.25					11.55		17.3		16.4		

KENNEBEC RIVER AT MOOSEHEAD, MAINE.

LOCATION.—At Canadian Pacific Railway bridge one-fourth mile below East Outlet dam on Moosehead Lake, half a mile northwest of Moosehead railroad station in Big Squaw Mountain Township, Piscataquis County, and 4.4 miles from Somerset Junction.

DRAINAGE AREA.—1,240 square miles (measured on map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—October 1, 1919, to September 30, 1922.

GAGE.—Chain gage near middle of bridge, downstream side. Read by Treffle Roy and Guy Hodgson.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Large boulders and gravel. Control is a series of rapids practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.7 feet at 5 p. m. June 30 (discharge, from extension of rating curve, 11,700 second-feet); minimum stage, 0.62 foot at 7 a. m. and 4 p. m. March 15 (discharge, from extension of rating curve, 64 second-feet).

1919–1922: Maximum stage recorded, 7.13 feet May 12 and 13, 1920 (discharge, from extension of rating curve, 13,400 second-feet); minimum stage, 0.62 foot March 15, 1922 (discharge, from extension of rating curve, 64 second-feet).

ICE.—Not affected by ice.

REGULATION.—Discharge is regulated by operation of gates at Moosehead Lake; large diurnal fluctuations occur during log-driving season.

ACCURACY.—Rating curve well defined between 100 and 8,000 second-feet. Gage read to hundredths twice daily. Daily discharge October 1 to May 1 and July 7 to September 30 determined by applying rating table to mean daily gage height; during remainder of year from gage heights and records of gate openings in dam at east outlet of Moosehead Lake. Records good.

Discharge measurements of Kennebec River at Moosehead, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Jan. 18	2.64	1,320
May 3	4.93	5,800
4	4.95	6,010

Daily discharge, in second-feet, of Kennebec River at Moosehead, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,140	980	650	1,380	1,450	1,040	120	540	2,080	5,820	3,220	2,400
2	1,140	1,040	650	1,380	1,450	980	120	2,390	1,830	3,490	3,220	2,400
3	1,140	1,040	690	1,380	1,380	980	120	3,180	2,680	4,720	2,220	1,860
4	1,090	1,040	142	1,380	1,380	980	125	3,120	3,200	5,140	3,220	1,860
5	1,090	1,040	139	1,380	1,380	980	125	1,730	1,880	5,420	3,020	1,860
6	1,040	1,040	139	1,380	1,380	980	130	3,220	3,030	4,450	3,020	1,790
7	1,040	1,040	410	1,380	1,380	980	130	2,830	2,720	2,830	3,020	1,790
8	980	1,040	980	1,380	1,380	735	142	2,410	2,670	2,830	2,830	2,010
9	1,040	1,040	1,520	1,380	1,380	575	148	3,090	2,920	2,830	2,830	2,320
10	1,040	1,040	1,520	1,380	1,380	80	154	3,270	2,850	2,830	2,830	2,320
11	1,090	1,090	1,380	1,380	1,260	80	195	1,970	2,900	2,830	2,830	2,320
12	1,090	1,090	1,450	1,380	1,260	76	202	3,670	2,600	2,830	2,830	2,320
13	1,090	1,090	1,450	1,380	1,260	76	209	3,540	2,610	2,830	2,830	2,320
14	1,090	1,090	1,520	1,380	1,260	68	216	3,120	2,470	2,830	2,830	2,320
15	1,090	1,140	1,520	1,380	1,200	64	216	3,450	2,710	2,830	2,830	2,160
16	1,090	1,090	1,520	1,380	1,200	68	234	3,330	2,750	2,830	2,830	2,160
17	1,040	1,090	1,450	1,320	1,200	76	250	2,870	2,820	2,830	2,830	2,160
18	1,040	1,090	1,260	1,380	1,200	80	266	2,980	3,020	2,830	2,830	2,160
19	1,040	1,090	440	1,580	1,200	85	310	3,490	1,700	2,830	2,650	2,160
20	1,090	1,140	136	1,580	1,140	85	335	1,980	6,580	2,830	2,650	2,010
21	1,090	1,140	133	1,520	1,140	90	335	2,950	7,580	2,830	2,650	2,010
22	1,090	68	133	1,520	1,140	90	360	3,030	10,100	3,220	2,480	1,860
23	1,090	68	270	1,450	1,090	95	385	2,950	7,070	3,420	2,480	1,860
24	1,040	72	880	1,450	690	100	385	3,020	5,760	3,420	2,480	2,160
25	1,040	410	1,380	1,450	690	105	410	2,920	6,920	3,420	2,480	2,160
26	980	1,260	1,450	1,380	1,200	105	410	2,810	9,650	3,420	2,480	2,010
27	980	1,320	1,450	1,380	1,200	115	470	3,160	5,160	3,420	2,480	2,010
28	980	1,320	1,450	1,380	1,200	115	1,380	3,100	5,300	3,220	2,480	2,010
29	1,040	1,320	1,450	1,580	-------	115	505	2,570	6,970	3,220	2,480	1,860
30	1,040	1,090	1,450	1,580	-------	115	540	3,240	10,400	3,220	2,400	2,010
31	980	-------	1,520	1,520	-------	120	-------	2,150	-------	3,220	2,400	-------

Monthly discharge of Kennebec River at Moosehead, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,240 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,140	980	1,060	0.855	0.99
November	1,320	68	980	.790	.88
December	1,520	133	985	.794	.92
January	1,580	1,320	1,420	1.15	1.33
February	1,450	690	1,230	.992	1.03
March	1,040	64	330	.266	.31
April	1,380	120	298	.240	.27
May	3,670	540	2,840	2.29	2.64
June	10,400	1,700	4,360	3.52	3.93
July	5,820	2,830	3,380	2.73	3.15
August	3,220	2,400	2,760	2.23	2.57
September	2,400	1,790	2,090	1.69	1.89
The year	10,400	64	1,820	1.47	19.91

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches do not represent the natural run-off from the basin because of storage. (See "Regulation.")

KENNEBEC RIVER AT THE FORKS, MAINE.

LOCATION.—Half a mile above highway bridge and 1 mile above mouth of Dead River at The Forks, Somerset County.

DRAINAGE AREA.—1,570 square miles.

RECORDS AVAILABLE.—September 28, 1901, to September 30, 1922.

GAGES.—Gurley seven-day recorder on right bank half a mile above highway bridge; chain on bridge and water-stage recorder on left abutment used prior to October 18, 1919. Recorder inspected by R. A. Fitzsimmons and S. C. Durgin.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel at bridge is subject to slight changes; control for new location is well defined by riffles a short distance below the gage.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 7.75 feet at 7 p. m. June 22 (discharge, from extension of rating curve, 13,700 second-feet); minimum discharge during year estimated as 540 second-feet on March 26 (stage-discharge relation affected by ice).

1901–1922: Maximum stage recorded, 10.1 feet by water-stage recorderl from 4 p. m. to midnight June 18, 1917 (discharge, by extension of rating curve, 23,700 second-feet); minimum stage, 0.3 foot at 7 a. m. October 27, 1911 (discharge, 215 second-feet).

ICE.—Stage-discharge relation seriously affected by ice for several months.

REGULATION.—Flow regulated by storage in Moosehead Lake. During May, June, July, and August, the operation of Indian Pond for log driving causes a large diurnal fluctuation. Records of monthly discharge have been corrected for storage by adding or subtracting a discharge corresponding to the amount of water stored in or released from Moosehead Lake.

ACCURACY.—Stage-discharge relation at present location practically permanent except when affected by ice. Rating curve well defined for ordinary stages. Operation of water-stage recorder satisfactory, except for short periods shown in footnote to daily-discharge table. Daily discharge October 1 to May 1 and August 29 to September 30 ascertained by application of rating table to mean daily gage height determined by inspection of recorder sheets, with corrections for effect of ice during winter; daily discharge May 2 to August 28 computed as mean of discharge for 12 two-hour periods. Records good.

Discharge measurements of Kennebec River at The Forks, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 20	a 3.75	1,610	Mar. 22	a 2.19	656
Feb. 21	a 3.72	1,350	Sept. 6	3.15	1,780

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Kennebec River at The Forks, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,230	1,230	1,410	1,750	1,650	1,350	1,000	2,110	2,530	10,400	3,900	2,460
2	1,180	1,350	1,180	1,800	1,600	1,150	860	3,780	2,310	5,430	3,800	2,460
3	1,180	1,350	1,120	1,700	1,550	1,150	820	3,920	2,530	6,470	3,400	2,190
4	1,180	1,290	920	1,600	1,550	1,150	800	4,110	2,600	6,470	3,230	2,030
5	1,180	1,350	775	1,600	1,550	1,150	740	2,780	2,570	6,740	3,390	1,870
6	1,120	1,350	730	1,600	1,550	1,300	740	3,640	2,900	5,680	3,420	1,870
7	1,120	1,290	775	1,600	1,550	1,750	820	3,400	3,070	3,860	3,410	1,800
8	1,120	1,230	1,180	1,600	1,550	1,550	1,180	3,200	3,070	2,740	3,790	1,870
9	1,180	1,230	2,280	1,600	1,550	1,100	1,660	3,800	3,420	3,020	3,350	2,280
10	1,230	1,230	2,640	1,600	1,550	900	2,460	4,000	3,220	3,710	3,180	2,550
11	1,410	1,290	2,550	1,600	1,550	740	4,440	3,400	3,120	3,600	3,330	2,460
12	1,540	1,290	2,030	1,600	1,450	700	6,200	4,020	3,100	3,500	3,100	2,460
13	1,660	1,290	1,870	1,650	1,450	700	6,470	4,700	2,990	3,400	3,030	2,460
14	1,600	1,290	1,800	1,700	1,450	680	5,180	3,690	3,020	3,400	2,820	2,460
15	1,540	1,290	1,730	1,700	1,450	700	4,680	3,890	3,000	3,460	2,740	2,370
16	1,470	1,290	1,730	1,650	1,400	700	3,750	3,900	3,240	3,160	2,670	2,370
17	1,410	1,290	1,800	1,600	1,400	720	3,640	3,380	3,100	3,200	2,660	2,280
18	1,350	1,290	1,730	1,550	1,400	680	4,320	3,340	4,680	3,200	3,230	2,190
19	1,290	1,290	1,180	1,600	1,400	660	4,080	3,950	4,680	3,200	3,660	2,190
20	1,290	1,660	793	1,600	1,400	620	3,030	3,350	7,840	3,200	2,730	2,110
21	1,540	2,030	666	1,700	1,350	620	2,650	4,030	9,850	3,200	2,730	2,030
22	1,540	1,230	636	1,700	1,350	660	2,370	3,340	12,600	3,500	2,640	2,030
23	1,600	890	658	1,600	1,350	620	2,190	4,000	10,100	2,890	2,670	2,110
24	1,540	840	1,600	1,600	1,350	580	2,030	3,920	7,560	3,560	2,620	2,280
25	1,470	811	1,700	1,550	1,300	560	2,460	3,570	8,400	3,600	2,620	2,280
26	1,350	1,410	1,700	1,550	1,300	540	2,650	3,500	11,000	3,600	2,630	2,110
27	1,290	1,870	1,700	1,450	1,350	560	2,740	3,400	7,280	3,550	2,790	2,030
28	1,290	1,730	1,700	1,550	1,350	660	2,650	2,970	5,430	3,600	4,280	2,030
29	1,230	1,730	1,700	1,600	-------	860	2,460	2,860	8,120	3,770	3,030	1,950
30	1,230	1,660	1,700	1,700	-------	960	2,190	3,530	11,300	3,800	2,650	1,950
31	1,230	-------	1,700	1,700	-------	1,000	-------	2,620	-------	3,900	2,550	-------

NOTE.—Stage-discharge relation affected by ice Dec. 25 to Apr. 7; discharge for this period computed from gage heights corrected for effect of ice by means of three discharge measurements, records of discharge from Moosehead Lake, observer's notes, and weather records. Water stage recorder not working properly; discharge estimated by comparison with records of discharge from Moosehead Lake and data from Indian Pond May 7–11, May 23, 26, 27, June 4, 12, 15, 17, July 11, 12, 14, 17–22, 25, 26, 28, 30, 31, and August 1–3.

Monthly discharge of Kennebec River at The Forks, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,570 square miles.]

Month.	Discharge in second-feet.			Corrected run-off in inches.
	Observed (mean).	Corrected for storage.		
		Mean.	Per square mile.	
October	1,340	1,050	0.669	0.77
November	1,350	1,950	1.24	1.38
December	1,470	1,760	1.12	1.29
January	1,630	928	.591	.68
February	1,450	547	.348	.36
March	872	1,860	1.18	1.36
April	2,710	9,200	5.86	6.54
May	3,550	4,090	2.61	3.01
June	5,290	5,600	3.57	3.98
July	4,090	2,700	1.72	1.98
August	3,000	1,030	.656	.76
September	2,180	160	.102	.11
The year	2,410	2,570	1.64	22.22

KENNEBEC RIVER AT WATERVILLE, MAINE.

LOCATION.—At dam and mill of Hollingsworth & Whitney Co. at Waterville, Kennebec County, 2 miles above Sebasticook River and 3½ miles above Messalonskee Stream.

DRAINAGE AREA.—4,270 square miles.

RECORDS AVAILABLE.—March 22, 1892, to September 30, 1922.

GAGES.—Rod gages in pond above dam and in tailrace of mill. A water-stage recorder is used to obtain records of head on the wheels.

DETERMINATION OF DISCHARGE.—Discharge computed from flow over dam, through the logway, and through the wheels of the mill. When flow is less than about 3,500 second-feet practically all the water is used through the wheels.

ICE.—Stage-discharge relation seldom affected by ice; in most winters the entire flow passes through wheels of mill.

REGULATION.—Numerous power plants and much storage above station; results not corrected for storage.

COOPERATION.—Records furnished by Hollingsworth & Whitney Co.

Daily discharge, in second-feet, of Kennebec River at Waterville, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	2,140	1,690	4,060	1,580	1,980	1,690	17,900	13,300	4,360	28,400	5,300	3,700
2	1,120	1,650	3,990	2,500	2,430	2,090	12,900	11,700	4,640	34,300	4,540	3,780
3	1,960	2,170	3,850	2,680	2,570	2,170	14,200	7,430	4,680	23,900	4,710	3,330
4	1,960	3,060	3,640	2,690	2,400	2,180	6,170	9,560	2,170	19,100	4,390	3,820
5	2,000	2,920	5,590	2,430	1,170	939	6,060	10,300	6,580	14,800	4,240	3,860
6	1,980	595	5,070	2,710	2,560	2,280	6,740	10,300	10,700	11,600	3,620	3,180
7	1,970	2,690	3,920	2,700	2,260	3,300	7,780	19,500	8,190	13,600	4,480	2,900
8	1,380	2,550	3,980	905	2,570	9,480	9,150	21,200	10,300	12,900	5,200	3,140
9	928	2,430	3,920	2,310	2,570	16,200	7,050	16,700	10,300	9,960	4,710	3,210
10	2,000	2,670	3,920	2,980	3,310	12,900	18,400	16,100	6,640	10,900	4,710	929
11	1,960	2,530	700	2,980	3,080	14,800	19,900	11,900	3,480	10,400	4,350	2,940
12	3,360	2,380	3,890	2,720	1,270	8,160	49,700	11,900	5,860	6,330	4,140	3,540
13	3,360	1,230	4,390	2,690	2,420	10,700	60,600	8,580	6,330	6,530	3,810	3,480
14	2,970	1,640	3,850	2,420	2,550	10,900	51,100	5,530	6,980	6,530	4,300	3,330
15	3,710	3,140	3,780	1,110	2,580	9,520	43,400	12,000	6,860	5,430	3,990	3,610
16	673	2,400	3,620	2,740	3,020	10,100	40,900	9,270	6,330	5,690	3,900	3,780
17	2,340	2,660	3,070	2,110	1,560	11,600	35,800	7,520	5,570	5,670	3,550	4,570
18	2,430	2,770	3,310	2,570	1,700	10,800	25,900	5,490	5,200	6,050	3,820	4,750
19	2,720	2,750	3,920	2,380	880	8,270	29,500	5,660	9,110	5,080	3,870	4,130
20	2,360	3,430	5,580	3,010	1,860	9,200	39,100	12,000	30,000	5,230	3,180	3,920
21	3,250	5,320	6,600	2,400	2,130	8,250	33,400	22,000	24,400	5,080	4,070	3,920
22	3,130	12,100	4,620	929	1,960	8,440	30,400	16,300	21,400	4,890	3,650	3,060
23	848	9,370	3,290	2,690	2,330	9,260	22,100	13,600	24,800	2,580	3,650	3,060
24	4,040	6,260	2,960	2,550	2,280	9,690	24,500	11,100	30,000	4,340	3,920	761
25	3,660	5,560	724	2,750	1,970	8,830	19,000	8,710	21,900	5,090	3,870	3,090
26	3,640	3,320	780	2,790	1,240	6,400	16,200	7,750	16,800	4,990	3,820	3,640
27	2,810	1,180	3,920	2,660	1,510	9,970	11,700	7,410	21,400	4,350	2,950	3,340
28	3,000	3,920	3,190	3,260	1,870	14,500	12,200	5,760	17,600	4,640	4,220	3,660
29	2,170	3,990	3,630	940	-------	25,200	12,900	7,870	12,300	4,540	7,250	2,990
30	962	3,920	2,660	2,570	-------	25,000	11,300	5,010	17,400	4,780	8,650	3,050
31	2,060	-------	2,720	2,270	-------	23,700	-------	8,620	-------	4,650	5,510	-------

Monthly discharge of Kennebec River at Waterville, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 4,270 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum	Mean.	Per square mile.	
October	4,040	673	2,350	0.550	0.63
November	12,100	595	3,390	.794	.89
December	6,600	700	3,650	.855	.99
January	3,260	905	2,390	.560	.65
February	3,310	880	2,140	.501	.52
March	25,200	939	9,890	2.32	2.68
April	60,600	6,060	23,200	5.43	6.06
May	22,000	5,010	11,000	2.58	2.97
June	30,000	2,170	12,100	2.83	3.16
July	34,300	2,580	9,430	2.21	2.55
August	8,650	2,950	4,400	1.03	1.19
September	4,750	761	3,350	.785	.88
The year	60,600	595	7,280	1.70	23.17

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches do not represent the natural run-off from the basin because of storage.

DEAD RIVER AT THE FORKS, MAINE.

LOCATION.—One-eighth mile above farmhouse of Jeremiah Durgin, 1½ miles west of The Forks, Somerset County.

DRAINAGE AREA.—878 square miles.

RECORDS AVAILABLE.—September 29, 1901, to August 15, 1907, and March 16, 1910, to September 30, 1922.

GAGE.—Staff bolted to large boulder on left bank; read by H. J. Farley.

DISCHARGE MEASUREMENTS.—Made from cable 700 feet above gage.

CHANNEL AND CONTROL.—Stream bed rough; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.8 feet at 7.30 a. m. April 14 (discharge, 12,900 second-feet); minimum open-water stage, 0.70 foot on several days in October (discharge, 160 second-feet) (an estimated discharge of 84 second-feet occurred on March 3; stage-discharge relation affected by ice).

1901–1907 and 1910–1922: Maximum stage recorded, 8.0 feet May 5, 1904, and May 14, 1912 (discharge, from extension of rating curve, 23,100 second-feet); minimum stage, 0.2 foot September 12–13, 17, 1918 (water held back by logging dams, discharge not determined).

ICE.—Stage-discharge relation seriously affected by ice.

REGULATION.—A number of dams on lakes above; used for log driving during May and June.

ACCURACY.—Stage-discharge relation for low stages subject to change at infrequent intervals. Rating curve well defined between 300 and 12,000 second-feet, but only approximate below 200 second-feet. Gage read to hundredths twice daily, except during winter, when it was read once daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice during winter. Records good above 300 second-feet, and fair below 200 second-feet.

Discharge measurements of Dead River at The Forks, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 20	[a]1.72	310	Aug. 5	1.08	391
Feb. 20	[a]1.09	205	Sept. 7	.98	306

[a] Stage-discharge relation affected by ice.

90902—25†—WSP 541——4

Daily discharge, in second-feet, of Dead River at The Forks, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July	Aug.	Sept.
1	208	610	720	490	230	100	2,320	2,510	1,020	3,990	320	500
2	184	665	610	490	220	92	2,060	2,140	950	3,110	320	410
3	160	560	780	470	220	84	1,970	3,990	1,020	2,510	320	329
4	160	510	1,030	460	220	100	1,880	3,110	1,090	2,420	320	320
5	160	510	1,100	450	230	160	1,800	2,140	1,630	2,320	392	320
6	160	510	1,100	440	240	840	1,720	2,900	2,230	2,060	374	320
7	160	510	965	420	230	1,050	1,720	3,550	2,510	1,800	383	303
8	160	462	840	420	230	1,250	2,510	3,990	1,720	1,470	410	303
9	176	415	840	420	220	1,550	3,110	2,700	1,160	1,020	410	303
10	200	415	780	400	210	1,850	3,770	2,900	1,090	841	383	260
11	406	415	780	390	190	2,200	8,200	4,220	1,020	776	347	235
12	560	415	780	380	185	2,000	11,300	1,550	1,160	738	320	260
13	780	415	720	370	175	2,400	10,100	1,630	1,310	650	320	347
14	720	415	610	370	160	2,000	12,900	2,700	1,310	579	320	320
15	610	415	560	360	150	1,700	10,900	1,630	1,240	510	320	320
16	560	415	510	340	140	1,400	8,940	1,550	1,240	510	320	320
17	397	415	510	320	140	1,400	9,700	1,470	1,310	510	235	320
18	325	510	610	310	130	1,400	10,100	1,470	2,700	510	440	320
19	325	510	720	310	135	1,400	11,300	1,630	4,710	602	614	320
20	334	780	780	310	200	1,400	9,700	2,700	4,710	510	568	320
21	610	840	760	310	200	1,350	10,500	2,510	3,990	470	522	320
22	965	1,170	720	310	160	1,300	9,700	2,700	3,990	401	480	320
23	965	1,460	660	300	160	1,400	7,840	1,470	4,710	392	440	312
24	840	1,170	640	290	160	1,250	7,480	1,390	3,990	470	374	278
25	720	902	600	280	160	1,100	5,530	1,310	3,110	450	320	235
26	720	840	600	270	150	960	4,970	1,160	2,420	430	430	235
27	720	840	580	270	135	1,100	4,460	1,160	2,060	410	625	235
28	720	840	560	260	125	1,400	3,990	1,020	2,230	410	700	235
29	665	720	560	260	-------	1,850	3,990	1,090	2,700	410	712	235
30	610	720	540	250	-------	2,200	2,700	1,020	3,990	365	638	235
31	610	-------	500	240	-------	2,510	---------	1,020	-------	320	568	-------

NOTE.—Stage-discharge relation affected by ice Dec. 21 to Mar. 30; discharge for this period computed from gage heights corrected for effect of ice by means of two discharge measurements, observer's notes, and weather records.

Monthly discharge of Dead River at The Forks, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 878 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	965	160	480	0.547	0.63
November	1,460	415	646	.736	.82
December	1,100	500	712	.811	.94
January	490	240	354	.403	.46
February	240	125	182	.207	.22
March	2,510	84	1,320	1.50	1.73
April	12,900	1,720	6,240	7.11	7.93
May	4,220	1,020	2,140	2.44	2.81
June	4,710	950	2,280	2.60	2.90
July	3,990	320	1,030	1.17	1.35
August	638	235	427	.486	.56
September	500	235	303	.345	.38
The year	12,900	84	1,340	1.53	20.73

COBBOSSEECONTEE STREAM AT GARDINER, MAINE.

LOCATION.—At dam of Gardiner Water Power Co. in Gardiner, Kennebec County.
DRAINAGE AREA.—220 square miles.
RECORDS AVAILABLE.—June 16, 1890, to September 30, 1922.
GAGES.—Staff in pond above dam and in tailrace of power house. There are also gages to indicate the water-wheel gate and the waste-gate openings.
DETERMINATION OF DISCHARGE.—Discharge determined by considering (1) flow over dam, usually nothing except for a short time in the spring; (2) flow through two gates; (3) flow through 39-inch Victor wheel installed in 1907; (4) flow through the 39-inch Hercules wheel installed in 1895; and (5) leakage. Daily discharge computed from tables based on coefficients and experiments. The accuracy of these tables was tested by a series of weir measurements in August, 1921, which indicated that there was no justification for revising the tables except to allow for leakage that was being neglected. Corrections have been made for leakage.
ICE.—Not affected by ice.
REGULATION.—Numerous lakes in the basin are regulated by dams at the outlets. Records not corrected for storage.
COOPERATION.—Computation of daily discharge made by engineers of S. D. Warren Co., Cumberland Mills, Maine.

The following weir measurement of leakage was made by M. R. Stackpole: August 20, 1922: Gage height of pond, 131.8 feet; discharge, 11.5 second-feet.

Daily discharge, in second-feet, of Cobbosseecontee Stream at Gardiner, Maine, for the years ending Sept. 30, 1916–1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	190	260	260	260	290	552	1,100	971	260	260	260	260
2	190	260	260	40	290	547	1,100	939	260	10	260	260
3	10	260	260	260	290	544	1,100	810	260	260	260	10
4	260	260	260	260	290	542	1,100	530	10	260	260	260
5	260	260	30	260	290	542	1,040	320	260	260	260	260
6	260	260	260	260	10	470	1,010	290	260	260	10	260
7	260	10	260	260	290	345	977	290	260	260	260	260
8	260	260	260	260	290	380	972	270	260	260	260	260
9	260	260	260	10	290	460	972	260	260	10	260	260
10	10	260	260	260	290	556	943	260	260	260	260	10
11	260	260	260	260	290	551	911	260	10	260	260	260
12	260	260	10	260	290	510	883	260	260	260	260	260
13	260	260	260	260	10	554	852	260	270	260	10	260
14	260	10	260	260	290	549	770	260	290	260	260	260
15	260	260	260	260	290	549	690	260	310	260	260	260
16	260	260	260	10	290	549	685	260	320	10	260	260
17	10	260	260	260	290	567	681	260	340	260	260	10
18	260	260	260	260	280	564	677	680	1,500	260	260	260
19	260	260	10	260	280	410	677	1,660	1,290	260	260	260
20	260	260	260	260	140	369	685	2,110	970	260	10	260
21	260	10	260	260	280	402	730	1,880	650	260	260	260
22	260	260	260	260	280	366	873	1,710	350	260	260	260
23	260	260	260	10	280	366	880	1,610	260	10	260	260
24	10	260	260	260	280	390	960	1,470	260	260	260	10
25	260	260	100	260	280	370	1,030	1,360	10	260	260	260
26	260	260	10	260	310	517	1,060	1,360	260	260	260	260
27	260	260	260	260	411	508	1,040	870	260	260	10	260
28	260	10	260	260	555	518	1,040	320	260	260	260	260
29	260	260	260	260	552	529	1,010	260	260	260	260	260
30	260	260	260	10	-------	610	970	130	260	10	260	260
31	10	-------	260	290	-------	870	-------	260	-------	260	260	-------

Daily discharge, in second-feet, of Cobbosseecontee Stream at Gardiner, Maine, for the years ending Sept. 30, 1916–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	10	210	245	260	362	290	2,650	260	260	135	260	260
2	260	210	260	260	362	290	2,590	260	260	260	260	135
3	260	210	10	260	387	290	2,540	260	10	260	260	260
4	260	210	260	260	343	10	2,350	260	260	10	260	260
5	260	10	260	260	387	290	2,300	260	260	260	10	260
6	260	210	260	260	387	290	2,250	10	260	260	260	260
7	260	210	260	10	362	290	2,590	260	260	260	260	260
8	10	210	260	260	362	290	2,810	260	260	10	260	260
9	260	210	260	290	362	290	2,650	260	260	260	260	10
10	260	210	10	290	310	290	2,400	260	10	260	260	260
11	260	210	260	290	310	10	2,300	260	650	260	260	260
12	260	10	260	290	310	290	1,890	260	1,760	260	10	260
13	260	210	260	290	310	290	1,290	10	2,590	260	260	280
14	260	210	260	10	310	290	1,080	260	2,560	260	260	260
15	10	210	260	720	310	290	1,110	260	2,480	10	260	260
16	260	210	260	713	310	290	1,110	260	2,310	260	260	10
17	260	210	10	540	310	290	1,020	260	1,280	260	260	260
18	260	210	260	371	300	10	760	260	3,210	260	260	260
19	260	10	260	372	290	310	602	260	3,870	260	10	260
20	260	230	260	267	290	310	500	10	3,870	260	260	260
21	260	230	260	310	290	310	413	260	3,810	260	260	260
22	10	230	260	310	290	310	510	260	3,710	10	260	260
23	235	230	260	310	290	310	510	260	3,610	260	260	10
24	210	230	10	335	290	400	413	260	3,450	260	260	260
25	210	230	260	360	10	310	360	260	3,110	260	260	260
26	210	10	260	361	290	431	300	260	2,720	260	10	260
27	210	230	260	370	290	610	270	10	2,610	260	260	260
28	210	230	260	350	290	930	260	260	1,380	260	260	260
29	10	230	260	358	------	2,010	160	260	260	10	260	260
30	210	230	260	358	------	2,820	260	135	260	260	260	10
31	210	------	10	358	------	2,730	------	260	------	260	260	------
1917–18.												
1	260	230	230	243	243	263	413	263	263	263	253	13
2	260	230	10	243	243	263	648	263	13	263	253	253
3	260	230	230	243	43	43	1,060	263	263	263	253	253
4	260	10	230	243	143	263	1,150	263	263	138	13	253
5	260	230	230	243	243	263	1,010	13	263	163	253	253
6	260	230	230	36	243	263	783	263	263	263	253	253
7	10	230	230	243	243	263	563	263	263	13	253	253
8	260	230	230	243	243	263	443	263	263	263	253	13
9	260	230	10	243	243	263	430	263	13	263	253	253
10	260	230	230	243	43	43	403	263	263	263	253	253
11	260	10	230	243	128	263	293	263	263	263	13	253
12	260	230	230	243	243	263	293	13	263	263	253	253
13	260	230	230	43	243	263	293	263	263	263	273	253
14	10	230	230	243	243	263	153	263	263	13	393	253
15	230	230	230	243	243	263	278	263	263	263	583	13
16	230	230	10	243	243	263	293	263	13	263	690	253
17	230	230	230	243	43	43	293	263	263	263	690	253
18	230	10	230	243	118	263	293	263	263	263	323	253
19	230	230	230	193	243	263	321	13	263	263	253	253
20	230	230	230	42	243	263	349	263	263	263	253	253
21	10	230	230	108	243	263	181	263	263	13	253	253
22	230	230	230	243	263	263	383	263	263	263	253	13
13	230	230	10	243	263	263	800	263	13	263	253	253
24	230	230	88	243	43	43	883	263	263	263	253	253
25	230	10	60	243	263	263	667	263	263	263	13	253
26	230	230	147	243	263	263	387	13	263	263	253	253
27	230	230	230	51	263	263	278	263	263	263	253	308
28	10	230	230	123	263	263	36	263	263	13	253	513
29	230	120	230	243	------	263	263	263	263	253	253	753
30	230	145	10	243	------	263	263	263	13	253	253	897
31	230	------	240	243	------	43	------	263	------	253	253	------

Daily discharge, in second-feet, of Cobbosseecontee Stream at Gardiner, Maine, for the years ending Sept. 30, 1916–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1918–19.												
1	1,080	443	550	503	531	293	1,850	379	320	273	273	193
2	1,020	456	503	803	466	13	1,970	379	303	273	273	193
3	793	433	353	813	463	293	1,680	388	288	273	13	193
4	716	458	323	613	463	293	1,180	330	283	13	233	213
5	543	456	317	493	411	293	870	313	283	36	233	198
6	493	386	303	639	353	303	453	313	283	13	223	163
7	883	306	295	513	348	433	426	313	283	263	213	13
8	713	273	210	353	331	433	369	313	13	263	213	163
9	471	253	273	303	315	13	331	313	278	263	213	163
10	394	13	253	273	351	293	293	313	273	263	13	163
11	396	253	253	273	319	753	293	317	273	263	213	163
12	369	253	253	13	297	1,120	293	327	273	263	213	178
13	281	253	253	273	293	956	13	359	273	13	213	193
14	414	253	253	273	293	781	283	411	273	263	213	13
15	373	253	13	273	293	731	283	379	13	263	213	193
16	323	253	591	273	13	333	283	323	273	263	213	193
17	315	13	751	283	293	543	293	305	273	263	13	193
18	413	253	763	333	293	533	346	423	273	263	193	193
19	519	1,080	608	338	293	1,020	382	958	273	263	193	193
20	693	1,290	418	506	293	1,360	481	968	273	13	193	193
21	893	1,520	338	463	293	1,560	624	738	273	263	193	13
22	798	1,760	58	400	293	1,730	508	448	13	273	193	193
23	482	1,610	460	373	13	1,620	383	863	273	273	193	193
24	483	1,380	688	763	293	1,610	363	1,380	273	273	13	193
25	443	1,060	1,050	1,390	293	1,430	505	1,290	273	273	193	193
26	419	691	1,400	1,350	293	1,230	721	1,300	273	273	193	193
27	137	511	1,360	1,230	293	1,230	576	849	273	13	193	193
28	373	425	1,240	878	293	1,390	363	383	273	273	193	13
29	365	413	772	709	------	1,920	313	372	13	273	193	193
30	328	498	830	743	------	2,630	343	356	273	273	193	193
31	363	------	613	645	------	2,110	------	320	------	273	13	------
1919–20.												
1	193	263	600	273	18	293	2,530	1,490	273	263	13	263
2	193	13	483	273	273	293	2,510	1,220	263	263	263	263
3	193	263	372	273	273	303	2,510	898	263	263	263	263
4	193	263	372	13	273	313	2,420	648	263	13	263	263
5	13	263	371	273	273	313	2,400	565	263	43	263	133
6	193	278	371	273	273	383	2,870	483	13	163	263	93
7	193	593	13	273	273	13	3,300	358	263	263	263	263
8	193	638	313	273	43	407	2,860	313	263	263	13	263
9	193	318	303	273	273	358	2,350	1,210	263	263	263	263
10	193	278	293	273	273	313	2,350	1,910	263	263	263	263
11	193	263	293	13	273	313	2,110	1,100	263	13	263	263
12	13	273	293	273	273	313	1,810	373	263	263	263	13
13	193	273	293	273	273	313	2,380	283	13	263	263	263
14	193	273	23	273	273	313	3,230	273	263	263	263	263
15	193	273	393	273	13	408	3,580	273	263	263	13	263
16	193	273	398	273	273	393	3,500	143	263	263	263	263
17	193	273	368	273	273	463	3,140	273	263	263	263	263
18	193	273	333	13	273	554	2,370	273	263	13	263	263
19	13	273	313	273	273	633	2,190	273	263	263	263	133
20	193	273	293	273	273	713	1,980	273	13	263	263	263
21	193	273	13	273	273	693	1,780	273	263	263	263	263
22	193	273	303	273	13	733	2,040	273	263	263	13	263
23	203	13	293	273	273	833	2,280	13	263	263	263	263
24	223	273	293	273	283	973	2,400	293	263	263	263	263
25	233	273	153	13	293	1,170	2,470	293	263	13	263	263
26	13	273	153	273	293	1,500	2,320	283	263	263	263	13
27	263	143	293	273	293	1,710	1,950	273	13	263	263	263
28	263	173	13	273	293	2,060	1,220	273	263	263	263	263
29	263	273	293	273	13	2,590	1,190	273	263	263	13	263
30	263	23	283	273	------	2,560	1,550	143	263	263	263	263
31	263	------	273	273	------	2,560	------	273	------	263	263	------

Daily discharge, in second-feet, of Cobbosseecontee Stream at Gardiner, Maine, for the years ending Sept. 30, 1916–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1920–21.												
1	1,290	273	273	463	313	313	377	24	263	263	213	193
2	2,290	273	273	93	313	313	494	329	263	263	213	193
3	2,040	273	273	313	313	313	640	313	263	70	213	193
4	1,660	273	273	313	313	320	822	313	263	70	213	24
5	933	273	13	313	313	327	945	303	24	193	213	93
6	328	273	273	313	24	323	1,030	293	263	263	213	193
7	293	13	296	313	313	523	783	293	263	263	24	193
8	293	273	440	313	313	713	473	24	263	263	213	178
9	293	273	582	24	313	821	373	263	263	263	213	163
10	13	273	584	313	313	1,250	24	263	263	24	213	163
11	293	273	679	313	313	1,630	358	263	263	263	213	24
12	293	273	748	313	313	1,380	313	263	24	263	213	163
13	293	273	818	313	24	1,180	313	263	263	263	213	163
14	293	13	1,350	313	313	1,330	313	263	263	263	24	163
15	293	273	2,810	313	313	1,410	303	24	263	263	213	163
16	293	273	3,910	313	313	1,470	293	263	263	263	213	163
17	13	273	3,500	313	313	1,470	24	263	263	48	203	163
18	293	273	3,320	313	313	1,470	313	263	263	263	193	24
19	293	273	2,970	313	313	1,470	313	263	24	238	193	163
20	273	273	2,770	313	24	1,290	313	263	263	213	193	163
21	273	13	2,690	313	313	1,270	303	263	263	213	24	163
22	273	273	2,450	313	313	1,260	293	24	263	213	193	163
22	273	273	2,310	24	313	1,170	293	263	263	213	193	163
24	13	273	2,340	313	313	903	813	263	263	24	193	163
25	273	45	2,270	313	313	729	2,070	263	263	213	193	24
26	273	273	1,780	313	313	793	2,090	263	123	213	193	163
27	273	273	1,350	313	24	783	2,070	263	263	213	193	163
28	273	13	873	313	313	773	2,030	263	263	213	24	163
29	273	273	453	313	------	726	1,370	24	263	213	193	163
30	273	273	523	24	------	645	523	163	263	213	193	163
31	13	------	513	313	------	469	------	213	------	24	193	------
1921–22.												
1	163	143	193	13	263	213	423	293	293	383	273	273
2	13	153	193	263	263	213	363	293	293	13	273	273
3	163	163	193	263	263	213	713	293	293	348	273	13
4	163	163	13	263	263	203	708	293	13	163	273	273
5	163	163	193	263	13	13	717	293	263	173	273	273
6	133	13	193	263	263	213	820	293	263	263	13	273
7	133	163	193	263	263	238	946	428	263	263	273	273
8	133	163	193	13	263	263	950	688	263	263	273	273
9	113	163	193	263	263	263	897	780	263	13	273	273
10	133	163	193	263	263	263	966	857	263	263	273	13
11	133	163	13	263	263	263	1,040	921	13	263	273	273
12	133	163	193	263	13	13	1,290	895	263	263	273	273
13	113	13	193	263	263	263	1,490	813	263	263	13	273
14	103	183	203	263	263	263	1,470	481	263	263	273	273
15	103	183	213	13	263	278	138	293	263	263	273	273
16	13	183	213	263	263	293	863	293	263	13	273	273
17	113	183	213	263	263	293	568	293	263	263	273	13
18	113	183	13	263	263	293	293	293	308	263	273	273
19	113	183	263	263	13	13	293	4,250	1,240	263	273	273
20	33	13	263	263	263	293	293	3,450	2,080	263	13	273
21	13	193	263	263	263	393	293	2,660	1,900	313	273	273
22	13	193	263	13	263	683	293	2,080	2,030	313	273	273
23	13	193	263	263	203	653	13	1,730	2,630	13	273	273
24	133	53	263	263	213	435	293	873	2,670	273	273	13
25	133	193	133	263	213	420	293	451	1,910	273	273	273
26	133	193	13	263	13	43	293	528	1,320	273	273	273
27	133	13	138	263	216	449	293	533	853	273	13	273
28	133	193	263	263	213	468	293	380	413	273	273	373
29	133	193	263	13	------	680	293	293	413	273	273	273
30	13	193	263	263	------	873	13	153	381	13	273	273
31	143	------	263	263	------	646	------	188	------	273	273	------

Monthly discharge of Cobbosseecontee Stream at Gardiner, Maine, for the years ending Sept. 30, 1916–1922.

[Drainage area, 220 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1915–16.					
October	260	10	215	0.977	1.13
November	260	10	227	1.03	1.15
December	260	10	223	1.01	1.16
January	290	10	222	1.01	1.16
February	555	10	286	1.30	1.40
March	870	345	502	2.28	2.63
April	1,100	677	914	4.15	4.63
May	2,110	130	724	3.29	3.79
June	1,500	10	358	1.63	1.82
July	260	10	220	1.00	1.15
August	260	10	228	1.04	1.20
September	260	10	227	1.03	1.15
The year	2,110	10	362	1.65	22.37
1916–17.					
October	260	10	208	.945	1.09
November	230	10	190	.864	.96
December	260	10	219	.995	1.15
January	720	10	328	1.49	1.72
February	387	10	311	1.41	1.47
March	2,820	10	522	2.37	2.73
April	2,810	160	1,340	6.09	6.80
May	260	10	224	1.02	1.18
June	3,870	10	1,720	7.82	8.72
July	260	10	216	.982	1.13
August	260	10	228	1.04	1.20
September	260	10	222	1.01	1.13
The year	3,870	10	474	2.15	29.28
1917–18.					
October	260	10	213	.968	1.12
November	230	10	194	.882	.98
December	240	10	182	.827	.95
January	243	36	207	.941	1.08
February	263	43	207	.941	.98
March	263	43	228	1.04	1.20
April	1,150	36	463	2.10	2.34
May	263	13	231	1.05	1.21
June	263	13	221	1.00	1.12
July	263	13	223	1.01	1.16
August	690	13	276	1.25	1.44
September	887	13	269	1.22	1.36
The year	1,150	13	243	1.10	14.94
1918–19.					
October	1,080	137	526	2.39	2.76
November	1,760	13	583	2.65	2.96
December	1,400	13	527	2.40	2.77
January	1,390	13	551	2.50	2.88
February	531	13	313	1.42	1.48
March	2,630	13	944	4.29	4.95
April	1,970	13	569	2.59	2.89
May	1,380	305	530	2.41	2.78
June	320	13	243	1.10	1.23
July	273	13	219	.995	1.15
August	273	13	178	.809	.93
September	213	13	164	.745	.83
The year	2,630	13	447	2.03	27.61
1919–20.					
October	263	13	184	.836	.96
November	638	13	263	1.20	1.34
December	600	13	286	1.30	1.50
January	273	13	239	1.09	1.26
February	293	13	232	1.05	1.13
March	2,590	13	800	3.64	4.20
April	3,580	1,190	2,390	10.9	12.16
May	1,910	13	493	2.24	2.58
June	273	13	230	1.05	1.17
July	263	13	220	1.00	1.15
August	263	13	223	1.01	1.16
September	263	13	232	1.05	1.17
The year	3,580	13	480	2.18	29.78

Monthly discharge of Cobbosseecontee Stream at Gardiner, Maine, for the years ending Sept. 30, 1916–1922—Continued.

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1920-21.					
October	2,290	13	469	2.13	2.46
November	273	13	231	1.05	1.17
December	3,910	13	1,410	6.41	7.39
January	463	24	283	1.29	1.49
February	313	24	272	1.24	1.29
March	1,630	313	930	4.23	4.88
April	2,090	24	689	3.13	3.49
May	329	24	228	1.04	1.20
June	263	24	234	1.06	1.18
July	263	24	201	.914	1.05
August	213	24	181	.823	.95
September	193	24	147	.668	.75
The year	3,910	13	442	2.01	27.30
1921-22.					
October	163	13	106	.482	.56
November	193	13	150	.682	.76
December	263	13	191	.868	1.00
January	263	13	223	1.01	1.16
February	263	13	218	.991	1.03
March	873	13	326	1.48	1.71
April	1,490	13	587	2.67	2.98
May	4,250	153	850	3.86	4.45
June	2,670	13	740	3.36	3.75
July	383	13	229	1.04	1.20
August	273	13	239	1.09	1.26
September	273	13	238	1.08	1.20
The year	4,250	13	342	1.55	21.06

ANDROSCOGGIN RIVER BASIN.

ANDROSCOGGIN RIVER AT ERROL DAM, N. H.

LOCATION.—At Errol dam, 1 mile above Errol, Coos County.

DRAINAGE AREA.—1,095 square miles.

RECORDS AVAILABLE.—January 1, 1905, to September 30, 1922.

GAGE.—Movable rod gage; readings taken daily from sill of deep gate No. 6; elevation of zero of gage or sill of gate, 1,231.3 feet above mean sea level.

DISCHARGE.—Computed from discharge through 14 gates in the dam by means of coefficients determined from a few discharge measurements.[1]

ICE.—Stage-discharge relation little affected by ice.

REGULATION.—Errol dam regulates the storage of Umbagog Lake, the lower of the Rangeley series of lakes, comprising the principal storage of Androscoggin River and amounting to nearly 20 billion cubic feet, and also a developed storage site on Magalloway River created by the Aziscohos dam, which amounts to about 9.6 billion cubic feet, thus making the total storage about 29.6 billion cubic feet. Errol dam is 5 miles below mouth of Magalloway River, thus making this stream one of the feeders of Umbagog Lake. Records not corrected for storage.

COOPERATION.—Records obtained and computations of daily discharge made under direction of Walter H. Sawyer, agent for Union Water Power Co., Lewiston, Maine.

[1] See U. S. Geol. Survey Water-Supply Paper 321, p. 61, 1914.

Daily discharge, in second-feet, of Androscoggin River at Errol dam, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,160	834	820	1,160	1,190	1,170	574	1,560	1,540	3,640	1,800	1,600
2	1,040	804	879	1,160	1,160	1,030	786	785	1,500	4,040	1,800	1,680
3	1,010	797	654	1,180	1,040	1,120	728	1,380	1,030	4,020	1,700	1,670
4	1,010	808	593	1,260	941	1,050	666	2,150	234	3,350	1,690	1,740
5	1,080	817	674	1,220	1,130	890	610	2,600	988	2,340	1,620	1,810
6	1,150	767	703	1,160	1,130	982	610	2,650	1,160	2,220	1,670	1,730
7	1,150	764	836	1,100	1,130	1,030	610	2,790	564	2,130	1,670	1,660
8	1,140	830	966	1,130	1,130	1,010	558	3,270	1,190	1,740	1,500	1,670
9	1,140	844	899	1,150	1,130	965	153	3,500	1,440	1,750	1,440	1,740
10	1,100	863	821	1,160	1,130	844	(a)	3,440	1,430	1,550	1,580	1,740
11	1,040	863	806	1,160	1,130	712	(a)	3,270	1,420	1,460	1,780	1,760
12	852	863	899	1,160	1,140	826	122	2,310	1,520	1,440	1,840	1,800
13	818	863	952	1,160	1,170	840	1,160	1,950	2,270	1,420	1,860	1,740
14	901	863	954	1,140	1,160	784	2,470	1,920	2,290	1,550	1,810	1,740
15	984	863	952	1,140	1,130	814	3,500	1,380	2,020	1,600	1,780	1,630
16	958	863	973	1,160	1,130	789	3,740	1,390	2,180	1,550	1,770	1,570
17	934	863	971	1,170	1,200	830	4,270	1,390	2,510	1,500	1,910	1,480
18	983	863	778	1,170	1,200	877	5,040	1,390	3,280	1,470	1,880	1,520
19	1,090	589	728	1,170	1,200	909	5,410	1,280	4,880	1,560	1,430	1,560
20	966	106	808	1,170	1,190	923	6,070	641	5,910	1,560	1,320	1,590
21	377	32	829	1,160	1,180	935	6,180	727	6,560	1,420	1,350	1,620
22	574	215	987	1,140	1,190	935	5,910	965	6,850	1,590	1,740	1,650
23	758	816	1,150	1,170	1,210	949	3,970	1,090	6,760	1,720	1,750	1,700
24	777	931	1,160	1,240	1,200	998	926	887	6,580	1,730	1,720	1,710
25	787	900	1,020	1,300	1,140	1,040	729	1,370	5,280	1,660	1,720	1,740
26	797	810	1,040	1,290	1,100	1,020	1,090	1,500	2,380	1,760	1,240	1,790
27	787	852	1,080	1,260	1,110	773	895	1,540	1,940	1,780	1,180	1,800
28	797	852	1,100	1,230	1,190	478	743	1,390	2,600	2,000	1,270	1,870
29	787	840	1,150	1,180	-------	205	1,420	1,670	3,230	1,700	1,320	1,850
30	787	800	1,170	1,160	-------	82	1,810	1,430	3,580	1,720	1,610	1,840
31	827	-------	1,190	1,180	-------	181	-------	1,430	-------	1,800	1,660	-------

Monthly discharge of Androscoggin River at Errol dam, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 1,095 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,160	377	921	0.841	0.97
November	931	32	759	.693	.77
December	1,190	593	920	.840	.97
January	1,300	1,100	1,180	1.08	1.24
February	1,210	941	1,150	1.05	1.09
March	1,170	82	837	.764	.88
April	6,180	(a)	2,020	1.84	2.05
May	3,500	641	1,780	1.63	1.88
June	6,850	234	2,840	2.59	2.89
July	4,040	1,420	1,970	1.80	2.08
August	1,910	1,180	1,630	1.49	1.72
September	1,870	1,480	1,700	1.55	1.73
The year	6,850	32	1,470	1.34	18.27

a Gates closed at dam.

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches do not represent the natural run-off from the basin because of storage. (See "Regulation."

ANDROSCOGGIN RIVER AT BERLIN, N. H.

LOCATION.—At upper or sawmill dam of Brown Co., at Berlin, Coos County.

DRAINAGE AREA.—1,380 square miles (revised by map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—October 1, 1913, to September 30, 1922.

GAGES.—Fixed gages are maintained in the river above the forebay racks and in the tailrace immediately below the outlet of the wheels; these gages are referred to the same datum, and the differences in the readings give the head acting on the wheels; a gage is also attached to each wheel gate, from which the wheel-gate opening can be ascertained.

DETERMINATION OF DISCHARGE.—Discharge up to November 21, 1921, computed from curves prepared from Holyoke tests of the wheel runners at the sawmill dam, using the head and gate openings as ascertained from the gages. Quantity of water wasted over the dam is computed by the Francis formula for discharge over weirs. Discharge after November 21, 1921, obtained by adding the flow through wheels in the Brown Co.'s new Riverside station and the flow through the Burgess flume.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Under an agreement between the power users on Androscoggin River, the flow at Berlin, N. H., is maintained at a minimum of 1,550 second-feet and at such a point above 1,550 second-feet as is consistent with the constant maintenance of that quantity. Final regulation of the river is made at Pontocook dam, N. H., above which is a pond containing about a day's supply; the primary regulation is made at Errol, N. H.

COOPERATION.—Gages are under the direction of George P. Abbott, of the Brown Co., and discharge record is furnished for publication by Walter H. Sawyer, agent for Union Water Power Co., Lewiston, Maine.

Daily discharge, in second-feet, of Androscoggin River at Berlin, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,600	1,420	1,280	1,320	1,320	1,280	1,400	2,600	1,640	5,000	1,920	1,920
2	1,600	1,440	1,330	1,320	1,320	1,300	1,400	2,500	1,850	5,000	1,930	1,900
3	1,600	1,480	1,650	1,340	1,320	1,300	1,450	2,500	1,780	5,000	1,870	1,900
4	1,600	1,440	1,500	1,350	1,300	1,300	1,520	2,600	1,800	4,200	1,920	1,900
5	1,600	1,400	1,430	1,400	1,330	1,300	1,320	3,000	1,820	3,500	1,900	1,920
6	1,580	1,400	1,330	1,400	1,290	1,280	1,370	3,100	1,800	3,000	1,900	1,920
7	1,580	1,400	1,320	1,320	1,290	1,310	1,430	3,300	1,730	2,600	2,100	1,890
8	1,600	1,380	1,340	1,310	1,290	1,450	1,500	3,800	1,710	2,800	2,050	1,900
9	1,600	1,380	1,330	1,320	1,290	1,420	2,800	3,700	1,780	2,200	1,900	1,900
10	1,600	1,420	1,300	1,310	1,280	1,380	4,500	3,600	1,730	1,960	1,880	1,890
11	1,580	1,400	1,320	1,320	1,290	1,330	5,000	3,500	1,920	1,900	1,880	1,900
12	1,600	1,420	1,300	1,300	1,300	1,330	5,500	2,800	3,000	1,900	1,900	1,950
13	1,600	1,380	1,310	1,320	1,300	1,350	5,600	2,400	3,000	1,920	1,900	1,970
14	1,580	1,400	1,300	1,320	1,290	1,350	5,600	1,500	3,050	1,920	1,880	2,000
15	1,560	1,420	1,280	1,330	1,280	1,350	5,700	2,000	2,800	1,900	1,900	2,300
16	1,500	1,400	1,310	1,320	1,260	1,370	5,600	1,900	2,700	1,800	1,900	2,200
17	1,500	1,400	1,330	1,320	1,290	1,300	5,700	1,900	3,500	1,950	1,910	2,100
18	1,400	1,450	1,450	1,330	1,300	1,290	9,300	2,100	4,500	1,950	2,000	1,920
19	1,400	1,600	1,380	1,350	1,300	1,300	7,900	2,500	5,500	1,900	2,080	1,900
20	1,500	2,000	1,350	1,350	1,300	1,300	7,400	2,100	5,700	1,860	2,000	1,900
21	1,650	1,660	1,340	1,330	1,300	1,300	4,800	1,900	8,000	1,900	2,000	1,920
22	1,500	1,220	1,330	1,330	1,310	1,280	4,600	1,800	9,000	1,900	2,050	1,920
23	1,420	1,220	1,350	1,300	1,290	1,280	3,000	1,800	8,500	1,880	2,000	1,900
24	1,420	1,240	1,310	1,300	1,320	1,310	2,600	1,880	7,000	1,950	1,980	1,890
25	1,400	1,350	1,310	1,300	1,320	1,310	2,200	1,900	6,000	1,900	2,050	1,900
26	1,400	1,350	1,310	1,330	1,300	1,350	2,400	1,850	4,500	1,920	2,350	1,820
27	1,400	1,360	1,320	1,330	1,300	1,500	2,600	1,850	3,000	1,920	2,400	1,870
28	1,400	1,350	1,350	1,350	1,290	1,700	2,600	1,850	3,600	1,920	2,050	1,900
29	1,400	1,310	1,380	1,330	-------	1,800	2,500	1,800	5,000	1,900	2,000	1,920
30	1,400	1,300	1,340	1,330	-------	1,700	2,500	1,800	5,000	1,900	2,000	1,920
31	1,380	-------	1,350	1,310	-------	1,550	-------	1,750	-------	1,900	1,980	-------

Monthly discharge of Androscoggin River at Berlin, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 1,380 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,650	1,380	1,510	1.09	1.26
November	2,000	1,220	1,410	1.02	1.14
December	1,650	1,280	1,350	.978	1.13
January	1,400	1,300	1,330	.964	1.11
February	1,330	1,260	1,300	.942	.98
March	1,800	1,280	1,380	1.00	1.15
April	9,300	1,320	3,730	2.70	3.01
May	3,800	1,500	2,370	1.72	1.98
June	9,000	1,640	3,760	2.72	3.04
July	5,000	1,300	2,430	1.76	2.03
August	2,400	1,870	1,990	1.44	1.66
September	2,300	1,820	1,940	1.41	1.57
The year	9,300	1,220	2,040	1.48	20.06

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches do not represent the natural run-off from the basin because of storage. (See "Regulation.")

ANDROSCOGGIN RIVER AT RUMFORD, MAINE.

LOCATION.—At two dams of Rumford Falls Power Co. at Rumford, Oxford County.

DRAINAGE AREA.—2,090 square miles.

RECORDS AVAILABLE.—May 18, 1892, to September 30, 1922.

GAGES.—One in pond above each dam; and in tailrace of power station and mills.

DISCHARGE.—Computed from discharge over the dam by use of Francis weir formula with modified coefficient, and the quantities passing through the various wheels of the power station and mills, which have been carefully rated.

ICE.—Stage-discharge relation little affected by ice.

REGULATION.—Storage in Rangeley system of lakes at headwaters of Androscoggin River, aggregates about 29.6 billion cubic feet. The stored water is regulated in the interests of the water-power users above and below. Records not corrected for storage.

COOPERATION.—Records obtained and computations made by Charles A. Mixer, engineer, Rumford Falls Power Co.

Daily discharge, in second-feet, of Androscoggin River at Rumford, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.
1	1,620	1,520	2,090	1,920	1,580	1,670	3,560	6,070	2,750	3,450	2,400	2,590
2	1,520	1,770	1,840	1,960	1,630	1,620	3,000	4,610	2,430	11,300	2,500	2,420
3	1,640	2,010	3,240	1,720	1,670	1,600	3,850	5,030	2,850	8,530	2,480	1,900
4	1,700	1,700	3,590	1,740	1,590	1,600	3,710	5,350	5,870	7,940	2,290	1,840
5	1,540	1,580	3,010	1,880	1,310	1,580	3,580	6,640	6,190	7,730	2,390	2,400
6	1,540	1,560	2,660	1,760	1,730	2,040	3,790	12,500	4,050	7,380	2,440	2,420
7	1,600	1,800	1,960	1,890	1,660	2,610	4,170	9,670	3,470	5,780	2,630	2,390
8	1,540	1,560	1,810	1,760	1,620	5,430	5,840	10,700	3,220	4,720	2,900	2,270
9	1,630	1,560	1,750	1,850	1,670	5,690	10,100	8,890	2,880	4,170	2,880	2,240
10	1,680	1,520	1,990	1,810	1,590	4,530	15,300	7,830	2,790	3,330	2,520	1,990
11	1,780	1,650	1,990	1,800	1,630	3,970	18,000	7,060	2,410	3,280	2,380	2,540
12	1,770	1,630	2,210	1,990	1,520	3,370	21,900	6,210	3,580	2,740	2,250	2,620
13	1,780	1,710	2,020	1,760	1,760	3,270	17,000	5,410	3,510	2,490	2,370	3,050
14	1,650	1,690	1,850	1,600	1,660	8,250	12,600	4,150	3,840	2,480	2,410	2,580
15	1,550	1,720	1,720	1,670	1,620	3,780	11,500	4,240	3,850	2,470	2,390	2,730
16	1,880	1,560	1,570	1,850	1,630	3,590	10,300	3,840	3,880	2,600	2,240	4,410
17	1,700	1,520	1,760	1,820	1,550	3,290	11,400	3,600	3,630	2,430	2,270	3,940
18	1,670	1,660	2,810	1,780	1,600	2,790	15,800	3,380	10,100	2,460	2,500	2,930
19	1,620	2,630	5,920	1,790	1,870	2,310	18,100	9,680	16,000	2,520	3,440	2,670
20	1,690	6,770	3,220	1,790	1,700	2,960	15,900	11,300	12,900	2,640	3,260	2,620
21	2,730	5,340	2,800	1,710	1,690	2,850	12,700	6,390	11,000	2,380	3,020	2,560
22	2,380	3,300	1,910	1,920	1,650	2,950	11,000	5,280	11,500	2,360	2,620	2,500
23	2,320	2,420	1,790	1,760	1,620	2,730	10,000	4,310	17,200	2,160	2,590	2,480
24	1,740	1,570	1,920	1,580	1,610	2,690	8,140	3,830	11,300	2,530	2,720	2,200
25	1,700	1,670	2,200	1,580	1,650	2,880	5,640	3,240	11,000	2,430	2,460	2,320
26	1,610	1,800	2,190	1,520	1,600	3,040	5,610	3,370	10,200	2,310	3,540	2,290
27	1,580	1,810	2,000	1,690	1,980	4,810	6,440	3,290	6,800	2,320	4,080	2,260
28	1,560	1,850	1,950	1,770	1,720	5,390	6,050	3,040	4,630	2,500	3,530	2,260
29	1,590	1,870	2,060	1,730	-------	7,110	5,000	3,180	9,630	2,380	3,190	2,390
30	1,800	2,000	1,790	1,860	-------	7,560	3,940	2,830	16,000	2,440	2,930	2,520
31	1,540	-------	1,820	1,770	-------	5,480	-------	2,720	-------	2,430	2,890	-------

Monthly discharge at Androscoggin River at Rumford, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 2,090 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	2,730	1,520	1,730	0.828	0.95
November	6,770	1,520	2,090	1.00	1.12
December	5,920	1,570	2,300	1.10	1.27
January	1,990	1,520	1,780	.852	.98
February	1,980	1,310	1,650	.789	.82
March	7,560	1,580	3,500	1.67	1.92
April	21,900	3,000	9,460	4.53	5.05
May	12,500	2,720	5,730	2.74	3.16
June	17,200	2,410	6,980	3.34	3.73
July	11,300	2,160	3,760	1.80	2.08
August	4,080	2,240	2,730	1.31	1.51
September	4,410	1,840	2,540	1.22	1.36
The year	21,900	1,310	3,690	1.77	23.95

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches do not represent the natural run-off from the basin because of storage. (See "Regulation.") The indicated minimum discharge usually occurs on Sundays when water is held back by dams.

MAGALLOWAY RIVER AT AZISCOHOS DAM, MAINE.

LOCATION.—At Aziscohos dam, Oxford County, 15 miles above mouth.

DRAINAGE AREA.—233 square miles (revised from map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—January 1, 1912, to September 30, 1922.

GAGE.—Vertical staff in two sections, the lower attached to one of the concrete buttresses of the dam and the upper to the concrete gate tower.

DISCHARGE.—Discharge determined from readings of gate openings. Gates have been rated by current-meter measurements at a station 1 mile below dam.

REGULATION.—The storage of about 9,593 million cubic feet is completely regulated, and the discharge corresponds to requirements of water users below. The operation of the gates is planned to maintain as nearly as possible a constant flow at Berlin, N. H. Records not corrected for storage.

COOPERATION.—Discharge computed and furnished for publication by Walter H. Sawyer, agent Union Water Power Co., Lewiston, Maine.

Monthly discharge of Magalloway River at Aziscohos dam, Maine, for the year ending Sept. 30, 1922.

[Drainage area 233 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	121	118	119	0.511	0.59
November	125	121	122	.524	.58
December	128	125	127	.545	.63
January	860	128	445	1.91	2.20
February	1,340	587	878	3.77	3.93
March	1,380	81	823	3.53	4.07
April	144	96	123	.528	.59
May	754	91	247	1.06	1.22
June	910	92	289	1.24	1.38
July	99	98	98.8	.424	.49
August	558	99	145	.624	.72
September	252	101	112	.481	.54
The year	1,380	81	291	1.25	16.94

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches do not represent the natural run-off from the basin because of storage. (See "Regulation.")

LITTLE ANDROSCOGGIN RIVER NEAR SOUTH PARIS, MAINE.

LOCATION.—At an old dam at Bisco Falls, 200 feet below highway bridge and 5½ miles above South Paris, Oxford County.

DRAINAGE AREA.—75 square miles.

RECORDS AVAILABLE.—September 14, 1913, to September 30, 1922.

GAGE.—Chain on left bank; read by G. A. Jackson.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—At low and medium stages water flows through opening at left of old stone dam; opening was enlarged by high water of April 9, 1914, and again by high water of March, 1921; water flows over dam at gage height 5.30 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.45 feet at 9 a. m. April 12 (discharge, by extension of rating curve, 2,350 second-feet); minimum stage during year, 1.0 foot at 5 p. m. October 7 (discharge, 4 second-feet).

1914–1922: Maximum stage recorded, 9.87 feet April 14, 1920 (discharge, by extension of rating curve, 3,540 second-feet); minimum stage, 0.7 foot at 6 p. m. August 16, 1914 (discharge, 1 second-foot).

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Storage at Snow Falls, 1½ miles above station, and at West Paris, 4 miles above, has some effect on regimen of stream.

ACCURACY.—Stage-discharge relation subject to change at infrequent intervals. Rating curve used during year well defined below 1,400 second-feet. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for days when the number of gage readings was insufficient to determine accurately the mean for the day.

Discharge measurements of Little Androscoggin River near South Paris, Maine, during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 30	M. R. Stackpole	6.47	683
30	do	6.41	653
Apr. 13	H. J. Williams	7.34	1,280
13	do	7.18	1,040

Daily discharge, in second-feet, of Little Androscoggin River near South Paris, Maine, for the year ending Sept. 30, 1922.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	5	32	64	32	22	12	372	124	124	298	34	68
2	6	22	72	37	24	10	340	120	124	249	32	58
3	9	72	219	44	22	10	372	124	219	199	29	37
4	7.5	44	179	44	18	10	340	132	372	219	29	47
5	6	18	120	37	20	72	312	340	326	199	22	54
6	9	18	104	50	22	120	372	960	219	199	16	47
7	4	14	104	44	26	120	532	532	179	159	24	34
8	9	10	88	44	18	460	650	440	76	124	116	29
9	9	10	72	44	18	506	960	340	68	108	84	28
10	9	22	72	44	22	326	1,300	312	68	92	47	28
11	10	44	64	37	20	298	1,500	312	76	80	40	26
12	9	44	64	44	18	209	2,300	298	72	100	44	30
13	12	58	44	32	20	199	1,300	284	68	124	24	34
14	7.5	58	50	32	22	199	840	260	61	140	29	40
15	9	64	44	32	18	179	650	120	61	64	26	91
16	7.5	72	44	32	20	159	532	108	58	54	24	159
17	10	72	64	26	18	140	532	108	219	68	29	112
18	9	88	219	26	18	140	482	159	840	72	47	76
19	18	104	159	22	14	120	482	960	1,500	124	68	47
20	22	219	120	26	16	159	440	532	1,030	108	58	37
21	72	179	120	26	14	159	440	404	960	112	61	24
22	44	159	72	25	14	159	284	340	840	76	64	16
23	26	120	44	24	14	179	260	219	650	47	68	18
24	10	120	44	24	18	199	219	179	482	58	61	16
25	14	88	37	22	16	219	179	179	340	47	61	24
26	72	58	37	20	14	284	149	199	372	54	68	24
27	64	44	35	20	12	440	140	179	340	61	76	20
28	58	44	35	22	10	735	132	140	312	47	124	12
29	61	72	34	20	------	785	124	140	312	47	108	14
30	44	72	32	18	------	650	124	124	326	34	104	12
31	44	------	30	22	------	482	------	124	------	40	76	------

NOTE.—Gage not read Dec. 27-31, Jan. 22-27, and Sept. 9-13; discharge for these periods estimated from observer's notes and weather records.

Monthly discharge of Little Androscoggin River near South Paris, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 75 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	72	4	22.5	0.300	0.35
November	219	10	68.0	.907	1.01
December	219	30	80.2	1.07	1.23
January	50	18	31.4	.419	.48
February	26	10	18.1	.241	.25
March	785	10	250	3.33	3.84
April	2,300	124	555	7.40	8.26
May	960	108	284	3.79	4.37
June	1,500	58	356	4.75	5.30
July	298	34	110	1.47	1.70
August	124	16	54.6	.728	.84
September	159	12	41.1	.548	.61
The year	2,300	4	156	2.08	28.24

PRESUMPSCOT RIVER BASIN.

PRESUMPSCOT RIVER AT OUTLET OF SEBAGO LAKE, MAINE.

LOCATION.—At outlet dam at Sebago Lake and hydroelectric plant at Eel Weir Falls, 1 mile below lake outlet.

DRAINAGE AREA.—436 square miles.

RECORDS AVAILABLE.—January 1, 1887, to September 30, 1922.

GAGES.—On bulkhead of gatehouse at outlet dam, and in forebay and tailrace of power plant.

DISCHARGE.—Prior to March, 1904, discharge was determined from records of opening of gates in dam; since March, 1904, flow from lake has been recorded by three Allen meters, one on each of three pairs of 30-inch Hercules wheels; wheels and recording meters checked by current-meter measurements, brake tests of wheels, and electrical readings of the generator output. Water wasted at regulating gates is measured from records of gate openings and coefficients determined from current-meter measurements. Water taken from Sebago Lake for supply of Portland water district and water leaking through reservoir dam, a total of about 18 second-feet, not included in tables of discharge.

REGULATION.—Sebago Lake (area, 46 square miles) is under complete regulation. Records not corrected for storage.

COOPERATION.—Record in cubic feet per minute furnished by S. D. Warren Co.; computations on basis of cubic feet per second made by engineers of the Maine Water Power Commission.

Daily discharge, in second-feet, of Presumpscot River at outlet of Sebago Lake, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	537	554	549	86	545	545	338	548	853	844	674	780
2	134	552	538	545	603	545	91	540	949	1,150	667	732
3	595	552	502	543	513	541	288	487	1,860	929	665	72
4	652	552	103	607	545	362	397	527	749	1,290	668	412
5	618	547	535	560	134	65	397	448	683	1,850	642	657
6	594	336	549	553	548	468	374	350	704	1,570	222	802
7	598	558	549	548	547	512	337	108	691	1,080	713	803
8	567	555	559	307	546	345	338	493	708	849	737	804
9	213	555	500	544	546	398	50	522	672	524	736	799
10	596	550	561	550	546	416	333	501	630	703	736	282
11	596	308	137	548	636	366	410	530	169	893	737	797
12	598	259	551	606	219	90	410	544	638	730	731	800
13	596	236	533	601	544	427	486	434	682	730	198	800
14	596	541	548	493	546	499	488	213	717	735	732	802
15	590	550	551	107	542	418	421	558	804	718	746	802
16	261	550	559	566	543	433	111	634	700	217	734	735
17	601	549	415	598	543	287	417	692	212	698	738	399
18	597	550	104	550	545	508	486	991	818	698	740	793
19	600	544	516	553	129	43	530	2,010	2,590	730	682	814
20	601	156	549	591	474	392	519	2,180	3,160	698	249	808
21	598	633	544	544	545	402	491	2,320	3,130	696	743	800
22	595	548	545	117	589	462	422	1,540	3,210	566	737	800
23	405	548	389	641	547	509	125	901	3,170	244	741	798
24	602	549	541	594	544	481	513	842	3,210	690	746	394
25	603	549	36	583	547	426	524	855	3,170	710	737	800
26	594	542	336	546	152	8	520	871	3,130	701	740	802
27	598	139	554	550	613	356	529	894	2,650	706	270	801
28	597	546	552	540	545	388	516	190	2,480	680	736	805
29	593	586	550	265	-------	383	422	484	2,410	239	740	804
30	323	596	552	469	-------	402	147	517	1,870	232	780	796
31	553	-------	550	546	-------	362	-------	860	-------	693	774	-------

Monthly discharge of Presumpscot River at outlet of Sebago Lake, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 436 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	652	134	542	1.24	1.43
November	633	139	493	1.13	1.26
December	561	36	470	1.08	1.24
January	641	86	498	1.14	1.31
February	636	129	496	1.14	1.19
March	545	8	382	.876	1.01
April	530	50	381	.874	.98
May	2,320	108	761	1.75	2.02
June	3,210	169	1,580	3.62	4.04
July	1,850	217	768	1.76	2.03
August	780	198	661	1.52	1.75
September	814	72	710	1.63	1.82
The year	3,210	8	645	1.48	20.08

NOTE.—The monthly discharge does not represent the natural flow from the basin because of artificial storage. The yearly discharge and run-off probably represent more nearly the natural flow, because comparatively little stored water is held over from year to year.

SACO RIVER BASIN.

SACO RIVER AT CORNISH, MAINE.

LOCATION.—At highway bridge at Cornish, York County, half a mile below mouth of Ossipee River.

DRAINAGE AREA.—1,300 square miles.

RECORDS AVAILABLE.—June 4, 1916, to September 30, 1922.

GAGES.—Friez water-stage recorder on left bank 300 feet above highway bridge, installed October 30, 1919; recorder referenced to gage datum by hook gage inside of well; chain on highway bridge used from June 4, 1916, to October 29, 1919. Datum of well gage is at a different elevation than that of chain gage, so that at low water the well gage reads 1.17 feet higher than chain gage. Recorder inspected by A. H. Guimont.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel covered with sand and boulders; broken by one pier at bridge.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 12.2 feet at 6 a. m. April 14 (discharge, from extension of rating curve, 18,000 second-feet); minimum stage during year recorded by chain gage, 0.03 foot at 6 a. m. October 1 (approximate discharge, from extension of rating curve, 90 second-feet; water held back by dams).

1916–1922: Maximum stage recorded, 12.2 feet April 14, 1922 (discharge, from extension of rating curve, 18,000 second-feet); minimum open-water stage recorded, 0.03 foot by chain gage October 1, 1921 (discharge, from extension of rating curve, 90 second-feet; water held back by dams).

ICE.—Ice forms to considerable thickness; stage-discharge relation seriously affected during most winters.

REGULATION.—Distribution of flow somewhat affected by power development at Great Falls 3½ miles above gage.

ACCURACY.—Stage-discharge relation shifts slightly at infrequent intervals; present rating curve well defined between 600 and 13,000 second-feet. Operation of water-stage recorder satisfactory, except for short periods as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying rating table to mean daily gage heights, as determined by inspection of recorder sheets, with corrections for effect of ice during winter. Records good.

Discharge measurements of Saco River at Cornish, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 9	a 4.68	1,150	Mar. 31	6.95	7,570
Mar. 2	a 4.49	1,120	May 18	5.45	4,780

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Saco River at Cornish, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	365	698	1,600	1,400	1,000	1,100	7,600	5,530	3,040	8,000	1,500	1,180
2	484	746	1,660	1,350	1,100	1,100	7,600	5,180	2,840	8,000	1,400	1,090
3	547	762	2,050	1,300	1,150	1,050	7,600	4,840	2,710	8,200	1,370	1,040
4	554	788	2,410	1,300	1,050	1,000	7,400	4,670	3,100	8,400	1,350	1,030
5	568	806	2,590	1,200	1,000	1,150	7,020	5,350	3,600	8,000	1,320	1,010
6	519	842	2,290	1,200	1,050	1,550	6,830	7,600	3,990	7,400	1,140	959
7	519	815	2,050	1,150	1,050	1,600	6,830	8,400	4,240	6,830	1,300	941
8	456	797	2,000	1,100	1,050	2,100	7,020	9,000	4,240	6,260	1,390	932
9	386	806	2,000	1,100	1,050	2,500	7,600	9,400	4,080	5,710	1,480	878
10	498	815	1,950	1,100	1,000	2,800	8,200	9,400	3,760	5,350	1,520	779
11	575	806	1,950	1,100	1,000	3,000	9,600	9,000	3,530	4,840	1,510	878
12	533	824	1,900	1,100	820	3,200	12,600	8,200	3,310	4,420	1,430	986
13	540	746	1,900	1,100	900	3,400	16,000	7,600	3,100	3,990	1,320	986
14	505	878	1,900	1,100	940	3,400	17,800	6,830	2,900	3,680	1,270	968
15	456	914	1,900	1,050	940	3,700	16,800	6,070	2,780	3,380	1,240	923
16	442	869	1,900	1,100	920	3,800	15,600	5,710	2,710	3,100	1,190	1,040
17	642	869	1,950	1,100	920	3,800	14,200	5,010	2,710	2,710	1,160	1,160
18	596	896	2,000	1,100	900	3,800	13,200	4,670	4,840	2,650	1,150	1,250
19	519	860	2,000	1,100	860	3,900	12,400	5,890	8,200	2,710	1,170	1,270
20	554	1,210	2,100	1,050	1,050	3,900	12,400	5,890	9,000	2,590	1,050	1,200
21	730	1,880	2,100	1,050	1,050	4,000	12,400	6,070	9,600	2,470	1,130	1,150
22	674	2,170	2,000	1,000	1,200	4,000	11,400	6,260	11,200	2,290	1,140	1,090
23	754	2,290	1,950	1,050	1,100	4,100	10,400	6,450	11,200	2,170	1,070	1,020
24	833	2,290	1,800	1,050	1,100	4,160	9,400	6,070	11,400	2,110	1,030	982
25	842	2,050	1,750	1,000	1,100	4,240	8,400	5,530	11,600	1,990	860	1,030
26	824	1,940	1,700	980	1,100	4,670	7,600	5,180	11,400	1,940	869	1,000
27	806	1,770	1,600	940	1,100	5,710	7,020	4,670	10,100	1,880	770	940
28	788	1,770	1,550	920	1,100	6,830	6,640	4,330	9,200	1,820	1,190	950
29	779	1,600	1,500	900	-------	7,210	6,260	3,910	8,500	1,500	1,310	914
30	650	1,350	1,450	900	-------	7,600	5,890	3,600	10,000	1,390	1,290	851
31	730	-------	1,400	940	-------	7,600	-------	3,240	-------	1,500	1,260	-------

NOTE.—Stage-discharge relation affected by ice Dec. 8 to Mar. 23; discharge for this period computed from gage heights corrected for effect of ice by means of two discharge measurements, observer's notes, weather records, and comparative records from West Buxton. Discharge estimated Sept. 26 and 27.

Monthly discharge of Saco River at Cornish, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,300 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	842	365	602	0.463	0.53
November	2,290	698	1,200	.923	1.03
December	2,590	1,400	1,900	1.46	1.68
January	1,400	900	1,090	.838	.97
February	1,150	820	1,020	.785	.82
March	7,600	1,000	3,610	2.78	3.20
April	17,800	5,890	9,990	7.68	8.57
May	9,400	3,240	6,110	4.70	5.42
June	11,600	2,710	6,100	4.69	5.23
July	8,400	1,390	4,110	3.16	3.64
August	1,520	770	1,230	.946	1.09
September	1,270	851	1,010	.777	.87
The year	17,800	365	3,170	2.44	33.05

SACO RIVER AT WEST BUXTON, MAINE.

LOCATION.—At hydroelectric plant of Cumberland County Power & Light Co., at West Buxton, York County.

DRAINAGE AREA.—1,550 square miles.

RECORDS AVAILABLE.—October 19, 1907, to September 30, 1916, and January 1, 1919, to September 30, 1922.

GAGES.—One in pond above dam; another in tailrace of power house.

CHANNEL AND CONTROL.—Crest of concrete dam about 300 feet long.

DISCHARGE.—Flow over dam and through wheels of power plant determined by means of hourly gage readings.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Distribution of flow somewhat affected by power developments above gage.

COOPERATION.—Records furnished by Cumberland County Power & Light Co., Portland, Maine.

Daily discharge, in second-feet, of Saco River at West Buxton, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	626	1,040	1,650	1,150	1,120	1,450	9,450	7,000	3,560	9,410	2,080	1,490
2	542	1,110	1,620	1,520	1,430	1,430	9,130	6,280	3,120	9,080	1,790	1,200
3	710	1,040	1,780	2,390	1,400	1,620	9,390	5,910	2,940	9,270	1,640	1,210
4	645	936	2,080	1,790	1,180	1,040	8,030	5,360	3,280	9,420	1,760	1,190
5	803	569	2,810	1,550	879	920	9,010	6,150	4,170	9,390	1,230	1,850
6	713	393	2,450	1,080	1,370	1,840	8,900	10,500	4,420	8,860	1,230	1,440
7	615	1,120	2,200	1,140	1,460	2,090	8,720	10,700	4,850	8,070	1,490	1,190
8	512	1,170	2,410	575	1,380	2,470	8,780	11,400	4,940	7,540	1,590	1,100
9	586	1,300	1,860	1,530	1,460	3,730	9,630	11,600	4,760	6,690	1,510	1,020
10	616	1,120	1,760	1,300	1,290	4,680	10,600	11,300	4,350	6,400	1,840	703
11	649	794	1,810	1,400	910	4,340	11,500	10,800	3,740	5,810	1,660	1,010
12	686	869	2,720	1,280	840	4,340	13,800	9,970	4,000	5,420	1,380	1,420
13	551	512	2,320	1,450	1,330	4,630	17,400	9,080	3,670	4,830	1,390	1,210
14	526	1,180	2,290	1,290	1,530	4,550	19,800	7,920	3,340	4,410	1,890	1,200
15	530	933	2,010	775	1,340	5,380	19,300	7,640	3,190	4,230	1,730	921
16	508	1,020	2,130	1,420	1,060	5,060	18,500	6,750	3,160	3,600	1,360	1,370
17	712	1,380	1,370	1,340	1,230	4,920	17,100	6,080	2,970	3,420	1,350	537
18	546	1,260	979	1,400	866	4,960	15,400	5,580	4,620	3,270	1,520	1,730
19	686	794	2,900	1,520	958	4,710	14,700	7,520	10,700	2,800	1,110	1,590
20	793	751	2,800	1,450	1,150	4,810	14,200	8,200	12,400	3,000	705	1,610
21	916	1,860	2,940	991	1,280	5,410	14,300	7,780	12,800	2,920	1,600	1,620
22	1,090	2,170	2,930	990	1,070	5,370	13,400	8,000	14,900	2,680	1,520	1,530
23	485	2,710	2,710	1,330	1,540	5,140	12,100	7,740	14,700	2,330	1,520	931
24	1,120	1,960	2,010	1,300	1,230	5,200	11,300	7,900	14,100	2,580	1,580	968
25	993	2,760	1,980	1,330	689	5,530	10,400	6,740	13,700	2,440	1,300	1,640
26	1,060	1,890	2,100	1,200	625	6,490	9,320	6,320	13,900	2,160	738	1,550
27	994	1,540	2,520	1,040	1,660	7,480	8,500	6,810	12,500	2,140	769	1,360
28	878	2,540	2,410	695	1,400	8,720	7,980	5,170	11,400	2,210	1,140	1,180
29	671	1,810	2,310	611	-------	9,760	7,340	5,140	10,100	1,390	1,310	1,000
30	397	1,490	2,250	1,260	-------	10,300	6,660	4,370	9,900	1,690	1,500	735
31	832	-------	1,920	1,050	-------	9,900	-------	3,940	-------	2,160	1,520	-------

Monthly discharge of Saco River at West Buxton, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 1,550 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,120	397	709	0.457	0.53
November	2,760	393	1,330	.858	.96
December	2,940	979	2,190	1.41	1.63
January	2,390	575	1,260	.813	.94
February	1,660	625	1,200	.774	.81
March	10,300	920	4,780	3.08	3.55
April	19,800	6,660	11,800	7.61	8.49
May	11,600	3,940	7,600	4.90	5.65
June	14,900	2,940	7,340	4.74	5.29
July	9,420	1,390	4,830	3.12	3.60
August	2,080	705	1,440	.929	1.07
September	1,850	537	1,250	.806	.90
The year	19,800	393	3,820	2.46	33.42

OSSIPEE RIVER AT CORNISH, MAINE.

LOCATION.—At highway bridge in Cornish, York County, 1¼ miles above confluence with Saco River.

DRAINAGE AREA.—455 square miles (measured on map compiled by Maine Water Power Commission).

RECORDS AVAILABLE.—July 5, 1916, to September 30, 1922.

GAGE.—Chain attached to bridge; read by O. W. Adams.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel covered with sand and gravel; possibly somewhat shifting; broken by one pier at bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.46 feet at 5 p. m. April 13 and 7 a. m. April 14 (discharge, 5,510 second-feet); minimum stage, 0.46 foot at 5 p. m. August 26 (discharge, by extension of rating curve, 137 second-feet).

1916–1922: Maximum stage recorded, 7.46 feet April 13 and 14, 1922 (discharge, 5,510 second-feet) (an estimated discharge of 6,480 second-feet occurred June 18, 1917); minimum open-water stage, 0.20 foot on July 3, 1921 (discharge, by extension of rating curve, 76 second-feet).

ICE.—Ice forms to considerable thickness and stage-discharge relation is seriously affected during most winters.

REGULATION.—Flow regulated by dam at outlet of Great Ossipee Lake. Power development at Kezar Falls, 5 miles above gage, may have some effect on distribution of flow.

ACCURACY.—Stage-discharge relation shifts occasionally at times of high water. Two rating curves used during year; curve used prior to April 5 well defined between 200 and 5,000 second-feet; curve used subsequent to April 5 well defined between 200 and 6,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height with corrections for effect of ice. Records good.

Discharge measurements of Ossipee River at Cornish, Maine, during the year ending Sept. 30, 1922.

[Made by M. R. Stackpole.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 9	a 1.64	456	Apr. 13	7.40	5,390	May 19	3.90	2,210
Mar. 2	a 2.95	545	Apr. 13	7.40	5,500	July 7	3.45	1,820
Mar. 31	a 4.88	2,930	May 18	2.79	1,350			

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Ossipee River at Cornish, Maine, for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.
1	218	268	520	500	390	540	2,800	1,580	860	2,500	448	282
2	196	320	425	490	380	540	2,800	1,420	860	2,500	425	272
3	221	340	425	470	380	540	2,700	1,340	800	2,410	402	246
4	227	360	620	450	370	540	2,600	1,340	1,050	2,590	402	262
5	214	340	800	450	370	600	2,590	2,320	1,190	2,320	360	279
6	224	320	800	430	380	700	2,680	3,490	1,260	1,900	360	282
7	208	320	800	440	380	920	2,770	3,940	1,190	1,820	380	296
8	185	320	800	440	380	1,350	2,950	4,220	1,190	1,660	470	286
9	157	340	760	440	360	1,450	3,220	3,670	1,190	1,580	470	279
10	214	340	740	430	360	1,400	3,670	3,220	1,190	1,500	448	268
11	239	320	740	420	330	1,400	4,310	2,860	1,120	1,340	402	293
12	236	320	650	420	340	1,400	4,880	2,590	1,050	1,260	360	320
13	243	320	620	410	340	1,400	5,450	2,410	920	1,190	380	380
14	230	320	595	420	340	1,400	5,450	2,320	920	1,120	402	402
15	199	320	600	420	340	1,550	4,980	2,230	860	980	380	380
16	185	320	580	410	340	1,450	4,690	1,820	860	920	300	520
17	185	340	560	410	340	1,500	4,310	1,500	800	920	255	448
18	221	380	640	420	340	1,500	4,120	1,260	1,820	860	300	495
19	221	360	740	420	240	1,500	3,850	2,230	3,760	860	380	545
20	230	340	740	410	350	1,400	3,850	2,230	4,220	800	402	520
21	227	360	720	410	370	1,450	3,400	2,140	4,220	740	448	495
22	224	360	740	400	390	1,400	2,950	1,980	4,790	680	402	495
23	233	360	700	400	400	1,350	2,860	1,740	4,410	650	402	448
24	239	360	680	400	420	1,350	2,590	1,500	3,940	620	360	402
25	243	380	640	410	440	1,350	2,500	1,340	3,760	595	179	402
26	243	380	640	390	440	1,500	2,230	1,260	3,490	570	147	402
27	246	402	600	400	430	1,850	2,140	1,120	3,130	545	147	380
28	249	570	560	410	470	2,600	2,060	1,050	2,770	545	286	360
29	236	570	560	390	-------	2,700	1,820	980	2,590	520	340	320
30	233	570	540	390	-------	2,900	1,660	980	2,590	495	300	320
31	239	-------	520	390	-------	2,900	-------	920	-------	470	296	-------

NOTE.—Stage-discharge relation affected by ice Dec. 8–10 and Dec. 15 to Apr. 4; discharge for these periods, computed from gage heights corrected for effect of ice by means of three discharge measurements, observer's notes, and weather records.

Monthly discharge of Ossipee River at Cornish, Maine, for the year ending Sept. 30, 1922.

[Drainage area, 455 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	249	157	221	0.486	0.56
November	570	268	364	.800	.89
December	800	425	647	1.42	1.64
January	500	390	422	.927	1.07
February	470	330	375	.824	.86
March	2,900	540	1,430	3.14	3.62
April	5,450	1,660	3,300	7.25	8.09
May	4,220	920	2,030	4.46	5.14
June	4,790	800	2,090	4.59	5.12
July	2,590	470	1,210	2.66	3.07
August	470	147	356	.782	.90
September	545	246	369	.811	.90
The year	5,450	147	1,070	2.35	31.86

MERRIMACK RIVER BASIN.

PEMIGEWASSET RIVER AT PLYMOUTH, N. H.

LOCATION.—At two-span highway bridge in Plymouth, Grafton County, three-fourths mile below mouth of Bakers River.

DRAINAGE AREA.—615 square miles.

RECORDS AVAILABLE.—January 1, 1886,[2] to September 30, 1922.

GAGES.—Vertical staff gage in three sections; two lower sections 40 feet above bridge; upper section on bridge abutment; read by A. F. Morse.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge at ordinary and high stages. At extremely low stages by wading.

CHANNEL AND CONTROL.—Right channel is rocky and practically permanent; left channel covered with fine gravel which shifts occasionally. Control section for low stages is gravel bed of river and has changed somewhat at various times. At high stages the banks are overflowed below the bridge and the control is somewhat indefinite.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 14.0 feet at 7 a. m. April 12 (discharge, 16,800 second-feet); minimum stage, 0.46 foot at 8.15 a. m. August 24 (discharge, 158 second-feet).

1903–1922: Maximum open-water stage recorded, 15.42 feet at 7 a. m. March 28, 1913 (approximate discharge from extension of rating curve 18,700 second-feet). A gage height of 18.17 feet was recorded at 4 p. m. February 25, 1915, but stage-discharge relation was probably affected by ice at the time. Minimum discharge 60 second-feet on September 21, 1913, and August 12, 1919.

ICE.—River freezes over, and stage-discharge relation is affected by ice usually from December to March.

REGULATION.—Several small ponds on Bakers River and other tributaries but practically no storage regulation. At very low stages the paper mill at Livermore Falls is obliged to shut down several times daily and at these times the ponding of water affects the distribution of flow at Plymouth.

ACCURACY.—Stage-discharge relation remained unchanged during year, except when affected by ice. Rating curve well defined. Gage read to half-inches twice daily. Daily discharge ascertained by applying rating table to mean daily gage heights, with corrections for effect of ice during winter. Records good.

Discharge measurements of Pemigewasset River at Plymouth, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 23	J. L. Lamson	2.62	1,850	Feb. 28	J. L. Lamson	a 2.33	369
Dec. 28	do	a 3.08	994	Aug. 24	Jones and Lamson	.85	304
Jan. 19	do	a 2.29	529				

a Stage-discharge relation affected by ice.

[2] No discharge measurements were made until September, 1903, and it is considered unsafe to apply the rating curve developed after that date to gage heights previously obtained. Stage-discharge relation for low stages has changed at various times, and several different rating curves have been used during previous years. These curves are coincident for stages above 2,000 second-feet.

Daily discharge, in second-feet, of Pemigewasset River at Plymouth, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	263	370	740	840	370	400	2,700	1,840	620	4,180	370	370
2	425	635	620	800	420	340	2,350	1,900	571	7,440	414	350
3	288	994	2,850	780	540	330	1,950	2,110	680	3,980	414	320
4	288	710	2,550	760	680	320	2,080	2,850	9,230	4,110	370	271
5	279	695	1,650	820	640	400	2,160	4,030	3,420	3,550	350	288
6	255	592	1,460	840	560	1,000	2,560	8,010	2,000	2,320	350	302
7	239	504	976	800	600	2,000	3,210	4,660	2,450	1,840	425	228
8	224	425	786	760	520	5,200	2,630	6,320	1,750	1,500	2,250	228
9	214	414	859	700	490	6,000	7,770	4,080	1,170	1,650	1,170	217
10	224	437	976	700	460	4,400	10,100	3,070	1,430	1,310	725	239
11	360	635	895	620	450	3,200	13,800	2,700	1,750	1,050	461	207
12	425	517	859	620	440	2,500	16,200	2,250	1,770	931	381	207
13	770	571	665	600	450	2,000	10,200	2,020	1,650	818	381	695
14	504	467	740	580	410	1,850	6,380	1,750	1,220	725	392	479
15	381	479	606	470	400	2,800	5,430	1,560	1,050	695	381	350
16	350	467	770	470	390	2,800	4,870	1,430	1,280	606	330	1,130
17	279	414	1,110	460	370	1,950	4,920	1,220	1,090	461	330	826
19	311	592	1,510	440	350	1,250	7,780	1,260	5,620	725	330	695
19	288	2,080	4,260	450	300	1,050	8,500	3,650	6,770	967	340	392
20	340	8,720	2,250	550	370	1,050	5,540	7,100	4,870	802	330	360
21	2,250	4,280	1,840	520	330	1,050	4,040	3,350	3,130	650	288	370
22	1,050	2,400	1,700	500	420	1,050	3,030	2,370	7,440	414	255	330
23	859	1,770	1,580	470	440	1,050	2,500	1,930	8,780	414	243	320
24	557	1,240	1,460	440	480	1,000	2,250	1,560	6,610	350	214	311
25	530	1,130	1,350	380	440	1,350	2,200	1,260	4,260	606	228	288
26	461	1,170	1,180	370	390	1,900	2,750	1,170	4,020	485	392	231
27	517	931	1,000	370	380	3,580	3,700	1,090	2,720	467	1,090	224
28	414	650	980	380	370	5,230	2,770	967	2,100	425	665	231
29	449	859	940	380	-------	8,270	2,110	802	3,980	414	564	217
30	381	755	900	370	-------	6,560	2,000	725	10,000	381	491	198
31	350	-------	860	370	-------	3,840	-------	665	-------	350	425	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Mar. 25; discharge for this period based on gage heights corrected for effect of ice.

Monthly discharge of Pemigewasset River at Plymouth, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 615 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	2,250	214	469	0.763	0.88
November	8,720	370	1,200	1.95	2.18
December	4,260	606	1,320	2.15	2.48
January	840	370	568	.924	1.07
February	680	300	445	.724	.75
March	8,270	320	2,440	3.97	4.58
April	16,200	1,950	4,950	8.05	8.98
May	8,010	665	2,570	4.18	4.82
June	10,000	571	3,450	5.61	6.26
July	7,440	350	1,440	2.34	2.70
August	2,250	214	495	.805	.93
September	1,130	188	362	.589	.66
The year	16,200	188	1,640	2.67	36.29

MERRIMACK RIVER AT FRANKLIN JUNCTION, N. H.

LOCATION.—At covered wooden bridge of Boston & Maine Railroad 1 mile below confluence of Pemigewasset and Winnepesaukee rivers, at Franklin Junction, Merrimack County.

DRAINAGE AREA.—1,460 square miles.

RECORDS AVAILABLE.—July 8, 1903, to September 30, 1922.

GAGE.—Standard chain gage fastened to floor of bridge on upstream side over west channel; read by L. A. Hildreth and E. R. Roers.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Composed of coarse gravel and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.4 feet at 2.30 p. m. April 12 (discharge by extension of rating curve, 29,000 second-feet); minimum stage, 3.75 feet at 6 a. m. October 10 (discharge, 865 second-feet).

1903–1922: Maximum stage recorded, 19.5 feet at 5 p. m. April 21, 1914 (discharge by extension of rating curve, 32,300 second-feet); minimum stage, 3.30 feet October 4, 1903 (approximate discharge by extension of rating curve, 250 second-feet).

ICE.—Stage-discharge relation affected by ice for short periods during severe winters.

REGULATION.—Flow affected by storage in Winnepesaukee, Squam, and New Found lakes, and by the operation of mills above the station.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined below 10,000 second-feet, and fairly well defined below 25,000 second-feet. Gage read to half-tenths twice daily except Sundays; some uncertainty in regard to accuracy of readings. Daily discharge ascertained by applying rating table to mean daily gage height. Records fair.

Discharge measurements of Merrimack River at Franklin Junction, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 19	J. L. Lamson	4.30	1,300	Mar. 25	J. L. Lamson	6.29	4,030
Jan. 19	do	[a]5.09	1,590	Apr. 3	do	7.00	5,390
Feb. 24	do	5.03	2,050	Aug. 25	Jones and Lamson	4.48	1,460
Mar. 25	do	6.20	3,930				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Merrimack River at Franklin Junction, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,060	1,220	2,260	1,660	1,650	1,350	6,830	3,620	2,130	10,600	1,470	1,560
2	1,060	1,380	2,130	1,850	1,600	1,300	5,800	3,620	2,000	9,000	1,660	1,560
3	1,220	1,880	3,280	1,900	1,550	1,300	5,400	3,450	2,260	7,880	1,660	1,220
4	1,140	1,770	5,600	1,950	1,600	1,300	5,200	4,130	11,000	7,460	1,660	1,300
5	1,060	1,560	3,620	1,900	1,450	1,250	5,200	5,800	9,140	7,040	1,560	1,300
6	1,060	1,380	2,970	1,900	1,550	1,850	5,800	17,200	5,400	6,410	1,140	1,380
7	1,060	1,470	2,540	1,850	1,550	2,500	6,620	13,500	4,840	5,800	1,560	1,380
8	980	1,380	2,260	1,750	1,450	6,200	6,410	9,770	4,300	5,200	2,130	1,380
9	900	1,380	1,880	1,650	1,500	12,100	12,500	9,140	3,450	3,450	3,120	1,380
10	900	1,380	2,400	1,750	1,500	8,090	15,700	6,620	3,120	4,300	2,130	1,200
11	1,060	1,380	1,880	1,750	1,450	5,400	23,200	6,000	3,450	3,960	2,000	1,300
12	1,140	1,560	2,260	1,750	1,400	4,480	27,800	5,200	3,790	3,790	1,770	1,300
13	1,380	1,380	2,260	1,750	1,450	4,130	23,600	4,840	3,790	3,280	1,060	1,380
14	1,470	1,560	2,000	1,750	1,400	4,130	14,400	3,960	3,280	3,280	1,380	1,560
15	1,300	1,470	1,770	1,700	1,400	4,840	10,400	3,790	2,970	2,820	1,660	1,660
16	1,140	1,380	1,660	1,700	1,400	5,400	8,300	3,620	2,970	2,000	1,660	1,770
17	1,060	1,380	1,470	1,650	1,350	4,480	9,980	3,280	3,120	2,400	1,470	1,470
18	1,060	1,560	2,260	1,650	1,300	3,790	10,600	3,120	10,000	2,260	1,470	1,660
19	1,220	2,400	7,670	1,650	1,350	3,280	17,400	6,000	14,800	2,820	1,470	1,770
20	1,140	7,250	4,300	1,650	1,350	3,450	10,600	10,400	12,300	2,820	1,060	1,660
21	2,000	8,510	3,450	1,700	1,350	3,960	9,560	5,200	8,510	2,820	1,300	1,470
22	2,130	4,480	2,970	1,600	1,400	3,790	8,090	5,800	13,800	2,000	1,300	1,470
23	1,560	3,120	2,820	1,600	1,450	3,790	4,300	4,840	15,000	1,500	1,300	1,380
24	1,380	2,540	2,130	1,500	1,500	3,790	4,840	4,130	18,300	1,880	1,300	1,020
25	1,470	2,130	2,130	1,500	1,400	3,790	4,480	3,790	14,600	1,880	1,470	1,220
26	1,380	2,130	2,000	1,450	1,300	4,000	4,480	3,450	11,900	1,880	1,380	1,300
27	1,470	1,880	2,130	1,400	1,400	6,620	5,200	3,280	8,510	1,770	1,770	1,300
28	1,380	1,770	2,260	1,400	1,400	9,770	5,600	2,680	6,830	1,770	2,000	1,300
29	1,220	2,000	2,000	1,400	-------	11,700	4,300	2,820	6,000	1,660	1,770	1,380
30	1,140	2,400	2,000	1,450	-------	15,300	3,960	2,540	19,700	1,200	1,660	1,380
31	1,220	-------	1,900	1,500	-------	10,500	-------	2,260	-------	1,470	1,560	-------

NOTE.—Stage-discharge relation affected by ice Dec. 31 to Mar. 7; discharge for this period based on gage heights corrected for effect of ice.

Monthly discharge of Merrimack River at Franklin Junction, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 1,460 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	2,130	900	1,250	0.856	0.99
November	8,510	1,220	2,240	1.53	1.71
December	7,670	1,470	2,660	1.82	2.10
January	1,950	1,400	1,670	1.14	1.31
February	1,650	1,300	1,440	.989	1.03
March	15,300	1,250	5,080	3.48	4.01
April	27,800	3,960	9,550	6.54	7.30
May	17,200	2,260	5,410	3.71	4.28
June	19,700	2,000	7,710	5.28	5.89
July	10,600	1,200	3,750	2.57	2.96
August	3,120	1,060	1,610	1.10	1.27
September	1,770	1,020	1,410	.966	1.08
The year	27,800	900	3,650	2.50	33.93

Note.—The monthly discharge in second-feet per square mile and the run-off in inches shown by the table do not represent the natural flow from the basin because of artificial storage.

MERRIMACK RIVER AT LAWRENCE, MASS.

LOCATION.—At dam of Essex Co. in Lawrence, Essex County.

DRAINAGE AREA.—Total of Merrimack River basin above Lawrence, 4,663 square miles; net drainage area, exclusive of diverted parts of Nashua and Sudbury River and Lake Cochituate basins, 4,452 square miles.

RECORDS AVAILABLE.—January 1, 1880, to September 30, 1922.

COMPUTATIONS OF DISCHARGE.—Accurate record is kept of the flow over the dam and through the various wheels and gates. This flow includes the water wasted into the Merrimack from the Nashua, Sudbury, and Cochituate drainage basins. Estimates of the quantity wasted from these basins is furnished by the Metropolitan Water and Sewerage Board of Boston, and subtracted from the quantity measured at Lawrence to obtain the net flow from the net drainage area of 4,452 square miles.

DIVERSIONS.—Practically the entire flow of South Branch of Nashua River, Sudbury River, and Lake Cochituate is diverted for use by the Metropolitan Water District of Boston.

REGULATION.—Flow regulated to some extent by storage in Lake Winnepesaukee. The low-water flow of the stream is affected by operation of various power plants above Lawrence.

STORAGE.—There are several reservoirs in the basin. It is estimated that the water surface is about 3.5 per cent of entire drainage area.

COOPERATION.—The entire record has been furnished by R. A. Hale, chief engineer of the Essex Co., rearranged in form of climatic year by the United States Geological Survey.

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,376	2,800	7,207	3,956	3,465	4,168	26,549	8,083	5,226	22,021	4,374	3,960
2	258	3,049	7,068	3,857	3,393	4,114	21,462	7,968	4,732	17,879	3,932	2,537
3	2,225	3,308	7,035	5,550	3,659	3,704	19,833	7,742	3,856	16,634	3,757	2,182
4	2,538	3,231	10,813	4,288	3,255	2,711	19,638	7,864	5,289	15,941	3,054	2,669
5	2,622	1,889	13,609	3,957	4,547	3,940	20,124	11,653	10,392	16,329	2,430	4,767
6	2,655	1,089	11,056	3,959	6,042	6,044	20,652	28,686	12,413	16,064	2,630	3,853
7	2,469	3,777	9,242	3,481	5,420	7,235	22,512	34,756	9,508	14,899	4,343	3,531
8	1,562	3,198	7,915	3,804	4,970	15,945	23,184	29,011	8,371	13,473	4,052	3,960
9	245	3,037	6,463	5,516	4,710	21,162	24,907	25,525	7,519	11,840	4,495	2,441
10	2,515	3,225	5,850	4,115	3,930	25,160	30,925	21,130	6,094	11,292	5,331	1,487
11	2,508	1,098	6,126	4,183	3,614	23,997	34,604	17,098	5,699	10,161	4,998	4,450
12	752	2,326	7,561	4,023	3,364	20,225	38,922	14,636	6,975	9,216	2,725	3,653
13	2,307	2,197	6,629	3,749	5,137	19,847	42,913	12,904	7,130	8,534	3,057	3,645
14	2,743	4,445	6,063	2,669	3,816	18,675	37,960	11,252	6,860	7,616	4,864	3,594
15	1,687	4,088	5,808	2,672	3,798	20,130	29,023	10,664	6,461	6,922	3,666	3,514
16	202	3,871	4,768	4,714	3,388	21,417	25,973	9,740	6,113	6,186	3,427	2,771
17	2,833	3,409	3,492	4,104	3,440	20,692	24,983	9,089	5,474	6,515	3,392	4,003
18	2,579	3,780	5,758	3,873	2,364	17,880	23,090	8,590	5,786	5,665	3,226	6,055
19	2,611	3,074	13,121	3,778	2,409	14,370	23,238	9,368	13,194	6,574	2,183	5,302
20	2,585	6,151	15,749	3,460	4,703	14,799	24,825	13,545	23,490	8,490	903	4,649
21	2,802	14,200	13,326	2,177	4,302	19,946	21,222	17,924	24,128	8,447	3,875	4,401
22	1,855	12,131	8,703	2,739	2,904	22,973	18,391	16,174	27,649	6,983	3,358	3,955
23	1,250	9,374	6,686	4,654	5,459	20,717	14,920	13,173	32,890	6,002	3,102	2,391
24	3,908	6,738	5,680	3,685	4,411	18,817	13,611	11,152	32,558	6,459	2,946	2,155
25	3,350	7,345	5,908	3,863	2,960	17,411	12,145	9,783	29,621	6,061	2,775	4,410
26	3,249	5,360	5,608	3,544	3,779	17,057	11,316	8,798	27,856	5,771	2,015	3,440
27	2,857	5,079	6,598	3,497	5,398	19,963	11,025	7,727	23,744	5,857	783	3,081
28	2,785	7,125	5,810	2,294	4,224	26,352	10,884	7,304	19,106	5,809	4,870	3,057
29	1,758	6,360	5,366	1,739	-------	30,810	10,468	6,634	16,740	4,447	4,720	3,059
30	217	5,799	4,653	4,366	-------	33,751	9,217	5,798	16,847	4,048	4,465	1,968
31	2,748	-------	3,921	3,534	-------	32,613	-------	6,326	-------	6,021	4,110	-------

Weekly discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the year ending Sept. 30, 1922.

[Weeks arranged in order of dryness.]

Week ending Sunday—	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins (211 square miles).	From net drainage area of 4,452 square miles.	Per square mile of net drainage area.
Oct. 16	1,816	6	1,810	0.407
2	1,998	6	1,992	.447
9	2,045	8	2,037	.458
23	2,359	50	2,309	.519
Nov. 6	2,588	7	2,581	.580
Oct. 30	2,589	8	2,581	.580
Aug. 27	2,693	33	2,660	.597
Nov. 13	2,694	13	2,681	.602
Aug. 20	3,094	29	3,065	.688
Sept. 10	3,244	143	3,101	.696
Jan. 29	3,325	23	3,302	.742
Feb. 19	3,479	46	3,433	.771
Jan. 22	3,549	36	3,513	.789
Sept. 17	3,661	119	3,542	.796
Aug. 6	3,743	27	3,716	.835
Feb. 5	3,746	55	3,691	.829
Sept. 3	3,835	87	3,748	.842
Jan. 15	3,847	48	3,799	.853
Mar. 5	4,037	116	3,921	.881
Feb. 26	4,074	113	3,961	.890
Nov. 20	4,117	35	4,082	.917
Jan. 8	4,128	50	4,078	.916
Sept. 24	4,130	60	4,070	.914
Aug. 13	4,143	29	4,114	.924
Feb. 12	4,579	75	4,504	1.012
Jan. 1	5,130	81	5,049	1.134
June 4	5,266	69	5,197	1.167
July 30	5,493	59	5,434	1.221
Dec. 18	5,726	117	5,609	1.260
June 18	6,400	60	6,340	1.424
July 23	6,954	131	6,823	1.532
Dec. 4	7,344	292	7,052	1.584
July 16	8,561	150	8,411	1.889
June 11	8,571	59	8,512	1.912
Nov. 27	8,604	73	8,531	1.916
Dec. 11	8,609	261	8,348	1.875
Dec. 25	9,882	132	9,750	2.190
May 28	10,587	208	10,379	2.331
Apr. 30	11,238	166	11,072	2.487
May 21	11,274	366	10,908	2.450
July 9	15,026	564	14,462	3.248
May 7	15,250	557	14,693	3.300
May 12	17,110	504	16,606	3.730
May 14	18,794	513	18,281	4.106
Mar. 26	18,817	253	18,564	4.170
Mar. 19	19,002	215	18,787	4.220
July 2	20,599	375	20,224	4.543
Apr. 23	21,524	474	21,050	4.728
Apr. 9	21,550	599	20,951	4.706
June 25	26,219	1,005	25,214	5.664
Apr. 2	27,357	226	27,131	6.094
Apr. 16	34,331	650	33,681	7.565

Monthly discharge of Merrimack River at Lawrence, Mass., for the year ending Sept. 30, 1922.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall, in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack from diverted drainage basins, 211 square miles.	From net drainage area of 4,452 square miles.	Per square mile of net drainage area.	Inches.	Per cent of rainfall.	
October	2,131	17	2,114	0.475	0.548	24.9	2.20
November	4,752	48	4,704	1.057	1.179	17.7	6.65
December	7,535	180	7,355	1.652	1.905	78.4	2.43
January	3,735	39	3,696	.830	.957	47.8	2.00
February	4,031	81	3,950	.887	.924	30.2	3.06
March	17,633	272	17,361	3.900	4.496	88.9	5.06
April	22,284	458	21,826	4.903	5.470	220.6	2.48
May	13,229	378	12,851	2.887	3.328	69.3	4.80
June	13,724	342	13,382	3.006	3.354	35.8	9.36
July	9,618	222	9,396	2.111	2.434	60.4	4.03
August	3,479	38	3,441	.773	.891	19.9	4.47
September	3,498	90	3,408	.766	.855	27.4	3.12
The year	8,804	180	8,624	1.937	26.341	53.0	49.66

NOTE.—The monthly discharge in second-feet per square mile and the run-off in inches, shown by the table, do not represent the natural flow from the basin because of artificial storage.

SMITH RIVER NEAR BRISTOL, N. H.

LOCATION.—At highway bridge in South Alexandria, 3 miles from Bristol, Grafton County.

DRAINAGE AREA.—78.5 square miles (measured on Walker map).

RECORDS AVAILABLE.—May 11, 1918, to September 30, 1922.

GAGE.—Vertical staff attached to downstream side of left abutment; read by Lillian Berry.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge or by wading.

CHANNEL AND CONTROL.—Channel rough and covered with boulders; control ledge rock and boulders 130 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.65 feet at 4 p. m. April 12 (discharge, from extension of rating curve, 1,490 second-feet); minimum discharge, 16 second-feet on October 2.

1918–1922: Maximum open-water stage recorded, 4.7 feet March 29, 1919 (discharge, by extension of rating curve, 1,510 second-feet); minimum stage, 0.54 foot August 4, 1919 (discharge, 5 second-feet).

ICE.—Ice forms to a considerable thickness during winter; stage-discharge relation affected.

REGULATION.—A few small mills above the gage, but no serious effect from their operation. Several small lakes in the basin have little if any storage regulation.

ACCURACY.—Stage-discharge relation shifts slightly at infrequent intervals. Rating curves used are well defined between 7 and 600 second-feet. Gage read to hundredths twice daily except during winter when it was read once a day. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice. Records good.

Discharge measurements of Smith River near Bristol, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 29	J. L. Lamson	[a] 2.88	73	Apr. 4	J. L. Lamson	2.20	325
Jan. 21	do	[a] 1.28	52	May 3	do	1.38	120
Feb. 24	do	[a] 1.70	56	Aug. 24	Jones and Lamson	.72	20.6
Apr. 4	do	2.20	329	25	do	.73	21.3

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Smith River near Bristol, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	18	25	82	64	50	26	374	141	72	342	27	22
2	16	84	122	60	60	20	358	133	56	248	43	22
3	18	72	262	60	250	30	342	118	96	198	47	21
4	18	64	282	56	220	20	342	116	475	219	39	21
5	18	45	143	56	220	220	342	457	475	187	35	21
6	17	38	110	140	175	470	422	600	298	157	31	20
7	17	35	100	110	140	280	475	492	182	122	41	20
8	17	49	96	90	120	780	600	390	135	104	104	19
9	17	31	90	80	90	740	790	284	108	106	76	19
10	18	38	90	74	72	600	910	224	106	100	50	19
11	20	40	88	70	64	520	1,000	182	148	90	40	18
12	25	45	96	68	58	400	1,300	155	131	76	33	21
13	31	46	98	64	50	320	1,100	133	94	69	32	23
14	27	46	98	60	42	220	790	122	81	59	30	24
15	23	59	94	58	36	400	712	112	80	53	27	37
16	20	53	84	56	30	320	637	100	89	48	29	85
17	19	48	110	52	26	250	582	96	87	44	28	57
18	18	118	220	50	30	220	637	90	582	69	25	37
19	19	185	394	98	30	190	600	406	674	104	26	30
20	38	356	232	50	30	190	546	457	475	81	24	29
21	55	252	188	52	64	220	406	342	582	62	22	28
22	41	135	141	52	56	250	312	245	830	50	21	26
23	29	104	130	52	54	280	270	182	830	39	21	24
24	26	93	120	52	56	298	226	150	674	57	20	22
25	26	87	98	50	40	312	201	133	790	57	22	21
26	32	85	90	50	30	358	193	116	358	47	48	23
27	36	70	80	50	32	600	201	104	253	43	40	21
28	32	106	72	50	30	750	187	96	196	39	48	19
29	29	89	70	50	------	790	168	81	237	33	45	21
30	28	77	84	50	------	790	152	70	406	31	47	20
31	23	------	64	50	------	674	------	62	------	28	29	------

NOTE.—Stage-discharge relation affected by ice Dec. 6–18 and Dec. 23 to Mar. 23; discharge based on gage heights corrected for effect of ice.

Monthly discharge of Smith River near Bristol, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 78.5 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	55	16	24.9	0.317	0.37
November	356	25	85.8	1.09	1.22
December	394	64	129	1.64	1.89
January	140	50	63.7	.811	.94
February	250	26	77.0	.981	1.02
March	790	20	372	4.74	5.46
April	1,300	152	506	6.45	7.20
May	600	62	206	2.62	3.02
June	830	56	320	4.08	4.55
July	342	28	95.5	1.22	1.41
August	104	20	37.1	.473	.55
September	85	18	26.3	.335	.37
The year	1,300	16	162	2.06	28.00

CONTOOCOOK RIVER NEAR ELMWOOD, N. H.

LOCATION.—At covered highway bridge on county road between Hancock and Greenfield, Hillsborough County; half a mile below mouth of Kimball Brook and 1½ miles south of Elmwood railroad station.

DRAINAGE AREA.—168 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 20, 1917, to September 30, 1922.

GAGE.—Chain on upstream side of bridge; read by Mrs. G. M. Elliott.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Stream bed is covered with boulders and gravel; control at low stages is rock ledge about 50 feet below gage and is well defined; at high stages control is probably at a storage dam 3 miles downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.2 feet at 6 a. m. June 22 (discharge, by extension of rating curve, 2,580 second-feet); minimum stage, 1.64 feet at 4 p. m. October 16 (discharge, 29 second-feet).

1917–1922: Maximum open-water stage recorded, 10.0 feet December 14, 1920 (discharge, by extension of rating curve, 2,940 second-feet). A stage of 11.9 feet was recorded March 10, 1921, but the channel was obstructed by ice. Minimum stage recorded, 1.48 feet August 23, 1918 (discharge, 19 second-feet).

ICE.—River is usually covered with ice for several months during winter.

REGULATION.—Some storage has been developed in Nubanusit Lake and other reservoirs on the main river and tributaries. Water power is used at various places on the river above the station; the first dam above the gage is at North Peterboro, 4 miles upstream. Records obtained from self-registering gage used during August and September, 1921, showed very little diurnal fluctuation.

ACCURACY.—Stage-discharge relation practically permanent, except when affected by ice. Rating curve fairly well defined between 50 and 1,200 second-feet. Gage read to hundredths twice daily except during winter, when it was read once daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice during the winter. Records fair.

Discharge measurements of Contoocook River near Elmwood, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 5	J. L. Lamson	[a] 3.02	165	May 2	J. L. Lamson	3.31	256
Feb 23	do	[a] 2.98	140	July 12	Jones and Lamson	3.20	245

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Contoocook River near Elmwood, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	93	80	127	120	100	135	1,020	210	174	980	134	166
2	54	134	120	86	150	125	820	230	158	675	120	142
3	58	120	514	74	260	135	745	210	183	514	120	80
4	80	113	484	125	240	140	710	321	280	514	106	74
5	63	86	454	125	220	150	745	1,180	270	484	106	113
6	74	54	290	185	200	260	860	2,120	240	514	80	150
7	68	58	183	185	185	300	980	1,400	174	425	150	158
8	63	74	150	150	165	1,200	1,220	745	120	300	174	150
9	166	74	127	140	150	1,050	1,680	484	100	344	174	142
10	45	93	134	150	135	960	1,630	321	106	321	158	80
11	58	68	120	150	135	820	2,040	321	113	290	150	68
12	80	68	113	140	105	780	2,040	290	210	230	100	120
13	80	58	120	135	125	740	1,720	260	174	220	54	142
14	93	54	113	94	125	780	1,360	230	127	192	106	142
15	74	80	106	94	140	1,050	1,450	240	150	127	134	134
16	30	86	106	94	135	1,100	1,220	174	106	100	120	220
17	41	142	120	120	140	1,050	1,020	166	113	134	142	120
18	80	240	321	125	125	640	1,060	250	250	150	142	134
19	80	240	1,020	135	105	420	940	544	1,060	369	113	106
20	86	260	605	135	120	740	860	484	820	344	58	106
21	150	280	396	120	150	1,300	640	344	1,020	250	100	100
22	106	201	201	115	135	1,150	514	280	2,530	183	106	106
23	63	174	183	100	145	820	484	230	2,040	120	120	74
24	54	127	170	94	160	780	454	210	1,500	210	127	68
25	93	134	158	86	150	740	425	210	1,320	270	134	54
26	80	134	150	135	135	860	344	201	1,180	210	174	63
27	80	106	140	135	150	1,350	270	166	900	210	127	86
28	80	120	140	135	165	1,600	240	120	605	166	220	86
29	74	134	135	105	-------	1,760	230	134	574	142	270	74
30	41	120	134	115	-------	1,760	210	134	1,180	106	201	58
31	49	-------	127	105	-------	1,270	-------	150	-------	120	174	-------

NOTE.—Stage-discharge relation affected by ice Dec. 26–29 and Jan. 4 to Mar. 28; discharge based on gage heights corrected for effect of ice.

Monthly discharge of Contoocook River near Elmwood, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 168 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	166	30	75.4	0.449	0.52
November	280	54	124	.738	.82
December	1,020	106	234	1.39	1.60
January	185	74	123	.732	.84
February	260	100	152	.905	.94
March	1,760	125	838	4.99	5.75
April	2,040	210	931	5.54	6.18
May	2,120	120	399	2.38	2.74
June	2,530	100	593	3.53	3.94
July	980	100	297	1.77	2.04
August	270	54	135	.804	.93
September	220	54	111	.661	.74
The year	2,530	30	335	1.99	27.04

NUBANUSIT BROOK NEAR PETERBORO, N. H.

LOCATION.—At highway bridge 1½ miles above Peterboro, Hillsborough County.

DRAINAGE AREA.—54.3 square miles.

RECORDS AVAILABLE.—November 18, 1920, to September 30, 1922.

GAGES.—Gurley water-stage recorder on left bank, referenced to gage datum by hook gage inside well; an inclined staff is used for auxiliary readings. Recorder inspected by John W. Robbe and F. E. Moore.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONRTOL.—Control formed by boulders 75 feet below gage; probably permanent. Above and below gage stream is swift, bed covered with small boulders.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.08 feet at 6 a. m. June 22 (discharge, from extension of rating curve, 832 second-feet); minimum stage, 1.67 feet at 10 a. m. August 20 (discharge, from extension of rating curve, 3.3 second-feet, water held back by dams).

1920–1922: Maximum open-water stage recorded 5.4 feet at noon March 10, 1921 (discharge, from extension of rating curve, 970 second-feet) (a stage of 5.6 feet was recorded at 8.30 a. m. January 21, 1921, but the channel was obstructed by ice at the time); minimum stage, 1.62 feet from 8 p. m. September 4 to 7 a. m. September 6, 1921 (discharge, from extension of rating curve, 2.7 second-feet, water held back by dams).

ICE.—Ice forms along banks and on rocks below gage; stage-discharge relation affected for short periods.

REGULATION.—Distribution of flow affected by operation of mills at West Peterboro half a mile upstream. There are several storage reservoirs on main stream and its tributaries above gage.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve fairly well defined between 5 and 200 second-feet. Operation of water-stage recorder satisfactory except for short periods indicated in footnote to daily-discharge table. Daily discharge ascertained by use of discharge integrator. Records good.

Discharge measurements of Nubanusit Brook near Peterboro, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 26	J. L. Lamson	2.88	88	Mar. 14	J. L. Lamson	3.08	115
27	do	2.89	81	14	do	3.46	180
27	do	2.90	83	14	do	3.43	179
Jan. 4	do	[a] 5.07	112	July 12	Jones and Lamson	2.83	68
Feb. 23	do	[a] 3.65	55	12	do	3.26	144
23	do	[a] 4.90	109	Aug. 15	J. S. S. Jones	2.92	85

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Nubanusit Brook near Peterboro, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	16	37	52	33	54	56	358	82	88	280	31	65
2	5	38	58	40	66	52	350	94	79	190	25	42
3	30	38	80	70	70	48	320	88	69	172	28	19
4	33	38	72	68	86	36	290	116	86	120	36	20
5	37	19	104	68	40	72	290	320	100	140	52	42
6	35	4	95	68	80	92	290	440	78	126	27	42
7	35	34	93	56	72	125	325	370	64	110	51	43
8	18	36	85	26	66	175	390	260	66	86	52	40
9	5	37	86	70	60	390	530	186	41	72	56	19
10	32	34	49	42	56	570	510	153	27	108	55	4
11	35	7	26	36	28	400	570	127	29	95	44	39
12	37	6	66	68	48	222	598	111	57	74	24	41
13	35	4	66	62	74	202	590	81	41	72	17	40
14	33	33	70	28	62	161	510	71	38	61	36	40
15	16	36	85	40	56	254	440	61	37	37	40	46
16	4	38	134	68	50	261	410	50	33	36	36	22
17	32	43	42	54	47	261	362	58	16	52	47	9
18	34	40	78	74	19	202	320	72	65	53	37	53
19	34	23	166	60	40	152	295	158	205	86	15	45
20	42	17	158	52	68	196	263	152	210	86	8	40
21	41	59	126	40	50	226	240	138	420	84	43	35
22	19	56	105	22	18	236	220	118	740	53	40	36
23	4	61	110	48	74	208	184	95	610	45	38	17
24	33	26	98	64	56	196	176	82	455	72	43	4
25	35	50	48	52	24	184	172	72	385	62	38	35
26	36	30	86	62	44	226	151	65	490	62	16	36
27	34	26	86	52	68	398	122	53	405	50	4	35
28	37	54	80	26	64	474	97	50	315	52	126	36
29	18	42	80	46	-------	470	75	59	300	30	81	36
30	4	44	80	54	-------	430	72	56	405	15	67	18
31	34	-------	68	56	-------	410	-------	87	-------	40	62	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22, 1921, to Mar. 11, 1922; daily discharge for these periods based on gage heights corrected for effect of ice.

Operation of water-stage recorder unsatisfactory Apr. 5–6, 8–9, 11–12, 14–21, and 26–29; discharge for these periods estimated by comparison with records for other rivers and climatic data.

Monthly discharge of Nubanusit Brook near Peterboro, N. H., for the year ending Sept. 30 1922.

[Drainage area, 54.3 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	42	4	27.2	0.501	0.58
November	61	4	33.7	.621	.69
December	166	26	84.9	1.56	1.80
January	74	22	51.8	.954	1.10
February	86	18	55.0	1.01	1.05
March	570	36	238	4.38	5.05
April	598	72	317	5.84	6.52
May	440	50	127	2.34	2.70
June	740	16	198	3.65	4.07
July	280	15	84.5	1.56	1.80
August	126	4	41.1	.757	.87
September	65	4	33.3	.613	.68
The year	598	4	108	1.99	26.91

SUNCOOK RIVER AT NORTH CHICHESTER, N. H.

LOCATION.—100 feet below highway bridge and 500 feet from Chichester depot North Chichester, Merrimack County, 2½ miles above mouth of Little Suncook River.

DRAINAGE AREA.—157 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 21, 1918, to September 30, 1920, and June 15, 1921 to September 30, 1922.

GAGE.—Gurley water-stage recorder on left bank, referred to gage datum by a hook gage inside the well; a vertical staff gage is used for auxiliary readings. Recorder inspected by M. H. Gamage.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Stream bed covered with gravel and other alluvial deposits. Low-water control at head of rapids 150 feet below gage; at high water the control is probably formed by crest of an old dam near Epsom.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.63 feet at 10 a. m. June 22 (discharge, from extension of rating curve, 1,720 second-feet): minimum stage from recorder, 1.08 feet at 4 p. m. October 18 (discharge, 8 second-feet).

1918–1922: Maximum stage during periods of record, approximately 9.1 feet March 27–28, 1920 (approximate discharge, by extension of rating curve, 1,840 second-feet); minimum stage, 1.05 feet August 29, 1921 (discharge, 7 second-feet).

ICE.—River is covered with ice for several months during winter.

REGULATION.—Storage has been developed at several points above Pittsfield. The operation of mills at Pittsfield causes a large variation in discharge during days when the mills are in operation.

ACCURACY.—Stage-discharge relation apparently permanent except when affected by ice. Rating curve well defined between 10 and 800 second-feet. Daily discharge ascertained by discharge integrator. Records good.

Discharge measurements of Suncook River at North Chichester, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 18	J. L. Lamson	1.09	9.0	Mar. 1	J. L. Lamson	[a] 2.32	33
Dec. 27	do	[a] 5.57	316	1	do	[a] 5.24	291
Jan. 23	do	[a] 5.29	341	Aug. 26	Jones and Lamson	1.37	27.4

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Suncook River at North Chichester, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	52	13	104	200	140	155	1,070	205	114	440	124	136
2	11	35	104	190	160	155	930	186	188	410	84	20
3	26	108	238	180	200	155	940	170	90	355	24	29
4	28	106	404	170	270	250	940	180	120	305	112	26
5	27	56	284	140	250	175	980	640	184	295	100	24
6	91	16	220	160	230	380	1,040	1,580	158	285	51	102
7	89	20	184	180	220	470	1,080	1,260	126	240	134	106
8	48	16	152	190	190	1,150	1,140	1,020	100	195	114	100
9	12	23	146	210	135	1,100	1,400	740	97	182	100	53
10	22	100	85	130	105	1,050	1,580	540	80	188	100	13
11	29	25	82	130	86	940	1,480	430	118	148	102	92
12	24	20	176	190	140	880	1,430	355	194	144	64	112
13	96	19	124	180	190	840	1,270	315	144	140	15	103
14	94	108	148	140	105	840	1,060	285	104	150	99	97
15	64	115	134	190	120	1,050	990	250	124	99	97	113
16	14	38	148	250	120	1,050	1,060	255	122	104	96	99
17	10	42	90	130	105	940	870	194	68	150	99	97
18	10	140	670	120	70	860	790	196	130	120	100	128
19	15	178	1,180	130	58	840	690	400	900	380	61	98
20	25	234	865	140	200	940	620	510	1,310	375	13	101
21	32	228	680	140	140	1,450	590	405	1,100	245	98	95
22	68	165	560	180	160	1,430	490	310	1,660	158	100	97
23	13	124	450	240	180	1,360	430	245	1,340	134	100	53
24	100	31	370	180	190	1,040	390	215	930	180	104	14
25	22	144	300	120	65	900	355	178	720	164	100	92
26	22	60	220	140	205	990	310	166	690	152	72	75
27	27	18	250	56	260	1,380	295	126	540	134	16	81
28	95	180	240	120	165	1,580	275	144	430	126	114	96
29	64	160	220	70	-------	1,640	245	168	390	74	114	94
30	13	132	200	250	-------	1,580	215	86	520	116	122	45
31	10	-------	180	140	-------	1,340	-------	148	-------	210	100	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Mar. 22; discharge based on gage heights corrected for effect of ice.

Monthly discharge of Suncook River at North Chichester, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 157 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	100	10	40.4	0.257	0.30
November	234	13	88.5	.564	.63
December	1,180	82	297	1.89	2.18
January	250	56	161	1.03	1.19
February	270	58	159	1.01	1.05
March	1,640	155	933	5.94	6.85
April	1,580	215	832	5.30	5.91
May	1,580	86	383	2.44	2.81
June	1,660	68	426	2.71	3.02
July	440	74	206	1.31	1.51
August	134	13	88.0	.561	.65
September	136	13	79.7	.508	.57
The year	1,660	10	309	1.97	26.67

90902—25†—WSP 541——6

SOUHEGAN RIVER AT MERRIMACK, N. H.

LOCATION.—At head of Atherton Falls, 7 miles below the mouth of Beaver Brook and 1½ miles above confluence of Souhegan and Merrimack rivers at Merrimack, Hillsborough County.

DRAINAGE AREA.—168 square miles.

RECORDS AVAILABLE.—July 13, 1909, to September 30, 1922.

GAGES.—Gurley printing water-stage recorder on left bank 350 feet above falls installed October 15, 1913; vertical staff and chain gages used prior to installation of water-stage recorder. Recorder inspected by employee of W. H. McElwain Co.

DISCHARGE MEASUREMENTS.—Made by wading below the falls at low stages or from cable at high stages.

CHANNEL AND CONTROL.—The channel opposite the gage is a pool in which velocity is very low. The control of this pool is a rock ledge at the head of Atherton Falls and is permanent.

ICE.—Ice forms on control for short periods during some winters.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.09 feet at 7 a. m. May 6 (discharge, by extension of rating curve, 3,570 second-feet); minimum stage from recorder, 2.05 feet at 4.30 p. m. October 1 (discharge, 26 second-feet).

1909–1922: Maximum stage recorded, 9.6 feet on August 5, 1915 (discharge, by extension of rating curve, 4,930 second-feet); minimum stage, 1.90 feet at 8 a. m. September 8, 1909 (discharge, 15 second-feet).

REGULATION.—Flow affected by the operation of mills at Milford, 8 miles above.

ACCURACY.—Stage-discharge relation permanent except when affected by ice for short periods. Rating curve well defined below 2,000 second-feet. Operation of water-stage recorder satisfactory except for period noted in footnote to daily-discharge table. Daily discharge ascertained by applying rating table to mean daily gage height. Records good.

Discharge measurements of Souhegan River at Merrimack, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
July 13	Jones and Lamson	3.17	224
28	J. L. Lamson	3.16	282
28	....do	3.19	274

Daily discharge, in second-feet, of Souhegan River at Merrimack, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	35	40	270	180	132	192	920	225	142	720	152	132
2	42	94	242	170	152	190	775	222	140	535	138	106
3	37	152	610	150	278	185	860	207	165	442	132	82
4	41	106	920	165	424	175	980	232	347	637	132	76
5	45	92	560	180	371	190	980	1,260	438	665	158	118
6	45	74	434	225	319	359	1,230	3,050	228	802	138	130
7	41	64	393	267	270	496	1,330	1,540	178	610	140	132
8	38	74	307	216	225	1,260	1,360	1,100	150	434	216	132
9	39	94	246	195	201	1,820	1,780	775	135	492	210	108
10	33	82	219	207	201	1,300	1,400	590	116	447	170	80
11	40	100	195	180	185	1,070	1,330	492	112	339	145	82
12	42	116	204	148	170	860	1,200	420	165	288	122	88
13	43	110	232	170	160	860	980	375	182	253	102	106
14	35	120	190	158	168	920	775	343	132	253	106	108
15	41	140	142	152	160	1,470	720	327	116	225	112	104
16	34	130	135	152	158	1,330	950	288	114	185	100	122
17	33	142	188	145	145	890	748	260	110	175	94	132
18	39	284	501	158	142	720	748	267	110	175	92	110
19	49	339	1,580	152	150	600	665	720	638	525	90	110
20	36	288	920	158	145	860	570	890	1,100	585	74	110
21	41	355	692	160	213	1,820	540	560	802	343	76	102
22		260	535	142	267	1,440	465	429	2,330	246	80	90
23		204	420	130	210	1,010	411	339	1,750	192	84	76
24		168	375	132	225	920	402	274	1,070	295	86	52
25		152	339	130	260	860	371	246	1,140	355	84	58
26	42	150	284	150	239	950	335	225	1,750	311	94	64
27		145	260	150	225	1,540	299	210	890	278	132	45
28		152	253	158	219	1,680	278	175	610	236	190	64
29		292	225	148	-------	1,680	267	170	565	228	281	49
30	43	281	190	138	-------	1,640	232	148	1,100	190	222	60
31	37	-------	175	130	-------	1,140	-------	152	-------	162	160	-------

NOTE.—Stage-discharge relation slightly affected by ice Dec. 22–24; discharge for this period based on gage heights corrected for effect of ice. Recorder not in operation Oct. 22–29; discharge estimated.

Monthly discharge of Souhegan River at Merrimack, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 168 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	45	33	40.2	0.239	0.28
November	355	40	160	.952	1.06
December	1,580	135	395	2.35	2.71
January	267	130	164	.976	1.13
February	424	132	215	1.28	1.33
March	1,820	175	982	5.85	6.74
April	1,780	232	797	4.74	5.29
May	3,050	148	533	3.17	3.66
June	2,330	110	561	3.34	3.72
July	802	162	375	2.23	2.57
August	281	74	133	.792	.91
September	132	45	94.3	.561	.63
The year	3,050	33	372	2.21	30.03

SOUTH BRANCH OF NASHUA RIVER BASIN (WACHUSETT DRAINAGE BASIN) NEAR CLINTON, MASS.

LOCATION.—At Wachusett dam, near Clinton, Worcester County.

DRAINAGE AREA.—119 square miles 1896 to 1907; 118.19 square miles 1908–1913; 108.84 square miles 1914–1922.

RECORDS AVAILABLE.—July, 1896, to September, 1922.

REGULATION.—Flow affected by storage in Wachusett reservoir and other ponds. Beginning with 1897, the determination of discharge have been corrected for gain or loss in the reservoir and ponds, so that the record shows approximately the natural flow of the stream.

The yield per square mile is the yield of the drainage area including the water surfaces. For the year 1897 to 1902, inclusive, the water surface amounted to 2.2 per cent of the total area; 1903, 2.4 per cent; 1904, 3.6 per cent; 1905, 4.1 per cent; 1906, 5.1 per cent; 1907, 6.0 per cent; 1908 and subsequent years, 7.0 per cent.

COOPERATION.—Record furnished by the Water Division of the Metropolitan District Commission; rearranged in form of climatic-year by United States Geological Survey.

Yield and rainfall in South Branch of Nashua River basin (Wachusett drainage area) near Clinton, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 108.84 square miles.]

Month.	Total yield (million gallons).	Yield per square mile.		Run-off.		Rainfall in inches.
		Million gallons per day.	Second-feet.	Inches.	Per cent of rainfall.	
October	534.6	0.158	0.245	0.282	14.1	2.00
November	2,583.8	.791	1.224	1.366	18.7	7.31
December	4,294.9	1.273	1.970	2.271	82.1	2.77
January	2,001.3	.593	.918	1.058	44.0	2.40
February	3,072.7	1.008	1.560	1.624	43.0	3.77
March	11,273.7	3.341	5.170	5.960	96.0	6.21
April	7,769.4	2.383	3.687	4.114	187.8	2.19
May	6,641.5	1.968	3.046	3.511	73.5	4.78
June	7,259.1	2.223	3.440	3.838	41.6	9.22
July	5,054.2	1.498	2.318	2.672	54.5	4.91
August	2,683.5	.795	1.231	1.419	25.4	5.59
September	1,686.6	.516	.798	.891	32.2	2.77
The year	54,855.3	1.381	2.136	29.006	53.79	53.92

SUDBURY RIVER AND LAKE COCHITUATE BASINS NEAR FRAMINGHAM AND COCHITUATE, MIDDLESEX COUNTY, MASS.

DRAINAGE AREA.—Area of Sudbury basin from 1875 to 1878, inclusive, was 77.8 square miles; 1879–80, 78.2 square miles; 1881–1922, 75.2 square miles. Area of Cochituate basin from 1863 to 1909, inclusive, was 18.87 square miles; 1910, 17.8 square miles; 1911 to 1922, 17.58 square miles.

RECORDS AVAILABLE.—Of Sudbury River, January, 1875, to September, 1922; of Lake Cochituate, January, 1863, to September, 1922. Records of rainfall have been kept in the Sudbury basin since 1875 and in the Cochituate basin since 1852, but the latter are considered of doubtful accuracy previous to 1872.

REGULATION.—The greater part of the flow from these basins is controlled by storage reservoirs constructed by the city of Boston and the Metropolitan Water and Sewerage Board. Lake Cochituate, which drains into Sudbury River a short distance below Framingham, is controlled as a storage reservoir for the Metropolitan waterworks system. In the Sudbury River basin the water surfaces exposed to evaporation have been increased from time to time by the construction of additional storage reservoirs. From 1875 to 1878, inclusive, the water surface amounted to 1.9 per cent of the total area; from 1879 to 1884, to 3 per cent; 1885 to 1893, to 3.4 per cent; 1894 to 1897, to 3.9 per cent; 1898 and subsequent years, 6.5 per cent.

DETERMINATION OF DISCHARGE.—In determining the run-off of the Sudbury and Cochituate drainage areas the water diverted for the municipal supply of Framingham, Natick, and Westboro, which discharge their sewerage outside the basins, is taken into consideration; the results, however, are probably less accurate since the sewerage diversion works were constructed.

Water from the Wachusett drainage area also passes into the reservoirs in the Sudbury basin and must be measured to determine the yield of the Sudbury basin; the small errors unavoidable in the measurement of large quantities of water decrease the accuracy of the determination of the Sudbury water supply during months of low yield for years subsequent to 1897.

COOPERATION.—Record furnished by the water division of the Metropolitan District Commission; rearranged in form of climatic year by United States Geological Survey.

Yield and rainfall in Sudbury River basin near Framingham, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 75.2 square miles.]

Month.	Total yield (million gallons).	Yield per square mile.		Run-off.		Rainfall in inches.
		Million gallons per day.	Second-feet.	Inches.	Per cent of rainfall.	
October	−228.2	−0.098	−0.151	−0.175	−15.6	1.12
November	1,505.1	.667	1.032	1.151	14.5	7.95
December	1,786.7	.766	1.186	1.367	53.8	2.54
January	754.0	.323	.500	.577	30.5	1.89
February	1,719.9	.817	1.264	1.316	40.5	3.25
March	5,994.5	2.571	3.979	4.587	85.7	5.35
April	4,405.8	1.956	3.026	3.376	207.1	1.63
May	4,086.0	1.753	2.712	3.126	58.0	5.39
June	3,522.0	1.561	2.415	2.695	30.3	8.90
July	1,682.6	.722	1.117	1.287	40.1	3.21
August	819.3	.351	.544	.627	12.9	4.85
September	1,483.9	.657	1.016	1.134	27.7	4.09
The year	27,531.4	1.003	1.552	21.068	42.0	50.17

Yield and rainfall in Lake Cochituate basin near Cochituate, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 17.58 square miles.]

Month.	Total yield (million gallons).	Yield per square mile.		Run-off.		Rainfall in inches.
		Million gallons per day.	Second-feet.	Inches.	Per cent of rainfall.	
October	30.0	0.055	0.085	0.10	8.7	1.13
November	403.2	.765	1.183	1.32	17.0	7.75
December	610.5	1.120	1.733	2.00	79.6	2.51
January	216.6	.397	.615	.71	38.3	1.85
February	459.4	.933	1.444	1.50	44.5	3.38
March	1,356.7	2.489	3.852	4.44	79.6	5.58
April	922.9	1.752	2.711	3.02	168.8	1.79
May	849.7	1.559	2.412	2.78	55.0	5.06
June	1,061.6	2.013	3.114	3.48	33.0	10.53
July	581.8	1.068	1.652	1.91	62.2	3.06
August	282.4	.518	.802	.92	22.5	4.11
September	498.4	.944	1.460	1.63	36.9	4.42
The year	7,273.2	1.133	1.753	23.81	46.5	51.17

TAUNTON RIVER BASIN.

TAUNTON RIVER AT TITICUT, NEAR BRIDGEWATER, MASS.

LOCATION.—At Summer Street Bridge, on road between Bridgewater and Middleboro, Plymouth County, half a mile from Titicut railroad station and 1 mile above confluence of Namasket and Taunton rivers.

DRAINAGE AREA.—185 square miles.

RECORDS AVAILABLE.—March 2, 1920, to September 30, 1922.

GAGE.—Chain on upstream side of highway bridge; read by Emily Pratt.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Channel deep, with hard bottom covered with rocks and gravel; apparently permanent. River overflows banks at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.4 feet at 8.40 a. m. August 29 (discharge, 2,070 second-feet); minimum stage, 2.38 feet at 8.55 a. m. August 26 (discharge, 91 second-feet).

1920–1922: Maximum stage of 15.5 feet occurred March 19, 1920 (determined from high-water marks) (approximate discharge from extension of rating curve, 5,150 second-feet); minimum stage recorded, 1.30 feet at 8.38 a. m. September 7, 1920 (discharge, from extension of rating curve, 59 second-feet).

ICE.—River freezes over, stage-discharge relation occasionally affected by ice; not affected during winter of 1921–22.

REGULATION.—The nearest dam above the gage is at Paper Mill Village, near Bridgewater, where water power is used by a paper mill. The operation of this mill does not materially affect the distribution of flow at the gage.

ACCURACY.—Stage-discharge relation apparently permanent except when affected by ice. Rating curve well defined between 200 and 3,400 second-feet, and fairly well defined between 100 and 200 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height. Records fair.

Discharge measurements of Taunton River at Titicut, near Bridgewater, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 5	W. E. Armstrong	3.5	196	Mar. 13	W. E. Armstrong	6.61	747
Feb. 10	do	3.61	166	June 29	Jones and Armstrong	5.4	392
10	do	3.64	164				

Daily discharge, in second-feet, of Taunton River at Titicut, near Bridgewater, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	220	176	1,070	275	255	235	1,020	220	195	275	164	1,210
2	205	195	1,020	315	275	188	1,100	195	170	235	140	900
3	170	188	930	360	235	188	1,160	182	235	235	103	1,020
4	188	195	740	295	205	255	1,180	170	195	275	125	1,240
5	182	170	510	140	235	460	1,100	570	176	335	120	850
6	176	182	275	140	275	620	990	990	170	385	135	850
7	164	195	205	140	295	900	850	1,240	158	435	235	820
8	176	205	176	152	235	1,490	540	1,130	146	410	295	710
9	170	176	170	158	275	1,660	600	820	130	360	188	620
10	152	158	152	170	152	1,380	620	540	140	315	140	540
11	130	152	146	188	158	1,040	620	485	164	295	130	460
12	158	170	135	220	176	820	540	335	182	205	130	435
13	182	188	140	205	176	710	500	295	195	182	164	570
14	188	188	146	220	176	600	440	235	205	275	182	485
15	176	205	158	235	176	510	500	410	182	220	158	460
16	170	188	170	182	182	510	600	295	195	315	152	385
17	152	205	188	295	188	435	480	315	255	255	140	315
18	170	235	188	275	188	335	360	360	275	195	135	385
19	158	255	176	235	235	220	410	435	510	176	115	385
20	158	220	182	205	385	176	460	485	1,070	158	182	315
21	182	205	195	235	485	205	410	460	1,300	125	255	205
22	176	205	195	195	510	205	335	410	1,460	140	205	220
23	164	188	195	176	485	360	255	335	1,320	170	176	255
24	182	182	220	195	460	570	295	360	1,070	410	125	315
25	188	182	188	195	410	510	315	335	760	335	95	295
26	188	220	205	235	385	485	235	295	680	315	92	235
27	205	295	275	235	335	435	255	220	600	295	188	195
28	176	540	335	205	295	435	220	220	510	255	1,440	182
29	135	850	335	195	-------	540	195	235	385	255	2,070	152
30	135	1,130	315	188	-------	570	220	295	295	205	1,910	146
31	158	-------	275	220	-------	850	-------	220	-------	182	1,580	-------

Monthly discharge of Taunton River at Titicut, near Bridgewater, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 185 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	220	130	172	0.930	1.07
November	1,130	152	261	1.41	1.57
December	1,070	135	310	1.68	1.94
January	360	140	215	1.16	1.34
February	510	152	280	1.51	1.57
March	1,660	176	577	3.12	3.60
April	1,180	195	560	3.03	3.38
May	1,240	170	422	2.28	2.63
June	1,460	130	444	2.40	2.68
July	435	125	265	1.43	1.65
August	2,070	92	364	1.97	2.27
September	1,210	146	505	2.73	3.05
The year	2,070	92	365	1.97	26.75

PAWTUXET RIVER BASIN.

PAWTUXET RIVER AT FISKEVILLE, R. I.

LOCATION.—At an unused mill dam in Fiskeville, Providence County.

DRAINAGE AREA.—101.8 square miles.[3]

RECORDS AVAILABLE.—January 1, 1916, to September 30, 1922.

DETERMINATION OF DISCHARGE.—Discharge determined from records of stage obtained by Gurley water-stage recorder. The dam, which is 140 feet long, has been rated by laboratory tests on a full-size model and by current-meter measurements made at bridge a short distance upstream. Rating curve well defined below 1,400 second-feet.

REGULATION.—Previous to April, 1919, there were four reservoirs in the basin with a capacity of 385 million cubic feet; since April, 1919, there have been five reservoirs with a total capacity of 441 million cubic feet. Monthly discharge has been corrected for gain or loss in amount of water held in storage. A few small mill ponds near Fiskeville hold back water Saturday afternoons and Sundays, when the stage of the river is low.

DIVERSIONS.—The Pawtuxet Valley Water Co. diverts part of the flow from 1.3 square miles just above Fiskeville, correction for which has been made.

COOPERATION.—Data collected and compiled under the direction of Frank E. Winsor, chief engineer, City of Providence Water Supply Board.

Daily discharge, in second-feet, of Pawtuxet River at Fiskeville, R. I., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	21.0	77.6	396	113	71.9	166	479	177	157	163	195	312
2	9.4	75.8	305	145	248	153	645	171	141	103	208	256
3	38.0	91.0	383	226	268	161	588	168	145	191	262	212
4	106	70.1	354	207	148	146	620	188	147	230	229	1,178
5	99.8	28.7	296	140	116	194	564	669	189	359	521	2,275
6	90.0	8.2	270	136	176	317	532	1,334	171	593	394	1,038
7	79.7	73.8	226	131	183	508	451	754	163	476	255	696
8	49.5	38.1	196	79.0	166	1,599	400	501	158	298	222	494
9	8.7	33.2	178	151	152	575	370	343	134	211	207	391
10	109	97.0	162	145	145	391	361	284	64.5	199	194	331
11	49.2	63.8	137	138	137	337	327	257	89.5	179	185	315
12	46.4	77.5	178	188	104	370	320	233	153	154	190	362
13	44.9	31.5	235	172	149	357	311	210	101	142	141	699
14	57.4	112	248	130	105	315	278	178	78.6	146	173	557
15	21.3	44.9	190	112	90.3	301	333	214	78.1	150	175	383
16	11.7	46.5	184	161	96.9	279	448	197	69.8	80.1	135	305
17	60.8	79.7	199	144	93.9	236	395	190	42.0	148	111	253
18	75.4	153	216	120	103	201	402	214	22.1	120	121	260
19	79.5	126	293	86.4	69.2	142	359	451	174	106	165	246
20	82.8	112	238	172	199	388	324	505	391	82.9	280	218
21	98.0	156	207	159	290	830	317	365	395	80.6	278	204
22	45.2	142	179	127	234	535	266	301	820	84.7	207	194
23	10.8	130	175	157	197	358	206	250	563	70.7	186	164
24	87.2	17.4	163	160	249	293	231	213	330	1,858	156	158
25	42.6	120	158	137	215	265	209	198	243	1,375	142	200
26	36.8	51.5	176	119	139	238	200	186	291	584	138	172
27	62.9	66.5	194	92.4	193	278	195	147	250	352	513	165
28	14.1	259	176	57.3	179	305	184	142	211	264	1,226	159
29	15.1	457	168	26.2	-------	344	175	179	198	254	1,345	143
30	8.6	525	157	85.4	-------	320	128	112	180	217	707	132
31	106	-------	133	78.1	-------	320	-------	171	-------	207	411	-------

[3] Includes a water area of 2.5 square miles and a swamp area of 2 square miles.

Monthly discharge of Pawtuxet River at Fiskeville, R. I., for the year ending Sept. 30, 1922.

[Drainage area, 101.8 square miles.]

Month.	Observed discharge (second-feet).			Gain or loss in storage (millions of cubic-feet).	Discharge corrected for storage (second-feet).		Run-off in inches.	Rain fall in inches.
	Maximum.	Minimum.	Mean.		Mean.	Per square mile.		
October	109	8.6	53.8	−88.4	20.8	0.204	0.24	1.26
November	525	8.2	112	+100	151	1.48	1.65	8.02
December	396	133	218	+475	236	2.32	2.68	2.54
January	226	26.2	132	−86.2	99.9	.981	1.13	1.91
February	290	69.2	161	+35.0	176	1.73	1.80	2.67
March	1,599	142	362	+167	425	4.17	4.81	6.40
April	645	128	354	+10.3	358	3.52	3.92	1.98
May	1,334	112	307	+7.0	309	3.04	3.50	5.22
June	820	22.1	205	+33.6	218	2.14	2.39	6.34
July	1,858	70.7	306	+8.8	309	3.04	3.50	8.36
August	1,345	111	312	+14.0	317	3.12	3.59	9.09
September	2,275	132	416	−39.7	400	3.93	4.39	5.35
The year	2,275	8.2	245	+636	252	2.47	33.60	59.14

NOTE.—The rainfall was computed as a weighted mean of records obtained at Hopkins Mills, Rocky Hill, South Scituate, and Fiskeville, using weights of 2, 2, 2, and 1 respectively

THAMES RIVER BASIN.

QUINNEBAUG RIVER AT JEWETT CITY, CONN.

LOCATION.—1,000 feet below railroad bridge and 570 feet below outlet of canal from Slater Mills (mouth of Pachaug River); Jewett City, town of Griswold, New London County.

DRAINAGE AREA.—712 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 17, 1918, to September 30, 1922.

GAGES.—Water-stage recorder on left bank referenced to gage datum by hook gage inside well; an inclined staff is used for auxiliary readings. Recorder inspected by Edward Thornton.

DISCHARGE MEASUREMENTS.—made from cable.

CHANNEL AND CONTROL.—Channel of gravel and alluvial deposits; control for low stages is fairly well defined riffle a few hundred feet below gage, at high stages the control is at head of rapids 2½ miles below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 16.0 feet at 8 p.m. March 8 (discharge, by extension of rating curve, 10,500 second-feet); minimum stage, from water-stage recorder, 3.70 feet at 6 to 11 p. m. November 5 (discharge, by extension of rating curve, 50 second-feet, water held back by dams).

1918–1922: Maximum stage, about 16.3 feet during high water of March 14–19, 1920 (discharge, by extension of rating curve, 10,800 second-feet); minimum discharge, 30 second-feet August 23, 1919 (water held back by dams).

ICE.—Probably little if any effect from ice.

REGULATION.—The flow of Pachaug River, which drains 59.7 square miles and enters Quinnebaug River through the canal 570 feet above the gage, is under almost complete regulation. Numerous small reservoirs and power developments on the main river and tributaries above the station also affect the distribution of flow. The operation of mills at Jewett City causes a large variation in discharge.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 200 and 6,000 second-feet. Operation of water-stage recorder was satisfactory except for October 5–6, 9–18, and 24–30, for which discharge was estimated by comparison with Pawtuxet River. Daily discharge ascertained by use of discharge integrator. Records good.

The following discharge measurement was made by W. E. Armstrong: October 23, 1921: Gage height, 5.64 feet; discharge, 646 second-feet.

Daily discharge, in second-feet, of Quinnebaug River at Jewett City, Conn., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	375	350	3,000	510	510	900	2,700	1,040	890	1,200	990	1,320
2	255	390	2,350	480	980	830	3,250	1,160	850	840	980	920
3	395	385	2,350	600	2,100	860	3,350	1,020	790	1,540	930	740
4	455	350	2,650	710	1,480	720	3,300	1,100	830	1,580	940	3,150
5	500	70	2,500	720	860	700	3,250	2,600	1,240	2,100	1,260	6,100
6	500	88	2,100	780	980	1,400	3,200	4,150	1,160	2,650	415	4,400
7	455	340	1,820	660	1,120	2,300	3,200	3,400	1,000	2,150	990	3,500
8	295	345	1,540	490	940	8,500	2,900	2,950	1,060	1,600	950	2,800
9	250	350	1,260	700	760	7,150	2,850	2,420	900	1,200	900	2,050
10	400	475	990	750	810	4,000	3,050	1,980	590	1,360	770	1,630
11	360	375	700	710	610	2,950	2,800	1,680	425	1,320	710	1,680
12	340	385	1,040	750	445	2,200	2,650	1,560	750	1,160	605	1,700
13	340	355	1,280	680	680	2,180	2,450	1,260	900	980	670	2,450
14	360	520	1,180	590	760	2,050	2,200	930	790	1,020	740	2,350
15	250	635	1,140	440	670	2,000	2,240	1,320	690	1,020	620	1,880
16	200	500	990	660	700	2,000	2,600	1,300	745	875	670	1,560
17	400	660	840	700	630	1,840	2,800	1,140	570	1,120	610	1,180
18	350	760	750	670	510	1,360	2,800	1,140	380	1,060	690	1,380
19	295	630	1,680	680	415	1,020	2,800	2,150	1,080	820	775	1,260
20	575	600	1,820	830	850	2,150	2,500	2,500	2,350	820	840	1,230
21	375	840	1,600	760	1,760	4,400	2,250	1,900	2,800	900	1,160	1,120
22	120	910	1,340	570	1,480	4,150	1,820	1,940	3,650	395	1,000	1,120
23	60	775	1,100	720	1,200	3,300	1,420	1,720	3,100	635	830	940
24	350	455	1,020	610	1,380	2,650	1,660	1,460	2,200	3,150	700	600
25	360	595	920	660	1,320	2,050	1,640	1,300	1,620	3,500	680	940
26	350	650	940	610	1,050	1,700	1,500	1,260	2,100	2,300	615	960
27	340	660	1,160	550	1,080	2,100	1,420	920	1,960	1,540	990	950
28	150	1,260	1,160	440	1,080	2,200	1,320	600	1,780	1,320	2,450	860
29	100	2,580	1,060	270	-------	2,650	1,080	710	1,700	1,020	3,000	720
30	300	3,750	870	570	-------	2,600	770	660	1,560	800	2,400	760
31	335	-------	660	570	-------	2,550	-------	930	-------	990	1,740	-------

Monthly discharge of Quinnebaug River at Jewett City, Conn., for the year ending Sept. 30, 1922.

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	575	60	329	0.462	0.53
November	3,750	70	701	.985	1.10
December	3,000	660	1,410	1.98	2.28
January	830	270	627	.881	1.02
February	2,100	415	970	1.36	1.42
March	8,500	700	2,500	3.51	4.05
April	3,350	770	2,390	3.36	3.75
May	4,150	600	1,620	2.28	2.63
June	3,650	380	1,350	1.90	2.12
July	3,500	395	1,390	1.95	2.25
August	3,000	415	1,020	1.43	1.65
September	6,100	600	1,740	2.44	2.72
The year	8,500	60	1,340	1.88	25.52

CONNECTICUT RIVER BASIN.

FIRST CONNECTICUT LAKE NEAR PITTSBURG, N. H.

LOCATION.—At the dam of Upper Connecticut River & Lake Improvement Co. at outlet of lake, 6 miles northeast of Pittsburg, Coos County.

DRAINAGE AREA.—81.4 square miles (from surveys by Connecticut Valley Lumber Co.).

RECORDS AVAILABLE.—October 1, 1918, to September 30, 1922.

GAGE.—Four staffs, one near each outlet gate, all to the same datum which is 0.9 foot above the sill of the lowest outlet gate.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 24.1 feet at 2.30 p. m. June 19 (water stored, 2,638 million cubic feet;[4] minimum stage, 2.1 feet March 6, 7 (water stored, 252.5 million cubic feet).[4]

1917–1922: Maximum stage recorded, 24.15 feet December 11–14, 1918 (water stored 2,645 million cubic feet);[4] minimum stage, 2.1 feet February 17, 1917, and March 6, 7, 1922 (water stored, 252.5 million cubic feet).[4]

REGULATION.—The capacity of the lake is 2,651 million cubic feet at gage height 24.2. feet. The dam is controlled by three gates, the sills of the gates varying from −0.9 foot to 14.4 feet on the gage. The records show only fluctuations in the level of the lake and are used in making corrections for effect of storage to observed records of flow of Connecticut River. Additional storage has been developed in Second Lake and on tributary streams.

Daily gage height, in feet, of First Connecticut Lake near Pittsburg, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.3	4.45	5.25	-------	4.5	2.3	5.5	19.25	21.75	23.45	22.55	22.5
2	3.2	4.45	5.25	-------	4.5	2.2	5.7	19.35	21.8	23.35	22.5	22.2
3	3.2	4.45	5.3	7.95	4.1	2.2	5.85	19.45	21.8	23.25	22.35	21.95
4	3.2	4.4	5.3	8.0	4.0	2.15	6.0	19.55	22.1	23.25	22.1	22.15
5	3.15	4.45	5.3	8.05	3.85	2.15	6.1	19.7	22.2	23.25	22.0	22.4
6	3.05	4.4	5.35	8.1	3.7	2.1	6.2	19.85	22.5	23.2	21.9	22.6
7	3.0	4.35	5.35	8.1	3.65	2.1	6.35	20.4	22.7	23.1	21.85	22.5
8	2.9	4.3	5.35	8.1	3.55	2.15	6.55	20.95	22.75	23.05	21.95	22.4
9	2.95	4.25	5.35	8.1	3.45	2.5	6.85	21.35	22.7	23.1	21.95	22.2
10	2.95	4.2	5.35	8.1	3.35	2.65	7.25	21.5	22.7	23.1	21.9	22.05
11	3.05	4.2	5.35	8.15	3.3	2.8	8.15	21.4	22.7	23.1	22.0	21.85
12	3.1	4.15	5.35	8.15	3.2	3.0	9.0	21.45	22.6	23.1	22.0	21.6
13	3.15	4.1	5.4	8.25	3.1	3.15	9.7	21.55	22.7	23.1	22.15	21.45
14	3.3	4.1	5.45	8.25	3.05	3.2	10.25	21.6	23.15	23.1	22.25	21.2
15	3.35	4.1	5.4	8.25	2.95	3.35	10.75	21.65	23.15	23.05	22.35	21.0
16	3.5	4.05	5.4	8.25	2.9	3.5	11.25	21.75	23.0	23.0	22.45	20.7
17	3.65	4.0	5.4	8.25	2.8	3.65	11.75	21.8	23.05	22.95	22.5	20.45
18	3.7	3.95	5.5	7.75	2.75	3.75	12.5	21.8	23.45	22.9	22.7	20.2
19	3.8	4.0	5.9	7.25	2.75	3.85	13.5	21.8	24.0	22.9	23.45	20.15
20	3.95	4.4	6.3	6.85	2.75	3.9	14.6	21.8	23.9	22.85	23.65	20.2
21	4.25	4.85	6.65	6.65	2.7	4.0	15.45	21.85	23.6	22.85	23.65	20.2
22	4.5	5.0	6.9	6.4	2.6	4.1	16.15	21.7	23.4	22.8	23.55	20.25
23	4.65	5.05	7.05	6.3	2.6	4.15	16.65	21.9	23.4	22.8	23.4	19.95
24	4.8	5.15	7.25	6.1	2.5	4.25	17.1	21.9	23.35	22.75	23.25	19.65
25	4.8	5.2	7.35	5.8	2.5	4.3	17.45	21.9	23.35	22.75	23.1	19.45
26	4.85	5.2	7.45	5.6	2.4	4.35	17.75	21.9	23.3	22.7	23.05	19.3
27	4.75	5.2	7.55	5.4	2.4	4.45	18.2	21.9	23.2	22.7	23.05	19.1
28	4.7	5.25	7.65	5.2	2.35	4.65	18.55	21.9	23.2	22.7	23.1	18.8
29	4.7	5.3	7.75	5.0	-------	4.85	18.9	21.8	23.25	22.6	23.05	18.55
30	4.6	5.3	7.8	4.85	-------	5.1	19.15	21.75	23.3	22.6	22.9	18.45
31	4.6	-------	7.85	4.7	-------	5.3	-------	21.75	-------	22.55	22.75	-------

[4] Does not include water stored in second lake or tributaries.

CONNECTICUT RIVER AT FIRST CONNECTICUT LAKE, NEAR PITTSBURG, N. H.

LOCATION.—At outlet of First Connecticut Lake, 6 miles northeast of Pittsburg, Coos County.

DRAINAGE AREA.—81.4 square miles. (From survey by Connecticut Valley Lumber Co.)

RECORDS AVAILABLE.—April 1, 1917, to September 30, 1922.

GAGES.—Gurley seven-day water-stage recorder on right bank one-fourth mile below the outlet dam, referred to gage datum by hook gage inside the well; an inclined staff gage is used for auxiliary readings. Recorder inspected by H. H. Young.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed rough, with rock bottom; channel at cable section has been improved by removal of rocks and ledges. Control for river gage is rock ledge extending completely across the stream; about 3 feet of fall immediately below ledge.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 3.91 feet at 6 a. m. June 20 (discharge, from extension of rating curve, 1,360 second-feet) (water being released from storage): minimum discharge during year 5 second-feet during several days in October, November, and March (gates closed at dam).

1917–1922: Maximum discharge, 1,460 second-feet at 1.45 a. m. April 9, 1921; minimum discharge, 3 second-feet during several days in April, 1917 (gates closed at dam).

ICE.—During extremely cold weather, when stage of river is low, ice occasionally forms on rocks at the control for a few hours each day. Gage heights corrected by comparison of recorder graph with records of gate openings at dam.

REGULATION.—About 4.1 billion cubic feet of storage has been developed in lakes and ponds above the gage; records of monthly discharge have been corrected for effect of storage in First Lake since April, 1917, and for effect of storage in Second Lake since October, 1919.

ACCURACY.—Stage-discharge relation subject to occasional changes by reason of gravel deposits on bank opposite gage, and temporarily affected at times by presence of logs. Rating curve well defined below 800 second-feet. Operation of water-stage recorder satisfactory throughout year. Daily discharge ascertained by applying rating table to mean daily gage height, using weighted mean discharge for days when variations occurred from opening and closing gates at dam. Records good.

Discharge measurements of Connecticut River at First Connecticut Lake, near Pittsburg, N. H., during the year ending Sept. 30, 1922.

[Made by J. L. Lamson.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 2	1.46	5.9	Dec. 2	1.87	34.6	Dec. 3	2.62	351
2	1.46	4.6	2	1.87	31.9	3	2.59	316
2	1.46	5.2	3	2.33	181			
2	1.87	31.0	3	2.33	183			

Daily discharge, in second-feet, of Connecticut River at First Connecticut Lake, near Pittsburg, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	46	118	42	56	258	81	7	42	56	393	158	492
2	46	72	32	57	253	78	7	38	35	393	343	458
3	45	72	107	57	238	76	7	38	33	329	374	243
4	44	72	42	58	228	75	8	38	94	234	368	46
5	42	71	42	58	218	74	8	36	148	275	390	44
6	40	70	42	58	209	72	8	36	291	213	485	258
7	39	69	42	58	200	69	8	38	280	183	469	471
8	38	69	42	58	191	59	9	192	217	121	380	478
9	38	108	42	58	182	46	10	426	128	91	381	505
10	39	104	42	58	173	46	11	526	128	91	198	526
11	40	66	42	58	160	48	12	194	209	91	176	526
12	40	65	42	58	152	22	13	44	213	91	134	519
13	22	64	42	58	148	6	13	42	128	91	42	512
14	5	63	42	57	140	5	14	42	354	91	42	512
15	5	94	42	56	132	5	16	40	458	91	59	512
16	14	109	43	55	128	5	18	57	235	91	109	505
17	47	70	43	294	124	6	19	120	284	91	109	505
18	48	35	44	509	120	6	21	124	728	88	215	355
19	52	16	46	492	116	6	22	230	1,200	80	303	38
20	38	5	48	445	109	6	24	223	1,150	58	122	38
21	5	5	49	444	102	6	29	120	751	66	212	36
22	5	5	50	432	98	6	33	120	470	92	328	328
23	5	5	51	392	95	6	35	120	306	122	328	580
24	5	17	52	393	93	6	36	120	259	131	336	591
25	5	42	53	393	91	6	38	120	255	91	345	591
26	38	42	54	374	89	6	38	116	317	91	227	591
27	72	42	55	345	87	6	40	112	261	88	46	591
28	72	42	55	328	85	6	42	228	228	88	186	583
29	86	42	55	306	-------	6	44	209	277	88	269	576
30	89	42	55	285	-------	6	44	66	386	88	269	681
31	117	-------	56	264	-------	7	-------	63	-------	88	385	-------

Monthly discharge of Connecticut River at First Connecticut Lake, near Pittsburg N. H., for the year ending Sept. 30, 1922.

[Drainage area, 81.4 square miles.]

Month.	Observed discharge (second-feet).			Gain or loss in storage in First and Second Lakes (millions of cubic-feet).	Discharge corrected for storage (second-feet).		Run-off in inches.
	Maximum.	Minimum.	Mean.		Mean.	Per square mile.	
October	117	5	39.6	+179.0	106	1.30	1.50
November	118	5	56.5	+420.6	219	2.69	3.00
December	107	32	48.2	+36.4	61.8	.759	.88
January	509	55	213.4	−540.2	11.7	.144	.17
February	258	85	150.7	−265.6	40.9	.498	.52
March	81	5	27.3	+310.1	143	1.76	2.03
April	44	7	21.1	+1,942.3	770	9.46	10.56
May	526	36	126	+637.9	364	4.47	5.15
June	1,200	33	329	+241.1	422	5.18	5.78
July	393	58	136.1	−128.0	88.3	1.08	1.24
August	485	42	251.0	+1.4	252	3.10	3.57
September	681	36	423	−1,062.8	13.0	.160	.18
The year	1,200	5	151	+1,772.2	207	2.54	34.58

CONNECTICUT RIVER AT WHITE RIVER JUNCTION, VT.

LOCATION.—At railroad bridge between Westboro, Lebanon Township, Grafton County, N. H., and White River Junction, Hartford Township, Windsor County, Vt. Mascoma River enters from east 1 mile below gage.

DRAINAGE AREA.—4,120 square miles.

RECORDS AVAILABLE.—November 1, 1911, to September 30, 1922.

GAGES.—Graduations painted on downstream end of pier near west end of bridge used from November 1, 1911, to June 15, 1918; chain gage over west channel installed June 16, 1918. Gage read by F. H. Chipman.

DISCHARGE MEASUREMENTS.—Made at highway bridges one-fourth mile above gage, the flow in White River and in Connecticut River above the confluence of the two streams being measured separately, the sum of the two being the discharge at the gage.

CHANNEL AND CONTROL.—Channel deep, bed covered with alluvial deposits, gravel, and rock ledge; control formed by rock outcrop extending across river at various places below the gage; control for high water is probably at Quechee Falls, 7 miles downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1922, 26.8 feet at 8 a. m. April 12 (discharge, from extension of rating curve, 88,500 second-feet); minimum stage, 3.4 feet at 8 a. m. October 1 (discharge, 960 second-feet).

1912–1922: Maximum stage recorded, 26.8 feet April 12, 1922 (discharge, from extension of rating curve, 88,500 second-feet); minimum stage, 2.8 feet September 8, 1913 (discharge, from extension of rating curve, 560 second-feet).

ICE.—River covered with ice each winter, usually from December to March; stage-discharge relation seriously affected.

REGULATION.—Distribution of flow not seriously affected by power plants, except for low water on Sundays caused by Sunday shutdown of paper mill at Wilder, 2 miles above gage. About 4,100 million cubic feet of storage at Connecticut lakes and tributary streams above Pittsburg, N. H., has some effect on low-water discharge.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 900 and 32,000 second-feet; extended beyond these limits. Gage read to tenths once a day prior to November 27, 1919, and twice a day thereafter. Daily discharge ascertained by applying rating table to daily or mean daily gage heights. For periods when stage-discharge relation was affected by ice see footnote to table of daily and monthly discharge. Records good.

Discharge measurements of Connecticut River at White River Junction, Vt., during the years ending Sept. 30, 1919–1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1919.		*Feet.*	*Sec.-ft.*	1922.		*Feet.*	*Sec.-ft.*
July 30	Stackpole and Bigwood	4.08	1,520	Jan. 20	J. L. Lamson	[a] 5.95	1,790
1920.				Mar. 17	do	9.52	13,600
Sept. 15	M. R. Stackpole	7.50	7,780	31	do	14.56	31,400
1921.				Apr. 2	do	11.62	20,500
May 19	J. L. Lamson	5.58	3,940	June 9	J. S. S. Jones	6.43	5,340
Sept. 14	W. E. Armstrong	3.40	959				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	------	5,830	12,300	------	------		21,800	19,700	38,700	2,820	1,600	3,680
2	------	5,610	10,600	------	------		19,400	16,400	36,300	2,820	1,600	3,320
3	------	5,180	9,770	------	------		15,700	14,100	34,300	2,820	1,600	4,220
4	------	4,980	8,960	------	------		13,200	13,200	31,500	2,390	1,600	3,680
5	------	4,600	6,270	------	------		10,900	11,700	26,200	2,390	2,980	3,320
6	------	4,600	4,790	------	------		17,000	11,100	23,200	2,390	3,320	3,150
7	------	4,790	4,790	------	------		28,800	12,600	19,000	2,390	3,320	2,980
8	------	5,830	4,790	------	------		65,100	13,800	16,400	2,390	2,980	2,980
9	------	5,610	4,790	------	------		48,700	14,100	15,100	2,390	2,980	3,500
10	------	5,180	4,980	------	------	3,800	39,100	14,100	13,200	2,390	2,670	3,150
11	------	4,790	6,050	------	------		35,100	12,900	12,000	2,390	2,390	2,980
12	------	4,600	6,960	------	------		27,300	12,900	11,100	2,110	1,600	2,670
13	------	4,600	9,770	------	------		25,800	12,900	11,100	2,110	3,150	3,500
14	------	5,180	17,700	------	------		24,700	14,100	11,100	1,980	4,040	5,830
15	------	5,390	20,800	------	------		22,900	14,100	11,400	2,110	4,980	4,980
16	------	6,500	17,700	------	------		28,800	14,100	11,100	1,980	5,180	4,600
17	------	5,610	13,800	------	------		44,700	22,200	10,000	1,850	4,040	6,730
18	------	5,390	11,400	------	------		45,100	20,800	10,000	1,720	3,680	6,730
19	------	6,730	10,300	------	------		47,100	18,300	9,500	1,600	2,820	6,270
20	------	6,730	6,960	------	------	21,100	45,900	16,100	8,430	1,850	2,820	6,270
21	------	7,680	5,610	------	------	23,200	38,700	16,700	7,200	1,400	2,820	11,100
22	------	7,200	5,610	------	------	19,000	31,900	23,900	6,960	1,850	2,530	14,800
23	------	6,730	8,180	------	------	12,000	31,900	21,500	6,730	3,150	2,530	14,100
24	------	6,050	18,700	------	------	8,690	33,100	19,000	6,270	2,250	2,390	11,100
25	------	6,050	20,800	------	------	7,440	33,100	19,000	5,830	2,110	2,390	8,430
26	------	5,830	18,300	------	------	7,200	31,900	16,400	4,980	2,110	1,850	6,960
27	------	5,610	13,800	------	------	6,270	28,100	13,200	4,040	1,980	2,390	5,830
28	------	5,610	12,300	------	------	6,050	25,000	12,900	3,680	1,400	7,930	4,980
29	------	5,610	8,960	------	------	6,270	23,200	12,600	3,680	1,110	6,270	4,040
30	------	10,300	5,180	------	------	15,400	22,200	26,500	2,530	1,600	5,180	4,220
31	------	------	5,000	------	------	16,700	------	30,000	------	1,600	3,860	------
1912–13.												
1	6,270	6,270	4,600	7,930	12,000	3,860	36,300	12,600	18,000	4,600	4,220	1,030
2	8,180	7,680	4,040	8,180	8,960	1,850	30,700	11,400	14,500	3,860	2,250	2,250
3	6,730	6,730	12,000	7,930	8,430	4,410	26,500	10,300	11,100	3,680	2,110	2,530
4	6,500	6,730	10,600	12,300	7,930	4,220	22,500	9,770	10,000	2,110	2,820	1,850
5	5,610	6,270	11,700	11,100	6,270	4,220	24,700	9,230	9,500	2,250	2,530	1,200
6	5,180	6,050	10,900	8,960	5,180	3,860	27,700	9,230	8,690	2,530	2,530	1,850
7	4,600	5,390	11,400	11,100	4,600	5,830	25,400	8,690	7,930	3,150	2,390	1,200
8	4,410	17,000	11,400	9,500	4,600	4,220	21,500	8,430	7,440	3,320	2,530	560
9	4,410	18,000	9,770	8,960	4,220	2,530	17,000	7,930	7,200	2,980	2,390	1,850
10	4,410	18,000	6,960	7,440	4,600	4,410	14,800	7,200	7,200	2,980	2,110	1,720
11	4,410	15,400	6,730	6,500	4,600	8,180	13,500	6,270	6,730	2,980	2,530	1,500
12	4,220	12,300	6,730	5,610	4,220	6,270	14,100	6,270	6,270	2,820	2,110	1,500
13	4,410	10,000	5,610	9,500	4,220	6,270	14,800	6,050	5,830	2,530	1,980	1,500
14	4,410	10,000	5,390	8,430	4,220	7,930	15,700	5,830	5,180	3,860	1,980	1,030
15	5,180	10,600	4,980	8,180	4,220	23,900	16,100	5,830	4,220	4,410	1,980	1,030
16	5,390	10,900	4,220	7,440	2,530	28,800	16,400	5,830	4,600	4,220	1,300	1,030
17	5,180	10,000	4,790	7,440	3,680	24,700	17,000	5,830	5,830	3,320	1,030	890
18	4,980	8,960	4,790	12,600	4,220	24,300	17,000	5,830	6,730	3,320	1,300	685
19	4,220	7,930	4,790	20,800	4,040	17,000	16,400	6,050	6,270	3,860	2,110	685
20	4,220	7,200	7,200	17,300	3,500	16,400	17,000	6,500	6,270	3,860	1,850	1,300
21	4,220	6,730	8,180	19,700	3,500	23,600	17,300	6,270	6,050	4,220	1,850	685
22	4,220	6,730	6,050	18,700	3,860	36,300	16,100	6,270	5,390	4,040	1,850	820
23	4,040	6,730	6,270	16,400	6,270	37,900	15,700	8,430	5,610	2,980	1,030	1,200
24	24,700	6,270	6,050	14,800	4,600	30,700	14,100	13,200	4,790	2,670	1,030	2,390
25	23,200	6,960	5,180	13,200	4,220	30,700	12,600	17,700	4,040	2,390	1,300	2,820
26	16,400	6,960	4,980	11,100	3,860	54,300	14,500	16,100	3,320	1,300	1,600	3,680
27	13,200	6,500	5,610	9,770	3,860	57,900	15,700	12,900	3,680	2,110	1,500	3,150
28	11,100	6,270	4,980	9,500	3,860	77,100	15,400	10,600	3,320	1,850	1,200	890
29	10,300	5,390	4,410	8,430	------	63,100	14,800	17,300	4,220	4,220	1,400	2,530
30	8,960	5,180	4,220	6,270	------	51,500	14,100	20,400	4,980	6,270	1,720	1,980
31	7,440	------	7,930	6,050	------	40,300	------	21,100	------	5,180	890	------

Daily discharge, in second-feet, of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Date.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept
1913–14.												
1	1,500	7,930	4,040				16,100	34,300	5,180	2,390	2,530	7,200
2	1,500	6,500	4,040				20,400	29,600	4,220	2,530	2,110	3,320
3	1,400	5,830	4,220				20,800	24,300	4,220	2,530	2,390	3,150
4	1,720	4,980	4,600				19,400	19,700	4,220	2,820	1,720	3,150
5	1,400	4,790	4,790				16,100	20,800	7,200	2,250	2,390	2,820
6	2,390	4,980	4,790				12,900	26,200	6,730	3,680	2,110	2,390
7	2,820	6,050	3,680				11,700	26,900	5,830	3,860	1,850	1,720
8	2,670	3,860	5,610				11,100	25,800	5,390	3,150	2,110	2,530
9	2,390	3,150	6,050				28,100	20,100	4,410	2,980	1,850	2,530
10	2,250	8,180	4,980				26,500	19,000	4,220	2,980	1,850	2,530
11	1,200	10,000	4,980				20,800	18,700	3,860	3,320	1,850	2,390
12	1,600	8,690	5,610				25,800	20,800	3,500	2,980	2,110	1,980
13	2,820	6,960	5,390				24,700	19,400	3,150	2,980	1,850	1,600
14	3,320	5,830	4,220			4,800	21,100	17,300	2,530	2,980	2,390	2,390
15	2,820	5,390	5,390				19,700	14,500	2,670	4,980	2,530	2,250
16	3,150	4,600	4,790				19,000	12,600	2,820	3,680	2,250	1,980
17	2,980	4,790	4,600				17,700	11,100	2,250	2,980	2,390	1,600
18	2,670	3,860	4,790				19,000	10,300	2,390	2,530	1,600	1,600
19	2,250	4,040	4,790				20,800	9,770	2,390	2,820	1,110	1,600
20	2,530	3,860	4,220				53,900	9,770	2,390	2,980	1,600	1,110
21	4,600	5,830	2,390				63,100	9,770	2,390	2,980	1,600	1,600
22	7,200	7,440	4,790				57,100	8,430	2,530	2,530	2,110	1,500
23	8,690	6,960	4,790				52,300	8,180	2,820	2,670	1,600	1,110
24	4,600	6,500	4,600				44,300	6,730	2,530	2,530	1,500	1,500
25	5,180	5,830	2,250				34,300	6,960	2,530	2,530	1,850	1,100
26	5,830	5,180	5,180				24,700	6,960	2,820	2,250	1,720	1,600
27	9,770	4,790	4,220			9,770	25,000	6,730	2,390	1,850	1,720	1,100
28	11,100	4,790				18,700	27,700	6,730	1,400	2,110	1,600	1,500
29	10,000	5,180	2,100			18,000	28,100	6,270	1,600	1,720	1,600	2,390
30	11,400	3,860				17,300	38,300	6,050	2,390	1,980	2,980	2,250
31	7,440					16,100		4,220		2,390	2,530	
1914–15.												
1	2,250	1,500	3,680			19,000	3,860	14,500	3,860	2,530	8,690	3,860
2	2,250	1,300	3,860			14,500	3,860	14,800	3,500	5,830	7,200	3,500
3	2,250	1,720	4,220			10,900	3,860	14,100	2,980	6,050	8,960	2,980
4	1,850	1,850	4,980			9,500	3,150	11,700	2,980	5,830	7,200	2,820
5	1,850	1,850	5,610			8,180	4,040	10,000	2,670	6,270	7,930	2,530
6	2,250	2,110	4,790			6,960	4,600	9,230	1,200	6,270	6,960	2,110
7	1,600	2,250	4,790			6,270	4,790	8,430	2,390	6,270	5,610	2,390
8	1,600	2,250	4,040			6,270	4,980	7,200	2,530	6,050	4,410	2,670
9	1,110	2,530	3,150			6,270	7,930	8,690	2,250	16,100	4,790	2,530
10	1,200	2,820	2,980			6,050	8,960	8,960	1,980	23,900	6,270	2,390
11	1,300	2,390	3,150			5,180	19,400	8,430	1,850	23,900	9,230	2,250
12	1,300	2,390	3,150			4,980	32,700	7,200	2,110	22,500	11,700	1,500
13	1,110	2,390	2,530		3,440	4,790	32,300	6,730	1,720	12,300	11,100	2,250
14	1,110	2,250	3,320			4,600	28,400	6,270	3,150	8,690	8,960	2,670
15	1,200	1,720	4,790			4,220	24,700	5,390	2,820	8,180	6,500	2,530
16	1,720	2,530	3,860			3,860	23,200	4,790	2,530	6,270	6,270	2,390
17	1,600	4,040	3,500			3,860	15,700	4,980	2,530	5,830	5,610	2,250
18	1,300	4,600	3,680			3,500	14,100	4,980	3,150	4,980	6,050	2,250
19	1,110	4,790	3,000			3,320	13,500	4,980	4,980	8,960	5,610	890
20	1,850	4,040	2,250			3,150	12,600	4,980	5,830	13,200	4,980	890
21	2,670	3,150	1,720			2,390	12,600	4,790	6,050	11,400	4,410	2,250
22	2,820	2,250				3,320	11,400	4,220	4,790	10,000	3,680	2,390
23	2,670	2,980				3,150	10,000	3,860	4,410	12,600	4,790	2,980
24	2,670	3,320				2,980	8,690	4,410	3,500	11,400	8,180	6,050
25	1,600	2,820				4,790	8,430	3,860	2,820	9,230	8,430	5,180
26	2,390	2,820	1,330		41,900	5,830	11,400	3,860	2,820	8,690	8,430	3,150
27	2,390	2,530			33,900	4,600	15,700	3,860	1,500	6,960	7,440	3,680
28	2,110	4,040			21,100	4,600	17,300	4,790	2,250	9,230	6,500	3,860
29	1,600	2,250				5,180	15,700	5,390	2,820	11,100	4,790	4,040
30	1,720	3,860				4,040	12,900	4,600	2,390	10,000	4,790	4,600
31	1,850					3,860		4,220		10,300	4,220	

Daily discharge, in second-feet, of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Date.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	4,040	3,150	4,790				30,300	17,700	10,000	8,180	3,150	2,390
2	3,860	4,040	4,980				39,900	17,700	11,100	6,270	3,680	2,250
3	2,390	4,790	4,790				33,100	17,700	9,770	10,300	3,500	1,200
4	2,980	4,040	4,220				30,300	16,700	8,690	8,690	3,150	1,110
5	3,500	3,860	2,530				25,000	16,400	11,100	13,800	2,980	890
6	3,500	3,680	3,680				22,500	15,700	14,500	14,500	2,110	2,390
7	3,680	2,820	3,150				21,100	13,200	16,100	11,700	2,670	2,390
8	4,040	3,500	3,860				17,300	12,900	15,700	8,960	2,670	2,530
9	4,040	3,320	3,150				16,100	12,000	12,900	7,200	2,670	2,530
10	2,670	3,150	2,980				15,700	11,400	13,200	8,960	8,960	1,300
11	3,860	2,980	2,980				14,500	10,000	13,800	8,430	14,100	1,600
12	3,860	3,150	2,250				16,100	9,230	15,700	6,960	13,800	2,530
13	3,150	3,150	1,850				16,700	9,230	16,100	6,500	9,770	2,390
14	2,820	2,530	5,900				17,300	8,690	14,800	6,050	9,500	2,390
15	2,670	3,150					17,300	8,430	13,200	5,610	5,610	2,390
16	2,820	3,860					18,300	7,200	10,600	4,790	4,790	2,390
17	1,850	4,040					19,000	8,960	10,000	4,790	4,040	2,530
18	2,250	3,860					21,500	24,300	10,300	4,040	3,500	4,040
19	2,980	3,320					24,700	25,000	11,100	4,040	2,980	4,040
20	2,820	3,860					26,200	22,900	12,600	7,200	2,250	3,320
21	2,530	4,040					24,300	18,700	13,500	5,830	2,390	2,980
22	2,980	5,390					22,200	14,800	12,600	4,980	2,110	2,670
23	2,980	5,180	5,900				25,800	12,600	11,100	4,040	2,110	2,390
24	1,980	4,980					31,500	12,000	9,500	7,200	2,250	1,500
25	3,500	4,410					30,000	11,100	7,680	7,200	2,250	2,670
26	3,320	4,040					28,100	9,770	8,180	6,730	2,250	2,980
27	2,980	3,860					26,200	8,960	7,440	5,610	890	2,980
28	2,820	2,670					22,900	8,180	8,430	5,180	1,720	2,980
29	2,980	2,980					20,800	8,180	10,600	4,600	2,390	2,530
30	3,150	4,040					18,000	7,200	8,960	3,320	2,390	4,220
31	1,850							10,000		3,860	2,250	
1916–17.												
1	7,200	3,150	19,000				20,800	18,300	9,770	9,770	2,820	7,200
2	7,200	2,980	20,800				23,600	19,700	9,770	11,700	2,820	6,730
3	6,730	3,500	20,800				25,000	21,500	9,770	11,400	2,390	6,500
4	5,390	4,600	16,400				31,900	20,400	10,600	9,230	2,390	6,050
5	4,220	3,680	11,700				28,100	17,700	11,400	8,430	1,980	5,830
6	3,680	4,220	11,100				24,700	16,100	10,600	6,960	3,680	4,980
7	3,320	3,680	11,100				26,200	15,700	9,770	6,050	2,980	4,040
8	1,720	3,320	10,900				26,500	14,500	8,960	4,790	2,670	4,040
9	2,820	3,150	9,770				22,900	13,800	11,400	4,980	2,390	3,150
10	2,980	3,320	8,430				20,800	13,800	11,100	4,220	3,150	3,150
11	2,980	3,320	8,430				17,700	13,200	13,200	4,040	5,830	3,500
12	2,670	2,250	7,930				13,200	13,800	24,700	3,860	5,390	3,500
13	2,670	3,150	7,200				12,000	16,100	30,300	4,600	5,390	3,500
14	2,530	3,150	5,390				12,300	16,100	26,500	4,690	4,040	3,320
15	1,500	2,980				4,530	12,000	15,700	25,800	3,500	3,320	2,980
16	2,980	2,980					11,400	14,800	17,700	4,980	2,980	1,500
17	3,500	2,670					11,100	13,800	14,100	4,980	3,500	2,390
18	3,320	2,530					12,300	12,000	20,100	4,600	6,050	2,670
19	3,150	1,980					14,500	11,100	31,500	4,040	10,300	2,820
20	3,150	3,500					19,400	10,900	27,300	4,040	11,400	2,390
21	6,050	3,680					30,000	13,200	23,600	3,860	10,000	2,110
22	7,200	3,320					36,300	14,100	20,800	3,680	11,100	2,110
23	7,200	2,820	4,260				38,700	13,500	17,300	4,790	12,900	1,600
24	6,500	3,860					38,300	13,500	14,100	4,600	10,300	2,820
25	5,390	11,100					35,900	12,900	12,900	4,600	9,500	2,820
26	4,790	11,700					31,500	12,600	11,400	4,040	12,600	2,530
27	4,040	10,300					25,000	11,100	10,000	3,680	11,400	2,390
28	3,860	8,430				26,900	21,100	10,600	8,690	3,150	8,690	2,390
29	2,530	7,200				26,900	17,700	10,000	7,200	1,400	6,730	2,390
30	3,150	8,430				25,000	17,300	11,700	8,690	2,390	5,830	1,110
31	2,820					21,800		10,900		2,820	6,730	

Daily discharge, in second-feet, of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	2,250	31,900					21,100	20,800	5,830	4,040	1,850	1,980
2	3,150	26,500					30,300	24,300	6,270	4,040	2,530	1,980
3	3,500	22,500					44,700	23,600	6,500	4,040	2,670	2,110
4	3,680	15,700					37,900	23,600	5,610	2,390	1,600	3,680
5	3,860	11,700					31,100	17,000	4,410	3,860	2,390	2,250
6	5,610	9,770					28,100	14,100	3,860	2,820	2,110	2,250
7	6,730	8,690					24,300	12,600	3,150	1,400	2,530	1,980
8	8,180	7,930					22,200	12,600	4,980	2,670	2,530	1,200
9	6,960	7,200					22,500	12,900	5,610	2,820	2,980	1,300
10	6,050	6,500					25,000	11,700	6,730	2,980	10,600	1,200
11	6,050	5,390					22,900	12,600	6,050	3,150	11,400	1,500
12	5,610	6,050					19,400	14,100	5,390	3,860	6,730	2,670
13	4,980	5,390					17,300	14,100	5,830	3,860	4,980	2,820
14	4,980	4,980					16,400	16,100	5,830	3,320	4,410	2,390
15	5,610	4,980					17,300	21,100	6,270	4,600	3,860	1,200
16	5,180	4,600					18,000	20,800	5,830	4,600	3,860	1,720
17	5,830	4,600					21,500	18,000	5,390	5,830	3,500	2,390
18	6,270	3,150					24,300	14,100	4,600	5,180	2,110	2,670
19	5,830	4,600					23,600	10,600	4,600	4,410	3,150	2,820
20	5,390	4,040					20,400	9,770	4,220	4,220	2,530	4,040
21	5,180	4,040					16,100	9,230	3,860	3,320	1,850	5,610
22	6,050	4,040					17,700	8,430	3,320	3,500	1,720	9,770
23	5,830	4,040					20,400	7,200	3,860	3,320	1,720	10,900
24	5,180	4,410					20,800	6,500	5,390	2,980	1,600	9,500
25	5,180	3,320					20,800	6,050	6,960	2,530	1,030	9,230
26	6,960	4,040					19,000	5,180	6,960	2,250	1,600	9,500
27	7,200	3,860					16,400	5,610	6,270	2,110	1,200	22,200
28	6,050	3,680					14,500	6,050	4,980	1,300	1,600	21,100
29	8,180	2,820					14,800	6,960	4,220	2,390	1,720	19,000
30	8,690	3,680					17,300	5,610	2,820	1,400	1,850	15,700
31	28,100							6,050		1,720	1,200	
1918–19.												
1	11,400	31,500	8,180	6,270	4,600	3,800	18,700	12,900	6,270	4,600	1,400	890
2	8,690	31,100	5,390	7,200	3,000	7,400	14,800	13,500	5,830	3,860	1,400	1,720
3	7,200	28,400	4,980	7,440	4,000	9,000	12,000	15,100	5,390	3,500	1,030	1,980
4	7,680	21,100	6,270	7,200	3,800	7,400	12,000	14,500	4,980	1,400	1,600	1,850
5	7,680	15,400	6,050	6,500	3,700	7,400	12,000	15,100	4,220	2,110	1,720	1,850
6	7,930	12,900	4,790	6,200	3,600	11,700	12,600	15,100	3,860	2,250	1,500	1,980
7	26,900	11,110	5,180	6,000	3,400	9,000	17,000	15,100	3,680	2,980	1,500	1,110
8	31,100	10,000	4,600	5,850	3,200	7,900	22,500	13,800	3,150	2,670	1,500	1,030
9	28,100	8,960	5,830	5,850	2,400	6,000	23,900	12,900	5,610	2,530	1,400	1,720
10	23,200	8,180	5,390	5,600	3,000	8,400	22,900	11,400	6,730	2,390	1,030	3,150
11	15,700	8,690	4,790	5,000	2,800	9,000	24,300	10,300	4,980	2,390	1,200	2,820
12	11,100	9,230	4,600	4,600	2,700	8,400	29,200	10,300	5,830	2,390	1,200	4,220
13	8,430	8,430	5,180	5,000	2,600	7,400	34,700	9,230	4,220	1,110	1,030	11,400
14	7,930	7,680	4,790	4,600	2,700	7,200	35,100	7,930	4,040	1,980	1,030	10,900
15	7,680	6,960	5,830	4,600	2,800	6,700	33,100	7,680	2,390	1,850	1,030	9,770
16	7,200	6,730	10,300	4,900	2,000	5,200	28,100	7,200	3,500	1,850	1,030	6,730
17	6,730	5,610	10,600	4,600	2,800	5,400	23,900	7,200	3,500	1,850	890	4,980
18	6,050	6,960	9,770	4,600	2,900	5,800	22,200	12,600	4,980	1,850	1,110	4,410
19	8,180	12,900	7,930	3,500	2,700	6,300	19,700	14,100	5,610	1,850	1,720	3,150
20	8,960	19,400	6,960	4,900	2,600	8,400	18,000	13,800	4,980	1,200	1,720	2,530
21	9,230	15,400	5,390	4,600	2,600	12,000	16,700	11,700	4,600	1,500	1,720	1,300
22	10,000	14,100	4,600	4,400	2,500	22,000	15,700	13,200	2,820	1,600	1,720	2,250
23	10,300	12,600	9,230	4,600	2,000	19,700	14,500	25,000	3,860	1,030	1,400	2,250
24	9,500	10,300	13,200	5,400	2,800	18,000	13,500	20,800	3,150	1,500	959	2,390
25	7,930	12,600	17,700	7,900	2,900	15,700	14,500	16,400	2,530	1,500	960	2,820
26	6,960	8,690	18,300	7,200	2,800	14,100	15,100	13,800	2,390	1,500	1,110	3,860
27	7,680	7,200	15,700	7,200	3,000	14,500	14,500	12,600	2,530	1,030	1,720	3,680
28	9,770	5,610	11,400	6,500	3,200	39,500	12,900	11,400	4,040	1,110	1,850	2,530
29	9,500	7,680	9,230	5,900		40,300	12,300	11,100	4,600	1,300	1,720	3,680
30	8,690	8,690	8,180	5,400		32,700	12,900	10,900	5,610	1,110	1,720	3,150
31	18,700		7,930	5,000		24,700		7,200		1,400	1,110	

Daily discharge, in second-feet, of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1919–20.												
1	2,820	10,900	14,800				29,200	31,900	6,050	2,110	2,250	2,530
2	2,820	20,400	14,100				27,700	27,700	5,830	4,980	4,600	2,820
3	2,250	20,800	11,400				28,100	24,300	5,830	6,960	4,220	2,980
4	3,150	18,000	6,270				27,700	21,800	5,390	5,830	3,500	3,150
5	5,180	13,200	6,270				23,900	19,700	5,180	5,390	3,320	1,500
6	6,270	10,900	6,500				26,200	17,700	5,390	5,390	2,250	1,300
7	7,200	9,770	5,830				28,800	16,400	6,730	5,180	2,250	3,150
8	8,690	8,960	6,730				23,200	16,400	7,680	4,790	1,720	2,530
9	8,180	7,200	6,960				18,300	19,700	7,680	4,410	1,980	3,150
10	6,730	7,680	9,230				15,100	22,900	6,270	4,220	1,500	3,500
11	5,390	7,200	8,690				13,800	22,500	4,790	3,500	1,980	3,320
12	8,690	7,680	7,930				13,800	20,800	4,600	3,860	1,980	2,530
13	9,230	13,500	7,930				21,100	17,700	3,150	3,500	2,530	4,040
14	7,200	19,700	9,770				42,700	14,800	5,610	3,500	2,980	7,680
15	5,830	19,400	9,230				39,500	13,200	5,390	3,320	3,320	7,680
16	4,980	15,100	8,690				38,300	11,400	3,150	3,680	5,830	6,730
17	5,830	11,400	7,680				37,100	10,900	3,500	3,680	6,050	5,390
18	5,830	9,770	5,390				33,900	11,100	3,500	2,250	4,600	4,600
19	4,600	8,690	4,220				30,700	11,400	3,680	3,320	3,860	4,410
20	5,390	8,430	4,410				28,400	11,700	1,720	3,500	3,500	6,500
21	4,600	7,680	2,980				28,400	12,000	3,500	3,860	1,720	6,270
22	4,600	7,200	3,860				42,700	17,300	3,500	4,600	1,500	5,180
23	5,830	7,200	4,600				43,500	18,000	3,150	4,600	1,980	4,040
24	7,200	9,230	4,410				45,900	10,000	2,820	4,600	1,980	3,320
25	7,200	9,230	4,220				41,500	13,500	2,820	3,860	2,820	3,500
26	5,390	8,690	4,040				36,300	11,400	2,820	4,600	2,980	1,300
27	5,830	9,230	4,980				30,000	10,300	1,300	3,860	2,670	2,670
28	6,050	8,180	2,820				28,100	9,230	2,250	3,500	1,850	2,390
29	7,200	7,200	5,390				34,700	8,430	2,110	2,580	1,400	2,530
30	5,830	9,770	4,980				36,300	6,960	2,250	2,390	1,980	3,320
31	6,730		4,220					6,270		2,390	1,720	
1920–21.												
1	21,500	4,790	4,220	6,050			28,400	12,300	2,250	1,600	1,500	1,110
2	21,500	4,980	5,390	4,600			25,800	9,230	1,980	1,500	1,300	1,030
3	16,700	7,200	7,680	6,960			23,200	8,180	2,250	1,300	1,300	1,110
4	12,600	9,770	7,440	7,200			19,700	7,680	2,250	1,200	1,300	1,030
5	9,770	10,300	7,200	6,270			16,400	6,960	2,250	1,030	1,200	1,030
6	7,200	9,230	23,900			8,540	14,500	6,270	1,980	960	1,200	1,110
7	5,830	6,730	22,500				14,500	6,270	2,250	1,110	1,110	1,110
8	4,980	6,270	18,300				14,500	5,390	2,250	1,110	1,110	1,110
9	4,600	5,610	13,800				14,100	5,180	1,980	1,030	1,300	1,030
10	3,320	5,610	10,300				14,500	4,980	1,720	1,300	1,980	1,030
11	3,680	6,730	9,230			27,700	15,100	4,600	1,600	1,500	2,250	820
12	3,500	6,730	7,930			27,700	13,200	4,600	1,980	1,980	2,250	960
13	3,320	6,050	7,930			28,400	11,400	4,220	1,980	1,500	3,320	960
14	3,150	4,410	8,690			29,200	10,000	4,980	2,820	1,200	3,680	960
15	3,150	4,600	30,300			26,200	9,500	5,390	2,820	1,110	3,320	1,030
16	3,150	4,220	26,200			28,400	10,000	4,980	2,820	1,300	2,820	960
17	1,300	4,410	20,400			31,900	9,770	4,980	2,670	1,300	2,670	960
18	3,680	5,390	16,400	4,000		28,100	15,700	4,220	2,530	1,400	2,820	890
19	2,980	5,830	12,300			22,500	16,100	3,860	1,980	1,400	3,320	960
20	3,500	5,390	10,300			19,700	13,500	3,680	1,600	2,250	3,860	960
21	3,320	3,860	8,960			31,500	11,400	3,150	1,720	1,980	3,150	960
22	3,500	4,220	7,680			38,300	10,300	3,150	1,500	1,850	2,980	960
23	3,150	3,500	6,270			35,500	10,600	3,150	1,500	1,850	2,530	1,030
24	1,400	3,860	7,200			32,700	12,900	3,680	1,600	1,600	2,390	960
25	3,320	5,390	6,500			33,100	14,500	4,220	1,500	1,500	2,390	890
26	3,320	5,180	4,980			32,300	13,200	3,860	1,300	1,300	1,980	960
27	3,150	4,790	4,220			30,700	11,400	3,500	1,200	1,030	1,980	1,110
28	3,150	3,860	4,600			30,000	10,300	3,320	1,110	960	1,500	1,110
29	3,680	4,220	5,390			35,100	8,690	2,530	1,500	1,030	1,110	1,110
30	4,790	4,220	5,610			29,200	8,690	2,250	1,500	1,500	1,300	960
31	4,600		5,390			26,200		2,390		1,500	1,300	

Daily discharge, in second-feet, of Connecticut River at White River Junction, Vt. for years ending Sept. 30, 1912–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921–22.												
1	995	1,980	5,390	3,300	2,200	2,500	25,400	12,000	3,680	27,700	1,980	4,220
2	1,110	1,980	5,180	3,700	2,400	2,500	20,400	10,900	3,500	27,300	1,850	3,500
3	1,030	2,530	6,270	3,700	2,200	2,200	17,000	10,300	4,500	19,000	2,530	2,110
4	1,110	3,320	10,900	3,300	2,700	2,400	16,400	10,900	5,830	18,300	2,390	1,980
5	1,110	3,860	8,690	3,200	2,200	1,800	15,100	14,500	10,600	16,400	2,250	2,250
6	1,200	2,980	7,200	3,300	2,700	2,800	17,000	21,500	11,100	13,800	1,980	2,820
7	1,200	3,150	6,730	3,300	3,000	3,300	19,700	18,700	9,230	11,100	2,530	2,530
8	1,110	2,820	5,830	2,800	2,700	9,200	22,200	20,400	7,680	9,500	5,390	2,670
9	1,030	2,530	5,390	3,200	2,700	21,000	37,900	20,100	6,270	8,960	5,830	2,110
10	1,110	2,390	4,790	2,700	2,500	17,500	47,900	18,700	5,610	8,180	6,270	1,980
11	1,500	2,530	4,600	3,000	2,400	15,000	58,700	15,700	5,180	6,960	4,980	1,850
12	1,720	2,390	4,980	3,000	2,000	12,500	77,500	13,200	6,050	6,050	4,220	1,980
13	2,530	1,980	4,600	2,800	2,400	11,500	66,700	11,400	7,200	5,390	2,390	2,530
14	3,500	2,820	4,600	2,700	2,400	9,200	60,300	9,770	8,430	4,790	2,530	2,980
15	3,860	2,980	4,410	2,100	2,200	12,000	53,900	8,690	7,680	4,220	3,150	3,680
16	3,320	2,670	4,220	2,700	2,200	16,100	45,900	7,680	6,960	3,320	2,390	4,410
17	2,820	2,530	4,040	2,800	2,100	13,800	39,500	7,200	6,270	4,040	1,980	6,270
18	2,530	2,820	4,410	2,700	2,200	12,000	38,300	7,440	6,730	4,220	1,980	5,830
19	1,850	5,390	10,600	2,500	1,700	10,300	38,700	7,680	12,600	4,040	1,980	4,600
20	1,980	15,700	10,300	2,000	2,100	9,770	39,100	10,300	18,700	3,680	2,250	4,220
21	2,250	20,400	9,230	2,200	2,400	9,230	37,900	9,230	19,700	3,320	6,730	3,500
22	3,500	19,700	7,440	2,000	2,500	9,230	32,300	8,690	26,900	3,680	6,270	2,820
23	4,040	16,400	5,390	2,500	2,400	8,690	23,900	7,680	27,700	2,250	4,410	2,530
24	4,040	10,900	5,000	2,700	2,200	8,180	19,000	6,270	26,900	2,980	3,500	1,980
25	3,500	7,200	4,600	2,400	2,200	9,230	15,700	5,390	21,100	3,680	3,150	2,110
26	2,820	5,180	4,400	2,500	2,000	9,770	14,500	5,390	15,700	3,320	3,150	2,110
27	2,820	4,220	4,200	2,400	2,500	16,400	14,800	5,180	12,000	3,150	3,500	1,980
28	2,670	4,220	4,200	2,200	2,500	24,700	16,100	4,410	9,500	2,980	7,200	1,980
29	2,530	4,040	4,100	2,000	-------	43,100	16,100	4,790	14,500	2,820	6,050	2,820
30	1,720	5,390	3,900	2,500	-------	41,100	13,500	4,220	32,300	1,720	4,790	2,250
31	1,980	-------	3,500	2,400	-------	31,900	-------	3,860	-------	2,250	4,040	-------

NOTE.—Stage-discharge relation affected by ice Dec. 31, 1911, to Mar. 19, 1912; Dec. 28, 1913, to Mar. 26, 1914; Dec. 22, 1914, to Feb. 25, 1915; Dec. 14, 1915, to Mar. 31, 1916; Dec. 15, 1916, to Mar. 27, 1917; Dec. 3, 1917, to Mar. 29, 1918; Jan. 4 to Mar. 22, 1919; Jan. 3 to Mar. 26, 1920; Jan. 6 to Mar. 10, 1921; and Dec. 24, 1921, to Mar. 15, 1922; daily discharge where given for these periods previous to 1921–22 estimated by comparison with records at Orford, N. H., and West Hartford, Vt.; daily discharge for winter of 1921–22 determined from gage heights corrected for effect of ice. Braced figures show mean discharge for period indicated.

Monthly discharge of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922.

[Drainage area, 4,120 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1911–12.					
October	----------	----------	[a] 5,730	1.39	1.60
November	10,300	4,600	5,810	1.41	1.57
December	20,800	4,790	10,200	2.48	2.86
January	----------	----------	[a] 4,140	1.00	1.15
February	----------	----------	[a] 1,890	.459	.50
March	23,200	----------	7,150	1.74	2.01
April	65,100	10,900	30,900	7.50	8.37
May	30,000	11,100	16,500	4.00	4.61
June	38,700	2,530	13,700	3.33	3.72
July	3,150	1,110	2,110	.512	.59
August	7,930	1,600	3,210	.779	.90
September	14,800	2,670	5,670	1.38	1.54
The year	65,100	----------	8,900	2.16	29.42

[a] See footnote to daily-discharge table; determination of discharge based on comparison with records at Orford, N. H.

Monthly discharge of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1912–13.					
October	24,700	4,040	7,440	1.81	2.09
November	18,000	5,180	8,840	2.15	2.40
December	12,000	4,040	6,850	1.66	1.91
January	20,800	6,050	10,700	2.60	3.00
February	12,000	3,500	5,010	1.22	1.27
March	77,100	1,850	22,800	5.53	6.38
April	36,300	12,600	18,300	4.44	4.95
May	21,100	5,830	9,850	2.39	2.76
June	18,000	3,320	6,830	1.66	1.85
July	6,270	1,300	3,350	.813	.94
August	4,220	890	1,920	.466	.54
September	3,680	560	1,580	.383	.43
The year	77,100	560	8,650	2.10	28.52
1913–14.					
October	11,400	1,200	4,230	1.03	1.19
November	10,000	3,150	5,690	1.38	1.54
December	6,050	----------	4,260	1.03	1.19
January	----------	----------	[a] 1,650	.400	.46
February	----------	----------	[a] 1,660	.403	.42
March	18,700	----------	6,600	1.60	1.84
April	63,100	11,100	27,400	6.65	7.42
May	34,300	4,220	15,100	3.67	4.23
June	7,200	1,400	3,430	.833	.93
July	4,980	1,720	2,800	.680	.78
August	2,980	1,110	1,980	.481	.55
September	7,200	1,110	2,180	.529	.59
The year	63,100	----------	6,420	1.56	21.14
1914–15.					
October	2,820	1,110	1,820	.442	.51
November	4,790	1,300	2,710	.658	.73
December	5,610	----------	2,910	.706	.81
January	----------	----------	[a] 2,870	.697	.80
February	41,900	----------	6,530	1.58	1.64
March	19,000	2,980	5,810	1.41	1.63
April	32,700	3,150	13,000	3.16	3.53
May	14,800	3,860	6,910	1.68	1.94
June	6,050	1,200	3,010	.731	.82
July	23,900	2,530	10,000	2.43	2.80
August	11,700	3,680	6,760	1.64	1.89
September	6,050	890	2,860	.694	.77
The year	41,900	----------	5,430	1.32	17.87
1915–16.					
October	4,040	1,850	3,060	.743	.86
November	5,390	2,670	3,730	.905	1.01
December	----------	----------	4,880	1.18	1.36
January	----------	----------	[b] 6,400	1.55	1.79
February	----------	----------	[b] 6,910	1.68	1.81
March	----------	----------	[b] 5,040	1.22	1.41
April	39,900	14,500	23,100	5.61	6.26
May	25,000	7,200	13,100	3.18	3.67
June	16,100	7,440	11,600	2.82	3.15
July	14,500	3,320	6,950	1.69	1.95
August	14,100	890	4,160	1.01	1.16
September	4,220	890	2,480	.602	.67
The year	39,900	----------	7,600	1.84	25.10

[a] See footnote to daily-discharge table; determination of discharge based on comparison with records at Orford, N. H.

[b] See footnote to daily-discharge table; determination of discharge based on comparison with records at Orford, N. H., and West Hartford, Vt.

Monthly discharge of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Month.	Observed discharge in second-feet.			Discharge corrected for storage in Connecticut lakes (second-feet).		Corrected run-off in inches.
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
1916–17.						
October	7,200	1,500	4,100	3,980	0.966	1.11
November	11,700	1,980	4,500	4,360	1.06	1.18
December	20,800		7,790	7,690	1.87	2.16
January			3,630	3,540	.859	.99
February			2,430	2,390	.580	.60
March	26,900		7,190	7,210	1.75	2.02
April	38,700	11,100	22,600	22,800	5.53	6.17
May	21,500	10,000	14,300	14,900	3.62	4.17
June	31,500	7,200	15,600	15,600	3.79	4.23
July	11,700	1,400	5,150	5,100	1.24	1.43
August	12,900	1,980	6,170	6,210	1.51	1.74
September	7,200	1,110	3,420	3,330	.808	.90
The year	38,700		8,080	8,100	1.97	26.70
1917–18.						
October	28,100	2,250	6,400	6,190	1.50	1.73
November	31,900	2,820	7,800	7,960	1.93	2.15
December			2,590	2,300	.558	.64
January			1,910	1,680	.408	.47
February			2,710	2,620	.636	.66
March			6,960	6,950	1.69	1.95
April	44,700	14,500	22,200	22,500	5.46	6.09
May	24,300	5,180	12,800	13,100	3.18	3.67
June	6,730	2,820	5,190	5,090	1.24	1.38
July	5,830	1,300	3,260	3,320	.806	.93
August	11,400	1,030	3,080	2,800	.680	.78
September	22,200	1,200	5,890	5,810	1.41	1.57
The year	44,700	1,030	6,730	6,700	1.63	22.02
1918–19.						
October	31,100	6,050	11,500	11,900	2.89	3.33
November	31,500	5,610	12,500	12,600	3.06	3.41
December	18,300	4,600	8,010	8,020	1.99	2.29
January	7,900	3,500	5,630	5,500	1.33	1.53
February	4,600	2,000	2,970	2,510	.609	.63
March	40,300	3,800	12,900	12,800	3.11	3.58
April	35,100	12,000	19,300	19,700	4.78	5.33
May	25,000	7,200	12,700	12,900	3.13	3.61
June	6,730	2,390	4,330	4,120	1.00	1.12
July	4,600	1,030	1,970	1,730	.420	.48
August	1,850	890	1,360	1,220	.296	.34
September	11,400	890	3,540	3,530	.857	.96
The year	40,300	890	8,080	8,070	1.96	26.61
1919–20.						
October	9,230	2,250	5,890	5,980	1.45	1.67
November	20,800	7,200	11,100	11,400	2.77	3.09
December	14,800	2,820	6,730	6,780	1.65	1.90
January			2,050	1,510	.367	.42
February			1,410	1,230	.299	.32
March	38,700		11,900	11,900	2.89	3.33
April	45,900	13,800	30,500	31,000	7.52	8.39
May	31,900	6,270	15,700	16,000	3.88	4.47
June	7,680	1,300	4,250	4,040	.981	1.09
July	6,960	2,110	4,010	4,100	.995	1.15
August	6,050	1,400	2,800	2,520	.612	.71
September	7,680	1,300	3,800	3,570	.867	.97
The year	45,900		8,340	8,340	2.02	27.51
1920–21.						
October	21,500	1,300	5,700	5,620	1.36	1.57
November	10,300	3,500	5,580	5,690	1.38	1.54
December	30,300	4,220	10,900	11,100	2.69	3.10
January	7,200		4,360	4,380	1.06	1.22
February			2,740	2,560	.621	.65
March	38,300		22,900	23,400	5.68	6.55
April	28,400	8,690	14,100	14,100	3.42	3.82
May	12,300	2,250	4,940	4,660	1.08	1.24
June	2,820	1,110	1,950	1,890	.459	.51
July	2,250	960	1,390	1,330	.323	.37
August	3,860	1,110	2,140	1,790	.434	.50
September	1,110	820	1,010	950	.231	.26
The year	38,300	820	6,510	6,490	1.58	21.33

Monthly discharge of Connecticut River at White River Junction, Vt., for the years ending Sept. 30, 1912–1922—Continued.

Month.	Observed discharge in second-feet.			Discharge corrected for storage in Connecticut lakes (second-feet).		Corrected run-off in inches.
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
1921–22.						
October	4,040	995	2,210	2,280	0.553	0.64
November	20,400	1,980	5,570	5,730	1.39	1.55
December	10,900	3,500	5,780	5,790	1.41	1.63
January	3,700	2,000	2,730	2,530	.626	.72
February	3,000	1,700	2,350	2,240	.544	.57
March	43,100	1,800	12,900	13,000	3.16	3.64
April	77,500	13,500	32,000	32,700	7.94	8.86
May	21,500	3,860	10,400	10,600	2.57	2.96
June	32,300	3,500	12,000	12,100	2.94	3.28
July	27,700	1,720	7,710	7,660	1.86	2.14
August	7,200	1,850	3,660	3,770	.915	1.05
September	6,270	1,850	2,950	2,540	.617	.69
The year	77,500	995	8,350	8,410	2.04	27.73

NOTE.—Beginning Oct., 1916, monthly mean discharge corrected for effect of storage in Connecticut Lakes.

CONNECTICUT RIVER AT SUNDERLAND, MASS.

LOCATION.—At five-span steel highway bridge at Sunderland, Franklin County, on road leading to South Deerfield, 18 miles in direct line and 24 miles by river above dam at Holyoke. Deerfield River enters the Connecticut from west 8 miles above station.

DRAINAGE AREA.—8,000 square miles.

RECORDS AVAILABLE.—March 31, 1904, to September 30, 1922.

GAGES.—Chain on downstream side of bridge; Gurley seven-day water-stage recorded installed October, 1921. Gage read and recorder inspected by F. W. Leete.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

CHANNEL AND CONTROL—Channel deep, with bottom of coarse gravel and alluvial deposits. Control at low stages not well defined, practically permanent. At high stages control is at crest of dam at Holyoke.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder 29.7 feet at 9 a. m. April 13 (discharge, by extension of rating curve, 103,700 second-feet); minimum stage recorded, 0.35 foot at 8.25 a. m. October 3 and 9.10 a. m. October 10 (discharge, 630 second-feet).

1904–1922: Maximum stage recorded, 30.7 feet during the night of March 28, 1913, determined by leveling from flood marks (discharge, by extension of rating curve, 108,000 second-feet); minimum stage, 0.0 foot August 29, 1921 (discharge, by extension of rating curve, 450 second-feet).

ICE.—The river usually freezes over early in winter but the ice is likely to break up at times of sudden rises in stage and at those times it occasionally forms ice jams at Northampton, 10 miles below station, causing several feet of backwater at the gage.

REGULATION.—Distribution of flow affected by operation of power plants at Turners Falls, and by regulation of Deerfield River (see Deerfield River at Charlemont, Mass.). The effect of regulation is shown by low water at the gage on Sundays and Mondays. Storage in Somerset reservoir and First Connecticut Lake has little effect on monthly discharge as measured at Sunderland.

ACCURACY.—Stage-discharge relation permanent, except when affected by ice. Rating curve well defined between 750 and 70,000 second-feet; extended above and below these limits. Chain gage read to half-tenths once daily; gage heights from water-stage recorder used for all stages subsequent to October 9; operation of water-stage recorder generally satisfactory except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying rating table to mean daily gage height corrected to chain gage datum and for effect of ice during winter. Records good.

Discharge measurements of Connecticut River at Sunderland, Mass., during the year ending Sept. 30, 1922.

[Made by W. E. Armstrong.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 30	[a] 8.87	9,200	Feb. 20	[a] 5.93	6,850
Jan. 18	[a] 6.42	7,250	Mar. 31	20.35	64,800

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept
1	2,020	4,030	9,100	6,500	6,300	8,400	54,900	22,100	8,960	40,400	4,790	8,960
2	1,230	3,760	9,520	5,600	7,200	8,400	45,100	21,000	8,690	38,800	4,590	6,050
3	2,260	4,490	18,800	8,700	8,200	8,200	39,600	19,200	6,490	37,300	4,400	2,320
4	2,790	5,200	21,000	9,200	7,900	7,400	36,100	16,700	16,000	26,600	4,590	2,450
5	2,790	4,790	16,400	9,000	6,700	6,000	34,200	28,100	21,000	28,900	6,490	6,720
6	2,650	2,140	17,400	9,200	6,300	7,000	35,000	50,900	18,800	23,600	4,030	6,270
7	2,940	2,870	15,300	10,400	8,400	9,800	36,500	45,500	17,800	22,100	4,790	4,990
8	2,200	4,400	13,300	7,200	8,200	32,000	47,400	38,000	15,000	17,000	6,270	5,620
9	1,560	4,590	13,300	6,700	8,400	38,800	65,300	35,300	14,300	15,300	8,420	3,850
10	1,180	5,100	10,100	8,200	9,000	47,000	72,600	33,400	11,700	14,300	9,810	1,840
11	2,320	3,940	5,510	8,700	7,200	45,000	85,000	30,000	8,420	13,000	10,100	3,170
12	2,380	4,790	9,240	8,200	4,800	43,000	97,400	26,200	24,700	11,700	8,420	4,990
13	2,580	3,330	12,000	7,900	5,400	42,300	103,000	23,600	19,200	10,700	4,400	5,200
14	3,850	3,410	10,700	7,200	6,700	43,500	93,700	16,400	14,300	10,100	4,990	5,200
15	3,850	4,500	10,100	4,800	6,500	50,500	83,700	15,300	12,600	8,420	4,990	4,990
16	4,300	4,790	13,300	5,400	7,200	46,000	78,000	15,700	12,600	4,210	4,590	6,270
17	4,790	5,940	11,700	7,200	7,000	41,200	71,000	15,000	12,600	5,620	4,210	5,200
18	4,590	7,910	7,910	7,000	5,600	34,200	66,500	13,000	8,160	6,270	4,210	10,100
19	5,720	11,300	25,500	6,700	3,500	29,300	64,900	27,000	22,800	6,490	3,670	11,000
20	5,300	16,400	23,600	6,500	4,200	26,600	60,900	40,800	28,100	7,180	1,620	7,910
21	4,790	24,300	19,500	6,300	7,200	30,400	56,900	24,700	35,300	8,690	3,330	6,720
22	4,300	25,100	16,000	3,700	6,500	28,500	52,900	21,000	49,000	7,420	6,050	6,490
23	2,080	25,800	13,000	4,400	7,200	25,500	48,200	19,500	49,800	3,500	6,720	4,210
24	2,870	20,600	10,700	7,200	7,900	23,600	41,600	18,800	46,200	4,590	7,910	2,080
25	5,300	16,700	9,200	7,000	7,900	24,000	33,800	17,400	42,300	5,410	7,180	3,170
26	6,490	14,300	12,300	6,500	6,000	25,800	31,200	14,700	38,400	6,490	5,830	4,790
27	5,300	7,660	11,300	5,800	7,000	40,400	23,200	11,000	34,200	7,660	4,590	4,400
28	4,990	7,060	10,700	4,400	8,200	52,100	22,100	6,950	21,000	7,420	7,660	4,210
29	4,120	11,300	9,500	3,200	-------	64,100	22,800	6,950	22,500	6,490	11,300	4,030
30	1,960	9,100	9,800	3,800	-------	77,100	24,000	6,950	29,300	3,330	11,000	3,330
31	2,580	-------	9,000	6,500	-------	68,500	-------	9,810	-------	4,400	8,690	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Mar. 12; discharge for this period based on gage heights corrected for effect of ice. Water-stage recorder not in operation Oct. 1–8; during this period chain gage was read twice daily, and records adjusted by comparison with records obtained after Oct. 9.

Monthly discharge of Connecticut River at Sunderland, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 8,000 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	6,490	1,180	3,420	0.428	0.49
November	25,800	2,140	8,990	1.12	1.25
December	25,500	5,510	13,100	1.64	1.89
January	10,400	3,200	6,750	.844	.97
February	9,000	3,500	6,880	.860	.90
March	77,100	6,000	33,400	4.18	4.82
April	103,000	22,100	54,200	6.78	7.56
May	50,900	6,950	22,300	2.79	3.22
June	49,800	6,490	22,300	2.79	3.11
July	40,400	3,330	13,300	1.66	1.91
August	11,300	1,620	6,120	.765	.88
September	11,000	1,840	5,220	.652	.73
The year	103,900	1,180	16,300	2.04	27.73

WHITE RIVER AT WEST HARTFORD, VT.

LOCATION.—500 feet above highway bridge in West Hartford, Windsor County, 7 miles above mouth of river.

DRAINAGE AREA.—687 square miles.

RECORDS AVAILABLE.—June 9, 1915, to September 30, 1922.

GAGE.—Inclined staff on left bank; read by F. P. Morse.

DISCHARGE MEASUREMENTS.—Made from cable 1,500 feet below gage or by wading.

CHANNEL AND CONTROL.—Channel wide and of fairly uniform cross-section at measuring section; covered with gravel and small boulders. Control formed by rock ledge 100 feet below gage; well defined.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 16.9 feet at 7 a. m. April 12 (discharge, by extension of rating curve, 24,500 second-feet); minimum stage, 2.60 feet at 6 p. m. October 3 (discharge, by extension of rating curve, 90 second-feet).

1915–1922: Maximum stage recorded, 16.9 feet, April 12, 1922 (discharge, by extension of rating curve, 24,500 second-feet); minimum stage, 2.33 feet at 6 a. m. August 29, 1916 (discharge, by extension of rating curve, 26 second-feet). The high water of March 27, 1913, reached a stage of 18.9 feet, as determined from reference point on scale platform opposite gage (discharge estimated as 30,000 second-feet).

ICE.—River freezes over at gage; control usually remains partly open, although ice on the rocks and along the shore affects the stage-discharge relation.

REGULATION.—There are several power plants on the main stream and tributaries above the station, the nearest being that of the Vermont Copper Co. at Sharon; when this plant is in operation it causes some diurnal fluctuation in discharge at low stages. The effect of power plants farther upstream is practically eliminated by the large amount of pondage at Sharon.

90902—25†—WSP 541——7

ACCURACY.—Stage-discharge relation permanent, except when affected by ice. Rating curve well defined between 130 and 5,000 second-feet. Staff gage read to quarter-tenths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice. Records good.

Discharge measurements of White River at West Hartford, Vt., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 10	J. L. Lamson	[a] 4.21	617	June 8	J. S. S. Jones	4.22	769
Feb. 25	do	[a] 4.98	639	Aug. 18	do	3.01	17 5

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of White River at West Hartford, Vt., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	134	215	685	580	460	500	3,820	1,550	530	2,200	247	247
2	325	305	620	580	520	480	3,470	1,460	560	4,920	325	230
3	100	620	2,440	560	580	470	2,990	1,370	1,040	2,570	265	230
4	150	500	2,320	520	640	440	2,840	1,370	1,970	2,700	285	247
5	146	395	1,370	580	580	520	2,700	3,470	1,120	2,080	265	305
6	140	345	1,460	660	560	700	3,300	4,540	820	1,750	247	230
7	146	395	1,120	820	520	880	3,820	3,300	1,120	1,460	370	230
8	138	305	855	700	520	8,200	7,500	3,470	865	1,280	1,200	230
9	134	305	760	680	470	7,500	10,000	2,570	750	1,550	717	215
10	200	370	660	660	440	4,730	13,400	2,200	925	1,200	500	215
11	200	500	620	620	460	3,140	15,200	1,860	1,120	960	370	187
12	265	445	600	600	440	2,200	20,500	1,650	960	890	325	230
13	685	420	560	620	440	2,080	10,000	1,550	890	785	305	345
14	445	445	540	600	420	2,080	7,500	1,370	785	717	215	285
15	305	420	470	620	400	4,920	6,500	1,280	685	620	280	285
16	265	345	472	580	390	3,470	6,500	1,120	717	560	215	620
17	215	445	750	560	370	2,320	6,100	1,040	717	500	247	445
18	187	685	1,370	560	370	1,860	11,000	1,040	1,200	560	247	345
19	155	2,440	2,570	540	380	1,750	6,700	2,200	2,440	620	265	265
20	200	5,900	1,370	540	380	1,970	5,110	2,700	1,750	530	305	247
21	685	2,570	925	540	540	1,860	4,000	1,860	1,650	420	187	230
22	652	1,650	620	540	580	1,650	3,140	1,460	5,900	370	215	230
23	395	1,280	560	520	490	1,550	2,840	1,280	3,140	370	215	230
24	395	820	560	500	540	1,650	2,570	1,120	2,080	445	215	215
25	305	855	560	490	620	2,080	2,320	1,040	1,550	472	215	175
26	345	890	560	480	540	2,440	2,320	1,040	1,200	370	420	200
27	265	750	560	480	540	4,730	2,320	890	1,040	370	652	200
28	265	590	540	480	500	8,740	2,080	820	1,280	325	395	200
29	265	820	540	470	-------	15,500	1,860	750	3,300	305	370	215
30	325	785	540	440	-------	8,320	1,750	620	4,000	325	345	187
31	230	-------	500	480	-------	5,500	--------	590	-------	230	265	-------

NOTE.—Stage-discharge relation affected by ice Dec. 9–15 and Dec. 23 to Mar. 8; discharge for these periods based on gage heights corrected for effect of ice by means of discharge measurements, observer's notes, and weather records.

Monthly discharge of White River at West Hartford, Vt., for the year ending Sept. 30, 1922.

[Drainage area, 687 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	685	100	279	0.406	0.47
November	5,900	215	894	1.30	1.45
December	2,570	470	906	1.32	1.52
January	820	440	568	.827	.95
February	640	370	489	.710	.74
March	15,500	440	3,360	4.89	5.64
April	20,500	1,750	5,800	8.44	9.42
May	4,540	590	1,700	2.47	2.85
June	5,900	530	1,540	2.24	2.50
July	4,920	230	1,050	1.53	1.76
August	1,200	187	343	.500	.58
September	620	175	257	.374	.42
The year	20,500	100	1,430	2.08	28.30

WEST RIVER AT NEWFANE, VT.

LOCATION.—At covered highway bridge 1¼ miles northeast of Newfane, Windham County.

DRAINAGE AREA.—310 square miles.

RECORDS AVAILABLE.—September 13, 1919, to September 30, 1922.

GAGE.—Chain on downstream side of highway bridge.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Gravel and ledge; well-defined riffle just above island 800 feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.0 feet at 8 a. m. April 12 (discharge, by extension of rating curve, 8,120 second-feet); minimum stage, 3.67 feet at 6 p. m. October 6 and 6 p. m. October 7 (discharge, by extension of rating curve, 50 second-feet).

1919–1922: Maximum stage recorded, 12.0 feet April 12, 1922 (discharge by extension of rating curve, 8,120 second-feet); minimum stage, 3.55 feet September 10, 1921 (discharge, by extension of rating curve, 35 second-feet).

ICE.—River freezes over and stage-discharge relation seriously affected.

REGULATION.—A few small mills above station do not seriously affect the distribution of flow.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve fairly well defined between 70 and 2,000 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying rating table to mean daily gage heights, with corrections for effect of ice during winter. Records good.

Discharge measurements of West River at Newfane, Vt., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 10	J. L. Lamson	[a] 5.30	332
June 15	J. S. S. Jones	4.57	438

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of West River at Newfane, Vt., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	63	71	225	280	170	210	1,490	339	188	309	75	100
2	59	162	265	260	190	190	1,120	326	158	320	71	87
3	55	225	1,400	240	380	190	1,000	309	562	255	71	71
4	55	146	1,110	220	310	160	1,150	406	3,130	265	124	75
5	53	124	712	260	240	240	1,090	3,750	1,180	240	80	87
6	52	124	594	400	220	360	1,360	2,510	839	179	75	80
7	52	115	455	520	210	480	1,680	1,580	546	138	75	115
8	52	95	430	420	195	4,300	4,160	1,310	346	115	162	100
9	59	95	420	360	190	3,750	3,750	848	265	115	206	87
10	71	106	440	320	180	3,130	4,270	538	1,490	124	115	80
11	85	124	430	290	170	2,720	4,370	462	1,990	106	95	75
12	100	138	380	270	170	2,090	6,480	392	1,790	95	75	100
13	106	138	350	270	160	1,940	3,030	352	1,150	87	71	100
14	100	118	320	260	155	3,440	2,040	339	586	80	65	100
15	80	118	310	250	150	2,920	2,350	326	434	75	71	95
16	67	115	310	260	150	1,940	2,190	270	372	71	59	399
17	65	154	380	240	145	1,220	2,240	230	309	65	55	276
18	63	995	1,700	230	145	890	3,030	281	797	59	130	192
19	59	1,180	1,490	260	140	822	2,350	5,610	1,220	162	265	124
20	80	1,490	780	260	140	1,160	1,740	2,660	848	138	115	100
21	170	848	652	260	190	1,360	1,310	1,360	1,580	124	100	95
22	150	455	594	220	240	977	1,080	1,020	2,350	115	75	87
23	106	333	540	220	210	907	882	703	1,490	95	75	80
24	87	240	490	210	260	865	746	492	907	80	71	75
25	85	225	460	190	320	1,190	686	462	695	106	87	75
26	85	265	380	190	280	2,350	712	462	570	170	206	71
27	82	206	350	185	240	3,340	729	406	455	240	333	59
28	85	225	320	190	220	3,650	635	326	372	138	179	59
29	77	255	290	185	-------	3,130	462	250	320	162	240	55
30	75	255	280	175	-------	2,920	372	206	455	95	150	55
31	67	-------	280	170	-------	1,740	-------	179	-------	100	130	-------

NOTE.—Stage-discharge relation affected by ice Dec. 8–18 and Dec. 23 to Mar. 8; discharge for this period based on gage heights corrected for effect of ice by means of one discharge measurement, observer's notes, and weather records.

Monthly discharge of West River at Newfane, Vt., for the year ending Sept. 30, 1922.

[Drainage area, 310 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	170	52	78.9	0.255	0.29
November	1,490	71	305	.984	1.10
December	1,700	225	553	1.78	2.05
January	520	170	260	.839	.97
February	380	140	206	.665	.69
March	4,300	160	1,760	5.68	6.55
April	6,480	372	1,950	6.29	7.02
May	5,610	179	926	2.99	3.45
June	3,130	158	913	2.95	3.29
July	320	59	143	.461	.53
August	333	55	119	.384	.44
September	399	55	105	.339	.38
The year	6,480	52	611	1.97	26.76

ASHUELOT RIVER AT HINSDALE, N. H.

LOCATION—At lower steel highway bridge a quarter of a mile below dam of Fisk Paper Co. and 1¼ miles above mouth of river at Hinsdale, Cheshire County.

DRAINAGE AREA.—440 square miles.

RECORDS AVAILABLE.—February 22, 1907, to December 31, 1909, and July 11, 1914, to September 30, 1922.

GAGE.—Chain gage on downstream side of bridge; read by Teresa Golden.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

CHANNEL AND CONTROL.—Channel covered with coarse gravel and boulders. Control is a short distance below gage and is practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.12 feet at 7 a. m. April 13 (discharge, by extension of rating curve, 4,620 second-feet); minimum stage, 2.71 feet at 4 p. m. October 11 (discharge, 88 second-feet).

1914–1922: Maximum stage recorded, 9.98 feet March 29, 1920 (discharge, by extension of rating curve, 8,940 second-feet); minimum stage, 2.0 feet at 4 p. m. October 4, 1914 (discharge, by extension of rating curve, 10 second-feet).

ICE.—Ice forms below bridge on control, affecting stage-discharge relation for short periods.

REGULATION.—The mills immediately above station are operated continuously except Sundays and holidays, but cause little fluctuation in stage. Several reservoirs and ponds on the river and its tributaries have some effect on the distribution of flow. The effect of power regulation was studied by a temporary installation of water-stage recorder during July and August, 1917.

ACCURACY.—Stage-discharge relation practically permanent except when affected by ice. Rating curve fairly well defined below 4,000 second-feet. Gage read to hundredths twice daily. Discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice during the winter. Records good.

Discharge measurements of Ashuelot River at Hinsdale, N. H., during the year ending Sept. 30, 1922.

[Made by J. L. Lamson.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Oct. 26	3.14	198
Jan. 7	a 4.65	646
Feb. 22	a 3.71	403

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Ashuelot River at Hinsdale, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	320	400	460	400	330	280	2,440	660	320	1,910	296	305
2	300	340	430	370	290	280	2,040	590	286	1,430	330	251
3	209	291	555	340	300	260	1,910	625	315	1,100	300	164
4	200	197	430	340	480	260	1,910	590	520	770	320	179
5	206	194	900	360	410	240	1,790	1,670	555	810	490	325
6	185	203	770	410	360	410	2,040	3,140	460	810	300	320
7	223	268	590	500	320	400	2,440	2,860	350	660	375	340
8	231	315	460	540	310	1,100	2,580	2,300	330	520	625	340
9	300	350	400	470	320	2,720	3,000	1,670	291	590	555	291
10	173	375	440	480	300	2,860	3,280	1,320	400	625	460	209
11	96	430	520	500	300	2,440	3,860	1,050	490	490	350	219
12	113	555	540	480	290	1,910	4,300	855	730	460	286	251
13	137	375	520	400	300	1,670	4,440	810	625	400	203	430
14	400	320	520	300	290	1,670	4,010	730	430	320	273	460
15	555	330	410	440	260	1,910	2,860	625	350	310	235	330
16	98	370	480	460	280	2,170	2,860	625	325	239	264	560
17	102	424	520	430	250	1,910	2,440	555	335	247	235	660
18	139	900	460	370	220	1,550	1,910	490	460	278	194	455
19	139	1,210	660	340	260	1,320	2,440	1,000	1,430	590	278	350
20	200	1,260	640	300	400	1,370	2,170	555	1,430	695	251	300
21	203	625	500	300	400	1,910	2,040	1,370	1,490	490	191	320
22	375	770	450	300	420	1,790	1,550	1,000	2,860	375	231	255
23	375	520	430	400	380	1,320	1,430	770	2,860	330	223	247
24	400	520	500	440	380	1,370	1,320	625	2,170	291	219	145
25	239	430	450	400	320	1,430	855	555	1,670	460	231	197
26	161	325	520	380	300	1,610	1,000	490	2,040	430	330	227
27	155	305	500	460	240	2,300	950	490	1,910	460	520	223
28	124	490	500	400	290	3,280	900	400	1,370	400	555	191
29	185	555	450	340	-------	3,720	695	400	1,320	400	660	188
30	155	520	450	290	-------	4,150	660	350	1,790	350	490	122
31	227	-------	480	340	-------	3,430	-------	325	-------	264	375	-------

NOTE.—Stage-discharge relation affected by ice Dec. 9 to Mar. 8; discharge for this period based on gage heights corrected for effect of ice.

Monthly discharge of Ashuelot River at Hinsdale, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 440 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	555	96	223	0.507	0.58
November	1,260	194	472	1.07	1.19
December	900	400	514	1.17	1.35
January	540	290	396	.900	1.04
February	480	220	322	.732	.76
March	4,150	240	1,710	3.89	4.48
April	4,440	660	2,200	5.00	5.58
May	3,140	325	951	2.16	2.49
June	2,860	286	997	2.27	2.53
July	1,910	239	565	1.28	1.48
August	660	191	343	.780	.90
September	660	122	295	.670	.75
The year	4,440	96	750	1.70	23.13

MINNEWAWA BROOK AT MARLBORO, N. H.

LOCATION.—In Marlboro, Cheshire County, 300 feet from Marlboro-Keene town line, and 1 mile above confluence with east branch of Ashuelot River.

DRAINAGE AREA.—31.7 square miles.

RECORDS AVAILABLE.—July 25, 1919, to March 20, 1922, when station was discontinued.

GAGE.—Gurley seven-day water-stage recorder on left bank, referenced to gage datum by a hook gage inside well; an inclined staff used for auxiliary readings. Recorder inspected by F. V. Perry.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge 500 feet above gage.

CHANNEL AND CONTROL.—Channel rough and has steep slope; control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage during period October 1 to March 20 from water-stage recorder, 7.27 feet at midnight, March 7 (channel obstructed by ice jam, discharge undetermined); discharge practically nil at various times when water was held back by dams.

1919–1922: Maximum stage recorded, 8.3 feet March 14, 1920 (channel probably obstructed by ice, discharge not determined); discharge practically nil at various times when water was held back by dams.

ICE.—Ice forms on rocks and at the control; channel fills with slush ice; and occasional ice gorges occur; stage-discharge relation seriously affected.

REGULATION.—Flow at ordinary stages is under complete regulation by power plants in Marlboro; several small reservoirs also affect the distribution of flow.

ACCURACY.—Stage-discharge relation subject to occasional changes, rating curves fairly well defined between 8 and 340 second-feet. Operation of water-stage recorder not entirely satisfactory owing to carelessness of local inspector. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for ice during winter. Records fair.

Discharge measurements of Minnewawa Brook at Marlboro, N. H., during the year ending Sept. 30, 1922.

[Made by J. L. Lamson.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Oct. 26	3.17	26.0	Mar. 15	4.17	180	Mar. 15	4.23	196
Jan. 5	[a] 5.70	68	do	4.15	187	Apr. 29	3.35	47.1
Feb. 21	[a] 3.51	45.8						

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Minnewawa Brook at Marlboro, N. H., for the period ending Mar. 20, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	9.7	11	19	22	28	39	16	5.8	12	32	37	35	127
2	5.1	12	20	39	28	40	17	11	11	22	34	35	97
3	9.3	11	76	37	105	41	18	15	18	146	30	32	97
4	14	11	48	36	48	37	19	15	28	101	32	20	76
5	9.3	8.3	52	39	37	24	20	21	49	74	30	37	73
6	10	5.0	52	37	54	37	21	22	39	60	28	37	------
7	12	8.3	49	37	58	74	22	14	36	52	14	28	------
8	8.3	7.6	42	22	60	260	23	11	26	49	32	20	------
9	6.4	7.6	32	37	48	133	24	21	19	42	32	28	------
10	10	14	22	37	37	101	25	15	29	26	31	39	------
11	13	17	22	35	32	103	26	13	14	36	31	20	------
12	15	20	29	32	28	76	27	11	12	37	30	39	------
13	15	10	24	34	37	100	28	11	22	37	30	35	------
14	14	14	26	37	37	127	29	8.6	20	37	14	------	------
15	10	11	31	14	35	146	30	4.2	20	35	32	------	------
							31	12	------	35	32	------	------

NOTE.—Stage-discharge relation affected by ice Dec. 22, 1921, to Mar. 8, 1922; discharge for this period determined from gage heights, discharge measurements, weather records, and comparison with records at other stations in the vicinity.

Monthly discharge of Minnewawa Brook at Marlboro, N. H., for the period ending Mar. 20, 1922.

[Drainage area, 31.7 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	22	4.2	12.0	0.379	0.44
November	49	5.0	17.4	.549	.61
December	146	19	44.0	1.39	1.60
January	39	14	31.1	.981	1.13
February	105	20	38.5	1.21	1.26
March 1–20	260	24	90.4	2.85	2.12

SOUTH BRANCH OF ASHUELOT RIVER AT WEBB, NEAR MARLBORO, N. H.

LOCATION.—At highway bridge on State road between Keene and Troy, one-fourth mile from Webb railroad station, Marlboro, Cheshire County.

DRAINAGE AREA.—36.6 square miles (measured on topographic map).

RECORDS AVAILABLE.—November 16, 1920, to September 30, 1922.

GAGES.—Friez water-stage recorder on right bank, downstream side of bridge, referenced to gage datum by hook gage inside the well; an inclined staff is used for auxiliary readings. Recorder inspected by O. J. Bemis and W. L. Goodell.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Large pool opposite gage, water swift above and below. Control is formed by boulders 50 feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.9 feet at 9 p. m. June 21 (discharge, from extension of rating curve, 760 second-feet); minimum stage, from water-stage recorder, 1.02 feet at 2 a. m. November 17 (discharge, from extension of rating curve, 3 second-feet).

1920–1922: Maximum open-water stage from water-stage recorder, 5.0 feet at 5 p. m. December 5, 1920 (discharge, from extension of rating curve, 780 second-feet) (a stage of 5.8 feet was recorded at 10 p. m. March 9, 1921, but the channel was obstructed by ice at the time); minimum discharge by water-stage recorder, 3 second-feet on several days in September and November, 1921 (discharge from extension of rating curve).

ICE.—Channel obstructed by ice during winter.

REGULATION.—Distribution of flow affected by operation of mills at Troy, 4 miles upstream; several small storage ponds on main stream and tributaries above the gage.

ACCURACY.—Stage-discharge relation probably permanent except when affected by ice. Rating curve fairly well defined between 8 and 400 second-feet. Operation of water-stage recorder generally satisfactory except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying rating table to mean daily gage height, as determined from inspection of recorder sheets, with correction for effect of ice during winter. Records fair.

Discharge measurements of South Branch of Ashuelot River at Webb, near Marlboro, N. H., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 6	J. L. Lamson	[a] 3.86	68	Apr. 28	J. L. Lamson	2.05	72
Feb. 21	do	[a] 2.23	65	28	do	2.08	72
Mar. 15	do	[a] 3.48	216	July 11	Jones and Lamson	1.98	58
Apr. 28	do	2.12	88				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of South Branch of Ashuelot River at Webb, near Marlboro, N. H., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	11	6	34	40	40	23	152	52	28	350	44	26
2	9	10	39	44	41	23	130	44	23	260	42	20
3	9	13	237	58	120	23	135	44	25	180	47	14
4	7	12	141	52	100	19	141	49	60	140	57	15
5	6	8	87	48	70	23	152	290	54	130	58	28
6	6	7	51	78	48	30	212	280	35	110	28	39
7	6	14	46	70	41	70	224	166	30	80	50	34
8	7	8	42	48	34	340	330	116	28	60	95	33
9	6	9	44	64	40	260	370	75	45	100	70	22
10	6	12	48	64	29	190	355	61	81	65	44	16
11	6	8	58	64	24	155	370	53	88	47	36	27
12	6	10	58	58	16	130	390	46	112	40	20	35
13	6	10	56	58	33	110	276	39	57	36	19	40
14	10	18	52	52	26	165	212	32	40	34	28	32
15	14	17	48	32	25	190	263	40	35	25	13	34
16	7	11	48	58	29	140	250	37	33	16	12	65
17	8	9	84	58	32	120	200	34	26	20	12	42
18	6	25	140	58	32	100	263	34	69	30	18	38
19	5	32	110	58	10	84	224	172	245	102	18	30
20	14	73	90	58	27	120	176	157	164	66	19	25
21	29	66	68	48	32	155	141	82	395	48	26	18
22	20	40	58	23	23	120	112	62	460	28	22	19
23	14	27	56	50	33	120	94	45	220	18	22	16
24	19	16	52	45	32	130	96	38	166	40	26	10
25	9	16	50	28	26	141	77	87	460	48	28	17
26	7	20	58	37	12	188	76	39	340	59	99	16
27	7	20	58	26	29	305	59	30	176	50	82	9
28	8	42	56	18	25	370	54	21	112	59	124	8
29	7	38	56	19	-------	420	45	19	110	46	96	8
30	6	84	56	34	-------	320	46	18	130	29	46	10
31	6	-------	56	20	-------	188	-------	30	-------	38	32	-------

NOTE.—Stage-discharge relation affected by ice Dec. 7 to Mar. 22; discharge for this period based on gage heights corrected for effect of ice. Clock not in operation June 30, July 1–8, 17–18, 21–22, Aug. 7–9, Sept. 4–5, 12–13; discharge for these periods estimated by comparison with records in adjacent drainage basins.

Monthly discharge of South Branch of Ashuelot River at Webb, near Marlboro, N. H., for the year ending Sept. 30, 1922.

[Drainage area, 36.6 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	29	5	9.26	0.253	0.29
November	73	6	21.0	.574	.64
December	237	34	68.8	1.88	2.17
January	78	18	47.4	1.30	1.50
February	120	10	36.8	1.00	1.04
March	420	19	154	4.21	4.85
April	390	45	188	5.14	5.74
May	290	18	72.3	1.98	2.28
June	460	23	128	3.50	3.90
July	350	16	75.9	2.07	2.39
August	124	12	33.0	.902	1.04
September	65	8	24.9	.680	.78
The year	460	5	72.5	1.98	26.62

90902—25†—WSP 541——8

MILLERS RIVER NEAR WINCHENDON, MASS.

LOCATION.—At steel highway bridge known as Nolan's Bridge, half a mile below mouth of Sip Pond Brook and 2 miles west of Winchendon, Worcester County.

DRAINAGE AREA.—80.0 square miles.

RECORDS AVAILABLE.—June 5, 1916, to September 30, 1922.

GAGES.—Water-stage recorder on right bank below highway bridge, referenced to gage datum by hook gage inside well. Staff on bridge abutment used for auxiliary readings. Recorder inspected by H. D. Sawyer.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel covered with gravel and alluvial deposits. Control for low and medium stages is gravel bar 80 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 8.65 feet at 9.30 p.m. June 25 (discharge, by extension of rating curve, 1,280 second-feet); minimum stage from water-stage recorder, 2.87 feet at 1 to 2 p.m. October 9 (discharge, by extension of rating curve, 12 second-feet).

1916–1922: Maximum stage recorded, 8.65 feet June 25, 1922 (discharge, by extension of rating curve, 1,280 second-feet); minimum stage, 2.02 feet at 5 a.m. September 20, 1918 (discharge, practically zero; water held back by dams).

ICE.—Ice cover usually forms during winter and owing to large diurnal fluctuation caused by operation of power plants in vicinity of Winchendon, water frequently overflows the ice.

REGULATION.—The distribution of flow is affected by operation of power plants at and below Winchendon and by storage in Lake Monomonac and other reservoirs.

ACCURACY.—Stage-discharge relation somewhat shifting on account of gravel bar 80 feet below gage, rating curves well defined for periods used. Operation of water-stage recorder satisfactory throughout the year with the exception of short periods indicated in footnote to daily-discharge table. Daily discharge for open-water periods ascertained by discharge integrator, and during winter by applying rating table to mean daily gage height with corrections for effect of ice. Records good.

Discharge measurements of Millers River near Winchendon, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 28	W. E. Armstrong	[a] 3.64	102	Aug. 2	Jones and Armstrong	3.75	149
Jan. 16	do	[a] 4.57	164	3	do	3.65	115
Feb. 16	do	[a] 4.78	79	3	do	4.30	241
Apr. 6	do	5.50	443	23	W. E. Armstrong	3.19	33.8
July 5	Jones and Armstrong	5.16	387	Oct. 5	Armstrong and Granger	3.19	36.9
5	do	5.12	381				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Millers River near Winchendon, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	41	52	166	25	82	29	440	152	50	650	130	136
2	23	48	102	35	115	78	380	116	53	380	96	110
3	42	50	164	41	115	92	405	110	56	265	128	48
4	51	48	175	58	96	45	380	124	50	255	95	73
5	50	36	205	88	42	39	365	300	90	365	80	140
6	50	18	180	84	100	80	395	485	110	430	46	146
7	54	50	150	47	135	185	485	550	95	300	104	150
8	40	48	110	32	110	540	560	550	80	188	144	144
9	13	45	110	39	140	520	660	395	70	245	136	112
10	43	36	70	50	115	520	700	245	42	245	138	50
11	47	35	44	88	100	475	700	200	99	168	130	134
12	46	42	94	125	30	430	710	154	156	162	102	140
13	45	30	96	105	105	405	660	94	124	118	44	144
14	46	75	100	60	105	295	570	31	120	85	122	86
15	44	98	112	28	90	320	485	108	108	71	140	102
16	15	96	104	50	32	300	520	100	92	44	138	138
17	45	106	70	58	32	260	500	100	78	72	134	57
18	40	115	108	58	41	240	400	108	37	81	128	144
19	45	90	325	74	23	122	405	285	250	215	100	126
20	55	70	265	19	27	280	405	325	380	230	41	104
21	45	155	215	26	60	365	360	255	475	215	112	104
22	35	126	230	19	29	330	265	255	720	130	104	104
23	16	116	200	29	29	295	245	160	770	50	126	71
24	45	50	155	44	45	280	250	124	680	192	136	45
25	54	112	110	47	35	250	196	134	810	215	130	93
26	55	98	64	44	21	245	142	120	830	198	118	73
27	45	50	110	50	55	410	136	62	630	188	46	85
28	45	110	125	39	39	520	126	60	455	186	148	68
29	40	136	105	24	-------	600	122	70	400	104	176	78
30	13	156	94	44	-------	610	38	50	600	54	172	54
31	45	-------	74	72	-------	540	-------	40	-------	116	140	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Mar. 11; daily discharge for these periods based on gage heights corrected for effect of ice. Water-stage recorder not in operation May 28–31, June 1–9, July 22, and Aug. 5; discharge for these periods estimated by comparisons with discharges at other stations in Millers River basin.

Monthly discharge of Millers River near Winchendon, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 80.0 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	55	13	41.1	0.514	0.59
November	156	18	76.6	.958	1.07
December	325	44	137	1.71	1.97
January	125	19	51.7	.646	.74
February	140	21	69.6	.870	.91
March	610	29	313	3.91	4.51
April	710	38	400	5.00	5.58
May	550	31	189	2.36	2.72
June	830	37	284	3.55	3.96
July	650	44	201	2.51	2.89
August	176	41	116	1.45	1.67
September	150	45	102	1.28	1.43
The year	830	13	165	2.06	28.04

MILLERS RIVER AT ERVING, MASS.

LOCATION.—One-fourth mile below dam at Erving, Franklin County, 8 miles above confluence of Millers River with Connecticut River, and below all important tributaries.

DRAINAGE AREA.—372 square miles.

RECORDS AVAILABLE.—August 1, 1914, to September 30, 1922.

GAGE.—Stevens water-stage recorder on right bank, referred to gage datum by hook gage inside well; vertical staff attached to downstream end of factory wall is used for auxiliary readings. Recorder inspected by Napoleon Lemire.

DISCHARGE MEASUREMENTS.—Made from cable near gage or by wading.

CHANNEL AND CONTROL.—Channel covered with coarse gravel and boulders; control section is a short distance below the gage and remained practically permanent until July, 1922, when débris deposited at right bank somewhat affected the control.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 5.36 feet at 7.30 a. m. June 22 (discharge, 4,850 second-feet); minimum stage, from water-stage recorder, 1.04 feet at 5.30 a. m. October 17 (discharge, 13 second-feet; water held back by dams).

1914–1922: Maximum open-water stage recorded, 5.74 feet at 10 a. m. March 28, 1920 (discharge, 5,800 second-feet) (a stage of 5.97 feet was recorded at 8.30 a. m. February 27, 1918, but the stage-discharge relation was affected by ice); minimum discharge, practically zero at various times during 1915 and 1916, when water was held back by dams above gage.

ICE.—River freezes over below gage at various times during the winter; ice considerably broken by rising and falling stages due to power operations; stage-discharge relation is seriously affected.

REGULATION.—Distribution of flow affected by operation of various power plants and storage reservoirs above the stations.

ACCURACY.—Stage-discharge relation practically permanent until July, 1922, except when affected by ice. Rating curve well defined between 90 and 4,000 second-feet. Operation of water-stage recorder satisfactory throughout year. Daily discharge for open-water periods ascertained by use of discharge integrator, and during winter from mean daily gage height corrected for effect of ice. Records good.

Discharge measurements of Millers River at Erving, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft*
Dec. 29	W. E. Armstrong	2.41	387	Aug. 1	Armstrong and Jones	3.15	816
Jan. 17	do	[a] 2.93	310	1	do	3.04	738
Feb. 17	do	[a] 3.24	502	22	W. E. Armstrong	2.67	498
Apr. 4	do	3.93	1,750	Oct. 7	Armstrong and Granger	2.13	271

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Millers River at Erving, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.
1	170	146	770	400	240	270	2,350	540	290	2,950	420	465
2	89	190	700	390	510	265	1,800	650	475	2,550	395	420
3	133	300	1,140	380	820	235	1,720	600	220	1,880	436	295
4	128	116	1,400	380	700	240	1,780	580	530	1,800	420	315
5	190	205	1,120	500	740	320	1,740	1,620	620	1,900	520	430
6	126	86	1,050	570	700	435	2,000	2,900	610	1,920	285	520
7	114	188	890	560	620	840	2,350	2,400	530	1,760	475	520
8	122	124	615	460	550	2,650	2,750	2,200	510	1,440	530	475
9	108	152	500	420	500	2,300	3,100	1,820	475	1,340	620	465
10	146	142	470	380	475	2,150	3,150	1,420	325	1,340	530	325
11	150	108	395	340	450	1,840	3,100	1,160	610	1,120	475	360
12	78	210	530	310	425	1,520	3,150	920	1,380	900	435	370
13	150	182	455	290	400	1,440	3,000	760	1,200	820	270	495
14	134	268	395	285	390	1,420	2,450	500	930	740	370	435
15	190	280	370	270	380	1,560	2,350	630	770	580	340	350
16	21	285	295	250	370	1,640	2,350	660	620	360	330	910
17	184	320	400	280	370	1,460	2,300	550	550	520	360	900
18	164	450	1,300	275	350	1,260	2,100	590	700	440	350	860
19	162	530	1,520	270	340	1,060	1,800	1,160	2,450	810	320	630
20	184	510	1,320	280	335	1,300	1,800	1,680	2,250	960	245	590
21	196	660	1,040	275	390	1,900	1,560	1,480	3,050	820	320	540
22	235	640	855	275	415	1,900	1,420	1,260	4,550	680	295	390
23	176	510	570	300	420	1,680	1,140	950	3,700	340	330	420
24	325	415	510	260	420	1,540	1,180	780	3,050	660	375	250
25	126	430	445	270	380	1,500	950	700	3,500	890	395	400
26	235	495	435	260	340	1,500	900	660	4,250	760	450	290
27	215	320	425	245	335	1,900	840	680	3,450	670	385	270
28	152	550	425	245	315	2,400	740	340	2,450	650	560	280
29	142	780	430	250	-------	3,100	770	440	2,150	940	680	300
30	24	710	440	240	-------	3,250	560	345	3,050	480	610	440
31	150	-------	440	245	-------	2,850	-------	530	-------	590	540	-------

NOTE.—Stage-discharge relation affected by ice Dec. 23 to Mar. 6; discharge for this period based on gage heights corrected for effect of ice.

Monthly discharge of Millers River at Erving, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 372 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	325	21	152	0.409	0.47
November	780	86	343	.922	1.03
December	1,520	295	698	1.88	2.17
January	570	240	328	.882	1.02
February	820	240	453	1.22	1.27
March	3,250	235	1,540	4.14	4.77
April	3,150	560	1,910	5.13	5.72
May	2,900	340	1,020	2.74	3.16
June	4,550	220	1,640	4.41	4.92
July	2,950	340	1,080	2.90	3.34
August	680	245	421	1.13	1.30
September	910	250	457	1.23	1.37
The year	4,550	21	837	2.25	30.54

SIP POND BROOK NEAR WINCHENDON, MASS.

LOCATION.—500 feet above highway bridge, one-fourth mile below Massachusetts New Hampshire State line, 1½ miles below outlet of Sip Pond, and 3 miles northwest of Winchendon, Worcester County.

DRAINAGE AREA.—18.8 square miles.

RECORDS AVAILABLE.—May 29, 1916, to September 30, 1922.

GAGES.—Gurley graph water-stage recorder on left bank 500 feet above highway bridge, with hook gage inside well; a vertical staff is used for auxiliary readings. Prior to June 26, 1917, an inclined staff on right bank 50 feet above highway bridge was used. Recorder inspected by Mary N. Greenall.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

CHANNEL AND CONTROL.—Channel rough with boulders; control clearly defined.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.8 feet at 2 to 6 p. m. June 22 (discharge, 250 second-feet); minimum stage from water-stage recorder, 5.06 feet at 8 a. m. October 17 to 2 p. m. October 19 (discharge, 1.7 second-feet).

1916–1922: Maximum stage recorded, 9.34 feet at 1 p. m. May 23, 1919 (discharge, by extension of rating curve, 339 second-feet); minimum discharge during period, 1.1 second-feet, August 16, 1919.

ICE.—Channel usually remains open during winter although stage-discharge relation is occasionally affected, and ice forms in float well, interfering with operation of water-stage recorder.

REGULATION.—The distribution of flow is considerably affected by operation of mills at State Line, N. H., and by storage in Pearly Pond and Sip Pond.

ACCURACY.—Stage-discharge relation practically permanent for present location. Rating curve well defined below 250 second-feet. Operation of water-stage recorder was satisfactory, except for short periods indicated in footnote to daily-discharge table and occasionally during winter when it was affected by ice in float well. Daily discharge ascertained by applying rating table to mean daily gage height with corrections for effect of ice during winter. Records good during open-water periods and fair during winter.

Discharge measurements of Sip Pond Brook near Winchendon, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 15	W. E. Armstrong	5.90	19.2	July 5	Jones and Armstrong	7.37	119
Apr. 6	do	7.26	99	Aug. 3	do	5.85	21.0

NOTE.—Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Sip Pond Brook near Winchendon, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.5	4.9	21	12	8	19	152	19	15	190	24	20
2	2.0	6.2	17	12	11	16	125	15	15	143	22	20
3	2.4	3.7	28	13	13	16	112	13	16	112	22	20
4	5.1	3.9	24	14	23	16	103	15	19	112	22	30
5	2.7	6.2	24	15	18	10	99	55	26	112	16	37
6	2.5	3.4	28	16	24	19	103	125	26	103	9.6	42
7	2.2	3.2	30	17	17	17	116	99	22	84	18	34
8	2.2	3.5	27	16	9	20	134	161	18	70	28	25
9	2.4	5.7	24	15	10	42	180	58	15	70	26	19
10	2.4	6.8	21	14	14	44	180	39	23	64	22	16
11	3.5	6.2	20	12	11	52	210	32	23	52	21	20
12	4.0	7.0	20	13	8	58	220	23	42	47	18	18
13	3.1	6.4	22	13	11	58	200	17	34	42	13	20
14	2.7	7.5	20	13	11	61	161	28	30	34	18	24
15	2.4	8.0	19	8	11	67	161	34	24	28	16	24
16	2.0	7.5	17	12	10	70	120	22	19	23	10	22
17	1.8	15	18	12	9	67	91	24	21	30	10	19
18	1.7	15	19	10	8	61	84	25	16	30	11	30
19	2.7	15	22	10	9	55	95	47	11	40	13	26
20	12	18	28	11	19	67	70	70	91	40	9.9	27
21	10	21	24	13	19	84	58	64	180	37	15	23
22	6.2	19	22	10	18	88	55	52	230	27	15	14
23	4.6	16	15	13	19	77	52	37	220	20	16	15
24	4.0	14	11	13	20	77	44	27	170	42	18	11
25	4.4	21	9	12	21	84	37	24	103	42	19	22
26	2.8	19	12	10	16	91	32	22	125	42	20	23
27	2.5	15	14	10	18	134	23	24	125	37	11	13
28	4.4	22	12	9	19	161	24	18	107	30	26	24
29	4.4	20	15	7	-------	190	22	21	107	20	26	22
30	3.9	21	15	8	-------	210	16	11	180	18	26	16
31	3.4	-------	12	8	-------	180	-------	16	-------	26	25	-------

NOTE.—Stage-discharge relation affected by ice Dec. 25 to Feb. 3 and Feb. 15 to Mar. 1; discharge based on gage heights corrected for effect of ice and by comparison with records at other stations in the vicinity. Water-stage recorder not in operation Dec. 11–18, Mar. 8, 11, Apr. 17, June 1, 7, 21, 26–28, and July 4; discharge estimated.

Monthly discharge of Sip Pond Brook near Winchendon, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 18.8 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	12	1.7	3.67	0.195	0.22
November	22	3.2	11.4	.606	.68
December	30	9	19.7	1.05	1.21
January	17	7	12.0	.638	.74
February	24	8	14.4	.766	.80
March	210	10	713	3.79	4.37
April	220	16	103	5.48	6.11
May	161	11	39.9	2.12	2.44
June	230	15	69.9	3.72	4.15
July	190	18	57.0	3.03	3.49
August	28	9.6	18.3	.973	1.12
September	42	11	22.5	1.20	1.34
The year	230	1.7	3.69	1.96	26.67

PRIEST BROOK NEAR WINCHENDON, MASS.

LOCATION.—At highway bridge 3 miles above confluence of Priest Brook with Millers River and 3½ miles west of Winchendon, Worcester County.

DRAINAGE AREA.—18.8 square miles.

RECORDS AVAILABLE.—May 25, 1916, to September 30, 1917, and July 18, 1918, to September 30, 1922.

GAGE.—Sloping staff on left bank 200 feet below bridge; read by R. D. Hutchinson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel above the station is straight with fairly uniform section and gravel bottom. Control is formed by the foundation of an old dam 30 feet below the gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.6 feet at 7 a.m. June 30 (discharge, by extension of rating curve, 356 second-feet); minimum stage 2.50 feet at 7 a. m. October 10 (discharge, 2.2 second-feet).

Maximum stage during the periods May 25, 1916, to September 30, 1917, and July 18, 1918, to September 30, 1922, estimated as 6.5 feet (water over top of gage) at 7 a. m. March 28, 1919 (discharge, by extension of rating curve, 700 second-feet); minimum stage recorded during periods, 2.02 feet at 8 a. m. August 21, 1921 (approximate discharge, 0.4 second-foot.)

ICE.—Brook freezes over at gage but usually remains open at control; stage-discharge relation occasionally affected.

REGULATION.—Flow not appreciably affected by regulation.

ACCURACY.—Stage-discharge relation has changed at infrequent intervals. Rating curves used well defined between 1 and 150 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height with corrections for ice during winter. Records good.

Discharge measurements of Priest Brook near Winchendon, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 16	W. E. Armstrong	[a]3.05	11.8	July 5	Jones and Armstrong	3.97	109
Apr. 5	do	3.82	94	5	do	3.96	107
5	do	3.82	92	Aug. 2	do	2.91	13.6
May 1	do	3.11	24.4				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Priest Brook near Winchendon, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	6.8	4.3	22	18	8	17	110	31	23	215	24	15
2	4.1	11	25	14	8	15	118	23	15	170	20	13
3	4.8	8.6	45	13	18	13	98	20	35	111	31	13
4	5.0	9.4	47	11	55	12	90	24	39	123	17	15
5	4.3	11	43	12	40	13	94	84	29	115	15	17
6	3.8	6.2	45	14	40	14	97	164	29	176	17	17
7	3.3	6.2	31	16	34	20	118	134	25	70	29	18
8	3.3	6.5	26	15	31	75	115	139	27	59	37	23
9	4.8	7.4	26	12	23	139	179	93	21	66	34	19
10	3.3	11	22	15	21	146	185	51	18	79	49	15
11	8.6	10	19	11	19	120	192	44	25	66	15	11
12	4.8	10	20	11	19	106	222	77	28	54	11	12
13	5.2	7.7	22	11	18	41	176	77	53	45	12	15
14	4.1	13	19	12	13	87	152	62	36	20	10	14
15	5.2	12	18	13	15	50	150	31	24	23	7.7	21
16	8.6	18	15	14	9	115	139	38	21	21	5.8	41
17	4.1	91	17	12	6	51	132	20	21	20	5.1	36
18	2.9	84	47	12	8	88	132	19	31	20	10	37
19	2.8	27	62	10	6	77	138	66	62	63	9.0	29
20	7.7	55	50	10	9	74	102	102	145	75	6.8	21
21	15	109	59	12	9	88	98	110	230	30	6.8	24
22	7.4	72	61	13	9	94	84	56	340	24	11	12
23	6.2	24	33	13	13	98	66	47	245	32	8.0	4.8
24	5.0	22	26	13	18	106	62	49	222	45	8.7	3.9
25	5.0	21	25	12	20	102	53	23	268	51	9.8	4.8
26	5.0	21	23	10	18	107	44	23	260	41	17	4.4
27	5.0	20	22	11	15	152	47	18	245	28	24	4.1
28	5.0	17	20	11	16	182	36	18	173	26	30	3.9
29	5.0	24	18	9	-------	142	30	54	192	27	41	3.6
30	4.8	25	20	7	-------	192	26	25	316	24	44	3.4
31	4.3	-------	17	8	-------	139	-------	22	-------	20	32	-------

NOTE—Stage-discharge relation affected by ice Dec. 26-28, Jan. 3-19, 25-31, Feb. 1-2, 8-23, and Mar. 2-6; discharge for these periods based on gage heights corrected for effect of ice.

Monthly discharge of Priest Brook near Winchendon, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 18.8 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	15	2.8	5.33	0.284	0.33
November	109	4.3	25 5	1.36	1.52
December	62	15	30.5	1.62	1.87
January	18	7	12.1	.644	.74
February	55	6	18.5	.984	1.02
March	192	12	86.3	4.59	5.29
April	222	26	110	5.85	6.53
May	164	18	56.3	2.99	3.45
June	340	15	107	5.69	6.35
July	215	20	62.5	3.32	3.83
August	49	5.1	19.3	1.03	1.19
September	41	3.4	15.7	.835	.93
The year	340	2.8	45.7	2.43	33.05

EAST BRANCH OF TULLY RIVER NEAR ATHOL, MASS.

LOCATION.—At highway bridge half a mile below mouth of Lawrence Brook and 3½ miles north of Athol, Worcester County.

DRAINAGE AREA.—50.2 square miles.

RECORDS AVAILABLE.—June 13, 1916, to September 30, 1922.

GAGE.—Vertical staff on downstream side of right abutment; read by W. A. Thompson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Two channels under bridge, one channel above; about 200 feet below the gage the channel is divided by an island; the control sections are formed by rocks and boulders in both channels.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.1 feet at 6 a. m. and 5 p. m. June 22 (discharge, by extension of rating curve, 900 second-feet); minimum stage, 0.46 foot several times during October (discharge, 8.5 second-feet).

1916–1922: Maximum stage recorded, 4.2 feet at 7 a. m. March 29, 1920 (discharge, by extension of rating curve, 1,000 second-feet); minimum stage, 0.22 foot several times during August and September, 1921 (discharge, 2.2 second-feet).

ICE.—River freezes slightly along banks, but stage-discharge relation is seldom affected.

DIVERSIONS.—About one-half mile below the station water is at times diverted through a canal into Packard Pond. The following measurements of this diversion were made by Jones and Armstrong: July 6, 13.1 second-feet; August 2, 7.1 second-feet.

REGULATION.—Flow not seriously affected by regulation.

ACCURACY.—Stage-discharge relation changed during high water of March, 1922. Rating curves well defined below 300 second-feet. Gage read to hundredths twice daily, except from January 1 to March 4, when it was read once daily. Daily discharge ascertained by applying rating table to mean daily gage height. Records good.

Discharge measurements of East Branch of Tully River near Athol, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 5	W. E. Armstrong	2.50	236	July 6	Armstrong and Jones	2.56	247
5	do	2.50	226	Aug. 2	do	1.11	33.3
May 2	do	1.66	83	Oct. 7	Armstrong and Granger	.66	11.7

Daily discharge, in second-feet, of East Branch of Tully River near Athol, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	10	13	72	51	32	48	330	85	25	560	40	55
2	13	22	68	45	46	43	259	85	24	420	34	38
3	13	28	163	43	76	37	242	85	31	312	37	32
4	16	26	232	39	88	40	250	99	92	292	49	32
5	12	23	183	42	99	41	242	162	112	271	53	51
6	11	22	149	51	88	49	280	400	91	253	45	47
7	9.2	20	125	60	88	83	334	344	65	211	61	57
8	8.5	19	78	60	76	210	354	271	42	168	117	59
9	8.8	18	58	56	69	295	440	215	32	189	134	44
10	8.5	19	62	58	55	344	460	166	29	195	78	36
11	9.8	23	56	51	48	312	480	134	63	164	78	31
12	11	24	51	46	48	279	480	115	174	129	50	28
13	12	28	50	43	42	292	440	100	174	75	42	36
14	11	28	46	46	42	240	348	86	134	79	34	40
15	9.8	32	40	40	39	282	302	75	80	65	31	40
16	9.8	38	35	40	36	302	344	63	66	53	25	134
17	9.2	45	35	39	36	312	312	55	43	42	21	137
18	8.5	74	71	39	36	306	292	61	60	37	18	112
19	10	93	323	36	36	183	274	130	271	115	22	76
20	17	109	279	36	35	193	250	239	420	139	27	59
21	45	132	260	39	40	323	218	215	440	103	25	45
22	41	115	212	37	43	298	202	170	900	73	21	38
23	32	86	100	42	43	260	174	136	675	53	17	33
24	26	67	83	39	51	248	145	91	500	96	20	25
25	22	59	74	39	56	246	124	69	480	124	26	20
26	18	56	67	40	55	273	110	63	605	114	38	19
27	15	51	64	39	46	389	108	54	500	95	65	18
28	14	56	63	39	45	485	85	45	362	84	87	17
29	13	69	54	35	-------	560	82	40	280	90	130	16
30	12	69	54	35	-------	560	83	35	560	73	108	14
31	12	-------	50	34	-------	420	-------	28	-------	58	78	-------

Monthly discharge of East Branch of Tully River near Athol, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 50.2 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	45	8.5	15.1	0.301	0.35
November	132	13	48.8	.972	1.08
December	323	35	105	2.09	2.41
January	60	34	43.2	.861	.99
February	99	32	53.4	1.06	1.10
March	560	37	257	5.12	5.90
April	480	82	268	5.34	5.96
May	400	28	126	2.51	2.89
June	900	24	244	4.86	5.42
July	560	37	153	3.05	3.52
August	134	17	52.0	1.04	1.20
September	137	14	46.3	.922	1.03
The year	900	8.5	118	2.35	31.85

MOSS BROOK AT WENDELL DEPOT, MASS.

LOCATION.—One-fourth mile above confluence with Millers River and one-fourth mile from Wendell Depot, Franklin County.

DRAINAGE AREA.—12.2 square miles.

RECORDS AVAILABLE.—June 7, 1916, to September 30, 1922. From June 4 to October 16, 1909, records were obtained at a station near the mouth of the stream, and from April 25 to August 27, 1910, at a weir a short distance below the present location.

GAGE.—Sloping staff on left bank; read by M. C. Eno.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Channel composed principally of ledge rock and boulders; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded during year, 3.8 feet at 7.45 a. m. June 22 (discharge, by extension of rating curve, 190 second-feet); minimum stage, 1.02 feet October 19 (discharge, 2.0 second-feet).

1916–1922: Maximum stage recorded, 3.8 feet on March 28, 1919, and June 22, 1922 (discharge, by extension of rating curve, 190 second-feet); minimum stage, 0.85 foot at 9 a. m. August 26, 1918 (discharge, 0.9 second-foot).

ICE.—Stage-discharge relation slightly affected by ice for short periods.

REGULATION.—Flow not affected by regulation.

ACCURACY.—Stage-discharge relation practically permanent throughout year, except when affected by ice. Rating curve well defined below 70 second-feet. Gage read to hundredths twice daily, except from January 1 to March 15, when it was read once daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice during some days in the winter. Records good.

Discharge measurements of Moss Brook at Wendell Depot, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 17	W. E. Armstrong	1.50	8.4	Aug. 1	Armstrong and Jones	1.46	9.4
Feb. 17	do	1.50	8.2	1	do	1.46	10.8
Apr. 4	do	2.35	64				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Moss Brook at Wendell Depot, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	9.7	3.7	39	13	4	9	68	22	10	79	14	9.0
2	5.1	11	33	12	6	9	63	20	11	73	12	8.5
3	3.2	15	63	10	12	9	61	19	21	90	11	7.6
4	2.9	12	62	8	20	8	68	25	30	63	9.7	15
5	2.7	6.8	58	12	28	12	70	159	20	70	9.0	25
6	2.7	6.0	51	15	31	17	86	159	14	61	11	16
7	2.3	5.3	44	16	27	27	103	76	10	52	14	13
8	2.3	4.9	37	16	16	156	106	68	9	37	18	10
9	3.8	4.6	32	16	16	154	116	55	8	45	15	9.0
10	3.3	8.2	21	15	15	88	111	45	12	40	10	8.5
11	2.9	16	17	12	14	83	94	37	13	30	9.0	7.4
12	5.3	14	16	11	14	75	106	32	79	25	8.2	9.7
13	4.1	11	16	10	13	68	91	30	48	20	12	28
14	3.7	9.7	16	8	12	70	70	28	24	19	10	20
15	3.2	20	24	8	12	82	75	24	19	15	7.6	13
16	2.9	16	88	8	11	77	72	21	16	13	6.3	49
17	2.6	34	76	8	8	72	66	19	15	12	5.7	38
18	2.2	33	68	7	8	68	81	25	46	12	21	16
19	2.0	25	94	8	8	61	65	69	152	49	14	14
20	16	38	82	9	10	59	61	75	100	24	9.7	12
21	24	33	73	8	10	86	51	61	92	21	7.4	12
22	20	27	68	7	12	76	45	40	184	18	5.1	11
23	8.5	24	67	6	13	72	41	30	108	12	4.4	9.7
24	4.3	22	73	6	16	66	36	22	78	37	27	8.5
25	3.4	20	64	6	16	65	34	23	106	35	18	8.5
26	3.3	15	48	6	12	63	32	27	123	27	16	7.6
27	2.9	23	42	6	14	108	30	22	76	24	20	7.4
28	2.9	37	27	6	14	132	28	17	68	37	30	6.8
29	2.9	42	23	5	-------	147	23	16	78	30	30	5.7
30	2.8	47	19	5	-------	125	22	14	143	22	16	5.7
31	2.7	-------	16	5	-------	97	-------	11	-------	16	12	-------

NOTE.—Stage-discharge relation affected by ice Dec 27-31, Jan 3-5, 14-19, 22-31, Feb 1-2, 17-19, 27-28, and Mar. 1-4; discharge based on gage heights corrected for effect of ice.

Monthly discharge of Moss Brook at Wendell Depot, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 12.2 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	24	2.0	5.18	0.425	0.49
November	47	3.7	19.5	1.60	1.78
December	94	16	47.0	3.85	4.44
January	16	5	9.29	.761	.88
February	31	4	14.0	1.15	1.20
March	156	8	72.3	5.93	6.84
April	116	22	65.8	5.39	6.01
May	159	11	41.6	3.41	3.93
June	184	8.5	57.1	4.68	5.22
July	90	12	35.7	2.93	3.38
August	30	4.4	13.3	1.09	1.26
September	49	5.7	13.7	1.12	1.25
The year	184	2.0	33.0	2.70	36.68

DEERFIELD RIVER AT CHARLEMONT, MASS.

LOCATION.—One mile below village of Charlemont, Franklin County.

DRAINAGE AREA.—362 square miles.

RECORDS AVAILABLE.—June 19, 1913, to September 30, 1922.

GAGES.—Friez water-stage recorder on left bank, referenced to gage datum by a hook gage inside well; an inclined staff gage is used for auxiliary readings. Recorder inspected by E. F. Spear.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel covered with coarse gravel and boulders; fairly uniform section; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 10.70 feet at 2.40 a. m., April 12 (discharge, by extension of rating curve, 21,000 second-feet); minimum stage from water-stage recorder, 1.50 feet from midnight to 4.15 a. m., October 17 (discharge, 48 second-feet, water held back by dams at power stations above the gage).

1913–1922: Maximum stage recorded, 15.7 feet on July 8, 1915 (discharge, by extension of rating curve, 45,000 second-feet); minimum stage, 0.70 foot on June 17, 1921 (discharge, practically nil, water held back by dams).

ICE.—River usually frozen over during the greater part of the winter; ice jams occasionally form below the gage causing several feet of backwater.

REGULATION.—Flow during low and medium stages largely regulated by a storage reservoir at Somerset, Vt. Several power plants above the station cause diurnal fluctuation.

ACCURACY.—Stage-discharge relation practically permanent, except when affected by ice. Rating curve well defined below 10,000 second-feet. Operation of water-stage recorder satisfactory except for short intervals as shown in footnote to daily-discharge table. Daily discharge during open-water period ascertained by discharge integrator; during remainder of year by applying rating table to mean daily gage height from recorder sheets with corrections for effect of ice. Records good.

Discharge measurements of Deerfield River at Charlemont, Mass., during the year ending Sept. 30, 1922.

[Made by W. E. Armstrong.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Feb. 19	[a] 6.91	240
Apr. 3	3.08	931

[a] Stage-discharge relation affected by ice.

Daily discharge, in second feet, of Deerfield River at Charlemont, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	370	240	530	360	400	370	1,700	680	290	480	430	480
2	142	450	600	260	600	400	1,320	560	285	245	465	360
3	335	380	3,060	440	1,150	440	1,240	445	540	480	610	305
4	420	350	1,840	560	1,150	440	1,220	580	4,520	270	475	310
5	395	285	1,060	720	720	310	1,140	5,100	1,480	460	192	590
6	370	112	680	1,150	640	500	1,660	3,550	840	420	100	430
7	210	210	540	1,050	600	760	2,000	1,840	640	340	810	475
8	62	235	480	540	540	2,200	7,900	1,700	440	285	990	460
9	138	285	445	600	500	2,200	6,650	1,150	335	150	660	435
10	300	290	400	720	500	1,750	7,300	830	460	270	435	285
11	420	275	370	560	500	1,450	9,400	740	4,000	300	415	435
12	140	285	445	540	340	1,150	12,600	660	3,750	270	350	560
13	360	190	400	560	440	1,200	4,450	570	1,700	210	180	530
14	320	270	370	600	470	1,450	2,550	500	890	220	425	500
15	250	250	355	240	370	2,200	3,550	430	650	108	380	480
16	90	240	310	500	400	2,200	3,100	430	540	92	395	960
17	260	460	310	540	370	1,650	3,300	400	550	250	400	405
18	220	2,040	2,160	560	310	1,200	6,050	540	640	375	380	455
19	210	2,700	2,300	600	340	1,250	4,250	8,430	1,600	530	125	490
20	470	3,300	960	600	440	1,450	2,300	5,000	1,000	450	70	470
21	690	1,840	780	470	440	1,750	1,600	2,050	2,150	320	350	425
22	410	1,080	370	310	440	1,450	1,300	1,360	2,500	148	425	420
23	170	840	450	470	400	1,150	1,050	920	1,400	118	400	305
24	240	370	500	470	600	1,150	1,010	720	870	445	475	325
25	270	700	430	500	800	1,600	880	570	710	500	530	360
26	220	470	360	540	640	2,700	830	600	680	455	1,300	395
27	180	260	450	500	540	5,550	810	600	570	470	730	388
28	220	920	540	470	440	6,400	800	435	520	465	770	370
29	200	650	640	370	-------	11,300	790	470	560	240	710	375
30	84	620	600	400	-------	5,400	470	320	670	92	520	325
31	200	-------	540	440	-------	2,400	-------	370	-------	400	510	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Mar. 24; discharge for this period based on gage heights corrected for effect of ice by discharge measurements, observer's notes, weather records, and comparisons with power plant records at New England Power Co.'s plant No. 4 at Shelburne Falls.
Water-stage recorder not in operation Apr. 27, 28, and Aug. 1; discharge estimated.

Monthly discharge of Deerfield River at Charlemont, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 362 square miles.]

Month.	Observed discharge (in second-feet).			Gain or loss in storage at Somerset, Vt. (millions of cubic-feet).	Discharge corrected for storage (second-feet).		Corrected run-off in inches.
	Maximum.	Minimum.	Mean.		Mean.	Per square mile.	
October	690	62	270	−151	214	0.591	0.68
November	3,300	112	691	+63	715	1.98	2.21
December	3,060	310	751	+169	814	2.25	2.59
January	1,150	240	537	−432	376	1.04	1.20
February	1,150	310	539	−112	493	1.36	1.42
March	11,300	310	2,110	+298	2,220	6.13	7.07
April	12,600	470	3,110	+819	3,430	9.48	10.58
May	8,430	320	1,370	+321	1,490	4.12	4.75
June	4,520	285	1,190	+231	1,280	3.54	3.95
July	530	92	318	−252	224	.619	.71
August	1,300	70	484	−410	331	.914	1.05
September	960	285	437	−604	204	.564	.63
The year	12,600	62	984	−60	982	2.71	36.84

NOTE.—The increase or decrease of water held in storage at Somerset, Vt., during the month computed by engineers of the Geological Survey from data of storage increase or decrease furnished by the company operating the reservoir.

WARE RIVER AT GIBBS CROSSING, MASS.

LOCATION.—Between highway and electric railway bridges at Gibbs Crossing, Hampshire County, three-quarters of a mile above mouth of Beaver Brook and 3 miles below Ware.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—August 20, 1912, to September 30, 1922.

GAGES.—Water-stage recorder on right bank referred to gage datum by a hook gage inside of well; an inclined staff gage is used for auxiliary readings. Recorder inspected by Marion G. Moore.

DISCHARGE MEASUREMENTS.—Made from electric railway bridge or by wading.

CHANNEL AND CONTROL.—Channel rough and subject to growth of aquatic vegetation during summer. Control free from weeds and at ordinary stages well defined at a section near gage; shifts occasionally; at high stages, control is probably at the dam at Thorndike, 4 miles below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 5.33 feet at 10 a. m., March 8 (discharge, 2,480 second-feet); minimum stage, from water-stage recorder, 1.32 feet at 9 a. m., October 30 (discharge, 21 second-feet; water held back by dams).

1912–1922: Maximum open-water stage recorded, 6.00 feet on March 27, 1920 (discharge, 2,820 second-feet); minimum stage, 1.20 feet on October 26, 1914 (discharge, 5 second-feet; water held back by dams).

ICE.—River usually freezes over, and the stage-discharge relation is affected by ice during most winters.

REGULATION.—Flow affected by operation of mills at Ware, which at low stages causes a large variation in discharge on days when the mills are in operation, and a low discharge on Sundays and holidays.

ACCURACY.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,800 second-feet, and fairly well defined below 2,700 second-feet. Operation of water-stage recorder satisfactory throughout the year, except for period indicated in footnote to daily-discharge table. Daily discharge October 1 to December 22, February 21 to May 13, and August 17 to September 30, ascertained by use of discharge integrator; during remainder of year by applying rating table to mean daily gage height with corrections for effect of ice. Records good.

Discharge measurements of Ware River at Gibbs Crossing, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 6	W. E. Armstrong	2.35	240	May 18	Jones and Armstrong	2.60	369
Dec. 23	do	[a] 2.94	445	18	do	2.64	369
Jan. 25	do	[a] 3.79	299	June 14	W. E. Armstrong	2.78	435
Feb. 21	do	2.66	415	Aug. 17	do	2.20	180
Apr. 7	do	3.81	1,230				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Ware River at Gibbs Crossing, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	32	89	375	185	96	210	930	295	195	1,000	288	235
2	23	104	390	260	195	196	810	265	200	732	250	150
3	62	67	910	300	330	186	820	270	172	708	235	110
4	138	64	1,020	300	270	140	900	275	154	1,450	230	225
5	70	84	740	260	210	205	910	690	188	1,600	210	445
6	104	48	540	230	185	295	1,100	1,400	225	1,330	170	390
7	58	97	430	230	180	710	1,240	1,180	225	1,100	295	305
8	58	91	355	220	190	2,250	1,300	1,060	166	869	210	275
9	22	98	315	210	190	1,440	1,460	800	118	772	170	215
10	102	120	250	150	190	1,200	1,360	590	134	672	160	180
11	98	55	215	150	165	980	1,220	480	102	524	150	220
12	28	150	285	185	175	800	1,140	435	630	415	135	280
13	96	90	280	220	175	770	1,090	365	720	400	105	240
14	88	138	245	230	175	800	920	305	461	400	130	240
15	76	168	225	240	145	860	950	285	345	375	120	220
16	27	178	182	240	145	830	1,080	265	272	288	120	174
17	95	215	134	220	150	700	920	285	206	313	120	200
18	47	295	315	200	155	590	940	285	232	288	146	265
19	43	270	910	145	155	500	860	470	595	461	176	240
20	100	245	710	165	185	740	740	650	878	574	215	190
21	116	345	570	145	270	1,440	650	620	878	425	265	182
22	102	300	445	155	270	1,180	580	555	1,400	318	225	128
23	112	230	360	160	280	970	530	430	1,170	244	152	83
24	140	180	300	160	320	820	510	320	986	360	130	86
25	100	240	260	165	275	780	485	310	1,090	318	128	174
26	85	176	250	155	220	710	430	280	1,320	292	104	164
27	83	200	260	100	245	830	410	174	887	264	148	138
28	45	360	220	115	235	970	370	220	756	304	325	136
29	30	500	175	100	-------	1,140	300	230	1,040	567	390	116
30	25	425	160	98	-------	1,160	285	165	1,340	450	335	76
31	49	-------	145	96	-------	1,040	-------	270	-------	350	280	-------

NOTE.—Stage-discharge relation affected by ice Dec. 23 to Jan. 15, Jan. 22 to Feb. 10, and Feb. 13–20; discharge for these periods based on gage heights corrected for effect of ice.
Water-stage recorder not in operation Aug. 2–16; discharge for this period estimated by comparison with records of Swift and Quaboag rivers.

Monthly discharge of Ware River at Gibbs Crossing, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 201 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	140	22	727	0.362	0.42
November	500	48	187	.930	1.04
December	1,020	134	386	1.92	2.21
January	300	96	187	.930	1.07
February	330	96	206	1.02	1.06
March	2,250	140	821	4.08	4.70
April	1,460	285	842	4.19	4.68
May	1,400	174	462	2.30	2.65
June	1,400	102	570	2.84	3.17
July	1,600	244	586	2.92	3.37
August	390	104	197	.980	1.13
September	445	76	203	1.01	1.13
The year	2,250	22	394	1.96	26.63

SWIFT RIVER AT WEST WARE, MASS.

LOCATION.—1,000 feet below old wooden dam opposite West Ware station of Boston & Albany Railroad, Hampshire County, 6 miles downstream from Enfield, and 3 miles below confluence of East and West branches of Swift River.

DRAINAGE AREA.—186 square miles.

RECORDS AVAILABLE.—July 15, 1910, to September 30, 1922.

GAGES.—Gurley seven-day water-stage recorder on left bank, referenced to gage datum by hook gage inside of well; an inclined staff is used for auxiliary readings. Recorder inspected by H. S. Davis.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Gravel and alluvial deposits; some aquatic vegetation in channel during summer. Control has shifted slightly at various times, the greatest change occurring during the high water of April 3, 1916, when dam above the gage was washed out; at high stages the control is probably at the dam at Bondsville, 4 miles below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, approximately 8.0 feet at about 7 a. m. July 1 (discharge, by extension of rating curve, 1,960 second-feet); minimum stage, from water-stage recorder, 1.98 feet at 6 a. m. October 12 (discharge, 79 second-feet).

1910–1922: Maximum discharge recorded, 2,340 second-feet (by extension of rating curve) on September 28, 1920; minimum discharge recorded, 22 second-feet on September 22, 1914.

ICE.—River usually freezes over, and the stage-discharge relation is affected by ice during most winters.

REGULATION.—Operation of mills at Enfield 6 miles above the station has at times affected the distribution of flow at low and medium stages; not seriously affected during present year.

ACCURACY.—Stage-discharge relation changed at infrequent intervals; practically permanent during present year. Rating curve well defined between 100 and 1,500 second-feet. Operation of water-stage recorder satisfactory throughout the year. Daily discharge ascertained by applying rating table to mean daily gage height determined by inspection of gage-height graph, with corrections for effect of ice. Records good.

Discharge measurements of Swift River at West Ware, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 23	W. E. Armstrong	[a] 3.99	330	Apr. 8	W. E. Armstrong	5.66	1,060
Jan. 26	do	[a] 3.01	135	May 18	Jones and Armstrong	3.23	300
Feb. 22	do	[a] 3.48	219	Aug. 17	W. E. Armstrong	2.51	149

[a] Stage-discharge relation affected by ice.

NOTE.—Stage-discharge relation affected by ice Dec. 23 to Mar. 8; discharge for this period based on gage heights corrected for effect of ice.

Daily discharge, in second-feet, of Swift River at West Ware, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	121	112	520	212	130	146	860	323	210	1,900	334	230
2	115	133	492	212	255	138	745	334	208	1,560	323	204
3	104	138	679	202	334	130	700	323	222	1,160	288	186
4	109	136	822	202	358	122	700	346	300	1,060	266	210
5	115	131	822	192	358	146	715	640	311	965	248	323
6	109	131	676	192	346	182	790	982	300	982	226	346
7	104	122	542	212	323	346	895	1,080	266	860	198	323
8	104	122	423	212	277	895	1,040	930	235	700	200	288
9	107	130	344	192	233	1,200	1,160	775	208	685	186	242
10	106	150	305	182	212	1,120	1,180	655	198	612	178	214
11	94	151	277	173	202	912	1,040	556	242	528	173	198
12	84	146	266	173	192	760	930	486	473	473	165	206
13	97	153	266	164	182	700	860	446	700	433	169	233
14	103	158	251	155	173	655	775	407	612	433	160	244
15	107	182	222	155	164	685	775	382	486	395	164	244
16	112	184	230	146	164	175	808	346	407	370	156	246
17	106	206	208	146	155	670	825	311	334	334	151	277
18	98	244	323	146	155	584	808	311	334	323	140	300
19	104	259	542	146	138	514	760	473	446	420	156	300
20	128	291	626	155	182	598	700	598	700	446	196	266
21	155	323	570	155	212	790	626	612	912	382	214	224
22	145	316	446	146	222	895	556	556	1,240	346	200	204
23	145	282	311	146	222	842	500	473	1,560	311	174	184
24	136	248	277	146	233	745	473	407	1,360	311	164	165
25	131	218	255	138	202	685	446	346	1,300	311	173	162
26	128	220	244	138	182	655	420	323	1,500	300	182	155
27	127	239	233	130	182	685	395	300	1,640	288	222	148
28	125	339	233	130	173	790	370	277	1,300	370	277	145
29	121	495	233	130	------	965	346	255	1,220	514	346	141
30	121	528	222	130	------	1,040	334	239	1,700	486	323	140
31	112	------	222	138	------	982	------	220	------	407	277	------

Monthly discharge of Swift River at West Ware, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 186 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	155	84	115	0.618	0.71
November	528	112	216	1.16	1.29
December	822	208	390	2.10	2.42
January	212	130	164	.882	1.02
February	358	130	220	1.18	1.23
March	1,200	122	655	3.52	4.06
April	1,180	334	718	3.86	4.31
May	1,080	220	475	2.55	2.94
June	1,700	198	697	3.75	4.18
July	1,900	288	602	3.24	3.74
August	346	140	214	1.15	1.33
September	346	140	225	1.21	1.35
The year	1,900	84	392	2.11	28.58

QUABOAG RIVER AT WEST BRIMFIELD, MASS.

LOCATION.—At two-span highway bridge near West Brimfield station of Boston & Albany Railroad, Hampden County, one-third mile above mouth of Blodgett Mill Brook.

DRAINAGE AREA.—150 square miles.

RECORDS AVAILABLE.—August 23, 1909, to September 30, 1922.

GAGES.—Gurley seven-day water-stage recorder at downstream end of center pier of bridge, referenced to gage datum by means of a hook gage inside the well; a vertical staff on upstream side of right abutment of bridge is used for auxiliary readings. Recorder inspected by Mrs. G. G. Allen.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Stream bed covered with boulders, gravel, and alluvial deposits; slight shifts in control have occurred at various times.

EXTREMES OF DISCHARGE.—Maximum open-water stage during year from water-stage recorder, 4.7 feet at 10 p. m. March 7 (discharge, 1,680 second-feet); a stage of 5.5 feet occurred at 9 a. m. January 4, but the channel was obstructed by ice. Minimum stage from water-stage recorder, 1.76 feet at 5.30 a. m. November 1, when water was held back by dams (discharge, by extension of rating curve, 9 second-feet).

1909–1922: Maximum open-water stage recorded, 5.3 feet at noon March 17, 1920 (discharge, 1,980 second-feet); minimum stage, 1.40 feet on September 17 and 18, 1910, when water was held back by dams (discharge, 2.5 second-feet).

ICE.—River usually freezes over, and the stage-discharge relation is affected during most winters.

REGULATION.—Flow affected by operation of power plants at West Warren, 3 miles above station which at low stages causes a large variation in discharge on days when the mills are in operation and a low discharge on Sundays and holidays.

ACCURACY.—Stage-discharge relation has changed slightly at various times. Rating curves well defined for periods used. Operation of water-stage recorder, satisfactory throughout year. Daily discharge for open-water periods ascertained by discharge integrator, and during winter by applying rating table to mean daily gage height corrected for effect of ice. Records good.

Discharge measurements of Quaboag River at West Brimfield, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 6	W. E. Armstrong	2.58	189	Jan. 25	W. E. Armstrong	[a] 3.76	105
Nov. 11	do	2.10	53	Feb. 23	do	[a] 3.74	235
11	do	2.14	57	Mar. 27	do	3.38	601
16	do	2.43	131	Apr. 8	do	3.58	760
19	do	2.62	198	May 17	Armstrong and Jones	2.98	375
19	do	2.56	166	June 15	W. E. Armstrong	2.46	159
Dec. 24	do	[a] 3.31	253	Aug. 17	do	2.51	168

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	70	59	225	185	76	110	670	320	150	285	205	205
2	50	72	235	180	250	110	640	300	138	275	196	194
3	81	58	430	220	250	135	660	300	152	290	184	188
4	60	65	375	240	250	250	680	340	174	415	180	320
5	64	39	365	210	210	470	670	600	152	440	180	325
6	60	40	335	180	210	690	660	630	140	455	180	290
7	43	71	260	175	195	840	670	610	134	425	172	280
8	64	48	260	185	175	970	720	570	128	415	174	270
9	66	55	250	160	175	850	760	550	126	430	166	270
10	80	55	270	135	145	820	740	530	122	390	160	265
11	65	81	275	115	120	730	730	500	152	350	156	250
12	50	77	260	105	120	690	730	460	164	320	156	270
13	79	81	245	145	110	660	650	435	144	305	152	280
14	65	72	220	145	98	620	660	410	158	290	150	260
15	45	81	220	140	86	610	730	375	154	265	142	240
16	64	88	210	135	110	570	720	345	156	255	140	235
17	73	90	270	135	96	530	700	315	144	225	124	225
18	65	108	325	130	86	480	730	305	164	235	128	215
19	57	88	330	115	76	480	670	420	265	280	136	200
20	62	120	335	110	145	590	620	400	250	250	170	194
21	75	128	335	110	145	710	580	365	295	230	154	188
22	54	122	215	100	140	710	590	340	330	205	144	186
23	65	112	220	96	215	690	560	315	305	205	146	174
24	78	114	230	90	300	670	530	290	295	225	142	176
25	68	114	240	80	250	640	490	275	340	200	142	168
26	55	100	210	76	210	620	500	250	340	186	162	152
27	63	144	220	74	210	600	410	225	315	184	235	148
28	57	205	200	76	165	680	380	310	310	196	270	150
29	43	200	210	74	-------	670	365	188	310	280	255	142
30	63	205	200	80	-------	660	340	174	305	250	235	134
31	73	-------	180	80	-------	660	-------	158	-------	220	220	-------

NOTE.—Stage-discharge relation affected by ice Dec. 8–9, 15–16, and Dec. 23 to Mar. 4; discharge for these periods based on gage heights corrected for effect of ice.

Monthly discharge of Quaboag River at West Brimfield, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 150 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	81	43	63.1	0.421	0.49
November	205	39	96.4	.643	.72
December	430	180	263	1.75	2.02
January	240	74	132	.880	1.01
February	300	76	165	1.10	1.14
March	970	110	597	3.98	4.59
April	760	340	619	4.13	4.61
May	630	158	371	2.47	2.85
June	340	122	210	1.40	1.56
July	455	184	290	1.93	2.22
August	270	124	173	1.15	1.33
September	325	134	220	1.53	1.71
The year	970	39	267	1.78	24.25

WESTFIELD RIVER AT KNIGHTVILLE, MASS.

LOCATION.—At single-span steel highway bridge known locally as Pitcher Bridge, in Knightville, Hampshire County, 1 mile north of outlet of Norwich Lake and 3 miles above confluence with Middle Branch of Westfield River.

DRAINAGE AREA.—162 square miles.

RECORDS AVAILABLE.—August 26, 1909, to September 30, 1922.

GAGE.—Chain attached to downstream side of highway bridge; read by J. A. Burr.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel rough, covered with boulders and ledge rock; control permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.2 feet at 7 a. m. May 19 (discharge, by extension of rating curve, 4,570 second-feet); minimum stage, 0.98 foot at 7.30 a. m. October 10 and 5.20 p. m. October 11 (discharge, 31 second-feet).

1909–1922: Maximum open-water stage recorded, 9.5 feet on August 4, 1915 (discharge, by extension of rating curve, 8,520 second-feet); minimum stage, 0.60 foot on August 10, 1913 (discharge, 4 second-feet).

ICE.—Ice usually forms in the river early in the winter and seriously affects the stage-discharge relation.

REGULATION.—Flow not seriously affected by regulation.

ACCURACY.—Stage-discharge relation permanent except when affected by ice, although individual discharge measurements have at times appeared erratic; the rough and irregular channel causes difficulty in securing accurate discharge measurements. Rating curve fairly well defined below 3,500 second-feet; revised above 1,400 second-feet on basis of high-water measurements made in March and May, 1922. Gage read to hundredths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height, with corrections for effect of ice. Records good.

Discharge measurements of Westfield River at Knightville, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 20	W. E. Armstrong	[a] 2.10	88	May 20	Jones and Armstrong	4.20	1,570
Mar. 29	do	5.56	3,050	Aug. 19	W. E. Armstrong	1.36	74
29	do	5.62	3,070	Sept. 18	Armstrong and Lamson	1.50	91

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Westfield River at Knightville, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	87	57	350	125	33	185	1,120	225	139	412	258	99
2	61	113	310	125	96	125	910	210	158	310	139	92
3	47	126	1,440	125	350	115	715	207	225	240	173	85
4	40	74	910	125	310	115	812	370	980	275	126	188
5	40	61	412	145	210	125	748	2,360	435	240	99	350
6	40	56	275	185	195	115	780	1,200	240	275	113	202
7	34	52	178	170	185	195	1,280	715	205	188	183	178
8	32	51	153	160	145	2,360	3,570	595	148	153	168	139
9	33	52	148	150	135	910	2,140	568	134	240	136	115
10	31	57	173	125	115	752	1,830	540	144	163	99	104
11	31	87	188	105	105	625	1,930	390	595	121	84	89
12	54	82	186	88	115	512	3,060	310	1,200	109	67	240
13	49	89	202	82	100	540	1,630	258	460	106	100	292
14	49	99	183	82	82	845	980	240	275	95	76	173
15	42	134	202	72	80	1,280	1,930	210	240	87	61	134
16	38	123	258	68	74	1,080	2,140	194	225	82	49	144
17	32	202	330	62	68	540	945	168	194	74	48	113
18	32	460	1,360	58	56	370	1,280	225	330	67	47	92
19	43	275	845	68	50	330	1,050	4,090	390	191	63	77
20	64	460	655	82	64	1,120	845	1,830	310	141	64	79
21	49	292	210	88	50	1,200	715	910	3,180	99	56	76
22	76	207	121	68	88	460	540	568	1,630	77	49	73
23	64	165	111	47	145	655	460	460	845	82	99	68
24	55	148	220	44	195	655	412	390	460	126	134	61
25	48	134	185	44	210	945	370	310	715	126	191	56
26	40	134	170	47	210	1,540	310	330	485	106	390	54
27	40	144	165	44	220	2,140	310	275	435	92	292	52
28	38	715	165	44	230	2,580	275	240	275	106	330	54
29	37	540	145	39	------	2,940	258	210	460	89	292	52
30	37	370	135	35	------	2,140	240	196	625	82	170	51
31	38	------	135	34	------	1,200	------	158	------	102	109	------

NOTE.—Stage-discharge relation affected by ice Dec. 24 to Mar. 7; discharge for this period based on gage heights corrected for effect of ice.

Monthly discharge of Westfield River at Knightville, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 162 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	158	31	45.2	0.279	0.32
November	715	51	185	1.14	1.27
December	1,440	111	339	2.09	2.41
January	185	34	88.3	.545	.63
February	350	33	140	.864	.90
March	2,940	115	924	5.70	6.57
April	3,570	240	1,120	6.91	7.71
May	4,090	158	611	3.77	4.35
June	3,180	134	538	3.32	3.70
July	412	67	150	.926	1.07
August	390	47	137	.846	.98
September	350	51	119	.735	.82
The year	4,090	31	367	2.27	30.73

WESTFIELD RIVER NEAR WESTFIELD, MASS.

LOCATION.—At Trap Rock Crossing, 1 mile below mouth of Big Brook, 2 miles below mouth of Westfield Little River, and 3 miles east of Westfield, Hampden County.

DRAINAGE AREA.—496 square miles.

RECORDS AVAILABLE.—June 27, 1914, to September 30, 1922.

GAGES.—Stevens continuous water-stage recorder on right bank, referenced to gage datum by a hook gage inside of well; an inclined staff gage is used for auxiliary readings. Recorder inspected by Andrew Kelly.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed covered with gravel and alluvial deposits; some aquatic vegetation in channel during summer. Riffle of boulders 200 feet below gage forms control at low and medium stages. At high stages control is probably formed by crest of storage dam at Mittineague, 3 miles below station.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 14.3 feet at 10 a.m. May 19 (discharge, by extension of rating curve, 12,700 second-feet); minimum stage, from water-stage recorder, 2.78 feet at 11.30 a. m. October 2 (discharge, by extension of rating curve, 9 second-feet).

1914–1922: Maximum stage recorded, 17.4 feet on August 4, 1915, and May 22, 1919 (discharge, by extension of rating curve, 17,400 second-feet); minimum stage, 2.78 feet on October 2, 1921 (discharge, by extension of rating curve, 9 second-feet).

ICE.—Stage-discharge relation may be slightly affected by ice for short periods during some winters.

DIVERSIONS.—Water is diverted from Westfield Little River and carried to Springfield for municipal use.

REGULATION.—There are several power plants above the station but the diurnal fluctuation is small; the nearest dam is at Westfield.

ACCURACY.—Stage-discharge relation for low stages subject to slight changes due to effect of aquatic vegetation during summer; not affected by ice. Two rating curves used during the year, both well defined between 100 and 7,500 second-feet. Operation of water-stage recorder was satisfactory except for short periods shown in footnote to daily-discharge table. Daily discharge ascertained by application of rating table to mean daily gage height, as determined from recorder sheets. Records good.

Discharge measurements of Westfield River near Westfield, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 19	W. E. Armstrong	3.88	378	Aug. 18	W. E. Armstrong	3.72	292
24	do	3.72	274	18	do	3.75	288
Mar. 30	do	8.09	3,680	21	do	4.13	390
May 20	Armstrong and Jones	10.02	6,160				

Daily discharge, in second-feet, of Westfield River near Westfield, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	135	211	415	266	262	411	2,080	664	559	1,280	618	292
2	99	144	370	282	370	375	1,820	622	475	1,020	644	284
3	108	111	1,400	402	748	343	1,980	592	605	915	775	284
4	117	120	1,040	286	823	334	2,260	646	572	901	637	276
5	187	187	526	314	640	440	2,080	5,580	1,060	880	782	1,020
6	183	177	334	361	622	706	3,000	4,140	705	866	480	631
7	243	171	232	375	520	1,180	3,430	2,260	631	712	469	458
8	229	168	201	339	480	6,850	5,300	1,860	579	618	618	469
9	194	174	254	352	402	3,000	5,580	1,440	453	943	624	345
10	168	180	314	339	370	2,260	3,900	1,170	396	775	486	284
11	144	190	339	294	330	1,740	4,020	1,020	698	559	401	376
12	144	225	310	310	318	1,470	4,390	894	3,000	480	406	367
13	144	250	298	282	366	1,580	3,000	803	1,250	448	292	880
14	129	290	318	232	361	2,080	2,210	719	775	453	316	644
15	117	294	298	250	302	3,210	3,210	698	650	316	284	464
16	150	302	375	286	282	2,500	3,210	598	546	332	272	386
17	165	290	640	282	294	1,700	2,260	522	522	332	249	332
18	135	239	2,900	270	266	1,320	2,800	859	559	308	235	332
19	117	286	1,860	278	243	1,220	2,300	9,250	1,820	336	341	272
20	85	435	935	278	343	2,120	1,820	5,860	1,360	528	480	249
21	82	393	760	290	440	3,000	1,620	2,800	3,320	426	401	245
22	99	225	730	250	485	2,030	1,440	1,980	4,020	280	341	268
23	144	258	445	334	470	1,580	1,250	1,550	1,940	354	235	228
24	174	406	366	286	526	1,620	1,180	1,280	1,400	1,550	221	264
25	197	318	470	278	658	2,120	1,070	1,100	1,510	922	336	211
26	208	322	406	246	628	2,700	970	1,100	1,470	650	504	225
27	204	366	393	243	526	4,650	900	950	1,060	504	719	194
28	204	515	352	236	418	4,780	816	859	880	453	733	184
29	215	1,440	310	236	-------	7,150	724	740	1,470	624	950	218
30	215	700	366	258	-------	4,390	652	624	1,740	421	592	194
31	211	-------	239	258	-------	2,550	-------	598	-------	421	442	-------

NOTE.—Water-stage recorder not in operation Oct. 10–19, Nov. 6–14, 26, and Dec. 12–17; discharge for these periods estimated by comparisons with records at other stations in the Westfield River basin.

Monthly discharge of Westfield River near Westfield, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 496 square miles.]

Month.	Observed discharge in second-feet.			Diversion from Westfield Little River in millions of gallons.	Total discharge in second-feet.		Run-off in inches.
	Maximum.	Minimum.	Mean.		Mean.	Per square mile.	
October	243	82	160	411.02	181	0.365	0.42
November	1,440	111	313	393.07	333	.671	.75
December	2,900	201	587	393.53	607	1.22	1.41
January	402	236	290	416.37	311	.627	.72
February	823	243	446	361.08	466	.940	.98
March	7,150	334	2,300	358.19	2,320	4.68	5.40
April	5,580	652	2,380	321.64	2,400	4.84	5.40
May	9,250	522	1,730	386.57	1,750	3.53	4.07
June	4,020	396	1,200	394.79	1,220	2.46	2.74
July	1,550	280	632	413.99	653	1.32	1.52
August	950	221	480	403.63	500	1.01	1.16
September	1,020	184	362	403.97	383	.772	.86
The year	9,250	82	909	4,657.85	929	1.87	25.43

NOTE.—The effect of storage in Borden Brook reservoir not taken into account in computing the total discharge.

MIDDLE BRANCH OF WESTFIELD RIVER AT GOSS HEIGHTS, MASS.

LOCATION.—At highway bridge in Goss Heights, Hampshire County, 1½ miles above Huntington and half a mile above confluence of Middle and North branches of Westfield River.

DRAINAGE AREA.—53 square miles.

RECORDS AVAILABLE.—July 14, 1910, to September 30, 1922.

GAGES.—Water-stage recorder on upstream side of bridge abutment on right bank, referenced to gage datum by a hook gage inside of well; an inclined staff is used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Channel covered with coarse gravel and boulders. Control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year, approximately 5.4 feet during high water of May 19 (discharge from extension of rating curve, 2,650 second-feet); minimum stage, from water-stage recorder, 0.77 foot at 4.30 p. m. October 21 (discharge, 14 second-feet).

1910–1922: Maximum open-water stage recorded, 7.33 feet July 8, 1915 (discharge, by extension of rating curve, 4,500 second-feet); a gage height of 7.8 feet was recorded on March 13, 1920, channel obstructed by ice. Minimum discharge, practically zero on October 26–27, 1914.

ICE.—River usually frozen over during the greater part of winter; ice jams occasionally form below gage, causing several feet of backwater.

REGULATION.—Flow affected at times by operation of small power plant 2 miles above station.

ACCURACY.—Stage-discharge relation changed during high water of March, 1922. Rating curves used during year well defined below 1,000 second-feet. Operation of water-stage recorder satisfactory except for short periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying rating table to mean daily gage height determined by inspection of gage-height graph with corrections for effect of ice. Records good for open-water periods and fair during winter.

Discharge measurements of Middle Branch of Westfield River at Goss Heights, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 20	W. E. Armstrong	[a] 1.90	34.3	July 25	J. S. S. Jones	1.07	39.0
Mar. 28	do	3.04	747	Aug. 19	W. E. Armstrong	.97	31.3
28	do	3.10	766	Sept. 18	Armstrong and Lamson	.96	28.6
May 22	Armstrong and Jones	1.78	190				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Middle Branch of Westfield River at Goss Heights, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	20	18	106	46	28	58	227	69	41	106	131	23
2	17	24	106	28	39	48	210	65	44	95	61	22
3	18	25	490	28	90	42	230	63	73	75	65	21
4	17	22	218	36	78	42	242	91	148	75	41	52
5	18	21	132	40	80	39	272	878	85	75	38	71
6	17	18	113	66	58	39	405	384	63	69	34	40
7	17	20	115	76	48	135	405	239	55	53	41	41
8	17	18	163	32	39	980	1,120	192	44	52	63	34
9	17	18	171	31	31	520	748	150	37	85	49	30
10	16	22	137	28	31	248	600	124	40	55	37	28
11	16	20	97	28	31	160	495	111	181	44	30	26
12	17	21	79	54	39	145	545	98	272	39	28	50
13	17	22	72	50	31	165	324	87	104	35	27	58
14	17	22	58	46	31	363	227	83	69	32	27	35
15	16	24	60	48	31	384	472	71	55	30	25	31
16	16	28	72	40	39	251	324	63	49	27	22	33
17	16	48	106	34	31	176	255	58	46	27	21	30
18	16	106	390	29	31	145	324	405	71	27	21	26
19	16	83	221	29	39	150	251	1,930	272	41	27	23
20	21	129	127	39	48	272	204	845	158	39	29	22
21	29	99	127	40	58	306	176	255	655	30	22	22
22	21	64	108	42	58	207	153	178	384	27	19	20
23	17	42	100	31	68	173	138	138	195	28	22	19
24	16	36	110	27	68	218	126	113	138	40	30	18
25	16	36	100	24	90	288	113	100	136	35	44	18
26	16	34	92	31	90	495	104	95	111	32	80	18
27	16	40	70	28	80	685	98	81	85	30	68	17
28	16	221	48	31	68	812	89	71	79	34	78	17
29	15	155	52	28	-------	1,120	81	61	109	38	58	17
30	15	115	36	28	-------	472	75	53	165	35	42	16
31	16	-------	54	23	-------	288	-------	46	-------	41	30	-------

NOTE.—Stage-discharge relation affected by ice Dec. 23 to Mar. 7. Water-stage recorder not in operation Oct. 30, Nov. 13–14, May 19–21, and Aug. 23–31; discharge for these periods estimated means of hydrograph comparisons with records at other stations on Westfield River.

Monthly discharge of Middle Branch of Westfield River at Goss Heights, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 53 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	29	15	17.3	0.326	0.38
November	221	18	51.7	.975	1.09
December	490	36	127	2.40	2.77
January	76	23	36.8	.694	.80
February	90	28	51.9	.979	1.02
March	1,120	39	304	5.74	6.62
April	1,120	75	301	5.68	6.34
May	1,930	46	232	4.38	5.05
June	655	37	132	2.49	2.78
July	106	27	46.8	.883	1.02
August	131	19	42.3	.798	.92
September	71	16	29.3	.553	.62
The year	1,930	15	115	2.17	29.41

WESTFIELD LITTLE RIVER NEAR WESTFIELD, MASS.

LOCATION.—At diversion dam of Springfield waterworks in Russell, 3 miles below confluence of Pebble and Borden brooks and 3 miles west of Westfield, Hampden County. Originally (July, 1905, to December, 1909) a short distance below Borden Brook, near Cobble Mountain.

DRAINAGE AREA.—48.5 square miles.

RECORDS AVAILABLE.—July 13, 1905, to September 30, 1922.

DETERMINATION OF DISCHARGE.—At the original site below Borden Brook (43 square miles, used 1905–1909) the discharge was determined by methods commonly employed at current-meter gaging stations. From August, 1906, to September, 1907, a 30-foot weir was maintained a short distance below gage.

Since March 1, 1910, high-water flow determined from continuous record of head on concrete diversion dam (crest length, 155.4 feet); for which coefficients have been deduced from experiments at Cornell University; low-water flow, less than 163 second-feet, determined from continuous record of head on a 12-foot sharp-crested weir without end contractions, the crest being 2.55 feet below that of the dam. Water diverted to Springfield is measured by a 54-inch Venturi meter, using continuous record chart. Daily record corrected for storage in a reservoir on Borden Brook 5 miles above station, but owing to the time required for water to reach the dam and the natural storage along the stream the record as corrected does not represent exactly the natural flow of the stream at all times.

EXTREMES OF DISCHARGE.—1909–1922: Maximum discharge for 24 hours, 1,940 second-feet, March 13, 1920; minimum discharge apparently zero at various times when the water released from the reservoir was equal to or greater than the total flow at the diversion dam.

DIVERSIONS.—Record of water diverted at station for municipal supply of Springfield included in records as published.

COOPERATION.—Data collected and compiled under the direction of E. E. Lochridge, chief engineer, Board of Water Commissioners, Springfield, Mass.; changed to conform to the computation rules of the United States Geological Survey.

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	(a)	8.56	93.6	19.9	18.9	23.2	201	64.8	45.8	141	89.2	33.1
2	(a)	24.6	93.6	15.0	37.2	23.0	160	57.8	43.6	99.9	95.7	28.4
3	(a)	35.3	86.0	13.1	58.0	29.0	185	55.6	104	73.1	81.5	23.9
4	(a)	26.9	79.6	17.4	35.1	19.3	195	99.4	154	73.8	139	66.6
5	(a)	24.1	71.9	22.4	24.1	38.5	226	851	104	72.7	95.5	74.2
6	(a)	7.73	64.4	28.6	25.1	32.8	348	493	87.2	81.7	66.2	50.9
7	(a)	3.12	45.6	26.4	17.4	414	390	308	75.5	60.3	55.4	43.4
8	(a)	(a)	34.6	30.2	28.4	917	802	251	53.5	54.1	71.6	35.3
9	(a)	(a)	24.9	33.3	23.4	331	556	185	38.7	77.8	59.8	33.6
10	(a)	14.4	35.6	10.7	31.4	237	449	149	37.5	55.4	46.1	30.4
11	(a)	26.2	35.5	3.58	21.9	214	412	127	44.0	45.1	33.5	26.8
12	4.23	31.4	32.2	9.99	21.1	185	342	109	83.5	36.9	28.4	90.6
13	9.11	25.9	27.8	21.0	21.1	171	261	98.3	68.7	33.8	37.4	113
14	8.32	21.9	20.4	18.9	29.1	272	221	87.5	37.0	32.3	31.5	75.6
15	9.07	22.8	17.3	21.1	19.7	336	380	74.4	27.2	27.2	25.8	51.3
16	7.55	27.1	20.8	12.2	20.8	256	293	64.6	26.1	22.8	21.6	37.4
17	8.94	37.0	21.7	9.13	21.5	171	273	60.8	23.9	18.4	20.3	26.1
18	9.24	51.7	183	13.8	27.5	137	292	341	27.9	23.5	29.6	23.9
19	9.16	41.2	151	13.7	18.5	137	223	1,338	41.2	28.6	51.6	22.5
20	18.0	44.1	92.7	29.9	68.2	349	202	611	55.1	24.0	84.6	20.0
21	26.7	41.9	56.2	19.1	45.7	300	180	359	319	17.6	51.9	18.1
22	11.7	30.9	23.0	17.1	21.7	209	142	252	300	18.6	37.8	17.2
23	6.29	22.3	24.8	17.6	42.7	166	136	178	164	125	29.3	15.9
24	12.3	21.0	33.3	16.6	26.7	163	128	148	111	366	23.8	18.5
25	11.7	20.9	31.8	16.0	36.6	203	119	124	113	157	24.5	18.2
26	11.3	22.8	27.0	15.8	27.9	374	107	113	143	101	35.1	21.9
27	10.1	49.1	29.5	17.0	27.4	426	96.6	91.4	66.6	65.4	41.3	20.4
28	14.2	77.8	24.6	4.73	32.2	453	83.8	81.5	43.3	76.6	93.5	21.4
29	7.00	93.4	22.4	11.5	-------	862	75.0	75.9	355	65.4	83.1	20.5
30	10.4	95.9	17.5	6.81	-------	448	67.7	63.1	288	48.7	56.9	21.2
31	3.55	-------	19.5	16.0	-------	239	-------	56.0	-------	46.9	41.0	-------

[a] Apparent storage release equal to or greater than total flow at the diversion dam.

NOTE.—Discharge determined by subtracting from the total flow at the diversion dam the amount of water apparently released from the Borden Brook reservoir or by adding the amount of water apparently stored in the reservoir, as indicated by the elevation of the water surface in the reservoir. As no allowance has been made for evaporation and seepage from the reservoir, the records are not an accurate indication of the natural flow at the diversion dam.

Monthly discharge of Westfield Little River near Westfield, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 48.5 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	26.7	(a)	6.74	0.139	0.16
November	95.9	(a)	31.7	.654	.73
December	183	17.3	49.7	1.02	1.18
January	33.3	3.58	17.0	.351	.40
February	68.2	17.4	29.6	.610	.64
March	917	19.3	262	5.40	6.23
April	802	67.7	252	5.20	5.80
May	1,338	55.6	225	4.64	5.35
June	355	23.9	103	2.12	2.36
July	366	17.6	70.0	1.44	1.66
August	139	20.3	54.3	1.12	1.29
September	113	15.9	36.7	.757	.84
The year	1,338	(a)	95.2	1.96	26.64

FARMINGTON RIVER AT NEW BOSTON, MASS.

LOCATION.—At highway bridge a quarter of a mile below Clam River and 1 mile south of New Boston, Berkshire County.

DRAINAGE AREA.—92.7 square miles.

RECORDS AVAILABLE.—May 27, 1913, to September 30, 1922.

GAGES.—Gurley seven-day water-stage recorder on left bank of downstream side of bridge, referenced to hook gage inside the well; a vertical staff on bridge abutment is used for auxiliary readings. Recorder inspected by George Snow.

DISCHARGE MEASUREMENTS.—Made from a cable or by wading.

CHANNEL AND CONTROL.—Channel rocky and covered with boulders; control permanent.

EXTREMES OF DISCHARGE.—Maximum open-water stage during year, from water-stage recorder, 6.8 feet at 3 a. m. March 29 (discharge, by extension of rating curve, 2,200 second-feet); a stage of 7.0 feet occurred at 9.30 p. m. March 7, channel obstructed by ice. Minimum stage, from water-stage recorder, 2.45 feet at 9.30 a. m. November 14 when water was held back by dam (discharge, 13 second-feet).

1913–1922: Maximum open-water stage from water-stage recorder, 7.64 feet on October 26, 1913 (discharge, by extension of rating curve, 3,200 second-feet); minimum stage, from water-stage recorder, 2.22 feet on August 27, 1913, when water was held back by dam (discharge, 4.4 second-feet).

ICE.—River usually frozen over during greater part of winter, with occasional ice jams below gage.

REGULATION.—Flow affected by storage in Otis reservoir about 5 miles above New Boston, which has a capacity of 880 million cubic feet, and by operation of a woodworking shop just above station.

ACCURACY.—Stage-discharge relation practically permanent except when affected by ice. Rating curve well defined below 1,700 second-feet. Operation of water-stage recorder satisfactory throughout year. Daily discharge ascertained by applying rating table to mean daily gage height determined by inspection of gage-height graph, with corrections for effect of ice. Records good.

Discharge measurements of Farmington River at New Boston, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 21	W. E. Armstrong	[a] 4.00	99
May 25	Armstrong and Jones	3.65	148

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Farmington River at New Boston, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	135	59	141	80	90	90	395	107	85	216	133	76
2	131	67	160	74	145	88	309	104	90	218	151	56
3	112	39	530	72	155	155	289	98	141	178	86	50
4	58	35	326	76	135	160	292	105	232	143	73	105
5	55	32	230	90	120	195	337	1,020	151	118	94	151
6	52	29	158	88	125	230	468	674	131	116	75	122
7	56	27	127	76	120	250	525	478	147	94	67	118
8	58	29	107	66	105	640	1,140	371	105	122	93	107
9	56	28	107	60	105	482	910	272	88	197	82	85
10	85	34	98	64	105	360	740	218	87	127	110	59
11	108	46	84	60	96	269	620	173	107	104	125	91
12	110	43	76	84	100	230	600	145	164	91	116	197
13	112	35	70	90	96	241	482	129	160	80	120	190
14	114	30	73	105	100	316	375	118	127	74	112	131
15	106	45	73	105	88	391	575	114	99	70	106	105
16	100	50	75	98	94	330	478	104	86	60	99	61
17	88	71	75	100	94	257	439	98	76	50	98	60
18	74	102	286	100	100	232	510	200	86	48	81	91
19	53	94	232	100	100	195	375	1,140	334	63	90	86
20	88	143	178	100	110	330	316	833	415	58	164	84
21	104	131	143	100	155	415	254	500	686	50	88	82
22	75	100	140	92	190	292	224	341	656	55	62	73
23	66	78	140	92	200	227	195	244	447	145	82	36
24	68	68	135	94	310	247	176	180	279	500	82	36
25	65	70	135	90	195	302	154	151	244	247	77	77
26	66	59	130	90	145	415	145	145	202	125	88	76
27	62	82	130	90	130	680	133	127	164	100	105	76
28	60	260	120	90	100	896	122	120	145	110	188	75
29	62	213	115	90	------	1,800	122	102	306	91	180	74
30	60	154	100	88	------	910	116	93	257	75	116	76
31	59	------	92	88	------	550	------	87	------	74	87	------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Feb. 11 and Feb. 17 to Mar. 8; discharge for these periods based on gage heights corrected for effect of ice.

Monthly discharge of Farmington River at New Boston, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 92.7 square miles].

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	135	52	80.6	0.870	1.00
November	260	27	75.1	.810	.90
December	530	70	148	1.60	1.84
January	105	72	86.8	.936	1.08
February	310	88	129	1.39	1.45
March	1,800	88	393	4.24	4.89
April	1,140	116	39.4	4.25	4.74
May	1,140	87	277	2.99	3.45
June	686	76	210	2.27	2.53
July	500	48	123	1.33	1.53
August	188	62	104	1.12	1.29
September	197	36	90.2	.973	1.08
The year	1,800	27	176	1.90	25.78

HOUSATONIC RIVER BASIN.

HOUSATONIC RIVER NEAR GREAT BARRINGTON, MASS.

LOCATION.—At highway bridge one-fourth mile northeast of Van Deusenville station of New York, New Haven & Hartford Railroad (Berkshire division) and 2 miles north of Great Barrington, Berkshire County.

DRAINAGE AREA.—280 square miles.

RECORDS AVAILABLE.—May 17, 1913, to September 30, 1922.

GAGE.—Inclined staff attached to concrete anchorages on downstream side of left abutment of highway bridge; vertical high-water section attached to bridge abutment; read by Mrs. Herbert Armstrong.

DISCHARGE MEASUREMENTS—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; control for high stages is not well defined; at low stages control is riffle a few hundred feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.6 feet at 4 p. m. March 29 (discharge, by extension of rating curve, 3,900 second-feet); minimum stage, 0.42 foot at 8 a. m. October 9 (discharge, 4 second-feet).

1913–1922: Maximum stage recorded, 8.0 feet on March 31, 1916 (discharge, by extension of rating curve, 5,300 second-feet). Zero flow recorded at various times caused by storage of water at dams above.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Storage above dam of a paper mill a mile above station causes low flow on Sundays and holidays.

ACCURACY.—Stage-discharge relation has changed slightly at infrequent intervals. Rating curve fairly well defined between 10 and 2,000 second-feet. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying rating table to mean daily gage height. Records good.

Discharge measurements of Housatonic River near Great Barrington, Mass., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 23	W. E. Armstrong	1.99	314	May 22	Jones and Armstrong	3.67	1,320
23	do	1.97	310	22	do	3.40	1,120

Daily discharge, in second-feet, of Housatonic River near Great Barrington, Mass., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	300	45	730	260	180	300	2,240	440	340	850	390	490
2	152	60	640	260	225	340	1,680	520	210	670	300	415
3	320	110	920	520	640	180	1,520	390	415	490	300	165
4	130	27	1,200	280	670	165	1,280	490	465	415	320	320
5	127	125	1,360	300	365	300	1,360	1,280	760	580	260	790
6	165	127	1,130	340	490	260	1,520	1,760	580	520	180	820
7	65	225	850	300	320	490	1,920	1,680	580	550	152	700
8	30	152	490	280	210	3,050	2,240	1,200	610	365	365	520
9	6	140	465	260	390	2,780	2,960	920	610	45	320	365
10	38	135	550	210	365	1,920	2,960	820	730	260	415	320
11	92	20	365	140	390	1,440	2,690	760	520	440	365	320
12	66	78	340	195	55	1,130	2,600	610	920	440	225	242
13	120	225	465	195	300	1,060	2,600	580	1,520	320	25	340
14	100	152	365	33	210	1,200	2,330	465	1,440	340	340	320
15	100	82	280	130	180	1,280	2,000	390	1,130	225	152	340
16	33	63	44	300	242	1,360	1,840	440	850	32	225	340
17	300	210	115	242	242	1,200	1,840	640	820	415	92	78
18	80	165	340	340	180	850	1,680	440	1,200	300	242	180
19	132	92	640	242	86	790	1,680	850	1,200	320	225	280
20	100	415	820	195	195	920	1,520	2,600	990	415	44	340
21	152	610	700	32	242	1,440	1,520	2,160	1,360	340	300	280
22	195	610	490	195	340	1,280	1,130	1,600	1,600	320	242	260
23	210	390	225	340	415	1,060	920	820	1,360	225	195	242
24	300	180	520	210	640	850	850	820	1,360	390	210	130
25	110	300	195	180	465	990	820	640	990	280	225	280
26	140	225	140	152	465	920	760	580	700	225	365	260
27	152	242	415	140	465	1,520	640	550	730	320	465	210
28	135	700	180	152	440	1,920	640	415	640	340	730	195
29	110	990	242	340	-------	3,410	610	260	610	225	820	340
30	74	990	90	280	-------	3,320	365	300	670	415	790	300
31	100	-------	340	180	-------	2,870	-------	320	-------	225	610	-------

Monthly discharge of Housatonic River near Great Barrington, Mass., for the year ending Sept. 30, 1922.

[Drainage area, 280 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	320	6	133	0.475	0.55
November	990	20	263	.939	1.05
December	1,360	44	505	1.80	2.08
January	520	32	233	.832	.96
February	670	55	336	1.20	1.25
March	3,410	165	1,310	4.68	5.40
April	2,960	365	1,620	5.79	6.46
May	2,600	260	830	2.96	3.41
June	1,600	210	864	3.09	3.45
July	850	32	364	1.30	1.50
August	820	25	320	1.14	1.31
September	820	78	339	1.21	1.35
The year	3,410	6	593	2.12	28.77

HOUSATONIC RIVER AT FALLS VILLAGE, CONN.

LOCATION.—Half a mile below power plant of Connecticut Power Co., at Falls Village, Litchfield County.

DRAINAGE AREA.—644 square miles.

RECORDS AVAILABLE.—July 11, 1912, to September 30, 1922.

GAGES.—Stevens continuous water-stage recorder on left bank, referenced to hook gage inside well; a vertical staff 25 feet upstream and chain gage 300 feet upstream are used for auxiliary readings. Recorder inspected by an employee of the Connecticut Power Co.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel deep and fairly uniform in cross-section; one channel at all stages. Control not clearly defined except at low stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 9.5 feet at 10 a. m. March 9 (discharge, 5,230 second-feet); minimum stage, from water-stage recorder, 0.40 foot at noon, August 20 (water held back by dam; discharge, 6 second-feet).

1912–1922: Maximum stage recorded, 13.3 feet on March 29, 1914 (discharge, 8,830 second-feet); minimum discharge, no flow at various times when water was held back by dam.

ICE.—Stage-discharge relation affected by ice during some winters.

REGULATION.—Low-water flow is completely regulated by the power plant at Falls Village.

ACCURACY.—Stage-discharge relation fairly permanent. Rating curve well defined between 100 and 7,000 second-feet. Operation of water-stage recorder satisfactory. Daily discharge for open-water periods ascertained by use of discharge integrator, and during winter from mean daily gage heights corrected for effect of ice. Records good.

Discharge measurements of Housatonic River at Falls Village, Conn., during the year ending Sept. 30, 1922.

Date	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 23	W. E. Armstrong	[a] 3.25	813	July 21	J. S. S. Jones	3.23	959
May 23	Jones and Armstrong	5.60	2,210	22	do	2.22	487
23	do	5.48	2,090	23	do	1.04	86
July 20	J. S. S. Jones	3.00	802	23	do	1.14	137
20	do	3.04	830	24	do	4.12	1,400
21	do	3.24	934	24	do	4.08	1,380

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Housatonic River at Falls Village, Conn., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	152	265	1,580	400	380	740	4,350	1,110	610	1,160	640	680
2	112	250	1,320	570	620	780	3,750	920	670	1,100	690	730
3	250	265	1,740	430	1,050	780	3,100	880	580	1,140	750	480
4	375	270	2,200	510	1,150	580	2,800	970	670	780	690	420
5	240	270	2,150	680	700	500	2,650	2,000	1,100	1 060	700	760
6	235	250	2,000	720	880	760	3,150	3,600	1,080	860	485	1,060
7	240	245	1,640	780	760	1,480	3,450	3,200	1,260	850	630	990
8	225	245	1,240	600	560	4,500	3,650	2,900	1,020	790	770	830
9	84	240	950	700	620	5,000	4,150	2,350	700	800	700	780
10	225	240	910	540	700	4,350	4,250	1,880	810	970	680	570
11	235	325	600	680	800	3,400	4,150	1,640	610	730	600	650
12	240	300	910	620	560	2,750	3,950	1,460	1,280	680	490	590
13	220	71	740	400	460	2,200	3,900	1,240	1,480	650	360	910
14	230	340	710	500	520	2,050	3,600	940	1,560	660	350	720
15	295	325	740	300	520	2,200	3,500	1,060	1,560	650	435	680
16	73	330	720	450	470	2,300	3,450	980	1,080	270	385	660
17	250	305	495	500	470	2,250	3,150	980	1,060	485	435	410
18	230	395	760	520	580	1,880	3,250	860	780	435	310	465
19	230	520	1,100	520	340	1,480	3,150	1,660	1,440	430	570	450
20	250	440	1,000	540	580	1,740	2,850	3,150	1,540	530	495	495
21	540	950	970	500	840	2,950	2,650	3,250	1,800	630	540	310
22	335	920	520	350	800	2,950	2,350	3,000	2,400	660	550	385
23	180	910	800	580	940	2,350	2,100	2,300	2,300	355	440	420
24	210	560	740	540	1,200	1,940	1,820	1,600	2,050	1,080	400	225
25	375	495	680	430	980	1,800	1,700	1,480	1,780	1,000	435	375
26	245	490	560	400	700	1,800	1,600	1,160	1,600	700	810	375
27	230	610	540	380	640	2,150	1,460	1,120	1,300	570	760	330
28	230	1,460	780	400	900	2,800	1,400	850	1,060	450	1,240	325
29	300	2,200	560	350	-------	3,600	1,080	1,000	1,180	800	1,240	240
30	90	2,000	520	560	-------	4,500	990	540	1,200	510	1,100	285
31	290	-------	540	470	-------	4,800	-------	760	-------	570	860	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22–24 and Dec. 30 to Mar. 6; discharge for these periods based on gage heights corrected for effect of ice.

Monthly discharge of Housatonic River at Falls Village, Conn., for the year ending Sept. 30, 1922.

[Drainage area, 644 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	540	73	239	0.371	0.43
November	2,200	71	550	.854	.95
December	2,200	495	991	1.54	1.78
January	780	300	514	.798	.92
February	1,200	340	704	1.09	1.14
March	5,000	500	2,370	3.68	4.24
April	4,350	990	2,910	4.52	5.04
May	3,600	540	1,640	2.55	2.94
June	2,400	580	1,250	1.94	2.16
July	1,160	270	721	1.12	1.29
August	1,240	310	630	.978	1.13
September	1,060	225	553	.859	.96
The year	5,000	71	1,090	1.69	22.94

NAUGATUCK RIVER NEAR NAUGATUCK, CONN.

LOCATION.—One-fifth mile above Beacon Hill Brook and 1.3 miles below Naugatuck, New Haven County.

DRAINAGE AREA.—247 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 15, 1918, to September 30, 1922.

GAGE.—Gurley water-stage recorder on left bank installed August 12, 1919, referenced to hook gage inside the well; an outside staff gage is used for auxiliary readings. Recorder inspected by T. C. Melbourne.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel deep and uniform in section at the gage; control is well-defined riffle 300 feet downstream.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 9.95 feet at 12.30 a. m. March 8 (discharge, by extension of rating curve, 7,920 second-feet); minimum stage, from water-stage recorder, 0.70 foot several times during October when water was held back by dams (discharge, by extension of rating curve, 34 second-feet).

1918–1922: Maximum stage recorded, 9.95 feet March 8, 1922 (discharge, by extension of rating curve, 7,920 second-feet); minimum stage, 0.70 foot August 31, 1921, and several times during October, 1921, when water was held back by dams (discharge, by extension of rating curve, 34 second-feet).

ICE.—Some short ice forms in the vicinity of the gage, but the stage-discharge relation is not affected.

REGULATION.—Distribution of flow somewhat affected by operation of mills at Naugatuck and towns above; also by several small reservoirs.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 90 and 2,500 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying rating table to mean daily gage height, as taken from recorder sheets. Records good.

No discharge measurements were made during the year.

90902—25†—WSP 541——10

Daily discharge, in second-feet, of Naugatuck River near Naugatuck, Conn., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	227	68	365	134	106	181	1,600	221	184	270	126	128
2	118	86	338	122	1,190	190	1,520	218	187	274	294	116
3	112	98	1,030	120	939	187	1,390	212	338	338	537	94
4	98	83	606	118	440	178	1,350	294	505	1,190	286	122
5	86	74	415	156	294	294	1,110	2,660	351	750	370	184
6	77	66	320	187	303	558	1,190	1,560	258	606	244	152
7	74	71	251	145	290	2,660	995	911	240	380	176	209
8	73	77	215	120	201	3,820	925	702	198	342	201	212
9	68	88	181	132	178	1,070	890	537	171	732	187	166
10	70	116	187	130	184	820	764	465	168	395	148	132
11	70	122	176	134	166	897	660	410	190	270	128	124
12	77	100	198	128	154	757	684	356	198	227	124	480
13	73	88	206	128	158	764	606	307	158	221	141	470
14	68	98	168	120	148	778	505	294	128	303	141	237
15	70	116	148	120	145	827	995	282	130	237	118	181
16	60	116	132	130	143	648	960	254	134	190	108	143
17	66	168	138	124	128	485	732	224	122	173	128	122
18	73	206	548	126	132	375	1,070	648	234	161	181	120
19	68	163	702	143	132	351	785	2,570	320	307	375	114
20	120	230	365	181	390	1,310	672	1,640	270	244	420	110
21	134	274	282	181	582	1,270	558	932	1,350	190	215	114
22	98	198	161	158	405	708	480	702	1,270	171	148	102
23	77	156	161	138	278	521	435	548	588	168	120	96
24	76	136	224	128	430	480	410	445	395	360	112	79
25	79	148	274	116	356	480	356	385	405	258	118	86
26	65	181	224	110	286	475	324	410	450	190	163	90
29	65	333	201	104	266	594	307	356	274	161	204	98
28	65	630	171	100	230	1,110	274	303	290	156	251	98
29	62	855	163	92	-------	1,070	230	274	425	145	278	100
30	54	490	136	104	-------	813	221	237	347	128	178	96
31	65	-------	143	104	-------	738	-------	212	-------	130	138	-------

Monthly discharge of Naugatuck River near Naugatuck, Conn., for the year ending Sept. 30, 1922.

[Drainage area, 247 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	227	54	83.5	0.338	0.39
November	855	66	188	.761	.85
December	1,030	132	285	1.15	1.33
January	187	92	130	.526	.61
February	1,190	106	309	1.25	1.30
March	3,820	178	820	3.32	3.83
April	1,600	221	767	3.11	3.47
May	2,660	212	631	2.55	2.94
June	1,350	122	343	1.39	1.55
July	1,190	128	312	1.26	1.45
August	537	108	205	.830	.96
September	480	79	152	.615	.69
The year	3,820	54	352	1.43	19.37

MIANUS RIVER BASIN.

MIANUS RIVER AT NORTH MIANUS, CONN.

LOCATION.—At Palmer dam, North Mianus, Fairfield County, 1 mile north of Mianus, Greenwich Township, and 2 miles west of Stamford.

DRAINAGE AREA.—29.9 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 4, 1920, to February 3, 1922, when station was discontinued.

GAGE.—Friez water-stage recorder on right bank halfway between dam and highway bridge; referenced to hook gage inside the well. Recorder inspected by E. N. Sampson.

DISCHARGE MEASUREMENTS.—Made from cable and by wading at cable one-fourth mile above gage, and at highway bridge.

CHANNEL AND CONTROL.—The old mill pond extends back to the highway bridge; water opposite gage is smooth, with low velocity at ordinary stages. Control is formed by crest of 6-foot sharp-crested weir without end contractions built in old canal at right end of dam; water begins to go over crest of dam at gage height 1.85 feet; dam has a spillway length of 79.2 feet, with smooth rounded crest.

EXTREMES OF DISCHARGE.—Maximum stage October 1 to February 3 from water-stage recorder, 2.82 feet at 5.30 p. m. February 2 (discharge, 385 second-feet); minimum stage, from water-stage recorder, 0.29 foot several times during October when water was held back by dam (discharge, 1.9 second-feet).

1920–1922: Maximum stage recorded, 3.67 feet at 5 p. m. September 30, 1920 (discharge, by extension of rating curve, 810 second-feet); minimum stage, 0.25 foot from 1 to 8 a. m. August 30, 1921 when water was held back by dam (discharge, 1.4 second-feet).

ICE.—Weir remains clear of ice, stage-discharge relation not affected.

REGULATION.—The operation of a mill 1 mile above the gage causes large fluctuations in discharge at ordinary stages.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 260 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by averaging discharge for 12 two-hour periods. Records excellent.

No discharge measurements were made during the year.

Daily discharge, in second-feet, of Mianus River at North Mianus, Conn., for the period Oct. 1, 1921, to Feb. 3, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Day.	Oct.	Nov.	Dec.	Jan.	Feb.
1	14	4.2	27	15	11	16	4.2	10	14	16	-------
2	9.2	7.6	23	14	225	17	4.2	22	12	12	-------
3	11	7.0	88	13	187	18	3.8	28	38	12	-------
4	7.7	7.7	57	12	-------	19	5.7	17	57	13	-------
5	8.9	6.1	38	15	-------	20	4.2	24	35	44	-------
6	7.5	6.4	32	25	-------	21	4.4	36	28	41	-------
7	8.0	7.7	27	15	-------	22	4.6	32	14	36	-------
8	7.1	5.1	25	16	-------	23	4.6	18	20	27	-------
9	6.4	4.7	20	19	-------	24	5.2	11	24	20	-------
10	6.7	5.9	17	12	-------	25	4.5	20	45	16	-------
11	5.4	9.7	19	15	-------	26	4.3	17	32	12	-------
12	5.4	8.7	29	18	-------	27	4.0	24	28	10	-------
13	4.9	7.6	18	18	-------	28	3.6	35	20	7.9	-------
14	2.2	8.5	21	18	-------	29	3.8	50	22	7.1	-------
15	3.8	9.8	14	11	-------	30	4.0	36	11	11	-------
						31	4.0	-------	19	11	-------

Monthly discharge of Mianus River at North Mianus, Conn., for the period Oct. 1 1921, to Jan. 31, 1922.

[Drainage area, 29.9 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	14	2.2	5.72	0.191	0.22
November	50	4.2	16.2	.542	.60
December	57	11	28.2	.943	1.09
January	44	7.1	17.2	.575	.66

HUDSON RIVER BASIN.

HUDSON RIVER AT GOOLEY, NEAR INDIAN LAKE, N. Y.

LOCATION.—1 mile above Gooley, Essex County, 1 mile below mouth of Cedar River, 1½ miles above mouth of Indian River, and 6 miles northeast of Indian Lake village, Hamilton County.

DRAINAGE AREA.—418 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 30, 1916, to September 30, 1922.

GAGE.—Gurley printing water-stage recorder on right bank. Inspected by Earle Husson and Dyre Daniels.

DISCHARGE MEASUREMENTS.—Made from cable 100 yards below gage or by wading.

CHANNEL AND CONTROL.—Solid ledge overlain with coarse gravel; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 10.00 feet at 8.15 a. m. April 12 (discharge, 13,900 second-feet): minimum stage from water-stage recorder, 1.58 feet at 4 p. m. September 11 to 4.15 a. m. September 12 (discharge, 109 second-feet).

1916–1922: Maximum stage from water-stage recorder, that of April 12, 1922; minimum discharge, 56 second-feet from 11 a. m. September 11 to 8 a. m. September 13, 1916 (gage-height, 1.43 feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Large diurnal fluctuation due to logging operations during spring. Seasonal distribution of flow slightly affected by storage.

ACCURACY.—Stage-discharge relation permanent throughout year, except when affected by ice. Rating curve well defined between 200 and 7,500 second-feet. Operation of water-stage recorder satisfactory except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height obtained by averaging the hourly gage heights, or for days of considerable variation in stage by averaging the hourly discharge. Records good, except for periods of ice effect and estimate, which are fair.

Discharge measurements of Hudson River at Gooley, near Indian Lake, N. Y. during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 2	Covert and Shupe	1.89	222	Apr. 25	B. F. Howe	2.63	654
Dec. 20	Shupe and Howe	[a] 3.03	622	25	do	2.63	675
Jan. 24	E. B. Shupe	[a] 2.82	237	26	do	7.37	7,380
Feb. 23	C. C. Covert	[a] 3.36	312	June 23	Granger and Shupe	5.60	4,220

[a] Stage-discharge relation affected by ice

Daily discharge, in second-feet, of Hudson River at Gooley, near Indian Lak N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	232	292	718		220	440	3,040	1,240	530	2,300	141	131
2	219	348	688		280	380	2,430	1,840	495	2,900	147	125
3	211	412	1,500		320	340	1,990	1,470	1,090	2,900	158	121
4	215	343	1,540		340	300	1,590	1,300	1,590	2,300	169	121
5	227	332	1,490		340	320	1,370	2,310	1,760	1,760	176	118
6	227	338	1,250		320	320	1,300	2,900	1,590	1,290	172	121
7	223	359	1,130	200	280	340	1,390	3,040	1,280	1,010	412	131
8	191	348	1,100		260	700	2,190	3,840	996	833	1,000	128
9	183	348	919		260	1,000	3,620	3,170	801	688	1,110	118
10	183	348	628		260	1,000	5,650	2,470	725	579	801	115
11	223	412	593		240	1,000	8,660	1,800	672	502	600	109
12	263	462	550		260	1,100	13,400	924	635	443	430	121
13	338	450	550		240	1,000	11,300	1,710	530	400	354	151
14	348	530			220	1,000	7,560	2,000	436	359	306	137
15	321	614				1,100	5,210	1,500	412	327	267	181
16	287	565				1,100	3,700	1,030	394	296	241	296
17	272	537			200	1,100	3,020	1,490	430	272	219	249
18	254	740		220		1,000	4,510	1,260	772	277	199	232
19	245	1,480				850	4,830	1,970	1,130	267	183	211
20	285	2,430				800	5,100	2,210	1,220	245	169	195
21	598	2,560			150	850	3,560	3,020	1,390	232	154	179
22	841	2,360	420		200	950	2,670	1,960	2,910	219	144	169
23	881	1,930			320	1,000	2,220	1,750	4,180	219	141	161
24	793	1,490		240	340	1,100	1,860	2,240	2,560	343	137	158
25	593	1,340		240	420	1,200	1,520	1,130	1,760	544	137	147
26	530	1,120		220	500	1,300	2,790	1,180	1,290	343	165	137
27	456	979		220	550	1,800	1,440	1,010	1,060	267	169	128
28	400	913		200	550	2,800	3,090	897	1,100	236	154	125
29	359	841		180	-------	4,020	1,860	865	1,430	211	154	121
30	327	785		170	-------	3,400	1,650	680	2,050	187	151	115
31	311	-------		170	-------	3,620	-------	600	-------	154	137	-------

NOTE.—Discharge estimated Dec. 14–31, Jan. 1–14, Jan. 15–23, and Feb. 15–20 from comparison with the station at North Creek and Indian River near Indian Lake, water-stage recorder not operating. Discharge, Dec. 12 to Mar. 28, determined from gage heights corrected for ice effect by means of three discharge measurements, study of gage-height graph and weather records, and comparison with records for Hudson River at North Creek and for Indian River near Indian Lake.

Monthly discharge of Hudson River at Gooley, near Indian Lake, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 418 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	881	183	356	0.852	0.98
November	2,560	292	867	2.07	2.31
December	1,540	----------	652	1.56	1.80
January	240	170	207	.495	.57
February	550	150	288	.689	.72
March	4,020	300	1,200	2.87	3.31
April	13,400	1,300	3,820	9.14	10.20
May	3,840	600	1,770	4.23	4.88
June	4,180	394	1,240	2.97	3.31
July	2,900	154	739	1.77	2.04
August	1,110	137	287	.687	.79
September	296	109	152	.364	.41
The year	13,400	109	964	2.31	31.32

HUDSON RIVER AT NORTH CREEK, N. Y.

LOCATION.—At two-span steel highway bridge in North Creek, Warren County, immediately above mouth of North Creek.

DRAINAGE AREA.—804 square miles.

RECORDS AVAILABLE.—September 21, 1907, to September 30, 1922.

GAGE.—Chain on upstream side of left span of bridge; read by William Alexander.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Heavy gravel; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.50 feet at 5 p. m. April 12 (discharge, 21,300 second-feet); minimum stage, 2.24 feet at 6 p. m. June 16 (discharge, 266 second-feet).

1907–1922: Maximum stage recorded, 12.0 feet during the evening of March 27, 1913 (discharge, about 30,000 second-feet); minimum stage, 2.05 feet at 7.05 a. m. September 30, 1913 (discharge, 168 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—The numerous lakes and ponds in the basin of the upper Hudson have a decided effect on the low-water flow, especially the reservoir at Indian Lake. Many of the reservoirs are used to make flood waves in the spring in connection with log driving.

ACCURACY.—Stage-discharge relation changed at time of high water in April; rating curve used before change well defined between 250 and 6,000 second-feet, that used after change well defined between 250 and 7,000 second-feet. Stage-discharge relation affected by ice from December to March. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Open-water records good except for log-driving season when mean daily gage height computed from two gage readings a day may be in error owing to large variations in stage caused by operation of sluice gates in logging dams above station. Records for period of ice effect fair.

Discharge measurements of Hudson River at North Creek, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 16	Shupe and Howe	[a] 2.66	513	June 26	Granger and Shupe	4.49	2,940
Mar. 8	Covert and Granger	[a] 5.20	1,580	Sept. 22	A. W. Harrington	3.22	1,060
Apr. 16	Howe and Granger	6.02	6,450				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Hudson River at North Creek, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,100	700	1,220	440	1,100	1,300	5,120	2,020	920	4,280	820	550
2	1,040	890	1,220	420	1,100	1,300	4,220	2,260	870	4,720	920	720
3	990	790	3,230	550	600	1,200	3,420	2,420	1,320	4,500	920	770
4	990	700	3,050	550	650	1,200	2,870	4,070	3,280	3,660	920	1,030
5	990	610	2,530	500	1,000	1,200	2,530	3,280	3,280	2,750	770	1,140
6	990	610	2,140	420	1,100	1,300	2,370	4,280	3,280	1,950	820	1,140
7	990	655	1,840	400	1,100	1,200	2,530	5,420	3,100	1,520	1,140	1,140
8	990	610	1,420	360	1,100	1,500	7,960	6,160	2,420	1,140	1,880	1,140
9	940	610	1,280	360	1,100	1,400	7,680	5,180	1,880	1,030	1,800	1,080
10	890	610	1,220	380	1,100	1,300	9,400	4,280	1,590	920	1,390	1,080
11	990	655	1,160	360	1,000	1,400	13,500	5,180	1,460	820	1,080	1,080
12	1,100	745	1,040	420	1,000	1,500	20,900	2,580	1,260	720	720	1,140
13	890	840	990	400	1,000	1,400	19,600	2,920	920	630	514	920
14	840	700	890	360	950	1,500	10,900	2,260	675	590	411	820
15	790	890	650	400	950	1,800	8,810	1,260	514	550	405	1,140
16	700	890	550		900	1,900	6,340	1,030	296	477	351	1,140
17	655	840	650		850	1,800	5,360	1,390	514	477	550	1,260
18	655	990	950	850	950	1,500	6,860	975	444	477	630	1,140
19	610	2,530	1,500		950	1,500	9,400	2,920	2,580	477	630	920
20	655	4,010	1,500		950	1,600	7,930	3,280	2,580	411	820	820
21	1,040	3,810	1,100	900	950	1,500	7,100	3,470	3,860	399	820	1,030
22	1,220	3,420	650	850	1,000	1,400	8,750	2,920	6,420	399	820	1,080
23	1,350	3,050	650	750	1,000	1,400	4,400	1,660	8,040	550	770	1,030
24	1,220	2,530	650	850	1,100	1,400	4,590	2,420	5,660	720	770	1,030
25	1,100	2,060	600	800	1,300	1,400	4,130	2,260	4,280	1,880	770	975
26	890	1,760	550	800	1,300	1,600	3,930	2,100	2,920	770	920	975
27	790	1,620	500	800	1,400	2,200	2,450	2,020	2,020	477	920	920
28	700	1,480	460	800	1,400	3,000	4,310	1,950	1,800	399	870	920
29	610	1,350	420	1,100	-------	5,840	1,900	1,730	2,580	351	590	920
30	530	1,280	340	1,100	-------	6,340	2,020	1,390	4,070	550	271	870
31	495	-------	300	1,100	-------	6,600	-------	1,200	-------	630	307	-------

NOTE.—Discharge, Jan. 16–20, estimated from comparison with record at Indian River near Indian Lake; no gage-height record. Discharge, Dec. 15 to Mar. 28, determined from gage heights corrected for ice effect by means of two discharge measurements, observer's notes, and weather records.

Monthly discharge of Hudson River at North Creek, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 804 square miles.]

Month.	Discharge in second-feet.				Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,350	495	895	1.11	1.28
November	4,010	610	1,410	1.75	1.95
December	3,230	300	1,140	1.42	1.64
January	1,100	360	659	.820	.95
February	1,400	600	1,030	1.28	1.33
March	6,600	1,200	1,980	2.46	2.84
April	20,900	1,900	6,710	8.35	9.32
May	6,160	975	2,780	3.46	3.99
June	8,040	296	2,490	3.10	3.46
July	4,720	351	1,270	1.58	1.82
August	1,880	271	817	1.02	1.18
September	1,260	550	997	1.24	1.38
The year	20,900	271	1,840	2.29	31.14

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches do not represent the natural flow from the basin because of artificial storage, mainly in Indian Lake reservoir. The yearly discharge and run-off doubtless represent more nearly the natural flow.

HUDSON RIVER AT HADLEY, N. Y.

LOCATION.—At Hadley, Saratoga County, a quarter of a mile above mouth of Sacandaga River and dam of Nuera Paper Co. and just below mouth of Lake Luzerne outlet.

DRAINAGE AREA.—1,660 square miles (from Fourth Annual Report of New York State Water Supply Commission).

RECORDS AVAILABLE.—July 15, 1921, to September 30, 1922. Comparable records at station at Thurman, 13 miles above, September 1, 1907, to September 30, 1920.

GAGE.—Gurley seven-day water-stage recorder on right bank; inspected by J. F. Kelly.

DISCHARGE MEASUREMENTS.—Made from cable 100 yards above gage.

CHANNEL AND CONTROL.—Solid ledge 200 feet below gage, with some large boulders, permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.73 feet at 3.30 p. m. April 12 (discharge, 33,100 second-feet); minimum stage from water-stage recorder, 1.95 feet at 7 p. m. August 31 (discharge, 608 second-feet).

1921–1922: Maximum stage recorded, that of April 12, 1922; minimum stage, that of August 31, 1922.

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Discharge regulated to some extent by storage reservoirs at Indian, Schroon, and Brant lakes and mills on Schroon River.

ACCURACY.—Stage-discharge relation permanent, except as affected by ice from December to March. Rating curve well defined between 600 and 30,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph, or for days of considerable fluctuation, by averaging discharge for intervals of the day. Records good.

COOPERATION.—Station established and maintained by the United States Geological Survey in cooperation with the Indian River Co. and the State of New York.

Discharge measurements of Hudson River at Hadley, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 8	B. F. Howe	[a] 5.80	2,850	Apr. 15	Howe and Granger	13.52	20,100
15	Shupe and Howe	[a] 3.82	1,260	17	do	10.82	14,400
28	E. B. Shupe	[a] 2.90	1,180	19	do	11.47	15,500
Jan. 27	C. C. Covert	[a] 3.02	1,280	22	B. F. Howe	9.96	12,300
Feb. 25	do	[a] 3.61	1,850	23	do	7.23	7,550
Mar. 10	Covert and Granger	[a] 5.07	3,630	24	do	6.97	7,100
30	Shupe and Granger	9.70	11,600	May 3	Covert and Shupe	5.22	4,210
30	do	9.40	11,400	June 22	Granger and Shupe	8.97	10,700
Apr. 14	Howe and Granger	15.81	24,500	Sept. 20	A. W. Harrington	2.72	1,170

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Hudson River at Hadley, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,400	832	2,020	1,000	1,600	1,800	10,900	4,200	2,300	7,330	1,130	818
2	1,350	1,540	1,960	1,100	1,600	1,700	9,490	4,200	2,240	7,870	1,400	900
3	1,300	1,490	4,810	1,100	1,700	1,700	8,050	4,500	2,860	7,690	1,400	1,050
4	1,260	1,350	5,450	1,300	1,300	1,700	7,330	5,510	4,650	7,150	1,540	1,130
5	1,220	1,220	4,400	1,400	1,100	1,700	6,460	5,230	4,970	6,120	1,590	1,400
6	1,220	1,170	4,000	1,400	1,400	1,800	6,460	7,510	5,130	5,130	1,300	1,440
7	1,170	1,130	3,400	1,300	1,600	1,900	6,800	8,410	5,130	4,350	1,690	1,490
8	1,170	1,010	3,000	1,100	1,600	4,200	9,310	8,230	4,350	3,750	2,780	1,440
9	1,170	1,010	2,800	1,000	1,500	4,400	15,100	8,770	3,530	3,460	2,720	1,400
10	1,170	1,050	2,600	1,100	1,500	3,600	16,400	7,510	3,110	3,040	2,420	1,350
11	1,260	1,130	2,400	1,000	1,500	3,200	22,600	6,330	3,250	2,660	2,020	1,350
12	1,400	1,170	2,200	900	1,500	3,000	31,800	5,600	3,110	2,360	1,850	1,590
13	1,400	1,300	1,900	900	1,600	3,000	29,900	5,360	2,660	2,180	1,540	1,640
14	1,170	1,260	1,600	950	1,600	3,600	24,400	4,220	2,120	2,070	1,440	1,260
15	1,090	1,170	1,300	900	1,600	5,000	20,500	4,560	1,850	1,900	1,260	1,350
16	954	1,350	1,000	950	1,600	5,610	17,200	3,680	1,690	1,800	1,130	1,800
17	946	1,350	1,400	1,300	1,500	4,810	14,300	3,550	1,640	1,690	962	1,850
18	900	1,850	2,400	1,400	1,500	4,200	13,900	3,210	2,640	1,690	1,090	1,690
19	878	3,250	3,400	1,500	1,500	4,050	16,200	5,280	4,970	1,640	1,170	1,490
20	930	4,810	2,800	1,500	1,500	4,050	14,500	6,460	4,350	1,440	1,130	1,260
21	1,300	4,810	2,600	1,500	1,600	4,350	13,600	7,080	6,790	1,300	1,220	1,220
22	1,440	4,200	1,800	1,400	1,500	3,900	10,900	7,480	11,500	1,260	1,170	1,350
23	1,590	3,600	1,500	1,400	1,500	3,530	8,590	4,900	14,900	1,040	1,170	1,400
24	1,590	3,040	1,600	1,400	1,700	3,600	7,870	5,450	12,200	1,190	1,170	1,400
25	1,490	2,660	1,600	1,300	1,900	3,820	7,150	4,500	9,490	2,180	1,170	1,300
26	1,260	2,600	1,500	1,300	1,900	3,900	5,100	3,900	7,690	1,900	1,350	1,260
27	1,090	2,300	1,200	1,300	2,000	5,450	6,520	3,900	6,120	1,260	1,350	1,260
28	1,000	2,240	1,200	1,300	1,900	8,410	6,120	3,680	5,450	1,050	1,350	1,260
29	908	2,240	1,100	1,300	-------	13,400	7,900	3,320	5,610	892	1,260	1,260
30	840	2,070	1,100	1,500	-------	12,000	4,350	3,040	7,150	738	877	1,220
31	802	-------	1,000	1,600	-------	12,000	-------	2,540	-------	1,050	668	-------

NOTE.—Mean daily gage heights, Oct. 16–17, estimated from gage-height graph; water-stage recorder not operating. Discharge, Dec. 5 to Mar. 15 determined from gage heights corrected for ice effect by means of six discharge measurements, study of gage-height graph, and weather records. Mean daily gage heights Apr. 12–13, determined from plotting on gage-height graph readings above or below reference points established at time of flood, and reduced to gage datum; water-stage recorder removed to safety, because of flood.

Monthly discharge of Hudson River at Hadley, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 1,660 square miles.]

Month.	Discharge in second-feet				Run-off in inches
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,590	802	1,180	0.711	0.82
November	4,810	832	2,010	1.21	1.35
December	5,450	1,000	2,290	1.38	1.59
January	1,600	900	1,240	.747	.86
February	2,000	1,100	1,580	.952	.99
March	13,400	1,700	4,500	2.71	3.12
April	31,800	4,350	12,700	7.65	8.54
May	8,770	2,540	5,260	3.17	3.66
June	14,900	1,640	5,120	3.08	3.44
July	7,870	738	2,880	1.73	1.99
August	2,780	668	1,430	.861	.99
September	1,850	818	1,350	.813	.91
The year	31,800	668	3,450	2.08	28.26

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches do not represent the natural flow from the basin because of artificial storage, mainly in Indian-Lake reservoir and Schroon and Brant lakes The yearly discharge and run-off doubtless represent very nearly the natural flow.

HUDSON RIVER AT SPIER FALLS, N. Y.

LOCATION.—Half a mile below Spier Falls dam, Saratoga County, and 11½ miles below mouth of Sacandaga River.

DRAINAGE AREA.—2,800 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 7, 1912, to September 30, 1922.

GAGE.—Gurley two-day water-stage recorder on right bank. Recorder inspected by L. R. Nichols, chief operator of power plant.

DISCHARGE MEASUREMENTS.—Made from cable 1,000 feet downstream from gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders. Control permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 16.30 feet (16.05 feet, intake partially plugged with silt) at 7 a. m. April 13 (discharge, 58,000 second-feet); minimum stage, 0.95 foot at 5 a. m. November 2 (discharge, 144 second-feet).

1912–1922: Maximum stage from water-stage recorder, 18.59 feet at 12.25 a. m., March 28, 1913 (discharge, about 89,100 second-feet); minimum stage, −0.12 foot at 4 p. m. September 23, 1917 (discharge, about 5.5 second-feet).

ICE.—Stage-discharge relation affected by ice for a short time during extremely cold periods.

REGULATION.—Large diurnal fluctuation in discharge is caused by operation of the Spier Falls power plant. Seasonal flow affected by storage at Indian Lake and many small lakes and reservoirs in the upper part of the drainage basin.

DIVERSIONS.—Water is diverted from Hudson River through the Glens Falls Canal. A portion flows north into Lake Champlain. No correction has been made for this diversion.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve well defined for all stages except about 9 feet, where curve may be 4 or 5 per cent large. Operation of water-stage recorder satisfactory except from March 30 to May 13 when intake was partially plugged with silt. Records good except for period of plugged intake, which are fair.

COOPERATION.—Water-stage recorder inspected by an employee of the Adirondack Power & Light Corporation. Record of hourly discharge computed by engineers of International Paper Co.

Discharge measurements of Hudson River at Spier Falls, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 4	Davison[a] and Shupe	3.64	2,630	Sept. 23	A. W. Harrington	2.80	1,510
Mar. 29	A. H. Davison[a]	10.13	25,000	24	do	2.58	1,260
Apr. 13	do	16.15	57,400				

[a] Engineer, International Paper Co.

Daily discharge, in second-feet, of Hudson River at Spier Falls, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,540	2,120	4,600	750	2,250	3,270	23,400	8,360	3,440	13,100	1,760	1,540
2	986	2,120	4,700	1,340	2,280	3,550	19,500	7,380	3,250	13,800	1,790	1,770
3	1,950	3,430	9,210	2,540	3,120	2,980	17,100	7,380	3,370	14,400	1,540	1,080
4	1,780	3,340	11,900	1,980	2,890	3,460	16,000	7,960	7,890	13,700	2,440	1,500
5	1,630	2,860	11,000	2,220	1,320	1,960	14,600	9,450	10,300	12,200	2,780	2,000
6	1,640	663	9,600	2,840	3,530	3,160	13,600	13,400	10,000	10,100	1,840	1,940
7	1,770	2,100	8,220	3,460	2,550	3,150	14,300	16,200	9,510	8,140	2,860	1,910
8	1,560	1,900	6,550	2,060	2,870	5,700	16,700	15,000	8,030	6,840	4,150	2,140
9	1,190	2,410	5,500	2,800	2,860	7,560	24,200	14,800	6,230	6,140	5,600	2,120
10	2,020	2,390	5,000	2,700	2,620	7,410	28,900	13,700	5,360	5,500	5,030	1,410
11	1,470	2,030	4,000	2,780	2,800	7,060	38,200	11,800	5,420	4,980	3,840	1,810
12	2,340	3,020	4,200	2,020	1,300	6,830	53,700	10,500	7,380	3,800	3,140	1,890
13	1,830	1,240	3,200	3,050	3,000	6,880	56,800	9,120	6,820	3,580	2,080	2,460
14	1,840	2,550	3,360	2,070	2,350	7,460	46,400	8,080	5,800	2,810	2,590	2,160
15	1,770	2,510	2,250	1,290	2,340	9,560	38,200	7,280	5,000	3,160	2,050	2,130
16	1,290	2,250	2,300	2,690	2,920	10,100	33,200	6,430	4,540	1,510	1,860	2,790
17	1,700	2,200	1,790	2,270	2,680	9,820	29,100	4,910	3,720	2,610	1,600	2,250
18	1,550	3,460	2,060	2,540	2,520	9,370	27,300	5,270	3,320	2,510	1,860	2,880
19	1,500	6,020	4,040	2,280	1,280	8,820	29,200	6,350	9,000	3,340	1,390	2,470
20	1,860	10,000	4,700	2,110	2,530	9,140	26,800	10,900	8,380	2,450	1,540	2,150
21	1,900	11,300	4,610	2,940	2,670	9,560	24,900	11,300	11,000	2,730	2,080	2,280
22	2,720	10,500	2,750	1,450	2,300	9,030	20,700	12,500	20,200	1,730	1,600	1,660
23	1,740	9,190	2,540	2,420	2,980	8,350	17,000	8,520	27,000	936	1,830	2,000
24	3,170	7,860	3,080	2,480	3,230	8,160	14,800	8,940	26,000	2,070	1,730	1,240
25	1,980	6,220	2,000	2,360	2,730	8,070	13,000	7,330	22,100	3,140	1,620	2,090
26	2,020	5,750	2,040	1,920	2,160	8,320	11,300	6,820	18,000	2,780	2,240	1,920
27	1,490	4,570	2,400	2,250	4,190	11,200	11,200	6,380	14,300	2,030	1,820	1,740
28	1,940	5,200	2,180	2,490	3,750	16,300	10,800	5,560	12,200	1,680	2,400	1,740
29	1,300	4,570	2,100	1,260	-------	25,400	11,700	5,790	11,900	1,540	2,730	1,930
30	690	4,750	2,450	2,420	-------	26,800	9,500	4,690	13,200	770	1,440	1,510
31	1,520	-------	2,470	2,370	-------	27,200	-------	3,710	-------	1,900	1,300	-------

NOTE.—Discharge for part of day estimated Oct. 18, 19, Nov. 7, 8, 16, 17, 28, 30, Dec. 1, 2, 5, 6, 9, 10, 11, 12, 13, 27, Feb. 11, 12, 13, Mar. 8, June 23, 24, Aug. 9, 28, Sept. 4, and 5; water-stage recorder not operating satisfactorily. Discharge, Mar. 30 to May 13, determined from mean daily gage heights corrected for discrepancy between water-stage recorder and slope gage, due to obstructions in intake pipe.

Monthly discharge of Hudson River at Spier Falls, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 2,800 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	3,170	690	1,730	0.618	0.71
November	11,300	663	4,280	1.53	1.71
December	11,900	1,790	4,410	1.58	1.82
January	3,460	750	2,260	.808	.93
February	4,190	1,280	2,640	.944	.98
March	27,200	1,960	9,210	3.29	3.79
April	56,800	9,500	23,700	8.46	9.44
May	16,200	3,710	8,900	3.18	3.67
June	27,000	3,250	10,100	3.61	4.03
July	14,400	770	5,030	1.80	2.08
August	5,600	1,300	2,340	.836	.96
September	2,880	1,080	1,950	.696	.78
The year	56,800	663	6,370	2.28	30.90

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches do not necessarily represent the natural flow from the basin because of artificial storage. The yearly discharge and run-off doubtless represent very nearly the natural flow.

HUDSON RIVER AT MECHANICVILLE, N. Y.

LOCATION.—At Duncan dam of West Virginia Pulp & Paper Co. in Mechanicville, Saratoga County, 3,700 feet above mouth of Anthony Kill, 1¼ miles below mouth of Hoosic River, and 9 miles above mouth of Mohawk River.

DRAINAGE AREA.—4,500 square miles.

RECORDS AVAILABLE.—1888 to September 30, 1922.

GAGE.—Water-stage recorder at dam, installed in 1910; previous to that date, staff gage.

COMPUTATIONS OF DISCHARGE.—Discharge over spillway determined from a rating curve based on coefficients derived by United States Geological Survey for dams of ogee section. Discharge through turbines computed from records of their operation. Discharge at lock and through Barge Canal turbines at lock computed from records of the number of lockages per day.

EXTREMES OF DISCHARGE.—Maximum daily discharge during year, 72,900 second-feet, April 12; minimum daily discharge, 725 second-feet, September 3.

1888–1922: Maximum discharge recorded, 120,000 second-feet at 6 a. m. March 28, 1913. The plant is occasionally shut down and the flow of the river stored in the pond so that the discharge below the station at these times becomes practically zero.

DIVERSIONS.—Water is diverted from Hudson River through the Glens Falls feeder and the old Champlain Canal into the summit level of the Barge Canal. A portion flows north into Lake Champlain. No correction has been made for this diversion.

COOPERATION.—Discharge over the spillway and through turbines of the West Virginia Pulp & Paper Co. furnished by Mr. W. J. Barnes, engineer of the company. Record of lockages from office of State superintendent of public works.

Daily discharge, in second-feet, of Hudson River at Mechanicville, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,880	2,040	8,500	2,580	1,760	4,580	32,400	9,440	4,960	13,900	1,640	1,960
2	1,140	2,390	8,840	1,920	3,880	3,990	25,700	8,290	5,000	14,200	1,870	1,560
3	1,210	3,100	16,500	1,870	5,860	3,920	23,900	8,860	4,920	15,300	2,340	725
4	2,080	3,780	16,600	2,630	4,860	3,860	22,500	8,780	8,820	13,900	2,010	1,480
5	1,950	3,800	14,800	4,330	3,650	3,100	22,300	13,600	12,700	13,400	3,000	2,670
6	2,010	2,520	13,200	5,680	4,550	4,770	22,000	16,900	11,300	11,400	2,230	2,930
7	1,690	2,010	12,100	4,710	4,790	18,900	21,200	19,000	10,400	9,620	3,660	2,620
8	1,850	3,570	9,810	5,020	4,520	23,500	24,300	18,200	9,930	7,790	5,420	2,320
9	1,150	2,760	8,080	3,880	3,580	15,300	31,400	17,300	8,110	7,560	6,590	2,480
10	1,180	2,330	7,500	4,050	3,670	13,200	34,200	15,700	6,640	6,860	6,680	2,050
11	2,280	2,800	6,580	3,970	3,620	10,700	49,300	13,900	8,870	5,670	5,260	1,890
12	2,160	2,710	7,280	3,850	2,060	10,800	72,900	12,200	14,800	5,600	4,310	2,490
13	2,200	2,760	6,910	4,570	3,110	12,900	70,500	10,600	11,000	4,230	2,890	2,570
14	2,350	2,630	5,060	4,220	4,310	14,300	59,200	11,200	8,750	3,800	3,300	3,470
15	2,330	3,470	4,320	3,050	4,040	16,600	49,400	10,400	7,140	2,790	2,990	2,930
16	1,580	2,850	3,820	2,560	3,250	15,400	41,100	9,090	6,020	2,210	2,570	3,990
17	1,460	3,010	3,260	2,890	3,600	13,900	35,400	7,220	5,360	2,760	1,950	3,250
18	2,000	4,720	4,600	2,670	3,260	12,400	34,000	7,710	5,150	3,230	2,120	4,770
19	2,200	6,770	7,860	3,140	1,780	12,000	34,200	9,010	10,300	3,460	2,440	4,060
20	2,320	12,100	7,480	3,500	3,710	18,000	31,900	15,800	10,300	3,620	1,880	3,080
21	2,400	13,900	5,580	2,900	4,720	16,200	28,900	14,200	11,600	3,240	2,070	2,420
22	2,390	12,600	6,888	3,300	4,670	14,100	24,900	15,400	20,200	3,040	2,070	2,560
23	2,020	11,200	4,500	2,900	5,190	12,700	20,800	11,700	26,100	1,640	2,320	2,270
24	2,880	9,270	4,150	2,410	6,630	12,800	18,000	10,800	26,700	2,390	2,290	1,860
25	3,350	8,620	2,850	2,540	5,270	11,900	15,700	10,300	23,000	2,570	2,670	1,680
26	2,690	7,620	3,910	2,270	2,660	12,600	13,700	8,830	19,200	3,250	2,980	1,990
27	2,510	7,200	4,370	1,950	4,740	17,900	13,200	8,340	15,900	3,660	2,630	2,040
28	1,860	13,200	3,930	2,020	4,530	24,900	11,800	7,850	13,700	2,940	4,240	1,810
29	2,400	10,200	3,480	1,410	-------	34,100	12,400	7,360	13,000	2,240	4,180	1,800
30	1,290	8,930	3,300	1,700	-------	35,600	10,800	5,430	13,500	1,150	3,710	1,800
31	1,510	-------	3,040	1,620	-------	34,900	-------	5,830	-------	1,540	2,540	-------

NOTE.—Part of flashboards forced off by ice February 5; estimated 4 per cent entirely off, 2 per cent 20 inches high, and 94 per cent 30 inches high. Discharge, February 5–28, estimated accordingly. Estimated 70 per cent of flashboards carried away by ice March 7 at 8 p. m.; all flashboards carried away March 15 at 5.30 p.m. Discharge estimated accordingly.

Monthly discharge of Hudson River at Mechanicville, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 4,500 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	3,350	1,140	2,010	0.447	0.52
November	13,900	2,010	5,830	1.30	1.45
December	16,600	2,850	7,070	1.57	1.81
January	5,680	1,410	3,100	.689	.79
February	6,630	1,760	4,010	.891	.93
March	35,600	3,100	14,800	3.29	3.79
April	72,900	10,800	30,300	6.73	7.51
May	19,000	5,430	11,300	2.51	2.89
June	26,700	4,920	11,800	2.62	2.92
July	15,300	1,150	5,770	1.28	1.48
August	6,680	1,640	3,120	.693	.80
September	4,770	725	2,450	.544	.61
The year	72,900	725	8,450	1.88	25.50

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches do not necessarily represent the natural flow from the basin because of artificial storage. See "Diversions" above.

OPALESCENT RIVER BELOW FLOWED LAND, NEAR TAHAWUS, N. Y.

LOCATION.—In Newcomb Township, one-eighth mile below dam at outlet of Flowed Land, 8 miles above Hudson River, and 14 miles northeast of Tahawus, Essex County.

DRAINAGE AREA.—9 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 25, 1920, to October 31, 1922.

GAGE.—Staff gage in two sections on left bank; the lower inclined, the upper vertical.

DISCHARGE MEASUREMENTS.—Made by wading above gage at low and medium stages; no equipment installed for high-stage measurements.

CHANNEL AND CONTROL.—Channel very rough, with many boulders; precipitous below gage. Control is a rock ledge overlain with large boulders a few feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the period, 6.2 feet at 4 p. m. April 11 (discharge, about 1,680 second-feet); minimum stage recorded, 1.5 feet several times in February (discharge, 1.2 second-feet).

1920–1922: Maximum stage recorded, 7.8 feet at 4 p. m. March 21, 1921 (discharge not determined); minimum stage recorded, 1.35 feet at 9.30 a. m. May 11, 1921, and 9 a. m. June 4, 1921 (discharge, about 0.8 second-foot).

ICE.—Stage-discharge relation probably not seriously affected by ice.

REGULATION.—Flow regulated by storage in Flowed Land. Diurnal flow in spring frequently affected by flood waves caused by tripping the dam at the outlet of Flowed Land during log-driving operations.

DIVERSIONS.—None, except that at high stages of Flowed Land there may be some leakage through dam at head of Calamity Brook and out of the drainage area. No record of such possible leakage available.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 5 and 150 second-feet; extended above and below. Daily discharge ascertained by applying daily gage height to rating table. For days of great fluctuation gage heights are estimated from hydrograph. Records good for stages between 5 and 150 second-feet.

COOPERATION.—Gage readings made by employees of New York State Conservation Commission.

Precipitation records for this vicinity are being obtained at a station including standard shelter, maximum and minimum thermometers, rain gage, snow tube and stake, density bucket, and scales. Part of this equipment furnished by United States Weather Bureau.

Discharge measurements of Opalescent River below Flowed Land, near Tahawus, N. Y., during the period Oct. 1, 1921, to Oct. 31, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 1	Covert and Shupe	2.05	13.3	June 24	Granger and Shupe	2.54	45.3
Dec. 18	Howe and Shupe	1.81	6.01	26	Shupe and Granger	2.54	44.9

Daily discharge, in second-feet, of Opalescent River below Flowed Land, near Tahawus, N. Y., for the period Oct. 1, 1921, to Oct. 31, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.
1	17	14	10	5.7	1.5	6.5	27	22	7.1	52	2.1	2.7	2.0
2	17	22	10	5.7	1.4	5.7	20	28	3.4	110	2.0	2.7	1.9
3	17	22	140	4.6	1.4	5.2	18	125	335	52	2.0	2.7	1.8
4	43	22	62	4.6	1.4	4.8	14	185	185	35	2.7	2.7	1.8
5	39	20	35	4.6	1.3	4.6	12	510	52	17	2.7	2.6	1.7
6	25	17	28	4.6	1.3	4.3	11	215	28	12	8.5	2.3	1.7
7	17	14	22	3.4	1.3	4.1	11	290	17	10	67	2.1	1.6
8	17	14	17	3.4	1.3	12	94	220	17	8.5	96	2.0	1.7
9	17	12	14	3.4	1.3	22	155	150	12	7.1	35	2.0	5.0
10	43	12	14	3.4	1.3	96	290	84	12	7.1	17	1.9	17
11	96	12	12	3.4	1.3	35	1,090	96	25	7.1	7.1	1.8	43
12	84	10	12	3.4	1.3	20	510	72	28	5.7	5.7	1.8	28
13	57	10	12	2.7	1.3	14	96	52	22	5.7	5.7	1.7	17
14	35	8.5	10	2.7	1.3	14	43	48	20	4.6	5.0	1.4	12
15	32	8.5	7.1	2.7	1.2	13	39	52	39	4.6	5.0	2.0	11
16	28	8.5	4.6	2.7	1.2	12	28	57	10	3.4	3.4	12	11
17	22	7.1	5.7	2.7	1.2	12	67	62	22	3.4	3.4	8.5	9.6
18	20	132	8.5	2.7	1.2	11	305	78	155	3.4	3.4	8.2	12
19	17	400	14	2.7	1.2	10	148	320	96	3.4	3.4	7.4	11
20	35	265	17	2.7	1.2	9.2	67	175	35	2.7	2.7	6.5	8.5
21	110	72	12	2.7	1.2	8.2	35	78	96	2.7	2.0	5.7	7.4
22	52	43	12	2.7	1.2	7.7	22	52	278	2.7	2.0	5.2	6.5
23	52	28	12	2.7	1.8	7.1	20	35	84	3.4	2.0	4.6	5.7
24	52	25	10	2.6	3.1	6.3	17	28	48	3.4	2.0	3.4	22
25	39	22	8.5	2.3	5.7	6.0	39	25	17	2.7	2.0	2.7	21
26	28	22	8.5	2.0	7.1	5.7	39	25	8.5	2.7	2.7	2.4	19
27	22	17	7.1	2.0	7.9	5.5	35	39	8.5	2.7	2.7	2.3	57
28	17	14	7.1	1.8	7.1	15	32	17	96	2.7	3.4	2.3	8.5
29	17	12	7.1	1.8	------	165	22	12	140	2.4	3.4	2.1	8.5
30	12	12	5.7	1.6	------	132	20	10	110	2.4	2.7	2.0	8.5
31	14	------	5.7	1.6	------	43	------	8.5	------	2.3	2.7	------	7.4

NOTE.—Discharge, May 8–9, estimated by interpolation; no gage-height record. Mean daily gage heights Aug. 6–7 estimated from plotted gage-height graph; no gage-height record. Mean daily gage heights, Nov. 18–20, Mar. 29–30, Apr. 10–12, 17–19, May 4–6, 18–20, June 3–4, and 18–19, determined from plotted graph on account of great fluctuation in stage.

Monthly discharge of Opalescent River below Flowed Land, near Tahawus, N. Y., for the period Oct. 1, 1921, to Oct. 31, 1922.

[Drainage area, 9 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1921–22.					
October	110	12	35.3	3.92	4.52
November	400	7.1	43.3	4.81	5.37
December	140	4.6	17.8	1.98	2.28
January	5.7	1.6	3.08	.342	.39
February	7.9	1.2	2.18	.242	.25
March	165	4.1	23.1	2.57	2.96
April	1,090	11	111	12.3	13.72
May	510	8.5	102	11.3	13.03
June	335	3.4	66.9	7.43	8.29
July	110	2.3	12.4	1.38	1.59
August	96	2.0	9.91	1.10	1.27
September	12	1.4	3.59	.399	.45
The year	1,090	1.2	35.9	3.99	54.12
1922.					
October	57	1.6	12.0	1.33	1.53

NOTE.—The above figures on discharge in second-feet per square mile and run-off in inches do not necessarily represent the natural flow from the drainage basin because of storage in Flowed Land.

INDIAN LAKE RESERVOIR NEAR INDIAN LAKE, N. Y.

LOCATION.—At masonry storage dam at outlet of Indian Lake, 2 miles south of Indian Lake village, Hamilton County, and 7½ miles above mouth of Indian River.

DRAINAGE AREA.—131 square miles, including 9.3 square miles of water surface of Indian Lake at the elevation of crest of spillway (measured on topographic maps).

RECORDS AVAILABLE.—Records of stage and gate openings from July 22, 1900, to September 30, 1922.

GAGES.—Elevation of water surface in reservoir is determined by chain gage on dam near gate house; prior to November 17, 1911, a staff gage was used at same site. Mean elevation of crest of spillway is at gage height 33.38 feet. Width of sluice gate openings determined by gage scales at sides of gate stems inside gate house. Gages read by Lester Savarie.

EXTREMES OF STAGE.—Maximum elevation of water surface in reservoir, 35.65 feet June 23; minimum elevation, 12.1 feet several times in October.

1900–1922: Maximum elevation recorded, 38.8 feet March 28, 1913; minimum elevation, 2.0 feet March 9–18, 1907, and January 3–17, 1910.

REGULATION.—At ordinary stages the discharge is completely regulated by the operation of the sluice gates. Water is held in storage until needed to supplement the flow of the upper Hudson during the low-water period. The storage capacity is about 4.7 billion cubic feet, equivalent to a flow of about 600 second-feet for 90 days.

Daily gage height, in feet, of Indian Lake reservoir near Indian Lake, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	14.3	13.3	19.3	23.35	20.55	13.8	19.8	34.8	34.7	34.95	34.25	31.0
2	14.1	13.6	19.45	23.4	20.25	13.65	20.4	34.75	34.7	34.95	34.05	30.8
3	13.9	13.85	20.0	23.45	20.15	13.4	20.8	34.7	35.15	34.95	33.85	30.45
4	13.7	14.05	20.45	23.5	21.1	13.15	21.0	34.65	35.5	34.9	33.6	30.1
5	13.45	14.2	20.7	23.6	19.8	12.9	21.2	35.0	35.45	34.9	33.5	29.65
6	13.2	14.4	21.0	23.7	19.65	12.75	21.4	35.25	35.15	34.95	33.4	29.2
7	13.0	14.55	21.15	23.8	19.3	12.55	21.7	35.35	34.75	35.0	33.45	28.8
8	12.8	14.6	21.3	23.9	9.0	12.35	22.0	35.35	34.7	35.0	33.55	28.45
9	12.5	14.65	21.4	24.0	18.7	12.55	22.3	35.15	34.65	35.0	33.65	28.0
10	12.35	14.75	21.5	24.1	18.4	12.65	23.0	35.0	34.6	35.0	33.7	27.85
11	12.1	14.85	21.55	24.2	18.1	12.9	24.2	34.8	34.5	35.0	33.75	27.25
12	12.1	14.95	21.6	24.25	17.8	13.15	26.0	34.5	34.5	35.0	33.75	26.85
13	12.2	15.05	21.65	24.3	17.5	13.35	28.3	34.4	34.5	35.05	33.75	26.6
14	12.2	15.15	21.7	24.3	17.25	13.6	29.55	34.4	34.5	35.05	33.7	26.35
15	12.2	15.25	21.75	24.1	17.0	13.8	30.2	34.4	34.55	35.05	33.7	26.1
16	12.15	15.3	21.8	23.9	16.75	14.0	30.55	34.45	34.6	35.05	33.65	25.8
17	12.15	15.4	21.9	23.7	16.5	14.25	31.05	34.5	34.7	35.05	33.6	25.5
18	12.1	15.6	22.2	23.5	16.25	14.5	31.85	34.55	34.85	35.05	33.45	25.2
19	12.1	16.2	22.35	23.3	15.95	14.7	33.0	34.85	35.05	35.05	33.25	24.8
20	12.2	16.9	22.45	23.1	15.6	14.8	34.0	35.15	35.15	35.05	33.0	24.55
21	12.45	17.5	22.55	22.9	15.3	14.9	34.55	35.35	35.2	35.05	32.8	24.1
22	12.65	17.8	22.7	22.7	15.05	15.3	34.7	35.5	35.6	35.0	32.55	23.8
23	12.85	18.05	22.8	22.5	14.8	15.5	34.7	35.45	35.65	34.9	32.3	23.45
24	12.95	18.3	22.9	22.3	14.55	15.75	34.6	35.4	35.4	34.8	32.1	23.1
25	13.1	18.45	23.0	22.1	14.5	15.9	34.45	35.3	35.1	34.8	31.85	22.75
26	13.2	18.55	23.05	21.9	14.35	16.1	34.5	35.2	34.9	34.8	31.65	22.45
27	13.3	18.7	23.1	21.7	14.15	16.3	34.6	35.1	34.95	34.85	31.45	22.1
28	13.4	18.85	23.15	21.5	13.95	16.5	34.7	34.95	35.05	34.85	31.35	21.75
29	13.5	19.0	23.2	21.35	-------	16.8	34.8	34.8	35.15	34.75	31.35	21.35
30	13.6	19.15	23.25	21.1	-------	18.0	34.8	34.75	34.9	34.6	31.35	21.05
31	13.55	-------	23.3	20.85	-------	19.0	-------	34.75	-------	34.45	31.2	-------

Gate openings, in inches, at Indian Lake reservoir near Indian Lake, N. Y., for the year ending Sept. 30, 1922.

Date.	Sluice gate A open.	Sluice gate B open.
Oct. 1, 12 a. m., to Oct. 12, 11 a. m.		54
Oct. 1, 12 a. m., to Oct. 20, 5 p. m.	60	
Oct. 31, 11 a. m., to Nov. 1, 3 p. m.		54
Jan. 15, 4 p. m., to Feb. 2, 10 a. m.[a]		54
Jan. 28, 1 p. m., to Mar. 3, 3 p. m.	30	
Feb. 6, 3 p. m., to Mar. 8, 1 p. m.[a]		54
Mar. 3, 3 p. m., to Mar. 8, 1 p. m.	60	
Apr. 7, 2 p. m., to Apr. 8, 2 p. m.[a]		54
Apr. 14, 8 p. m., to Apr. 15, noon[a]	30	54
Apr. 21, 8 a. m., to Apr. 24, 3 p. m.[a]		48
Apr. 24, 3 p. m., to Apr. 29, 1 p. m.[a]		12
Apr. 29, 1 p. m., to May 5, 4 p. m.		24
May 5, 4 p. m., to May 13, 5 p. m.		54
May 13, 5 p. m., to May 16, 8 a. m.		12
May 22, 7 p. m., to May 26, 4 p. m.		30
May 26, 4 p. m., to May 29, 6 p. m.		54
May 29, 6 p. m., to May 30, 6 p. m.		18
May 30, 6 p. m., to June 2, 1 p. m.		12
June 3, 8 a. m., to June 7, 6 p. m.		54
June 5, 6 p. m., to June 7, 6 p. m.	54	
June 7, 6 p. m., to June 12, 2 p. m.		24
June 20, 10 a. m., to June 26, 8 a. m.		54
June 22, 9 a. m., to June 26, 8 a. m.	54	
June 29, 8 a. m., to June 30, 7 p. m.	54	
June 29, 8 a. m., to July 1, 1 p. m.		54
July 1, 1 p. m., to July 4, 7 a. m.		30
July 22, 1 p. m., to July 24, 2 p. m.		30
July 29, 9 a. m., to July 31, 3 p. m.		30
July 31, 3 p. m., to Aug. 4, 9 a. m.		54
Aug. 4, 9 a. m., to Aug. 5, 5 p. m.		30
Aug. 5, 5 p. m., to Aug. 7, 10 a. m.		54
Aug. 16, 10 a. m., to Aug. 19, 12.30 p. m.		30
Aug. 19, 12.30 p. m., to Aug. 28, 11 a. m.		54
Aug. 30, noon, to Sept. 1, noon		30
Sept. 1, noon, to Sept. 30, midnight		54
Sept. 3, 8 a. m., to Sept. 12, 4 p. m.	60	
Sept. 14, 11 a. m., to Sept. 15, 10 a. m.	60	
Sept. 15, 10 a. m., to Sept. 18, 10 a. m.	30	
Sept. 20, 11 a. m., to Sept. 30, midnight	60	

[a] Date of change altered from gate keeper's record on basis of gage-height record from water-stage recorder on Indian River near Indian Lake. There is no question about the gate-keeper's record being recorded in error.

NOTE.—Small logway open 15 feet during following periods: Apr. 20, 8 a. m., to May 14, 4 p. m.; June 6, 9 a. m., to June 11, 1 p. m.; June 20, 10 a. m., to June 27, 7 a. m., and June 28, 6 a. m., to July 5, 8 a. m.

INDIAN RIVER NEAR INDIAN LAKE, N. Y.

LOCATION.—Three-fourths mile below dam at outlet of Indian Lake, 2 miles south of Indian Lake village, Hamilton County, 1 mile above mouth of Big Brook, and 6½ miles above mouth of Indian River.

DRAINAGE AREA.—132 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 1, 1912, to June 30, 1914; June 5, 1915, to September 30, 1922; also miscellaneous measurements in 1911.

GAGE.—Gurley seven-day graph water-stage recorder; installed August 30, 1916, on right bank at same datum as staff gage previously used. Recorder inspected by Lester Savarie.

DISCHARGE MEASUREMENTS.—Made from cable 75 feet below gage or by wading.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.99 feet from 8 a. m. to noon June 23 (discharge, 1,530 second-feet); minimum stage from water-stage recorder, 0.03 foot from 4 p. m. December 16 to 2 a. m. December 18 (discharge, 1.2 second-feet).

1912–1922: Maximum stage recorded, 7.8 feet at 4 p. m. March 28, 1913 (discharge, 3,460 second-feet); minimum discharge, 0.7 second-foot at midnight September 30, 1918.

CHANNEL AND CONTROL.—Control is a reef of coarse gravel; permanent.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Discharge is regulated by operation of sluice gates at Indian Lake dam.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 15 and 1,500 second-feet. Operation of water-stage recorder satisfactory except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of the recorder graph, or for days when there have been changes in openings of sluice gates at Indian Lake dam, by averaging the discharge for bihourly intervals of the day. Records good except for periods during which recorder did not operate satisfactorily

Discharge measurements of Indian River near Indian Lake, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 3	Covert and Shupe	2.83	535
Apr. 27	B. F. Howe	2.26	354

Daily discharge, in second-feet, of Indian River near Indian Lake, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	545	266	3.3	1.4	704	526	4.2	489	178	489	623	454
2	545	7.7	3.4	1.4	432	508	3.5	471	136	471	623	564
3	545	3.9	13	1.4	230	489	3.1	471	477	489	623	719
4	526	2.3	7.9	1.4	224	508	3.1	471	810	368	476	941
5	526	2.1	4.7	1.4	220	508	3.3	636	922	158	416	919
6	526	2.1	3.7	1.4	407	489	4.7	919	1,270	59	623	919
7	526	2.1	3.1	1.4	664	489	230	985	1,030	74	347	897
8	526	1.9	1.6	1.4	643	296	262	963	489	77	39	897
9	508	1.9	1.4	1.4	643	7.2	11	919	471	83	39	897
10	508	1.9	1.4	1.4	623	4.7	13	875	453	92	39	897
11	508	1.9	1.4	1.4	623	3.7	26	810	402	92	39	875
12	339	2.3	1.4	1.4	603	3.5	29	788	210	92	39	756
13	152	2.3	1.4	1.4	603	3.3	32	697	39	92	39	526
14	152	2.3	1.4	1.4	603	4.7	182	267	39	90	39	686
15	148	2.3	1.4	157	584	9.9	463	187	39	89	40	788
16	146	2.1	1.3	471	584	7.5	42	94	39	89	264	746
17	146	2.1	1.2	471	564	6	48	51	43	89	388	746
18	144	4.8	3.1	471	564	4	62	48	47	92	388	593
19	144	7.2	3.5	471	564	2.7	120	57	49	92	495	489
20	116	6.2	2.3	471	545	3.1	191	98	476	92	603	635
21	7.6	4.2	1.9	471	545	3.5	579	150	853	90	603	767
22	5.5	3.3	1.8	471	545	3.3	788	226	1,230	182	603	767
23	4.2	2.7	1.5	471	545	2.9	788	545	1,480	418	603	746
24	3.9	2.5	1.4	471	545	2.9	616	526	1,430	281	603	746
25	3.7	2.3	1.4	471	545	3.9	322	508	1,270	54	584	725
26	3.7	2.1	1.4	471	526	5.5	338	542	518	55	584	725
27	3.7	1.9	1.4	471	526	9.9	338	725	77	55	584	725
28	3.5	2.3	1.4	570	526	15	353	684	201	57	289	704
29	3.3	2.3	1.4	704	-------	17	418	532	845	277	25	704
30	3.3	2.5	1.4	704	-------	7.5	489	232	1,100	402	164	704
31	181	-------	1.4	704	-------	5.0	-------	185	-------	501	347	-------

NOTE.—Mean daily gage heights, Oct. 15, Jan. 3–14, 16–19, Jan. 29 to Feb. 1, June 17–22, and July 19–21, estimated from gage-height graph; water-stage recorder not operating. Discharge for Jan. 15, 28, Feb. 2, and Mar. 17–18, during which water-stage recorder did not operate satisfactorily, and when there were changes in gate openings at Indian Lake reservoir, determined from gage heights estimated from graph and from record of gate openings and elevation of water in Indian Lake reservoir.

Monthly discharge of Indian River near Indian Lake, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 132 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	545	3.3	242.	1.83	2.11
November	266	1.9	11.7	.089	.10
December	13	1.2	2.53	.019	.02
January	704	1.4	275	2.08	2.40
February	704	220	533	4.04	4.21
March	526	2.7	127	.962	1.11
April	788	3.1	225	1.70	1.90
May	985	48	489	3.70	4.27
June	1,480	39	554	4.20	4.69
July	501	54	182	1.38	1.59
August	623	25	360	2.73	3.15
September	941	454	742	5.62	6.27
The year	1,480	1.2	309	2.34	31.82

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches shown by the table do not represent the natural flow from the basin because of artificial storage in Indian Lake reservoir.

SCHROON RIVER AT RIVERBANK, N. Y.

LOCATION.—At steel highway bridge near Riverbank post office, Warren County, near Tumblehead Falls, 9 miles below Schroon Lake and 9 miles above Warrensburg.

DRAINAGE AREA.—534 square miles.

RECORDS AVAILABLE.—September 2, 1907, to September 30, 1922.

GAGE.—Chain, on upstream side of bridge; read by J. H. Roberts.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Gravel; occasionally shifting. Logs become lodged on the control at times nearly every year.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.23 feet at 8 a.m. and 4 p.m., April 13 (discharge, 9,740 second-feet); minimum stage, 1.37 feet at 4 p.m. August 16 (discharge, 138 second-feet).

1907–1922: Maximum stage recorded, 10.7 feet at 5 p.m. March 28, 1913 (discharge, about 13,500 second-feet); minimum stage, 0.85 foot at 5 p.m., October 17, 1909 (discharge, 28 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Flow affected by storage in Schroon and Brant lakes.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice and by logs on the control; duration of such effect November 28 to March 14. Former rating curve revised above 2,000 second-feet and is well defined between 150 and 7,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except those for periods when stage-discharge relation was affected by ice or logs which are fair.

Discharge measurements of Schroon River at Riverbank, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 21	Shupe and Howe	[a] 2.89	675	Apr. 28	B. F. Howe	4.45	2,090
Jan. 29	C. C. Covert	[b] 2.30	300	June 27	Granger and Shupe	5.21	2,850
Mar. 9	Covert and Granger	[c] 2.70	586	Sept. 22	A. W. Harrington	1.58	201
Apr. 18	Howe and Granger	7.25	5,310				

[a] Stage-discharge relation affected by logs.
[b] Stage-discharge relation affected by ice.
[c] Stage-discharge relation affected by logs and ice.

Daily discharge, in second-feet, of Schroon River at Riverbank, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	232	201	440	500	300	300	4,150	1,290	745	2,140	232	232
2	232	232	440	420	380	320	3,760	1,290	718	2,140	248	216
3	232	232	700	500	360	320	3,520	1,210	860	2,250	248	201
4	232	232	950	440	340	280	3,520	1,290	920	2,140	232	216
5	216	216	950	440	320	280	3,280	1,550	1,060	2,140	232	201
6	201	201	1,000	460	360	300	2,800	1,840	1,130	2,140	248	186
7	216	216	950	420	300	300	2,800	2,040	1,290	1,840	248	201
8	186	201	900	440	320	650	3,040	2,040	1,210	1,740	298	186
9	201	216	850	420	300	600	3,760	2,040	1,210	1,640	333	172
10	201	232	800	400	340	650	4,280	2,040	1,130	1,550	407	186
11	216	248	800	400	360	700	5,330	1,940	1,060	1,210	351	186
12	232	248	750	400	360	650	8,800	1,840	990	1,060	333	201
13	232	232	650	380	340	850	9,700	1,740	920	1,060	232	201
14	201	216	600	360	340	1,100	8,650	1,550	860	920	201	201
15	201	232	500	360	340	1,210	7,450	1,370	800	860	172	201
16	201	232	400	320	280	1,460	6,590	1,210	745	800	138	201
17	186	232	440	360	280	1,550	5,890	1,130	662	772	369	201
18	186	298	550	360	280	1,550	5,470	1,210	800	718	264	201
19	186	369	600	360	260	1,460	5,190	1,290	920	662	298	201
20	248	232	650	380	260	1,640	4,930	1,550	1,290	585	264	201
21	248	232	700	360	260	1,550	4,540	1,640	1,640	535	248	201
22	232	216	750	360	280	1,550	4,020	1,550	2,250	512	232	201
23	232	232	750	300	280	1,460	3,520	1,460	3,280	490	232	201
24	232	281	550	260	240	1,460	3,040	1,290	3,890	447	232	201
25	201	298	550	240	260	1,460	2,690	1,290	3,640	369	216	201
26	201	333	550	200	280	1,460	2,360	1,130	3,160	298	232	186
27	201	369	550	260	320	1,740	2,140	1,060	2,920	264	248	186
28	201	420	550	240	320	2,140	2,040	990	2,580	248	232	186
29	201	400	550	300	-------	2,800	1,060	990	2,360	232	232	201
30	201	440	480	300	-------	3,890	1,210	920	2,250	216	232	201
31	186	-------	600	300	-------	4,150	-------	772	-------	216	232	-------

NOTE.—Discharge, Nov. 28 to Dec. 11, determined by indirect method owing to backwater from logs on control. Discharge, Dec. 12 to Mar. 14, determined from gage-heights corrected for ice effect on basis of three discharge measurements, study of observer's notes, weather records, and comparison with records for Hudson River at North Creek and Hadley.

Monthly discharge of Schroon River at Riverbank, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 534 square miles]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	248	186	212	0.397	0.46
November	440	201	265	.496	.55
December	1,000	400	661	1.24	1.43
January	500	200	363	.680	.78
February	380	240	309	.579	.60
March	4,150	280	1,280	2.40	2.77
April	9,700	1,060	4,320	8.09	9.03
May	2,040	772	1,440	2.70	3.11
June	3,890	662	1,580	2.96	3.30
July	2,250	216	1,040	1.95	2.25
August	407	138	255	.478	.55
September	232	172	199	.373	.42
The year	9700	138	992	1.86	25.25

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches do not necessarily represent the natural flow from the basin because of artificial storage in Schroon and Brant lakes.

SACANDAGA RIVER NEAR HOPE, N. Y.

LOCATION.—1½ miles below junction of East and West branches, 3¼ miles above Hope post office, Hamilton County, and 12 miles above Northville.

DRAINAGE AREA.—494 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 15, 1911, to September 30, 1922.

GAGE.—Staff in two sections on left bank, the lower inclined, the upper vertical; read by Melvin Willis.

DISCHARGE MEASUREMENTS.—Made from cable 100 feet below gage or by wading.

CHANNEL AND CONTROL.—Rocky; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.10 feet at 7.10 a. m. April 12 (discharge, 19,200 second-feet); minimum stage, 1.65 feet at 6.20 p. m. September 30 (discharge, 104 second-feet).

1911–1922: Maximum stage recorded, 11.7 feet during flood of March 25 to 30, 1913, determined by leveling from flood marks (discharge, above limits of rating curve); minimum stage, 1.17 feet at 7.55 a. m. September 30, 1913 (discharge, about 16 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent; affected by ice during much of the period, December to March. Rating curve well defined between 60 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except during periods of estimate, which are fair.

Discharge measurements of Sacandaga River near Hope, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 3	Covert and Shupe	3.38	1,180	Sept. 21	A. W. Harrington	1.95	207

Daily discharge, in second-feet, of Sacandaga River near Hope, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	292	558	1,110	750			3,990	1,440	495	2,390	282	182
2	242	1,440	1,110	650			2,930	1,220	525	2,930	292	168
3	255	1,220	4,730	550			2,560	1,220	2,080	2,560	360	158
4	320	1,010	1,680	650			2,390	1,440	3,330	2,080	443	154
5	273	910	1,110	820			2,930	3,130	2,230	1,440	438	175
6	251	820	1,110	740			5,790	2,930	1,680	1,220	495	175
7	225	910	1,110	740			8,490	3,130	1,440	1,010	558	168
8	217	1,010	1,060			1,000	8,160	2,930	1,220	910	625	158
9	220	1,010	1,060				7,840	2,390	1,010	910	590	147
10	310	910	1,010				11,800	2,080	1,440	740	525	141
11	495	820	1,010				14,500	1,940	3,330	660	465	128
12	495	780	820				18,600	1,680	2,560	558	454	122
13	495	740	740				12,700	1,330	1,940	495	432	135
14	460	660	660				6,930	1,110	1,330	432	245	202
15	345	625	625		480		6,930	960	1,010	390	273	320
16	315	590	590			2,560	7,530	820	780	360	255	301
17	292	625	625			1,810	6,930	780	780	350	238	273
18	282	1,940	1,220			1,440	9,180	1,220	1,680	370	230	247
19	373	3,990	1,440			1,330	8,830	2,230	2,230	380	255	238
20	264	4,230	1,330	280		1,330	6,350	2,230	2,080	355	234	213
21	495	3,330	1,110			1,440	5,250	1,940	7,230	320	217	198
22	910	2,740	820			1,560	4,230	1,810	8,490	296	205	182
23	660	2,230	660			1,440	3,540	1,440	5,790	320	198	168
24	525	1,680	625			1,330	2,930	1,160	3,990	385	190	161
25	465	1,560	590			1,440	2,740	1,110	3,330	350	182	154
26	448	1,560	590			1,680	2,560	1,110	2,560	320	172	150
27	400	1,440	590			1,680	2,230	960	1,940	292	154	138
28	370	1,220	660			6,930	2,080	910	1,940	264	230	125
29	340	1,160	650			10,300	1,810	740	2,560	230	230	116
30	320	1,160	650			7,530	1,560	625	2,230	205	205	106
31	310		700			6,070		558		217	194	

NOTE.—Discharge, Dec. 29 to Jan. 3, determined from gage heights corrected for ice effect, from study of gage-height graph, weather records, and comparison with records of flow at Hadley. No gage-height record Jan. 8 to Mar. 11. Braced figures show mean discharge for periods indicated by conparison with record of flow of Sacandaga River at Hadley.

Monthly discharge of Sacandaga River near Hope, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 494 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	910	217	373	0.755	0.87
November	4,230	558	1,430	2.89	3.22
December	4,730	590	1,030	2.09	2.41
January	----------	----------	452	.915	1.05
February	----------	----------	480	.972	1.01
March	10,300	----------	2,090	4.23	4.88
April	18,600	1,560	6,140	12.4	13.83
May	3,130	558	1,570	3.18	3.67
June	8,490	495	2,440	4.94	5.51
July	2,930	205	766	1.55	1.79
August	625	154	318	.644	.74
September	320	106	177	.358	.40
The year	18,600	106	1,430	2.89	39.38

SACANDAGA RIVER AT HADLEY, N. Y.

LOCATION.—Half a mile west of railroad station at Hadley, Saratoga County, 1 mile above mouth of river and 4½ miles below site of proposed storage dam at Conklingville.

DRAINAGE AREA.—1,060 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1911, to September 30, 1922. September 13, 1907, to December 31, 1910, at upper bridge station; September 24, 1909, to midsummer of 1911, at lower bridge station.

GAGE.—Gurley seven-day repeating graph water-stage recorder in a concrete shelter on left bank. Recorder inspected by J. F. Kelly.

DISCHARGE MEASUREMENTS.—Made from highway bridge half a mile below gage or by wading.

CHANNEL AND CONTROL.—Very rough but probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 10.70 feet from 5 a. m. to 8 a. m. April 13 (discharge, 23,100 second-feet); minimum stage from water-stage recorder, 2.79 feet from noon to midnight September 30 (discharge, 290 second-feet).

1911–1922: Maximum stage from water-stage recorder, 12.36 feet from 11 a. m. to noon March 28, 1913 (discharge, about 35,500 second-feet); minimum stage from water-stage recorder, 2.25 feet all day September 16, 1913 (discharge, about 61 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent during the year except as affected by ice from December to March. A revision of the previous rating curve below 3,500 second-feet, in accordance with recent discharge measurements, and well defined between 300 and 3,500 second-feet was used throughout the year. The previous rating curve was well defined between 3,500 and 12,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph, or for days of considerable fluctuation, by averaging discharge for intervals of the day. Records good except for periods of ice effect and estimate, which are fair.

Discharge measurements of Sacandaga River at Hadley, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 28	C. C. Covert	[a] 4.30	641
Sept. 20	A. W. Harrington	3.34	637
23	do	3.13	480

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Sacandaga River at Hadley, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	350	546	2,800	800	480	1,400	11,100	2,540	1,010	4,700	442	553
2	460	880	2,630	750	550	1,200	8,050	2,220	929	5,340	442	480
3	460	1,920	4,200	750	800	1,200	8,050	2,060	1,520	5,470	442	442
4	430	1,780	5,730	950	900	1,200	7,130	1,990	3,880	5,470	499	424
5	518	1,550	6,000	1,200	1,000	1,100	6,270	3,150	4,460	4,820	839	412
6	539	1,440	5,340	1,200	1,100	1,100	5,860	4,700	4,340	4,220	782	367
7	480	1,310	4,460	1,100	1,000	1,300	5,860	5,340	3,770	3,360	890	367
8	442	1,210	3,560	1,000	1,200	2,200	6,700	5,470	3,080	2,800	2,140	367
9	436	1,280	2,630	1,200	1,200	3,200	8,050	5,210	2,460	2,460	2,890	372
10	442	1,370	2,300	1,300	1,100	3,400	10,400	4,820	1,920	1,990	2,140	350
11	499	1,410	2,140	1,300	1,000	3,400	13,500	4,220	2,630	1,660	1,580	330
12	726	1,370	1,850	1,400	1,200	3,600	19,400	3,560	3,880	1,340	1,260	356
13	875	1,140	1,500	1,300	1,200	3,400	22,500	2,980	3,990	1,180	1,050	473
14	866	1,060	1,340	1,200	1,300	3,400	19,400	2,460	3,560	1,030	893	546
15	750	1,120	1,110	1,100	1,000	4,000	15,600	1,990	2,890	929	734	610
16	648	1,160	1,030	1,000	850	4,200	13,500	1,710	2,380	822	632	848
17	574	1,150	992	800	850	4,400	12,200	1,500	1,920	774	546	929
18	512	1,980	1,240	850		4,700	11,500	1,380	2,210	875	486	790
19	492	3,880	1,990	900		4,460	11,900	2,020	3,560	1,020	506	686
20	560	5,080	2,220	850	700	4,340	11,500	3,560	3,660	1,010	632	625
21	1,020	5,860	1,990	900		4,460	10,000	3,770	4,250	814	595	574
22	1,410	5,860	1,300	850	700	4,460	8,700	3,560	7,310	710	518	539
23	1,050	5,210	1,000	750	750	4,340	7,280	3,080	10,800	632	460	480
24	974	4,460	950	750	1,000	3,990	6,270	2,460	11,500	632	442	436
25	866	3,660	850	750	1,600	3,770	5,340	2,060	10,400	726	480	394
26	798	3,170	800	700	1,800	3,990	4,700	2,220	8,370	750	702	356
27	742	2,720	750	650	1,700	4,700	4,100	2,300	6,840	670	830	335
28	670	2,540	800	650	1,500	6,550	3,660	1,920	5,860	625	848	310
29	610	2,630	800	550	-------	10,000	3,260	1,620	5,340	588	790	300
30	574	2,720	800	550	-------	13,500	2,890	1,380	5,080	532	726	295
31	546	-------	750	500	-------	13,500	-------	1,160	-------	473	640	-------

NOTE.—Discharge, Dec. 22 to Feb. 17 and Feb. 22 to Mar. 17, determined from gage heights corrected for ice effect from one discharge measurement, study of weather records and gage-height graph, and comparison with records of flow for Hudson River at Hadley and Spier Falls. Discharge, Feb. 18–21, estimated from comparison with records of flow for Hudson River at Hadley and Spier Falls. Mean daily gage heights, Apr. 1, May 1–3, 14, and June 11, estimated from recorder graph; water-stage recorder not operating satisfactorily.

Monthly discharge of Sacandaga River at Hadley, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 1,060 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,410	350	655	0.618	0.71
November	5,860	546	2,380	2.25	2.51
December	6,000	750	2,120	2.00	2.31
January	1,400	500	921	.869	1.00
February	1,800	480	1,020	.962	1.00
March	13,500	1,100	4,210	3.97	4.58
April	22,500	2,890	9,490	8.95	9.99
May	5,470	1,160	2,850	2.69	3.10
June	11,500	929	4,460	4.21	4.70
July	5,470	473	1,880	1.77	2.04
August	2,890	442	866	.817	.94
September	929	295	478	.451	.50
The year	22,500	295	2,610	2.46	33.38

HOOSIC RIVER NEAR EAGLE BRIDGE, N. Y.

LOCATION.—Half a mile below Walloomsac River and 1½ miles above Owl Kill and Eagle Bridge, Rensselaer County.

DRAINAGE AREA.—512 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 13, 1910, to March 31, 1922, when station was discontinued. Comparable records at station at Buskirk, 4 miles below, September 25, 1903, to December 31, 1908.

GAGE.—Chain gage on left bank near the farmhouse of James Russell 1½ miles above Eagle Bridge. Gage read by Michael Murrane, May 1 to August 14, 1921, and by John Quinn, August 24, 1921, to March 31, 1922.

DISCHARGE MEASUREMENTS.—Made from cable half a mile below gage or by wading.

CHANNEL AND CONTROL.—Gravel; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the period October 1, 1921, to March 31, 1922, 11.25 feet at 7 a. m. March 8 (discharge, 11,700 second-feet); minimum stage, 2.40 feet at 7 a. m. October 30 and November 7 (discharge, 82 second-feet).

1910–1922: Maximum stage recorded, 13.5 feet at 7.30 a. m. July 9, 1915 (discharge, about 16,700 second-feet), possibly higher stages previous to August 17, 1914, as gage was inaccessible at extremely high water; minimum stage, 6.1 feet (old datum) at 5 p. m. September 14, 1913 (discharge, practically zero).

ICE.—Stage-discharge relation usually affected by ice.

REGULATION.—Flow affected by storage on Walloomsac River and at Hoosick Falls, 2 miles above gage.

ACCURACY.—Stage-discharge relation changed at time of high water, March 8; rating curve used before this time well defined between 150 and 9,000 second-feet; rating curve used after high water, fairly well defined between 1,000 and 5,000 second-feet. Stage-discharge relation affected by ice during most of the period, December to February. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except for periods of low water, when the mean of two gage heights may not indicate a true mean daily gage height, owing to abnormal fluctuation in stage and for periods of ice effect, for which they are fair.

Discharge measurements of Hoosic River near Eagle Bridge, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Jan. 20	E. B. Shupe	[a] 4.36	536
Apr. 7	Granger and Shupe	6.65	3,210
Aug. 26	Shupe and Harrington	5.41	1,780

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Hoosic River near Eagle Bridge, N. Y., for the period Oct. 1, 1921, to Mar. 31, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	165	170	1,470	420	300	800
2	91	185	1,190	320	2,200	1,020
3	152	185	4,450	240	4,200	670
4	185	185	2,690	240	2,200	555
5	170	170	1,880	1,100	1,300	610
6	160	120	1,370	1,200	950	500
7	145	136	1,020	600	950	5,710
8	136	165	870	420	750	8,420
9	185	185	700	340	750	2,440
10	170	185	730	360	750	1,870
11	178	165	670	400	480	1,560
12	165	110	730	220	650	1,180
13	196	220	610	280	550	1,180
14	190	178	555	180	480	1,560
15	152	250	528	240	550	2,440
16	136	214	360	300	420	1,760
17	120	268	555	220	450	1,270
18	140	1,100	1,370	320	480	930
19	136	1,280	1,880	240	500	860
20	165	1,670	1,020	320	1,300	2,440
21	405	1,570	940	240	1,500	2,320
22	250	940	500	200	1,880	1,560
23	178	475	420	160	3,590	1,180
24	178	528	650	190	6,710	1,180
25	185	730	500	170	3,450	1,360
26	145	670	400	200	2,100	1,180
27	145	610	420	220	1,770	3,440
28	145	3,590	360	200	800	5,210
29	145	2,810	300	240	----------	7,230
30	100	1,570	260	260	----------	4,890
31	110	----------	260	260	----------	3,440

NOTE.—Discharge, Dec. 23 to Feb. 21, determined from gage heights corrected for ice effect from discharge measurements; study of weather records, gage-height graph, and observer's notes; and comparison with records of flow for other stations.

Monthly discharge of Hoosic River near Eagle Bridge, N. Y., for the period Oct. 1, 1921, to Mar. 31, 1922.

[Drainage area, 512 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	405	91	165	0.322	0.37
November	3,590	110	688	1.34	1.50
December	4,450	260	957	1.87	2.16
January	1,200	160	332	.648	.75
February	6,710	300	1,500	2.93	3.05
March	8,420	500	2,280	4.45	5.13

MOHAWK RIVER AT CRESCENT DAM, N. Y.

LOCATION.—At Crescent dam of Barge Canal, 3 miles above mouth of river at Cohoes, Albany County.

DRAINAGE AREA.—3,490 square miles (furnished by the Department of State Engineer and Surveyor.)

RECORDS AVAILABLE.—December 1, 1917, to September 30, 1922.

GAGE.—Gurley seven-day graph water-stage recorder on left bank 50 feet above guard gate at head of Waterford flight of locks and 200 yards from left end of spillway. Inspected by operator from Barge Canal power house the dam.

DISCHARGE MEASUREMENTS.—Made from steel highway bridge at Crescent, 1½ miles upstream.

CHANNEL AND CONTROL.—Control is the crest of the spillway.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.83 feet at 3 p. m. April 12 (discharge, 59,400 second-feet); minimum daily discharge, 1,060 second-feet, October 9.

1917–1922: Maximum stage recorded, 9.24 feet at 4 p. m. March 27, 1920 (discharge, 67,200 second-feet), minium stage, 4.04 feet at 6 a. m. August 21, 1918 (discharge, 157 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is diverted at this point for canal purposes through Lock 6 and is not returned to the river. The following tables of discharge include the flow over spillway, through gates at right end of dam, when opened, through Barge Canal power house, and that diverted through Lock 6.

REGULATION.—Seasonal distribution of flow regulated by the Delta reservoir on the upper Mohawk, and by Hinckley reservoir on West Canada Creek. Large diurnal fluctuations occur during low water caused by operation of movable dams upstream.

ACCURACY.—Stage-discharge relation permanent, except as affected by operation of gates which was permanently discontinued August 6, 1922; not affected by ice. Rating curve for spillway used before August 6 well defined between 5,000 and 50,000 second-feet; curve used after that date well defined between 4,000 and 50,000 second-feet. Rating curve for gates, theoretical and approximate only. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge for spillway ascertained by applying to rating table mean daily gage height determined from inspection of recorder graph, or for days of considerable fluctuation, by averaging discharge for intervals of day. To this is added the discharge through gates, power plant, and diversion through Lock 6. Records good, except for days when the proportion of the total discharge passing through the gates is large, for which they are fair.

COOPERATION.—Recorder inspected by an employee of the State superintendent of public works. Record of gate openings furnished by Cohoes Power & Light Corporation.

Discharge measurements of Mohawk River at Crescent dam, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 4	Granger and Shupe	6.06	14,800
May 27	C. C. Covert	5.24	7,140

90902—25†—WSP 541——11

Daily discharge, in second-feet, of Mohawk River at Crescent dam, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,440	1,970	19,800	1,880	2,010	4,840	18,300	3,320	2,700	9,830	1,540	2,280
2	1,090	2,660	15,100	3,220	2,320	4,500	16,300	2,740	2,650	15,600	1,920	2,350
3	1,390	4,040	33,300	3,140	2,410	3,840	14,300	2,550	4,310	15,600	2,090	2,290
4	1,300	3,980	26,400	3,110	5,360	3,810	15,700	3,490	14,000	14,400	1,890	2,250
5	1,470	2,920	15,500	3,910	5,620	4,100	17,600	11,400	13,000	7,250	2,760	1,950
6	1,370	2,860	11,900	4,370	4,520	4,240	32,800	17,600	7,490	5,640	2,580	2,160
7	1,380	2,650	9,340	7,770	4,610	6,230	34,300	11,700	6,260	3,810	5,230	2,500
8	1,680	3,180	5,840	5,460	4,040	29,100	32,700	12,000	3,900	2,140	13,900	2,340
9	1,060	2,880	5,930	3,780	3,890	31,300	33,500	9,900	3,350	2,270	10,100	2,140
10	1,450	3,000	4,850	3,900	3,200	23,200	28,900	7,230	2,790	2,700	6,420	1,960
11	1,460	6,150	4,690	3,960	2,620	18,300	29,700	5,670	13,400	1,690	3,430	1,880
12	1,660	5,660	5,090	2,990	2,570	14,300	53,500	4,600	48,400	1,350	2,140	1,860
13	1,700	4,250	5,540	2,310	2,660	12,800	44,900	4,580	27,500	1,350	2,940	2,440
14	1,810	3,230	4,950	1,580	2,970	17,800	31,100	3,710	17,600	1,820	2,800	2,550
15	2,000	3,570	4,800	1,820	2,960	38,500	25,900	3,050	9,720	2,270	2,080	2,190
16	1,280	4,240	4,430	2,340	2,930	32,100	31,100	3,070	5,820	2,260	2,110	3,590
17	1,550	7,890	3,460	1,900	1,800	19,000	23,700	2,680	3,350	2,030	1,940	2,720
18	1,380	16,400	6,060	2,360	2,710	11,400	23,700	3,390	3,040	2,270	1,890	1,980
19	1,400	15,700	13,000	2,130	2,920	8,420	25,900	3,990	6,030	3,320	2,230	1,880
20	1,940	18,200	7,940	2,450	2,450	11,000	21,600	8,740	4,960	2,400	2,400	1,840
21	3,090	15,400	4,790	2,610	3,360	23,900	16,700	5,310	6,450	1,230	2,320	1,710
22	4,040	11,800	3,160	2,190	6,410	17,600	13,100	4,310	31,200	1,830	1,750	1,880
23	2,150	7,110	3,370	2,710	6,090	12,100	8,680	3,580	34,400	1,810	1,930	2,100
24	2,610	6,980	3,540	2,180	14,000	9,870	7,090	3,670	28,200	1,630	2,390	1,550
25	2,220	7,390	2,420	1,390	17,600	12,500	5,980	3,480	17,600	2,480	2,820	1,620
26	1,670	9,650	2,470	2,140	13,700	13,600	4,170	9,110	8,940	2,730	3,690	1,610
27	1,770	8,880	3,120	2,220	10,300	19,700	2,900	8,310	5,760	1,540	4,410	1,560
28	1,780	27,800	2,450	1,860	7,720	26,900	4,940	5,850	4,400	2,020	2,780	1,670
29	2,000	40,100	2,190	1,820	.....	37,700	4,390	4,630	7,190	2,260	3,330	1,570
30	1,200	23,200	2,330	2,210	.....	32,100	3,560	2,820	9,180	2,010	2,500	1,730
31	1,620	.....	2,340	1,850	.....	22,500	.....	2,900	.....	1,800	2,590	.....

NOTE.—Above figures of daily discharge include flow over spillway, through gates and power plant, and diversion through Lock 6.

Mean daily gage height for the following days estimated from recorder graph and from staff gage readings at the dam May 13–17 and Sept. 9; water-stage recorder not operating satisfactorily.

Monthly discharge of Mohawk River at Crescent dam, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 3,490 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	4,040	1,060	1,740	0.499	0.58
November	40,100	1,970	9,120	2.61	2.91
December	33,300	2,190	7,750	2.22	2.56
January	7,770	1,390	2,820	.808	.93
February	17,600	1,800	5,130	1.47	1.53
March	38,500	3,810	17,000	4.87	5.62
April	53,500	2,900	20,900	5.99	6.68
May	17,600	2,550	5,790	1.66	1.91
June	48,400	2,650	11,800	3.38	3.77
July	15,600	1,230	3,910	1.12	1.29
August	13,900	1,540	3,320	.952	1.10
September	3,590	1,550	2,070	.599	.67
The year	53,500	1,060	7,600	2.18	29.55

WEST CANADA CREEK AT HINCKLEY, N. Y.

LOCATION.—A mile below Hinckley dam at Hinckley, Oneida County, and a quarter of a mile below New York Central Railroad bridge.

DRAINAGE AREA.—373 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 14, 1919, to September 30, 1922.

GAGE.—Gurley seven-day graph water-stage recorder on right bank; inspected by Charles D. Cady, gate tender at State dam.

DISCHARGE MEASUREMENTS.—Made from cable 1,000 feet above gage.

CHANNEL AND CONTROL.—Large boulders on solid rock bottom; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.93 feet at 2 p. m. April 12 (discharge, 10,800 second-feet); minimum stage from water-stage recorder 3.25 feet from 3 to 5 p. m. September 2 (discharge, 178 second-feet).

1919–1922: Maximum stage from water-stage recorder, 8.93 feet April 12, 1922 (discharge, 10,800 second-feet); minimum stage from water-stage recorder 2.53 feet at 12.30 p. m., August 31, 1919 (discharge, 8 second-feet), caused by closing of gates in dam.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Seasonal flow regulated by storage in Hinckley reservoir, Consolidated Water Co.'s reservoir on Black Creek at Grey and several small lakes. Diurnal flow affected slightly at low stages by operation of the Fibre Co.'s mill at Hinckley.

DIVERSIONS.—Consolidated Water Co. of Utica diverts water for Utica from Hinckley reservoir.

ACCURACY.—Stage-discharge relation permanent. Rating curve revised above 3,000 second-feet and is well defined between 100 and 5,000 second-feet; used throughout the year. Operation of water-stage recorder satisfactory throughout year. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph, or for days of considerable fluctuations, by averaging discharge for intervals of the day. Records good.

COOPERATION.—Station installed by Utica Gas & Electric Co. Maintained by United States Geological Survey in cooperation with the State of New York.

Discharge measurements of West Canada Creek at Hinckley, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 16	B. F. Howe	4.10	625
May 9	Covert and Shupe	5.87	3,010
Aug. 12	Granger and Harrington	4.26	738

Daily discharge, in second-feet, of West Canada Creek at Hinckley, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	569	770	1,490	744	694	679	2,160	1,220	576	2,320	640	753
2	562	806	1,270	744	702	908	2,080	1,170	590	4,300	640	438
3	555	806	2,040	744	694	1,120	1,720	1,170	789	3,860	633	268
4	555	824	3,000	753	694	1,120	1,550	1,170	2,450	2,560	633	453
5	555	852	2,320	744	687	1,120	1,450	1,530	2,240	1,790	640	762
6	555	843	1,720	744	687	1,110	1,420	2,820	1,650	1,280	648	744
7	548	843	1,310	753	679	1,100	1,650	2,820	1,160	1,000	648	753
8	548	843	1,040	753	679	1,100	2,210	3,180	890	871	656	753
9	548	834	930	736	671	1,100	4,240	2,910	719	824	656	659
10	548	834	960	736	671	1,110	5,420	2,240	770	736	656	490
11	555	843	960	728	687	1,120	7,660	1,720	1,520	648	719	694
12	604	834	960	728	687	913	10,400	1,410	2,820	611	753	702
13	625	834	1,180	728	687	866	7,940	1,220	2,400	611	753	694
14	625	834	1,360	728	679	1,090	4,940	1,190	1,650	611	744	679
15	633	834	1,660	736	679	1,090	4,060	1,180	1,170	611	744	648
16	625	834	2,080	744	671	1,090	4,380	1,180	890	611	744	611
17	625	843	2,160	744	671	1,090	4,160	1,070	806	597	744	472
18	625	871	1,740	744	671	1,100	6,080	880	1,060	604	736	618
19	625	890	980	744	664	1,130	5,910	806	1,540	597	679	633
20	664	950	920	736	664	1,130	4,490	787	1,490	590	496	640
21	719	970	824	728	664	1,130	3,370	815	2,600	590	736	633
22	744	1,050	815	728	656	1,130	2,480	940	7,750	604	736	640
23	744	1,270	815	719	648	1,130	2,010	960	7,720	640	728	580
24	736	1,300	815	719	656	1,130	1,580	815	4,910	656	719	426
25	736	1,260	815	719	664	1,130	1,400	787	3,000	656	719	679
26	736	1,210	815	702	671	1,140	1,360	1,100	2,010	656	685	679
27	736	1,140	770	694	671	1,160	1,380	1,120	1,400	656	458	671
28	736	1,320	728	702	671	1,200	1,410	930	1,720	656	728	664
29	744	1,860	736	702	-------	1,280	1,380	762	2,160	656	744	664
30	736	1,790	744	702	-------	1,350	1,330	664	2,400	656	753	613
31	736	-------	753	694	-------	1,520	-------	604	-------	648	753	-------

Monthly discharge of West Canada Creek at Hinckley, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 373 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	744	548	640	1.72	1.98
November	1,860	770	1,000	2.68	2.99
December	3,000	728	1,250	3.35	3.86
January	753	694	730	1.96	2.26
February	702	648	676	1.81	1.88
March	1,520	679	1,110	2.98	3.44
April	10,400	1,330	3,390	9.09	10.14
May	3,180	604	1,330	3.57	4.12
June	7,750	576	2,100	5.63	6.28
July	4,300	590	1,060	2.84	3.27
August	753	458	688	1.84	2.12
September	762	268	624	1.67	1.86
The year	10,400	268	1,210	3.24	44.20

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches shown by the table do not represent the natural flow from the basin because of storage mainly in Hinckley reservoir. The yearly discharge and run-off doubtless represent very nearly the natural flow.

WEST CANADA CREEK AT KAST BRIDGE, N. Y.

LOCATION.—In Kast Bridge, Herkimer County, 4 miles upstream from junction with Mohawk River at Herkimer.

DRAINAGE AREA.—575 square miles (from report of State engineer).

RECORDS AVAILABLE.—May 15, 1905, to December 31, 1910; January 1, 1912, to December 31, 1913; and October 1, 1920, to September 30, 1922.

GAGE.—Gurley seven-day graph water-stage recorder on left bank, 500 feet below highway bridge. A tape gage at highway bridge was used 1905 to 1913. Recorder inspected by engineers from Little Falls office of the State engineer and surveyor.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge or by wading.

CHANNEL AND CONTROL.—Small boulders and coarse gravel, subject to shift at times of high discharges.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 7.30 feet at 11 a. m. June 21 (discharge, about 16,500 second-feet); minimum stage from water-stage recorder, 1.20 feet at 10.30 p. m. September 3 (discharge, 140 second-feet).

1920–1922: Maximum stage recorded, 7.30 feet June 21, 1922 (discharge, about 16,500 second-feet); minimum stage, 1.20 feet September 3, 1922 (discharge, 140 second-feet).

ICE.—Stage-discharge relation probably not affected by ice.

REGULATION.—Seasonal flow regulated by storage in Hinckley reservoir, Consolidated Water Co.'s reservoir on Black Creek at Gray and several small lakes. Diurnal flow affected by operation of mills and power plants upstream.

DIVERSIONS.—Consolidated Water Co. of Utica diverts water for Utica from Hinckley reservoir. Water is diverted below Trenton Falls power plant during the navigation season through the Ninemile feeder and Ninemile Creek, into the Barge Canal.

ACCURACY.—Stage-discharge relation changed during the flood of April 12. Rating curve used before this time very well defined between 300 and 3,000 second-feet; curve used subsequently well defined between 200 and 4,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of gage-height graph, or for days of considerable fluctuation, by averaging discharge for intervals of the day. Records good, except for periods of estimate, for which they are fair.

COOPERATION.—Station installed by Utica Gas & Electric Co. Maintained by United States Geological Survey in cooperation with the State of New York.

Discharge measurements of West Canada Creek at Kast Bridge, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 7	Harrington and Howe	3.63	3,190	June 19	Granger and Harrington.	2.70	1,690
May 8	Covert and Shupe	3.92	3,850	Aug. 4	H. I. Granger	2.04	829

Daily discharge, in second-feet, of West Canada Creek at Kast Bridge, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	452	724	1,920	860		936	2,500		487	3,280	672	754
2	343	1,510	1,620		1,000	956	2,410		589	5,360	623	727
3	456	904	2,500			1,380	2,160	1,550	1,570	4,580	760	317
4	421	871	3,310			1,400	2,160		2,620	3,090	935	213
5	414	1,040	2,670	1,000	1,130	1,440	2,870		2,730	2,220	896	659
6	426	871	2,080		1,150	1,410	3,140	3,280	2,140	1,640	734	827
7	406	893	1,560	1,220	978	2,240	3,030	3,580	1,490	1,310	2,960	708
8	483	769	1,260	1,110	837	3,020	3,600	3,780	1,120	1,180	3,160	826
9	345	850	1,100	1,240		2,080	4,710	3,480	859	1,080	1,170	755
10	479	1,640	1,130	1,010	950	1,840	6,120	2,730	769		920	496
11	495	1,130	1,090	912		1,720	8,760	2,140	3,870		841	626
12	511	1,040	1,100	731	1,090	1,640	12,600	1,700	3,890		918	777
13	550	982	1,130	904	1,140	1,680	10,200	1,420	3,000		836	783
14	480	970	1,470	1,030	1,010	3,590	5,930	1,320	2,110		932	732
15		1,010	1,470	982	1,060	3,080	6,230	1,310	1,460		843	962
16		1,080	2,080	1,050	974	2,350	5,500	1,280	1,140		832	794
17		2,320	2,240	866	923	1,650	5,090	1,270	860		830	494
18	600	2,850	3,580	906	789	1,410	7,360	1,060	1,300		820	558
19		1,660	1,420	927	772	1,380	7,190	1,460	1,640	700	920	638
20		2,480	1,160	888	1,020	2,190	5,500	1,200	1,660		570	660
21		1,490	970	849	1,190	2,080	3,890	1,010	6,040		725	678
22		1,340	783	871	1,110	1,590	3,100	1,080	9,660		793	622
23	660	1,480	932		1,380	1,400	2,730	1,100	10,400		802	690
24	680	1,680	1,070		2,460	1,660	2,090	1,030	6,230		1,030	441
25	652	1,920	1,040		1,840	1,880	1,870	1,610	3,630		900	523
26	580	1,650	937	900	1,540	2,370	1,730	1,600	2,410		920	663
27	610	1,860	1,040		1,370	2,620	1,720	1,380	1,780		618	650
28	600	3,530	914		1,120	3,790	1,740	1,110	2,220		705	637
29	608	2,500	887		-------	3,600	1,720	860	2,910		817	664
30	524	2,240	800		-------	2,080	1,660	685	3,100	560	804	720
31	622	-------	800		-------	1,780	--------	676	--------	630	796	-------

NOTE.—Discharge for the following periods estimated from a study of recorder graphs, storage in Hinckley reservoir, diversion through Ninemile feeder and estimated inflow in the area between Hinckley and Kast Bridge: Oct. 15–22, Dec. 2, 3, 30, 31, Jan. 2–6, 23–31, Feb. 1–4, 9–11, 17, 18, Apr. 30, May 1–5, June 22, July 10–29, Aug. 18 and 25, as indicated in above table; mean daily gage-heights estimated, Dec. 1, Jan. 13, 14, Apr. 14, 21, 22, 29, May 6, 20, June 17, 23, July 7, 8, 9, Aug. 5, 19, 26; water-stage recorder not operating satisfactorily.

Braced figures show mean discharge for periods indicated.

Monthly discharge of West Canada Creek at Kast Bridge, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 575 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	680	343	535	0.930	1.07
November	3,520	724	1,510	2.63	2.93
December	3,580	783	1,490	2.59	2.99
January	1,240	731	950	1.65	1.90
February	2,460	772	1,130	1.97	2.05
March	3,790	936	2,010	3.50	4.04
April	12,600	1,660	4,310	7.50	8.37
May	3,780	676	1,640	2.85	3.29
June	10,400	487	2,790	4.85	5.41
July	5,360	560	1,260	2.19	2.52
August	3,160	570	970	1.69	1.95
September	962	213	653	1.14	1.27
The year	12,600	213	1,600	2.78	37.79

NOTE.—The monthly discharge in second-feet per square mile and run-off in inches do not represent the natural flow from the basin because of storage, mainly in Hinckley reservoir. The yearly discharge and run-off doubtless represent very nearly the natural flow, except for the diversion out of the basin, during the navigation season, through the Ninemile feeder and Ninemile Creek into the Barge Canal.

NINEMILE FEEDER NEAR HOLLAND PATENT, N. Y.

LOCATION.—At mouth of Ninemile feeder, 4 miles east of Holland Patent, Oneida County, half a mile below highway bridge near farm of P. A. Wade, which is 4 miles south and 1 mile west of Barneveld.

RECORDS AVAILABLE.—June 5, 1919, to September 30, 1922. Operation of station was assumed by the State engineer and surveyor July 1, 1921.

GAGE.—Gurley seven-day graph water-stage recorder on right bank. Recorder inspected by D. G. Humphrey.

DISCHARGE MEASUREMENTS.—Made from highway bridge half a mile upstream from gage or by wading.

CONTROL.—Suppressed weir of concrete with a lip about 1.5 feet high and a spillway inclined about 1:2. Permanent.

REGULATION.—Flow in the feeder is regulated by gates at the intake of the canal just below the power plant at Trenton Falls.

ICE.—Feeder canal not in operation during winter.

ACCURACY.—Rating curve well defined between 30 and 200 second-feet. Daily discharge ascertained by applying mean daily gage height to rating table, or, for day of considerable fluctuation, by averaging discharge for intervals of the day Records good.

COOPERATION.—Gage-height record furnished by the State engineer and surveyor.

Daily discharge, in second-feet, of Ninemile feeder near Holland Patent, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	May.	June.	July.	Aug.	Sept.
1	138	134	-------	124	21	134	134
2	138	138	-------	125	21	134	134
3	138	129	-------	134	6	138	127
4	138	129	-------	142	3	138	120
5	138	129	-------	142	-------	114	134
6	138	128	-------	138	-------	118	134
7	138	129	-------	134	-------	147	134
8	138	128	-------	128	-------	138	129
9	138	134	-------	127	-------	118	127
10	142	147	-------	127	-------	115	125
11	138	134	124	161	-------	115	128
12	142	134	120	156	-------	116	129
13	138	129	119	142	-------	116	128
14	138	129	118	134	-------	116	128
15	138	134	118	126	-------	116	134
16	138	134	118	123	-------	116	125
17	138	142	118	124	-------	116	124
18	138	142	116	129	-------	125	126
19	138	138	118	129	-------	138	126
20	142	115	115	126	-------	134	127
21	138	7	115	134	55	138	126
22	138	2	116	146	116	138	126
23	134	0	116	22	120	138	126
24	134	0	114	8	134	138	123
25	134	0	117	3	129	138	124
26	134	2	117	1	129	138	124
27	134	16	123	0	129	134	124
28	134	39	129	8	129	138	124
29	129	8	127	11	129	138	124
30	129	3	125	4	129	138	124
31	129	-------	125	-------	138	138	-------

NOTE.—Discharge July 5–20 practically zero. Discharge estimated Nov. 26 and July 21. Diversion discontinued for winter on Nov. 20. No diversion June 23 to July 20; discharge represents inflow along canal.

Monthly discharge, in second-feet, of Ninemile feeder near Holland Patent, N. Y., for the year ending Sept. 30, 1922.

Month.	Maximum.	Minimum.	Mean.	Month.	Maximum.	Minimum.	Mean.
October	142	129	137	July	138	0	44.8
November	147	0	91.1	August	147	114	130.8
May 11–31	129	114	119	September	134	120	127
June	161	0	100				

WALLKILL RIVER AT PELLETS ISLAND MOUNTAIN, N. Y.

LOCATION.—At highway bridge in Pellets Island Mountain, Orange County, 4½ miles south of Middletown and 5½ miles below mouth of Pochuck Creek.

DRAINAGE AREA.—385 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 29, 1919, to September 30, 1922.

GAGE.—Chain gage on downstream side of highway bridge, installed January 17, 1920. Previous readings were made on temporary staff gage attached to pile on right bank under bridge. Gage read by Michael Meduski.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge or by wading 2 miles below.

CHANNEL AND CONTROL.—Channel mostly silt and control coarse gravel; probably fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.02 feet at 5.30 p. m. March 9 (discharge, 3,970 second-feet); minimum stage, 7.54 feet several times in October (discharge, 32 second-feet).

1920–1922: Maximum stage recorded, 20.7 feet at 7.30 a. m. March 16, 1920 (discharge, 8,350 second-feet); minimum stage, 7.50 feet several times in August and September, 1921 (discharge, 27 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by ice. Rating curve well defined between 30 and 3,500 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except during periods when stage-discharge relation was affected by ice, which are fair.

Discharge measurements of Wallkill River at Pellets Island Mountain, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 19	C. C. Covert	7.60	37.5	June 3	Granger and Harrington	8.73	284
Jan. 19	B. F. Howe	[a] 8.20	121	3	Harrington and Granger	8.84	293
Feb. 10	do	[a] 9.42	442	Aug. 5	B. F. Howe	9.20	400

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Wallkill River at Pellets Island Mountain, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	39	56	1,250	130	85	860	1,690	279	202	266	119	148
2	39	101	1,100	110	170	815	1,990	266	190	418	168	226
3	39	158	1,250	80	900	650	1,930	239	385	1,050	294	226
4	39	148	1,250	90	1,100	612	1,810	239	905	1,000	385	138
5	39	138	1,200	80	1,100	574	1,690	574	1,050	1,050	369	401
6	42	110	1,050	260	950	905	1,450	905	1,050	1,050	323	468
7	42	81	905	360	850	1,450	1,300	770	1,000	950	266	434
8	37	68	770	260	700	2,860	1,200	690	950	815	202	401
9	39	71	612	200	550	3,860	1,100	538	815	770	179	338
10	32	74	502	150	440	3,590	1,000	401	690	690	148	294
11	39	87	418	150	360	3,020	905	323	574	574	119	239
12	39	101	369	110	280	2,550	905	279	468	502	101	190
13	45	101	369	100	280	1,340	905	252	385	401	101	158
14	45	101	338	100	260	2,130	815	226	308	308	101	158
15	39	101	239	120	260	1,930	1,050	214	252	266	101	138
16	39	110	252	130	240	1,690	1,200	202	202	236	92	119
17	32	128	190	130	220	1,400	1,150	190	190	202	84	101
18	39	158	240	120	170	1,150	1,200	190	815	190	84	98
19	32	179	480	120	180	1,100	1,150	860	1,400	202	98	92
20	59	202	400	130	320	1,350	1,050	1,510	1,450	226	138	87
21	119	369	360	220	900	1,810	905	1,450	1,150	214	119	84
22	158	338	180	240	1,100	1,750	815	1,300	1,000	179	101	84
23	138	252	240	220	1,300	1,510	690	1,050	815	158	87	84
24	87	202	200	170	1,750	1,350	650	860	650	138	76	84
25	68	190	220	140	1,810	1,250	538	650	485	138	76	84
26	45	214	240	110	1,300	1,100	485	574	385	138	87	76
27	53	279	220	100	1,250	1,050	434	502	308	138	119	65
28	53	860	180	85	1,100	1,000	385	418	323	119	138	60
29	50	860	170	70	-------	1,000	323	354	308	119	148	60
30	45	1,400	130	70	-------	1,000	294	294	266	138	138	60
31	42	-------	120	60	-------	1,000	-------	239	-------	119	128	-------

NOTE.—Discharge, Dec. 18 to Feb. 23, determined from gage-heights corrected for ice effect by means of two discharge measurements, observer's notes, and study of weather records and gage-height graph.

Monthly discharge of Wallkill River at Pellets Island Mountain, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 385 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	158	32	53.3	0.138	0.16
November	1,400	56	241	.626	.70
December	1,250	120	498	1.29	1.49
January	360	60	142	.369	.43
February	1,810	85	712	1.85	1.93
March	3,860	574	1,570	4.08	4.70
April	1,990	294	1,030	2.68	2.99
May	1,510	190	543	1.41	1.63
June	1,450	190	632	1.64	1.83
July	1,050	119	411	1.07	1.23
August	385	76	151	.392	.45
September	468	60	173	.449	.50
The year	3,860	32	512	1.33	18.04

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HACKENSACK RIVER BASIN.

HACKENSACK RIVER AT ORADELL, N. J.

LOCATION.—At Oradell Flour, Feed & Grain Co.'s mill, one-quarter mile north of Oradell station, Bergen County, and 1 mile north of New Milford.

DRAINAGE AREA.—115 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 9, 1908, to April 24, 1913, when station was discontinued.

GAGE.—Staff on left bank on the north inclined brace of the Oradell Flour, Feed & Grain Co.'s mill and below dam; read twice a day by Gustif Genther.

DISCHARGE MEASUREMENTS.—Made by wading 175 feet below gage.

CHANNEL AND CONTROL.—Channel straight at gage. Control gravel and probably permanent.

EXTREMES OF STAGE.—Maximum daily mean stage recorded, 7.05 feet March 16, 1912; minimum stage, 0.30 foot October 13, 26, and November 21–22, 1910.

COOPERATION.—The observations at this stage were made by the New Jersey Water-Supply Commission.

Discharge measurements of Hackensack River at Oradell, N. J., for the period June 9, 1908, to Apr. 24, 1913.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
June 9, 1908	J. C. Hallock [a]	2.2	83.6
Sept. 11, 1908	....do	1.8	15.7
Apr. 10, 1912	W. H. Boardman [a]	2.9	270

[a] Hydrographer, New Jersey State Water-Supply Commission.

Daily gage height, in feet, of Hackensack River at Oradell, N. J., for the period June 9, 1908, to Apr. 24, 1913.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1908.					1908.				
1	.....	1.9	2.05	2.3	16	2.95	2.1	2.1	1.15
2	.....	1.85	1.9	2.15	17	3.05	2.05	2.1	1.35
3	.....	2.4	1.85	1.95	18	2.55	1.9	2.05	1.15
4	.....	2.6	1.85	1.7	19	2.5	1.8	1.8	1.5
5	.....	2.5	1.5	1.75	20	2.3	1.7	1.55	1.3
6	.....	2.25	2.0	1.45	21	2.3	1.6	1.55	1.45
7	.....	2.2	2.15	2.0	22	2.1	1.55	1.8	1.7
8	.....	2.1	2.35	2.05	23	2.1	1.9	2.9	1.85
9	2.2	2.05	2.2	1.85	24	2.1	1.9	2.75	2.0
10	2.2	1.9	2.1	1.8	25	2.1	1.9	2.5	2.1
11	2.2	1.8	2.15	1.8	26	2.1	3.05	2.85	2.1
12	2.1	1.6	2.55	1.45	27	1.95	2.75	3.45	1.9
13	2.1	1.65	2.45	1.25	28	1.9	2.45	3.15	2.0
14	2.1	1.8	2.3	1.2	29	1.9	2.2	2.85	2.15
15	2.1	1.95	2.1	1.25	30	1.9	2.1	2.55	2.2
					31	.....	2.1	2.45	.....

Daily gage height, in feet, of Hackensack River at Oradell, N. J., for the period June 9, 1908, to Apr. 24, 1913—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	2.1	2.15	2.1	2.2	2.1	2.9	2.7	4.2	2.1	2.2	1.3	1.9
2	2.1	2.05	2.05	2.15	2.1	2.85	2.6	4.15	2.05	2.15	1.25	1.85
3	1.9	1.9	1.9	2.1	2.1	3.1	2.55	3.7	1.9	2.1	1.25	1.8
4	1.4	1.9	1.9	2.1	2.15	3.05	2.65	3.3	1.9	1.65	1.25	1.8
5	.65	1.75	1.8	2.3	2.2	2.75	2.65	3.05	2.0	.95	1.85	1.55
6	.85	1.65	1.85	3.3	2.25	2.7	2.55	2.75	2.2	.85	2.15	1.7
7	.65	1.9	2.35	3.35	2.45	2.7	2.5	2.7	2.2	.65	2.05	1.9
8	.6	1.85	2.9	2.95	2.45	2.7	2.4	2.7	2.1	.85	1.85	1.9
9	.7	1.9	2.6	2.8	2.4	2.8	2.4	2.6	2.1	1.05	1.5	2.0
10	1.85	1.9	2.3	2.6	2.65	2.8	2.35	2.6	2.1	1.3	1.2	2.05
11	2.1	2.0	2.2	2.45	3.3	2.8	2.3	2.5	2.2	.4	.35	1.8
12	2.1	2.1	2.2	2.4	3.05	2.65	2.3	2.45	2.15	.9	.55	1.75
13	2.1	2.1	2.3	2.3	2.8	2.6	2.3	2.4	2.1	1.1	1.0	1.9
14	2.1	1.9	2.2	2.2	2.7	2.6	2.8	2.3	2.15	1.05	1.4	1.9
15	2.1	1.9	2.25	2.5	2.65	2.55	4.95	2.35	2.15	1.0	.4	1.85
16	2.1	2.15	2.15	2.3	2.75	2.5	4.75	2.4	2.1	1.7	8.5	1.8
17	2.1	2.15	2.1	2.25	3.25	2.4	3.9	2.3	1.95	.85	3.05	1.5
18	2.1	2.15	2.15	2.2	3.15	2.4	3.4	2.3	2.0	.85	3.05	1.7
19	2.05	2.1	2.15	2.2	2.9	2.4	3.05	2.2	2.3	1.5	2.7	1.45
20	1.9	2.1	2.2	2.2	3.1	2.3	2.85	2.2	2.3	1.9	2.45	1.15
21	1.85	2.1	2.15	2.1	3.45	2.3	3.45	2.2	2.2	1.5	2.25	1.5
22	1.7	2.1	2.1	2.15	3.15	2.3	3.65	2.35	2.15	1.55	2.15	1.05
23	1.9	2.1	2.05	2.15	2.95	2.3	3.85	2.6	1.95	1.75	1.95	1.1
24	2.0	2.1	1.55	2.15	3.35	2.2	3.7	2.45	1.5	2.15	1.7	1.8
25	2.1	2.1	1.85	2.35	4.3	2.65	3.5	2.35	.65	2.1	1.5	2.0
26	2.15	2.1	1.9	2.6	4.1	4.4	3.05	2.25	1.15	2.05	1.05	2.1
27	2.3	2.1	2.1	2.55	3.6	4.1	2.85	2.2	1.55	1.85	.4	2.15
28	2.15	2.1	2.1	2.45	3.15	3.75	2.75	2.2	2.0	1.0	.7	2.20
29	2.2	2.1	2.05	2.25	-------	3.5	2.9	2.3	2.25	.9	.7	2.25
30	2.25	2.1	1.9	2.3	-------	3.15	3.3	2.2	2.2	8.5	.9	2.15
31	2.3	-------	2.15	2.25	-------	2.95	-------	2.15	-------	.6	.9	-------
1909–10.												
1	2.1	1.85	2.2	1.8	2.85	4.75	2.2	2.9	2.35	1.9	1.85	1.4
2	1.95	1.75	2.05	1.9	2.65	5.05	2.2	2.6	2.4	1.8	1.85	1.9
3	1.85	2.0	1.9	1.9	2.55	4.35	2.2	2.6	2.4	1.8	1.75	1.9
4	1.7	2.2	1.9	1.9	2.55	3.75	2.2	2.65	2.4	1.9	1.9	2.1
5	1.8	2.2	1.9	1.8	2.55	3.3	2.2	2.6	2.35	1.9	2.1	2.1
6	1.6	2.15	1.9	2.0	2.4	3.2	2.3	2.5	2.2	1.8	2.05	2.1
7	1.6	2.1	1.9	2.6	2.35	3.15	2.3	2.4	2.8	1.6	1.75	1.95
8	.6	2.1	2.15	2.9	2.25	3.2	2.25	2.4	3.05	1.6	1.65	1.75
9	1.2	1.9	2.2	2.6	2.2	3.1	2.25	2.55	2.55	1.6	1.85	1.15
10	1.45	1.8	2.15	2.5	2.2	2.95	2.2	2.6	2.5	1.9	1.9	1.35
11	1.85	1.8	2.0	2.35	2.2	2.75	2.2	2.55	2.5	1.9	2.1	.7
12	1.6	1.85	1.9	2.25	2.2	2.6	2.2	2.45	2.8	1.9	2.1	.5
13	1.85	1.9	3.1	2.2	2.2	2.5	2.2	2.4	3.25	1.5	1.85	1.4
14	1.9	1.85	3.35	2.2	2.2	2.5	2.2	2.3	2.9	1.25	1.25	1.3
15	1.9	1.8	3.7	2.1	2.2	2.5	2.2	2.3	2.7	1.25	.8	1.15
16	1.9	1.85	3.35	2.1	2.25	2.4	2.1	2.3	2.6	1.25	1.1	1.2
17	1.7	1.9	3.05	1.95	2.55	2.4	2.1	2.2	2.8	1.7	1.5	1.3
18	1.9	1.9	2.8	2.05	2.95	2.4	2.4	2.2	2.7	2.0	1.9	1.15
19	1.9	1.85	2.5	2.35	3.1	2.4	3.35	2.3	3.15	2.1	1.8	1.25
20	1.85	1.85	2.3	2.4	2.9	2.4	3.6	2.3	3.05	2.1	1.8	1.6
21	1.8	1.9	2.25	2.45	3.1	2.4	3.4	2.45	2.55	1.95	1.85	1.7
22	1.8	1.8	2.15	4.85	4.7	2.35	3.1	2.6	2.45	1.9	1.85	1.85
23	1.9	1.85	1.95	5.1	4.45	2.3	2.7	2.45	2.3	1.9	1.85	1.7
24	1.9	1.9	1.9	4.65	3.8	2.3	2.5	2.4	2.2	1.85	1.55	1.7
25	2.15	1.9	1.8	4.15	3.4	2.25	2.6	2.3	2.15	1.85	1.05	1.1
26	2.2	2.15	1.8	3.75	2.9	2.2	5.1	2.6	2.1	1.7	.72	1.2
27	2.2	2.2	1.85	3.15	2.6	2.2	5.5	2.75	2.05	1.3	.72	1.45
28	2.05	2.2	1.9	2.9	3.1	2.1	4.45	2.45	1.9	1.45	1.32	1.4
29	1.9	2.2	1.9	2.8	-------	2.1	3.85	2.4	1.9	1.45	1.42	1.5
30	1.9	2.2	1.85	2.8	-------	2.15	3.25	2.3	1.9	1.7	1.52	1.2
31	1.8	-------	1.8	2.9	-------	2.2	-------	2.35	-------	1.9	1.75	-------

Daily gage height, in feet, of Hackensack River at Oradell, N. J., for the period June 9, 1908, to Apr. 24, 1913—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	1.4	1.05	2.1	2.2	2.15	2.55	3.1	2.3	2.0	1.75	1.75	2.9
2	1.1	.6	2.1	2.35	2.15	2.5	2.9	2.4	2.1	1.5	1.9	2.8
3	.7	1.1	1.95	2.7	1.95	2.4	2.65	2.4	2.1	1.6	1.9	2.6
4	1.2	2.5	1.8	3.1	2.55	2.4	2.55	2.3	1.95	1.85	1.9	2.5
5	.75	2.7	1.8	2.85	3.15	2.25	3.15	2.3	1.9	1.7	1.9	2.4
6	.9	2.4	1.65	2.55	2.6	2.3	3.6	2.3	2.15	1.6	1.8	2.3
7	.7	2.25	1.45	2.45	2.4	2.2	3.3	2.2	2.3	1.4	1.8	2.2
8	1.2	2.2	1.2	2.3	2.3	2.3	3.1	2.2	2.3	1.3	1.45	2.05
9	1.3	2.1	1.3	2.3	2.25	2.25	3.1	2.2	2.25	1.6	1.75	1.7
10	1.15	1.95	.95	2.25	2.3	2.35	3.1	2.2	2.2	1.6	1.85	1.75
11	1.05	1.85	.65	2.2	2.2	2.5	2.9	2.2	2.6	1.85	1.6	1.55
12	.5	1.6	.5	2.15	2.1	2.5	2.7	2.15	3.3	1.85	1.5	1.6
13	.3	1.75	.9	2.1	2.1	2.5	2.65	2.15	3.7	1.8	1.1	1.9
14	.6	1.4	1.45	2.15	2.15	2.5	2.6	2.1	3.5	1.9	1.1	1.8
15	.6	1.5	5.75	2.45	2.1	2.75	2.6	2.05	3.05	1.85	1.4	1.9
16	.6	1.3	1.8	2.45	2.1	3.05	2.6	1.9	2.7	1.85	1.65	1.9
17	.4	.9	1.7	2.25	2.15	2.7	2.6	1.9	2.6	1.75	1.55	1.85
18	.5	.45	1.7	2.2	2.25	2.6	2.5	1.9	2.6	1.7	1.65	1.75
19	.7	.7	1.4	2.2	2.4	2.5	2.5	2.15	2.5	1.8	1.75	1.6
20	.95	.45	1.1	2.1	2.3	2.6	2.8	2.2	1.95	1.8	1.6	1.85
21	1.95	.3	1.2	2.1	2.25	2.6	3.45	2.2	1.85	1.9	1.6	1.85
22	1.55	.3	1.3	1.95	2.2	2.55	3.1	2.2	1.5	1.8	1.55	1.9
23	.6	.75	1.25	1.9	2.2	2.5	2.95	2.15	1.75	1.9	1.55	1.75
24	.6	1.1	1.4	1.9	2.2	2.4	2.75	2.15	1.85	1.85	1.7	1.85
25	.4	.95	2.6	1.9	2.1	2.4	2.6	2.15	1.9	1.9	1.9	1.7
26	.3	1.6	2.4	1.9	2.35	2.3	2.5	2.1	1.85	1.8	1.8	1.8
27	------	1.9	2.25	2.1	2.55	2.4	2.4	2.05	1.85	1.85	1.5	1.8
28	------	1.9	2.2	2.15	2.7	2.85	2.4	1.9	1.85	1.85	1.8	1.75
29	.4	1.9	2.2	2.2	------	2.75	2.4	1.9	1.9	1.8	1.7	1.9
30	------	2.1	2.2	2.3	------	3.2	2.35	1.9	1.8	1.9	1.85	1.9
31	------	------	2.2	2.1	------	3.4	------	1.9	------	1.75	2.05	------
1911–12.												
1	1.9	2.15	2.65	2.7	2.3	3.2	3.85	2.9	1.55	2.15	2.55	2.25
2	2.4	2.2	2.55	2.85	2.3	2.9	3.6	2.9	1.3	2.45	2.15	2.15
3	2.55	2.30	2.55	2.9	2.3	2.5	3.5	2.85	1.5	2.35	2.2	2.5
4	2.45	2.25	2.5	2.75	2.25	2.45	3.55	2.7	1.45	2.35	2.05	2.15
5	2.3	2.2	2.25	2.85	2.1	2.3	3.35	2.6	1.55	2.3	1.6	2.5
6	2.15	2.2	2.4	2.5	2.2	2.25	3.15	2.65	1.55	1.95	2.35	1.75
7	2.1	2.25	2.5	2.3	2.25	2.25	3.1	2.85	1.9	2.2	1.75	1.55
8	2.2	2.8	2.6	2.45	2.3	2.35	3.1	3.2	1.75	2.2	1.85	2.4
9	2.3	3.05	2.7	2.6	2.2	2.7	3.1	3.6	1.45	1.65	2.65	1.75
10	2.25	2.65	2.8	2.85	2.1	2.9	2.95	3.55	1.3	1.65	1.7	1.6
11	2.2	2.45	2.8	2.55	2.1	2.9	2.9	3.35	1.8	1.7	1.5	1.65
12	2.2	2.5	2.85	2.4	2.1	2.75	2.9	3.15	1.85	1.7	2.4	1.85
13	2.2	2.4	2.9	2.5	2.05	6.5	2.85	2.95	1.85	1.35	1.65	1.75
14	2.25	2.5	2.85	2.45	1.9	6.7	2.8	2.85	1.9	1.45	1.6	1.45
15	2.1	2.65	3.0	2.35	1.9	5.35	2.75	2.8	2.0	1.65	1.85	2.5
16	2.1	2.8	3.55	2.3	2.0	7.05	2.75	2.75	2.35	1.4	.95	2.2
17	1.95	3.0	3.5	2.3	2.1	5.4	2.8	3.15	2.15	1.85	1.35	2.35
18	2.35	3.35	3.45	2.45	2.1	4.85	3.05	3.35	1.95	1.65	2.35	2.45
19	3.05	3.65	3.5	2.5	2.2	4.35	3.5	3.1	1.5	1.25	2.4	2.1
20	3.85	3.85	3.2	2.65	2.35	3.85	3.5	2.95	2.0	1.95	2.05	2.25
21	3.75	3.55	3.2	2.7	2.7	3.55	3.25	2.75	2.2	1.8	1.85	1.85
22	3.45	3.35	3.15	2.65	4.15	3.5	3.2	2.55	2.75	2.4	2.3	1.7
23	3.4	2.75	3.5	2.6	4.5	3.5	3.1	2.35	2.6	2.25	2.15	2.2
24	3.4	2.9	3.5	2.65	4.1	3.65	3.1	2.4	2.1	2.4	2.4	1.4
25	3.2	3.3	3.35	2.65	3.35	4.05	2.95	2.4	1.6	2.1	2.15	1.7
26	3.1	3.4	3.15	2.5	3.55	4.1	2.85	2.4	1.7	2.35	1.9	2.1
27	2.8	3.15	3.1	2.4	3.7	3.8	2.8	2.15	2.5	2.6	1.85	2.1
28	2.65	3.05	3.2	2.3	3.8	3.75	2.7	1.85	2.7	2.5	2.25	2.3
29	2.5	2.8	3.15	2.3	3.65	3.8	2.65	1.4	2.15	2.3	2.05	2.5
30	2.3	2.75	3.05	2.2	------	4.3	2.75	1.9	1.3	2.15	1.8	2.2
31	2.1	------	2.85	2.25	------	4.1	------	1.6	------	2.25	1.8	------

Daily gage height, in feet, of Hackensack River at Oradell, N. J., for the period June 9, 1908, to Apr. 24, 1913—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912-13												
1	1.4	2.8	2.8	4.2	3.3	3.85	3.55					
2	2.55	2.8	2.8	4.1	3.25	3.75	3.45					
3	2.1	2.9	2.85	4.1	3.2	3.6	3.35					
4	1.55	2.9	3.1	3.75	3.2	3.4	3.2					
5	1.7	2.8	3.1	3.9	3.2	3.2	3.1					
6	1.7	2.8	3.15	3.75	3.15	3.25	3.1					
7	2.2	2.85	3.2	3.55	3.1	3.25	3.15					
8	2.35	3.65	3.1	3.55	3.1	3.1	3.1					
9	2.45	3.65	3.1	3.6	3.05	3.2	3.05					
10	2.3	3.4	3.1	3.45	2.85	3.15	2.9					
11	2.35	3.15	3.1	3.4	2.85	3.15	2.85					
12	2.2	3.2	3.05	3.3	2.8	3.3	2.9					
13	2.7	3.1	2.8	3.45	2.7	3.55	2.9					
14	2.4	3.1	2.7	3.35	2.85	3.4	2.9					
15	2.25	3.1	2.8	3.35	2.9	3.7	2.9					
16	2.5	3.1	2.7	3.3	2.9	4.15	2.85					
17	2.2	3.1	2.8	3.35	2.9	4.15	2.85					
18	2.5	3.1	2.7	3.55	2.9	3.9	2.9					
19	2.1	3.05	2.6	3.6	2.9	3.65	2.9					
20	2.15	2.9	2.9	3.45	3.1	3.55	2.9					
21	2.35	2.9	3.1	3.45	3.1	4.3	2.85					
22	2.1	2.9	3.05	3.35	3.15	4.25	2.8					
23	2.2	2.65	2.9	3.25	3.4	4.05	2.9					
24	3.45	2.8	2.85	3.45	3.35	3.75	2.4					
25	3.35	2.9	2.8	3.45	3.35	3.55						
26	3.1	2.8	2.8	3.3	3.15	3.5						
27	3.1	2.75	3.0	3.35	3.1	3.75						
28	3.05	2.7	3.35	3.45	3.5	4.7						
29	2.9	2.9	3.3	3.45		4.3						
30	2.9	2.9	3.45	3.2		4.05						
31	2.85		3.85	3.15		3.8						

HACKENSACK RIVER AT NEW MILFORD, N. J.

LOCATION.—At pumping plant of Hackensack Water Co., New Milford, Bergen County, 3½ miles below mouth of Dwars Kill.

DRAINAGE AREA.—115 square miles (measured on topographic map).

RECORDS AVAILABLE.—October 28, 1921, to September 30, 1922.

GAGE.—Vertical staff on left bank 30 feet above south spillway.

DISCHARGE MEASUREMENTS.—Measured from highway bridge at Oradell, one-half mile upstream.

CHANNEL AND CONTROL.—The two spillways and sluice gates at the pumping-plant forebay form the control.

EXTREMES OF DISCHARGE.—Maximum stage recorded 3.32 feet at 7.50 a. m. March 9 (discharge, 1,230 second-feet); no water going over dams several days in June, July, and August.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is diverted above the control by the Hackensack Water Co. This diversion is measured by Venturi meter and included in the records.

REGULATION.—Flow is regulated at the storage dam of the Hackensack Water Co. at Oradell, 1 mile above gage.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined between 40 and 900 second-feet. Gage read to even hundredths once a day. Daily discharge ascertained by applying daily gage height to rating table. Records fairly good.

COOPERATION.—Gages read by an employee of the Hackensack Water Co.

Discharge measurements of Hackensack River at New Milford, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Sept. 8	O. W. Hartwell	1.86	264	Sept. 16	Otto Lauterhahn	1.43	63
9	do	1.69	174	16	do	1.41	63
9	do	1.53	101				

Daily discharge, in second-feet, of Hackensack River at New Milford, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		0	137	0	0	206	274	0	0	0	0	0
2		0	79	0	0	206	434	0	0	1	37	0
3		0	96	0	497	154	434	0	0	0	37	0
4		0	170	0	234	85	373	0	27	59	37	0
5		0	170	0	234	99	373	179	32	37	114	0
6		0	32	0	215	295	197	770	42	48	137	0
7		0	10	0	197	373	154	373	37	0	225	253
8		0	59	0	179	995	197	79	48	0	129	244
9		0	99	0	79	1,230	197	253	37	14	0	234
10		0	48	0	85	880	170	129	22	1	0	48
11		0	0	1	85	562	154	99	59	1	0	2
12		0	0	32	79	497	150	85	54	0	0	1
13		0	0	0	72	530	145	59	66	0	10	284
14		0	0	0	85	316	114	59	42	0	0	253
15		0	4	0	79	466	225	42	1	32	0	79
16		0	0	1	79	305	344	66	0	0	0	85
17		0	0	4	10	225	225	37	0	18	0	59
18		0	27	0	10	225	179	37	0	22	0	66
19		0	54	2	14	162	305	66	0	0	0	18
20		0	122	4	14	284	225	170	0	0	0	0
21		0	114	0	562	497	72	197	0	0	0	0
22		0	10	37	316	497	114	197	137	0	0	0
23		0	7	42	316	305	129	284	129	114	0	0
24		54	0	48	316	274	122	274	0	434	0	0
25		48	42	14	316	162	92	206	79	0	0	0
26		27	66	4	244	162	72	154	0	0	0	7
27		0	59	2	162	137	66	32	0	0	0	0
28	0	85	27	0	206	137	72	114	0	0	0	0
29	0	162	32	0		162	0	72	1	0	0	0
30	0	162	10	0		274	0	32	0	0	0	0
31	0		4	0		154		0		4	0	

Monthly discharge of Hackensack River at New Milford, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 115 square miles.]

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
October 28–31	0	0	0	52.0	0.452	0.07
November	162	0	17.9	68.9	.599	.67
December	170	0	47.7	104	.904	1.04
January	48	0	6.2	61.2	.532	.61
February	562	0	167	224	1.95	2.03
March	1,230	85	350	404	3.52	4.06
April	434	0	187	238	2.07	2.31
May	770	0	131	182	1.58	1.82
June	137	0	27.1	81.1	.705	.79
July	434	0	25.3	82.7	.719	.83
August	225	0	23.4	81.4	.708	.82
September	284	0	54.4	113	.983	1.10

NOTE.—No corrections made for storage at Oradell.

PASSAIC RIVER BASIN.

PASSAIC RIVER NEAR MILLINGTON, N. J.

LOCATION.—At highway bridge known as Davis Bridge, 1 mile above Millington, Somerset County, 1½ miles below mouth of Black Brook, and three-fourths mile above gaging station formerly maintained at Millington.

DRAINAGE AREA.—55 square miles (measured on topographic map).

RECORDS AVAILABLE.—November 10, 1921, to September 30, 1922. At Millington three-fourths mile downstream, November 25, 1903, to July 15, 1906.

GAGE.—Inclined staff gage on right bank 400 feet below Davis Bridge; read by Robert L. Higby.

DISCHARGE MEASUREMENT.—Made from bridge or by wading near gage.

CHANNEL AND CONTROL.—Channel coarse gravel and rock; control is narrow section in channel and rocky riffle just below, 100 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year 6.5 feet at 5.30 p. m. March 7 (discharge, 548 second-feet); minimum stage, 3.30 feet several times in January (discharge, 2.6 second-feet).

1903–1906, 1922: Maximum stage recorded, 7.50 feet, March 8, 1904 (discharge, 2,000 second-feet); minimum stage, 3.30 feet several times in January, 1922 (discharge, 2.6 second-feet).

ICE.—Stage discharge relation not seriously affected by ice.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent, except as affected by ice. Rating curve well defined between 5 and 500 second-feet. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Passaic River near Millington, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 11	O. W. Hartwell	3.44	6.2	Feb. 2	Otto Lauterhahn	4.98	129
11	do	3.43	6.0	2	do	5.09	148
Dec. 7	Otto Lauterhahn	4.13	51	5	O. W. Hartwell	5.50	237
7	do	4.13	51	5	do	5.45	220
22	do	3.85	27.4	7	do	4.92	131
22	do	3.85	27.9	Mar. 9	Otto Lauterhahn	6.17	429
Jan. 13	do	3.54	12.1	June 2	do	3.85	27.7
13	do	3.54	11.6	Aug. 8	do	3.77	24.3

Daily discharge, in second-feet, of Passaic River near Millington, N. J., for the year ending Sept. 30, 1922.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	-------	72	12	8.7	143	210	108	23	40	32	37
2	-------	44	7.5	114	121	286	102	26	188	55	35
3	-------	87	2.6	300	108	222	102	51	210	44	21
4	-------	87	2.6	272	108	160	108	108	315	55	37
5	-------	68	12	222	169	143	234	97	375	44	97
6	-------	59	16	160	210	121	286	121	345	33	87
7	-------	44	19	121	375	108	210	121	286	26	55
8	-------	37	13	92	509	121	151	121	234	24	29
9	-------	31	9.5	72	438	108	92	68	160	18	27
10	12	26	10	44	330	92	64	48	121	15	20
11	6.3	27	9.5	37	286	77	51	48	72	14	16
12	9.1	25	9.5	36	315	87	48	48	59	16	20
13	10	31	9.5	64	286	82	37	33	59	15	23
14	6.3	24	7.5	77	246	68	31	26	143	14	23
15	12	15	5.5	72	188	82	37	24	143	16	16
16	7.9	13	5.5	48	160	151	44	24	97	14	15
17	16	12	5.5	40	121	121	33	20	64	11	12
18	20	40	5.5	40	102	135	55	33	44	12	9.1
19	13	59	8.7	30	87	114	259	36	55	14	7.5
20	19	51	13	77	178	108	259	27	44	17	10
21	27	36	25	234	272	87	222	30	37	14	11
22	20	27	34	210	234	72	151	33	36	14	10
23	15	20	37	234	169	59	108	21	59	12	10
24	14	16	31	272	121	51	68	17	59	10	10
25	12	44	18	210	97	44	48	16	114	9.1	10
26	12	34	7.5	151	87	44	48	17	135	15	11
27	13	30	2.6	143	82	37	36	30	108	21	11
28	26	24	2.6	188	87	33	30	36	72	15	9.1
29	72	20	2.6	-------	82	33	27	23	51	15	11
30	92	17	4.0	-------	72	121	27	16	48	14	11
31	-------	13	4.3	-------	77	-------	27	-------	33	15	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22, 29, 30, Jan. 15, 16, Feb. 22 and 23; discharge estimated.

Monthly discharge of Passaic River near Millington, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 55 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
November 10-30	92	6.3	20.7	0.376	0.29
December	87	13	36.5	.664	.77
January	37	2.6	11.3	.205	.24
February	300	8.7	127	2.31	2.40
March	509	72	189	3.44	3.97
April	286	33	106	1.93	2.15
May	286	27	100	1.82	2.10
June	121	16	44.8	.815	.91
July	375	33	123	2.24	2.58
August	55	9.1	20.7	.376	.43
September	97	7.5	23.4	.425	.47

ROCKAWAY RIVER AT BOONTON, N. J.

LOCATION.—At dam of Jersey City Waterworks at Boonton, Morris County.

DRAINAGE AREA.—119 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1906, to September 30, 1922.

GAGES.—Elevation of water surface in reservoir determined by measuring from a reference point on the dam to the water surface with a graduated rod. Read once daily by an employee of the Jersey City Waterworks.

Automatic water-stage recorder on left bank one-quarter of a mile below dam. Operated by an employee of the Jersey City Waterworks.

DETERMINATION OF DISCHARGE.—Discharge over dam. January 1, 1906, to March 2, 1918, determined from elevation of water surface in the reservoir and rating curve for spillway. Discharge March 3, 1918, to September 30, 1922, determined at gaging station.

DISCHARGE MEASUREMENTS.—For gaging station made by wading near gage.

CHANNEL AND CONTROL.—For gaging station, coarse gravel, probably permanent.

REGULATION.—Records corrected for storage above dam.

DIVERSION.—Water diverted to Jersey City through pipe line measured by Venturi meter. Records corrected for this diversion.

COOPERATION.—Gage-height records and records of diversion furnished by the Bureau of Water, Department of Streets and Public Improvements, Jersey City.

Monthly discharge of Rockaway River at Boonton, N. J., for the years ending Sept. 30, 1906–1922.

[Drainage area, 119 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1906.					
January	594	169	286	2.40	2.77
February	589	82	201	1.69	1.76
March	1,390	156	421	3.54	4.08
April	1,280	252	555	4.66	5.20
May	888	80	240	2.02	2.33
June	563	93	218	1.83	2.04
July	633	56	189	1.59	1.83
August	688	77	251	2.11	2.43
September	108	39	67.4	.566	.63
1906–7.					
October	320	11	101	.849	.98
November	320	85	126	1.06	1.18
December	374	57	159	1.34	1.54
January	1,250	210	421	3.54	4.08
February	258	101	152	1.28	1.33
March	1,060	107	498	4.18	4.82
April	452	196	292	2.45	2.73
May	490	150	260	2.18	2.51
June	435	67	166	1.39	1.55
July	206	14	69.2	.582	.67
August	139	8	34.7	.292	.34
September	1,080	17	261	2.19	2.44
The year	1,250	8	212	1.78	24.17
1907–8.					
October	1,300	125	459	3.86	4.45
November	1,760	432	743	6.24	6.96
December	1,360	255	585	4.92	5.67
January	1,430	187	521	4.38	5.05
February	2,060	161	599	5.03	5.42
March	933	334	548	4.61	5.32
April	478	142	257	2.16	2.41
May	1,580	212	541	4.55	5.25
June	838	91	263	2.21	2.47
July	665	39	141	1.18	1.36
August	325	26	98.2	.825	.95
September	136	9	40.2	.338	.38
The year	2,060	9	399	3.35	45.69

Monthly discharge of Rockaway River at Boonton, N. J., for the years ending Sept. 30, 1906–1922—Continued.

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1908–9.					
October	226	8	63.7	0.535	0.62
November	91	43	71.0	.597	.67
December	142	31	80.6	.677	.78
January	812	39	190	1.60	1.84
February	1,540	96	546	4.59	4.78
March	1,040	153	399	3.35	3.86
April	1,390	136	524	4.40	4.91
May	1,290	152	393	3.30	3.80
June	503	80	162	1.36	1.52
July	110	15	50.0	.420	.48
August	490	3	75.6	.635	.73
September	74	14	41.3	.347	.39
The year	1,540	3	214	1.80	24.38
1909–10.					
October	60	3	34.5	.290	.33
November	114	31	62.3	.524	.58
December	1,010	37	140	1.18	1.36
January	1,230	51	265	2.23	2.57
February	1,120	119	319	2.68	2.79
March	1,470	183	534	4.49	5.18
April	1,620	29	456	3.83	4.27
May	721	142	323	2.71	3.12
June	422	88	210	1.76	1.96
July	90	15	50.4	.424	.49
August	145	14	49.8	.418	.48
September	76	11	36.2	.304	.34
The year	1,620	3	206	1.73	23.47
1910–11.					
October	80		29.7	.250	.29
November	385	23	93.9	.789	.88
December	246	26	73.6	.618	.71
January	429	91	178	1.50	1.73
February	359	93	137	1.15	1.20
March	580	94	220	1.85	2.13
April	659	190	373	3.13	3.49
May	260	43	111	.933	1.08
June	871	63	260	2.18	2.43
July	164	39	76.0	.639	.74
August	367	6	56.8	.477	.55
September	384	19	85.7	.720	.80
The year	871		141	1.18	16.03
1911–12.					
October	875	97	274	2.30	2.65
June	140	7	55.1	.463	.52
July	91	14	39.7	.334	.39
August			92.0	.773	.89
September	186	30	83.6	.703	.78
1912–13.					
October	592		88.6	.745	.86
January			467	3.92	4.52
February	470	130	217	1.82	1.90
March	1,320	156	554	4.66	5.37
April	1,300	277	506	4.25	4.74
May	551	133	251	2.11	2.43
June	87	11	57.2	.481	.54
July	75	5	37.8	.318	.37
August	54	3	29.0	.244	.28
September	82	0	34.7	.292	.33

Monthly discharge of Rockaway River at Boonton, N. J., for the years ending Sept. 30, 1906–1922—Continued.

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1913–14.					
October	801	28	198	1.66	1.91
November	605	100	218	1.83	2.04
December	605	99	212	1.78	2.05
January	916	125	276	2.32	2.68
February	774	155	294	2.47	2.57
March	1,330	159	406	3.41	3.93
April	766	212	455	3.82	4.26
May	716	104	297	2.50	2.88
June	119	37	67.0	.563	.63
July	267	6	101	.849	.98
August	94	4	49.2	.413	.48
September	50		20.7	.174	.19
The year	1,330		216	1.82	24.60
1914–15.					
October	83		28.0	.235	.27
November	446	1	73.7	.619	.69
December	575	47	214	1.80	2.08
January	1,870	59	566	4.76	5.49
February	1,990	286	625	5.25	5.47
March	520	140	263	2.21	2.55
April	864	126	288	2.42	2.70
May	351	6	145	1.22	1.41
June	147	19	77.7	.653	.73
July	98	31	70.7	.594	.68
August	1,340	29	268	2.25	2.59
September	716		107	.899	1.00
The year	1,990		225	1.89	25.66
1915–16.					
October	311		126	1.06	1.22
November	585	32	148	1.24	1.38
December	927	9	270	2.27	2.62
January	1,010	229	588	4.94	5.70
February	1,500	124	415	3.49	3.76
March	905	196	358	3.01	3.47
April	1,020	381	563	4.73	5.28
May	582	29	196	1.65	1.90
June	407	70	187	1.57	1.75
July	548	47	128	1.08	1.24
August	113	5	46.6	.392	.45
September	161	9	44.6	.375	.42
The year	1,500		255	2.14	29.19
1916–17.					
October			23.6	.198	.23
November	134		49.6	.417	.47
December	257		126	1.06	1.22
January	531	62	260	2.18	2.51
February	347	51	165	1.39	1.45
March	904	155	387	3.25	3.75
April	884	147	312	2.62	2.92
May	523		199	1.67	1.92
June	265	40	140	1.18	1.32
July	266	34	103	.866	1.00
August	76	15	43.0	.361	.42
September	91		33.5	.282	.31
The year	904		154	1.29	17.52
1917–18.					
October	207		53.4	.449	.52
November	429	12	89.2	.750	.84
December	263	36	87	.731	.84
January	278	28	110	.924	1.07
February	1,370	67	391	3.28	3.42
March	736		388	3.26	3.76
April	709	149	304	2.55	2.84
May	407	138	227	1.91	2.20
June	274	36	111	.933	1.04
July	92	7	48.8	.410	.47
August	105	3	39.8	.334	.39
September	83		33.9	.285	.32
The year	1,370		155	1.30	17.71

Monthly discharge of Rockaway River at Boonton, N. J., for the years ending Sept. 30, 1906–1922—Continued.

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1918–19.					
October			26.4	0.222	0.26
November			41.4	.348	.39
December	438	15	146	1.23	1.42
January	548	76	209	1.76	2.03
February	532	57	195	1.64	1.71
March	1,250	246	500	4.20	4.84
April	636	209	325	2.73	3.05
May	580	164	344	2.89	3.33
June	380	20	116	.975	1.09
July	2,860	11	395	3.32	3.83
August	546	143	282	2.37	2.73
September	780	32	213	1.79	2.00
The year	2,860		234	1.97	26.68
1919–20.					
October	570	57	189	1.59	1.83
November	498	158	330	2.77	3.09
December	540	170	308	2.59	2.99
January	376	35	162	1.36	1.57
February	200	95	146	1.23	1.33
March	2,410	115	1,000	8.40	9.68
April	818	300	538	4.52	5.04
May	466	103	265	2.23	2.57
June	359	78	186	1.56	1.74
July	1,160	78	264	2.22	2.56
August	543	95	217	1.82	2.10
September	377		109	.916	1.02
The year	2,410		311	2.61	35.52
1920–21.					
October	1,200	24	182	1.53	1.76
November	834	37	229	1.92	2.14
December	1,240	283	490	4.12	4.75
January	1,060	172	307	2.58	2.97
February	466	162	226	1.90	1.98
March	955	213	545	4.58	5.28
April	599	232	365	3.07	3.42
May	839	82	301	2.53	2.92
June	139	1	79.8	.671	.75
July	330	40	96.1	.808	.93
August	398	28	98.3	.826	.95
September	118		58.1	.488	.54
The year	1,240		249	2.09	28.39
1921–22.					
October	133		47.9	.403	.46
November	385		88.4	.743	.83
December	313	61	143	1.20	1.38
January	164	25	80.8	.679	.78
February	752	82	243	2.04	2.12
March	2,220	249	519	4.36	5.03
April	741	103	346	2.91	3.25
May	1,050	72	278	2.34	2.70
June	908	106	307	2.58	2.88
July	726	84	227	1.91	2.20
August	142		65.8	.553	.64
September	917		114	.958	1.07
The year	2,220		205	1.72	23.34

WHIPPANY RIVER AT MORRISTOWN, N. J.

LOCATION.—At Morristown sewage-disposal plant, three-fourths mile below Morristown, Morris County, and 8 miles above mouth of river.

DRAINAGE AREA.—29 square miles (measured on topographic map).

RECORDS AVAILABLE.—August 26, 1921, to September 30, 1922.

GAGE.—Vertical staff on left bank 150 feet above chlorination house of sewage-disposal plant; read under direction of William H. Frapwell.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Channel sand and fine gravel; control is riffle 50 feet below gage. Right bank is overflowed at very high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.40 feet, from graph at 5 p. m. July 1 (discharge, estimated, 700 second-feet); minimum stage, 0.80 foot at 5.30 p. m. October 5 and 7 (discharge, 6.3 second-feet).

ICE.—Stage-discharge relation affected by ice during extremely cold weather.

ACCURACY.—Stage-discharge relation permanent, except for few days in December, January, and February when morning gage readings were ice affected. Rating curve well defined between 8 and 350 second-feet. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage read by an employee of the commissioner of streets and sewers, city of Morristown.

Discharge measurements of Whippany River at Morristown, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 4	Otto Lauterhahn	0.86	9.4	Jan. 12	Otto Lauterhahn	0.95	15.2
15	do	.87	9.5	Feb. 2	do	2.96	255
Nov. 9	do	.90	11.4	7	O. W. Hartwell	1.42	53
9	do	.90	11.4	Mar. 9	Otto Lauterhahn	1.78	91
Dec. 8	do	.98	17.2	June 2	do	1.20	32.8
21	do	.98	16.6	Aug. 8	do	1.14	28.4

Daily discharge, in second-feet, of Whippany River at Morristown, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	10	15	26	14	12	35	230	38	31	275	43	110
2	11	21	20	16	245	38	92	37	37	245	50	36
3	14	15	81	17	136	36	70	37	110	92	43	26
4	10	14	33	15	49	41	76	60	116	290	41	215
5	7	13	27	22	31	116	70	245	136	185	37	163
6	10	12	22	26	44	76	60	65	163	122	32	57
7	8	12	22	18	48	116	70	65	76	92	29	56
8	10	12	17	14	28	275	70	52	48	81	29	48
9	8	12	15	16	21	86	65	46	47	92	27	40
10	8	17	13	14	20	76	57	48	48	76	24	38
11	11	13	16	17	22	110	55	45	81	65	23	34
12	11	14	16	14	26	110	70	41	60	59	25	35
13	10	13	16	17	39	86	54	38	48	57	25	33
14	10	14	15	17	31	76	51	38	44	70	23	31
15	10	17	13	13	23	70	156	39	43	52	22	29
16	11	14	11	13	23	60	76	39	45	48	22	27
17	11	34	12	12	20	56	70	37	65	45	22	25
18	11	20	39	12	20	47	81	129	70	45	20	25
19	12	16	29	14	21	49	70	170	52	70	21	24
20	18	39	21	34	104	200	65	76	44	49	29	23
21	14	28	18	34	86	104	55	59	65	42	19	24
22	12	21	14	31	60	70	52	52	52	45	18	23
23	11	16	14	24	60	60	50	46	45	45	17	22
24	11	16	25	16	81	58	49	43	39	142	17	22
25	11	14	38	13	43	57	46	41	41	110	22	19
26	11	16	22	12	33	55	46	39	36	53	48	18
27	11	17	21	11	65	55	45	36	43	48	28	18
28	11	45	18	11	55	76	42	36	52	51	29	18
29	12	122	16	12	-------	59	40	34	36	46	25	18
30	12	39	16	12	-------	54	39	33	31	37	21	18
31	12	-------	13	12	-------	76	-------	32	-------	33	50	-------

Monthly discharge of Whippany River at Morristown, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 29 square miles.]

Month.	Discharrge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	18	7	10.9	0.376	0.43
November	122	12	22.4	.772	.86
December	81	11	21.9	.755	.87
January	34	11	16.9	.583	.67
February	245	12	51.6	1.78	1.85
March	275	35	80.1	2.76	3.18
April	230	39	69.1	2.38	2.66
May	245	32	57.9	2.00	2.31
June	163	31	60.1	2.07	2.31
July	290	33	89.1	3.07	3.54
August	50	17	28.4	.979	1.13
September	215	18	42.5	1.47	1.64
The year	290	7	45.8	1.58	21.45

GREENWOOD LAKE AT THE GLENS, N. J.

LOCATION.—On Erie Railroad bridge 100 feet above dam at The Glens, Passaic County.

DRAINAGE AREA.—27.1 square miles.

RECORDS AVAILABLE.—June 1, 1898, to November 16, 1904, and June 1, 1907, to September 30, 1922.

GAGE.—Vertical staff gage on trestle of railroad bridge.

CONTROL.—A masonry dam with two wooden sluice gates.

EXTREMES OF STAGE.—Maximum stage recorded during year, 101.0 feet March 9; minimum stage, 95.7 feet November 11–20.

1898–1904; 1907–1922: Maximum stage recorded 102.37 feet several days in March, 1902 (also gage height was reported as "two feet over gage"—approximately 104.0—October 9–14, 1903); minimum stage, 93.25 several days in November, 1900.

REGULATION.—The Greenwood Lake dam was constructed to provide a storage reservoir for the water supply of the Morris Canal. The sluice gates are operated to augment the dry weather flow of the stream.

COOPERATION.—Records furnished by John H. Cook, hydraulic engineer of the Society for Establishing Useful Manufactures, Paterson, N. J.

Daily gage height, in feet, of Greenwaod Lake at The Glens, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	96.7	96.0	96.3	97.4	97.9	99.6	100.7	100.2	100.2	100.3	100.0	99.8
2	96.7	96.0	96.4	97.4	98.0	99.7	100.8	100.2	100.2	100.3	100.1	99.8
3	96.6	95.9	96.6	97.5	98.0	99.7	100.8	100.1	100.3	100.4	100.1	99.8
4	96.6	95.9	96.7	97.5	98.1	99.8	100.7	100.1	100.8	100.5	100.1	99.9
5	96.6	95.9	96.8	97.6	98.2	99.9	100.7	100.3	100.9	100.5	100.1	100.0
6	96.6	95.9	96.8	97.6	98.2	100.0	100.6	100.3	100.9	100.5	100.1	100.0
7	96.5	95.8	96.8	97.6	98.3	100.1	100.6	100.4	100.8	100.5	100.1	100.0
8	96.5	95.8	96.8	97.6	98.3	100.9	100.5	100.4	100.7	100.4	100.0	100.0
9	96.5	95.8	96.9	97.6	98.3	101.0	100.5	100.3	100.7	100.4	100.0	100.0
10	96.5	95.8	96.9	97.6	98.4	100.9	100.5	100.3	100.6	100.4	100.0	100.0
11	96.5	95.7	96.9	97.6	98.4	100.9	100.5	100.3	100.5	100.3	100.0	100.0
12	96.4	95.7	96.9	97.7	98.4	100.9	100.5	100.2	100.5	100.3	100.0	100.0
13	96.4	95.7	97.0	97.7	98.5	100.8	100.4	100.2	100.4	100.3	99.9	100.0
14	96.4	95.7	97.0	97.7	98.5	100.8	100.4	100.1	100.3	100.3	99.9	100.0
15	96.4	95.7	97.0	97.7	98.5	100.7	100.5	100.1	100.3	100.2	99.9	99.9
16	96.3	95.7	97.0	97.7	98.5	100.7	100.5	100.0	100.2	100.2	99.9	99.9
17	96.3	95.7	97.0	97.8	98.6	100.6	100.4	100.0	100.2	100.2	99.9	99.9
18	96.3	95.7	97.1	97.8	98.6	100.6	100.4	99.9	100.3	100.2	99.9	99.9
19	96.2	95.7	97.1	97.8	98.6	100.5	100.5	-------	100.3	100.3	99.9	99.8
20	96.2	95.7	97.1	97.8	98.6	100.6	100.5	100.8	100.3	100.2	99.9	99.8
21	96.2	95.8	97.2	97.8	98.7	100.7	100.4	100.8	100.4	100.2	99.8	99.8
22	96.1	95.8	97.2	97.8	98.8	100.7	100.4	100.7	100.4	100.2	99.8	99.8
23	96.1	95.8	97.2	97.8	99.0	100.8	100.4	100.7	100.3	100.2	99.8	99.8
24	96.1	95.8	97.3	97.8	99.2	100.7	100.3	100.6	100.3	100.1	99.8	99.8
25	96.0	95.8	97.3	97.8	99.3	100.6	100.3	100.6	100.3	100.1	99.8	99.7
26	96.0	95.8	97.4	97.8	99.4	100.6	100.3	100.5	100.2	100.1	99.8	99.7
27	96.0	95.8	97.4	97.8	99.5	100.6	100.3	100.5	100.2	100.1	99.8	99.7
28	95.9	95.9	97.4	97.8	99.6	100.6	100.2	100.4	100.2	100.0	99.9	99.7
29	95.9	96.1	97.4	97.8	-------	100.5	100.2	100.4	100.2	100.0	99.8	99.7
30	95.9	96.2	97.4	97.8	-------	100.5	100.2	100.3	100.2	100.0	99.8	99.7
31	95.8	-------	97.4	97.8	-------	100.5	-------	100.3	-------	100.0	99.8	-------

WANAQUE RIVER AT GREENWOOD LAKE, N. J.

LOCATION.—600 feet downstream from dam at outlet of Greenwood Lake, at The Glens, Passaic County.

DRAINAGE AREA.—27 square miles (measured on topographic maps).

RECORDS AVAILABLE—May 13, 1919, to September 30, 1922.

GAGE.—Vertical staff on left bank 600 feet downstream from dam. Read by an employee of the North Jersey District Water Supply Commission.

DISCHARGE MEASUREMENTS.—Made by wading at the gage.

CHANNEL AND CONTROL.—Gravel all sizes. Control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.62 feet at 5 p. m. March 14 (discharge, 266 second-feet).

1919–1922: Maximum stage recorded, 3.3 feet at 5 p. m. March 14, 1920 (discharge, 440 second-feet).

ICE.—Stage-discharge relation slightly affected by ice during extremely cold periods.

REGULATION.—This station indicates the discharge of the river as regulated at the Greenwood Lake dam.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by ice. Rating curve well defined between 5 and 200 second-feet. Gage read to tenths twice daily May, 1919, to August, 1921, and to hundredths twice daily August, 1921, to September, 1922. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Record of daily gage height and some discharge measurements furnished by North Jersey District Water-Supply Commission.

Discharge measurements of Wanaque River at Greenwood Lake, N. J., during the years ending Sept. 30, 1920–1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1920.		*Feet.*	*Sec.-ft.*	1921.		*Feet.*	*Sec.-ft.*
July 23	J. A. Ward [a]	0.83	30.9	Aug. 5	Otto Lauterhahn	0.73	25.5
Aug. 20	do	1.50	81.2	Sept. 9	do	.72	25.5
Oct. 18	do	.50	17.2				
18	do	.70	26.5	1922.			
18	do	.85	31.8	Feb. 6	do	.14	3.1
18	do	.95	39.2	6	do	.14	3.2
18	do	1.03	45.6	Apr. 4	O. W. Hartwell	1.94	140
18	do	1.11	51.2	4	do	1.92	139
Nov. 15	do	.95	37.1	May 10	Otto Lauterhahn	1.05	46.4
				Aug. 24	O. W. Hartwell	.38	12.2
				Sept. 7	Otto Lauterhahn	.60	18.9

[a] Engineer of North Jersey District Water-Supply Commission.

Daily discharge, in second-feet, of Wanaque River at Greenwood Lake, N. J., for the years ending Sept. 30, 1919–1922.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1919.											
1		50	30	102	30	16	76	16	30	50	43
2		43	30	86	36	17	92	16	30	50	43
3		40	30	72	50	18	86	16	30	50	36
4		36	30	67	72	19	86	12	30	58	36
5		36	30	58	76	20	86	14	30	58	36
6		30	30	62	76	21	86	16	30	58	30
7		30	30	67	67	22	86	12	50	54	30
8		28	30	67	67	23	86	12	150	50	36
9		25	30	62	58	24	86	12	183	50	30
10		25	30	58	50	25	86	20	166	43	30
11		25	30	50	58	26	86	30	150	43	30
12		20	30	43	58	27	81	33	183	40	30
13	97	20	30	43	54	28	76	36	201	36	30
14	86	18	30	50	50	29	67	30	174	36	30
15	76	20	30	50	46	30	58	30	150	30	30
						31	54		120	30	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1919–20.												
1	30	30	108	36	30	30	192	86	46	36	30	25
2	30	43	108	36	30	30	183	76	43	30	25	25
3	30	58	97	36	30	30	183	76	43	30	25	25
4	30	62	92	36	30	30	166	67	36	36	25	25
5	30	92	86	30	30	43	166	62	46	36	25	25
6	30	108	81	30	30	114	174	58	67	33	25	25
7	30	108	81	30	30	158	150	50	67	30	25	36
8	30	108	86	30	30	183	142	43	67	30	25	36
9	30	97	97	36	30	183	134	43	62	30	25	36
10	30	86	108	36	30	183	120	43	58	30	25	46
11	30	81	108	36	30	183	108	43	54	30	30	50
12	30	76	102	36	30	166	97	43	50	30	46	108
13	30	97	102	36	30	296	102	62	50	30	67	134
14	25	97	108	33	30	410	108	67	50	30	76	127
15	30	97	97	30	30	371	97	67	43	30	86	108
16	30	92	97	30	30	320	97	58	43	30	97	97
17	30	86	86	30	30	358	108	58	43	30	108	86
18	30	81	86	30	30	384	108	58	50	30	102	72
19	30	76	76	30	30	371	102	50	50	30	97	62
20	30	67	76	30	30	320	97	50	50	30	86	50
21	30	62	72	30	30	272	102	54	50	30	81	46
22	30	58	67	30	30	240	108	76	43	30	76	43
23	30	50	58	30	30	240	108	86	43	30	67	40
24	30	50	58	30	30	261	108	86	43	58	58	46
25	30	50	50	30	30	284	97	86	40	58	50	54
26	30	54	50	30	30	308	86	76	36	50	43	50
27	30	76	50	30	30	308	86	76	36	43	40	50
28	30	86	43	30	30	296	86	67	30	43	36	50
29	30	86	43	30	30	284	86	62	30	40	36	54
30	30	97	43	30		261	86	58	36	33	30	54
31	30		40	30		230		50		30	30	

Daily discharge, in second-feet, of Wanaque River at Greenwood Lake, N. J., for the years ending Sept. 30, 1919–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1920-21.												
1	230	43	102	67	40	67	86	86	43	30	25	26
2	261	43	120	58	36	81	97	86	43	30	25	26
3	230	43	134	58	36	120	92	76	43	30	25	26
4	192	43	134	58	36	158	97	76	43	30	25	26
5	158	43	134	58	36	166	86	86	43	30	25	26
6	127	43	120	58	36	166	81	97	43	30	25	26
7	114	43	120	50	36	166	76	97	43	30	25	26
8	102	43	120	54	36	166	72	86	43	30	25	26
9	86	43	108	58	36	174	67	81	43	30	33	25
10	76	43	108	54	36	272	67	76	43	30	43	25
11	67	43	97	50	36	220	67	72	43	30	43	25
12	58	43	97	46	36	201	58	67	43	30	43	34
13	58	43	86	43	36	183	54	76	43	30	43	34
14	50	43	108	50	36	174	50	86	36	30	43	34
15	46	43	166	76	36	150	50	86	30	30	43	34
16	43	43	166	86	36	134	50	81	30	30	42	34
17	50	43	158	97	36	134	50	76	30	30	35	34
18	43	43	150	86	36	127	54	67	30	30	29	34
19	43	43	134	86	36	108	58	58	30	30	9	34
20	43	43	114	76	36	97	58	54	30	30	8	34
21	43	43	108	67	36	86	58	50	30	30	27	34
22	43	46	97	67	36	76	54	43	30	30	27	34
23	43	54	97	67	36	76	76	46	30	30	27	34
24	43	67	97	58	36	81	86	50	30	30	27	28
25	43	67	86	58	36	86	86	50	30	30	27	23
26	43	76	86	58	36	108	86	50	30	30	27	23
27	43	81	76	54	36	108	86	43	30	30	27	23
28	43	86	76	50	54	97	81	43	30	30	27	23
29	43	86	76	50	------	86	76	43	30	30	27	23
30	43	86	76	43	------	------	81	43	30	30	26	23
31	43	------	72	43	------	76	------	43	------	28	26	------
1921-22.												
1	23	21				4	120	27	43	35	12	12
2	23	21				4	134	23	41	54	16	12
3	23	21				4	150	21	97	62	17	12
4	23	21				5	134	21	183	92	21	18
5	23	21			3	7	120	46	192	102	19	21
6	23	21				12	120	58	192	97	17	21
7	23	21				31	108	58	158	92	17	21
8	23	20				192	102	58	142	81	16	19
9	23	20				220	97	50	120	76	16	18
10	23	20			3	201	86	46	102	67	14	17
11	23	20			3	192	81	43	86	58	11	17
12	22	20			3	183	76	38	76	50	10	16
13	22	20			3	166	76	34	62	43	9	15
14	22	20			3	210	72	32	54	43	9	13
15	22	20			3	192	86	30	46	38	9	13
16	22	20	3	3	3	134	81	27	41	33	9	13
17	22	20			3	120	76	25	38	28	8	12
18	22	20			3	102	76	28	58	28	8	11
19	22	20			3	92	86	192	54	38	9	11
20	22	21			3	114	76	201	54	36	8	10
21	22	19			3	134	72	220	58	33	7	9
22	22	19			3	120	67	192	54	27	9	9
23	22	19			3	114	58	158	58	25	12	9
24	21				3	102	54	127	50	22	12	8
25	21				3	97	50	102	43	19	12	8
26	21	3			3	92	46	97	43	17	12	8
27	21				3	86	41	86	40	16	12	8
28	21				4	86	36	76	37	15	12	8
29	21				------	81	33	67	38	15	11	8
30	21				------	76	31	54	34	12	11	17
31	21	------			------	76	------	46	------	11	11	------

NOTE.—No record of gage height Nov. 24, 1921, to Feb. 9, 1922; gates at dam closed and no discharge over spillway. Flow consists of leakage through dam.

Monthly discharge, in second-feet, of Wanaque River at Greenwood Lake, N. J., for the years ending Sept. 30, 1919–1922.

Month.	Maximum.	Minimum.	Mean.	Month.	Maximum.	Minimum.	Mean.
1919.				1920–21.			
May 13–31	97	54	80.9	February	54	36	36.8
June	50	12	25.0	March	272	67	130
July	201	30	69.6	April	97	50	71.3
August	102	30	54.0	May	97	43	66.9
September	76	30	43.9	June	43	30	35.8
				July	30	28	29.9
1919–20.				August	43	8	29.3
October	30	25	29.8	September	34	23	28.6
November	108	30	77.0				
December	108	40	79.2	The year	272	8	61.5
January	36	30	31.8				
February	30	30	30.0	1921–22.			
March	410	30	231	October	23	21	22.1
April	192	86	120	November	21	3	16.2
May	86	43	62.5	December			3.0
June	67	30	46.8	January			3.0
July	58	30	34.4	February	4	3	3.0
August	108	25	51.5	March	220	4	105
September	134	25	56.2	April	150	31	81.5
				May	220	21	73.6
The year	410	25	73.7	June	192	34	76.5
				July	102	11	44.0
1920–21.				August	21	7	12.1
October	261	43	82.3	September	21	8	13.1
November	86	43	51.7				
December	166	72	110	The year	220		37.9
January	97	43	60.8				

WANAQUE RIVER AT WANAQUE, N. J.

LOCATION.—100 feet below Erie Railroad bridge and 400 feet below highway bridge in Wanaque, Passaic County.

DRAINAGE AREA.—91 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 16, 1903, to December 31, 1905; May 1, 1912, to May 1, 1915, and May 13, 1919, to September 30, 1922.

GAGE.—Gurley seven-day water-stage recorder on left bank, 100 feet below railroad bridge, in operation since April 2, 1922. Operated by an engineer of the North Jersey District Water Supply Commission. Vertical staff gage on left bank 100 feet above railroad bridge May 1, 1912, to April 1, 1922; read by Richard Rhinesmith. Chain gage on upstream side of highway bridge 300 feet above railroad bridge, used 1903 to 1905. Each gage at different datum.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading 150 feet below gage.

CHANNEL AND CONTROL.—Sand and fine gravel. Control is gravel riffle 50 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.6 feet (staff gage) at 7 a. m. March 8 (discharge, 1,690 second-feet); minimum stage, 2.1 feet (staff gage) at 7 a. m. and 4 p. m. January 28 (discharge, 18 second-feet).

1903–5, 1912–15, 1919–22: Maximum stage recorded 8.35 feet July 22 or 23, 1919, determined by level from high-water marks (discharge, about 2,100 second-feet); minimum discharge, 16 second-feet several days in August, 1921.

REGULATION.—Flow regulated by operation of sluice gates at Greenwood Lake, 11 miles upstream.

ACCURACY.—Stage-discharge relation changed April 2 by relocation of gage; permanent at both stations except for period October 1 to 23 when brush on piling under railroad bridge caused backwater. Rating curves fairly well defined. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph. Records good.

COOPERATION.—Station maintained and gage heights furnished by North Jersey District Water Supply Commission.

Discharge measurements of Wanaque River at Wanaque, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.		Discharge.	Date.	Made by—	Gage height.		Discharge.
		Staff gage.	Recording gage.				Staff gage.	Recording gage.	
		Feet.	*Feet.*	*Sec.-ft.*			*Feet.*	*Feet.*	*Sec.-ft.*
Oct. 7	Otto Lauterhahn	2.39	0.73	32.7	Jan. 16	Otto Lauterhahn	2.29	0.67	32.4
28	J. A. Ward [a]		.69	31.8	Feb. 6	do	2.61	.96	79
29	Otto Lauterhahn	2.30	.70	33.2	6	do	2.61	.96	80
29	do	2.30	.69	32.4	Mar. 10	O. W. Hartwell	4.56	2.71	615
Dec. 6	do	2.68	1.01	81	Apr. 4	do	3.90	2.03	405
6	do	2.68	1.01	84	June 2	do	2.73	1.06	114
24	do	2.54	.88	62	Aug. 21	J. A. Ward [a]	2.09	.49	22.1
24	do	2.56	.89	63	Sept. 2	Otto Lauterhahn	2.25	.62	31.6
Jan. 16	do	2.29	.67	34.6					

[a] Engineer of North Jersey District Water Supply Commission.

Daily discharge, in second-feet, of Wanaque River at Wanaque, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	38	38	80	33	24	107	660	88	107	156	49	63
2	38	80	71	24	98	107	500	91	109	256	89	32
3	38	44	265	24	139	139	420	87	290	223	72	30
4	38	44	184	24	88	107	400	102	950	344	83	171
5	38	33	107	38	88	172	381	344	530	362	63	168
6	38	33	88	56	88	236	325	290	560	290	52	79
7	38	33	71	44	88	295	308	208	420	240	46	72
8	38	33	56	44	64	1,380	308	186	325	192	45	60
9	38	33	56	38	56	750	290	162	273	223	44	54
10	38	44	56	33	56	660	256	148	223	168	38	54
11	38	44	56	33	56	630	240	134	208	142	35	48
12	38	38	56	33	56	570	240	122	208	124	30	55
13	38	33	50	33	56	540	223	109	151	109	27	54
14	38	33	28	33	44	540	208	102	124	109	26	42
15	38	44	24	33	44	510	325	96	109	100	26	40
16	38	44	21	33	44	510	273	87	10(	83	24	37
17	38	56	33	33	44	375	256	79	10(	74	22	34
18	38	56	161	24	33	310	290	273	308	81	22	32
19	38	56	139	33	38	295	256	1,180	256	223	29	31
20	38	56	80	56	80	570	240	760	174	119	25	30
21	44	71	71	44	88	820	208	560	240	94	19	31
22	38	56	56	44	118	392	192	400	223	79	19	29
23	38	56	56	44	196	358	180	308	174	74	21	28
24	33	50	64	24	358	340	168	256	140	64	21	27
25	33	44	98	24	150	295	156	240	124	79	24	25
26	33	33	80	24	139	280	148	273	114	63	33	22
27	33	38	56	24	150	250	140	223	107	55	30	22
28	33	88	44	18	150	250	126	186	126	55	30	23
29	33	184	38	24	-------	295	114	162	105	52	29	22
30	33	118	28	24	-------	250	102	140	94	45	25	23
31	33	-------	33	24	-------	428	-------	122	-------	41	40	-------

NOTE.—Stage-discharge relation affected by brush lodging on piles between gage and control Oct. 1-23.

Monthly discharge, in second-feet, of Wanaque River at Wanaque, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 91 square miles.]

Month.	Maximum.	Minimum.	Mean.	Month.	Maximum.	Minimum.	Mean.
October	44	33	36.9	May	1,180	87	243
November	184	33	53.8	June	950	94	233
December	265	21	74.4	July	362	41	139
January	56	18	32.9	August	89	19	36.7
February	358	24	94.0	September	171	22	47.9
March	1,380	107	412				
April	660	102	264	The year	1,380	18	139

PEQUANNOCK RIVER AT MACOPIN INTAKE DAM, N. J.

LOCATION.—At Macopin intake dam of Newark waterworks, 3 miles above Butler, Morris County.

DRAINAGE AREA.—63.7 square miles (measured on topographic map). In September, 1911, a small brook was permanently diverted into the Pequannock basin increasing the drainage area from 62.7 square miles to 63.7 square miles.

RECORDS AVAILABLE.—January 1, 1892, to September 30, 1922.

GAGE.—Water-stage recorder indicates head on spillway at dam. Elevation of water surface in various storage reservoirs indicated by staff gages.

DETERMINATION OF DISCHARGE.—Rating for spillway of intake dam determined by constructing weir at head of pond and making a series of simultaneous observations of head on the weir and dam. Discharge determined in millions of gallons per week. In converting discharge into monthly units, the division of overlapping weeks was made after a graphic comparison with the temperature and precipitation records.

DIVERSIONS.—Water diverted from the stream at intake dam only and is measured by Venturi meter. Diversion included in the records. No correction made for evaporation from reservoirs.

REGULATIONS.—Flow above the dam regulated by several reservoirs. These records corrected for such regulation.

COOPERATION.—Monthly discharge computed from records furnished by Morris R. Sherrerd, consulting engineer to city of Newark.

Monthly discharge of Pequannock River at Macopin intake dam for the years ending Sept. 30, 1892–1921.

[Drainage area, 62.7 square miles.[a]]

Month.	Discharge in second-feet.		Run-off in inches.
	Mean.	Per square mile.	
1892.			
January	327	5.22	6.02
February	96.5	1.54	1.66
March	142	2.26	2.61
April	99.0	1.58	1.76
May	115	1.83	2.11
June	141	2.25	2.51
July	28.5	.455	.52
August	29.2	.466	.54
September	27.4	.437	.49
1892–93.			
October	8.7	.139	.16
November	92.1	1.47	1.64
December	84.8	1.35	1.56
January	101	1.61	1.86
February	232	3.70	3.85
March	376	6.00	6.92
April	243	3.88	4.33
May	272	4.34	5.00
June	48.4	.772	.86
July	17.5	.279	.32
August	69.3	1.11	1.28
September	41.0	.654	.73
The year	132	2.11	28.51
1893–94.			
October	77.7	1.24	1.43
November	127	2.03	2.26
December	211	3.37	3.88
January	72.2	1.15	1.33
February	130	2.07	2.16
March	265	4.23	4.88
April	181	2.89	3.22
May	163	2.60	3.00
June	112	1.79	2.00
July	10.2	.163	.19
August	7.3	.116	.13
September	135	2.15	2.40
The year	124	1.98	26.88
1894–95.			
October	113	1.80	2.08
November	214	3.41	3.80
December	172	2.74	3.16
January	185	2.95	3.40
February	54.5	.869	.90
March	188	3.00	3.46
April	311	4.96	5.53
May	84.5	1.35	1.56
June	33.8	.539	.60
July	39.5	.630	.73
August	18.2	.290	.33
September	5.7	.091	.10
The year	118	1.88	25.65
1895–96.			
October	17.2	0.274	0.32
November	52.1	.831	.93
December	64.6	1.03	1.19
January	87.2	1.39	1.60
February	362	5.77	6.22
March	332	5.30	6.11
April	184	2.93	3.27
May	47.4	.756	.87
June	79.4	1.27	1.42
July	83.8	1.34	1.54
August	27.8	.443	.51
September	105	1.67	1.86
The year	119	1.90	25.84
1896–97.			
October	103	1.64	1.89
November	187	2.98	3.32
December	90.5	1.44	1.66
January	89.8	1.43	1.65
February	201	3.21	3.34
March	198	3.16	3.64
April	172	2.74	3.06
May	198	3.16	3.64
June	92.1	1.47	1.64
July	199	3.17	3.66
August	140	2.23	2.57
September	41.8	.667	.74
The year	143	2.28	30.81
1897–98.			
October	20.9	.333	.38
November	90.0	1.44	1.61
December	176	2.81	3.24
January	204	2.25	3.75
February	241	3.84	4.00
March	156	2.49	2.87
April	152	2.42	2.70
May	341	5.44	6.27
June	66.9	1.07	1.19
July	19.1	.305	.35
August	56.7	.904	1.04
September	10.1	.161	.18
The year	127	2.03	27.58
1898–99.			
October	45.7	.729	.84
November	138	2.20	2.46
December	169	2.70	3.11
January	212	3.38	3.90
February	207	3.30	3.44
March	424	6.76	7.79
April	239	3.81	4.25
May	57.1	.911	1.05
June	19.5	.311	.35
July	39.9	.636	.73
August	39.3	.627	.72
September	37.5	.598	.67
The year	135	2.15	29.31

[a] See paragraph under "Drainage area."

Monthly discharge of Pequannock River at Macopin intake dam for the years ending Sept. 30, 1892–1921—Continued.

Month.	Discharge in second-feet.		Run-off in inches.
	Mean.	Per square mile.	
1899–1900			
October	34.0	0.542	0.62
November	84.7	1.35	1.51
December	93.9	1.50	1.73
January	150	2.39	2.76
February	415	6.62	6.89
March	248	3.96	4.56
April	125	1 99	2.22
May	132	2.11	2.43
June	41.7	.665	.74
July	12.7	.203	.23
August	10.1	.161	.19
September	6.4	.102	.11
The year	111	1.77	23.99
1900–1901.			
October	6.9	.110	.13
November	21.9	.349	.39
December	38.4	.612	.71
January	36.8	.587	.68
February	16.7	.266	.28
March	247	3.94	4.54
April	380	6.06	6.76
May	210	3.35	3.86
June	87.1	1.39	1.55
July	46.1	.735	.85
August	289	4.61	5.32
September	108	1.72	1.92
The year	125	1.99	26.99
1901–2.			
October	66.5	1.06	1.22
November	56.1	.895	1.00
December	251	4.00	4.61
January	234	3.73	4.30
February	136	2.17	2.26
March	414	6.60	7.61
April	218	3.48	3.88
May	105	1.67	1.92
June	54.6	.871	.97
July	92.9	1.48	1.71
August	59.1	.943	1.09
September	84.5	1.35	1.51
The year	148	2.36	32.08
1902–3.			
October	203	3.24	3.74
November	81.2	1.30	1.45
December	238	3.80	4.38
January	200	3.19	3.68
February	238	3.80	3.96
March	337	5.37	6.19
April	290	4.63	5.17
May	38.8	.619	.71
June	280	4.47	4.99
July	124	1.98	2.28
August	124	1.98	2.28
September	103	1.64	1.83
The year	188	3.00	40.66
1903–4.			
October	532	8.48	9.78
November	80.8	1.29	1.44
December	167	2.66	3.07
January	156	2.49	2.87
February	139	2.22	2.39
March	298	4.75	5.48
April	191	3.05	3.40
May	113	1.80	2.08
June	108	1.72	1.92
July	28.0	.447	.52
August	24.4	.389	.45
September	59.6	.951	1.06
The year	159	2.54	34.46
1904–5.			
October	109	1.74	2.01
November	76.3	1.22	1.36
December	73.8	1.18	1.36
January	276	4.40	5.07
February	72.8	1.16	1.21
March	357	5.69	6.56
April	162	2.58	2.88
May	40.8	.651	.75
June	31.4	.501	.56
July	17.3	.276	.32
August	12.9	.206	.24
September	77.1	1.23	1.37
The year	109	1.74	23.69
1905–6.			
October	62.3	.994	1.15
November	37.3	.595	.66
December	105	1.67	1.92
January	129	2.06	2.38
February	103	1.64	1.71
March	217	3.46	3.99
April	282	4.50	5.02
May	141	2.25	2.59
June	115	1.83	2.04
July	218	3.48	4.01
August	172	2.74	3.16
September	32.7	.522	.58
The year	135	2.15	29.21
1906–7.			
October	50.0	.797	.92
November	63.5	1.01	1.13
December	72.3	1.15	1.33
January	265	4.23	4.88
February	76.2	1.22	1.27
March	268	4.27	4.92
April	157	2.50	2.79
May	119	1.90	2.19
June	102	1.63	1.82
July	22.4	.357	.41
August	7.2	.115	.13
September	174	2.78	3.10
The year	115	1.83	24.89

Monthly discharge of Pequannock River at Macopin intake dam for the years ending Sept. 30, 1892–1921—Continued.

Month.	Discharge in second-feet.		Run-off in inches.
	Mean.	Per square mile.	
1907–8.			
October	246	3.92	4.52
November	353	5.63	6.28
December	270	4.31	4.97
January	236	3.76	4.34
February	295	4.70	5.07
March	287	4.58	5.28
April	119	1.90	2.12
May	275	4.39	5.06
June	140	2.23	2.49
July	25.3	.404	.47
August	20.7	.330	.38
September	15.8	.252	.28
The year	190	3.03	41.26
1908–9.			
October	31.4	.501	.58
November	12.4	.198	.22
December	38.8	.619	.71
January	112	1.79	2.06
February	291	4.64	4.83
March	200	3.19	3.68
April	326	5.20	5.80
May	200	3.19	3.68
June	81.7	1.30	1.45
July	19.3	.308	.36
August	29.7	.474	.55
September	15.6	.249	.28
The year	112	1.79	24.20
1909–10.			
October	9.0	.144	.17
November	15.2	.242	.27
December	81.1	1.29	1.49
January	194	3.09	3.56
February	184	2.93	3.05
March	321	5.12	5.90
April	255	4.07	4.54
May	150	2.39	2.76
June	98.2	1.57	1.75
July	17.6	.281	.32
August	15.6	.249	.29
September	11.2	.179	.20
The year	112	1.79	24.30
1910–11.			
October	12.8	.204	.24
November	51.9	.828	.92
December	44.8	.715	.82
January	124	1.98	2.28
February	76.8	1.22	1.27
March	137	2.19	2.52
April	210	3.35	3.74
May	52.7	.841	.97
June	182	2.90	3.24
July	53.3	.850	.98
August	81.6	1.30	1.50
September	99.0	1.58	1.76
The year	93.5	1.49	20.24
1911–12.			
October	239	3.75	4.32
November	194	3.05	3.40
December	175	2.75	3.17
January	102	1.60	1.84
February	108	1.70	1.83
March	340	5.34	6.16
April	232	3.64	4.06
May	184	2.89	3.33
June	32.6	.512	.57
July	9.6	.151	.17
August	34.0	.534	.62
September	33.5	.526	.59
The year	141	2.21	30.06
1912–13.			
October	53.5	.840	.97
November	119	1.87	2.09
December	132	2.07	2.39
January	248	3.89	4.48
February	100	1.57	1.64
March	314	4.93	5.68
April	262	4.11	4.59
May	122	1.92	2.21
June	38.9	.611	.68
July	9.1	.143	.16
August	7.7	.121	.14
September	22.8	.358	.40
The year	119	1.87	25.43
1913–14.			
October	136	2.14	2.47
November	211	3.31	3.69
December	118	1.85	2.13
January	150	2.35	2.71
February	191	3.00	3.12
March	239	3.75	4.32
April	319	5.01	5.59
May	198	3.11	3.58
June	42.0	.659	.74
July	50.3	.790	.91
August	18.3	.287	.33
September	2.2	.034	.04
The year	140	2.20	29.63
1914–15.			
October	12.9	.203	.23
November	38.5	.604	.67
December	82.8	1.30	1.50
January	360	5.65	6.51
February	309	4.85	5.05
March	115	1.81	2.09
April	163	2.56	2.86
May	86.5	1.36	1.57
June	42.1	.661	.74
July	37.7	.592	.68
August	163	2.56	2.95
September	38.3	.601	.67
The year	120	1.88	25.52

Monthly discharge of Pequannock River at Macopin intake dam for the years ending Sept. 30, 1892–1921—Continued.

Month.	Discharge in second-feet.		Run-off in inches.
	Mean.	Per square mile.	
1915–16.			
October	45.9	0.721	0.83
November	79.1	1.24	1.38
December	182	2.86	3.30
January	299	4.69	5.41
February	215	3.38	3.64
March	186	2.92	3.37
April	335	5.26	5.87
May	136	2.14	2.47
June	172	2.70	3.01
July	102	1.60	1.84
August	38.3	.601	.69
September	10.6	.166	.19
The year	150	2.35	32.00
1916–17.			
October	15.0	.235	.27
November	21.7	.341	.38
December	70.4	1.11	1.28
January	148	2.32	2.68
February	62.7	.984	1.02
March	222	3.49	4.02
April	187	2.94	3.28
May	133	2.09	2.41
June	103	1.62	1.81
July	52.5	.824	.95
August	24.4	.383	.44
September	12.3	.193	.22
The year	87.9	1.38	18.76
1917–18.			
October	63.2	.992	1.14
November	63.3	.994	1.11
December	55.3	.868	1.00
January	81.4	1.28	1.48
February	242	3.80	3.96
March	198	3.11	3.58
April	173	2.72	3.04
May	96.2	1.51	1.74
June	67.3	1.06	1.18
July	13.4	.210	.24
August	17.9	.281	.32
September	15.5	.243	.27
The year	89.4	1.40	19.06
1918–19.			
October	11.0	.173	.20
November	22.4	.352	.39
December	99.6	1.56	1.80
January	108	1.70	1.96
February	101	1.59	1.66
March	288	4.52	5.21
April	168	2.64	2.94
May	174	2.73	3.15
June	50.9	.799	.89
July	174	2.73	3.15
August	115	1.81	2.09
September	69.7	1.09	1.22
The year	116	1.82	24.66
1919–20.			
October	72.2	1.13	1.30
November	181	2.84	3.17
December	165	2.59	2.99
January	42.7	.670	.77
February	36.6	.575	.62
March	524	8.23	9.49
April	297	4.66	5.20
May	137	2.15	2.48
June	98.9	1.47	1.64
July	111	1.74	2.01
August	89.0	1.40	1.61
September	107	1.68	1.87
The year	155	2.43	33.15
1920–21.			
October	133	2.09	2.41
November	148	2.32	2.59
December	264	4.14	4.77
January	146	2.29	2.64
February	93.5	1.47	1.53
March	332	5.21	6.01
April	184	2.89	3.22
May	150	2.35	2.71
June	37.4	.587	.65
July	65.2	1.02	1.18
August	46.3	.727	.84
September	18.1	.284	.32
The year	136	2.14	28.87
1921–22.			
October	18.2	.286	.33
November	60.5	.950	1.06
December	72.3	1.14	1.31
January	47.1	.739	.85
February	121	1.90	1.98
March	313	4.91	5.66
April	191	3.00	3.35
May	177	2.78	3.20
June	180	2.83	3.16
July	80.3	1.26	1.45
August	32.0	.502	.58
September	50.8	.798	.89
The year	112	1.76	23.82

ELIZABETH RIVER BASIN.

ELIZABETH RIVER AT ELIZABETH, N. J.

LOCATION.—Just above Westfield Avenue Bridge in Elizabeth, Union County, and 2½ miles above mouth of river.

DRAINAGE AREA.—20 square miles (measured on topographic map).

RECORDS AVAILABLE.—October 5, 1921, to September 30, 1922.

GAGE.—Hook gage in stilling well on left wing wall of dam, 75 feet above bridge; read by L. Gallagher.

DISCHARGE MEASUREMENTS.—Made by wading below bridge.

CONTROL.—Concrete dam with crest 48.5 feet long, at elevation 5.00 feet, referred to datum of gage. There is a sluice gate 24 inches in diameter the invert of which is at elevation 0.3 foot gage datum.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.66 feet at 5.25 p. m. February 2 (discharge, 305 second-feet); stream dry several days during summer.

DIVERSIONS.—The Elizabethtown Water Co. diverts water from Elizabeth River above this point, at the Ursina Lake pumping station and through wells at its Hummock Wells pumping station.

ACCURACY.—Stage-discharge relation permanent, except for opening of sluice gate. Rating curve well defined to 80 second-feet. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except for April and May, which are poor.

Discharge measurements of Elizabeth River at Elizabeth, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 14	Otto Lauterhahn	5.040	0.73	Dec. 23	Otto Lauterhahn	[a] 5.083	2.80
15	do	5.023	.19	23	do	5.080	2.43
Dec. 1	do	5.085	2.77	Feb. 3	do	[b] 5.273	15.2
1	do	5.077	2.65	6	O. W. Hartwell	5.630	67.
17	do	5.065	1.96	6	do	5.497	48.3
17	do	5.065	1.90	Aug. 8	Otto Lauterhahn	5.055	1.58

[a] Drift removed from dam before reading gage.
[b] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Elizabeth River at Elizabeth, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	-------	1.0	4.1	2.9	1.0	5.4	100		5.4	185	2.4	4.1
2	-------	1.9	3.5	3.5	120	8.3		4	7.5	248	2.9	4.7
3	-------	1.9	17	4.1	14	52	20		12	235	1.9	4.1
4	-------	1.9	6.7	2.9	10	31		16	4.1	235	1.0	23
5	2.9	1.0	5.4	2.9	14	31		135	12	248	1.4	14
6	1.9	1.0	3.5	2.9	56	26	10		14	235	1.9	13
7	1.9	1.9	4.1	3.5	31	124	10	60	10	164	1.9	12
8	1.9	.2	4.1	2.9	6.7	88	10		6.7	146	1.9	15
9	1.9	2.4	3.5	2.9	4.7	12	14		4.1	137	0	14
10	1.0	4.7	2.9	2.9	4.7	26	15		2.9	112	0	11
11	2.4	3.5	2.9	1.9	5.4	81	24		22	92	1.9	14
12	2.9	2.9	4.1	4.1	6.0	72	20		10	81	4.1	20
13	1.9	4.7	4.1	4.1	10	64	10		16	81	4.1	11
14	1.9	2.9	3.5	2.9	7.5	42	13		13	0	2.9	4.7
15	1.0	8.3	4.1	4.1	6.0	34	15	20	10	0	1.9	4.7
16	1.0	1.9	4.1	4.1	3.5	24	14		6.7	0	1.9	5.4
17	1.9	51	2.4	4.7	5.4	19	11		9.1	0	1.9	4.7
18	1.9	3.5	57	2.9	4.1	15	10		39	0.1	1.9	2.9
19	1.4	2.9	4.1	4.1	14	10	11		31	1.4	1.9	1.9
20	1.9	31	6.7	14	24	112	13		10	1.0	1.0	0
21	1.9	10	4.1	10	20	45	16		8.3	1.4	.2	4.1
22	1.9	2.9	2.9	6.0	24	13	16		7.5	2.9	.2	2.4
23	.2	2.9	2.9	6.7	14	10	15		8.3	13	1.0	1.0
24	.6	2.9	5.4	4.7	9.1	10		4.7	10	12	.2	1.9
25	1.0	2.9	13	2.9	6.0	8.3		3.5	16	6.7	1.4	8.3
26	1.9	2.9	5.4	4.1	12	100	7	4.1	14	4.1	4.7	5.4
27	2.4	6.0	2.9	2.9	29	8.3		4.1	14	1.9	10	4.1
28	1.4	35	2.9	1.0	13	7.5		2.9	106	17	10	0
29	1.4	26	2.9	1.0	-------	7		1.9	197	6.7	5.4	0
30	.6	11	4.1	1.0	-------	15		2.9	164	4.1	4.1	4.7
31	1.9	-------	2.9	1.9	-------	20	-------	1.9	-------	1.9	6.7	-------

NOTE.—Sluice gates open Mar. 29 to May 23; discharge Apr. 1, 6–11, 13–21, 23, and May 4–6 determined, by adding the discharge over the dam to that through the sluice pipe; discharge Mar. 29–31, Apr. 2–5, 12, 22, 24–30, May 1–3, and 7–23 obtained by graphic comparison with records for Whippany River. Braced figures show mean discharge for periods indicated.

Monthly discharge of Elizabeth River at Elizabeth, N. J. for the year ending Sept. 30, 1922.

[Drainage area, 20 square miles.]

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
October 5–31	2.9	0.2	1.66	11.2	0.560	0.56
November	51	.2	7.77	16.5	.825	.92
December	57	2.4	6.36	15.4	.770	.89
January	14	1.0	3.89	13.3	.665	.77
February	120	3.5	17.0	25.6	1.28	1.33
March	124	3.5	33.3	41.3	2.06	2.38
April			15.9	21.7	1.08	1.20
May			19.0	25.3	1.26	1.45
June	197	2.9	26.4	35.2	1.76	1.96
July	248	0	73.3	81.7	4.08	4.70
August	10	0	2.67	11.6	.580	.67
September	23	0	7.20	16.6	.830	.93

RAHWAY RIVER BASIN.

RAHWAY RIVER AT RAHWAY, N. J.

LOCATION.—At Church Street Bridge in Rahway, Union County, half a mile above mouth of Robinsons Branch of Rahway River.

DRAINAGE AREA.—41 square miles (measured on topographic map).

RECORDS AVAILABLE.—July 10, 1908, to April 29, 1915, and October 1, 1921, to September 30, 1922.

GAGE.—Vertical staff gage attached to tree on right bank 40 feet below bridge; read by W. M. Ritchie. Gage read by Robert Davis 1908–1915.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Channel is fine gravel; control head of riffle 300 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.32 feet at 8 a.m. May 19 (discharge, 560 second-feet); minimum stage, 0.52 foot at 5 p.m. January 3 (discharge, 2 second-feet).

1908–1915: Maximum mean daily stage 4.85 feet March 13, 1912 and February 1, 1914; minimum stage zero December 1, 1912.

ICE.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—Orange Water Co., South Orange Waterworks (wells), Short Hills Water Co. (wells), Springfield station of Elizabethtown Water Co. (wells), and Rahway Waterworks divert water from Rahway River above Rahway. The total flow diverted is about 15 second-feet.

ACCURACY.—Stage-discharge relation fairly permanent except for children constructing dam June 11. Rating table fairly well defined. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Discharge not determined 1908–1915. Records fair.

COOPERATION.—The observations, prior to October 1, 1921, were made by the New Jersey Water-Supply Commission (1907–1916).

Discharge measurements of Rahway River at Rahway, N. J., during period July 10, 1908, to Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1908.		*Feet.*	*Sec.-ft.*	1921.		*Feet.*	*Sec.-ft.*
July 10	J. C. Hallock	0.8	[a] 10.9	Oct. 2	Otto Lauterhahn	0.595	7.4
Nov. 2	do	.79	[a] 19.1	2	do	.595	7.2
				14	do	.605	6.4
1912.				Nov. 11	do	.58	5.7
Apr. 5	W. H. Boardman	1.14	[a] 79	Dec. 1	do	.70	14.0
May 14	do	1.00	[a] 58	1	do	.70	14.7
June 10	do	.75	[a] 26.1	23	do	.60	7.2
				23	do	.59	7.1
1913.							
Apr. 14	do	1.41	[a] 136	1922.			
May 23	do	.94	[a] 37.6	Jan. 14	do	.64	9.7
				14	do	.62	8.7
1921.				Feb. 3	do	1.68	169
Aug. 19	Otto Lauterhahn	.70	17.2	4	do	.98	49.1
20	do	.64	11.3	6	O. W. Hartwell	1.07	64
20	do	.64	12.4	7	do	.94	46.4
20	do	.64	12.1	Mar. 11	do	1.46	148
20	do	.64	11.8	Aug. 7	Otto Lauterhahn	.76	15.3
Oct. 1	do	.60	6.8				

[a] Measurement made by the State Water Supply Commission of New Jersey. Mean velocity determined by "Multiple point method." Where depth was more than 1 foot, the meter was held at mid-depth, 0.5 foot below the surface, and at 0.5 foot above the bottom. Mean velocity determined by dividing the sum of the top velocity, four times the mid-depth velocity, and the bottom velocity by 6.

Daily gage height, in feet, of Rahway River at Rahway, N. J., for the period July 10, 1908, to Apr. 29, 1915.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1908.				1908.				1908.			
1		0.9	0.8	11	0.75	0.85	0.8	21	0.8	0.8	0.8
2		.85	.8	12	.75	.85	.8	22	.85	.85	.8
3		.8	.8	13	.85	.8	.75	23	1.05	.95	.8
4		.8	.8	14	.9	.8	.8	24	1.2	.8	.8
5		.8	.8	15	.85	.8	.8	25	1.0	.8	.8
6		.8	.85	16	.8	.8	.8	26	.95	1.85	.8
7		.8	1.0	17	.85	.8	.8	27	.9	1.4	.7
8		.8	.9	18	.9	.8	.8	28	.9	1.0	.75
9		.85	.8	19	.8	.8	.8	29	.9	.95	.75
10	0.8	.8	.8	20	.8	.8	.8	30	.9	.8	.85
								31	.9	.8	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908-9.												
1	0.8	0.75	0.65	0.6	0.9	1.0	0.9	1.8	0.8	0.8	0.75	0.6
2	.8	.79	.55	.7	.9	.9	.9	1.6	.8	.7	.7	.6
3	.8	.75	.4	.6	.9	1.05	.9	1.2	.7	.8	.7	.6
4	.8	.8	.5	.65	.9	1.3	1.0	1.0	.9	.7	.6	.6
5	.75	.65	.5	.9	.9	1.0	.9	.9	1.05	.7	.6	.6
6	.7	.65	.5	1.95	.9	.9	.9	.9	.8	.7	.6	.6
7	.7	.7	1.15	1.05	.9	.95	.9	.9	.8	.8	.7	.6
8	.7	.6	1.1	.85	.8	.9	.9	.9	.7	.9	.6	.6
9	.7	.65	.9	.6	.8	.9	.8	.9	.75	.9	.6	.7
10	.7	.6	.8	.8	1.25	1.15	.8	.9	.8	.9	.6	.7
11	.7	.6	.8	.8	1.4	.9	.8	.9	.8	.7	.6	.6
12	.7	.7	.8	.8	1.0	.9	.8	.9	.7	.7	.6	.6
13	.8	.7	.85	.8	.9	1.0	.8	.9	.8	.7	.6	.6
14	.7	.7	.8	.8	.9	.9	1.95	.9	.8	.7	.6	.6
15	.7	.7	.7	.8	1.0	.9	3.65	.9	.8	.7	.6	.7
16	.7	.95	.65	.8	1.6	.9	2.3	.9	.7	.7	.8	.6
17	.7	.8	.7	.7	1.85	.9	1.2	.9	.7	.7	2.2	.6
18	.7	.7	.7	.7	1.1	.9	1.15	.9	.7	.7	1.1	.6
19	.7	.85	.7	.6	.9	.9	1.0	.9	.7	.7	.9	.6
20	.65	.7	.65	.5	2.2	.9	1.3	.9	.7	.6	.8	.6
21	.7	.7	.65	.5	1.4	.85	1.55	.9	.7	.6	.8	.6
22	.7	.7	.6	.5	1.1	.8	1.7	1.0	.7	.6	.7	.6
23	.7	.85	.6	.6	.9	.8	1.4	1.0	.8	.75	.7	.6
24	.7	.7	.6	.8	3.35	.85	1.4	.9	.6	1.0	.7	.7
25	.7	.65	.7	1.05	3.1	1.7	1.2	.9	.6	.9	.6	.5
26	.9	.7	.7	1.0	2.1	2.35	1.0	.9	.7	.9	.5	.6
27	.95	.8	.65	.9	1.3	1.7	.9	.9	.7	.8	.7	.6
28	.9	.7	.6	.9	1.15	1.4	1.1	.8	.8	.85	.6	.6
29	.9	.65	.6	.9		1.2	1.0	.8	.8	.8	.6	.7
30	.95	.7	.6	.9		1.1	2.3	.8	.7	.8	.6	.6
31	.8		.7	.9		1.0		.8		.7	.6	

Daily gage height, in feet, of Rahway River at Rahway, N. J., for the period July 10, 1908, to Apr. 29, 1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	0.6	0.6	0.8	0.6	1.1	3.35	9.8	1.0	0.9	0.8	0.6	0.6
2	.6	.7	.7	.6	1.0	2.35	.8	.95	.9	.8	.6	.6
3	.6	.8	.7	.6	.9	2.0	.8	.9	.9	.7	.6	.5
4	.6	.6	.7	.6	.9	1.9	.8	.9	.9	.7	1.1	.7
5	.6	.8	.6	.6	.9	1.6	.8	.9	.9	.7	.9	.7
6	.6	.6	.6	.6	.9	1.4	.8	.9	1.1	.7	.7	.7
7	.6	.6	.6	1.5	.9	1.3	.8	.9	1.2	.7	.7	.7
8	.6	.8	.6	1.5	.9	1.1	.8	.9	.9	.7	.7	.6
9	.6	.8	.6	1.0	.9	1.1	.8	.85	.9	.7	.7	.6
10	.6	.8	.6	.9	1.0	1.1	.8	.8	1.25	.7	.7	.6
11	.6	.8	.6	.9	.9	1.1	.8	.8	1.5	.7	.6	.6
12	.6	.8	.6	.8	.9	1.0	.8	.8	1.85	.7	.6	.6
13	.6	.8	.7	.8	.9	1.0	.8	.7	1.15	.7	.6	.6
14	.6	.8	3.0	.7	.9	.9	.8	.7	1.05	.6	.6	.6
15	.6	.8	1.25	.6	.9	.9	.6	.7	1.0	.6	.6	.6
16	.6	.8	.85	.8	.9	.9	.6	.7	.9	.6	.6	.6
17	.6	.8	.8	.9	1.1	.9	.9	.7	.9	.6	.6	.6
18	.6	.8	.8	.9	1.1	.9	1.5	.9	2.0	.6	.6	.6
19	.6	.7	.6	1.5	1.1	.9	2.2	.8	2.0	.6	.65	.6
20	.6	.6	.6	1.5	1.5	.9	1.55	.7	1.15	.6	.6	.9
21	.6	.6	.6	1.3	2.1	.9	1.15	.8	1.0	.6	.6	.75
22	.6	.6	.6	3.4	2.55	.9	1.1	.8	.9	.6	.6	.75
23	.6	.6	.6	2.0	1.2	.9	1.1	.8	.8	.6	.6	.6
24	.6	.7	.6	1.5	.9	.8	1.0	.8	.8	.6	.6	.75
25	.6	1.3	.4	1.2	.9	.8	1.15	1.05	.8	.6	.6	.75
26	.6	1.0	.4	1.2	.9	.8	1.9	.9	.8	.6	.6	.6
27	.6	.8	.4	1.1	.9	.8	2.6	.8	.8	.6	.6	.6
28	.6	.8	.4	1.1	1.0	.8	2.7	.8	.8	.6	.6	.6
29	.6	.8	.4	1.1	------	.8	1.7	.8	.8	.6	.6	.6
30	.6	.8	.4	1.1	------	.8	1.3	.8	.8	.6	.6	.6
31	.6	------	.4	1.1	------	.8	------	.9	------	.6	.6	------
1910–11.												
1	.6	.6	.8	.6	.6	.6	.9	.8	.7	.6	.8	3.0
2	.6	.6	.8	.9	.6	.6	.9	.9	1.0	.6	.8	2.65
3	.6	.75	.8	1.5	.6	.6	.9	.9	.9	.6	.8	2.4
4	.6	1.4	.6	2.1	2.6	.6	1.1	.9	.8	.6	.8	2.1
5	.6	1.0	.6	1.5	1.7	.6	2.2	.9	.8	.5	.8	1.8
6	.6	.9	.6	1.5	1.4	.6	1.1	.9	.8	.5	.8	1.6
7	.6	.9	.6	1.4	1.2	.6	.9	.8	.8	.5	.8	1.4
8	.6	.9	.6	1.2	1.0	.6	.9	.8	.8	.5	.8	1.3
9	.6	.9	.6	1.0	.95	.6	.9	.8	.8	.5	.8	1.1
10	.6	.7	.6	1.0	.9	.6	.9	.8	.8	.5	.8	1.0
11	.6	.7	.6	.9	.9	.6	.9	.8	.8	.5	.8	.9
12	.6	.6	.6	.9	.8	.7	.9	.8	.8	.5	.8	.8
13	.6	.6	.6	.9	.8	.8	.9	.8	1.45	.5	.8	.8
14	.6	.6	.6	.9	.8	1.1	.9	.8	1.2	.7	.8	.8
15	.6	6	.6	1.0	.7	2.5	.9	.8	1.1	1.1	.8	.8
16	.6	.5	.6	1.0	.7	1.7	.9	.8	1.0	1.0	.9	.8
17	.6	.5	.6	.9	.6	1.25	.9	.7	.9	1.1	1.2	.8
18	.6	.5	.6	.9	.6	.9	.9	.7	.9	.9	1.0	.8
19	.6	.4	.6	.9	.6	.9	.9	.7	.8	.8	.9	.8
20	1.0	.4	.6	.8	.6	.9	.9	.7	.8	.8	.9	.8
21	.9	.4	.6	.8	.6	.9	.8	.7	.7	.7	.9	.8
22	.9	.4	.6	.6	.7	.9	.8	.6	.7	1.2	.8	.8
23	.9	.6	.6	.6	.9	.9	.8	.6	.6	1.2	.8	.8
24	.6	.9	.6	.6	.65	.9	1.0	.6	.6	1.1	.8	.8
25	.6	.9	.6	.6	.6	.9	.9	.6	.6	1.2	.8	.8
									.6			
26	.6	1.0	.6	.6	.6	.9	.8	.6	.6	1.2	.8	.8
27	.6	.9	.6	.6	.6	.9	.8	.6	.6	1.2	1.2	.8
28	.6	.9	.6	.6	.6	1.0	.8	.6	.6	.8	1.0	.8
29	.6	.9	.6	.6	------	1.2	.8	.6	.6	.8	1.0	.8
30	.6	.8	.6	.9	------	1.55	.8	.6	.6	.8	1.15	.8
31	.6	------	.6	.7	------	.9	------	.6	------	.8	2.65	------

Daily gage height, in feet, of Rahway River at Rahway, N. J., for the period July 10, 1908, to Apr. 29, 1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911-12.												
1	0.9	0.7	0.8	0.8	0.8	3.4	1.0	0.9	0.8	0.75	0.6	------
2	1.4	.8	.7	.8	.8	1.65	1.0	.9	.8	.75	.6	------
3	1.05	.8	.8	.7	.8	1.05	1.0	.9	.8	.75	.6	------
4	.95	.8	.7	.75	.8	.9	1.0	.9	.8	.8	.65	------
5	.9	.9	.7	.7	.8	.9	1.0	.9	.8	.75	.6	------
6	.9	1.7	.7	.7	.7	.9	1.0	2.55	.8	.8	.75	------
7	.9	2.2	.7	.8	.6	.8	1.0	1.95	.8	.85	.65	------
8	.8	1.9	.7	.8	.6	.8	1.45	1.4	.8	.85	.65	------
9	.8	1.7	.7	.8	.6	.8	1.1	1.0	1.05	.85	.65	------
10	.8	1.4	.7	.8	.7	.8	1.0	.95	.9	.75	.6	------
11	.85	1.2	.7	.8	.8	.8	1.0	.9	.8	.7	.65	------
12	.85	1.1	.7	.8	.8	.85	1.0	.9	.8	.75	.65	------
13	.8	1.0	.7	.8	.7	4.85	1.0	.9	.8	.8	.75	------
14	.8	1.0	.7	.7	.7	2.25	1.0	.8	.75	.8	.65	------
15	.8	1.0	.9	.7	.7	3.0	1.0	.8	.7	.8	.6	------
16	.8	.9	2.05	.7	.6	4.5	.9	.8	.9	.85	.65	------
17	.8	1.05	1.9	.8	.6	2.65	.9	.8	.8	.75	.75	------
18	.7	2.3	1.75	1.95	.6	1.9	.9	.8	.8	.75	.75	------
19	2.7	2.05	1.7	1.65	.6	1.2	.9	.8	.8	.65	.65	------
20	1.9	1.65	1.6	1.3	.75	.9	.9	.8	.8	.65	.65	------
21	1.3	1.3	1.5	1.0	2.7	.9	.9	.8	.8	.7	.65	------
22	1.2	1.15	1.3	.9	1.7	.9	.9	.8	.8	.85	.6	------
23	1.1	1.05	1.1	.9	1.1	1.0	.9	.8	.8	.75	.8	------
24	.9	2.5	1.1	.8	.9	1.0	.9	.8	.7	.7	.8	------
25	.9	2.1	.9	.8	.9	1.2	.9	.8	.7	.6	.7	------
26	.9	1.85	.9	.8	.9	1.0	.9	.8	.7	.7	1.1	------
27	.8	1.15	.9	.9	.8	1.0	.9	.8	.7	.6	.65	------
28	.8	1.1	.8	.95	.8	1.0	.9	.8	.6	.6	.8	------
29	.8	1.0	.8	.9	2.75	1.0	.9	.8	.75	.65	.85	------
30	.8	.9	.8	.8	------	1.0	.9	.8	.75	.65	.75	------
31	.7	------	.8	.8	------	1.0	------	.8	------	.6	.65	------
1912-13.												
1	------	------	------	.75	------	1.9	------	------	------	------	.65	0.75
2	------	------	.3	.7	.85	1.05	------	------	------	------	.65	.8
3	------	------	.6	.6	.8	.85	------	------	------	------	.8	.8
4	------	------	.6	.6	1.0	.8	------	------	------	------	.65	.8
5	------	------	.6	.6	.9	.7	------	------	------	------	.7	.8
6	------	------	.75	.6	.8	.7	------	------	------	------	.8	.8
7	------	------	.6	.6	.7	.7	------	------	------	------	.8	.85
8	------	------	.6	.6	.7	.7	------	------	------	------	.8	.85
9	------	------	.6	.6	.7	.7	------	------	------	------	.9	.75
10	------	------	.6	.6	.7	.7	------	------	------	------	.8	.85
11	------	------	.7	.6	.8	.7	------	------	------	------	.9	.85
12	------	------	.7	.65	.8	.7	------	------	------	------	.8	.75
13	------	------	.7	.6	.8	.7	------	------	------	------	.8	.7
14	------	------	.65	.75	.75	2.9	------	------	------	------	.8	.75
15	------	------	.6	.8	.7	1.9	------	------	------	------	.9	.9
16	------	------	.6	.8	.7	1.5	------	------	------	------	.8	.85
17	------	------	.6	.75	.7	1.05	------	------	------	------	.75	.8
18	------	------	.6	.65	.7	.9	------	------	------	------	.8	.7
19	------	------	.6	.7	.7	.9	------	------	------	------	.9	.85
20	------	------	.6	.65	.7	.9	------	------	------	------	.9	.75
21	------	------	.6	.6	.7	.9	------	------	------	------	.8	.75
22	------	------	.6	.6	.7	.8	------	------	------	------	.8	.9
23	------	------	.6	.6	.7	.8	------	------	------	------	.85	.95
24	------	------	.65	.6	.75	.8	------	------	------	------	.8	.8
25	------	------	.6	.65	.7	.8	------	------	------	------	.9	.75
26	------	------	.6	.6	.75	.7	------	------	------	------	.65	.8
27	------	------	.6	.7	.7	.7	------	------	------	------	.9	.8
28	------	------	.6	.65	2.9	.7	------	------	------	------	.75	.8
29	------	------	.6	.65	------	.7	------	------	------	------	.7	.8
30	------	------	.65	.7	------	.7	------	------	------	------	.8	.75
31	------	------	.7	.7	------	.65	------	------	------	------	------	------

Daily gage height, in feet, of Rahway River at Rahway, N. J., for the period July 10, 1908, to Apr. 29, 1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913-14.												
1	0.8	0.9	0.9	0.8	2.55	0.95	1.15	1.0	0.9	0.85	0.75	9.6
2	1.75	.95	.95	.95	1.65	.9	1.05	1.0	.8	1.8	.8	.7
3	2.25	.95	.9	1.85	1.1	.9	1.3	1.0	.7	1.4	.85	.7
4	1.3	.9	.9	2.3	1.0	.9	1.0	1.0	.65	.95	.85	.65
5	.9	.8	.8	2.65	.9	.9	1.0	1.05	.6	.85	.85	.6
6	.9	.8	.85	1.95	.9	.9	1.0	2.35	.6	.85	.8	.65
7	.8	.8	.8	1.35	.95	.9	1.0	1.75	.8	1.0	.8	.7
8	.8	.8	.9	1.0	1.3	1.0	1.0	1.1	.85	.9	.85	.6
9	.7	.85	.85	.9	1.05	.95	1.0	1.0	1.0	.85	.85	.6
10	.75	.85	.8	.85	.95	.9	.95	1.0	1.0	1.1	.8	.65
11	.8	.85	.8	.8	.95	.9	.9	.9	.85	.95	.8	.6
12	.8	.85	.8	.9	1.0	.9	.9	.85	.65	.9	.8	.65
13	.8	.8	.8	.85	1.0	1.0	1.0	.75	.6	.95	.85	.6
14	.8	.8	.8	.8	1.0	1.35	1.0	.8	.6	.85	.85	.65
15	.7	.85	.8	.8	1.0	1.85	1.0	.8	.6	.8	.8	.6
16	.7	.8	.8	.8	1.0	2.3	1.0	.8	.6	.9	.8	.6
17	.7	.9	.8	.8	1.0	2.8	.95	.8	.6	.95	.85	.6
18	.8	.9	.8	.8	1.0	2.8	.9	.8	.65	.85	.85	.7
19	.8	.85	.8	.85	1.0	2.25	1.0	.8	.8	.9	.75	.65
20	.75	.8	.8	.9	1.0	1.6	1.0	.8	.8	.85	.7	.65
21	.85	.8	.8	.8	1.0	1.15	1.0	.9	1.05	.9	.6	.7
22	.75	------	.8	.8	1.05	1.0	1.0	.95	.9	.85	.6	.6
23	.8	.9	.85	.95	1.0	1.2	1.05	.85	.8	.9	.6	.6
24	1.05	.9	2.5	.8	.95	1.05	1.05	.8	.7	.85	.65	.6
25	2.95	.8	2.0	.8	.9	1.05	1.1	.8	.7	.85	.7	.55
26	3.15	.9	1.5	.8	.9	1.1	3.45	.8	.7	.85	.75	.5
27	2.15	.9	1.0	.85	1.0	1.0	2.75	.8	.7	.95	.6	.5
28	1.1	.8	.9	.9	.95	1.0	2.05	.8	.8	1.2	.6	.5
29	.9	.9	.8	.85	------	1.05	1.65	.8	.8	1.05	.6	.5
30	.9	.95	.8	.95	------	1.1	1.0	.8	.8	.9	.65	.4
31	.9	------	.85	1.7	------	1.2	------	.9	------	.8	.7	------
1914-15.												
1	.4	.8	.8	.6	2.4	1.1	.8	------	------	------	------	------
2	.4	.9	.7	.9	4.05	1.1	.9	------	------	------	------	------
3	.4	.85	.65	.6	2.1	1.1	.75	------	------	------	------	------
4	.4	.9	.6	.85	1.35	1.0	.95	------	------	------	------	------
5	.3	.8	.7	.8	1.35	1.0	1.0	------	------	------	------	------
6	.3	.8	.85	.7	2.7	1.05	1.0	------	------	------	------	------
7	.3	.8	1.3	1.3	2.6	1.1	1.25	------	------	------	------	------
8	.3	.85	1.7	1.1	1.75	1.1	1.05	------	------	------	------	------
9	.3	.9	1.6	.9	1.35	1.1	.95	------	------	------	------	------
10	.2	.8	1.2	.77	1.25	1.15	.9	------	------	------	------	------
11	.2	.9	1.0	.85	1.1	1.2	.9	------	------	------	------	------
12	.4	.9	.9	1.55	1.1	1.15	1.7	------	------	------	------	------
13	.55	.9	.85	4.7	1.1	1.05	1.35	------	------	------	------	------
14	.25	.8	.8	2.75	1.2	1.0	1.1	------	------	------	------	------
15	.25	.95	.8	1.55	1.4	1.05	1.0	------	------	------	------	------
16	.8	1.75	.8	1.3	2.45	1.0	1.0	------	------	------	------	------
17	1.35	1.25	.8	1.25	1.7	1.0	1.0	------	------	------	------	------
18	.95	1.0	.85	2.7	1.3	.95	1.0	------	------	------	------	------
19	.9	1.0	.8	3.3	1.2	1.0	.95	------	------	------	------	------
20	.9	1.0	.8	1.85	1.1	.9	.9	------	------	------	------	------
21	.9	1.0	.8	1.45	1.1	.9	.85	------	------	------	------	------
22	.85	.95	.9	1.2	1.05	.9	.9	------	------	------	------	------
23	.8	.85	.8	1.15	1.1	.9	.9	------	------	------	------	------
24	.8	.8	.85	2.05	1.35	.9	.9	------	------	------	------	------
25	.85	.8	.8	1.55	3.15	.9	.8	------	------	------	------	------
26	.9	.9	.8	1.5	2.2	.9	.9	------	------	------	------	------
27	.8	1.0	.8	1.25	1.4	.9	.9	------	------	------	------	------
28	.75	.95	.9	1.2	1.3	.8	.9	------	------	------	------	------
29	.7	.8	1.05	1.1	------	.8	.9	------	------	------	------	------
30	.75	.9	1.1	.9	------	.8	------	------	------	------	------	------
31	.85	------	.9	.95	------	.8	------	------	------	------	------	------

Daily discharge, in second-feet, of Rahway River at Rahway, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	7	46	15	6	43	31	313	18	15	82	19	23
2	6	5	27	4	172	30	153	18	31	290	45	13
3	8	6	42	2	212	31	63	19	92	144	23	11
4	11	5	23	4	51	69	60	39	81	400	34	45
5	8	11	20	10	60	126	54	400	57	301	21	45
6	6	10	14	10	88	85	45	313	313	290	21	15
7	6	6	13	7	68	233	54	132	135	78	17	23
8	6	6	11	6	31	505	57	71	48	65	17	14
9	10	6	11	6	10	278	48	39	45	162	15	11
10	7	10	10	7	10	79	43	28	25	40	14	11
11	7	8	10	10	14	144	36	26	38	31	13	10
12	8	11	13	9	18	182	38	23	49	23	13	18
13	6	11	14	7	38	101	31	22	27	18	12	21
14	8	12	10	6	58	71	26	23	28	57	11	9
15	9	14	9	6	20	61	84	25	17	27	13	8
16	8	13	7	6	22	49	65	31	17	18	11	8
17	13	32	8	6	20	43	51	22	26	13	10	9
18	7	27	11	5	26	31	63	45	60	32	9	8
19	8	10	9	10	38	40	46	452	40	58	8	6
20	11	19	9	11	88	222	38	202	36	36	31	6
21	11	21	10	36	104	144	31	78	60	30	13	5
22	14	15	8	35	54	63	28	46	39	36	9	4
23	11	10	12	23	78	45	30	35	25	34	8	4
24	11	9	45	15	61	35	27	27	22	42	7	4
25	10	10	42	13	48	31	26	27	90	101	7	5
26	8	10	22	25	60	28	28	23	76	39	6	6
27	10	13	15	31	78	27	26	19	112	25	11	5
28	10	23	13	16	52	39	25	20	107	23	15	5
29	8	60	8	17	-------	35	25	19	54	57	15	5
30	11	26	7	12	-------	39	22	17	32	23	13	5
31	13	-------	6	15	-------	109	-------	17	-------	19	13	-------

Monthly discharge of Rahway River at Rahway, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 41 square miles.]

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
October	14	6	8.94	22.8	0.556	0.64
November	60	5	15.5	30.1	.734	.82
December	45	6	15.3	29.5	.720	.83
January	36	2	12.1	27.1	.661	.76
February	212	10	57.9	73.2	1.79	1.86
March	505	27	97.0	111.0	2.71	3.12
April	313	22	54.5	70.3	1.71	1.91
May	452	17	75.0	91.6	2.23	2.57
June	313	15	59.9	75.0	1.83	2.04
July	400	13	83.7	96.8	2.36	2.72
August	45	6	15.3	29.2	.712	.82
September	45	4	12.1	25.8	.629	.70
The year	505	2	42.2	56.8	1.39	18.79

ROBINSONS BRANCH OF RAHWAY RIVER AT GOODMANS, N. Y.

LOCATION.—At Lehigh Valley Railroad station in Goodmans, Union County, 2¾ miles above dam and pumping station of Middlesex Water Co. near Rahway and 4½ miles above mouth of stream.

DRAINAGE AREA.—12.7 square miles (measured on topographic map).

RECORDS AVAILABLE.—October 27, 1921, to September 30, 1922 (fragmentary).

GAGE.—Vertical staff attached to tree on right bank 100 feet below highway bridge at Goodmans station.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Channel fine gravel. Banks high. Control is at riffle 50 feet below gage and is drowned out by backwater from reservoir at medium and high stages when reservoir is full.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year, 3.57 feet at 6.15 a. m. July 4 (discharge not determined); minimum stage, 0.2 foot several times during fall (discharge, 1.6 second-feet).

REGULATION.—Swamp just above station gives natural storage.

ACCURACY.—Stage-discharge relation affected by backwater from reservoir at medium and high stages. Rating curve well defined to 20 second-feet. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Robinsons Branch of Rahway River at Goodmans, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 27	Otto Lauterhahn	0.24	2.0	Jan. 14	Otto Lauterhahn	0.32	3.4
Nov. 11	do	.28	2.6	14	do	.32	3.3
21	O. W. Hartwell	.54	11.3	Feb. 4	do	1.19	24.6
21	do	.54	11.9	6	O. W. Hartwell	1.52	44.0
Dec. 1	Otto Lauterhahn	.46	8.1	16	Otto Lauterhahn	.58	10.5
1	do	.46	8.1	16	do	.58	10.8
23	do	.24	2.1	Aug. 7	do	.28	3.1
23	do	.24	2.1	8	do	.26	2.9

Daily discharge, in second-feet, of Robinsons Branch of Rahway River at Goodmans, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Aug.	Sept.	Day.	Oct.	Nov.	Dec.	Jan.	Aug.	Sept.
1	------	2.6	6.8	2.6	3.3	12.0	16	------	3.8	3.8	3.1	2.3	2.6
2	------	3.1	5.7	1.8	12.5	4.0	17	------	12.5	2.6	2.9	2.2	2.3
3	------	2.6	30	2.2	8.4	3.1	18	------	15.0	15	2.4	2.2	2.2
4	------	2.3	11.5	1.6	6.0	22	19	------	4.6	12	4.3	2.0	2.2
5	------	2.6	8.0	2.0	4.6	50	20	------	16.5	7.2	10	2.4	2.2
6	------	2.2	5.7	2.9	2.9	9.2	21	------	12.5	5.0	16	2.3	2.2
7	------	2.0	5.7	3.3	2.9	8.0	22	------	7.6	2.3	15	2.2	2.2
8	------	2.2	5.0	2.3	2.8	5.3	23	------	6.0	2.3	13	2.0	2.2
9	------	2.2	5.0	2.4	2.4	3.6	24	------	6.8	7.2	3.1	2.0	2.2
10	------	3.3	3.3	2.4	2.4	3.1	25	------	5.7	16.5	2.9	2.2	2.0
11	------	2.8	4.3	2.4	2.3	3.1	26	------	6.4	11.0	1.7	2.4	1.9
12	------	2.8	5.7	4.3	2.4	7.6	27	1.8	13	6.0	2.8	2.8	1.8
13	------	2.8	6.8	3.6	2.4	7.6	28	1.8	23	4.0	1.9	3.3	1.8
14	------	3.1	4.3	3.3	2.4	4.0	29	2.0	41	4.0	3.1	2.9	1.7
15	------	4.6	3.6	3.1	2.3	2.8	30	2.3	18.5	3.8	2.3	2.4	1.7
							31	2.6	------	2.9	2.0	2.8	------

NOTE.—Stage-discharge relation Feb. 1 to July 31, affected by backwater from storage reservoir; discharge not determined.

Monthly discharge of Robinsons Branch of Rahway River at Goodmans, N. J., for the year ending Sept 30, 1922.

[Drainage area, 12.7 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	2.6	1.8	2.1	0.165	0.03
November	41	2.0	7.80	.614	.68
December	30	2.3	7.00	.551	.64
January	16	1.6	4.09	.324	.37
August	12.5	2.0	3.17	.250	.29
September	50	1.7	5.89	.464	.52

RARITAN RIVER BASIN.

SOUTH BRANCH OF RARITAN RIVER NEAR HIGH BRIDGE, N. J.

LOCATION.—One mile above High Bridge, Hunterdon County, and 4 miles above mouth of Spruce Run.

DRAINAGE AREA.—64 square miles (measured on topographic map).

RECORDS AVAILABLE.—February 24, 1919, to September 30, 1922.

GAGE.—Gurley water-stage recorder on left bank just above large pine tree 1 mile above High Bridge; operated by en engineer of the Taylor-Wharton Iron & Steel Co. Prior to September 30, 1921, reference stake 2 inches square driven into bed of stream at same point.

DISCHARGE MEASUREMENTS.—Made by wading near gage for low stages and at highway bridge one-third mile upstream for high stages.

CHANNEL AND CONTROL.—Channel very rough with many boulders. Control is a well-defined riffle of rock and boulders 100 feet below gage, permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 10.97 feet at 10.30 a. m. February 2 (discharge, 3,600 second-feet); minimum stage, 4.80 feet at 6.30 a. m. October 3 (discharge, 9 second-feet).

1919–1922 Maximum stage recorded that of February 2, 1922; minimum stage, that of October 3, 1921, as given above.

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSION.—None immediately above.

REGULATION.—Daily distribution of flow affected by small water powers at points upstream.

ACCURACY.—Stage-discharge relation permanent, except as affected by ice. Rating curve well defined between 20 and 2,500 second-feet. Operation of water-stage recorder fairly satisfactory. Daily discharge ascertained by use of discharge integrator except for periods indicated in footnote to table of daily discharge. Records good, except for estimated periods.

COOPERATION.—Shelter for water-stage recorder erected and instrument operated by Taylor-Wharton Iron & Steel Co.

Discharge measurements of South Branch of Raritan River near High Bridge, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 20	Otto Lauterhahn	5.26	32.5	Jan. 19	Otto Lauterhahn	[b] 6.54	59
20	do	5.53	59	Mar. 1	do	5.98	147
Nov. 23	Alexander McMillan	[a] 5.71	71	11	do	6.66	336
23	do	[a] 5.71	68	Apr. 18	O. W. Hartwell	6.29	216
Dec. 29	Otto Lauterhahn	[b] 6.21	74	Aug. 4	Otto Lauterhahn	5.69	94

[a] Backwater due to log on control.

[b] Stage-discharge relation affected by ice.

Daily discharge, in second. feet, of South Branch of Raritan River near High Bridge, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	29	43	85	60	304	137	685	103	69	769	68	348
2	32	55	115	50	1,410	129	230	96	87	459	75	90
3	44	49	307	50	446	122	210	95	183	404	100	72
4	38	52	116	60	166	134	250	179	279	474	115	841
5	50	38	96	70	119	239	220	482	140	370	139	491
6	44	34	73	80	134	274	200	210	164	242	77	193
7	35	36	78	70	141	440	240	159	122	178	68	148
8	44	43	64	55	96	852	220	135	92	158	57	135
9	33	38	55	65	87	293	200	119	80	153	58	119
10	33	50	44	75	78	257	180	110	80	140	52	115
11	38	56	53	80	82	308	170	104	91	125	53	107
12	40	36	53	70	106	301	190	96	94	113	65	100
13	35	34	54	60	113	250	157	98	70	114	70	93
14	40	49	49	50	98	224	144	86	56	113	70	84
15	40	40	50	48	91	218	418	105	60	105	70	77
16	31	45	98	44	79	182	217	106	60	92	60	50
17	35	61	59	44	116	166	204	90	58	87	50	55
18	45	64	65	50	197	144	245	287	78	96	46	60
19	36	52	70	60	159	144	194	348	102	128	45	55
20	40	104	55	65	371	472	180	182	78	90	44	50
21	56	82	48	70	276	294	160	133	80	77	44	46
22	45	68	46	70	212	212	154	121	77	83	48	46
23	37	49	48	70	270	182	143	109	63	97	38	58
24	36	46	55	60	316	173	143	102	56	101	36	53
25	42	48	60	50	164	162	129	99	53	113	36	57
26	37	33	50	46	140	155	123	100	60	93	36	51
27	43	50	50	40	186	156	118	86	59	72	46	50
28	37	174	55	40	179	200	112	80	88	71	55	50
29	33	416	65	46	-------	170	105	77	63	92	55	50
30	35	132	70	55	-------	150	102	73	55	74	51	49
31	28	-------	65	70	-------	200	-------	69	-------	67	86	-------

NOTE.—Stage-discharge relation affected by ice Dec. 18, 19, and Dec. 22 to Jan. 31; discharge based on two discharge measurements, observer's notes, and graphic comparison with South Branch of Raritan River at Stanton. Discharge based on comparison with records for station at Stanton, Mar. 29–31, Apr. 3–12, Aug. 12–18, 20–30, and Sept. 16–23.

Monthly discharge of South Branch of Raritan River near High Bridge, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 64 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	56	28	38.4	0.600	0.69
November	416	33	69.2	1.08	1.20
December	307	44	72.6	1.13	1.30
January	80	44	58.8	.919	1.06
February	1,410	78	219	3.42	3.56
March	852	122	237	3.70	4.27
April	685	102	201	3.14	3.50
May	482	69	137	2.14	2.47
June	279	53	89.9	1.40	1.56
July	769	67	173	2.70	3.11
August	139	36	61.7	.964	1.11
September	841	46	126	1.97	2.20
The year	1,410	28	123	1.92	26.03

SOUTH BRANCH OF RARITAN RIVER AT STANTON, N. J.

LOCATION.—At highway bridge near Lehigh Valley Railroad station in Stanton, Hunterdon County, half a mile above mouth of Prescott Brook and 5 miles below mouth of Cakepoulin Creek.

DRAINAGE AREA.—158 square miles (measured on topographic map).

RECORDS AVAILABLE.—July 2, 1903, to December 31, 1906; and from July 1, 1919, to September 30, 1922.

GAGE.—Chain gage on downstream side of bridge near left end; read by E. H. Smith.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed and banks, gravel. Banks are overflowed at high stages. Control is slight riffle 100 feet below bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.30 feet at 9 a. m. February 2 (discharge, 3,710 second-feet); minimum stage, 1.92 feet November 6 (discharge, 28 second-feet).

1903–1906 and 1919–1922: Maximum stage recorded, 10.5 feet October 9, 1903 (discharge, not determined); minimum stage, 1.85 feet at 5 p. m. September 16, 1921 (discharge, about 24 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Distribution of flow slightly affected by small water powers at points upstream.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined between 35 and 1,200 second-feet. Gage read to even hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except during period given in footnote to table of daily discharge.

Discharge measurements of South Branch of Raritan River at Stanton, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 30	Alexander McMillan	2.87	[a] 75	Mar. 12	Otto Lauterhahn	3.63	559
Jan. 19	Otto Lauterhahn	3.01	[a] 105	12	do	3.61	549
Mar. 1	do	2.82	232	Aug. 4	O. W. Hartwell	2.84	209
1	do	2.91	253				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of South Branch of Raritan River at Stanton, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	47	60	174	75	170	191	1,080	151	93	970	216	470
2	42	68	157	65	2,800	220	545	148	85	860	187	126
3	75	89	670	65	860	205	376	154	312	800	174	98
4	70	78	151	70	292	231	445	224	470	915	231	750
5	60	41	209	85	201	595	398	860	212	860	191	1,020
6	50	28	163	110	251	398	354	354	239	520	106	251
7	53	61	151	85	247	545	398	280	177	398	89	187
8	36	50	134	65	216	1,440	376	220	131	376	93	167
9	60	51	131	75	167	570	354	209	106	333	85	131
10	67	62	121	85	134	620	312	216	96	292	75	121
11	57	60	102	90	114	595	267	151	98	271	78	116
12	57	54	131	80	151	595	312	157	106	205	76	131
13	55	62	114	65	231	470	251	148	104	805	80	104
14	54	55	111	60	198	445	239	148	108	422	106	131
15	50	68	65	60	160	422	1,140	157	93	247	116	73
16	36	31	104	55	170	398	398	154	76	205	89	82
17	48	102	82	55	209	292	376	154	82	187	65	85
18	43	91	110	75	216	247	354	201	87	212	61	96
19	47	62	110	100	190	239	333	595	111	247	65	91
20	67	154	95	120	1,320	970	312	271	114	209	54	73
21	51	137	85	110	470	545	271	167	131	163	83	82
22	43	108	75	110	333	398	243	148	111	163	93	85
23	47	85	60	100	445	354	224	180	108	154	68	73
24	38	61	65	70	520	292	239	143	75	187	68	75
25	41	82	70	60	259	271	220	126	55	160	68	70
26	48	80	65	55	198	239	194	157	85	151	68	70
27	50	76	65	50	376	263	177	157	121	118	82	45
28	44	194	70	50	312	312	170	126	106	148	93	65
29	30	1,140	75	60	-------	271	154	131	108	118	96	71
30	34	312	75	75	-------	231	143	93	70	130	80	61
31	38	-------	75	100	-------	333	-------	93	-------	137	71	-------

NOTE.—Stage-discharge relation affected by ice Dec. 18 to Feb. 2; discharge based on two discharge measurements, temperature and gage height records, observer's notes, and graphic comparison with records for South Branch of Raritan River near High Bridge. Discharge based on comparison with records for High Bridge Nov. 26, Feb. 19, May 7, June 26, July 3, 30, and Sept. 17.

Monthly discharge of South Branch of Raritan River at Stanton, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 158 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	75	30	49.6	0.314	0.36
November	1,140	28	120	.759	.85
December	670	60	125	.791	.91
January	120	50	76.8	.486	.56
February	2,800	114	400	2.53	2.64
March	1,440	191	426	2.70	3.11
April	1,140	143	355	2.25	2.51
May	860	93	209	1.32	1.52
June	470	55	129	.816	.91
July	970	118	354	2.24	2.58
August	231	54	100	.633	.73
September	1,020	45	167	1.06	1.18
The year	2,800	28	208	1.32	17.86

RARITAN RIVER AT MANVILLE,[6] N. J.

LOCATION.—At highway bridge between Manville and Finderne, Somerset County, 1¼ miles above mouth of Millstone River and 4½ miles below confluence of North and South branches of Raritan River.

DRAINAGE AREA.—490 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 27, 1903, to March 31, 1907; August 10, 1908, to April 30, 1915; and August 19, 1921, to September 30, 1922.

GAGE.—Chain gage at downstream side of left span 30 feet from center pier; read by William B. Patten.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Red sandstone on left side; sand and gravel on right side, fairly permanent, affected by vegetal growth during summer. Banks are overflowed at very high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year 11.80 feet at 8 a. m., March 8 (discharge, 12,200 second-feet); minimum stage, 3.46 feet at 5 p. m., October 31 (discharge, 66 second-feet).

1903–1907 and 1921–1922: Maximum stage recorded, 15.90 feet October 10, 1903 (discharge, estimated, 25,000 second-feet); minimum discharge, 66 second-feet, October 31, 1922.

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—The Johns-Manville Co. diverts 2 second-feet from the Raritan at a point one-fourth mile above gage.

REGULATION.—Distribution of flow affected by water powers at Somerville and other points upstream.

ACCURACY.—Stage-discharge relation not permanent; affected by growth of moss on control. Fairly well defined rating curve directly applied December 10 to May 27, except for ice-affected periods; used as standard curve with shifting-control method for remaining periods. Gage read to hundredths twice a day. Daily discharge ascertained by applying to rating table directly or indirectly mean daily gage height, except as noted in footnote to daily-discharge table. Records good.

Discharge measurements of Raritan River at Manville, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 3	Otto Lauterhahn	3.74	104	Mar. 8	Otto Lauterhahn	9.12	5,870
22	do	3.75	130	8	do	8.15	4,460
28	O. W. Hartwell	3.62	100	12	O. W. Hartwell	6.60	3,020
Nov. 19	Alexander McMillan	3.90	203	May 22	Otto Lauterhahn	4.33	619
30	do	4.80	1,030	June 2	do	3.89	255
Dec. 28	Otto Lauterhahn	4.18	[a] 218	Aug. 2	do	4.40	614
Jan. 18	do	3.77	[a] 150	22	do	3.69	140
Feb. 13	do	4.66	1,080	Sept. 30	do	3.78	160
13	do	5.12	1,630				

[a] Stage-discharge relation affected by ice.

[6] Formerly Finderne, N. J.

Daily discharge, in second-feet, of Raritan River at Manville, N. J., for the years ending Sept. 30, 1921 and 1922.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1921.			1921.			1921.		
1		97	11		107	21	164	101
2		114	12		99	22	144	117
3		95	13		124	23	129	142
4		91	14		107	24	122	124
5		95	15		91	25	99	134
6		89	16		107	26	114	101
7		101	17		114	27	105	122
8		99	18	196	103	28	103	112
9		99	19	192	99	29	95	103
10		107	20	158	101	30	129	114
						31	101	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921-22.												
1	103	117	542	190	560	1,730	3,440	472	233	2,370	352	1,020
2	105	112	472	190	5,330	1,300	346	409	284	3,360	800	416
3	101	147	2,120	190	3,800	1,540	1,020	394	671	1,080	424	229
4	105	114	1,360	200	1,300	1,480	1,020	506	1,660	4,220	736	860
5	99	167	692	260	1,020	736	1,130	4,470	910	2,840	681	2,370
6	114	170	703	320	1,540	2,680	456	1,600	1,240	1,660	416	671
7	103	99	551	300	1,480	2,840	542	1,080	910	1,130	346	515
8	112	105	506	250	640	7,200	1,300	800	860	910	333	498
9	127	105	506	210	590	2,370	245	736	489	960	294	380
10	91	107	387	240	620	1,920	590	610	440	681	269	304
11	93	119	380	240	440	2,250	660	542	409	580	245	264
12	95	117	380	220	620	2,900	1,240	533	432	515	237	289
13	99	124	409	170	1,600	2,370	1,080	409	321	489	233	279
14	99	117	410	170	1,180	1,860	1,020	515	310	1,600	233	254
15	101	132	416	170	1,180	1,420	2,590	432	274	681	217	233
16	107	139	416	180	767	1,130	1,240	506	254	506	213	237
17	87	161	241	170	481	1,130	1,180	448	304	448	196	206
18	93	185	1,020	150	860	860	1,360	681	373	402	176	192
19	105	206	860	170	640	640	1,240	1,660	359	746	179	199
20	107	229	590	280	4,340	3,710	960	736	327	448	217	179
21	134	310	472	280	3,020	2,840	789	671	346	387	176	173
22	132	259	220	260	1,020	1,420	778	650	321	359	170	173
23	134	229	220	260	590	1,080	1,020	580	346	464	144	179
24	95	225	260	240	1,920	481	1,130	448	250	394	161	167
25	119	182	320	220	1,080	119	610	402	321	746	150	158
26	101	176	240	200	284	233	542	394	321	440	269	161
27	91	289	260	200	2,760	725	472	346	254	359	254	161
28	91	327	220	260	1,920	580	464	333	440	424	196	137
29	95	2,680	220	280	-------	778	416	315	327	416	217	161
30	105	1,300	200	300	-------	746	366	254	279	373	176	150
31	83	-------	190	320	-------	860	-------	250	-------	359	217	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22 to Jan. 31; discharge based on two discharge measurements, observer's notes, and graphic comparison with records for South Branch of Raritan River at Stanton.

Monthly discharge of Raritan River at Manville, N. J., for the years ending Sept. 30, 1921 and 1922.

[Drainage area, 490 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1921.					
August 18–31	196	95	132	0.269	0.14
September	142	89	107	.218	.24
1921–22.					
October	134	83	104	.212	.24
November	2,680	99	292	.596	.66
December	2,120	190	509	1.04	1.20
January	320	150	229	.466	.54
February	5,330	284	1,490	3.04	3.17
March	7,200	119	1,680	3.43	3.95
April	3,440	245	975	1.99	2.22
May	4,470	250	716	1.46	1.68
June	1,660	233	476	.971	1.08
July	4,220	359	979	2.00	2.31
August	800	144	288	.588	.68
September	2,370	137	374	.763	.85
The year	7,200	83	670	1.37	18.58

NORTH BRANCH OF RARITAN RIVER NEAR FAR HILLS, N. J.

LOCATION.—At dam of Somerset Lake & Game Club 2 miles north of Far Hills, Somerset County, and 2 miles above mouth of Peapack Brook.

DRAINAGE AREA.—26 square miles (measured on topographic map).

RECORDS AVAILABLE.—February 15 to September 30, 1922.

GAGE.—Hook gage in stilling box at left of dam; read by C. Meyers.

DISCHARGE MEASUREMENTS.—Made by wading 200 feet below dam.

CONTROL.—Masonry dam with flat crest having low-water notch 26 feet long with crest at elevation of gage height 1.696 feet. Remainder of spillway 137 feet long with crest at elevation of gage height 2.204 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.1 feet at midnight March 7 (discharge, not determined); minimum stage 1.93 feet at 9.30 a. m. February 17 (discharge, 11 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Small turbine diverts continuous flow of 2 second-feet to operate fountains. This water is returned and has been included in daily discharge.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined to 180 second-feet. Gage read to hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage read by game warden of Somerset Lake & Game Club.

Discharge measurements of North Branch of Raritan River near Far Hills, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 15	Otto Lauterhahn	2.155	25.6	June 7	Otto Lauterhahn	2.320	55.2
Mar. 9	do	2.385	78	7	do	2.320	53
Apr. 8	do	2.361	61	Aug. 4	do	2.336	52
May 11	do	2.250	34.9	22	do	2.032	13.8
25	do	2.218	30.7	25	O. W. Hartwell	2.075	18.0
June 1	do	2.141	22.0	29	do	2.088	18.4
2	do	2.161	22.8				

Daily discharge, in second-feet, of North Branch of Raritan River near Far Hills, N. J., for the year ending Sept. 30, 1922.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		38	237	77	25	845	34	45
2		38	94	60	28	124	40	28
3		38	84	34	104	167	114	25
4		43	104	63	94	156	56	94
5		145	89	375	84	189	49	94
6		47	70	70	84	94	30	56
7		466	70	56	49	77	28	52
8		980	70	41	43	66	34	45
9		80	66	43	41	77	25	41
10		80	66	41	45	60	23	41
11		114	52	38	49	56	23	36
12		84	74	36	41	49	22	45
13		74	49	36	32	52	23	34
14		70	47	60	49	77	22	30
15	27	70	201	47	29	56	21	28
16	25	60	94	38	29	45	20	27
17	15	49	84	34	30	38	19	24
18	22	49	74	89	41	56	17	23
19	22	49	77	114	34	56	17	22
20	237	375	63	56	28	38	27	23
21	77	94	56	41	38	36	21	23
22	52	77	63	41	34	34	17	19
23	66	70	63	38	27	38	16	15
24	70	63	49	34	25	38	16	17
25	41	63	56	32	23	60	19	19
26	38	66	40	30	26	40	47	19
27	99	66	34	28	27	34	26	19
28	52	99	38	28	41	34	24	19
29		63	36	27	27	36	21	19
30		63	36	26	24	30	19	19
31		80		25		25	156	

Monthly discharge of North Branch of Raritan River near Far Hills, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 26 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
February 15-28	237	15	60.2	2.32	1.21
March	980	38	121	4.65	5.36
April	237	34	74.5	2.87	3.20
May	375	23	56.7	2.18	2.51
June	104	23	41.4	1.59	1.77
July	845	25	89.8	3.45	3.98
August	156	16	33.1	1.27	1.46
September	94	15	33.4	1.28	1.43

BLACK RIVER NEAR POTTERSVILLE, N. J.

LOCATION.—One mile above highway bridge at Pottersville, Somerset County, and 8 miles above mouth of Rockaway Creek.

DRAINAGE AREA.—33 square miles (measured on topographic map).

RECORDS AVAILABLE.—November 8, 1921, to September 30, 1922.

GAGE.—Gurley seven-day water-stage recorder with inside hook and outside inclined staff gages on right bank 1 mile above Pottersville. Chain gage on downstream side of highway bridge at Pottersville used November 8, 1921, to June 30, 1922. Theodore Bush, observer.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel and boulders very rough. Control is riffle at boulders just below gage. Probably permanent. Channel at bridge sand and gravel; control is at head of slight riffle. Shifting control.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 3.76 feet at noon July 1 (discharge, by extension of rating curve 880 second-feet); minimum stage, 0.86 foot at 5 p. m. September 29 (discharge, 5.8 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Daily fluctuations caused by operations at small mills upstream.

ACCURACY.—Stage-discharge relation changed July 1 by relocation of gage. Rating curve used to June 30, poorly defined; from July 1 to September 30, well defined between 5 and 100 second-feet. Operation of water-stage recorder partly unsatisfactory due to drum slipping and clock stopping. Chain gage at first station read to even hundredths twice a day November 8, 1921, to June 30, 1922. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph or, prior to June 30, by applying mean daily gage height to rating table principally by shifting-control method. Records November to June, poor; thereafter fair.

Discharge measurements of Black River near Pottersville, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 8	Otto Lauterhahn	1.00	11.4	Mar. 9	Otto Lauterhahn	1.86	165
Dec. 7	do	1.26	53	Apr. 8	do	1.48	91
7	do	1.26	53	May 11	do	1.09	50
22	do	[a] 1.87	26.9	June 27	do	[c] 1.83	92
Jan. 13	do	[a] 1.06	20.1	Aug. 3	O. W. Hartwell	1.48	40.6
Feb. 3	do	[b] 1.93	144	3	do	1.48	42.9
5	O. W. Hartwell	1.51	88	Sept. 12	Otto Lauterhahn	1.66	65.4
14	Otto Lauterhahn	1.16	61	29	do	.95	9.0

[a] Stage-discharge relation affected by ice.
[b] About 5 feet of control covered with ice.
[c] June 27 to Sept. 29 at new location.

Daily discharge, in second-feet, of Black River near Pottersville, N. J., for the year ending Sept. 30, 1922.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		96	30	54	90	159	45	32	158	67	78
2		90	28	315	67	97	44	49	147	67	57
3		127	26	128	67	97	48	168	183	46	54
4		119	37	83	64	94	96	144	170	60	158
5		99	69	99	144	105	174	132	160	78	116
6		78	56	138	125	96	149	142	140	81	158
7		62	32	105	215	85	125	128	130	80	196
8	10	52	42	105	149	69	115	115	120	70	170
9	14	45	32	85	151	62	97	99	100	49	147
10	24	32	27	65	148	75	80	85	90	34	95
11	22	23	25	81	166	75	66	103	76	32	80
12	20	26	39	70	112	77	58	56	70	31	67
13	16	30	37	75	92	75	44	46	66	30	64
14	14	23	41	88	108	75	54	44	67	29	69
15	21	24	54	75	105	128	62	33	66	27	76
16	23	32	49	75	87	112	54	27	67	30	61
17	39	25	55	77	77	117	41	23	67	25	37
18	31	80	52	78	72	115	128	42		20	42
19	32	60	56	80	61	106	149	23		26	37
20	52	52	52	101	197	99	128	33		32	35
21	42	54	70	103	134	75	134	56		27	32
22	42	27	56	94	94	66	111	45		23	30
23	39	24	61	114	88	60	101	36		22	29
24	37	32	51	106	81	58	73	41	67	22	26
25	34	52	60	96	72	49	48	23		28	26
26	23	52	49	72	67	46	42	18		27	25
27	25	34	45	77	64	54	38	48		26	24
28	58	24	44	69	62	49	23	49		29	23
29	132	21	46	------	69	58	26	39		28	22
30	90	15	49	------	87	48	30	37		36	22
31	------	34	46	------	96	------	27	------		72	------

NOTE.—Discharge estimated July 4–10 and July 18 to Aug. 2.

Monthly discharge of Black River near Pottersville, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 33 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
November 8-30	132	10	36.5	1.11	0.95
December	127	15	49.8	1.51	1.74
January	70	25	45.7	1.38	1.59
February	315	54	96.7	2.93	3.05
March	215	61	104	3.15	3.63
April	159	46	82.7	2.51	2.80
May	174	23	77.7	2.35	2.71
June	163	18	63.7	1.93	2.15
July	183		90.8	2.75	3.17
August	81	20	40.5	1.23	1.42
September	196	22	68.4	2.07	2.31

MILLSTONE RIVER AT BLACKWELLS MILLS, N. J.

LOCATION.—At highway bridge in Blackwells Mills, Somerset County, one-quarter mile below mouth of Middlebrush Brook, 1¾ miles above Millstone and 5 miles above mouth of Millstone River.

DRAINAGE AREA.—258 square miles (measured on topographic map).

RECORDS AVAILABLE.—August 4, 1921, to September 30, 1922. A station was maintained at Millstone 1¾ miles downstream from June 28, 1903, to December 31, 1904, and from June 7, 1912, to April 30, 1915.

GAGE.—Vertical staff in two sections on downstream side of left bridge abutment; read by Alex Barna after June 15, before by Stanley Laiewski.

DISCHARGE MEASUREMENT.—Made by wading 200 feet downstream from gage or from highway bridge at Millstone.

CHANNEL AND CONTROL.—Channel clay. Banks are overflowed at high stages; control is foundation of old stone and timber dam 100 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1921, 8.55 feet August 8 (discharge, 4,190 second-feet); minimum stage, 1.20 feet September 4 (discharge, 16 second-feet).

Maximum stage recorded during year ending September 30, 1922, 7.50 feet at 6.30 a. m. March 8 (discharge, 3,420 second-feet); minimum stage, 1.30 feet at 6 a. m. September 24 (discharge, 31 second-feet).

ICE.—Stage-discharge relation affected by ice during extreme cold.

DIVERSIONS.—The Delaware & Raritan canal takes water from Delaware River and flows in a northeasterly direction to Raritan River. It passes along the right bank of Millstone River for 15 miles above the gaging station and for 5 miles below. The canal is above the river at all points and loses water to the river by leakage, seepage and discharge from spillways.

REGULATION.—Several small mills above the gage and Carnegie Lake slightly affect distribution of flow.

ACCURACY.—Stage-discharge relation for discharges below 1,000 second-feet, shifting; for stage above permanent. Rating curves well defined between 50 and 3,500 second-feet. Gage read to hundredths twice a day. Observer to June 15 unreliable; thereafter reliable. Daily discharge ascertained by applying mean daily gage height to rating table; indirectly October 1 to December 31. Records to June 15 poor, thereafter good.

Discharge measurements of Millstone River at Blackwells Mills, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 3	Otto Lauterhahn	[a] 1.74	111	Mar. 8	Otto Lauterhahn	6.90	3,020
22	do	1.82	113	8	do	6.85	2,960
22	do	1.84	116	9	do	3.62	1,190
Nov. 19	McMillan and Lauterhahn	2.07	170	11	O. W. Hartwell	4.02	1,330
19	do	2.07	169	12	do	4.98	1,850
Dec. 28	Otto Lauterhahn	2.47	365	June 7	Otto Lauterhahn	5.43	2,010
28	do	2.50	378	Aug. 2	do	2.17	323
Jan. 18	do	1.68	105	2	do	2.33	407
18	do	1.69	109	Sept. 29	do	1.24	67
Feb. 13	do	2.38	378	30	do	1.34	73

[a] Corrected —.02 owing to log on control.

Daily discharge, in second-feet, of Millstone River at Blackwells Mills, N. J., for the year ending Sept. 30, 1921 and 1922.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1921.			1921.			1921.		
1		212	11	727	110	21	368	151
2		142	12	540	120	22	277	157
3		133	13	379	128	23	249	139
4	450	40	14	695	128	24	228	130
5	347	118	15	760	130	25	200	130
6	301	133	16	480	130	26	108	130
7	296	124	17	368	130	27	163	130
8	4,050	118	18	695	130	28	128	130
9	2,810	108	19	570	130	29	220	130
10	1,530	113	20	432	130	30	208	142
						31	182	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921-22.												
1	136	97	374		68	510			108	174	146	130
2	123	95	331		1,630	510	1,200		128	599	340	138
3	128	95	630		3,140	727	374		163	361	241	123
4	136	95	84		2,030	760	570		145	409	208	146
5	123	95	220		1,240	1,090			115	538	219	163
6	113	120	272		825	1,200				508	174	135
7	99	167	306		727	2,030			2,090	340	146	110
8	104	133	258		630	3,070	630			293	141	116
9	116	106	228		510	1,380	480			1,170	123	103
10	118	95	204		390	955	450			414	121	100
11	97	95	212		385	1,160				284	103	93
12	116	95	220		379	1,970				219	90	121
13	116	95	212		347	1,330				382	90	146
14	116	95	189		450	890				508	116	146
15	113	116	204		540	480				331	93	125
16	110	120	189		426	600			302	226	103	116
17	110	154	157		363	510			249	186	96	96
18	110	179	570		390	414			284	538	89	100
19	116	182	600		570	363			222	340	79	93
20	116	189	480		955	1,680			192	222	93	86
21	104	204	426		2,330	1,630		128	160	192	107	82
22	118	212	390	88	2,270	760		128	148	180	86	93
23	106	212	374	86	1,730	630		128	168	160	89	83
24	104	212	311	66	825	600		128	174	448	93	73
25	104	136	363	50	390	390		151	196	361	86	91
26	101	142	301	30	450	385		170	222	238	83	85
27	101	93	480	35	480	374		133	326	208	112	93
28	101	163	336	48	510	358		130	258	199	148	89
29	99	630	321	50		352		120	253	174	130	89
30	99	402	420	46		341		115	205	146	130	79
31	97		220	57		420		108		133	125	

NOTE.—Discharge Jan. 1-21 not determined because of unreliable gage-height record. No gage-height record Apr. 1, 5-7, Apr. 11 to May 20, June 6, and 8-15.

Monthly discharge, in second-feet, of Millstone River at Blackwells Mills, N. J., for the years ending Sept. 30, 1921 and 1922.

Month.	Maximum.	Minimum.	Mean.	Month.	Maximum.	Minimum.	Mean.
1921.				1921-22.			
August 4-31	4,050	108	634	January 22-31	88	30	55.6
September	212	40	129	February	3,140	68	892
1921-22.				March	3,070	341	899
October	136	97	111	July	1,170	133	338
November	630	93	161	August	340	79	129
December	630	84	319	September	163	73	108

LAWRENCE BROOK AT PATRICKS CORNER, N. J.

LOCATION.—Near highway bridge at Patricks Corner, Middlesex County, 3 miles southwest of Milltown, seven-eighths mile above Beaver Brook dam, and 6¼ miles above mouth of Lawrence Brook.

DRAINAGE AREA.—29 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 21 to September 30, 1922.

GAGE.—Gurley seven-day water-stage recorder installed in wooden shelter, on right bank 150 feet above bridge. Slope gage at shelter and high-water staff gage attached to shelter. Henry Patrick, observer.

DISCHARGE MEASUREMENTS.—Made by wading near gage for low and medium stages and from bridge for high stages.

CHANNEL AND CONTROL.—Banks high and channel fairly straight. Control is sill of old wooden dam.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.78 feet at 7 p.m. July 24 (discharge, 28 second-feet); minimum stage from recorder, 1.24 feet at 8.30 a.m. September 24 (discharge, 1.3 second-feet).

REGULATION.—Distribution of flow affected by water power above station.

ACCURACY.—Stage-discharge relation changed in August. Rating curves well defined. Operation of recorder satisfactory. Daily discharge ascertained by averaging discharge obtained by applying to rating table the mean gage height for 2-hour periods. Records good.

Discharge measurements of Lawrence Brook at Patricks Corner, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 21	Otto Lauterhahn	1.664	20.1	Aug. 18	Otto Lauterhahn	1.281	2.7
26	do	1.491	11.3	30	O. W. Hartwell	1.63	15.8
Aug. 1	do	1.384	6.9	31	do	1.65	18.6
1	do	1.479	10.8	Sept. 28	Otto Lauterhahn	1.54	11.5
18	do	1.281	2.7				

Daily discharge, in second-feet, of Lawrence Brook at Patricks Corner, N. J., for the year ending Sept. 30, 1922.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		21	19	14	16		24	11	8.7
2		30	51	8.0	17		16	7.4	3.1
3		16	49	6.0	18		36	6.6	10
4		22	71	27	19		63	7.5	9.7
5		47	34	23	20		25	4.3	8.6
6		38	19	15	21	10	18	8.3	11
7		20	19	14	22	14	16	8.9	8.8
8		17	12	8.7	23	16	8.8	8.0	8.9
9		11	15	15	24	7.0	69	3.7	1.7
10		12	14	3.6	25	18	100	7.0	7.8
11		8.7	15	7.8	26	10	50	9.3	10
12		10	11	28	27	16	32	21	7.5
13		41	6.1	20	28	21	40	33	8.2
14		76	8.9	19	29	18	30	14	7.5
15		38	8.0	14	30	11	17	11	3.3
					31		13	22	

NOTE.—Recorder not operating July 25–29; discharge ascertained from hydrographs of near-by streams.

Monthly discharge of Lawrence Brook at Patricks Corner, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 29 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
June 21–30	21	7.0	14.1	0.486	0.18
July	100	8.7	31.1	1.72	1.98
August	71	6.1	17.3	.597	.69
September	28	1.7	11.3	.381	.43

DELAWARE RIVER BASIN.

EAST BRANCH OF DELAWARE RIVER AT FISHS EDDY, N. Y.

LOCATION.—At railroad bridge in Fishs Eddy, Delaware County, 4 miles below mouth of Beaver Kill and 5½ miles above confluence of East and West branches.

DRAINAGE AREA.—785 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 19, 1912, to September 30, 1922.

GAGE.—Staff, in two sections, on downstream end of left pier of bridge; read by J. P. Lyons until November 15 and by Jay C. Baxter, September 30, 1922.

DISCHARGE MEASUREMENTS.—Made from highway bridge 200 feet above gage or by wading 300 to 500 feet below.

CHANNEL AND CONTROL.—Coarse gravel; occasionally shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.46 feet at 9 a. m. November 29 (discharge, 22,000 second-feet); minimum stage, 2.40 feet morning and afternoon. September 28, 29, and 30 (discharge, 245 second-feet).

1912–1922: Maximum stage recorded, 18.0 feet at 8 a. m. March 13, 1920 (stage-discharge relation affected by ice); 17.4 feet during the afternoon of March 27, 1913, determined by leveling from flood marks (discharge, about 33,500 second-feet); minimum stage, 1.64 feet at 5 p. m. October 12, 14, and 15, 1914 (discharge, 97 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice from December to February. Rating curve fairly well defined between 200 and 20,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for period when stage-discharge relation was affected by ice, which are fair.

Discharge measurements of East Branch of Delaware River at Fishs Eddy, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 18	C. C. Covert	3.22	705	June 6	Harrington and Granger	6.66	4,780
Jan. 17	B. F. Howe	[a] 6.48	768	Aug. 9	B. F. Howe	3.51	834
Feb. 7	do	[a] 6.10	1,290	10	do	3.28	671

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of East Branch of Delaware River at Fishs Eddy, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	470	970	5,950	750	650	3,450	4,050	820	690	2,610	970	1,050
2	470	1,140	4,690	850	850	3,170	3,450	820	575	3,450	820	750
3	445	1,100	10,600	600	1,900	2,750	2,890	690	1,870	4,210	750	630
4	1,050	1,230	7,350	750	1,700	2,350	3,590	750	6,950	3,030	1,230	750
5	930	1,330	5,210	1,300	1,600	2,350	2,890	2,110	3,730	2,610	1,010	970
6	820	1,100	3,730	1,300	1,200	2,350	4,370	1,870	4,530	1,990	720	750
7	720	970	2,890	1,000	1,300	4,210	4,370	1,650	4,370	1,540	690	1,140
8	690	930	2,610	750	900	11,400	4,850	1,650	3,310	1,330	1,140	890
9	820	890	2,110	700	800	4,530	5,030	1,330	2,610	1,230	890	785
10	750	820	1,870	700	950	4,050	4,690	1,330	2,350	1,050	690	720
11	660	820	1,760	700	900	3,450	4,210	1,050	2,350	890	575	630
12	930	785	1,650	750	900	3,590	10,400	1,010	4,210	785	520	785
13	890	2,110	1,330	700	750	3,170	6,950	930	2,890	690	520	890
14	820	1,760	1,050	950	550	3,450	5,030	820	2,350	630	470	690
15	750	1,430	820	850	500	4,050	6,150	750	1,870	575	420	575
16	690	1,540	575	800	450	3,590	4,690	690	1,650	520	370	575
17	660	1,650	930	850	450	2,750	4,210	630	1,430	470	348	470
18	660	3,730	2,750	850	550	2,110	4,850	630	2,230	690	325	445
19	660	3,170	1,990	1,100	600	2,110	4,210	4,370	1,540	575	690	420
20	820	5,390	1,650	700	1,200	2,470	3,730	3,450	1,230	520	750	420
21	1,430	4,210	1,650	850	3,200	4,050	3,030	2,610	1,180	445	420	370
22	1,140	3,730	690	800	3,200	3,170	2,610	2,350	1,650	395	370	370
23	1,100	2,890	820	800	5,500	2,610	2,350	1,870	1,650	395	325	325
24	1,010	3,170	1,540	650	13,600	2,470	2,230	1,540	1,650	420	370	325
25	930	3,170	1,330	600	7,350	2,610	1,870	1,330	1,430	470	630	305
26	855	2,610	750	600	5,950	3,170	1,650	1,330	1,180	420	1,050	285
27	820	2,750	820	600	5,030	4,370	1,650	1,050	1,140	395	1,230	265
28	785	17,600	750	750	4,050	12,100	1,230	890	1,140	1,650	930	245
29	690	19,400	750	800	-------	10,800	1,050	820	2,610	630	890	245
30	1,100	9,350	850	700	-------	6,950	970	720	2,350	445	750	245
31	1,050	-------	750	700	-------	4,850	-------	630	-------	370	630	-------

NOTE.—Discharge, Dec. 30 to Feb. 23, determined from gage heights corrected for ice effect from two discharge measurements, study of weather records and gage-height graph, and comparison with record of Beaver Kill at Cooks Falls.

Monthly discharge of East Branch of Delaware River at Fishs Eddy, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 785 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,430	445	826	1.05	1.21
November	19,400	785	3,390	4.32	4.82
December	10,600	575	2,330	2.97	3.42
January	1,300	600	800	1.02	1.18
February	13,600	450	2,380	3.03	3.16
March	12,100	2,110	4,150	5.29	6.10
April	10,400	970	3,780	4.82	5.38
May	4,370	630	1,370	1,75	2.02
June	6,950	575	2,290	2.92	3.26
July	4,210	370	1,140	1.45	1.67
August	1,230	325	693	.883	1.02
September	1,140	245	577	.735	.82
The year	19,400	245	1,970	2.51	34.06

DELAWARE RIVER AT PORT JERVIS, N. Y.

LOCATION.—At toll bridge at Port Jervis, Orange County, 1 mile above Neversink River, 6 miles below Mongaup River.

DRAINAGE AREA.—3,070 square miles.

RECORDS AVAILABLE.—October 12, 1904, to September 30, 1922.

GAGE.—Staff in two sections; the upper section vertical and attached to downstream end of left abutment; the lower section inclined, about 30 feet downstream. On March 14, 1920, the facing board of the inclined section was carried out. After that date a chain gage on bridge was used. Gage read by John Bisland.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel; occasionally shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.1 feet at 5 p. m. November 29 (discharge, 68,100 second-feet); minimum stage, 1.6 feet several times in October and September (discharge, 780 second-feet).

1904–1922: Maximum stage recorded,[7] 16.0 feet at 8 a. m. March 28, 1914 (discharge, 92,700 second-feet); minimum stage, 0.60 foot at 8 a. m. September 22 and 23, 1908 (discharge, 175 second-feet).

ICE.—Stage-discharge relation somewhat affected by ice.

ACCURACY.—Stage-discharge relation practically permanent during year except as affected by ice during periods in January and February. Rating curve fairly well defined below 2,500 second-feet and well defined between 2,500 and 30,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Open-water records good except those for low and high stages and for periods when stage-discharge relation was affected by ice, which are fair.

[7] The flood of Oct. 10–11, 1903, reached a stage of 23.3 feet, according to Irving Righter, city engineer. The corresponding discharge was about 155,000 second-feet.

Discharge measurements of Delaware River at Port Jervis, N. Y., during the year ending Sept. 30, 1922.

[Made by B. F. Howe.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Feb. 9	2.90	2,880
Aug. 6	2.76	2,510

Daily discharge, in second-feet, of Delaware River at Port, Jervis, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	780	1,240	24,600	1,980	2,400	6,010	16,200	3,400	2,470	7,810	1,800	2,070
2	780	2,070	22,500	1,640	2,200	5,050	15,700	3,160	2,260	12,600	2,360	2,260
3	780	3,650	24,600	1,980	6,700	4,750	13,600	2,920	3,400	13,600	2,920	1,890
4	880	3,160	24,600	2,400	8,600	4,750	15,700	2,690	32,000	12,600	3,160	1,890
5	1,180	2,690	16,800	2,920	6,700	4,180	15,700	4,750	18,000	9,840	3,160	2,160
6	1,720	2,470	12,600	6,010	4,180	3,910	14,600	8,600	15,700	8,200	2,800	2,470
7	1,470	2,260	9,840	6,010	3,650	7,430	13,600	7,810	13,600	6,010	2,070	2,260
8	1,240	2,070	9,010	3,910	3,160	52,500	11,600	6,700	12,600	5,360	1,980	2,470
9	1,240	1,890	7,430	3,160	3,040	31,200	12,100	6,010	10,700	4,460	2,360	2,070
10	1,110	1,890	6,700	2,920	2,690	20,500	12,600	5,050	8,200	3,910	1,890	2,070
11	1,320	1,980	6,010	2,580	2,690	15,700	13,100	4,460	6,350	3,400	1,720	1,890
12	1,550	2,260	5,360	1,800	2,470	14,600	21,200	4,180	6,700	3,040	1,550	1,890
13	2,160	2,260	5,050	1,800	2,470	15,700	19,800	4,180	10,300	2,690	1,550	1,980
14	2,470	2,260	4,460	1,800	2,470	16,800	18,000	3,910	7,060	2,470	1,550	2,260
15	2,260	2,360	4,180	1,900	2,470	19,800	16,800	3,650	6,010	2,260	1,390	1,980
16	2,070	2,800	2,800	2,000	2,260	16,800	19,200	3,160	4,750	2,070	1,240	1,720
17	1,890	3,650	2,260	2,000	2,000	13,600	16,800	2,920	4,750	2,070	1,110	1,550
18	1,720	4,180	4,750	2,100	2,000	10,700	15,700	2,800	25,300	1,890	990	1,390
19	1,390	7,060	8,200	2,200	3,000	9,010	16,800	6,010	14,600	2,160	990	1,240
20	1,640	7,430	7,430	2,100	4,200	9,840	13,600	9,840	11,600	2,260	1,320	1,110
21	2,360	12,100	5,360	2,000	5,050	16,800	11,600	8,200	7,430	1,980	1,800	1,110
22	4,180	9,840	4,180	2,000	5,050	14,600	9,840	7,430	7,430	1,720	1,390	990
23	2,470	7,430	3,160	2,000	9,010	10,700	8,200	6,350	7,060	1,550	1,110	990
24	2,690	6,010	3,160	1,900	40,400	9,840	7,430	5,360	6,350	1,550	990	990
25	2,470	6,010	4,180	1,800	20,500	9,420	6,700	4,460	6,010	1,390	1,050	880
26	2,070	7,430	4,180	2,200	12,600	9,840	5,680	5,360	4,750	1,550	1,470	880
27	1,720	7,430	3,650		9,840	10,700	5,360	4,180	4,180	1,550	3,040	780
28	1,390	27,500	2,920		8,200	17,400	4,750	3,650	3,910	1,550	3,650	780
29	1,240	67,300	2,920		.....	29,000	4,180	3,400	3,650	1,800	2,920	780
30	1,240	44,400	2,360	2,600	.....	23,200	3,910	3,160	9,840	2,070	2,470	780
31	1,240	.....	2,070	2,200	.....	16,800	.....	2,690	.....	1,720	2,260	.....

NOTE.—Discharge estimated Jan. 26-29, when gage was not read because of ice jam at gage, from comparison with records of other stations in the Delaware drainage basin. Discharge, Jan. 4, Jan. 13 to Feb. 2, and Feb. 17-20, determined from gage-heights corrected for ice effect from one discharge measurement, study of weather records and gage-height graph, and comparison with records for other stations in the basin.

Monthly discharge of Delaware River at Port Jervis, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 3,070 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	4,180	780	1,700	0.554	0.64
November	67,300	1,240	8,500	2.77	3.09
December	24,600	2,070	7,980	2.60	3.00
January	6,010	1,640	2,470	.805	.93
February	40,400	2,000	6,430	2.09	2.18
March	52,500	3,910	14,600	4.76	5.49
April	21,200	3,910	12,700	4.14	4.62
May	9,840	2,690	4,850	1.58	1.82
June	32,000	2,260	9,230	3.01	3.36
July	13,600	1,390	4,100	1.34	1.54
August	3,650	990	1,940	.632	.73
September	2,470	780	1,590	.518	.58
The year	67,300	780	6,320	2.06	27.98

DELAWARE RIVER AT RIEGELSVILLE, N. J.

LOCATION.—At toll suspension bridge between Riegelsville, Warren County, N. J., and Riegelsville, Bucks County, Pa., 600 feet above mouth of Musconetcong River and 9 miles below Lehigh River.

DRAINAGE AREA.—6,190 square miles (revised).

RECORDS AVAILABLE.—July 3, 1906, to September 30, 1922.

GAGE.—Inclined staff installed November 14, 1914, on left bank (New Jersey side) at upstream side of bridge. Prior to November 14, 1914, chain gage attached to upstream side of bridge.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Large boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from graph, 20.4 feet at 10 p. m. November 29 (discharge, 106,000 second-feet); minimum stage recorded 2.3 feet September 30 (discharge, 1.77 second-feet).

1906–1922: Maximum stage recorded, 25 feet March 28, 1913 (discharge, 144,000 second-feet); minimum stage, 1.55 feet at 8 a. m. September 20, 1908 (discharge, 870 second-feet).

The flood of October 10–11, 1903, reached a stage of 35.9 feet determined by level from three good flood marks. Maximum discharge has been estimated 275,000 second-feet at Riegelsville from observations made at Lambertville.

ICE.—Stage-discharge relation affected by ice during severe winters.

DIVERSIONS.—The Delaware division of the Pennsylvania Canal diverts water from Lehigh River near its mouth from the last of March to the middle of December each year. The canal is so operated that the flow past Riegelsville is constant at 230 second-feet.

ACCURACY.—Stage-discharge relation permanent, not affected by ice. Rating curve well defined. Gage read to half-tenths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Delaware River at Riegelsville, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 17	Otto Lauterhahn	3.60	4,870	July 11	Otto Lauterhahn	4.50	7,430
Jan. 20	do	3.71	5,300	Aug. 11	Hartwell and Lauterhahn	3.26	4,010
Mar. 2	do	5.83	12,400				

Discharge measurements of Pennsylvania Canal at Riegelsville, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Discharge.	Date.	Made by—	Discharge.
		Sec.-ft.			*Sec.-ft.*
Nov. 17	Alexander McMillan	228	July 11	Otto Lauterhahn	231

Daily discharge, in second-feet, of Delaware River at Riegelsville, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	2,250	2,940	44,400	5,610	3,630	15,000	30,400	8,480	6,230	14,200	3,590	5,010
2	2,160	2,940	32,100	4,420	9,160	12,700	28,200	7,820	6,540	20,700	3,330	4,420
3	2,080	3,630	36,900	3,050	15,000	10,900	26,100	7,490	9,500	24,500	3,330	4,420
4	2,160	3,880	47,000	3,880	9,500	10,500	25,000	7,490	27,100	26,600	5,310	5,310
5	2,340	5,010	33,900	5,920	9,840	10,900	27,100	17,100	39,300	20,200	5,310	6,540
6	2,340	4,140	26,600	7,490	10,900	13,100	25,600	21,600	34,500	16,300	5,310	5,310
7	3,050	3,880	21,100	6,850	10,200	19,700	26,600	19,700	32,700	13,100	4,710	5,010
8	2,730	3,630	17,100	9,500	8,480	79,300	26,100	16,300	27,100	10,900	3,860	4,710
9	2,630	3,390	14,600	7,490	7,170	76,300	26,100	14,200	20,700	9,840	3,590	4,420
10	2,530	3,390	12,400	6,540	6,850	47,000	25,600	12,400	17,100	8,820	3,860	4,420
11	2,440	3,390	11,600	6,230	6,540	37,500	22,600	10,900	15,000	8,150	4,140	3,860
12	2,940	3,280	10,900	3,880	6,850	36,300	21,600	9,840	14,200	7,170	3,590	3,860
13	2,940	3,630	10,200	4,420	6,540	33,300	34,500	9,160	16,300	6,540	3,330	4,140
14	2,940	3,630	9,500	3,880	5,920	31,000	29,900	8,820	15,000	6,540	3,080	4,140
15	3,390	3,880	8,820	4,140	5,920	33,300	29,900	8,820	12,000	5,610	2,840	4,140
16	3,390	3,630	6,850	4,420	5,610	34,500	39,300	8,150	10,200	5,310	2,720	3,860
17	2,840	5,010	6,540	4,420	4,420	29,900	33,300	7,170	9,160	4,710	2,600	3,200
18	2,730	5,010	6,850	4,420	4,420	23,000	29,900	7,490	8,820	4,710	2,480	2,840
19	2,530	5,610	11,600	5,010	5,010	19,700	28,200	10,200	28,800	5,610	2,370	2,720
20	2,730	9,500	16,300	5,310	6,850	21,600	26,600	21,600	18,800	5,310	2,370	2,480
21	2,730	11,600	12,000	5,610	12,400	28,800	21,600	24,000	15,000	5,010	2,160	2,600
22	3,630	14,200	9,160	5,310	10,500	31,000	19,700	17,500	13,500	4,420	2,600	2,370
23	5,920	11,200	6,540	5,010	13,500	23,500	17,100	14,600	12,700	4,140	2,600	2,160
24	5,010	9,160	7,820	4,420	23,000	20,200	15,400	12,400	11,600	3,880	2,260	2,160
25	4,420	8,480	8,480	3,630	34,500	18,800	13,900	10,900	10,900	3,880	2,370	2,160
26	3,630	8,150	8,150	3,050	25,600	18,800	12,400	10,500	9,500	3,880	2,480	2,160
27	3,390	9,500	7,820	2,840	20,700	18,800	11,200	10,200	8,480	3,880	2,960	1,960
28	3,280	11,200	6,850	2,730	17,500	23,000	10,200	9,500	8,150	3,880	4,710	1,960
29	3,050	80,800	6,850	3,160	-------	38,100	9,500	8,150	7,490	3,590	5,310	1,960
30	2,840	85,400	5,310	3,880	-------	39,900	9,160	7,170	7,490	4,140	4,420	1,770
31	2,940	-------	4,710	3,880	-------	32,100	-------	6,540	-------	4,140	4,140	-------

NOTE.—This table gives discharge in river only; flow in canal 230 second-feet except when canal was closed Dec. 10 to Mar. 4.

Monthly discharge of Delaware River at Riegelsville, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 6,190 square miles.]

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
October	5,920	2,080	3,030	3,260	0.527	0.61
November	85,400	2,940	11,100	11,300	1.83	2.04
December	47,000	4,710	15,100	15,200	2.46	2.84
January	9,500	2,730	4,850	----------	.784	.90
February	34,500	3,630	10,900	----------	1.76	1.83
March	79,300	10,500	28,700	28,900	4.67	5.38
April	39,300	9,160	23,400	23,600	3.81	4.25
May	24,000	6,540	11,800	12,000	1.94	2.24
June	39,300	6,230	15,800	16,000	2.58	2.88
July	26,600	3,590	8,700	8,930	1.44	1.66
August	5,310	2,160	3,480	3,700	.598	.69
September	6,540	1,770	3,540	3,770	.609	.68
The year	85,400	1,770	11,700	11,900	1.92	26.00

DELAWARE RIVER AT TRENTON, N. J.

LOCATION.—At Calhoun Street Bridge, Trenton, Mercer County, 1 mile above Pennsylvania Railroad bridge and half a mile above mouth of Assunpink Creek.

DRAINAGE AREA.—6,800 square miles.

RECORDS AVAILABLE.—February 24, 1913, to September 30, 1922.

GAGE.—Chain gage on downstream side of bridge 100 feet from left abutment.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Rocky and permanent at the rapids a few hundred feet below bridge.

EXTREMES OF DISCHARGE.—1913–1922: Maximum stage recorded, 13.3 feet, during night of March 28–29, 1913 (discharge, 160,000 second-feet); minimum stage, −0.4 foot, October 22, 31, November 1, 4–5, 13–15, 1914 (discharge, 1,240 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—The Delaware division of the Pennsylvania canal diverts water from Lehigh River from the last of March to the middle of December each year. All but 53 second-feet of this water has been wasted back into Delaware River above Trenton.

The Delaware and Raritan feeder canal diverts 160 second-feet from March 1 to December 31 each year.

The Trenton Power canal diverts 210 second-feet, around the gage, daily.

ACCURACY.—Stage-discharge relation permanent, except during ice-affected periods. Rating curve well defined between 1,700 and 90,000 second-feet. Gage read to tenths once a day. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage readings furnished by United States Weather Bureau.

Discharge measurements of Delaware River at Trenton, N. J., during the year ending Sept. 30, 1922.

[Made by Otto Lauterhahn.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 6	3.28	18,800	July 25	0.71	3,900
6	3.20	17,700	Aug. 17	.43	2,960
14	1.90	8,650			

Discharge measurements of canals at Trenton, N. J., during the year ending Sept. 30, 1922.

Date.	Canal.	Discharge.
		Sec.-ft.
Aug. 17	Pennsylvania canal at Morrisville, Pa	51
17	Trenton power canal at Trenton, N. J	212
17	Delaware and Raritan feeder canal at Trenton, N. J	159

Daily discharge, in second-feet, of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913.												
1						14,800	38,700	30,400	14,800	3,470	2,300	2,080
2						25,600	33,400	24,700	13,200	3,470	5,600	1,900
3						18,800	27,400	21,200	11,800	2,560	5,220	2,080
4						15,600	25,600	18,800	10,400	2,300	4,850	2,080
5						13,000	24,700	15,600	8,150	2,300	4,140	1,900
6						11,100	22,900	13,200	9,200	2,560	3,150	2,080
7						9,800	22,000	8,650	8,150	2,840	2,840	2,080
8						8,150	22,000	11,800	8,150	2,840	3,150	2,080
9						7,200	16,400	11,100	8,650	2,560	2,840	2,840
10						7,650	16,400	10,400	8,150	2,300	2,840	2,300
11						10,400	14,800	8,650	7,200	2,300	2,840	2,080
12						11,100	22,900	6,800	6,400	2,300	2,560	2,080
13						14,000	39,800	7,650	4,850	2,560	2,300	1,900
14						14,000	32,400	7,200	4,140	2,560	2,300	1,900
15						35,400	32,400	7,200	4,490	2,300	2,080	1,900
16						55,800	32,400	7,200	4,490	2,300	2,080	1,900
17						44,500	31,400	7,650	4,140	2,300	2,080	2,080
18						33,400	24,700	5,220	4,140	2,560	2,080	1,900
19						27,400	25,600	6,000	4,490	2,300	2,080	2,080
20						23,800	19,600	5,600	4,490	2,300	2,300	1,900
21						32,400	14,800	5,600	4,850	2,300	2,080	1,900
22						32,400	15,600	4,850	4,490	2,560	2,080	2,840
23						27,400	14,800	6,000	3,490	2,080	2,080	2,300
24					9,800	24,700	14,000	8,150	4,140	2,080	2,300	2,560
25					9,800	22,900	11,100	14,000	4,850	2,840	2,080	2,300
26					11,100	23,800	12,500	13,200	4,140	2,560	2,080	2,080
27					9,800	36,500	11,800	11,800	3,470	2,560	2,080	2,840
28					15,600	130,000	29,400	11,100	3,800	2,300	2,080	2,560
29						132,000	42,100	13,200	3,470	2,840	2,080	2,300
30						69,200	38,700	13,200	3,800	2,560	2,300	2,080
31						49,300		11,800		2,300	2,080	
1913–14.												
1	2,300	6,000	9,800	7,650	37,600		54,500	22,900	6,400	4,140	5,220	3,800
2	2,840	6,400	9,200	7,650	35,400		54,500	22,000	6,000	4,490	5,220	3,800
3	2,840	6,000	8,150	8,150	28,400		53,200	20,400	5,600	5,600	5,600	3,800
4	2,300	5,220	6,800	7,650	22,900		51,900	17,200	5,220	5,220	5,600	4,140
5	4,140	5,220	7,200	9,200	20,400		39,800	15,600	5,220	4,490	4,850	4,140
6	4,140	5,600	7,200	9,800	19,600		33,400	18,800	6,000	4,490	3,470	2,840
7	3,470	5,600	6,400	8,650	18,800		28,400	26,500	6,800	4,490	3,150	3,150
8	2,840	4,140	7,200	8,150	17,200	6,200	24,700	24,700	6,800	6,000	3,150	3,150
9	2,080	5,220	11,100	7,650	13,200		27,400	22,000	6,000	6,800	2,840	3,150
10	2,080	18,800	13,200	7,200	11,800		74,800	19,600	6,000	5,600	3,150	3,150
11	2,300	24,700	14,800	7,200	9,200		58,400	18,000	6,000	5,600	2,840	3,470
12	5,600	22,900	13,200				53,200	15,600	6,400	6,400	2,840	3,800
13	6,400	18,800	12,500				42,100	17,200	6,000	6,000	3,150	2,300
14	5,220	14,800	8,650				30,400	21,200	4,490	6,000	3,470	2,300
15	4,140	9,200	8,150				22,000	21,200	4,850	7,200	3,800	2,300
16	3,470	8,150	8,150			9,200	16,400	18,800	4,850	6,800	3,470	2,300
17	2,840	14,800	7,200		6,500	9,800	13,200	16,400	4,490	6,800	3,470	2,560
18	2,080	14,800	8,150	5,000		14,800	14,000	16,400	4,490	6,000	3,150	2,560
19	2,080	14,000	9,800			22,900	22,900	17,200	4,140	4,490	2,840	2,300
20	2,300	11,800	7,650			16,400	18,800	17,200	3,470	6,400	2,840	2,840
21	2,300	11,100	6,800			14,800	22,000	14,800	3,470	5,600	2,840	2,560
22	3,800	13,200	6,800			16,400	54,500	15,600	3,800	5,220	3,470	2,560
23	2,840	14,800	7,200		6,800	17,200	38,700	13,200	3,800	5,220	5,220	2,300
24	5,220	13,200	11,100	8,150		14,800	32,400	9,800	3,470	5,220	5,220	2,300
25	4,850	12,500	11,800	18,000		13,200	24,700	8,650	3,470	5,600	4,850	2,300
26	5,600	12,500	12,500	12,000	6,000	12,500	22,000	8,650	3,470	4,490	5,220	2,300
27	4,140	9,800	14,800	8,000		11,800	18,800	8,150	3,470	4,490	5,220	1,720
28	3,470	7,200	13,200	7,500		14,800	21,200	8,150	3,470	5,220	4,850	1,720
29	2,560	8,150	11,800	7,500		136,000	16,400	9,200	3,470	5,220	5,220	1,900
30	2,080	9,800	11,100	8,000		126,000	14,800	8,150	3,470	5,600	4,850	1,900
31	4,140		11,800	11,100		80,400		6,800		5,600	4,490	

Daily discharge, in second-feet, of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	1,900	1,240	2,300		11,100	29,400	6,000	8,150	6,800	2,840	6,000	11,100
2	1,720	1,400	2,300		45,700	24,700	5,600	8,150	6,000	2,840	6,000	10,400
3	1,720	1,400	2,080		40,900	22,900	5,600	8,150	7,200	4,850	6,400	8,650
4	1,560	1,240	2,080	3,200	22,900	22,900	5,600	7,200	7,200	6,800	8,150	7,650
5	1,560	1,240	2,080		19,600	22,000	5,220	7,650	6,800	7,200	32,400	7,200
6	1,560	1,400	2,300		14,000	14,000	5,600	8,650	5,220	7,200	34,400	6,400
7	1,560	1,400	2,560	5,600	35,400	12,500	6,400	8,150	4,490	6,800	25,600	6,400
8	1,560	1,560	5,220	29,400	26,500	12,500	6,400	7,650	4,490	5,220	18,000	6,400
9	1,400	1,560	7,650	44,500	22,900	11,800	6,800	7,650	4,140	5,220	18,000	6,000
10	1,560	1,400	6,400	26,500	19,600	10,400	6,800	6,800	4,140	5,600	18,000	6,400
11	1,560	1,400		20,400	15,600	9,800	7,200	6,800	3,470	24,700	14,800	6,000
12	1,560	1,400		16,400	13,200	9,800	20,400	6,800	3,470	21,200	12,500	5,600
13	1,400	1,240	5,000	61,000	13,200	9,200	35,400	6,400	3,150	11,100	12,500	4,850
14	1,560	1,240		58,400	14,800	8,650	28,400	6,800	3,800	11,800	12,500	4,490
15	1,400	1,240		39,800	14,800	8,650	22,900	6,400	3,800	13,200	10,400	4,140
16	1,560	2,840		29,400	18,800	8,650	21,200	6,400	3,800	14,000	9,800	4,140
17	1,560	2,560		22,900	28,400	8,150	21,200	6,800	4,490	10,400	9,800	4,140
18	2,080	2,560		21,200	22,900	8,150	18,800	6,800	4,140	8,650	9,200	4,140
19	1,720	2,840		26,500	21,200	8,150	16,400	6,400	4,490	8,150	8,150	4,490
20	1,400	2,840		42,100	18,800	7,200	15,600	6,400	4,850	7,650	7,200	5,220
21	1,400	2,840		39,800	14,800	6,800	12,500	6,800	4,850	7,650	7,200	5,600
22	1,240	2,560		32,400	17,200	6,800	11,100	6,800	4,490	7,200	7,200	7,200
23	1,400	2,080		29,400	17,200	6,400	8,650	11,100	4,850	6,000	6,000	8,150
24	1,400	2,080	3,400	26,500	15,600	6,000	7,200	14,000	5,220	5,220	5,220	8,650
25	2,080	2,080		24,700	27,400	6,000	8,150	14,800	4,850	5,600	6,400	8,150
26	1,900	2,080		22,000	43,300	6,000	8,150	14,800	4,490	6,000	6,400	7,650
27	1,900	2,080		21,200	34,400	5,220	7,650	12,500	3,470	5,600	5,600	7,650
28	1,900	2,080		19,600	37,600	6,800	8,150	11,100	3,150	4,850	11,800	7,200
29	1,900	2,080		16,400	-------	6,400	8,150	9,800	3,150	4,850	10,400	6,400
30	1,560	2,080		13,200	-------	6,400	8,650	11,100	3,150	6,800	11,100	6,400
31	1,240	-------		11,800	-------	6,000	-------	8,150	-------	6,800	11,100	-------
1915-16.												
1	5,220	3,800	6,000	16,400	22,900	19,600	80,400	19,600	10,400	8,650	13,200	2,080
2	4,850	4,140	6,000	16,400	25,600	18,000	81,800	17,200	9,200	7,200	11,100	2,080
3	5,220	3,470	6,000	6,400	29,400	16,400	89,300	15,600	8,150	6,800	9,200	2,840
4	5,600	3,470	5,600	22,900	22,000	12,500	66,400	14,000	7,650	7,650	8,150	2,560
5	6,800	3,470	5,220	21,200	18,800	11,800	51,900	14,000	8,150	6,400	7,200	2,560
6	6,800	3,470	5,220	19,600	18,000	10,400	40,900	14,000	9,800	6,400	6,400	2,300
7	6,400	3,150	4,490	22,000	15,600	9,800	36,500	12,500	8,150	6,000	6,000	2,300
8	6,800	3,150	4,490	22,900	14,800	9,200	33,400	12,500	9,200	5,600	6,000	2,080
9	7,200	3,470	4,490	18,000	12,500	10,400	31,400	11,800	10,400	4,850	5,600	2,560
10	6,400	3,470	4,140	15,600	11,100	8,650	29,400	10,400	11,800	4,490	4,850	2,300
11	6,000	3,470	4,140	14,000	10,400	9,200	27,400	9,200	11,100	6,400	5,220	2,080
12	5,600	3,470	3,800	14,000	9,800	8,150	24,700	9,200	11,100	8,150	5,220	1,900
13	5,220	3,470	3,470	14,800	8,150	8,650	23,800	8,650	10,400	8,150	4,850	2,080
14	4,850	3,470	3,400	18,800	7,000	12,500	28,400	7,650	9,800	8,150	5,220	1,900
15	4,850	3,800	3,200	15,600	5,500	12,500	37,600	7,200	8,650	7,650	4,490	1,900
16	4,850	3,800	3,000	12,500	6,500	10,400	53,200	7,200	8,150	12,500	4,140	2,080
17	4,490	3,800	3,200	11,000	6,500	8,150	39,800	7,200	9,200	9,800	3,800	8,150
18	3,800	4,490	5,000	10,000	7,500	7,650	33,400	8,650	22,900	10,400	3,800	9,200
19	4,140	4,490	17,200	8,500	8,000	7,200	31,400	11,800	22,000	8,150	3,150	5,600
20	4,490	4,850	24,700	7,000	7,000	7,650	28,400	11,100	18,800	7,200	3,150	4,490
21	4,490	11,800	24,700	7,500	6,000	8,150	22,900	9,200	17,200	7,200	2,840	3,800
22	4,850	13,200	22,900	7,500	6,500	8,150	20,400	8,650	16,400	8,150	2,840	3,150
23	4,850	13,200	22,000	11,100	6,000	7,650	21,200	8,150	16,400	8,650	2,840	2,560
24	4,850	11,100	13,200	9,800	6,500	7,650	22,900	9,200	14,000	8,650	2,560	2,840
25	4,490	9,800	13,200	8,650	7,500	8,150	22,000	13,200	10,400	8,150	2,560	2,840
26	5,220	9,200	17,200	8,150	20,400	11,100	20,400	11,800	9,200	7,650	2,300	2,560
27	3,800	8,150	22,000	9,800	25,600	12,500	18,800	10,400	8,650	8,650	2,300	3,150
28	3,800	6,800	19,600	10,400	28,400	12,500	17,200	9,200	8,650	46,900	2,300	2,840
29	3,800	6,400	18,000	11,100	29,400	14,800	14,800	8,650	8,150	22,000	2,300	2,560
30	4,490	6,000	15,600	37,600	-------	42,100	22,900	8,150	8,150	18,000	2,080	2,560
31	4,490	-------	14,000	36,500	-------	42,100	-------	7,650	-------	11,800	2,080	-------

Daily discharge, in second-feet, of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	2,560	3,150	4,140	7,000	8,650	7,650	32,400	6,800	11,800	14,000	4,140	7,650
2	2,560	2,840	4,140	7,000	8,150	8,650	30,400	6,400	9,800	12,500	4,140	7,200
3	2,300	2,560	12,500	7,000		9,200	43,300	7,650	10,400	11,100	4,490	6,000
4	2,300	2,300	16,400	7,000		9,200	42,100	7,650	12,500	10,400	3,470	5,600
5	2,560	2,840	14,800	16,400		9,800	32,400	11,100	10,400	9,800	3,470	4,490
6	2,560	2,840	7,650	18,000		6,400	31,400	8,650	9,800	9,200	3,150	4,140
7	2,300	2,840	6,800	18,000		6,400	27,400	11,800	9,800	7,200	2,840	3,800
8	2,080	2,560	6,400	15,600		5,600	27,400	13,200	11,100	6,400	2,840	3,800
9	2,080	2,560	5,600	16,400		8,150	24,700	13,200	16,400	6,000	2,840	4,140
10	2,080	2,300	5,600	14,000		9,200	22,000	12,500	17,200	6,800	11,100	3,800
11	1,900	2,560	6,000	12,500		12,500	20,400	12,500	14,800	7,650	9,800	3,470
12	1,720	2,560	6,400	9,800		16,400	17,200	11,800	18,800	11,800	8,150	3,150
13	1,720	2,560	6,000	7,500		24,700	15,600	10,400	42,100	14,800	7,200	3,150
14	1,720	2,840	5,600	6,500	5,000	15,600	14,000	8,650	34,400	14,800	6,000	2,840
15	1,720	2,840	4,850	10,000		17,200	14,000	8,650	27,400	14,800	4,850	2,560
16	1,720	2,560	4,490	18,800		16,400	12,500	8,150	26,500	12,500	4,490	2,840
17	1,720	2,560	4,490	23,800		14,000	9,800	7,200	23,800	9,800	8,650	2,560
18	1,720	2,560	3,600	19,600		20,400	10,400	6,800	20,400	9,200	6,400	2,300
19	1,900	2,560	3,600	17,200		11,800	9,800	7,200	16,400	9,800	5,220	2,300
20	2,080	2,300	4,000	15,600		13,200	9,200	6,800	14,000	7,650	5,220	2,080
21	5,220	2,300	4,000	11,800		11,800	9,800	6,000	14,000	6,800	4,850	2,080
22	7,200	2,300	6,000	13,200		9,200	11,800	6,000	13,200	6,400	4,490	2,080
23	6,800	2,300	18,000	18,000		10,400	11,100	5,600	11,800	6,400	3,800	2,080
24	7,200	2,560	15,000	13,200		14,800	11,800	5,220	10,400	6,800	3,800	1,900
25	5,600	3,470	11,000	9,800		24,700	9,800	5,600	11,800	6,000	3,800	1,720
26	4,490	5,600	13,000	9,200	7,000	53,200	9,200	5,220	12,500	6,000	6,800	1,720
27	4,140	6,400	11,000	8,150		46,900	8,150	4,850	12,500	5,600	7,650	1,720
28	3,800	5,220	10,000	6,800		69,200	8,150	4,850	11,800	5,600	6,400	1,720
29	3,470	4,140	9,000	6,800		86,300	7,650	6,000	22,000	5,600	5,220	1,720
30	3,150	4,140	9,500	8,150		54,500	7,650	8,650	16,400	5,220	4,140	1,720
31	3,150		8,000	11,100		40,900		11,800		4,490	4,490	
1917–18.												
1	1,720	76,200	4,490			36,500	11,100	14,800	14,800	3,800	4,850	1,400
2	1,720	39,800	4,490			30,400	10,400	14,800	14,000	3,800	3,470	1,400
3	1,720	25,600	5,600			39,800	10,400	14,000	11,100	3,800	3,470	2,080
4	1,720	14,800	5,220			42,100	12,500	13,200	9,200	3,800	3,150	2,300
5	1,720	15,600	5,220			25,600	12,500	12,500	7,650	3,470	2,300	2,300
6	1,720	13,200	4,850	2,200	3,400	22,000	13,200	11,100	7,650	3,470	2,080	2,840
7	1,720	11,100	4,490			22,900	13,200	10,400	7,200	3,150	2,080	2,300
8	1,720	9,200	4,140			34,400	9,800	9,200	7,200	3,150	2,080	2,300
9	1,720	8,650	3,800			25,600	8,650	8,650	7,200	2,840	2,080	3,150
10	1,900	7,650	3,150			25,600	9,200	7,650	6,800	2,560	1,900	1,900
11	1,900	7,200				21,200	20,400	7,650	9,200	2,560	1,900	1,900
12	1,900	6,400		7,650		20,400	18,000	7,200	6,800	2,840	1,720	1,720
13	1,900	6,400		7,650	6,000	18,800	19,600	6,800	6,800	2,840	1,900	1,720
14	1,900	6,000		7,200	14,000	23,800	19,600	7,200	7,200	2,840	2,300	1,900
15	2,560	5,220		9,200	18,800	34,400	18,000	11,100	9,200	3,150	3,470	1,900
			3,200									
16	3,150	5,220		9,800	31,400	31,400	25,600	12,500	9,200	3,470	3,800	1,720
17	3,470	4,850		8,650	28,400	31,400	28,400	11,100	5,600	3,470	2,560	1,720
18	3,150	4,850		7,650	14,800	22,900	27,400	9,200	5,600	3,150	2,300	1,900
19	2,840	4,490			14,800	24,700	30,400	8,650	5,220	3,470	2,080	1,900
20	2,840	4,140			53,200	26,500	29,400	7,650	4,490	3,470	1,900	2,080
21	3,470	4,140	4,140		44,500	28,400	28,400	7,200	3,800	3,150	1,720	2,300
22	3,800	4,140	4,490		57,100	31,400	30,400	11,100	4,140	2,840	1,720	2,300
23	5,600	4,490	4,490		31,400	31,400	39,800	10,400	6,800	2,840	1,720	3,470
24	5,600	6,800			39,800	32,400	36,500	9,800	6,400	2,300	1,560	4,490
25	6,000	7,200		4,200	22,000	26,500	29,400	8,650	8,150	2,080	1,560	4,140
26	7,650	6,000			38,700	22,000	24,700	8,150	6,400	2,080	1,560	3,150
27	11,100	5,600	3,200		44,500	19,600	21,200	7,200	5,600	2,080	1,560	2,840
28	10,400	4,140			53,200	17,200	18,000	15,600	4,490	2,080	1,900	3,150
29	8,650	4,140				14,000	16,400	14,000	4,140	1,900	1,900	10,400
30	9,800	4,140				12,500	14,800	12,500	4,140	1,900	1,900	7,650
31	27,400					11,800		11,100		2,300	1,900	

Daily discharge, in second-feet, of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1918–19.												
1	6,000	3,470	3,800	9,200	10,400	9,800	22,900	14,000	10,400	4,490	8,650	4,490
2	4,850	5,600	3,470	14,800	9,200	21,200	23,800	15,600	9,200	3,800	9,200	4,490
3	4,490	4,850	3,470	18,000	7,200	19,600	22,000	16,400	9,200	3,470	7,200	4,490
4	4,490	6,800	3,150	27,400	6,800	17,200	22,000	13,200	7,650	3,470	7,200	4,850
5	4,140	5,600	3,800	22,000	6,800	19,600	22,900	12,500	7,200	3,150	6,400	5,600
6	4,140	5,600	3,470	15,600	5,600	17,200	14,800	12,500	5,600	3,150	6,000	6,000
7	3,800	4,850	4,140	12,500	4,850	18,000	14,000	9,200	6,000	3,800	7,650	6,400
8	3,470	4,850	3,470	10,400	5,220	20,400	12,500	9,200	6,400	4,490	10,400	5,220
9	3,800	4,850	3,800		4,850	16,400	11,800	9,800	7,200	4,140	15,600	4,850
10	3,800	4,850	3,800		5,220	18,800	10,400	11,100	7,200	4,140	11,800	4,490
11	3,470	4,490	3,470		5,220	44,500	9,800	17,200	7,650	3,800	9,200	4,140
12	3,470	3,800	4,140		4,490	43,300	10,400	19,600	7,200	3,150	6,800	4,850
13	3,800	3,800	3,800	11,000	4,140	43,300	22,900	18,800	5,600	4,140	6,400	6,000
14	5,220	4,140	4,850		4,850	40,900	23,800	20,400	5,220	3,150	14,800	5,220
15	4,850	4,490	5,220		6,000	27,400	24,700	21,200	4,490	3,150	11,100	4,850
16	4,490	3,470	6,000		10,400	17,200	22,900	18,000	4,140	3,470	10,400	4,850
17	4,140	3,800	5,600		14,000	18,000	25,600	18,000	3,470	3,470	9,800	4,490
18	4,140	4,140	6,000	19,600	10,400	18,800	21,200	18,000	3,800	3,800	9,800	4,140
19	4,140	5,220	5,220	8,650	9,200	21,200	18,800	20,400	4,140	9,200	10,400	3,800
20	3,800	4,850	4,850	8,150	9,800	24,700	23,800	21,200	4,140	9,800	9,800	3,470
21	3,800	4,490	4,140	7,650	7,650	22,000	22,000	20,400	4,490	12,500	8,650	3,470
22	3,800	6,000	5,600	8,150	6,000	21,200	22,000	22,900	4,850	30,400	8,150	3,470
23	3,150	5,600	14,800	8,650	5,220	18,000	20,400	24,700	4,490	48,100	7,200	10,400
24	3,470	5,600	17,200	11,800	9,800	16,400	19,600	25,600	3,800	34,400	6,000	5,600
25	3,470	4,850	27,400	14,000	9,200	14,000	18,000	20,400	3,470	23,800	6,400	4,850
26	3,470	4,490	27,400	17,200	10,400	12,500	18,800	18,800	4,140	17,200	6,000	4,850
27	3,470	3,800	17,200	17,200	10,400	11,800	18,800	17,200	4,490	16,400	6,400	4,850
28	3,470	4,140	20,400	12,500	9,200	17,200	18,000	16,400	5,220	13,200	5,600	4,140
29	3,470	4,140	14,800	10,400	------	40,900	16,400	14,800	5,220	12,500	5,220	4,140
30	3,470	4,140	12,500	11,100	------	22,000	14,800	14,800	4,850	11,800	4,850	3,800
31	3,800	------	11,100	11,100	------	22,900	------	13,200	------	9,200	4,850	------
1919–20.												
1	3,470	6,800	27,400	------	------	2,200	48,100	17,200	6,000	4,490	9,200	4,140
2	3,470	11,800	22,900	------	------	2,200	46,900	15,600	5,600	4,850	9,800	3,470
3	3,800	18,000	19,600	------	------	3,000	51,900	14,800	5,220	6,400	8,150	4,140
4	3,800	22,900	16,400	------	------	4,000	48,100	14,000	4,850	6,400	7,200	4,140
5	4,140	22,000	14,000	------	------	6,000	40,900	12,500	4,850	6,800	6,800	4,140
6	3,150	22,900	11,800	------	------	10,000	48,100	11,800	6,000	7,200	6,000	3,800
7	3,470	22,900	11,000	------	------	7,000	45,700	11,100	9,800	7,200	6,400	3,800
8	3,150	22,000	12,500	------	------	5,000	35,400	9,800	9,200	5,600	5,600	8,650
9	3,470	20,400	14,000	------	------	4,000	29,400	9,800	7,650	4,850	5,220	7,650
10	3,150	14,800	15,000	------	------	4,000	24,700	9,200	6,800	4,490	5,220	6,800
11	3,150	14,000	15,000	------	------	7,000	18,800	9,200	6,000	4,490	5,220	8,150
12	3,470	13,200	15,000	------	------	22,000	19,600	9,200	5,220	4,140	8,650	8,150
13	3,470	18,000	18,800	------	------	44,000	19,600	9,200	4,850	5,600	9,800	11,800
14	4,490	22,000	19,600	------	------	57,100	21,200	14,000	4,850	4,490	9,800	14,000
15	6,000	22,000	18,000	------	------	76,200	24,700	14,000	5,600	4,490	9,200	12,500
16	7,200	19,600	17,000	------	------	54,500	22,000	12,500	5,600	6,400	14,000	12,500
17	7,650	16,400	16,400	------	------	65,000	20,400	10,400	5,220	6,800	14,000	9,800
18	8,650	14,800	14,800	------	------	59,700	24,700	9,200	6,000	6,400	16,400	8,650
19	7,200	14,000		------	------	59,700	21,200	8,650	9,200	6,000	14,000	7,200
20	7,650	12,500		------	------	45,700	19,600	8,150	16,400	6,800	15,600	6,800
21	7,200	11,800		------	------	35,400	18,800	8,150	12,500	7,200	12,500	6,000
22	6,400	11,100		------	------	34,400	21,200	9,200	10,400	6,800	10,400	5,600
23	6,000	9,200		------	------	32,400	21,200	14,800	8,650	6,800	9,200	4,140
24	5,600	8,650		------	------	35,400	22,000	12,500	7,650	6,400	9,200	4,850
25	5,220	8,150	8,000	------	------	46,900	18,800	11,100	7,200	32,400	7,650	4,490
26	5,220	9,220		------	------	62,300	18,000	9,800	6,400	40,900	6,400	4,490
27	5,600	11,800		------	------	67,800	16,400	8,650	6,400	27,400	5,600	4,140
28	5,600	39,800		------	------	76,200	15,600	8,150	5,220	19,600	5,220	4,850
29	6,000	36,500		------	------	62,300	14,800	7,200	4,850	15,600	4,850	4,490
30	5,600	31,400		------	------	57,100	16,400	7,200	4,850	12,500	5,220	5,220
	5,600	------		------	------	51,900	------	6,000	------	11,100	5,600	------

Daily discharge, in second-feet, of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1920–21												
1	14,800	8,150	12,500	11,100	7,650	24,700	18,000	17,200	5,600	6,800	3,470	2,300
2	43,300	7,200	28,400	9,800	6,400	25,600	25,600	23,800	5,220	4,850	4,850	2,560
3	38,700	6,800	54,500	9,800	6,000	28,400	23,800	25,600	5,220	3,800	4,850	1,900
4	25,600	8,150	49,300	9,800	5,220	36,500	22,000	21,200	5,600	3,800	5,600	2,080
5	19,600	17,200	39,800	11,800	4,850	54,500	18,800	29,400	5,220	3,470	5,600	2,080
6	17,200	13,200	31,400	11,100	4,490	35,400	15,600	23,800	4,850	3,150	4,850	1,900
7	13,200	9,800	32,400	9,200	8,150	27,400	14,800	21,200	4,490	3,150	4,490	1,900
8	11,100	9,800	27,400	9,800	7,200	30,400	14,000	19,600	4,490	2,840	7,200	2,840
9	9,800	8,150	22,900	9,200	6,800	54,500	14,000	16,400	3,800	2,560	4,490	2,300
10	9,200	7,200	19,600	8,650	7,650	69,200	14,800	14,800	3,800	3,800	4,140	2,080
11	8,150	7,650	18,000	7,650	7,200	89,300	12,500	12,500	3,800	3,800	4,140	2,080
12	7,200	7,200	16,400	7,650	8,150	54,500	11,800	11,100	3,800	3,470	4,140	2,080
13	6,800	6,000	14,800	7,650	6,800	43,300	11,100	11,800	3,470	4,490	3,800	2,080
14	6,400	6,400	13,200	7,200	6,400	38,700	9,800	15,600	3,470	4,490	3,470	1,900
15	6,000	6,000	25,600	14,000	6,400	36,500	9,200	13,200	3,150	4,140	3,800	1,900
16	5,220	6,000	49,300	18,800	6,400	32,400	9,800	11,800	3,150	6,000	3,800	1,900
17	5,600	8,150	35,400	21,200	6,800	29,400	10,400	10,400	3,150	5,600	3,470	2,080
18	4,850	11,800	28,400	15,600	7,200	28,400	12,500	9,200	2,840	6,000	3,800	2,080
19	5,600	15,600	22,900	9,000	8,150	23,800	21,200	8,650	2,840	5,220	3,150	1,900
20	5,220	15,600	19,600	7,500	13,200	21,200	19,600	7,650	2,840	24,700	3,150	2,080
21	4,490	12,500	16,400	7,000	8,650	19,600	17,200	7,200	2,840	11,100	2,840	1,720
22	4,140	11,100	14,800	8,000	6,800	18,800	14,800	6,800	2,840	7,650	2,560	1,900
23	4,490	17,200	14,800	17,200	7,200	17,200	12,500	6,400	2,560	7,200	3,150	3,470
24	4,140	20,400	18,800	10,400	8,150	16,400	22,000	6,800	2,560	7,200	2,560	2,560
25	4,140	39,800	18,800	8,650	7,650	16,400	27,400	6,300	2,300	5,600	2,560	4,850
26	4,140	28,400	17,200	7,650	6,000	25,600	24,700	6,400	2,300	4,490	2,560	3,800
27	3,800	22,900	13,200	8,000	6,800	26,500	22,900	7,200	2,560	3,800	2,300	3,150
28	4,140	19,600	12,500	8,150	15,600	27,400	18,000	7,200	2,560	3,800	2,300	2,840
29	5,600	17,200	11,100	8,650	-------	22,900	15,600	6,800	2,300	3,470	2,300	2,560
30	7,200	15,600	10,400	9,200	-------	20,400	14,800	6,000	3,150	3,150	2,080	2,560
31	8,150	-------	11,100	8,150	-------	18,000	-------	5,600	-------	3,800	2,560	-------
1921–22.												
1	2,300	2,300	57,100	6,500	4,000	15,600	35,400	8,150	6,400	8,150	4,140	4,140
2	2,300	2,560	35,400	5,000	3,800	12,500	30,400	7,650	6,000	23,800	4,490	4,850
3	2,080	2,300	31,400	4,000	10,000	11,800	27,400	7,200	6,800	21,200	4,490	4,850
4	1,900	3,150	43,300	5,000	16,000	10,400	23,800	7,200	14,800	27,400	5,600	4,490
5	2,080	5,600	34,400	7,000	11,800	12,500	27,400	11,800	46,900	22,900	6,000	6,800
6	2,300	4,490	28,400	7,500	10,400	13,200	25,600	19,600	30,400	18,800	5,600	5,600
7	2,300	4,140	22,900	7,500	12,500	14,000	25,600	21,200	31,400	14,800	5,220	6,000
8	2,840	3,470	18,800	8,500	11,100	44,500	29,400	17,200	29,400	15,600	4,850	5,220
9	2,840	3,470	16,400	10,000	9,800	98,400	26,500	14,800	23,800	10,400	4,140	4,490
10	2,560	3,470	13,200	7,500	7,200	50,600	26,500	13,200	18,800	9,200	3,800	4,140
11	2,300	3,150	12,500	6,000	6,800	38,700	23,800	11,800	15,600	8,650	4,140	4,490
12	2,560	2,840	10,400	6,000	6,800	36,500	22,000	10,400	14,000	7,200	4,140	5,220
13	2,840	3,470	10,400	5,000	7,000	34,400	27,400	9,200	14,000	6,800	3,800	4,140
14	2,560	3,470	9,200	4,400	6,500	31,400	32,400	8,150	17,200	7,650	3,150	4,490
15	2,840	3,800	8,650	4,400	6,000	30,400	27,400	7,650	13,200	6,400	3,150	4,140
16	3,470	3,800	7,200	4,400	6,000	32,400	36,500	8,150	11,100	5,600	3,150	4,140
17	3,150	4,140	6,400	4,400	6,000	31,400	35,400	7,650	9,200	5,220	2,840	3,800
18	2,840	4,850	6,400	4,400	5,500	25,600	30,400	7,200	8,650	4,850	2,840	3,150
19	2,560	5,220	8,650	5,000	5,500	21,200	27,400	8,150	32,400	5,600	2,560	3,150
20	2,560	6,400	13,200	5,500	6,000	20,400	27,400	13,200	22,000	6,000	2,840	2,840
21	2,560	9,200	12,500	5,500	7,000	27,400	23,800	22,900	15,600	5,220	2,300	2,560
22	2,840	14,800	10,400	6,000	12,500	31,400	20,400	19,600	14,000	4,850	2,300	2,560
23	4,140	12,500	8,650	5,500	12,500	23,800	18,000	15,600	12,500	4,490	2,300	2,560
24	5,220	9,800	6,400	5,000	17,200	19,600	15,600	13,200	11,800	3,800	2,300	2,300
25	4,850	8,650	7,650	4,600	28,400	18,000	14,000	11,800	10,400	3,800	2,300	2,300
26	4,140	7,650	8,150	4,000	29,400	18,000	12,500	13,200	9,200	3,470	2,560	2,300
27	3,800	9,800	7,650	3,400	31,400	18,000	11,100	10,400	8,650	3,800	2,840	2,080
28	2,840	9,200	8,150	3,400	19,600	18,800	10,400	9,200	8,150	3,800	3,150	2,080
29	2,840	34,400	7,200	3,600	-------	26,500	9,800	8,150	7,650	3,470	5,600	2,080
30	2,840	96,800	6,500	3,800	-------	37,600	9,200	7,650	6,800	3,800	5,220	2,080
31	2,560	-------	6,000	4,000	-------	32,400	-------	7,200	-------	4,140	4,490	-------

NOTE.—Stage-discharge relation affected by ice Jan. 12–23, 26–30, Feb. 12 to Mar. 15, Dec. 11–31, 1914 Jan. 1–6, Dec. 14–18, 1915, Jan. 17–22, Feb. 14–25, Dec. 18–31, 1916, Jan. 1–4, 13–15, Feb. 3–28, Dec. 11–20, 24–31, 1917, Jan. 1–11, 19–31, Feb. 1–12, 1918, Jan. 9–17, Dec. 7, 10–12, 15–16, 19–31, 1919, Jan. 1 to Mar. 13, 1920, Jan. 15, 19–22, 27, Dec. 30–31, 1921, Jan. 1 to Feb. 4, and Feb. 13–15, 17–21, 1922; discharge based on temperature records and graphic comparison with records for Delaware River at Riegelsville, N. J. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922.

[Drainage area, 6,800 square miles.]

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
1913.						
February 24–28	15,600	9,800	11,200	11,400	1.68	0.31
March	132,000	7,200	29,800	30,200	4.44	5.12
April	42,100	11,100	24,300	24,700	3.63	4.05
May	30,400	4,850	11,200	11,600	1.71	1.97
June	14,800	3,470	6,370	6,790	.999	1.11
July	3,470	2,080	2,510	2,940	.432	.50
August	5,600	2,080	2,680	3,100	.456	.53
September	2,840	1,900	2,160	2,590	.381	.43
1913–14.						
October	6,400	2,080	3,430	3,860	.568	.65
November	24,700	4,140	11,100	11,600	1.71	1.91
December	14,800	6,400	9,790	10,200	1.50	1.73
January	18,000	----------	7,390	7,600	1.12	1.29
February	37,600	----------	12,200	12,500	1.84	1.92
March	136,000	----------	20,100	20,400	3.00	3.46
April	74,800	13,200	33,300	33,700	4.96	5.53
May	26,500	6,800	16,100	16,600	2.44	2.81
June	6,800	3,470	4,820	5,240	.771	.86
July	7,200	4,140	5,500	5,900	.868	1.00
August	5,600	2,840	4,050	4,470	.657	.76
September	4,140	1,720	2,780	3,200	.471	.53
The year	136,000	1,720	10,900	11,300	1.66	22.45
1914–15.						
October	2,080	1,240	1,610	2,030	.299	.34
November	2,840	1,240	1,870	2,290	.337	.38
December	7,650	2,080	3,690	4,080	.600	.69
January	61,000	----------	23,200	23,400	3.44	3.97
February	45,700	11,100	23,100	23,300	3.43	3.57
March	29,400	5,220	10,900	11,300	1.66	1.91
April	35,400	5,220	11,900	12,300	1.81	2.02
May	14,800	6,400	8,550	8,980	1.32	1.52
June	7,200	3,150	4,590	5,010	.737	.82
July	24,700	2,840	8,130	8,550	1.26	1.45
August	34,400	5,220	11,900	12,300	1.81	2.09
September	11,100	4,140	6,560	6,980	1.03	1.15
This year	61,000	1,240	9,600	9,980	1.47	19.91
1915–16.						
October	7,200	3,800	5,120	5,540	.815	.94
November	13,200	3,150	5,660	6,080	.894	1.00
December	24,700	----------	10,500	10,800	1.59	1.83
January	37,600	----------	15,300	15,600	2.29	2.64
February	29,400	----------	13,900	14,100	2.07	2.23
March	42,100	7,200	12,700	13,100	1.93	2.22
April	89,300	14,800	35,800	36,200	5.32	5.94
May	19,600	7,200	10,800	11,200	1.65	1.90
June	22,900	7,650	11,400	11,800	1.74	1.94
July	46,900	4,490	9,880	10,300	1.51	1.74
August	13,200	2,080	4,770	5,190	.763	.88
September	9,200	1,900	3,060	3,490	.513	.57
The year	89,300	1,900	11,600	11,900	1.75	23.83
1916–17.						
October	7,200	1,720	3,080	3,500	.515	.59
November	6,400	2,300	3,040	3,460	.509	.57
December	18,000	----------	7,980	8,390	1.23	1.42
January	23,800	----------	12,400	12,600	1.85	2.13
February	----------	----------	5,530	5,740	.844	.88
March	86,300	5,600	21,400	21,800	3.21	3.70
April	43,300	7,650	18,000	18,500	2.72	3.04
May	13,200	4,850	8,290	8,710	1.28	1.48
June	42,100	9,800	16,500	16,900	2.49	2.78
July	14,800	4,490	8,750	9,170	1.35	1.56
August	11,100	2,840	5,290	5,710	.840	.97
September	7,650	1,720	3,210	3,630	.534	.60
The year	86,300	1,720	9,480	9,870	1.45	19.72

90902—25†—WSP 541——15

Monthly discharge of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922—Continued.

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
1917–18.						
October	27,400	1,720	4,600	5,020	0.738	0.85
November	76,200	4,140	10,900	11,300	1.66	1.85
December	5,600	----------	3,750	4,130	.607	.70
January	9,800	----------	4,410	4,620	.679	.78
February	53,200	----------	19,800	20,000	2.94	3.06
March	42,100	11,800	26,100	26,500	3.90	4.50
April	39,800	8,650	20,200	20,700	3.04	3.39
May	15,600	6,800	10,400	10,800	1.59	1.83
June	14,800	3,800	7,210	7,630	1.12	1.25
July	3,800	1,900	2,920	3,350	.493	.57
August	4,850	1,560	2,270	2,690	.396	.46
September	10,400	1,400	2,810	3,230	.475	.53
The year	76,200	1,400	9,520	9,900	1.46	19.77
1918–19.						
October	6,000	3,150	3,980	4,400	.647	.75
November	6,800	3,470	4,690	5,120	.753	.84
December	27,400	3,150	8,320	8,700	1.28	1.48
January	27,400	7,650	12,700	13,000	1.91	2.20
February	14,000	4,140	7,590	7,800	1.15	1.20
March	44,500	9,800	22,500	22,900	3.37	3.88
April	25,600	9,800	19,000	19,400	2.85	3.18
May	25,600	9,200	17,000	17,400	2.56	2.95
June	10,400	3,470	5,700	6,120	.900	1.00
July	48,100	3,150	10,200	10,600	1.56	1.80
August	15,600	4,850	8,320	8,740	1.29	1.49
September	10,400	3,470	4,880	5,300	.779	.87
The year	48,100	3,150	10,400	10,800	1.59	21.64
1919–20.						
October	8,650	3,150	5,100	5,520	.812	.94
November	39,800	6,800	17,600	18,000	2.65	2.96
December	27,400	----------	13,000	13,400	1.97	2.27
January	----------	----------	5,000	5,200	.765	.88
February	----------	----------	3,200	3,410	.501	.54
March	76,200	2,200	35,500	35,900	5.28	6.09
April	51,900	14,800	27,100	27,600	4.06	4.53
May	17,200	6,000	10,700	11,200	1.65	1.90
June	16,400	4,850	6,970	7,390	1.09	1.22
July	40,900	4,140	9,700	10,100	1.49	1.72
August	16,400	4,850	8,650	9,070	1.33	1.53
September	14,000	3,470	6,620	7,040	1.04	1.16
The year	76,200	----------	12,500	12,800	1.88	25.74
1920–21.						
October	43,300	3,800	10,300	10,700	1.57	1.81
November	39,800	6,000	13,000	13,400	1.97	2.20
December	54,500	10,400	23,300	23,600	3.47	4.00
January	21,200	----------	10,200	10,500	1.54	1.78
February	15,600	4,490	7,430	7,640	1.12	1.17
March	89,300	16,400	32,700	33,100	4.87	5.62
April	27,400	9,200	16,600	17,100	2.51	2.80
May	29,400	5,600	12,800	13,300	1.96	2.26
June	5,600	2,300	3,560	3,980	.585	.65
July	24,700	2,560	5,370	5,790	.851	.98
August	7,200	2,080	3,680	4,100	.603	.70
September	4,850	1,720	2,380	2,800	.412	.46
The year	89,300	1,720	11,800	12,200	1.79	24.43

Monthly discharge of Delaware River at Trenton, N. J., for the years ending Sept. 30, 1913–1922—Continued.

Month.	Discharge in second-feet.					Run-off in inches.
	At gage.			Plus diversions.		
	Maximum.	Minimum.	Mean.	Mean.	Per square mile.	
1921–22.						
October	5,220	1,900	2,900	3,330	0.490	0.56
November	96,800	2,300	9,630	10,100	1.49	1.66
December	57,100		15,600	16,000	2.35	2.71
January			5,380	5,590	.822	.95
February	31,400		11,300	11,500	1.69	1.76
March	98,400	10,400	27,700	28,100	4.13	4.76
April	36,500	9,200	23,800	24,200	3.56	3.97
May	22,900	7,200	11,600	12,000	1.76	2.03
June	46,900	6,000	15,900	16,300	2.40	2.68
July	27,400	3,470	9,060	9,480	1.39	1.60
August	6,000	2,300	3,750	4,180	.615	.71
September	6,800	2,080	3,770	4,190	.616	.69
The year	98,400	1,900	11,700	12,100	1.78	24.08

NOTE.—Water diverted above the gage is included in the last three columns giving the totals for the drainage area. Pennsylvania Canal diverted 53 second-feet Apr. 15 to Dec. 15, 1913, Mar. 23–28 and Apr. 5 to Dec. 10, 1914, Mar. 8 to Dec. 12, 1915, Mar. 15 to Dec. 20, 1916, Mar 17 to Dec. 9, 1917, Mar. 16 to Dec. 6, 1918, Mar. 17 to Dec. 6, 1919, Mar. 22 to Dec. 13, 1920, Mar. 2 to Dec. 9, 1921, and Mar. 5 to Sept. 30, 1922; Trenton Power canal, 210 second-feet daily; and Delaware and Raritan feeder canal, 160 second-feet from Mar. 1 to Dec. 31 of each year.

BEAVER KILL AT COOKS FALLS, N. Y.

LOCATION.—At covered highway bridge in Cooks Falls, Delaware County.

DRAINAGE AREA.—241 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 25, 1913, to September 30, 1922.

GAGE.—Vertical staff in three sections, bolted to rock on left bank under the bridge; read by H. B. Couch.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Coarse gravel, boulders, and solid ledge; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.0 feet at 7 p. m. November 28 (discharge, 7,740 second-feet); minimum stage, 1.20 feet at 11 a. m. and 7 p. m. September 30 (discharge, 92 second-feet).

1913–1922: Maximum stage recorded, 12.4 feet at 5 p. m. October 30, 1917 (discharge, about 9,700 second-feet); minimum stage, 0.70 foot from 7 a. m. October 12 to 7 a. m. October 13, 1916 (discharge, 30 second-feet).

ICE.—Stage-discharge relation somewhat affected by ice.

ACCURACY.—Stage-discharge relation permanent, except as affected by ice from January to February. Rating curve fairly well defined between 60 and 3,000 second-feet. Gage read to hundredths twice daily. Discharge ascertained by applying mean daily gage height to rating table. Records good except for period when stage-discharge relation was affected by ice and for periods of estimate, for which they are fair.

Discharge measurements of Beaver Kill at Cooks Falls, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 18	B. F. Howe	[a]2.19	208	June 5	Granger and Harrington	3.80	988
Feb. 8	do	[a]2.41	208	Aug. 7	B. F. Howe	2.01	238
June 4	Granger and Harrington	4.75	1,570	10	do	1.83	194

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Beaver Kill at Cooks Falls, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	260	260	1,590	260	150		1,330	290	210	830	260	222
2	234	780	1,730	240	360		1,090	260	260	1,460	260	168
3	210	525	3,140	180	700		1,210	260	1,460	1,390	425	168
4	485	465	2,090	280	300	1,200	1,210	290	1,590	730	390	210
5	355	425	1,460	440	220		1,330	1,590	1,330	590	247	199
6	290	408	1,090	500	220		1,460	980	1,460	485	199	199
7	247	372	980	320	220	4,250	1,870	830	1,330	425	222	305
8	247	355	680	400	190	2,160	1,730	780	930	390	290	234
9	338	320	635	320	190	1,520	1,590	550	680	338	234	210
10	290	390	635	240	200	1,090	1,460	465	635	290	188	210
11	260	372	590	190	170	1,150	1,590	425	590	275	168	210
12	635	355	545	160	160	1,040	3,140	390	658	260	159	485
13	465	355	485	200	140	1,040	1,730	355	635	234	168	234
14	372	390	425	180	100	1,520	1,460	320	525	210	142	199
15	338	485	234	160	110	1,390	2,240	305	445	199	134	168
16	305	445	159	160	140	1,270	1,660	260	408	188	126	159
17	290	730	150	130	160	980	1,330	247	390	178	118	142
18	275	1,330	1,730	190	160	750	1,210	234	680	275	118	134
19	290	980	730	200	200	750	1,210	3,400	545	222	260	126
20	1,090	2,240	545	160	280	1,870	1,090	2,020	408	168	168	118
21	880	1,330	525	160	340	1,520	880	1,150	568	159	142	118
22	590	1,090	260	160	360	1,090	830	980	545	150	118	111
23	505	930	210	110	465	880	780	780	525	134	111	104
24	425	1,040	525	120	1,150	980	635	568	445	168	142	104
25	408	980	445	120		1,090	545	465	408	150	210	104
26	372	830	260	120	1,050	1,330	465	485	338	134	545	98
27	372	1,040	320	160		2,240	425	390	305	134	260	98
28	305	6,980	290	150		4,760	390	338	320	525	234	98
29	290	4,050	290	160		3,670	355	320	355	290	199	92
30	270	2,400	260	150	-------	2,320	320	275	305	188	168	92
31	247	-------	234	130	-------	1,660	-------	247	-------	150	222	-------

NOTE.—Discharge for Oct. 30, Feb. 25–28, Mar. 1–6, 18–19, and May 9, estimated from comparison with record of East Branch of Delaware River at Fishs Eddy; gage-height record either missing or doubtful. Discharge, Jan. 1 to Feb. 22, determined from gage-heights corrected for ice effect from two discharge measurements and study of weather records and gage-height graph. Braced figures show mean discharge for periods indicated.

Monthly discharge of Beaver Kill at Cooks Falls, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 241 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	1,090	210	385	1.60	1.84
November	6,980	260	1,090	4.52	5.04
December	3,140	150	750	3.11	3.58
January	500	110	208	.863	.99
February	1,150	100	389	1.61	1.68
March	4,760	750	1,600	6.64	7.66
April	3,140	320	1,220	5.06	5.64
May	3,400	234	653	2.71	3.12
June	1,590	210	643	2.67	2.98
July	1,460	134	365	1.51	1.74
August	545	111	214	.888	1.02
September	485	92	171	.710	.79
The year	6,980	92	641	2.66	36.08

WEST BRANCH OF DELAWARE RIVER AT HALE EDDY, N. Y.

LOCATION.—At highway bridge in Hale Eddy, Delaware County, 8 miles below power dam of Deposit Electric Co. and 8½ miles above junction with East Branch of Delaware River.

DRAINAGE AREA.—603 square miles (measured on topographic maps, and base map of New York, scale 1:500,000).

RECORDS AVAILABLE.—November 15, 1912, to September 30, 1922.

GAGE.—Vertical staff, in four sections, attached to rocks near the right abutment of the bridge and to the abutment; read by W. J. Shanly.

DISCHARGE MEASUREMENTS.—Made from cable installed in July, 1916, 400 feet below gage. Previous measurements made from highway bridge or by wading.

CHANNEL AND CONTROL.—Coarse gravel and boulders; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.3 feet at 8 a. m. November 29 (discharge, 19,000 second-feet); minimum stage, 1.8 feet at 8 a. m. September 30 (discharge, 124 second-feet).

1912–1922: Maximum stage recorded,[8] 15.3 feet at 5 p. m. March 27, 1913 (discharge, 25,000 second-feet); minimum stage, 1.0 foot at 6 p. m. September 21, 1913 (discharge, 34 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined between 50 and 24,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Open-water records good; records for period of ice effect, fair.

Discharge measurements of West Branch of Delaware River at Hale Eddy, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 16	B. F. Howe	[a] 5.93	506	June 6	Granger and Harrington.	4.62	1,760
Feb. 6	do	[a] 6.21	770	Aug. 11	B. F. Howe	2.67	414

[a] Stage-discharge relation affected by ice.

[8] The flood of Oct. 10, 1903, reached a stage of 20.3 feet, corresponding to a discharge of 46,000 second-feet.

Daily discharge, in second-feet, of West Branch of Delaware River at Hale Eddy, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	180	468	5,260	420	300	1,790	2,670	668	468	3,320	640	565
2	165	930	3,560	320	380	1,700	2,070	780	445	3,690	590	515
3	180	810	5,920	300	1,000	1,700	1,970	930	468	3,820	490	515
4	340	695	5,260	380	1,100	1,520	2,470	1,070	2,770	2,670	445	515
5	340	565	4,490	600	950	1,520	2,670	810	2,270	1,880	468	515
6	300	468	3,560	1,300	800	1,520	2,870	930	1,880	1,520	490	468
7	280	515	2,470	950	500	2,870	3,320	1,360	1,440	1,140	468	780
8	300	540	1,610	750	450	10,500	3,820	1,140	1,210	1,000	422	640
9	340	490	1,360	600	400	2,980	3,560	930	1,520	930	468	565
10	380	515	1,210	600	500	2,470	2,870	840	1,360	930	422	468
11	360	468	1,070	600	550	2,270	2,270	750	2,570	750	400	468
12	422	445	870	550	550	2,070	6,820	695	3,560	615	360	695
13	722	468	695	550	440	1,880	5,420	668	2,670	540	300	615
14	468	565	565	500	360	1,970	4,640	615	2,270	468	300	515
15	360	615	515	460	340	1,880	3,690	565	1,700	422	262	490
16	340	615	490	460	300	1,880	3,090	565	1,360	380	228	380
17	380	840	468	380	280	1,970	2,670	615	930	336	228	340
18	400	2,270	490	420	220	2,070	2,980	640	930	356	210	300
19	640	2,270	668	420	220	2,070	2,670	1,210	810	380	380	262
20	840	2,670	930	400	500	2,270	2,270	1,210	750	360	360	195
21	840	2,470	1,070	340	1,700	2,270	1,970	1,000	695	336	245	228
22	695	2,270	930	320	1,800	2,070	1,880	930	1,280	312	195	228
23	750	2,070	810	340	6,500	1,880	1,790	810	1,520	292	195	210
24	668	1,880	722	280	6,270	1,700	1,610	722	1,360	292	360	195
25	615	1,880	722	280	3,820	1,700	1,360	668	1,210	312	590	210
26	565	1,880	722	260	2,270	1,700	1,210	615	1,070	256	930	180
27	468	7,810	700	280	1,970	1,880	1,000	615	930	256	1,070	165
28	380	14,600	650	280	1,880	5,100	930	590	930	220	1,070	165
29	380	18,100	650	300	-------	4,940	810	540	3,320	220	930	150
30	360	8,660	650	320	-------	4,350	668	515	3,560	238	695	137
31	380	-------	550	300	-------	3,320	-------	468	-------	220	615	-------

NOTE.—Discharge, Dec. 27 to Feb. 23, determined from gage-heights corrected for ice effect from two discharge measurements; study of observer's notes, weather records, and gage-height graph; and comparison with records for Fishs Eddy and Port Jervis.

Monthly discharge of West Branch of Delaware River at Hale Eddy, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 603 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	840	165	446	0.740	0.85
November	18,100	445	2,630	4.36	4.86
December	5,920	468	1,600	2.65	3.06
January	1,300	260	460	.763	.88
February	6,500	220	1,300	2.16	2.25
March	10,500	1,520	2,570	4.26	4.91
April	6,820	668	2,600	4.31	4.81
May	1,360	468	789	1.31	1.51
June	3,560	445	1,580	2.62	2.92
July	3,820	220	918	1.52	1.75
August	1,070	195	478	.793	.91
September	780	137	389	.645	.72
The year	18,100	137	1,310	2.17	29.43

PAULINS KILL AT BLAIRSTOWN, N. J.

LOCATION.—At highway bridge in Blairstown, Warren County, 200 feet above mouth of Blairs Creek and 9 miles above mouth of Paulins Kill.

DRAINAGE AREA—128 square miles (measured on topographic map).

RECORDS AVAILABLE—October 20, 1921, to September 30, 1922.

GAGE—Gurley seven-day water-stage recorder on left bank just above bridge. Auxiliary chain gage on upstream side of bridge.

DISCHARGE MEASUREMENTS—Made from bridge or by wading.

CHANNEL AND CONTROL.—Sand and gravel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year 7.0 feet at 4 p. m. March 8 (discharge, 1,800 second-feet); minimum stage, 1.32 feet at 4.30 p. m. October 29 and November 11 (discharge, 4 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Distribution of flow slightly affected by storage in Swartswood Lake and by water power above station.

ACCURACY.—Stage-discharge relation permanent, except for ice-affected days. Rating curve well defined to 1,500 second-feet. Gage read to hundredths twice a day until water-stage recorder was installed May 24. Operation of recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height prior to date of installation of recorder; thereafter by use of discharge integrator. Records excellent after May 24; before that date, fair.

Discharge measurements of Paulins Kill at Blairstown, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 15	Otto Lauterhahn	1.34	4.3	Jan. 31	Otto Lauterhahn	1.65	25.7
Nov. 18	Alexander McMillan	1.59	20.0	Apr. 6	do	3.50	399
18	do	1.93	63	10	do	3.11	291
Dec. 20	Otto Lauterhahn	2.42	138	17	do	3.60	415
20	do	2.45	153	18	do	3.83	462
Jan. 10	do	1.90	56	May 1	do	1.91	60
10	do	1.79	44.3	5	do	4.09	524
31	do	1.57	20.2	Aug. 9	O. W. Hartwell	a 1.93	60

a Hook gage reading.

Daily discharge, in second-feet, of Paulins Kill at Blairstown, N. J., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	-------	62	457	90	60	172	830	126	75	154	56	79
2	-------	50	436	80	330	182	620	124	86	398	62	149
3	-------	47	532	90	620	172	560	109	203	393	72	102
4	-------	44	384	95	399	182	480	147	460	336	79	217
5	-------	56	354	100	268	224	457	480	338	292	96	263
6	-------	50	291	160	202	328	415	399	372	236	80	208
7	-------	40	291	154	202	590	384	304	302	184	73	211
8	-------	45	246	103	192	1,500	368	285	221	157	68	190
9	-------	50	213	111	182	990	341	182	183	323	63	170
10	-------	25	192	98	172	620	316	182	158	273	57	147
11	-------	24	192	75	141	620	280	162	153	201	57	131
12	-------	33	192	43	135	590	328	139	177	158	41	126
13	-------	20	172	114	132	590	291	128	138	134	49	128
14	-------	20	162	96	132	532	268	128	113	119	54	106
15	-------	33	122	126	118	505	505	128	102	107	44	102
16	-------	21	96	100	116	415	457	126	94	102	48	95
17	-------	33	113	36	114	368	399	130	92	90	55	85
18	-------	69	172	34	113	316	457	162	152	85	73	80
19	-------	67	202	34	109	280	384	280	199	142	58	70
20	93	64	152	86	246	532	316	316	146	139	62	65
21	96	78	154	88	415	685	268	213	137	103	68	57
22	75	70	102	118	415	505	268	172	134	90	50	62
23	49	70	128	180	415	415	246	151	116	79	40	57
24	75	70	122	160	532	384	213	138	97	80	57	69
25	69	57	95	90	384	341	202	123	90	84	58	71
26	70	58	100	44	291	304	182	137	85	78	63	59
27	56	29	120	22	246	291	172	123	78	70	80	69
28	45	143	114	26	224	341	162	107	100	78	85	59
29	20	505	111	57	-------	384	149	96	95	82	87	78
30	44	505	110	47	-------	341	141	93	83	61	70	51
31	44	-------	100	57	-------	399	-------	84	-------	64	108	-------

NOTE.—Stage-discharge relation affected by ice Dec. 30, 31, Jan. 1–6, 11 23, 24, 26–28, and Feb. 2; discharge based on observer's notes and temperature and gage-height records. Discharge interpolated Sept. 16–20.

Monthly discharge of Paulins Kill at Blairstown, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 128 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October 20–31	96	20	61.3	0.479	0.21
November	505	20	81.3	.635	.71
December	532	95	201	1.57	1.81
January	180	22	87.5	.684	.79
February	620	60	247	1.93	2.01
March	1,500	172	455	3.55	4.09
April	830	141	349	2.73	3.05
May	480	84	175	1.37	1.58
June	460	75	159	1.24	1.38
July	398	61	158	1.23	1.42
August	108	40	64.9	.507	.58
September	263	51	112	.875	.98
The period	1,500	20	185	1.44	18.61

PEQUEST RIVER AT PEQUEST, N. J.

LOCATION.—At Pequest station, Warren County, on Lehigh & Hudson River Railroad, 100 feet above railroad bridge, 300 feet below mouth of Furnace Brook, and 6¾ miles above mouth of Pequest River.

DRAINAGE AREA.—108 square miles (measured on topographic map).

RECORDS AVAILABLE.—November 7, 1921, to September 30, 1922.

GAGE.—Vertical staff gage attached to face of former bridge abutment on right bank 100 feet above railroad bridge; read by Marcus Beers.

DISCHARGE MEASUREMENT.—Made by wading or from footbridge 15 feet above gage.

CHANNEL AND CONTROL.—Channel fine gravel; control riffle of large stones probably remains of old diversion dam 50 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year from graph, 2.5 feet at 4 a.m. March 8 (discharge, 525 second-feet); minimum stage recorded, 0.49 foot at 7.30 a.m. November 8 (discharge, 28 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 30 and 900 second-feet. Gage read to even hundredths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Pequest River at Pequest, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 7	O. W. Hartwell	0.53	31.2	Feb. 1	Otto Lauterhahn	0.80	59
22	Alexander McMillan	.70	45.0	1	do	.80	59
Dec. 21	Otto Lauterhahn	1.18	118	Mar. 25	do	1.81	281
21	do	1.19	123	25	do	1.79	272
Jan. 11	do	.85	64	Apr. 24	do	1.52	202
11	do	[a].89	66.0	Aug. 9	O. W. Hartwell	.89	72

[a] Stage-discharge relation affected by snow collecting on control.

Daily discharge, in second-feet, of Pequest River at Pequest, N. J., for the year ending Sept. 30, 1922.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		262	85	57	206	414	134	78	180	70	234
2		193	60	277	192	414	134	82	378	80	234
3		293	55	293	168	378	134	134	324	83	168
4		248	68	248	168	378	168	193	340	114	451
5		220	105	293	234	343	309	168	308	105	451
6		193	124	277	326	343	293	168	234	96	378
7	30	168	114	248	326	309	220	156	180	77	378
8	32	145	75	180	489	309	180	105	168	70	343
9	36	134	85	145	451	277	168	114	193	69	293
10	40	124	78	134	451	248	145	105	168	63	234
11	35	124	69	134	489	234	134	114	168	62	193
12	42	124	46	156	527	262	134	114	134	56	180
13	35	124	66	134	489	234	124	105	114	56	180
14	35	114	69	124	451	220	124	88	114	53	145
15	38	105	66	105	414	343	124	80	105	56	134
16	49	74	69	105	378	343	124	75	96	52	124
17	45	206	64	66	309	326	105	69	96	50	114
18	52	145	62	105	248	326	124	96	96	56	105
19	40	168	69	105	220	293	234	105	96	56	105
20	69	134	105	220	378	262	220	96	96	57	96
21	82	124	105	326	378	234	168	96	88	51	105
22	83	70	105	343	378	220	134	96	83	52	88
23	62	88	66	343	378	206	124	88	88	45	88
24	55	86	88	378	309	193	114	77	88	42	88
25	47	124	72	326	292	180	105	74	114	50	85
26	53	85	60	262	248	180	105	69	96	85	85
27	50	105	57	248	234	168	105	75	88	96	78
28	124	75	55	220	248	156	96	82	82	85	80
29	326	88	45	------	234	156	88	78	124	77	75
30	308	52	38	------	220	145	85	78	114	64	75
31	------	83	55	------	248	------	80	------	77	75	------

Monthly discharge of Pequest River at Pequest, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 108 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
November 7-30	326	30	73.6	0.681	0.61
December	293	52	138	1.28	1.48
January	124	38	73.5	.681	.79
February	378	57	209	1.94	2.02
March	527	168	325	3.01	3.47
April	414	145	270	2.50	2.79
May	309	80	146	1.35	1.56
June	193	69	102	.944	1.05
July	378	77	149	1.38	1.59
August	114	42	67.5	.625	.72
September	451	75	180	1.67	1.86
The period	527	30	159	1.47	17.94

BEAVER BROOK NEAR BELVIDERE, N. J.

LOCATION.—500 feet above mouth of brook and 2 miles east of Belvidere, Warren county.

DRAINAGE AREA.—36 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 24, 1922, to September 30 1922.

GAGE.—Gurley seven-day water-stage recorder on right bank; M. F. Hildebrant, observer.

DISCHARGE MEASUREMENTS.—Made by wading at various points or from highway bridge one-fourth mile above gage.

CHANNEL AND CONTROL.—Gravel and ledge. Control is solid rock outcrop 25 feet below gage, improved by having rough cavities filled with concrete, Permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage re-recorder, 2.74 feet at 10 a. m., July 1 (discharge, 186 second-feet); minimum stage from water-stage recorder, 1.33 feet at 11 p. m., August 24 (discharge, 6.0 second-feet).

REGULATION.—Daily distribution of flow often irregular because of operation of small grist mills some distance upstream.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph. Records excellent.

Discharge measurements of Beaver Brook near Belvidere, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 24	Otto Lauterhahn	1.830	27.9
June 2	O. W. Hartwell	1.630	16.8
Aug. 10	Otto Lauterhahn	1.459	9.4

Daily discharge, in second-feet, of Beaver Brook near Belvidere, N. J., for the year ending Sept. 30, 1922.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1		17	57	14	40	16		14	23	8.4	29
2		19	100	14	33	17		13	22	7.4	29
3		21	81	14	26	18		17	22	7.2	30
4		53	93	16	60	19		19	25	7.2	28
5		37	82	15	123	20		16	22	8.7	22
6		33	69	13	134	21		19	19	7.2	20
7		28	56	12	88	22		17	17	8.0	19
8		23	48	12	68	23		15	17	6.4	13
9		21	45	11	56	24	29	14	18	6.2	11
10		18	41	10	50	25	26	13	20	8.4	11
11		20	36	9.7	44	26	27	13	18	25	11
12		21	43	8.7	46	27	24	14	15	27	12
13		17	29	9.4	46	28	22	15	15	20	11
14		15	28	8.4	38	29	20	14	23	17	11
15		15	25	8.7	33	30	21	13	19	15	10
						31	20		15	14	

Monthly discharge of Beaver Brook near Belvidere, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 36 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
May 24-31	29	20	23.6	0.656	0.20
June	53	13	19.5	.542	.60
July	100	15	36.9	1.02	1.18
August	27	6.2	11.9	.331	.38
September	134	10	38.4	1.07	1.19

MUSCONETCONG RIVER NEAR HACKETTSTOWN, N. J.

LOCATION.—500 feet above Delaware, Lackawanna & Western Railroad bridge, half a mile below Saxton Falls dam of Morris Canal, and 3 miles above Hackettstown, Warren County.

DRAINAGE AREA.—70 square miles (measured on topographic map).

RECORDS AVAILABLE.—September 24, 1921, to September 30, 1922.

GAGE.—Inclined staff gage on left bank; read by Mrs. Mary C. Luyster Hulse.

DISCHARGE MEASUREMENTS.—Made from railroad bridge or by wading.

CHANNEL AND CONTROL.—Coarse gravel; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from graph, 4.2 feet at 3 a. m. September 5 (discharge, 720 second-feet); minimum stage recorded, 1.05 feet at 5.30 p. m. May 1 (discharge, 5 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Lake Hopatcong, about 9 miles above this station, is the source of supply for the Morris Canal. There is a complex interchange of water between the canal and the river from the lake down to the Saxton Falls dam, where the canal finally leaves the river and extends westward to Delaware River at Phillipsburg. The canal also extends eastward to Wharton and thence down the Passaic Valley to Newark. The record at this station represents the amount of water left in Musconetcong River by the Morris Canal. See list of discharge measurements of canal.

REGULATION.—Distribution of flow is affected by operation of Morris Canal (see "Diversions").

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Gage read to half-tenths twice daily. Rating curve well defined between 10 and 450 second-feet. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Musconetcong River near Hackettstown, N. J., during the years ending Sept. 30, 1921 and 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1921		*Feet.*	*Sec.-ft.*	1922		*Feet.*	*Sec.-ft.*
Sept. 24	Otto Lauterhahn	1.55	28.6	Jan. 11	Otto Lauterhahn	[a] 1.65	33.8
Oct. 8	do	1.45	22.1	Feb. 1	do	[a] 1.76	22.5
Nov. 8	do	1.62	36.9	Mar. 10	do	3.10	303
22	Alexander McMillan	1.64	36.8	10	do	3.08	296
Dec 6	do	2.10	88.2	Apr. 18	do	2.80	222
31	Otto Lauterhahn	[a] 2.04	37.8	Aug. 9	do	1.65	39.8

[a] Stage-discharge relation affected by ice.

Discharge measurements of Morris Canal (flowing west) during the year ending Sept. 30, 1922.

Date.	Locality.	Discharge.	Date.	Locality.	Discharge.
		Sec.-ft.			*Sec.-ft.*
Dec. 6	Near Hackettstown, N. J	29.2	Jan. 12	At Saxton Falls, N. J	13.4
31	do	14.0	Feb. 1	do	19.4
Aug. 6	do	29.6	Mar. 10	do	15.5
Oct. 8	At Saxton Falls, N. J	34.2	Apr. 8	do	0
Nov. 8	do	14.2			

Daily discharge, in second-feet, of Musconetcong River near Hackettstown, N. J., for the period Sept. 25, 1921, to Sept. 30, 1922.

Day.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		27	26	103	34	16	96	350	7	29	58	41	221
2		24	24	119	30	221	103	350	22	20	128	27	136
3		29	26	197	34	197	103	246	22	76	119	42	136
4		27	18	155	30	136	111	197	20	111	221	41	273
5		20	20	155	55	89	136	197	119	155	246	19	595
6		24	9	103	44	82	150	197	155	155	221	22	333
7		20	24	76	38	76	240	209	128	136	155	18	165
8		22	34	64	30	61	360	221	111	119	136	19	136
9		43	19	58	28	48	333	246	89	96	111	32	119
0		14	27	53	30	35	288	221	45	43	136	30	146
11		18	9	45	34	38	246	175	34	22	119	29	119
12		24	9	45	38	53	221	165	30	38	96	27	89
13		24	14	45	34	76	209	155	34	22	74	26	82
14		15	20	41	38	89	197	155	29	27	58	26	82
15		15	20	29	30	76	175	175	27	21	41	29	74
16		20	14	27	22	82	155	234	29	19	26	25	64
17		18	15	29	26	76	119	221	24	20	29	25	64
18		19	20	89	27	82	111	260	49	38	38	19	52
19		24	15	76	32	89	103	260	221	41	49	34	52
20		35	41	55	58	89	175	246	197	32	41	41	47
21		58	41	51	64	89	197	221	175	34	42	32	48
22		35	35	44	30	76	146	155	103	27	44	27	38
23		16	32	41	26	89	119	155	96	26	35	27	34
24		13	24	43	17	103	111	128	82	20	45	32	34
25	35	10	15	76	17	103	103	119	74	20	49	48	35
26	29	9	32	89	15	96	103	76	66	19	47	48	38
27	26	7	41	53	15	89	103	58	44	22	39	49	37
28	32	9	66	51	15	89	111	53	30	32	39	53	34
29	29	8	197	55	18	-------	76	19	21	26	45	43	33
30	27	10	155	44	16	-------	70	7	21	22	48	44	35
31	-------	16	-------	38	20	-------	103	-------	29	-------	41	111	-------

NOTE.—Stage-discharge relation affected by ice Dec. 22, 29–31, Jan. 1–17, 22–31, and Feb. 1; discharge based on temperature records, observer's notes, study of gage-height record, and comparison with records for Musconetcong River at Bloomsbury.

Monthly discharge of Musconetcong River near Hackettstown, N. J., for the year ending Sept. 30, 1922.

[Drainage area, 70 square miles.]

Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
October	58	7	21.1
November	197	9	34.7
December	197	27	69.3
January	64	15	30.5
February	221	16	87.3
March	360	70	157
April	350	7	182
May	221	7	68.8
June	155	19	48.9
July	246	26	83.1
August	111	18	35.0
September	595	33	112
The year	595	7	77.2

NOTE.—Water diverted to Morris Canal not included in above table.

MUSCONETCONG RIVER NEAR BLOOMSBURY, N. J.

LOCATION.—At highway bridge 1½ miles above Bloomsbury, Hunterdon County, and 9 miles above mouth of river.

DRAINAGE AREA.—143 square miles (revised measurement on topographic map).

RECORDS AVAILABLE.—July 4, 1903, to March 31, 1907; and from July 26, 1921, to September 30, 1922.

GAGE.—Gurley seven-day water-stage recorder in concrete shelter on right bank just below bridge; operated by Howard Person. Auxiliary vertical staff gage in downstream side of right bridge abutment. Not at datum used 1903 to 1907.

DISCHARGE MEASUREMENT.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Channel gravel. Control gravel riffle 150 feet below gage. Banks are overflowed at high stages.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.93 feet at 4 p. m. February 2 (discharge, 1,450 second-feet); minimum stage recorded, 0.73 foot at 4 a. m. November 19 (discharge, 21 second-feet).

1903–1907, 1921–1922: Maximum stage recorded, 8.0 feet (1903–7 datum) October 10 or 11, 1903; minimum stage 0.73 foot November 19, 1921 (discharge, 21 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—Lake Hopatcong at the head of Musconetcong River is the source of supply for the Morris Canal. Through this canal water passes westward to Delaware River at Phillipsburg and eastward down the Passaic Valley to Newark. Water left in the Musconetcong by the canal is measured by the gaging station near Hackettstown.

REGULATION.—Distribution of flow affected by several small water powers above the station.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined between 75 and 1,000 second-feet. Gage read to hundredths twice a day July 26 to September 22, 1921; operation of water-stage recorder satisfactory during remainder of period. Daily discharge ascertained by applying to rating table mean daily gage height for staff readings and by use of discharge integrator on water-stage recorder graph. Records good.

COOPERATION.—Station established in cooperation with the Warren Manufacturing Co.

Discharge measurements of Musconetcong River near Bloomsbury, N. J., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 14	Otto Lauterhahn	1.13	85	Jan. 30	Otto Lauterhahn	1.18	97
Nov. 21	Alexander McMillan	[a] 1.25	103	30	do	1.20	100
21	do	1.29	108	Mar. 2	do	1.74	257
Dec. 29	Otto Lauterhahn	1.29	111	11	do	2.40	472
29	do	1.32	117	11	do	2.40	479
Jan. 9	do	1.24	114	June 6	do	1.85	300
9	do	1.26	116	Aug. 10	O. W. Hartwell	1.33	138

[a] Some leaves on the control.

Daily discharge, in second-feet, of Musconetcong River near Bloomsbury, N. J., for the years ending Sept. 30, 1921 and 1922.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1921.				1921.				1921.			
1		75	84	11		114	107	21		71	93
2		77	84	12		102	102	22		77	226
3		137	84	13		102	107	23		79	141
4		114	71	14		93	97	24		79	94
5		112	84	15		97	107	25		84	87
6		102	86	16		88	77	26	102	81	106
7		307	156	17		90	84	27	84	81	78
8		178	107	18		84	84	28	88	84	77
9		150	95	19		93	97	29	84	88	90
10		121	86	20		79	75	30	93	90	72
								31	75	84	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921–22.												
1	97	63	248	101	76	253	636	127	116	643	163	350
2	70	121	235	84	1,010	243	515	115	134	440	146	241
3	80	94	381	103	453	229	480	131	235	473	208	184
4	88	79	317	97	358	217	445	176	320	498	192	618
5	87	84	274	145	290	314	427	333	265	500	172	723
6	80	90	218	166	304	310	386	307	303	429	144	461
7	74	74	176	131	284	437	403	271	278	353	131	320
8	56	71	170	110	244	830	398	244	228	295	129	270
9	75	96	162	113	227	656	405	226	209	285	118	122
10	80	92	138	102	212	521	394	197	167	270	129	200
11	58	104	141	95	147	484	365	164	150	220	122	200
12	70	82	113	107	170	452	369	157	145	208	103	193
13	75	56	124	145	172	400	317	156	120	184	103	164
14	68	58	120	104	156	375	221	148	116	185	103	159
15	70	71	108	96	149	357	514	154	112	167	114	154
16	66	72	100	102	150	327	395	153	100	156	108	152
17	81	74	102	96	132	290	420	144	108	148	114	135
18	76	76	169	90	142	262	446	203	127	144	113	139
19	72	59	172	91	139	248	435	263	142	165	104	120
20	103	86	143	124	575	453	428	365	124	139	120	130
21	119	110	133	139	237	423	410	332	126	140	117	115
22	98	97	94	135	323	349	362	266	130	148	101	130
23	88	92	115	127	366	301	326	216	120	148	96	124
24	63	81	143	116	398	278	295	208	108	157	111	116
25	56	81	169	114	321	263	272	202	97	172	104	114
26	65	78	131	110	282	246	250	172	103	159	140	113
27	73	80	133	110	317	243	210	136	98	151	146	116
28	63	185	116	86	282	172	199	127	128	143	155	113
29	62	454	117	84		256	183	133	118	156	132	104
30	57	323	92	84		225	150	110	102	143	114	100
31	60		108	84		268		116		153	118	

Monthly discharge of Musconetcong River near Bloomsbury, N. J., for the years ending Sept. 30, 1921 and 1922.

[Drainage area, 143 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1921.					
July 26-31	102	75	87.7	0.613	0.14
August	307	71	104	.727	.84
September	226	71	97.9	.685	.75
1921-22.					
October	119	56	75.2	.526	.61
November	454	56	106	.741	.83
December	381	92	160	1.12	1.29
January	145	84	109	.762	.88
February	1,010	76	286	2.00	2.08
March	830	172	345	2.41	2.78
April	636	150	369	2.58	2.88
May	365	110	195	1.36	1.57
June	320	97	155	1.08	1.20
July	643	139	244	1.71	1.97
August	208	96	128	.895	1.03
September	723	100	206	1.44	1.61
The year	1,010	56	198	1.38	18.73

NOTE.—No allowance made for diversion by Morris Canal from headwaters of river.

NORTH BRANCH OF RANCOCAS CREEK AT PEMBERTON, N. J.

LOCATION.—Near highway bridge at Pemberton, Burlington County, 11 miles above confluence with South Branch.

DRAINAGE AREA.—111 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 15, 1921, to September 30, 1922.

GAGE.—Vertical staff on left bank 800 feet downstream from bridge; read by William Jones.

DISCHARGE MEASUREMENT.—Made by wading near gage.

CHANNEL AND CONTROL.—Sand, shifting. Banks are overflowed at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.70 feet at 4 p. m. February 2; minimum stage, 0.10 foot at 5 p. m., October 20.

REGULATION.—Distribution of flow affected by small power plants at Pemberton and Browns Mills.

Discharge measurements of North Branch of Rancocas Creek at Pemberton, N. J. during the years ending Sept. 30, 1921 and 1922.

[Made by O. Lauterhahn.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1921.	*Feet.*	*Sec.-ft.*	1921.	*Feet.*	*Sec.-ft.*	1922.	*Feet.*	*Sec.-ft.*
Sept. 15	0.54	52.1	Nov. 29	1.68	82.5	Aug. 16	1.61	93.2
Oct. 12	1.10	78.8	29	1.69	88.6	16	1.56	90
12	1.22	82.0						

Daily gage height, in feet, of North Branch of Rancocas Creek at Pemberton, N. J., for the years ending Sept. 30, 1921 and 1922.

Day.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	-------	0.61	1.12	1.58	1.57	1.60	2.45	2.68	0.73	0.65	1.36	1.84	1.84
2	-------	1.03	1.21	1.45	1.60	3.63	2.48	2.37	.84	1.08	1.89	2.52	1.77
3	-------	.63	1.06	1.78	1.45	3.07	2.37	2.59	.92	1.42	1.95	3.20	1.71
4	-------	.90	1.11	1.81	1.67	3.01	2.79	2.42	1.52	1.57	2.28	4.00	1.61
5	-------	.97	1.22	1.67	1.50	2.81	3.05	1.99	2.84	1.37	2.97	3.72	1.84
6	-------	.67	.80	1.69	1.35	2.58	3.12	1.81	2.81	1.83	2.91	3.25	1.63
7	-------	.37	1.09	1.68	1.42	2.51	3.05	2.03	2.59	2.05	2.89	2.39	1.37
8	-------	.53	.68	1.67	1.47	2.45	3.55	2.15	2.06	1.91	2.49	2.87	1.40
9	-------	.77	1.03	1.68	1.47	2.31	3.85	2.05	1.63	1.76	2.23	2.33	1.35
10	-------	.73	1.41	1.68	1.38	2.08	3.75	1.78	1.67	1.43	2.29	1.98	1.33
11	-------	.36	1.38	1.53	1.82	2.08	3.68	1.54	2.06	.92	2.09	1.72	1.29
12	-------	.96	1.40	1.58	2.30	2.07	3.65	2.15	2.57	.85	1.90	1.83	1.42
13	-------	.90	1.56	1.67	1.93	2.24	3.80	2.91	2.38	.68	3.19	1.86	1.46
14	-------	.67	1.49	1.63	1.93	2.13	3.62	2.56	1.95	.68	3.46	1.90	1.63
15	0.40	.68	1.37	1.73	1.76	2.22	3.58	2.15	1.46	.70	2.58	1.74	1.39
16	.38	.80	1.16	1.51	1.67	2.07	3.24	1.90	1.35	.71	2.31	1.64	1.36
17	.54	.66	1.54	1.44	1.39	2.06	3.15	1.53	1.10	.47	1.98	1.45	1.16
18	.52	.71	1.47	1.70	1.29	2.05	2.29	1.45	1.57	.74	1.30	1.56	1.13
19	.60	.50	1.47	1.69	1.50	2.05	2.40	1.65	2.24	.69	1.54	1.46	1.20
20	.31	.41	1.85	1.51	1.53	2.65	2.84	1.92	2.46	.59	1.52	1.59	1.10
21	.56	.51	1.76	1.60	1.71	2.62	2.56	1.63	2.34	.78	1.71	1.37	1.12
22	.76	.59	1.68	1.66	1.77	2.53	2.47	1.64	1.87	1.03	1.66	1.27	1.12
23	.80	.86	1.52	1.50	1.69	2.13	2.62	1.63	1.86	1.01	1.66	1.33	.98
24	.70	.90	1.60	1.76	1.56	2.11	1.66	1.29	.93	.77	1.29	1.13	.97
25	.59	.93	1.56	1.87	1.45	2.00	1.92	1.17	.87	1.30	1.76	1.07	1.04
26	.33	.90	1.47	1.86	1.58	1.84	1.85	1.15	.87	1.40	1.61	1.17	.79
27	.65	.87	1.58	1.68	1.67	2.38	1.68	1.59	1.19	1.35	1.74	1.52	.93
28	.74	.88	1.46	1.67	1.84	2.90	1.60	1.48	1.11	.98	2.76	2.21	1.06
29	.82	.93	1.81	1.57	1.78	-------	1.72	1.15	.84	.80	3.05	2.14	.92
30	.60	1.15	1.70	1.64	1.63	-------	1.69	1.03	.86	.98	2.26	2.23	.86
31	-------	1.17	-------	1.37	1.50	-------	1.55	-------	.93	-------	1.94	1.87	-------

SUSQUEHANNA RIVER BASIN.

SUSQUEHANNA RIVER AT CONKLIN, N. Y.

LOCATION.—At steel highway bridge just below Conklin, Broome County, 5 miles below Big Snake Creek and 8 miles above Chenango River.

DRAINAGE AREA.—2,350 square miles.

RECORDS AVAILABLE.—November 13, 1912, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank just below bridge. Recorder inspected by George W. Marvin.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Coarse gravel and boulders; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 16.03 feet from 8 a. m. to 10 a. m., November 29 (discharge, 39,900 second-feet); minimum stage from water-stage recorder, 2.31 feet from 8 a. m. to 9 a. m., October 1 (discharge, 416 second-feet).

1912–1922: Maximum stage recorded, 18.3 feet on the morning of March 28, 1913 (discharge, 52,000 second-feet); minimum stage, 1.32 feet at 8.20 a. m. and 4 p. m., September 16, 1913 (discharge, 106 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

ACCURACY.—Stage-discharge relation changed at time of high water November 29. Rating curve used before that time well defined between 250 and 55,000 second-feet; that used after the change fairly well defined between 400 and 40,000 second-feet. Stage-discharge relation affected by ice from December to February. Operation of water-stage recorder satisfactory except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph, or for days of considerable fluctuation, by averaging discharge for intervals of the day. Records good except for periods of ice effect and estimate, for which they are fair.

Discharge measurements of Susquehanna River at Conklin, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 13	B. F. Howe	[a] 4.54	1,360	Aug. 13	B. F. Howe	3.38	1,160
Feb. 3	do	[a] 5.78	2,240	15	do	2.95	738
June 7	Granger and Harrington	5.82	4,890				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Susquehanna River at Conklin, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	470	1,100	16,900	1,400	1,400	5,500	10,700	2,490	1,230	7,540	688	1,740
2	440	2,280	11,500	1,300	1,200	5,000		2,200	1,140	9,480	716	1,620
3	458	2,280	12,800	2,000	2,600	4,800		2,000	2,760	8,740	702	1,450
4	593	2,510	13,000	2,600	4,800	3,300		1,930	7,540	8,020	790	1,620
5	691	2,140	10,700	3,400	3,800	2,720	12,000	2,270	6,380	7,070	1,010	1,800
6	733	1,810	8,420	6,000	2,800	2,960		6,380	5,270	5,490	1,040	1,500
7	698	1,750	6,980	6,500	2,400	9,380		5,930	5,350	4,240	936	1,500
8	656	1,630	5,830	5,000	2,200	26,800	15,100	5,930	3,390	3,660	1,160	1,400
9	775	1,520	4,720	3,000	2,000	22,300	14,200	4,960	2,640	3,130	2,420	1,200
10	775	1,690	4,020	2,200	1,700	12,900	13,400	3,940	3,050	2,720	2,060	1,060
11	796	2,070	4,000	1,900	1,400	10,200	11,500	3,390	10,500	2,340	1,500	962
12	1,220	2,360	3,900	1,200	1,600	8,980	14,200	2,960	17,700	2,130	1,200	1,250
13	1,180	2,440	3,720	1,200	2,000	7,780	16,400	2,640		1,800	995	1,620
14	1,070	2,590	3,280	1,500	1,800	8,980	13,100	2,340		1,620	853	1,450
15	1,030	3,500	2,930	1,700	1,700	11,500	11,800	2,060	9,500	1,500	775	1,240
16	938	3,680	2,510	1,900	1,500	11,200	13,700	1,860		1,340	738	1,110
17	842	3,500	2,000	1,700	1,500	8,740	12,000	1,740	4,740	1,180	695	1,010
18	719	5,780	4,140	1,600	1,200	6,610	11,800	1,620		1,140	611	978
19	698	7,800	5,930	1,200	1,200	5,060	11,800	1,900		1,170	723	877
20	1,140	11,100	4,640	1,300	2,600		9,980	4,030		1,120	853	837
21	2,240	12,300	3,300	1,800	6,000	6,500	8,500	4,140	6,500	1,020	970	805
22	3,240	9,500	2,130	1,800	8,500		7,780	3,040		944	782	752
23	2,750	7,100	2,270	1,800	14,000		6,840	2,560		910	646	730
24	2,210	5,940	2,000	1,600	20,000		6,150	2,130	13,700	970	883	695
25	1,810	6,860	2,400	1,400	16,000	6,150	5,490	1,930	11,000	970	2,760	702
26	1,460	7,100	2,000	1,400	10,200	9,500	4,740	2,060	8,020	1,060	4,620	650
27	1,350	7,920	1,900	1,400	9,000		4,140	2,270	6,380	978	5,490	550
28	1,180	26,400	1,800	1,400	8,500		3,660	2,060	5,930	928	3,660	507
29	1,130	39,300	1,700	1,400			3,220	1,620	12,800	861	3,220	471
30	1,040	31,800	1,600	1,400			2,800	1,450	9,980	768	2,640	441
31	1,090		1,700	1,300				1,340		760	2,060	

NOTE.—Discharge for the following periods, when the water-stage recorder did not operate satisfactorily, estimated principally from the record of Chenango River at Chenango Forks: Mar. 20–24, 26–31, Apr. 2–7, June 13–16, 18–23, Oct. 27, Feb. 27, 28, Mar. 1, 2, 3, June 25, and Sept. 26 and 27. Mean daily gage-height, Oct 26, Jan. 26, Mar. 19, and Apr. 12 estimated from gage-height graph; Mar. 25, Apr. 1, 8–11, June 17, 24, 29, 30, and July 1 and 2 estimated from observer's readings. Discharge, Dec. 25 to Feb. 25, determined from gage-heights corrected for ice effect from two discharge measurements, study of weather records, and comparison with record of Chenango River. Braced figures show mean discharge for periods indicated.

Monthly discharge of Susquehanna River at Conklin, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 2,350 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	3,240	440	1,140	0.485	0.56
November	39,300	1,100	7,260	3.09	3.45
December	16,900	1,600	4,990	2.12	2.44
January	6,500	1,200	2,110	.898	1.04
February	20,000	1,200	4,770	2.03	2.11
March	26,800	2,720	8,720	3.71	4.28
April	16,400	2,800	10,200	4.34	4.84
May	6,380	1,340	2,810	1.20	1.38
June	17,700	1,140	7,220	3.07	3.42
July	9,480	760	2,760	1.17	1.35
August	5,490	611	1,550	.660	.76
September	1,740	441	1,080	.460	.51
The year	39,300	440	4,530	1.93	26.14

CHENANGO RIVER NEAR CHENANGO FORKS, N. Y.

LOCATION.—1½ miles below Tioughnioga River, 2 miles by road below Chenango Forks, Broome County, and 11½ miles above Binghamton and mouth of river.

DRAINAGE AREA.—1,420 square miles. See "Diversions."

RECORDS AVAILABLE.—November 11, 1912, to September 30, 1922.

GAGE.—Stevens water-gage recorder on the left bank on the farm of Erastus Ingraham; inspected by Erastus Ingraham.

DISCHARGE MEASUREMENTS.—Made from cable 100 yards above gage or by wading.

CHANNEL AND CONTROL.—Sand, gravel, and small cobblestones; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 11.82 feet at 7.30 a. m. February 24 (stage-discharge relation affected by ice); maximum discharge, 21,400 second-feet, at 8 p. m. June 12. Minimum stage, 2.45 feet at 8 a. m. October 1 (discharge, 212 second-feet).

1912–1922: Maximum stage recorded, 13.7 feet on afternoon of March 27, 1913 (discharge, 35,500 second-feet); minimum stage, 2.20 feet several times in August and September, 1913 (discharge, 92 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—The run-off from 87.3 square miles at head of Chenango River and from 15.7 square miles at head of Tioughnioga River is stored in reservoirs and, except for discharge over the spillways, is diverted out of the drainage area to the Erie Canal. The above-mentioned drainage area for Chenango River does not include these two areas.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by ice from December to March, until June 18 when there probably was a slight change at the low-water end of the curve. The previous rating was revised to agree more closely with the current discharge measurements and new rating used from October 1 to June 18, when the low-water end was revised. Rating curves fairly well defined between 200 and 20,000 second-feet. Operation of water-stage recorder satisfactory except for periods noted in footnote to daily-discharge table. Daily discharge ascertained by applying to the rating table the mean daily gage height, determined by inspecting gage-height graph or for days of considerable fluctuation, by averaging the discharge for intervals of the day. Records good except for periods of ice effect and estimate, for which they are fair.

Discharge measurements of Chenango River near Chenango Forks, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 14	B. F. Howe	[a] 5.68	1,240	June 8	Granger and Harrington.	3.80	1,600
Feb. 4	do	[a] 5.50	1,800				
Mar. 20	do	4.88	3,600	Aug. 14	B. F. Howe	3.10	657

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Chenango River near Chenango Forks, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	228	358	6,620	1,200	650	3,800	8,740	1,620	700	5,440	552	2,350
2	249	1,300	5,320	750	700	3,200	8,160	1,450	787	9,040	590	1,810
3	266	2,090	7,170	1,000	1,600	3,200	7,170	1,340	3,530	7,590	630	1,390
4	238	1,520	5,450	1,600	1,700	2,400	9,640	1,510	4,600	7,120	714	1,790
5	284	1,340	4,150	2,400	1,300	2,200	8,740	4,620	2,720	4,720	876	1,920
6	266	1,380	3,500	3,600	1,000	2,200	9,040	3,820	2,180	3,610	725	1,450
7	238	1,170	3,000	1,900	1,100	7,160	8,740	3,400	2,350	2,900	981	1,600
8	238	1,150	2,720	1,300	900	19,700	9,640	3,400	1,630	2,350	2,720	1,290
9	295	1,100	2,180	1,000	700	15,500	8,160	2,620	1,330	2,090	2,450	1,120
10	308	2,130	2,090	700	700	11,800	6,900	2,180	1,230	1,820	1,390	1,020
11	326	3,100	2,090	750	700	8,450	5,830	1,890	4,580	1,580	1,040	939
12	308	2,440	2,000	650	1,000	6,220	8,160	1,680	18,100	1,400	864	2,310
13	345	2,350	1,900	700	950	5,960	7,310	1,510	14,800	1,290	758	1,960
14	345	2,000	1,660	1,200	700	7,870	5,700	1,380	7,870	1,160	681	1,360
15	308	2,530	1,450	1,200	650	9,640	9,530	1,270	5,200	1,060	620	1,160
16	238	2,620	1,160	1,300	650	7,870	10,200	1,150	3,820	965	580	1,060
17	266	2,880	1,300	1,100	400	5,320	7,450	1,030	3,000	926	543	952
18		7,500	2,810	1,200	400	3,930	8,160	1,030	3,400	1,480	525	840
19		6,760	3,400	800	500	3,400	6,620	1,860	4,490	1,160	1,070	758
20	850	7,870	2,090	850	950	4,270	5,450	3,200	3,200	978	864	714
21		6,900	1,780	1,300	3,000	6,760	5,080	2,180	3,300	852	670	714
22		4,840	1,450	1,000	4,800	5,580	4,600	1,700	8,450	769	580	650
23	910	3,720	1,300	750	11,000	4,260	4,040	1,420	9,640	736	534	620
24		3,610	1,380	700	16,000	4,150	3,610	1,190	8,740	913	8,040	561
25		5,320	1,450	750	11,000	4,260	3,100	1,380	6,360	804	6,510	543
26	550	4,150	1,390	700	7,000	4,600	2,810	2,090	4,600	714	10,200	525
27		6,060	1,360	700	6,500	6,490	2,440	1,520	3,610	640	5,700	489
28		15,000	1,300	700	5,500	10,500	2,260	1,150	4,490	630	3,720	456
29		13,800	1,300	750	-------	11,500	2,000	970	4,720	620	3,000	440
30	394	9,340	1,300	700	-------	8,450	1,820	852	5,080	543	2,530	408
31	358	-------	1,300	650	-------	6,620	-------	784	-------	507	2,090	-------

NOTE.—Gage-heights from staff gage used Oct. 1 to Nov. 2; no record for recorder. Discharge estimated for the following periods from comparison with record of Susquehanna River at Conklin: Oct. 18–22, 24–29. Mean daily gage-height for Dec. 16, 22–25, Jan. 3–5, 24–27, Mar. 9–11, Apr. 1, 4–9, June 14, 17, 18, 20, 21, and 27 estimated from recorder graph; water-stage recorder not operating satisfactorily. Discharge, Dec. 28 to Mar. 6, determined from gage heights corrected for ice effect from two discharge measurements, study of weather record and gage-height graph, and comparison with record of Susquehanna River at Conklin. Braced figures show mean discharge for periods indicated.

Monthly discharge of Chenango River near Chenango Forks, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 1,420 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	910	228	450	0.317	0.37
November	15,000	358	4,210	2.96	3.30
December	7,170	1,160	2,500	1.76	2.03
January	3,600	650	1,090	.768	.89
February	16,000	400	2,930	2.06	2.14
March	19,700	2,200	6,690	4.71	5.43
April	10,200	1,820	6,370	4.49	5.01
May	4,620	784	1,850	1.30	1.50
June	18,100	700	4,950	3.49	3.89
July	9,040	507	2,140	1.51	1.74
August	10,200	525	2,020	1.42	1.64
September	2,350	408	1,110	.782	.87
The year	19,700	228	3,010	2.12	28.81

TIOGA RIVER NEAR ERWINS, N. Y.

LOCATION.—At highway bridge one-quarter mile below mouth of Canisteo River, near Erwins, Steuben County, and 3 miles above junction of Tioga and Cohocton rivers, which form Chemung River at Painted Post.

DRAINAGE AREA.—1,320 square miles (furnished by Robert O. Hayt).

RECORDS AVAILABLE.—July 12, 1918, to September 30, 1922.

GAGE.—Chain near left abutment, downstream side of bridge; read by Loren King until December 31, and by Jane Sexton from January 1 to September 30.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of well-compacted gravel; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.22 feet at 4.20 p. m. November 28 (discharge, 21,900 second-feet); minimum stage, 1.18 feet several times in October and September (discharge, 136 second-feet).

1918–1922: Maximum stage recorded, 16.4 feet at 4 p. m. May 22, 1919 (beyond the limits of present rating curve); minimum stage, 0.80 foot several times August 24 to September 2, 1921 (discharge, 30 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Storage not sufficient to affect the seasonal flow.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by ice. The old rating curve was revised at low stages only and new rating used during entire year. Rating curve well defined between 100 and 13,000 second-feet; extended beyond these limits. Gage read to quarter-tenths twice daily. Daily-discharge ascertained by applying mean daily gage height to rating table. Open-water records good; records for period of ice effect and when gage was not read, fair.

COOPERATION.—Station established in cooperation with Lamoka Power Corporation (Robert O. Hayt, chief engineer).

Discharge measurements of Tioga River near Erwins, N. Y., during the year ending Sept. 30, 1922.

Date.[a]	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 11	B. F. Howe	[a] 2.05	457	June 9	Granger and Harrington	2.50	950
Feb. 1	do	[a] 1.90	230	Aug. 16	B. F. Howe	1.21	147
Mar. 16	do	4.98	4,350				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Tioga River near Erwins, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	207	170	3,750	600	280	940	6,160		378	1,840	161	420
2	161	5,960	4,090	380	300	940	4,270		426	2,080	230	297
3	198	1,730	3,150	420	1,000	740	4,810		10,700	2,920	342	225
4	178	1,330	2,210	460	1,000	820	8,620	850	7,680	3,080	302	189
5	157	1,090	1,960	900	750	860	6,370		3,240	1,620	342	402
6	157	900	1,620	3,400	650	900	4,270		2,620	1,240	330	420
7	136	780	1,330	1,200	650	6,580	3,750	1,960	2,210	980	275	360
8	146	700	1,200	750	550	10,400	3,240	1,620	1,420	820	1,330	302
9	161	650	1,060	600	550	3,240	2,920	1,280	1,060	700	1,060	265
10	172	1,630	980	550	440	2,770	3,080	1,060	1,060	590	590	235
11	161	1,520	900	480	480	3,920	2,620	940	1,730	534	420	202
12	184	1,240	940	600	1,500	3,920	3,580	820	9,870	450	342	980
13	207	1,020	900	550	1,100	5,560	2,770	740	3,240	426	286	1,060
14	216	980	780	750	800	9,110	2,080	660	1,960	492	250	700
15	176	1,240	660	800	600	6,370	4,270	625	1,420	390	225	534
16	150	1,420	590	550	550	4,270	3,240	576	1,100	336	161	426
17	150	1,380	660	400	240	2,480	2,480	527	1,200	319	184	360
18	142	7,010	2,770	300	240	1,840	6,370	485	3,750	319	202	308
19	165	3,240	1,620	340	240	1,620	3,750	1,150	1,730	302	207	275
20	184	2,550	1,100	460	700	1,620	2,920	1,330	1,280	297	250	189
21	202	1,840	1,020	900	1,300	1,620	2,210	940	1,060	260	255	216
22	184	1,520	650	750	2,000	1,280	1,730	780	2,620	230	198	207
23	188	1,280	650	600	9,610	1,150	1,620	740	2,210	225	180	216
24	198	1,280	750	550	10,700	1,240	1,330	700	1,280	245	220	189
25	198	2,620	700	460	3,750	1,330	1,100	625	940	297	478	180
26	184	3,240	600	460	1,960	1,960	1,020	980	780	255	330	165
27	202	5,960	600	400	1,620	3,580	980	820	660	230	520	157
28	165	21,400	550	400	1,420	8,620	940	625	5,560	207	324	157
29	146	8,620	360	400	-------	6,580	820	527	3,240	189	286	150
30	165	4,810	400	320	-------	3,920	780	464	1,960	176	255	136
31	165	-------	750	300	-------	3,080	-------	402	-------	176	225	-------

NOTE.—Discharge, May 1-6, estimated from comparison with records of Chemung and Cohocton rivers Oct. 4, 12, 20, 23, 24, Nov. 1, Dec. 25, Jan. 22, and Feb. 21 estimated, as indicated in above table, by interpolation and otherwise; no gage-height record. Discharge, Dec. 22 to Feb. 22, determined from gage-heights corrected for ice effect from two discharge measurements, study of weather records and gage-height graph, and comparison with records of Chemung and Cohocton rivers.

Monthly discharge of Tioga River near Erwins, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 1,320 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	216	136	174	0.132	0.15
November	21,400	170	2,970	2.25	2.51
December	4,090	360	1,270	.962	1.11
January	3,400	300	646	.489	.56
February	10,700	240	1,610	1.22	1.27
March	10,400	740	3,330	2.52	2.90
April	8,620	780	3,140	2.38	2.66
May	1,960	402	854	.647	.75
June	10,700	378	2,610	1.98	2.21
July	3,080	176	717	.543	.63
August	1,330	161	347	.263	.30
September	1,060	136	331	.251	.28
The year	21,400	136	1,490	1.13	15.33

CHEMUNG RIVER AT CHEMUNG, N. Y.

LOCATION.—At new highway bridge midway between Chemung, Chemung County, N. Y., and Willawana, Pa., half a mile upstream from State line and 10 miles above mouth.

DRAINAGE AREA.—2,440 square miles.

RECORDS AVAILABLE.—September 7, 1903, to September 30, 1922.

GAGE.—Tape gage at upstream side of right span of bridge; read by D. L. Orcutt from October 1 to November 15, and April 1 to September 30 and by R. C. Farrow from November 16 to March 31.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Sand and gravel; occasionally shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.36 feet at 8 a. m. March 8 (discharge, 30,800 second-feet); minimum stage, 1.90 feet at 6.30 a. m. October 10 (discharge, 205 second-feet).

1903–1922: Maximum stage recorded, 17.96 feet at 7 a. m. March 15, 1918 (discharge, about 67,000 second-feet); minimum stage, 1.47 feet at 7 a. m. August 14, 1911 (discharge, about 49 second-feet).

ICE.—Stage-discharge relation affected by ice.

ACCURACY.—Stage-discharge relation changed at time of spring break-up February 24. Rating curve used before the change fairly well defined between 200 and 45,000 second-feet; that used after the change fairly well defined between the same limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for period when stage-discharge relation was affected by ice, for which they are fair.

Discharge measurements of Chemung River at Chemung, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 12	B. F. Howe	[a] 2.77	586	July 4	C. C. Covert	6.68	7,720
Feb. 2	do	[a] 3.03	582	20	do	2.50	646
Mar. 16	do	6.78	8,260	Aug. 16	B. F. Howe	2.31	447
June 9	Granger and Harrington	3.77	2,100				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Chemung River at Chemung, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	280	260	6,980	905	650	2,150	10,000	1,200	571	3,280	385	571
2	270	2,280	5,510	660	600	1,620	10,000	1,100	610	7,010	471	648
3	280	4,420	6,720	950	900	1,620	7,280	985	10,100	7,280	571	536
4	300	2,280	4,840	995	1,700	1,620	14,200	1,040	15,700	8,140	610	502
5	265	1,590	3,630	1,300	1,700	1,500	14,600	2,010	6,490	4,240	571	2,440
6	260	1,410	2,740	6,470	1,300	1,750	9,380	2,600	4,650	2,930	571	1,380
7	241	1,140	2,280	2,600	1,200	10,700	7,280	3,100	3,840	2,150	536	930
8	550	995	1,990	1,500	1,200	24,800	6,750	2,600	2,760	1,750	733	733
9	255	950	1,720	1,100	1,100	8,140	5,760	2,010	2,010	1,500	2,290	648
10	232	995	1,590	1,000	950	6,000	5,760	1,750	1,750	1,320	1,260	536
11	265	2,580	1,410	850	900	5,760	4,860	1,500	2,010	1,100	930	471
12	280	1,850	1,410	550	1,600	8,140	6,490	1,320	13,100	930	733	536
13	290	1,720	1,470	650	2,800	9,060	5,530	1,150	7,280	827	610	2,290
14	336	1,410	1,350	750	2,000	18,800	4,440	1,040	4,040	780	536	1,320
15	330	1,410	1,090	950	1,500	13,800	5,080	985	2,760	780	502	1,040
16	312	2,280	820	900	1,200	9,060	7,280	878	2,010	690	440	878
17	285	1,850	820	900	900	5,760	5,080	827	1,880	610	412	733
18	260	4,020	1,470	800	1,600	8,440	8,440	780	10,000	610	385	648
19	265	5,740	4,020	750	1,100	3,280	7,010	930	5,080	610	536	571
20	290	4,630	1,850	700	1,800	2,930	4,860	2,010	3,460	571	412	536
21	360	3,820	1,590	1,100	6,500	2,930	4,440	1,750	2,440	536	440	502
22	530	2,740	1,190	1,300	5,980	2,600	3,460	1,380	7,010	502	412	471
23	485	2,280	950	1,200	14,900	2,150	2,930	1,200	8,140	536	360	440
24	420	1,990	1,190	950	19,200	2,150	2,600	985	4,240	571	502	440
25	372	3,630	1,240	950	7,560	2,290	2,150	878	2,760	690	1,500	385
26	336	2,910	1,040	900	5,080	2,760	2,010	1,100	2,010	610	1,150	360
27	300	3,440	905	850	3,840	4,440	1,750	1,440	1,620	536	1,320	336
28	290	23,800	995	800	3,100	13,500	1,620	1,040	8,440	502	1,040	336
29	260	20,000	950	750	-------	12,000	1,440	827	6,750	471	878	336
30	250	10,300	860	700	-------	7,850	1,260	733	5,300	440	780	314
31	241	-------	820	700	-------	6,000	-------	648	-------	412	648	-------

NOTE.—Discharge, Jan. 7 to Feb. 21, determined from gage heights corrected for ice effect from two discharge measurements; study of observer's notes, weather records, and gage-height graph; and comparison with records of Tioga and Cohocton rivers.

Monthly discharge of Chemung River at Chemung, N. Y., for the year ending Sept. 30, 1922.

[Drainage area, 2,440 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	550	232	313	0.128	0.15
November	23,800	260	3,960	1.62	1.81
December	6,980	820	2,110	.865	1.00
January	6,470	550	1,140	.467	.54
February	19,200	600	3,320	1.36	1.42
March	24,800	1,500	6,430	2.64	3.04
April	14,600	1,260	5,790	2.37	2.64
May	3,100	648	1,350	.553	.64
June	15,700	571	4,960	2.03	2.26
July	8,140	412	1,710	.701	.81
August	2,290	360	727	.298	.34
September	2,440	314	729	.299	.33
The year	24,800	232	2,690	1.10	14.98

COHOCTON RIVER NEAR CAMPBELL, N. Y.

LOCATION.—At the highway bridge known locally as Red Bridge, 2 miles upstream from Campbell, Steuben County, midway between Campbell and Savona.

DRAINAGE AREA.—480 square miles (furnished by Robert O. Hayt).

RECORDS AVAILABLE.—July 11, 1918, to September 30, 1922.

GAGE.—Chain gage secured to downstream handrail of bridge near left abutment; read by Miss Dora Wood.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Firmly bedded gravel, not likely to shift.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.58 feet at 6 p. m. June 21 (discharge, 5,150 second-feet); minimum stage, 0.68 foot at 5 p. m. October 7 (backwater correction of 0.33 foot due to aquatic growth), (discharge, about 13 second-feet).

1918–1922: Maximum stage recorded, 8.62 feet at noon March 12, 1920, during spring break-up (discharge, 11,300 second-feet); minimum stage, 0.68 foot October 7, 1921 (discharge, 13 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Seasonal distribution of flow is probably not affected by small reservoirs above.

ACCURACY.—Stage-discharge relation changed presumably at time of spring break-up February 24. Rating curve used before that time was well defined between 350 and 6,500 second-feet; that used after the change is fairly well defined between 200 and 3,000 second-feet. Stage-discharge relation affected by ice from January to February and by aquatic growth during the summer. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying to rating table, mean daily gage height corrected for weed effect, as determined by discharge measurements. Records fair.

COOPERATION.—Station established in cooperation with the Lamoka Electric Corporation (Robert O. Hayt, chief engineer).

Discharge measurements of Cohocton River near Campbell, N. Y., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Jan. 10	B. F. Howe	[a] 1.72	250	June 10	Granger and Harrington	1.41	356
31	do	[a] 1.64	120	July 19	C. C. Covert	[b] 1.02	156
Mar. 15	do	3.45	2,070	Aug. 17	B. F. Howe	[b] 1.15	115

[a] Stage-discharge relation affected by ice.
[b] Stage-discharge relation affected by aquatic growth.

Daily discharge, in second-feet, of Cohocton River near Campbell, N. Y., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	•28	24	998		140	422	2,370	258	155	1,100	140	200
2	28	1,500	800	225	150	331	1,790	250	158	800	200	200
3	17	487	762		360	422	1,790	246	1,590	700	190	160
4	24	350	725	160	340	360	3,030	395	1,120	550	140	280
5	22	350	489	280	280	340	2,630	510	645	440	170	650
6	18	275	430	1,400	200	317	2,010	422	510	360	140	400
7	14	212	402	800	190	2,250	1,690	450	390	320	140	320
8	17	212	350	340	190	2,130	1,400	370	294	280	800	280
9	22	197	312	300	170	1,400	1,300	307	258	260	380	240
10	22	430	275	280	120	998	1,120	280	365	240	340	200
11	24	402	275	190	130	998	1,120	250	1,220	220	260	180
12	38	326	293		340	1,080	1,220	229	1,790	200	220	950
13	60	293	293		400	1,400	1,040	194	1,040	220	180	420
14	44	275	257		320	3,030	915	205	758	190	160	360
15	34	350	302	240	220	2,250	1,300	198	510	190	150	360
16	28	350	293		160	1,590	1,080	179	422	190	130	300
17	28	402	340		120	1,080	998	168	1,120	180	110	260
18	24	725	340		110	795	1,040	194	1,790	170	110	220
19	36	762	236	180	110	645	875	289	1,220	160	190	190
20	46	800	257	220	380	645	795	272	795	150	140	180
21	60	650	340	280	950	610	610	229	2,370	140	120	170
22	65	517	376	180	1,500	510	575	209	2,760	140	110	160
23	48	457	350	120	2,030	450	480	179	1,590	150	100	160
24	32	725	340	170	2,270	542	422	161	955	300	750	130
25	34	762	321	180	1,220	575	395	190	682	190	1,000	120
26	34	549	293	190	915	835	385	336	500	160	850	110
27	36	1,130	326		720	1,220	350	217	460	150	600	100
28	32	2,640	340	160	575	2,010	326	172	600	130	500	90
29	30	1,700	340		-------	1,790	303	168	850	130	380	90
30	28	1,310	326		-------	1,400	280	155	650	110	320	85
31	28	-------	293	120	-------	1,300	-------	141	-------	110	260	-------

NOTE.—Discharge for Jan. 1–3, 6, 12–18, 20, 22, 25, and 27–30 estimated, as indicated in above table from comparison with record of Tioga River near Erwins; no gage-height record. Discharge, Oct. 1 to Nov. 1, and June 26 to Sept. 30 determined from gage heights corrected for weed effect, from two discharge measurements, and comparison with record of Tioga River. Discharge, Jan. 5 to Feb. 21 determined from gage-heights corrected for ice effect, from two discharge measurements, study of weather records, gage-height graph, and comparison with record of Tioga River. Braced figures show mean discharge for periods indicated.

***Monthly** discharge of Cohocton River near Campbell, N. Y., for the year ending Sept. 30, 1922.*

[Drainage area, 480 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	65	14	32.3	0.067	0.08
November	2,640	24	639	1.33	1.48
December	998	236	389	.810	.93
January	1,400	120	270	.562	.65
February	2,270	110	522	1.09	1.14
March	3,030	317	1,090	2.27	2.62
April	3,030	280	1,120	2.33	2.60
May	510	141	252	.525	.61
June	2,760	155	919	1.91	2.13
July	1,100	110	278	.579	.67
August	1,000	100	299	.623	.72
September	950	85	252	.525	.59
The year	3,030	14	503	1.05	14.22

PATUXENT RIVER BASIN.

PATUXENT RIVER NEAR BURTONSVILLE, MD.

LOCATION.—At Columbia Turnpike bridge 1½ miles northeast of Burtonsville, Montgomery County, and 4 miles northwest of Laurel.

DRAINAGE AREA.—127 square miles.

RECORDS AVAILABLE.—July 21, 1911, to June 15, 1912 (records furnished by United States Engineer Office); July 21, 1913, to September 30, 1922.

GAGE.—Au water-stage recorder installed August 8, 1922, referred to a staff gage in three sections on left bank about 80 feet below highway bridge; Stevens water-stage recorder referred to same staff gage as Au recorder July 23, 1914, to August 8, 1922; prior to July 23, 1914, a vertical staff fastened to left side of bridge pier; datum of recorder is 1.29 feet below that of gage on pier. Recorder inspected by Arthur Beall.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Banks are lined with trees and brush and are overflowed at stage of about 10 feet. Control poorly defined.

EXTREMES OF DISCHARGE.—Maximum stage during the year from water-stage recorder, 7.53 feet at 8 p. m., February 6 (discharge, 1,510 second-feet); minimum stage from water-stage recorder, 1.83 feet at 9 a. m., August 31 (discharge, 16 second-feet).

1911–1922: Maximum stage recorded, 14.6 feet about 9 a. m., January 12, 1915 (discharge, from poorly defined rating curve, 5,100 second-feet); minimum stage, 0.18 foot August 25, 1911 (discharge, 6 second-feet).

ICE.—Stage-discharge relation affected by ice.

REGULATION.—Fluctuation at low stage has been noted and is probably caused by the operation of a power plant above the gage.

ACCURACY.—Stage-discharge relation changed during high water February 2 and 3. Rating curve used previous to February 3, well defined between 30 and 300 second-feet; after February 3, the curve is well defined between 35 and 800 second-feet. Operation of water-stage recorder continuous except as shown in footnote to daily-discharge table. Daily discharge ascertained by use of discharge integrator, by averaging discharge for intervals of the day, or by use of mean daily gage height obtained by inspecting recorder graph. Records good.

Discharge measurements of Patuxent River near Burtonsville, Md., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Nov. 8	Dirzulaitis and Dornbach	2.00	31.8
July 29	Dirzulaitis and Horton	2.24	49.0

Daily discharge, in second-feet, of Patuxent River near Burtonsville, Md., for the year ending Sept. 30, 1922.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	28	87	96	80	155	117	125	65	48	46	117	35
2	25	72	97			141	108	65	196	50	57	198
3	31	43	238	45	970	204	98	65	344	563	50	79
4	33	37	120		638	204	96	125	125	165	51	48
5	31	37	109	77	435	275	94	149	184	153	47	41
6	29	32	101	76	543	167	93	94	108	83	39	37
7	30	35	94		259	275	94	83	86	71	42	34
8	30	33	91	45	117	438	97	74	75	79	66	32
9	30	34	86		117	195	93	67	96	136	66	33
10	31	50	79		94	204	88	66	76	63	41	31
11	30	41	76	315	210	244	83	67	67	55	40	42
12	29	38	74	237	214	195	80	65	75	52	40	277
13	27	40	74		244	158	75	62	62	50	35	60
14	27	39	77	95	133	141	81	65	60	46	50	45
15	29	37	77		125	357	97	189	62	46	97	38
16	30	36	74	108	117	261	86	80	62	44	47	34
17	30	42	73	97		176	80	67	56	83	146	31
18	33	48	97	84	100	158	83	76	56	353	45	35
19	28	41	109	171		149	94	90	61	470	40	33
20	32	73	87	321	862	244	102	83	54	102	34	32
21	33	69	82	197	372	185	84	68	55	79	34	33
22	29	48	73	197	224	141	87	67	53	68	32	31
23	28	41	79	138	195	133	80	61	48	65	29	31
24	30	43	80		158	125	77	57	45	57	30	28
25	31	56	106		125	125	75	56	42	51	35	33
26	29	52	104		117	117	75	55	44		35	27
27	31	44	91	115	176	109	74	56	46	50	28	26
28	30	491	87		141	117	68	54	46		36	30
29	34	217	79		-------	117	67	56	136	48	32	28
30	30	118	102		-------	102	66	54	57	45	32	28
31	34	-------	108		-------	104	-------	48	-------	50	30	-------

NOTE.—Stage-discharge relation affected by ice Jan. 2–4, 7–10, 13–15, 24–31, and Feb. 1, 2, and 17–19; discharge estimated by study of recorder graph, weather records, and observer's notes. Recorder not working July 26–28; discharge estimated by study of weather records and comparison with records of Monocacy River near Frederick. Braced figures show mean discharge for periods indicated.

Monthly discharge of Patuxent River near Burtonsville, Md., for the year ending Sept. 30, 1922.

[Drainage area, 127 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	34	25	30.1	0.237	0.27
November	491	32	69.1	.544	.61
December	238	73	94.2	.742	.86
January	321	----------	117	.921	1.06
February	970	----------	257	2.02	2.10
March	438	102	183	1.44	1.66
April	125	66	86.7	.683	.76
May	189	48	75.1	.591	.68
June	344	42	84.2	.663	.74
July	563	44	107	.842	.97
August	146	28	48.5	.382	.44
September	277	26	49.7	.391	.44
The year	970	25	99.1	.780	10.59

POTOMAC RIVER BASIN.

POTOMAC RIVER AT POINT OF ROCKS, MD.

LOCATION.—At steel highway bridge at Point of Rocks, Frederick County, one-third mile below Catoctin Creek and 6 miles above Monocacy River.

DRAINAGE AREA.—9,650 square miles.

RECORDS AVAILABLE.—February 17, 1895, to September 30, 1922.

GAGE.—Chain gage attached to downstream side of left span of bridge; read by W. W. Compher. Datum constant since September 2, 1902; prior to this date datum was 0.45 foot higher than at present. Sea-level elevation of gage datum, 200.54 feet.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Practically permanent. Control is a rock ledge a few hundred feet below station, the ledge extending completely across the river except for one relatively unimportant channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.82 feet at 2 p. m. March 17 (discharge not determined); minimum stage, 0.60 foot at 2 p. m. September 30 (discharge not determined.)

1895–1922: Maximum stage recorded, 29 feet March 2, 1902 (discharge, 219,000 second-feet); minimum stage, 0.38 foot September 10, 1914 (discharge, 540 second-feet).

The crest of the flood of June 2, 1889, as determined by the United States Army Engineers from high-water marks, reached a stage of 40.2 feet (discharge, 325,000 second-feet).

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—The Chesapeake & Ohio Canal parallels the Potomac on the Maryland side. The average discharge of the canal is 75 to 100 second-feet. The discharge of the canal is not included in the records for this station.

REGULATION.—Fluctuation at extreme low stages has been noted and is probably caused by the operation of power plants or storage reservoirs on the upper Potomac and tributaries.

ACCURACY.—Stage-discharge relation practically permanent. Gage read to hundredths once daily; during high water read oftener. Daily discharge withheld pending making of additional discharge measurements.

Discharge measurements of Potomac River at Point of Rocks, Md., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 15	Stevens and Dirzulaitis	[a] 0.91	1,380	Jan. 10	J. J. Dirzulaitis	1.86	4,360
				Apr. 26	Dirzulaitis and Wallace	2.43	7,070
Nov. 3	Dirzulaitis and Dornbach	1.02	1,790	May 17	J. J. Dirzulaitis	2.23	6,130

[a] Stage-discharge relation affected by backwater from fish dam.

Daily gage height, in feet, of Potomac River at Point of Rocks, Md., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1.30	1.04	5.10	2.60	2.40	4.80	3.60	1.90	2.30	2.70	1.48	1.20
2	1.20	1.04	5.00	2.40	2.36	4.40	3.70	1.80	2.60	2.70	1.30	1.60
3	1.20	1.04	4.80	2.30	2.30	4.80	4.00	1.70	2.80	2.80	1.26	1.40
4	1.14	2.50	4.00	2.10	2.60	5.80	3.00	1.60	3.00	2.70	1.24	1.28
5	1.16	2.30	3.90	2.00	2.80	7.00	3.40	1.50	4.40	2.56	1.26	1.28
6	1.10	1.94	3.70	1.92	3.00	6.50	3.30	2.18	4.40	2.50	1.26	1.20
7	1.10	1.70	3.20	2.10	3.20	6.40	3.14	2.70	4.60	2.20	1.26	1.30
8	1.00	1.60	3.10	1.90	3.60	7.50	3.00	2.80	4.00	2.10	1.30	1.38
9	1.10	1.50	3.00	1.80	3.28	7.20	2.70	2.62	3.50	1.80	1.28	1.14
10	1.20	1.40	2.88	1.88	3.40	6.00	2.62	2.54	3.30	1.78	1.20	1.16
11	1,10	1.20	2.60	1.70	2.80	5.20	2.60	2.50	2.00	1.64	1.18	1.18
12	1.00	1.30	2.60	1.60	3.00	6.00	2.50	2.40	2.48	1.50	1.10	1.00
13	.90	1.20	2.50	1.50	6.70	6.30	2.46	2.30	2.32	1.42	1.10	1.00
14	.88	1.20	2.40	1.40	7.30	5.40	2.44	2.20	2.16	1.46	1.12	1.12
15	.90	1.10	2.44	1.60	6.20	5.60	2.60	2.10	2.00	1.58	1.12	1.00
16	.90	1.00	2.36	1.84	5.10	9.70	3.00	2.12	1.90	1.60	1.10	1.02
17	.80	.90	2.16	1.80	4.30	10.82	4.80	2.23	1.76	1.68	1.04	1.00
18	.84	.86	2.20	1.80	4.00	7.80	5.20	4.00	1.80	1.52	1.02	.98
19	.86	.80	3.14	1.74	4.30	6.00	4.00	6.40	1.84	2.20	1.00	.84
20	.90	1.00	3.50	2.50	4.50	5.40	3.10	8.40	1.76	1.64	1.00	.84
21	.94	1.50	4.50	2.70	7.50	4.90	3.00	6.00	1.64	1.66	.96	.80
22	.96	2.00	3.50	6.40	9.60	4.70	2.92	5.10	1.56	1.70	.90	.76
23	1.10	2.00	3.40	6.60	9.10	4.10	2.90	4.20	1.64	1.60	.86	.72
24	1.20	2.04	2.90	6.00	7.10	3.80	2.58	3.60	1.40	1.52	.88	.70
25	1.16	1.80	4.00	5.00	5.90	3.60	2.44	3.10	1.46	1.54	.88	.68
26	1.10	1.70	6.30	4.50	5.00	3.50	2.40	3.00	1.48	1.30	1.14	.70
27	1.00	1.80	5.00	2.70	4.50	3.30	2.30	2.90	1.40	1.28	1.15	.70
28	.96	2.00	4.10	2.60	4.40	3.18	2.20	2.80	1.40	1.20	1.20	.70
29	.90	4.30	3.70	2.60	-------	3.10	2.16	2.70	1.50	1.30	1.14	.70
30	.80	6.30	3.00	2.70	-------	3.40	2.00	2.60	2.62	1.40	1.08	.60
31	.74	-------	2.70	2.50	-------	3.50	-------	2.50	-------	1.54	1.10	-------

NOTE.—Gage height for July 1 increased 1 foot as study of weather records indicated gage reading was 1 foot too low.

MONOCACY RIVER NEAR FREDERICK, MD.

LOCATION.—At Ceresville Bridge 3 miles northeast of Frederick, Frederick County, on road from Frederick to Mount Pleasant. Tuscarora Creek enters on right 3,000 feet above station.

DRAINAGE AREA.—660 square miles.

RECORDS AVAILABLE.—August 4, 1896, to September 30, 1922.

GAGE.—Chain attached to downstream handrail of right span of bridge; read by Edward D. Shriner, jr.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; shifting during very high stages. Control not well defined. Banks lined with trees and brush; subject to overflow at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.41 feet at 8 a. m. March 8 (discharge, 8,100 second-feet); minimum stage, 3.87 feet at 7.30 a. m. September 26 (discharge, 46 second-feet).

1896–1922: Maximum stage recorded, 27.2 feet at 11 a. m. January 13, 1915 (discharge, determined from rating curve used for 1916, 19,000 second-feet); minimum stage, 3.54 feet several days in October, 1910 (discharge, 15 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters only.

ACCURACY.—Stage-discharge relation permanent during the year, except when affected by ice. Rating curve well defined between 50 and 15,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying gage height to rating table. Records good.

The following discharge measurement was made by J. J. Dirzulaitis and E. E. R. Dornbach:

November 2, 1921: Gage height, 5.58 feet; discharge, 578 second-feet.

Daily discharge, in second-feet, of Monocacy River near Frederick, Md., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	151	120	705	318	335	2,100	1,170	286	255	335	950	127
2	117	505	570	270	388	950	2,320	286	352	352	425	134
3	117	352	4,980		4,980	1,610	1,000	270	2,240	3,520	592	127
4	132	212	1,110	240	2,240	1,820	900	255	1,680	1,820	226	122
5	127	136	950		1,480	5,240	638	2,240	6,650	950	226	122
6	115	124	950	212	1,230	4,560	570	1,290	3,290	750	158	115
7	115	106	950	198	2,240	2,030	570	800	2,170	548	139	110
8	103	101	850		1,050	8,100	548	485	1,170	425	134	108
9	103	112	705		660	4,230	548	425	1,050	370	158	68
10	103	136	570		485	1,960	548	370	750	370	166	74
11	103	136	525		505	2,320	388	352	682	352	134	78
12	103	166	525		900	1,890	388	370	660	270	122	88
13	82	148	505		900	1,680	352	370	548	270	134	198
14	76	136	485	185	615	1,420	370	405	485	240	139	198
15	92	124	425		728	2,990	800	900	465	240	950	134
16	76	129	335			3,220	682	638	405	226	352	99
17	76	129	318		670	1,540	660	388	405	212	212	68
18	82	161	1,960			1,420	660	615	505	198	184	59
19	76	168	1,480		1,000	1,290	638	1,170	485	1,110	158	59
20	76	255	950	705	1,170	1,480	615	1,170	425	750	184	59
21	82	255	525	1,820	3,440	1,540	525	850	388	335	198	61
22	82	226	286	2,240	3,060	1,480	485	638	335	270	146	59
23	82	174	302	1,480	1,890	800	425	445	286	226	110	59
24	82	158	525	682	1,820	800	405	388	255	212	122	59
25	76	176	505	592	1,480	750	388	352	226	198	110	55
26	76	286	548		1,350	728	370	335	240	184	110	46
27	76	226	485		1,420	615	352	352	226	171	115	50
28	72	240	405		2,100	1,110	335	352	226	184	122	59
29	72	3,360	352	420	-------	800	318	302	1,050	161	122	68
30	72	1,170	318		-------	728	302	286	565	158	122	61
31	82	-------	270		-------	850	-------	255	-------	146	122	-------

NOTE.—Gage height Dec. 2 increased 1 foot as gage reading was 1 foot too low. Discharge Jan. 3–5, 8–19, 26–31, and Feb. 1, and 16–18 estimated because of ice by comparison with records of flow of Potomac River and study of observer's notes and weather records. Braced figures show mean discharge for periods indicated.

Monthly discharge of Monocacy River near Frederick, Md., for the year ending Sept. 30, 1922.

[Drainage area, 660 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	151	72	92.9	0.141	0.16
November	3,360	101	324	.491	.55
December	4,980	270	786	1.19	1.37
January	2,240	----------	451	.683	.79
February	4,980	----------	1,410	2.14	2.23
March	8,100	615	2,000	3.03	3.49
April	2,320	302	609	.923	1.03
May	2,240	255	569	.862	.99
June	6,650	226	946	1.43	1.60
July	3,520	146	502	.761	.88
August	950	110	230	.348	.40
September	198	46	90.8	.138	.15
The year	8,100	46	663	1.00	13.64

OCCOQUAN CREEK NEAR OCCOQUAN, VA.

LOCATION.—At Frank Davis's farm, 1 mile above Beaverdam Creek, 4½ miles northwest of Occoquan, on county line between Fairfax and Prince William counties.

DRAINAGE AREA.—546 square miles.

RECORDS AVAILABLE.—February 14, 1913, to May 3, 1916, and December 16, 1920, to September 30, 1922.

GAGE.—Stevens water-stage recorder installed December 23, 1920, referred to an inclined staff gage on left bank, about 150 feet upstream from gage house. Observer, P. S. Davis. Freiz water-stage recorder used April 27, 1913, to May 3, 1916, referred to same staff gage. From February 14 to April 26, 1913, a temporary vertical staff gage on opposite bank was used.

DISCHARGE MEASUREMENTS.—Made from cable about 75 feet below the recorder or by wading.

CHANNEL AND CONTROL.—Gravel and large rocks; control practically permanent. Stage of zero flow at gage height, 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year from water-stage recorder, 11.3 feet at 11 a. m. February 20 (discharge, 6,330 second-feet); minimum stage, 1.50 feet at 7 p. m. October 17 (discharge, 12 second-feet).

1913–1916; 1921–1922: Maximum stage, 21.2 feet on afternoon of January 13, 1915, determined from flood marks on recorder shelter (discharge, from extension of rating curve, 20,900 second-feet); minimum stage, 1.39 feet September 13–18, 1913 (discharge, 9.7 second-feet).

ICE.—Stage-discharge relation affected by ice for short periods.

ACCURACY.—Stage-discharge relation practically permanent except when affected by ice. Rating curve well defined between 12 and 9,800 second-feet and extended beyond these limits. Water-stage recorder operated satisfactorily; daily discharge obtained principally by discharge integrator. Record excellent.

The following discharge measurement was made by J. J. Dirzulaitis and A. H. Horton:

October 19, 1921: Gage height, 1.54 feet; discharge, 13.0 second-feet.

Daily discharge, in second-feet, of Occoquan Creek near Occoquan, Va., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	22	30	161	99	211	495	303		121	118	78	29
2	22	33	118	97	230	733	435	110	123	88	74	2,000
3	20	32	116	78	1,410	3,300	292		201	76	65	1,610
4	20	40	264	71	2,680	2,290	235		317	75	58	349
5	19	39	188	71	1,940	4,000	218	2,900	4,080	87	76	156
6	19	42	160	70	2,000	1,440	204	900	3,010	119	60	106
7	18	30	183	75	3,690	1,030	193	650	824	174	46	76
8	16	26	188	75	1,570	2,700	206	420	530	110	40	59
9	16	25	162	70	983	1,070	211	292	396	90	281	53
10	15	31	132	67	766	1,400	192	232	350	139	144	46
11	14	31	113	1,100	1,780	3,200	171	194	317	105	100	40
12	13	30	102	4,220	4,400	1,910	148	194	227	81	70	944
13	13	30	91	967	2,580	1,010	139	182	176	62	53	260
14	12	34	92	622	1,430	771	135	206	159	241	47	118
15	12	36	97	460	923	2,840	206	784	146	242	68	84
16	12	37	107	434		4,620	324	444	140	128	62	59
17	12	39	113	375	530	1,430		263	153	91	564	48
18	13	36	114	286		925		1,470	1,460	85	155	43
19	13	36	113	335	861	739		5,000	520	94	84	38
20	14	54	124	941	5,640	752	220	1,290	245	288	62	33
21	14	73	121	648	3,640	865		619	171	148	48	34
22	14	77	100	875	1,930	611		464	641	95	36	33
23	14	80	93	525	1,210	475	160	391	354	188	30	30
24	18	61	102	340	867	412		290	172	223	28	28
25	18	59	324	214	637	385		229	129	139	30	27
26	18	55	546		539	351	120	227	102	364	29	27
27	18	48	276	170	561	316		316	89	442	28	27
28	19	458	198		668	306		259	82	246	29	27
29	20	696	156			332		205	81	488	32	27
30	20	284	126	174		304		169	144	166	30	27
31	20		101	193		254		136		103	33	

NOTE.—Stage-discharge relation affected by ice Jan. 26–29 and Feb. 16–18; record destroyed by rats Apr. 17–22, Apr. 24 to May 4, May 6, and 7; discharge estimated from study of weather records and comparison with records for Rappahannock River. Discharge estimate from graph, owing to recorder not working properly for Jan. 11, 12, and May 19.

Monthly discharge of Occoquan Creek near Occoquan, Va., for the year ending Sept. 30, 1922.

[Drainage area, 546 square miles.]

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
October	22	12	16.4	0.030	0.03
November	696	25	86.1	.016	.02
December	546	91	157	.288	.33
January	4,220	67	457	.837	.96
February	5,640	211	1,600	2.93	3.05
March	4,620	254	1,330	2.44	2.81
April	435		198	.363	.40
May	5,000		618	1.13	1.30
June	4,080	81	515	.943	1.05
July	488	62	164	.300	.35
August	564	28	81.9	.150	.17
September	2,000	27	215	.394	.44
The year	5,640	12	446	.817	10.91

RAPPAHANNOCK RIVER BASIN.

RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA.

LOCATION.—At rear of McWhirt farm, 1½ miles above dam of Spotsylvania Power Co. and 3½ miles above Fredericksburg, Spottsylvania County.

DRAINAGE AREA.—1,590 square miles.

RECORDS AVAILABLE.—September 19, 1907, to September 30, 1922.

GAGE.—Friez water-stage recorder installed January 6, 1922, referred to a staff gage in two sections on right bank. Original gage was a vertical staff which was destroyed February 14, 1908, and replaced February 20, 1908, by a chain gage under the cable. Chain gage destroyed October 31, 1913, and replaced by vertical staff installed November 4, 1913, which was used until January 6, 1922. Gages at practically the same location and referred to same datum. Gage read by Charles Perry. Recorder inspected by W. K. Howard.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading 1 mile above gage.

CHANNEL AND CONTROL.—Bed composed of boulders, somewhat rough. One channel. Banks wooded; water overflows right bank at stage about 15 feet and left bank at about 12 feet. Current sluggish at extremely low water. Control is a rocky section a few hundred feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 9.30 feet at 4.15 p. m. June 5 (discharge, 27,200 second-feet); minimum stage from water-stage recorder, 0.48 foot from 1.30 p. m. to 2.45 p. m. October 25 (discharge, 104 second-feet).

1907–1922: Maximum stage recorded, 11.45 feet at noon April 11, 1918 (discharge, 38,500 second-feet); minimum stage, 0.30 foot at 3 p. m. August 21, 1914 (discharge, 72 second-feet).

ICE.—Ice forms near gage, but seldom in sufficient quantity at control to affect stage-discharge relation.

ACCURACY.—Stage-discharge relation practically permanent, except when affected by ice. Rating curve well defined between 100 and 27,000 second-feet; extended beyond these limits. Gage read to hundredths once a day from October 1 to January 14; discharge for this period ascertained by applying gage height to rating table except for days when stage-discharge relation was affected by ice. Operation of water-stage recorder satisfactory. Daily discharge from January 15 to September 30, ascertained by use of discharge integrator or by averaging discharge for intervals of the day. Records excellent.

Discharge measurements of Rappahannock River near Fredericksburg, Va., during the year ending Sept. 30, 1922.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 17	Stevens and Dirzulaitis.	0.53	118	Oct. 25	Stevens and Reid	0.48	102
17	do	.54	132	Jan. 5	Dirzulaitis and Lamoureux	1.44	679
24	Stevens and Reid	.57	132				
24	do	.59	140				

90902—25†—WSP 541——17

Daily discharge, in second-feet, of Rappahannock River near Fredericksburg, Va., for the year ending Sept. 30, 1922.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	186	178	999	440	580	1,890	1,890	954	984	942	627	353
2	182	2,040	687	250	1,460	2,330	2,270	928	980	784	569	360
3	178	880	1,180	347	6,980	5,620	1,740	902	1,470	756	562	353
4	162	502	1,440	470	5,290	4,800	1,590	1,090	2,990	917	607	435
5	155	398	1,140	687	3,520	6,520	1,530	3,090	17,700	1,230	839	389
6	147	385	1,100	645	3,690	4,040	1,460	3,140	9,060	1,610	775	332
7	147	275	964	600	4,160	3,410	1,430	1,900	4,180	1,160	927	332
8	159	260	860	626	2,840	5,130	1,440	1,380	2,930	880	734	336
9	143	293	750	510	2,160	3,500	1,400	1,140	2,420	787	2,470	347
10	140	275	729	398	1,780	4,690	1,310	1,030	2,110	724	1,600	321
11	123	366	676	569	3,390	7,130	1,250	997	1,840	701	828	308
12	129	420	569	4,730	5,380	5,210	1,220	994	1,620	648	622	413
13	147	398	550	1,620	5,600	3,540	1,170	933	1,540	685	581	436
14	136	372	534	1,280	3,460	2,980	1,170	1,030	1,350	746	544	480
15	129	334	534	1,230	2,740	7,770	1,960	3,050	1,310	1,130	964	371
16	116	328	510	1,370	2,000	9,560	1,810	1,770	1,290	719	1,130	329
17	119	340	526	1,280	1,400	5,620	1,420	1,180	1,180	665	1,480	294
18	109	322	518	1,100	1,000	3,710	1,320	4,300	1,370	833	1,230	256
19	109	360	486	1,300	2,950	3,050	1,360	8,640	1,420	931	774	238
20	151	448	598	2,220	7,210	2,910	1,450	4,370	1,110	894	728	236
21	136	463	883	2,400	5,380	2,970	1,360		1,060	711	628	232
22	126	478	794	2,200	4,240	2,430	1,220		1,610	613	496	221
23	119	398	827	2,080	3,280	2,110			1,210	692	396	222
24	126	420	805		2,740	1,930		3,000	918	1,030	356	216
25	106	347	860		2,370	1,830	1,050		819	679	496	203
26	109	372	1,050		2,180	1,690			762	908	853	186
27	136	398	1,220	600	2,140	1,600		1,700	776	3,310	612	203
28	133	510	1,010		2,210	1,610		1,430	793	1,380	516	195
29	133	1,400	872		-------	1,960	975	1,260	3,270	1,350	510	170
30	143	1,100	816		-------	1,680	982	1,130	1,600	1,040	500	174
31	162	-------	645		-------	1,510	-------	1,050	-------	683	400	-------

NOTE.—Stage-discharge relation affected by ice Jan. 1, 2, Jan. 24 to Feb. 1, and Feb. 16–18. Recorder not working Apr. 23–28 and May 21–26. No gage readings Jan. 7, 22, 24; discharge estimated from study of weather records and comparison with records for Occoquan Creek near Occoquan. Discharge for Mar. 17 and 18 estimated from recorder sheet.

Monthly discharge of Rappahannock River near Fredericksburg, Va., for the year ending Sept. 30, 1922.

[Drainage area, 1,590 square miles.]

Month.	Discharge in second-feet.				Run-off in inches
	Maximum.	Minimum.	Mean.	Per square mile.	
October	186	106	139	0.087	0.10
November	2,040	178	502	.316	.35
December	1,440	486	811	.510	.59
January	4,730	----------	1,070	.673	.78
February	7,210	580	3,290	2.07	2.16
March	9,560	1,510	3,700	2.33	2.69
April	2,270	975	1,370	.862	.96
May	8,640	902	2,170	1.36	1.57
June	17,700	762	2,390	1.50	1.67
July	3,310	613	972	.611	.70
August	2,470	356	786	.494	.57
September	480	170	298	.187	.21
The year	17,700	106	1,450	.912	12.35

MISCELLANEOUS MEASUREMENTS.

Miscellaneous discharge measurements in north Atlantic slope basins during the year ending Sept. 30, 1922.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Oct. 19	Blackwater River	Contoocook River	Webster, N. H.	1.53	36.4
May 3	do	do	do	3.13	228
Jan. 18	Connecticut River	Atlantic Ocean	Wells River, Vt.	[a] 10.60	1,530
Feb. 27	do	do	do	[a] 10.88	1,760
Aug. 22	do	do	South Newbury, Vt.	4.48	3,550
23	do	do	Orford, N. H.	6.27	3,120
21	Ammonoosuc River	Connecticut River	Wells River, Vt.	[b] 10.80	172
21	Wells River	do	do	[b] 10.80	45.0
July 6	Canal	Diversion from East Branch of Tully River.	Above Packard Pond		13.1
Aug. 2	do	do	do		7.1
Oct. 4	Passaic River	Atlantic Ocean	Chatham, N. J.	.24	18.3
Dec. 8	do	do	do	1.36	67.8
Oct. 28	Raritan River	do	Above mouth of Millstone River at Manville, N. J.		189
28	Millstone River	Raritan River	Mouth, Manville, N. J.		124
28	do	do	do		112
Nov. 2	Power canal	Susquehanna River	Colliersville, N. Y.		22.7
2	do	do	do		124
3	do	do	do		211
3	do	do	do		348
3	do	do	do		478
3	do	do	do		72
3	do	do	do		125
4	do	do	do		218
4	do	do	do		307

[a] Stage-discharge relation affected by ice.
[b] Gage on Connecticut River at Wells River, Vt.

INDEX.