DEPARTMENT OF THE INTERIOR
HUBERT WORK, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 522

SURFACE WATER SUPPLY OF THE UNITED STATES

1921

PART II. SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS

NATHAN C. GROVER, Chief Hydraulic Engineer
A. H. HORTON, G. C. STEVENS, and WARREN E. HALL,
District Engineers

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ILLUSTRATIONS

SURFACE WATER SUPPLY OF THE SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO DRAINAGE BASINS, 1921

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1921.

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 examinations 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, 1895–1922

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

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 10.

Measurements of stream flow have been made at about 5,200 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1921, 1,350 gaging stations were being maintained by the Survey and the cooperating organizations. Many miscellaneous discharge measurements are 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. The 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.

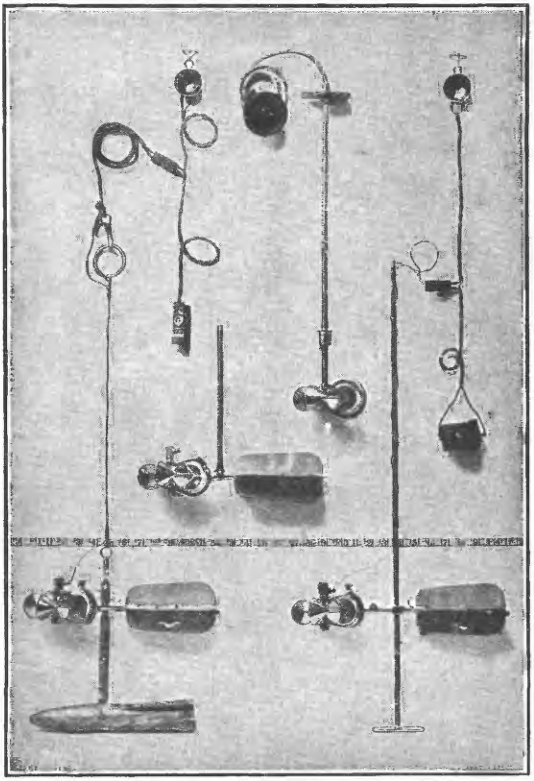
"Run-off in inches" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

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.

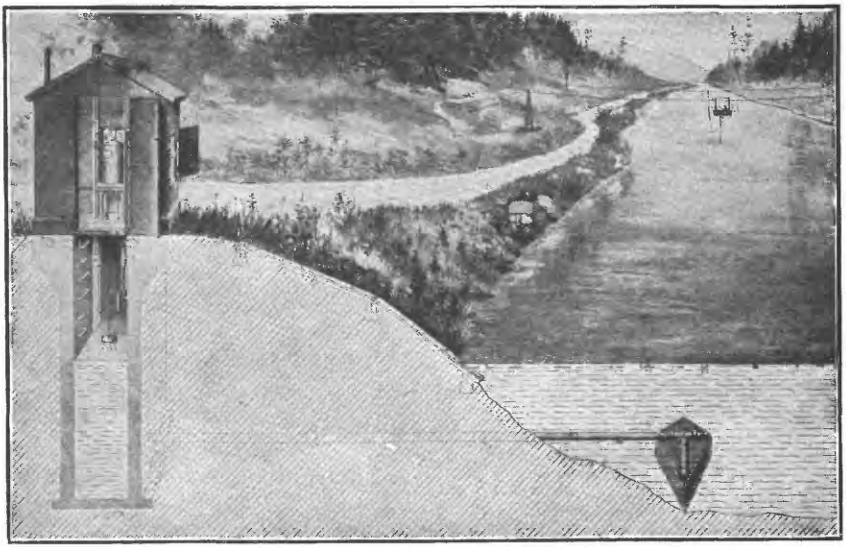
The following terms not in common use are here defined:

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

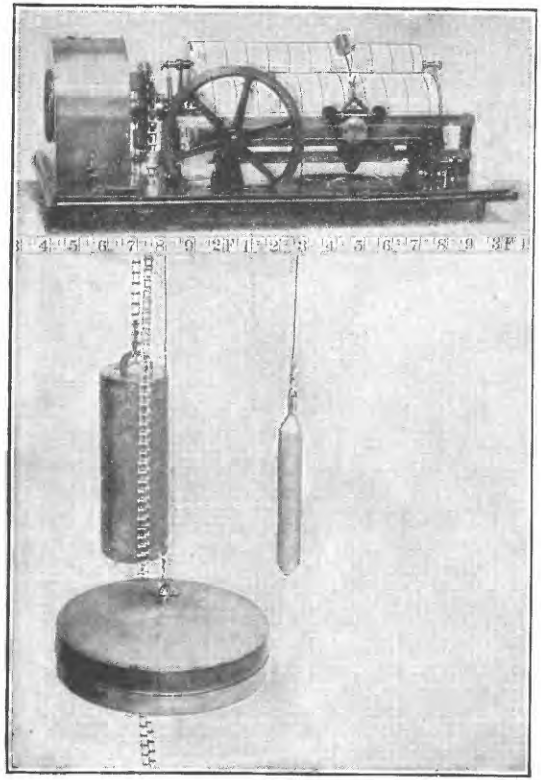
"Control"; a term used to designate the section or sections of the stream below the gage which determine the stage-discharge relation



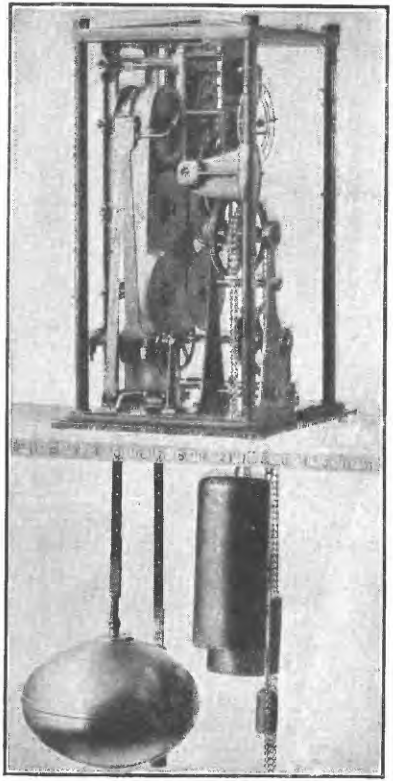
A. PRICE CURRENT METERS.



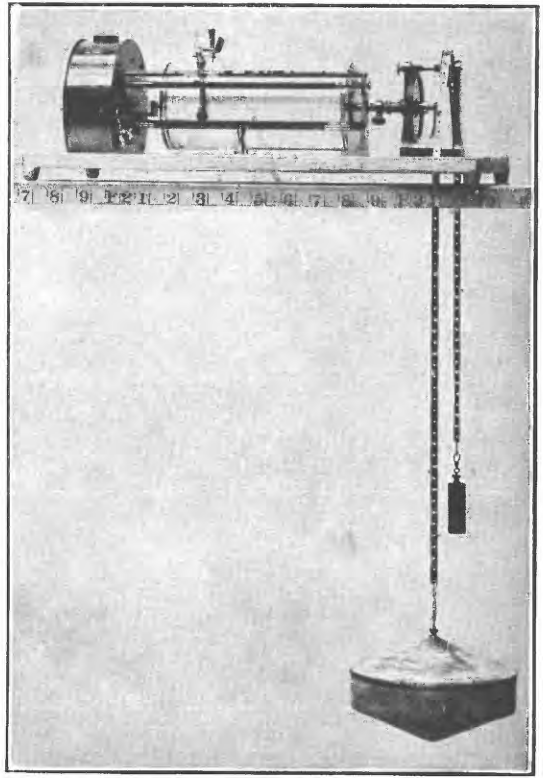
B. TYPICAL GAGING STATION.



A. STEVENS CONTINUOUS.



B. GURLEY PRINTING.



C. FRIEZ.

WATER-STAGE RECORDERS.

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.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1920, and ending September 30, 1921. 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 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, and these rating tables, when applied to the gage heights, give the discharge from which the daily, monthly, and yearly mean discharge is determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving results 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 heights and results 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 constancy 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 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 for each second during the month. On this average flow computations recorded in the remaining columns which are defined on pages 2 and 3, are based.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanence 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 or footnotes added to the tables gives information regarding (1) the 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 heights to the rating table to obtain the daily discharge.[1]

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 depth of run-off in inches may be subject to gross errors caused by the inclusion of large non-

[1] For a more detailed discussion of the accuracy of stream-flow data see Grover, N. C., and Hoyt, J. C., Accuracy of stream-flow data: U. S. Geol. Survey Water Supply Paper 400, pp. 53–59, 1916.

contributing 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)" previously published by the Survey should be used with caution because of possible inherent but unknown sources of errors.

Many gaging stations on streams in the irrigated sections of the United States are located above most of the diversions from those streams, and the discharge recorded does not show the water supply available for 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. Where values are given these can not be considered exact but as being the best information available.

The table of monthly discharge gives 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 annually 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., 316 Jackson Building.
Chattanooga, Tenn., 37 Municipal Building.
Columbus, Ohio, Brown Hall, Ohio State University.
Chicago, Ill., 1404 Kimball Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
Ames, Iowa, State Highway Commission Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Topeka, Kans., 23 Federal Building.
Helena, Mont., 52 Montana National Bank Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, 615 Idaho Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 328 Customhouse.
Los Angeles, Calif., 600 Federal Building.
Tucson, Ariz., 210 Agricultural Building, University of Arizona.
Austin, Tex., State Capitol.
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 5,200 points in the United States, and the data obtained have been published in the reports tabulated below:

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	1884 to Sept. 1890.
11th A, pt. 2	Monthly discharge and descriptive information	
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	Description, 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.

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, 1899–1921

Year	I North Atlantic slope basins (St. John River to York River)	II South Atlantic and eastern Gulf of Mexico (James River to the Mississippi)	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	[k] 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	505	506	507	508	509	510	511	512	513	[u] 514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534

[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

Acknowledgments are due for financial assistance rendered by the Virginia Railway & Power Co., Central Georgia Power Co., Columbus Power Co., North Carolina Geological and Economic Survey, Georgia Geological Survey, Tallahassee Power Co., Tucker & Laxton, and Viele, Blackwell & Buck.

DIVISION OF WORK

Data for stations in the James River drainage basin and for Roanoke River at Roanoke, Va., were collected and prepared for publication under the direction of A. H. Horton and G. C. Stevens, district engineers, assisted by J. J. Dirzulaitis, B. L. Bigwood, J. S. S. Jones, V. B. Lamoureux, D. S. Wallace, and H. S. Price.

Data for drainage basins south of James River, except Roanoke River at Roanoke, Va., were collected and prepared for publication under the direction of Warren E. Hall, district engineer, assisted by L. J. Hall, B. M. Hall, jr., J. H. Morgan, and Mrs. Effie T. Workman.

The manuscript was reviewed by B. J. Peterson.

GAGING-STATION RECORDS

JAMES RIVER BASIN

JAMES RIVER AT BUCHANAN, VA.

LOCATION.—At highway bridge near Chesapeake & Ohio Railway station at Buchanan, Botetourt County.

DRAINAGE AREA.—2,060 square miles.

RECORDS AVAILABLE.—August 18, 1895, to September 30, 1921.

GAGE.—Chain gage attached to highway bridge, installed November 21, 1903, to replace original wire gage read from August 18, 1895, to that date; read by D. D. Booze for United States Weather Bureau. Datum of gage lowered 2 feet April 3, 1897, to avoid negative readings. A span of the bridge and the gage were destroyed by flood on the night of March 27, 1913. A temporary gage was used from April 22 to September 15, 1913, when a new gage was installed.

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

CHANNEL AND CONTROL.—Bed under bridge is composed of rock overlain with a thick deposit of mud. Banks high; not overflowed except in extreme floods. Control of boulders and gravel several hundred feet below station.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.0 feet January 23 (discharge, 24,400 second-feet); minimum stage, 1.9 feet August 28 to September 8 (discharge, 340 second-feet).

1895–1921: Maximum stage recorded, 31 feet during the night of March 27, 1913, determined by levels from flood marks October 2, 1914 (discharge not determined); minimum stage, 1.2 feet (present gage datum) April 17 and May 2, 1896 (discharge, 260 second-feet).

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

ACCURACY.—Stage-discharge relation permanent during the year; not affected by ice. Rating curve fairly well defined between 300 and 28,000 second-feet; extended beyond these limits. Gage read to tenths once daily. Records fair.

COOPERATION.—Since July 15, 1906, gage-height records have been furnished by United States Weather Bureau.

Discharge measurements of James River at Buchanan, Va., during the year ending Sept. 30, 1921

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Nov. 22	Bigwood and Lamoureux	2.88	1,030
May 14	do	5.42	5,050
June 28	B. L. Bigwood	2.42	683

Daily discharge, in second-feet, of James River at Buchanan, Va., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	795	445	11,700	2,070	2,900	3,080	1,180	1,180	975	570	795	340
2	640	445	9,610	1,920	2,560	3,080	1,180	1,180	975	715	715	340
3	640	445	5,290	1,920	2,220	3,080	1,180	1,180	975	570	640	340
4	570	445	4,330	1,780	2,070	3,080	1,180	1,520	880	505	640	340
5	570	445	3,670	1,650	1,920	2,900	1,180	1,520	880	505	505	340
6	505	445	3,270	1,520	1,920	2,900	1,080	1,520	1,520	505	505	340
7	505	445	2,900	1,400	1,780	2,900	1,080	1,400	1,400	505	505	340
8	505	445	2,560	1,290	1,780	2,900	1,080	1,400	1,400	505	445	340
9	505	445	2,220	1,290	2,560	2,900	1,080	1,290	1,290	505	445	795
10	505	445	1,920	1,290	7,370	2,900	1,080	1,290	1,080	505	445	445
11	505	445	1,650	2,560	13,700	2,720	1,080	1,290	975	505	445	570
12	445	445	1,520	7,370	7,370	2,720	1,080	1,920	880	505	445	505
13	445	445	1,400	5,800	5,800	2,720	975	2,560	795	1,080	390	505
14	445	445	5,290	6,580	4,560	2,720	975	2,900	715	1,180	505	505
15	445	445	10,500	9,040	3,670	3,270	975	2,900	640	1,400	445	445
16	445	505	7,640	6,840	3,270	5,040	975	2,220	570	1,180	445	445
17	445	2,900	4,560	5,040	2,900	4,330	1,080	2,070	570	880	445	445
18	445	4,100	3,670	4,560	2,720	3,470	1,400	1,780	570	715	445	445
19	445	2,560	2,900	3,670	2,560	3,080	1,400	1,520	505	640	445	390
20	445	1,780	2,560	3,080	2,390	2,900	1,290	1,520	570	570	445	390
21	445	1,400	2,220	2,720	2,390	2,560	1,290	1,400	640	505	445	390
22	445	1,080	1,920	6,060	3,470	2,390	1,180	1,400	640	505	390	390
23	445	975	1,780	24,400	7,100	2,220	1,180	1,290	570	505	390	390
24	445	975	2,070	17,200	4,560	2,070	1,180	1,290	570	505	390	390
25	445	880	1,920	4,800	3,670	1,920	1,180	1,180	570	505	390	390
26	445	880	1,650	4,100	3,470	1,780	1,080	1,180	570	505	390	390
27	445	795	1,520	3,470	3,270	1,650	1,080	1,080	570	505	390	390
28	445	795	2,720	3,470	3,080	1,520	1,400	1,080	640	505	340	390
29	445	7,640	2,720	3,470	-------	1,400	1,400	1,080	570	975	340	390
30	445	9,610	2,560	3,270	-------	1,290	1,290	975	570	795	340	390
31	445	-------	2,220	3,270	-------	1,180	-------	975	-------	640	340	-------

Monthly discharge of James River at Buchanan, Va., for the year ending Sept. 30, 1921

[Drainage area, 2,060 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	795	445	489	0.237	0.27
November	9,610	445	1,450	.704	.79
December	11,700	1,400	3,630	1.76	2.03
January	24,400	1,290	4,740	2.30	2.65
February	13,700	1,780	3,820	1.85	1.93
March	5,040	1,180	2,670	1.30	1.50
April	1,400	975	1,160	.563	.63
May	2,900	975	1,520	.738	.85
June	1,520	505	802	.389	.43
July	1,400	505	661	.321	.37
August	795	340	459	.223	.26
September	795	340	417	.202	.23
The year	24,400	340	1,810	.879	11.94

JAMES RIVER AT CARTERSVILLE, VA.

LOCATION.—At highway bridge between Pemberton and Cartersville, Cumberland County, 50 miles above Richmond. Willis River enters from south a mile above station and Rivanna River from north 7 miles above.

DRAINAGE AREA.—6,230 square miles.

RECORDS AVAILABLE.—January 1, 1899, to September 30, 1921.

GAGE.—Chain gage on downstream side and near Cartersville end of bridge; read by B. W. Palmore. Wire gage used previous to July 24, 1903.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Bed composed of rocks and sand; shifts somewhat during floods. Banks high; left bank is overflowed at a stage of about 20 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.68 feet at 5 p. m. December 1 (discharge, 43,300 second-feet); minimum stage, 0.50 foot at 10 a. m. August 29 (discharge, about 600 second-feet).

1899–1921: Maximum stage recorded, 26.7 feet at 6 p. m. December 30, 1901 (discharge, about 106,000 second-feet); minimum stage, 0.5 foot at 10 a. m. August 29, 1921 (discharge, about 600 second-feet).

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

ACCURACY.—Stage-discharge relation permanent; not affected by ice during the year. Rating curve fairly well defined between 1,300 and 40,000 second-feet and extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

The following discharge measurement was made by G. C. Stevens and J. J. Dirzulaitis:

June 22, 1921: Gage height, 1.96 feet; discharge, 2,990 second-feet.

Daily discharge, in second-feet, of James River at Cartersville, Va., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,100	1,470	41,700	8,650	8,390	9,190	5,460	5,460	4,600	2,300	3,020	1,000
2	14,000	1,550	34,800	8,130	8,130	8,650	5,460	5,020	3,790	4,810	1,960	860
3	6,630	1,550	25,000	7,610	8,130	10,000	5,690	5,020		4,390	8,020	860
4	3,990	1,790	21,300	6,870	7,870	10,800	5,690	5,240	3,600	3,210	3,210	860
5	3,020	1,550	17,700	8,390	6,870	10,600	5,920	6,150		1,960	1,790	665
6	2,650	1,550	11,400	7,360	6,390	10,300	5,460	8,130	5,920	2,300	1,630	730
7	2,650	1,630	9,460	5,020	5,920	9,730	5,240	7,610	3,790	2,300	1,550	1,630
8	2,470	1,550	8,650	4,600	5,920	8,920	5,020	6,630	3,990	2,130	1,550	1,150
9	2,300	1,550	6,630	5,460	6,630	7,870	5,240	5,920	3,790	2,470	1,550	1,000
10	2,130	1,550	6,390	10,000	8,390	8,130	5,690	5,460	3,590	2,650	1,310	860
11	1,880	1,550	5,690	13,700	12,500	7,610	5,460	5,690	3,400	2,830	1,710	860
12	1,880	1,550	5,460	10,300	18,300	7,360	5,460	7,360	3,210	3,210	1,310	2,150
13	1,790	1,630	5,240	12,200	18,300	7,100	4,600	13,700	2,650	4,190	1,230	1,790
14	1,960	1,710	5,690	19,000	12,800	6,870	4,390	11,400	2,470	4,600	1,310	1,470
15	1,790	1,790	11,400	40,500	10,600	7,110	4,390	12,200	2,470	4,810	1,150	1,150
16	1,790	2,470	25,800	39,000	8,920	7,610	4,390	10,600	2,470	7,110	1,000	1,150
17	1,630	24,400	19,300	24,000	7,870	8,390	4,600	8,650	1,960	6,870	1,000	1,000
18	1,470	20,000	17,100	18,300	6,870	10,800	6,390	7,110	1,790	4,190	1,470	1,080
19	1,630	11,400	15,500	13,400	6,390	9,460	5,240	6,150	1,960	3,990	1,390	1,000
20	1,630	8,390	13,700	11,100	6,870	8,920	4,810	5,460	2,300	3,400	1,470	730
21	1,630	6,390	7,110	11,400	17,400	8,130	4,600	5,240	2,470	2,650	1,470	665
22	1,630	4,600	6,870	15,200	19,300	6,870	4,600	5,020	3,020	2,300	1,000	730
23	1,550	4,390	8,130	21,300	19,300	6,150	5,240	4,190	2,130	2,040	1,000	1,470
24	1,630	4,810	8,130	37,400	15,200	6,630	5,690	4,190	2,130	2,130	930	1,470
25	1,630	4,390	7,610	29,600	10,600	8,130	6,150	4,190	2,300	2,040	1,000	1,470
26	1,630	3,990	7,110	23,700	10,000	7,360	5,240	4,190	2,470	2,300	860	1,230
27	1,470	4,190	8,390	20,000	9,460	7,360	5,240	4,190	2,130	1,790	930	1,150
28	1,630	3,790	9,460	12,800	8,390	5,920	5,240	8,390	2,300	1,790	730	1,000
29	1,960	28,600	9,190	10,800	-------	5,690	5,460	8,390	2,470	1,630	600	1,000
30	1,710	31,800	8,390	16,000	-------	5,460	5,460	7,610	2,130	1,470	795	1,000
31	1,630	-------	7,870	8,920	-------	5,020	-------	5,920	-------	2,130	860	-------

NOTE.—Gage not read June 3–5; mean discharge estimated.

Monthly discharge of James River at Cartersville, Va., for the year ending Sept. 30, 1921

[Drainage area, 6,230 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	16,100	1,470	2,950	0.474	0.55
November	31,800	1,470	6,250	1.00	1.12
December	41,700	5,240	12,800	2.05	2.36
January	40,500	4,600	15,300	2.46	2.84
February	19,300	5,920	10,400	1.67	1.74
March	10,800	5,020	8,000	1.28	1.48
April	6,390	4,390	5,250	.843	.94
May	13,700	4,190	6,790	1.09	1.26
June	5,920	1,790	2,950	.474	.53
July	7,110	1,470	3,100	.498	.57
August	3,210	600	1,410	.226	.26
September	2,130	665	1,110	.178	.20
The year	41,700	600	6,350	1.02	13.85

ROANOKE RIVER BASIN

ROANOKE RIVER AT ROANOKE, VA.

LOCATION.—At Walnut Street highway bridge in Roanoke, Roanoke County.

DRAINAGE AREA.—388 square miles.

RECORDS AVAILABLE.—July 10, 1896, to July 15, 1906; May 7, 1907, to September 30, 1921.

GAGE.—Chain gage on downstream side of Walnut Street Bridge; read by employee of Roanoke Railway & Electric Co. Wire gage used previous to November 28, 1903.

DISCHARGE MEASUREMENTS.—Made from downstream side of Walnut Street Bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and small boulders. Banks may be overflowed at extreme flood stages. Control, loose boulders.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year, 3.50 feet at 8 a. m. November 30 (discharge, 2,250 second-feet); minimum stage, 0.60 foot November 5–8 (discharge, 56 second-feet).

1896–1921: Maximum stage recorded, 14.34 feet August 6, 1901 (discharge, 16,900 second-feet); minimum stage, zero on morning of December 23, 1909, when flow was retarded by freezing.

ICE.—Stage-discharge relation seriously affected by ice during severe winters.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve fairly well defined between 80 and 7,000 second-feet; extended beyond these limits. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by the Roanoke Railway & Electric Co.

Discharge measurements of Roanoke River at Roanoke, Va., during the year ending Sept. 30, 1921

Date	Made by—	Gage height	Discharge
		Feet.	*Sec.-ft.*
Nov. 23	Bigwood and Lamoureux	1.01	155
May 17	do	1.22	211
June 29	B. L. Bigwood	.92	120

Daily discharge, in second-feet, of Roanoke River at Roanoke, Va., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	169	58	1,650	335	815	612	322	261	206	98	242	66
2	150	58	1,100	343	772	575	322	242	156	111	156	156
3	150	58	650	343	730	541	322	281	156	111	150	87
4	134	58	445	330	650	507	322	301	150	98	140	98
5	127	56	445	322	650	476	322	301	206	87	140	172
6	119	56	417	301	575	445	301	293	188	87	111	111
7	119	56	575	293	507	389	285	281	156	87	111	75
8	116	56	650	281	445	366	281	261	156	87	111	87
9	116	60	507	281	575	366	281	242	156	124	111	206
10	93	69	417	281	1,650	366	281	223	172	119	106	111
11	84	80	343	281	1,530	366	261	242	156	98	98	98
12	69	80	1,100	301	1,420	366	242	445	150	98	98	98
13	60	80	1,650	322	1,000	366	223	343	124	242	156	98
14	66	80	1,480	690	730	343	223	322	124	541	140	91
15	60	231	650	730	541	860	261	281	124	507	124	87
16	60	330	507	730	541	650	242	242	116	476	111	87
17	60	1,360	476	650	541	507	301	223	111	301	140	87
18	60	612	417	575	507	445	281	206	111	261	111	82
19	60	269	417	507	507	445	281	172	111	223	98	75
20	60	250	417	476	650	389	269	172	156	156	87	87
21	60	178	417	650	612	366	253	162	223	140	80	87
22	60	178	445	1,530	541	389	242	162	206	124	75	206
23	60	162	507	1,360	575	343	242	156	156	116	71	124
24	60	162	507	1,200	650	343	234	156	111	111	66	111
25	60	172	507	1,150	650	445	216	172	106	343	66	98
26	62	172	476	1,200	650	417	206	172	106	140	66	93
27	62	417	445	690	650	366	242	156	124	242	66	87
28	60	1,100	389	730	650	343	366	206	111	156	87	87
29	60	905	343	815	-------	343	389	195	223	261	75	87
30	58	2,250	343	815	-------	335	281	223	140	343	71	82
31	58	-------	335	815	-------	322	-------	281	-------	417	66	-------

Monthly discharge of Roanoke River at Roanoke, Va., for the year ending Sept. 30, 1921

[Drainage area, 388 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	169	58	83.6	0.215	0.25
November	2,250	56	322	.830	.93
December	1,650	335	614	1.58	1.82
January	1,530	281	623	1.61	1.86
February	1,650	445	726	1.87	1.95
March	860	322	432	1.11	1.28
April	389	206	276	.711	.79
May	445	156	238	.613	.71
June	223	106	150	.387	.43
July	541	87	203	.523	.60
August	242	66	107	.276	.32
September	206	66	104	.268	.30
The year	2,250	56	321	.827	11.24

ROANOKE RIVER AT OLD GASTON, N. C.

LOCATION.—At bridge of Roanoke Railway Co., at Old Gaston, Northampton County, three-fourths mile below mouth of Indian Creek, 1¼ miles north of Thelma, and 2½ miles above mouth of Deep Creek.

DRAINAGE AREA.—8,350 square miles.

RECORDS AVAILABLE.—December 7, 1911, to September 30, 1921.

GAGE.—Chain gage attached to outside guard timber on downstream side of second span from right end of deck railroad bridge; read by R. A. Howell.

DISCHARGE MEASUREMENTS.—Made from downstream side of the bridge. Measuring section broken by 11 bridge piers. This bridge has been floored over and equipped with handrails. It is now a combined toll highway and railroad bridge.

CHANNEL AND CONTROL.—Channel practically permanent. Control about 1 mile below gage is of rocks and probably permanent. Left bank subject to overflow in extreme floods, but a fair determination can be made of the overflow discharge around bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.7 feet at 7.25 a. m. December 3 (discharge, 59,700 second-feet); minimum stage, 1.00 foot at 7.30 a. m. August 27, 28, 30, 31, September 1–3 and 8 (discharge, 890 second-feet).

1911–1921: Maximum stage recorded, 16.6 feet at 7 a. m. March 18, 1912 (discharge, 210,000 second-feet); minimum stage, 0.95 foot at 6 a. m. October 1, 1914 (discharge, 790 second-feet).

ICE.—Ice forms to considerable thickness at this station during severe winters, and the stage-discharge relation is seriously affected.

REGULATION.—During periods of low water there are variations in flow, probably due to weekly (Sunday) shutdown of large power plants farther upstream. These variations are observable at power plants at Roanoke Rapids and Weldon on Tuesdays or Wednesdays.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice during the year. Rating curve revised slightly on basis of recent measurements and is well defined below 33,000 second-feet and fairly well defined to 200,000 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

The following discharge measurement was made by Stevens and Dirzulaitis: June 21, 1921: Gage height, 2.38 feet; discharge, 4,410 second-feet.

Daily discharge, in second-feet, of Roanoke River at Old Gaston, N. C., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9,000	2,090	51,100	8,500	12,000	9,500	8,000	7,080	7,080	4,520	2,640	890
2	11,000	1,830	55,300	7,540	14,100	9,000	11,500	6,280	5,560	8,500	11,000	890
3	10,500	2,360	59,700	7,080	14,700	9,000	11,000	5,920	4,520	7,080	11,000	890
4	5,920	3,230	30,500	6,660	12,000	8,000	8,500	5,200	4,180	4,860	3,540	1,110
5	4,180	2,930	13,600	6,280	10,500	8,000	7,540	5,560	11,500	3,860	2,930	1,110
6	4,180	2,640	11,500	6,280	9,000	8,090	7,080	6,660	14,100	4,180	2,360	1,110
7	2,640	2,090	11,000	6,280	8,500	7,080	6,280	8,500	10,000	3,540	2,360	1,340
8	2,360	2,090	9,500	5,560	8,500	6,660	6,280	7,080	7,080	3,230	2,640	890
9	2,930	1,830	10,500	6,280	8,000	7,080	5,200	5,920	4,520	2,640	2,090	1,580
10	2,360	2,090	27,300	6,660	8,500	8,090	11,000	5,560	4,180	2,090	2,360	1,830
11	2,640	2,360	28,900	50,100	30,500	10,500	8,000	5,200	3,860	5,200	1,830	2,090
12	2,360	2,360	17,200	45,100	55,300	8,500	7,540	5,920	4,180	7,540	2,090	2,640
13	1,580	2,640	12,500	27,300	51,100	8,000	5,920	19,900	3,860	5,920	1,830	8,000
14	1,340	2,360	10,000	17,200	26,500	8,000	5,560	32,200	3,860	4,520	1,830	5,920
15	1,830	2,640	15,300	30,500	14,700	8,500	5,200	16,600	3,540	3,860	2,090	3,540
16	1,830	2,930	36,500	45,100	11,500	11,500	5,200	10,500	3,860	5,560	2,360	2,640
17	1,580	11,000	22,000	51,100	10,000	10,000	5,560	9,500	3,540	8,500	1,830	2,090
18	2,090	48,100	13,000	15,900	9,500	9,000	19,900	9,000	2,930	9,000	1,830	1,580
19	1,830	37,400	9,500	12,000	9,000	8,000	23,500	7,080	5,920	6,660	1,580	1,340
20	1,580	16,600	8,500	10,000	9,500	7,080	13,600	6,280	4,180	4,180	1,830	1,580
21	2,090	9,000	8,000	9,000	28,100	6,660	9,500	5,560	4,180	4,180	1,830	1,340
22	1,580	5,920	7,080	8,500	33,000	6,280	8,000	5,560	3,860	3,540	1,830	1,580
23	1,830	5,200	7,540	10,000	25,800	6,660	6,660	5,560	3,540	3,230	1,340	1,580
24	1,580	4,520	8,500	14,700	16,600	6,280	8,500	5,200	3,230	3,230	1,340	9,500
25	1,830	4,520	9,000	23,500	12,500	8,500	9,500	5,920	3,540	2,930	1,110	1,580
26	1,830	4,520	8,500	18,500	11,500	12,500	7,080	4,520	3,540	2,930	1,110	1,340
27	2,640	4,180	8,000	9,000	11,000	10,500	6,660	4,520	3,540	2,360	890	2,360
28	2,090	5,200	14,700	11,000	9,500	9,000	5,920	6,660	3,540	2,640	890	2,090
29	2,360	40,200	16,600	10,000	.....	8,000	5,920	10,500	6,280	2,640	1,110	1,830
30	2,090	52,100	16,600	9,500	.....	7,080	7,080	9,000	5,560	3,230	890	2,360
31	1,830	.....	11,500	10,000	.....	6,660	.....	8,500	.....	3,280	890	.....

Monthly discharge of Roanoke River at Old Gaston, N. C., for the year ending Sept. 30, 1921

[Drainage area, 8,350 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	11,000	1,340	3,080	0.369	0.43
November	52,100	1,830	9,560	1.14	1.27
December	59,700	7,080	18,400	2.20	2.54
January	51,100	5,560	16,300	1.95	2.25
February	55,300	8,000	17,200	2.06	2.14
March	12,500	6,280	8,310	.995	1.15
April	23,500	5,200	8,570	1.03	1.15
May	32,200	4,520	8,300	.994	1.15
June	11,500	2,930	5,110	.612	.68
July	9,000	2,090	4,500	.539	.62
August	11,000	890	2,430	.291	.34
September	9,500	890	2,290	.274	.31
The year	59,700	890	8,620	1.03	14.03

DAN RIVER NEAR PINNACLES, VA.

LOCATION.—In the middle of Pinnacles Gorge, 3 miles southeast of Pinnacles, Patrick County, and 7 miles upstream from North Carolina State line.

DRAINAGE AREA.—35 square miles (determined by a survey around basin by private engineers).

RECORDS AVAILABLE.—October 29, 1920, to September 30, 1921.

GAGE.—A vertical staff on right bank at end of measuring weir; read by C. M. Gentry. The location is very inaccessible, so that only one daily reading could be obtained.

DISCHARGE MEASUREMENTS.—A rectangular, sharp-edged timber weir, attached to heavy timber, bolted to bedrock. The joint between rock and weir was not tight, so some water escaped under weir. The weir discharge table was checked by one current-meter discharge measurement made by wading. A standard weir formula was used to compute weir rating table.

CHANNEL AND CONTROL.—Channel approaches weir on a fairly straight line, the weir forming a pool 3 or 4 feet deep at low stages. Control formed by weir.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.9 feet morning of December 14 (discharge, 686 second-feet); minimum stage, 0.22 foot September 17–20 (discharge, 17 second-feet).

ICE.—None reported.

REGULATION.—Low stages considerably affected by operation of several mill dams upstream.

COOPERATION.—Records furnished by North Carolina Geological and Economic Survey.

The following discharge measurement was made by W. E. Hall and Thorndike Saville:

July 25, 1921: Gage height, 0.37 foot; discharge, 31.8 second-feet.

Daily discharge, in second-feet, of Dan River near Pinnacles, Va., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		57	237	87	105	125	201	72	57	57	45	20
2		64	165	87	105	114	165	72	57	51	43	28
3		75	125	87	105	108	125	212	57	51	39	26
4		60	117	82	98	108	105	117	55	45	33	20
5		57	190	79	98	105	96	82	72	45	33	20
6		57	105	75	87	102	87	75	57	39	33	28
7		53	105	72	87	98	82	72	55	39	33	28
8		53	145	72	212	95	87	72	55	35	33	28
9		53	108	72	310	93	82	72	55	35	33	60
10		53	105	96	500	90	75	67	55	35	33	33
11		72	105	91	370	87	72	67	55	35	33	28
12		57	105	87	340	87	72	190	51	69	33	24
13		57	165	72	260	165	72	114	45	60	33	24
14		57	686	540	212	237	72	87	45	96	24	22
15		57	212	500	165	125	125	82	45	84	24	20
16		145	165	125	125	114	237	82	45	72	24	20
17		212	145	114	105	98	310	72	45	69	24	17
18		117	108	108	105	91	237	67	45	60	24	17
19		96	96	105	125	87	190	64	45	310	24	17
20		91	91	125	190	87	125	75	45	105	24	17
21		91	87	114	260	87	105	72	45	72	22	45
22		87	237	105	237	87	87	72	45	51	20	43
23		79	145	105	190	87	145	64	45	45	20	39
24		72	117	98	165	108	105	60	45	33	20	35
25		67	87	87	125	105	82	57	72	31	20	33
26		67	82	87	125	96	72	114	72	87	20	31
27		67	237	125	165	96	72	87	57	72	20	28
28		237	165	165	145	91	72	72	57	45	20	28
29	57	190	125	212		87	98	72	72	43	20	28
30	57	310	105	165		87	87	57	64	57	20	28
31	57		105	125		87		57		51	20	

NOTE.—No gage-height record Jan. 30 and 31 and Feb. 20; discharge estimated by North Carolina Geological and Economic Survey. No gage-height record Mar. 6–13 and Sept. 9; discharge estimated by U. S. Geol. Survey by comparison with records of Ararat River near Pilot Mountain, N. C.

Monthly discharge of Dan River near Pinnacles, Va., for the year ending Sept. 30, 1921

[Drainage area, 35 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
November	310	53	93.7	2.68	2.99
December	686	82	154	4.40	5.07
January	540	72	131	3.74	4.31
February	500	87	183	5.23	5.45
March	237	87	104	2.97	3.42
April	310	72	118	3.37	3.76
May	212	57	83.8	2.39	2.76
June	72	45	53.8	1.54	1.72
July	310	31	63.8	1.82	2.10
August	45	20	27.3	.780	.90
September	60	17	27.8	.794	.89

PEEDEE RIVER BASIN

YADKIN RIVER AT NORTH WILKESBORO, N. C.

LOCATION.—At new bridge (same location as old one washed out July 16, 1916) 3,870 feet below Southern Railway station at North Wilkesboro, Wilkes County.

DRAINAGE AREA.—500 square miles.

RECORDS AVAILABLE.—April 10, 1903, to June 30, 1909, and October 1, 1920, to September 30, 1921.

GAGE.—Original chain gage washed away with old bridge July 16, 1916. The original datum was lost. A temporary staff gage was used from October 17, 1920, to April 13, 1921, when a chain gage was installed on downstream handrail and set to datum of staff gage. W. L. Wyatt read the gage to August 6, 1921, and S. U. Reynolds thereafter.

DISCHARGE MEASUREMENTS.—Made from bridge at gage.

CHANNEL AND CONTROL.—Channel is straight above station, slightly curved at bridge, and straight for 600 feet below. Current is swift. Right bank is low and subject to overflow but all water must pass under bridge and approaches. Left bank is high and rocky. Bed of stream is rocky with sand in places; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.0 feet from 8.30 to 10 a. m. December 14 (discharge, 10,700 second-feet); minimum stage, 1.3 feet at 6 a. m. September 17 (discharge, 376 second-feet).

1903–1909 and 1920–1921: Maximum stage recorded, 18.8 feet (datum of old gage) at 10.20 a. m. November 19, 1906 (discharge, 22,300 second-feet, revised determination); minimum stage, —0.6 foot January 26, 1905 (discharge, 184 second-feet).

REGULATION.—Very slight regulation from small mill dams upstream.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 376 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.

Discharge measurements of Yadkin River at North Wilkesboro, N. C., during the year ending Sept. 30, 1921

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Dec. 14	North Carolina Geological and Economic Survey	12.25	9,740
July 21	W. E. Hall	2.30	846
Sept. 2	L. J. Hall	1.56	476

Daily discharge, in second-feet, of Yadkin River at North Wilkesboro, N. C., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,730	492	1,120	760	1,480	1,020	1,380	1,120	860	712	472	472
2	1,380	532	912	712	1,380	1,020	1,020	1,070	810	618	472	492
3	871	532	760	760	1,280	1,020	912	2,360	810	760	574	472
4	801	532	712	810	1,330	964	912	2,160	810	664	664	414
5	697	532	1,590	760	1,280	912	860	1,540	1,220	618	574	433
6	664	452	760	760	1,220	912	860	1,336	860	618	574	433
7	634	452	618	760	1,220	912	860	1,220	810	618	664	395
8	603	452	2,220	712	1,480	912	860	1,170	1,120	618	712	414
9	546	472	2,290	860	1,920	964	860	1,070	1,070	618	618	492
10	546	452	1,640	1,430	2,420	964	760	1,020	912	712	492	1,220
11	574	492	1,380	1,480	3,160	912	760	964	860	712	492	532
12	519	574	1,170	1,380	2,100	912	760	1,980	810	760	760	492
13	519	492	2,040	1,220	1,590	912	760	1,380	760	1,170	760	452
14	519	452	7,240	2,040	1,380	912	760	1,170	810	1,020	1,020	414
15	546	492	2,380	1,860	1,330	912	964	712	810	1,220	810	395
16	519	2,630	1,590	1,590	1,280	912	1,020	1,330	810	912	712	395
17	532	1,590	1,220	1,380	1,220	860	4,430	1,120	810	760	664	376
18	492	860	1,020	1,070	1,170	860	1,860	1,070	760	712	664	395
19	532	664	964	1,020	1,170	860	1,490	1,020	810	712	618	395
20	492	574	860	964	1,430	860	1,280	1,120	760	712	532	395
21	492	574	860	964	1,380	860	1,120	1,380	712	760	492	452
22	452	574	1,480	1,170	1,380	1,020	1,070	912	618	664	492	810
23	452	532	2,230	1,040	1,280	1,070	1,430	1,070	574	618	532	452
24	492	532	1,430	1,590	1,170	1,020	1,120	1,020	532	618	492	433
25	492	492	1,020	1,170	1,120	1,020	964	1,070	574	664	532	414
26	492	492	860	964	1,070	964	1,430	1,070	664	664	492	1,120
27	492	810	860	1,220	1,120	860	2,630	1,070	810	664	452	574
28	532	3,080	2,100	1,220	964	860	2,100	1,020	964	618	452	492
29	492	1,020	1,360	1,170	-------	860	1,490	964	1,070	574	760	492
30	492	860	810	1,220	-------	810	1,280	912	810	574	532	452
31	532	-------	760	1,430	-------	810	-------	860	-------	492	492	-------

NOTE.—Daily discharge, Oct. 1–16, estimated by comparison with records of flow of Yadkin River near Salisbury, N. C.; Nov. 27–30, Dec. 13–15, and May 4 determined from mean daily gage height ascertained from graph constructed on basis of two daily readings.

Monthly discharge of Yadkin River at North Wilkesboro, N. C., for the year ending Sept. 30, 1921

[Drainage area, 500 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,730	452	649	1.30	1.50
November	3,080	452	756	1.51	1.68
December	7,240	618	1,490	2.98	3.44
January	2,040	712	1,160	2.32	2.68
February	3,160	964	1,440	2.88	3.00
March	1,070	810	925	1.85	2.13
April	4,480	760	1,270	2.54	2.83
May	2,360	712	1,200	2.40	2.77
June	1,220	532	820	1.64	1.83
July	1,220	492	715	1.43	1.65
August	1,020	452	599	1.20	1.38
September	1,220	376	506	1.01	1.13
The year	7,240	376	958	1.92	26.02

YADKIN RIVER AT DONNAHA, N. C.

LOCATION.—One-fourth mile upstream from railroad station at Donnaha, Forsyth County, just below site of old toll bridge which was washed away by a flood in 1916, 6 miles downstream from Ararat River, which enters from left.

DRAINAGE AREA.—1,600 square miles.

RECORDS AVAILABLE.—April 11, 1913, to September 30, 1918, and October 1, 1920, to September 30, 1921.

GAGE.—Vertical gage in four sections on left bank, 150 feet downstream from left end of remains of old toll bridge; read by J. F. Goolsby. Section of gage below 10 feet, which was carried away by ice in February, 1918, was replaced April 23, 1920.

DISCHARGE MEASUREMENTS.—Prior to flood in July, 1916, measurements were made from toll bridge. Bridge washed out in July, 1916. After that date no measurements were made until April 23, 1920, when a new bridge had been erected 1 mile downstream. Since July, 1920, measurements have been made from a cable erected 400 feet upstream from gage by North Carolina Geological & Economic Survey.

CHANNEL AND CONTROL.—Bed composed of sand and bedrock; probably permanent. Current slightly obstructed by two old steel trusses one of which is opposite and the other 300 feet below gage; obstruction probably permanent. Control is a rock ledge extending across river and forming a shoal 450 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.5 feet at 10 a. m. April 17 (estimated discharge, 19,200 second-feet); minimum stage recorded, 5.4 feet numerous periods in September (discharge, 1,160 second-feet).

1913–1921: Maximum stage recorded, 40.0 feet at 8 a. m. July 16, 1916, (determined by observer who measured from flood marks down to water surface at lower stage; discharge not determined); minimum stage, 4.65 feet at 4 p. m. September 30, 1914 (discharge, 678 second-feet).

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

DIVERSION.—None.

REGULATION.—None except for a few small mill dams on tributary streams.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 2,500 second-feet and fairly well defined between 2,500 and 15,000 second-feet; extended above 15,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fairly good.

Discharge measurements of Yadkin River at Donnaha, N. C., during the years ending Sept. 30, 1920 and 1921

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1920		*Feet*	*Sec.-ft.*	1920		*Feet*	*Sec.-ft.*
Apr. 23	A. H. Condron	6.10	2,440	Oct. 2	Broach • and Saville •	6.36	2,520
July 12	North Carolina Geological and Economic Survey	8.30	6,570	2	do	6.31	2,520
				26	Cottrell • and Cobb •	5.64	1,610
				Nov. 13	Austin •	5.65	1,470
15	do	6.10	2,730				
Aug. 26	do	12.00	13,800	1921			
Sept. 11	do	6.22	2,170	Jan. 15	Broach •	6.68	8,920

• North Carolina Geological and Economic Survey.

Daily discharge, in second-feet, of Yadkin River at Donnaha, N. C., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,430	1,610	7,470	2,910	4,050	3,290	4,620	3,480	2,530	2,530	1,780	1,380
2	2,720	1,610	4,430	2,910	3,860	3,290	3,860	3,290	2,530	2,530	1,780	1,360
3	2,530	1,610	2,150	2,910	3,860	3,290	3,100	3,290	2,530	1,960	1,780	1,300
4	2,340	1,610	2,340	2,910	4,050	3,290	2,720	4,050	2,720	1,870	1,610	1,280
5	2,240	1,610	2,340	2,720	3,860	3,290	2,530	4,620	3,290	1,700	1,380	1,160
6	2,150	1,610	2,530	2,910	3,860	2,910	2,530	5,570	2,910	1,530	1,610	1,160
7	2,150	1,610	4,050	3,290	3,670	2,910	2,340	4,430	3,290	1,700	1,530	1,160
8	2,150	1,610	4,810	2,910	4,050	2,720	2,240	4,620	3,290	1,780	1,450	1,230
9	2,240	1,610	4,810	2,910	4,430	2,720	2,530	5,570	3,860	1,610	1,450	1,160
10	2,060	1,610	5,380	2,910	5,760	2,720	2,240	5,190	2,910	1,610	1,450	1,160
11	1,960	1,610	5,570	2,910	5,950	2,720	2,060	4,430	3,290	1,610	1,610	1,300
12	1,780	1,610	4,810	2,910	5,570	2,720	2,060	3,860	2,910	1,610	1,450	1,450
13	1,780	1,610	4,240	3,670	5,570	2,720	1,960	3,670	2,720	2,150	1,450	1,610
14	1,780	1,610	5,760	5,570	5,950	2,720	1,870	2,910	2,530	3,290	1,700	1,300
15	1,780	1,610	4,810	9,370	5,950	2,720	1,960	2,910	2,530	2,910	2,340	1,230
16	1,780	1,610	4,430	6,710	5,950	2,720	7,470	5,570	2,340	2,720	2,150	1,160
17	1,700	1,610	3,860	4,430	5,950	2,530	15,800	3,670	2,340	2,910	1,960	1,160
18	1,610	1,610	4,050	3,670	5,760	2,530	5,950	3,100	2,340	3,290	1,780	1,230
19	1,610	1,780	3,860	3,290	5,570	2,530	4,620	2,910	2,340	2,910	1,780	1,160
20	1,610	2,240	3,670	3,290	5,190	2,530	4,050	2,910	2,340	2,720	1,780	1,300
21	1,610	1,870	3,670	3,290	5,000	2,530	3,670	2,910	2,340	2,530	1,780	1,300
22	1,610	4,810	3,670	4,430	4,810	2,340	3,670	2,910	2,240	2,530	1,780	1,380
23	1,610	3,290	3,480	4,480	4,620	2,240	4,050	2,910	2,240	2,240	1,610	1,300
24	1,610	2,240	3,290	5,570	4,240	2,150	3,670	2,530	2,910	2,530	1,610	1,300
25	1,610	1,960	3,100	5,190	4,050	2,240	3,670	2,530	3,860	2,530	1,610	1,380
26	1,450	1,780	3,290	4,050	3,670	2,240	3,670	3,670	3,290	3,670	1,700	1,700
27	1,610	1,870	3,670	4,430	3,480	2,240	3,670	2,910	3,290	3,100	1,610	1,450
28	1,610	5,570	3,290	4,810	3,480	2,910	3,480	2,910	4,240	2,530	1,610	1,610
29	1,610	8,230	3,290	4,050	-------	3,290	3,670	2,910	4,810	2,530	1,530	1,450
30	1,610	10,500	3,100	3,860	-------	2,910	3,480	2,720	4,430	2,240	1,530	1,450
31	1,610	-------	2,910	4,240	-------	3,670	-------	2,530	-------	1,960	1,450	-------

Monthly discharge of Yadkin River at Donnaha, N. C., for the year ending Sept. 30, 1921

[Drainage area, 1,600 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	4,430	1,450	1,930	1.21	1.40
November	10,500	1,610	2,500	1.56	1.74
December	7,470	2,150	3,940	2.46	2.84
January	9,370	2,720	3,980	2.49	2.87
February	5,950	3,480	4,720	2.95	3.07
March	3,670	2,150	2,760	1.72	1.98
April	15,800	1,870	3,770	2.36	2.63
May	5,570	2,530	3,600	2.25	2.59
June	4,810	2,240	2,970	1.85	2.06
July	3,670	1,530	2,370	1.48	1.71
August	2,340	1,380	1,670	1.04	1.20
September	1,700	1,160	1,320	.825	.92
The year	15,800	1,160	2,950	1.84	25.01

YADKIN RIVER NEAR SALISBURY, N. C.

LOCATION.—At highway bridge known as Piedmont toll bridge, 1,000 feet upstream from Southern Railway bridge, 4 miles east of Spencer, 5 miles downstream from mouth of South Yadkin River, and 6 miles east of Salisbury, Rowan County.

DRAINAGE AREA.—3,400 square miles.

RECORDS AVAILABLE.—September 24, 1895, to December 31, 1909; September 1, 1911, to September 30, 1921.

GAGE.—Chain gage attached to highway bridge; read by J. T. Yarbrough. From the date of establishment to May 31, 1899, the gage was at the Southern Railway bridge, and from May 31, 1899, it was at the highway bridge until moved back to the railroad bridge early in 1903, where it remained until the end of 1905. Since January 1, 1906, the gage has been at the highway bridge; the datum originally established there in 1899 has never knowingly been changed, but it is probable that there has been a variation of about 0.1 foot owing to settlement of bridge or other cause. On July 19, 1921, gage was moved from middle of long span to a position near right bank to eliminate probability of change. The last gage at the railroad bridge read the same as the gage at the highway bridge at gage height 3.2 feet, but not for higher and lower stages. Datum of the original gage at railroad bridge somewhat uncertain.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge. During the time that gage was at railroad bridge most of the measurements were made from that bridge. During flood of July, 1916, water rose over floor of highway bridge, making it necessary to use railroad bridge.

CHANNEL AND CONTROL.—Channel wide and rather rough. Control is a rock ledge about 500 feet below bridge extending entirely across river; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.87 feet at 6 p. m. February 11 (discharge, 43,200 second-feet); minimum stage, 1.80 feet at 7 a. m. September 9 (discharge, 1,400 second-feet).

1895–1921: Maximum stage recorded, 23.8 feet at 1 a. m. July 18, 1916 (discharge, 121,000 second-feet); minimum stage recorded, 1.2 feet September 20, October 6, November 22 and 26, 1897 (discharge, 900 second-feet).

ICE.—Never enough to affect stage-discharge relation.

DIVERSIONS.—None.

REGULATION.—Flow during low stages may be somewhat affected by developed powers on the river and tributaries above.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 1,280 and 20,000 second-feet and fairly well defined up to 121,000 second-feet. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Yadkin River near Salisbury, N. C., during the year ending Sept. 30, 1921

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 24	W. E. Hall	2.32	2,230	Aug. 20	L. J. Hall	2.23	2,180
July 19	L. J. Hall	[a] 3.06	4,690	22	do	2.06	1,840
20	do	2.95	4,160	Sept. 10	do	2.14	1,940

[a] Gage moved to a point near right bank on this date. No change in gage datum, but gage readings at new location are 0.08 foot lower than at previous location.

Daily discharge, in second-feet, of Yadkin River near Salisbury, N. C., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12,400	2,360	23,000	4,920	10,800	5,600	5,940	5,940	3,480	4,120	3,400	1,720
2	6,280	2,240	14,200	4,600	10,000	5,260	8,460	4,920	3,480	2,740	2,100	1,720
3	3,960	2,240	7,000	4,600	8,460	4,920	5,940	5,600	3,320	2,480	2,100	1,810
4	3,640	2,480	5,260	4,280	7,720	4,920	4,920	8,080	3,320	2,480	1,900	1,720
5	3,170	2,360	5,260	4,120	7,360	4,920	4,600	9,220	4,600	2,610	2,440	1,640
6	3,020	2,480	5,600	4,120	6,640	4,600	4,280	5,940	5,260	2,360	2,320	1,720
7	2,880	2,240	4,920	3,800	6,640	4,600	4,280	5,260	3,800	2,480	2,000	1,900
8	2,740	2,360	12,400	3,800	8,080	4,600	4,280	5,260	3,320	2,480	2,210	1,720
9	2,480	2,360	23,500	4,280	8,460	4,600	4,280	4,920	4,600	2,480	2,440	1,400
10	2,480	2,360	16,500	15,200	15,200	4,600	4,280	4,600	4,920	3,320	2,320	2,100
11	2,610	2,240	8,840	18,000	42,800	4,600	4,120	4,600	3,800	3,480	2,100	3,250
12	2,360	2,360	6,640	10,800	27,400	4,600	3,960	7,720	3,480	2,610	1,900	2,820
13	2,360	2,610	6,280	6,280	11,600	4,600	3,960	10,800	3,640	3,320	2,100	1,900
14	2,360	2,360	16,500	7,360	8,460	4,600	3,800	7,360	3,020	3,170	2,560	1,720
15	2,480	2,360	32,000	27,400	7,000	4,600	3,960	6,640	3,480	4,120	2,820	1,560
16	2,360	2,880	14,700	20,500	6,280	4,600	4,280	9,600	3,020	4,600	2,960	1,560
17	2,360	18,500	7,720	10,800	5,940	4,600	17,500	7,000	3,020	4,600	2,320	1,560
18	2,240	12,000	6,280	8,080	5,940	4,280	23,500	5,260	2,880	6,640	2,210	1,480
19	2,130	5,600	5,600	6,280	5,600	4,280	9,600	4,600	2,880	5,760	2,320	1,720
20	2,240	4,120	4,920	5,600	8,840	4,280	7,000	4,280	3,170	4,400	2,100	1,720
21	2,360	3,320	4,600	5,260	16,500	4,280	5,940	4,600	3,170	5,080	2,100	1,560
22	2,130	3,320	4,600	5,260	10,000	4,280	5,260	4,600	2,740	3,100	1,900	3,720
23	2,360	3,170	5,260	5,600	7,720	4,920	5,260	4,600	2,480	2,820	1,720	4,230
24	2,240	3,170	6,280	6,280	7,000	5,600	5,600	4,280	2,880	2,440	1,900	2,560
25	2,360	2,740	5,940	6,280	6,280	5,600	5,260	4,280	2,740	2,320	1,900	1,720
26	2,240	3,020	4,920	5,940	5,940	4,920	4,600	4,920	3,170	2,320	1,900	2,100
27	2,360	2,740	7,360	5,600	5,600	4,600	5,260	5,600	3,640	2,560	1,720	2,960
28	2,360	7,000	10,800	6,280	5,600	4,280	13,800	4,920	4,280	2,820	1,640	3,100
29	2,740	21,500	7,720	6,640	-------	4,280	13,800	4,120	3,800	2,320	1,720	2,100
30	2,360	11,200	6,280	6,280	-------	4,280	7,000	4,280	4,600	2,100	1,720	1,900
31	2,240	-------	5,260	8,080	-------	4,280	-------	3,640	-------	3,400	1,900	-------

Monthly discharge of Yadkin River near Salisbury, N. C., for the year ending Sept. 30, 1921

[Drainage area, 3,400 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	12,400	2,130	2,980	0.876	1.01
November	21,500	2,240	4,660	1.37	1.53
December	32,000	4,600	9,550	2.81	3.24
January	27,400	3,800	7,820	2.30	2.65
February	42,800	5,600	10,100	2.97	3.09
March	5,600	4,280	4,680	1.38	1.59
April	23,500	3,800	6,820	2.01	2.24
May	10,800	3,640	5,720	1.68	1.94
June	5,260	2,480	3,530	1.04	1.16
July	6,640	2,100	3,280	.965	1.11
August	3,400	1,640	2,150	.632	.73
September	4,230	1,400	2,090	.615	.69
The year	42,800	1,400	5,260	1.55	20.98

FISHER RIVER NEAR DOBSON, N. C.

LOCATION.—At steel highway bridge at Turkey Ford, on Dobson-Ararat Highway, 2 miles east of Dobson, Surry County.

DRAINAGE AREA.—109 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 1, 1920, to September 30, 1921.

GAGE.—Enameled staff gage fastened to tree on left bank 20 feet above bridge; read by Allen Kidd.

DISCHARGE MEASUREMENTS.—Made from lower side of bridge.

CHANNEL AND CONTROL.—Channel straight above and below gage; bed rather rough. Banks subject to overflow above gage height 10 feet. Control is shoals about 50 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of records, 4.08 feet at 5 p. m. December 14, 1920 (discharge, 2,110 second-feet); minimum stage, 0.44 foot at 8.25 a. m. August 22, 8 a. m. August 28, 6 p. m. September 15, and 8 a. m. September 16, 1921 (discharge, 65 second-feet).

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

REGULATION.—Probably none.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve well defined between 54 and 300 second-feet and extended above by comparison with records for Ararat River near Pilot Mountain, N. C. Gage read to hundredths twice daily; readings November 7, 1920, to January 22, 1921, except for a few days were 1 foot too high. Daily discharge ascertained by applying mean daily gage height to rating table. Records probably good, except November, 1920, to January, 1921, and for high stages.

Discharge measurements of Fisher River near Dobson, N. C., during the year ending Sept. 30, 1920 and 1921

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Aug. 24	North Carolina Geological and Economic Survey	0.80	169
1921			
Oct. 31	do	.60	113
July 27	W. E. Hall and Thorndike Saville	.98	262
Aug. 30	L. J. Hall	.54	95

Daily discharge, in second-feet, of Fisher River near Dobson, N. C., for the period Sept. 1, 1920, to Sept. 30, 1921

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	196	168	151	243	154	298	255	208	204	154	168	168	79
2	178	154	151	235	151	298	255	223	227	135	171	154	116
3	178	185	138	223	154	320	255	196	243	154	168	168	101
4	178	168	135	200	151	320	251	185	227	204	154	171	82
5	161	161	125	189	151	320	231	168	196	154	158	200	88
6	154	151	119	185	151	298	243	154	161	151	151	193	88
7	171	151	119	239	135	320	235	171	154	161	135	200	79
8	154	151	154	227	154	320	227	168	243	171	122	204	85
9	171	151	154	196	154	341	204	189	227	189	104	231	158
10	161	151	196	154	164	1,440	196	154	204	204	154	235	85
11	154	151	227	161	193	341	189	151	204	208	158	231	88
12	151	138	235	196	189	320	171	168	168	154	154	204	85
13	161	132	185	1,380	168	320	158	189	158	151	161	196	74
14	154	125	227	2,050	760	320	161	154	204	135	168	231	74
15	189	151	276	388	650	298	158	189	204	125	164	235	68
16	161	151	435	412	168	276	154	223	189	135	171	243	71
17	154	151	650	320	161	276	154	243	189	151	227	204	76
18	151	151	227	227	151	298	161	227	168	122	223	193	71
19	168	151	189	185	185	320	151	204	154	154	204	200	71
20	161	151	185	154	168	320	154	189	168	158	189	208	68
21	154	151	185	161	154	364	158	168	154	154	171	94	76
22	119	151	235	168	151	320	168	154	204	138	164	94	144
23	128	151	243	276	320	320	189	168	189	125	158	91	85
24	1,120	151	223	204	320	298	204	189	204	135	243	88	74
25	168	151	185	168	276	298	196	168	235	158	235	98	79
26	161	151	154	161	276	276	168	154	227	154	204	98	88
27	151	151	161	154	276	276	154	189	154	158	196	91	85
28	171	185	154	189	255	276	151	227	168	151	154	76	85
29	168	161	144	185	276	-------	161	243	204	158	171	85	82
30	485	151	243	168	320	-------	171	243	189	171	164	98	94
31	-------	151	-------	161	320	-------	189	-------	168	-------	161	85	-------

NOTE.—Discharge Sept. 1-4, 1920, estimated by comparison with records for Ararat River near Pilot Mountain, N. C.; gage not read.

Monthly discharge of Fisher River near Dobson, N. C., for the period Sept. 1, 1920, to Sept. 30, 1921

[Drainage area, 109 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1920					
September	1,120	119	198	1.82	2.03
1920-21					
October	185	125	153	1.40	1.61
November	650	119	207	1.90	2.12
December	2,050	154	308	2.83	3.26
January	760	135	234	2.15	2.48
February	1,440	276	350	3.21	3.34
March	255	151	189	1.73	1.99
April	243	151	188	1.73	1.93
May	243	154	193	1.77	2.04
June	208	122	156	1.43	1.60
July	243	104	172	1.58	1.82
August	243	76	163	1.50	1.73
September	158	68	86.6	.794	.89
The year	2,050	68	199	1.83	24.81

ARARAT RIVER NEAR PILOT MOUNTAIN, N. C.

LOCATION.—At steel highway bridge on Ararat Road, R. D. route 3, 1 mile below mouth of Tom's Creek, 1½ miles upstream from old Douglas Ford, and 5 miles west of Pilot Mountain, Surry County.

DRAINAGE AREA.—250 square miles.

RECORDS AVAILABLE.—July 28, 1920, to September 30, 1921.

GAGE.—Enameled staff gage fastened to downstream side of pier at left bank; read by Martin A. Fulk.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge to which gage is attached.

CHANNEL AND CONTROL.—Channel is straight and smooth above and below gage. Banks are about 10 feet high and rarely overflowed. Control is a rock shoal about 75 feet downstream from gage; excellent for stages below 10 feet. Rock bluffs farther downstream make high-water control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of records, 6.2 feet at 7 a. m. December 14, 1920 (discharge, 5,040 second-feet); minimum stage, 0.30 foot at 8 a. m. September 20, 1921 (discharge, 70 second-feet).

ICE.—Probably not enough to affect stage-discharge relation.

REGULATION.—Two hydroelectric power plants above station may seriously affect the low-water flow; their storage however is relatively small.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 165 and 2,550 second-feet and extended beyond these limits. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Ararat River near Pilot Mountain, N. C., during the year ending Sept. 30, 1921

Date	Made by—	Gage height	Discharge
		Feet.	*Sec.-ft.*
July 23	W. E. Hall and Thorndike Saville	0.94	287
Aug. 29	L. J. Hall	.71	201

Daily discharge, in second-feet, of Ararat River near Pilot Mountain, N. C., for the years ending Sept. 30, 1920 and 1921

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1920				1920				1920			
1		255	338	11		615	255	21		855	385
2		338	315	12		505	295	22		615	255
3		235	315	13		642	275	23		532	505
4		235	315	14		700	295	24		455	1,360
5		235	295	15		480	295	25		405	480
6		338	315	16		532	295	26		430	430
7		295	430	17		588	295	27		505	532
8		275	315	18		430	235	28	275	480	430
9		588	360	19		1,200	255	29	255	405	315
10		1,060	315	20		990	255	30	255	405	560
								31	235	360	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1920-21												
1	455	218	1,130	430	670	505	560	430	405	360	315	158
2	360	200	642	405	588	480	455	430	315	295	275	154
3	338	255	505	405	560	480	430	700	315	295	338	130
4	315	235	455	405	505	455	405	532	505	255	338	106
5	295	218	588	382	505	455	405	480	382	255	275	218
6	275	218	430	360	505	430	405	455	338	235	275	200
7	275	218	405	360	480	455	405	430	315	235	255	172
8	275	218	990	360	505	430	405	405	670	275	275	235
9	295	218	760	480	560	455	455	405	360	295	255	588
10	255	218	615	700	3,090	455	360	405	338	255	218	455
11	255	275	560	560	1,200	405	382	382	382	255	218	176
12	235	235	480	505	760	405	405	615	382	360	235	218
13	235	218	588	455	642	455	382	560	338	295	255	186
14	218	218	3,360	3,420	588	430	405	480	295	642	315	176
15	235	235	990	1,200	532	455	455	430	275	615	255	162
16	218	1,690	700	730	505	430	990	480	275	382	235	151
17	295	1,360	615	615	480	405	2,350	430	275	560	275	168
18	176	480	505	588	480	455	855	405	255	560	235	168
19	218	405	480	480	455	405	642	382	255	990	235	154
20	190	338	456	480	1,960	405	532	360	275	455	186	124
21	218	338	430	480	855	405	480	382	275	360	162	218
22	218	315	455	560	642	430	480	382	295	295	190	405
23	186	315	615	642	615	455	455	360	255	295	196	176
24	218	295	480	588	560	455	455	360	255	218	168	158
25	218	275	455	505	532	430	430	360	275	235	182	162
26	218	275	405	505	505	405	430	615	990	642	179	218
27	218	275	642	588	582	405	455	455	360	360	176	218
28	295	2,980	532	560	505	405	615	382	1,209	255	172	172
29	218	1,280	480	532		405	455	480	642	235	235	137
30	218	1,960	455	532		405	480	360	405	1,600	186	186
31	218		430	642		670		360		480	162	

Monthly discharge of Ararat River near Pilot Mountain, N. C., for the years ending Sept. 30, 1920 and 1921

[Drainage area, 250 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
1920					
July 28–31	275	255	255	1.02	0.15
August	1,200	235	516	2.06	2.38
September	1,360	235	373	1.49	1.66
1920–21					
October	455	176	253	1.01	1.16
November	2,980	200	533	2.13	2.38
December	3,860	405	682	2.73	3.15
January	3,420	360	628	2.51	2.89
February	3,090	455	726	2.90	3.02
March	670	405	443	1.77	2.04
April	2,350	360	547	2.19	2.44
May	700	360	442	1.77	2.04
June	1,200	255	397	1.59	1.77
July	1,600	218	414	1.66	1.91
August	338	162	235	.94	1.08
September	588	106	205	.82	.92
The year	3,860	106	457	1.83	24.80

SANTEE RIVER BASIN

WILSON CREEK NEAR ADAKO, N. C.

LOCATION.—At pool 2½ miles northwest of Adako, Caldwell County, 3 miles above junction of Wilson Creek with Johns River and 4½ miles downstream from mouth of Harpers Creek.

DRAINAGE AREA.—66 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 27 to September 30, 1921.

GAGE.—Enameled staff in two sections in a pool at proposed lower dam site. Lower section is fastened to a vertical timber bolted to a large rock near right bank; upper section is fastened to rock on right bank in line with lower section. Gage read by W. H. Thompson. Sea-level elevation of zero of gage, 1,144 feet.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed and banks composed mostly of solid bedrock; banks are the sides of the gorge. Control is a solid rock ledge; permanent.

EXTREMES OF DISCHARGE.—Crest of flood of July, 1916, approximately 27 feet (discharge not estimated); minimum stage recorded during period of records, 1.40 feet September 6 and 19, 1921 (discharge, 70 second-feet).

ICE.—Probably never enough to affect stage-discharge relation.

REGULATION.—Probably none.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 50 and 120 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Station operated in cooperation with Granite Falls Manufacturing Co., permittees of Federal Power Commission project No. 81.

Discharge measurements of Wilson Creek near Adako, N. C.

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Aug. 6	W. E. Hall and Thorndike Saville	1.64	111	Aug. 26	L. J. Hall	1.52	98.3
25	L. J. Hall	1.52	87.9	Sept. 13	do	1.48	82.7

Daily discharge, in second-feet, of Wilson Creek near Adako, N. C., for the year ending Sept. 30, 1921

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1		109	84	11		111	107	21		103	91
2		101	92	12		113	92	22		105	126
3		122	80	13		118	85	23		116	80
4		136	77	14		126	84	24		114	73
5		126	73	15		176	80	25		91	73
6		120	70	16		142	73	26		91	109
7		116	105	17		130	72	27	154	84	82
8		109	100	18		124	72	28	165	92	78
9		96	105	19		113	70	29	144	107	87
10		94	231	20		107	84	30	134	87	77
								31	120	84	

Monthly discharge of Wilson Creek near Adako, N. C., for the year ending Sept. 30, 1921

[Drainage area, 66 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
July 27-31	165	120	143	2.17	0.40
August	176	84	112	1.70	1.96
September	231	70	90.4	1.37	1.53

SAVANNAH RIVER BASIN

CHATTOOGA RIVER NEAR TALLULAH FALLS, GA.

LOCATION.—300 feet above mouth of Camp Creek, 5½ miles above junction with Tallulah River, and 8 miles east of Tallulah Falls, Rabun County.

DRAINAGE AREA.—256 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 1, 1917, to January 28, 1918; September 25, 1918, to September 30, 1921.

GAGE.—Gurley 7-day water-stage recorder installed on right bank August 17, 1917. On the same date a new vertical staff gage was installed 30 feet upstream, to which all recording gage records are referred. Prior to August 17, 1917, readings were taken from an old vertical staff gage located on same site as new staff gage and set at same datum. Gage read by employees of Georgia Railway & Power Co.

DISCHARGE MEASUREMENTS.—Made from cable at gage location.

CHANNEL AND CONTROL.—Section under cable may shift somewhat. Control is a solid rock shoal 100 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 6.3 feet at 7 p. m. February 10 (discharge, 5,100 second-feet); minimum stage, 0.95 foot at 11 p. m. September 19 (discharge, 372 second-feet).

1917–1921: Maximum stage recorded, 12.2 feet March 24, 1917 (discharge, 13,900 second-feet); minimum stage, 0.6 foot October 16–18, 1918 (discharge, 255 second-feet).

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

ACCURACY.—Stage-discharge relation practically permanent, but no current-meter measurements have been made since 1919. Rating curve well defined between 280 and 2,500 second-feet. Operation of water-stage recorder satisfactory except for one short period as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph. Records good.

COOPERATION.—Gage-height record furnished by Georgia Railway & Power Co.

Daily discharge, in second-feet, of Chattooga River near Tallulah Falls, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	755	538	810	920	810	1,040	980	980	755	655	450	470
2	755	560	755	920	810	980	865	920	755	605	450	470
3	705	655	705	920	810	980	865	980	705	582	470	430
4	705	582	582	865	810	980	810	920	705	582	515	430
5	705	560	705	865	865	980	810	920	705	560	705	410
6	705	538	655	810	980	980	810	865	705	560	560	390
7	705	515	655	810	920	980	755	865	655	560	470	390
8	705	515	980	755	1,310	980	755	865	655	655	538	390
9	705	515	980	1,040	2,960	980	755	810	655	605	450	390
10	705	515	865	1,550	3,750	980	755	810	865	605	430	430
11	655	515	705	1,100	3,070	980	705	865	705	605	470	450
12	655	515	655	980	1,970	980	705	865	655	582	560	430
13	655	492	705	920	1,630	920	705	1,170	655	655	470	430
14	655	492	2,250	1,710	1,390	920	705	1,040	655	705	470	410
15	655	605	1,310	1,630	1,240	920	1,240	920	655	655	515	410
16	655	1,100	1,100	1,310	1,100	865	1,240	920	865	920	560	390
17	655	1,100	980	1,170	1,100	865	1,880	865	865	810	515	390
18	655	810	920	1,100	1,040	865	1,470	810	755	865	515	390
19	655	755	865	1,040	1,040	865	1,240	810	605	705	470	372
20	605	705	810	980	2,550	865	1,100	810	605	705	450	582
21	605	655	755	980	1,880	865	980	1,630	605	755	430	655
22	605	655	1,100	920	1,470	810	980	1,710	605	755	492	810
23	605	655	1,630	920	1,310	865	1,550	1,470	605	605	492	515
24	605	605	1,100	920	1,240	980	1,310	1,170	605	538	470	430
25	605	605	980	865	1,170	1,100	1,100	1,040	755	538	470	410
26	605	605	920	920	1,100	980	1,040	980	980	515	470	450
27	920	605	1,790	920	1,100	920	1,040	920	865	470	515	755
28	810	755	1,390	980	1,040	865	980	920	705	470	492	865
29	655	755	1,170	865	-------	865	1,100	865	655	492	470	755
30	560	705	1,040	865	-------	810	1,040	865	655	515	470	705
31	560	-------	980	865	-------	810	-------	810	-------	470	470	-------

NOTE.—Gage did not operate Dec. 12–17; discharge estimated by comparison with records of stage of Broad River at Carlton, Ga., furnished by the U. S. Weather Bureau.

Monthly discharge of Chattooga River near Tallulah Falls, Ga., for the year ending Sept. 30, 1921

[Drainage area, 256 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	920	560	670	2.62	3.02
November	1,100	492	639	2.50	2.79
December	2,250	582	995	3.89	4.48
January	1,710	755	1,010	3.95	4.55
February	3,750	810	1,450	5.66	5.89
March	1,100	810	928	3.62	4.17
April	1,880	705	1,010	3.95	4.41
May	1,710	810	980	3.83	4.42
June	980	605	707	2.76	3.08
July	920	470	623	2.43	2.80
August	705	430	493	1.93	2.22
September	865	372	493	1.93	2.15
The year	3,750	372	829	3.24	43.98

ALTAMAHA RIVER BASIN

OCMULGEE RIVER AT JULIETTE, GA.

LOCATION.—1 mile below Juliette railroad station, 1 mile below Juliette cotton mills, which are on left side of river opposite Juliette, and 2½ miles below mouth of Towaliga River.

DRAINAGE AREA.—2,100 square miles (measured on post-route map).

RECORDS AVAILABLE.—June 3, 1916, to September 12, 1921, when station was discontinued.

GAGE.—Stevens continuous water-stage recorder in concrete stilling well on left bank of river.

DISCHARGE MEASUREMENTS.—Made from a cable 150 feet upstream from gage.

CHANNEL AND CONTROL.—Bed composed of sand and solid rock at gage section. Banks high; subject to overflow at gage height of about 15 feet. Control is a rock ledge across bottom of river 600 feet below gage, and a rock shoal about half a mile downstream forms a control which keeps stage-discharge relation permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year 22.84 feet at 12.15 a. m. February 11 (discharge, 33,800 second-feet); minimum stage, 3.60 feet at 1.30 p. m. May 2 (discharge, 710 second-feet).

1916–1921: Maximum stage recorded 30.8 feet from 9 to 11 a. m. December 11, 1919 (discharge, 52,900 second-feet); minimum stage from water-stage recorder, 2.74 feet from 4 to 5 p. m. November 4, 1918 (discharge, 270 second-feet from extension of rating curve). Minimum stage caused by regulation at Jackson dam.

A stage of 32 feet was probably reached by the flood in 1886. This stage was determined by marks pointed out by residents and may be subject to error. Discharge corresponding to this stage is about 55,800 second-feet.

DIVERSIONS.—None.

REGULATION.—Considerable fluctuations in stage are caused by operation of the hydroelectric plant about 20 miles upstream, near Jackson, Ga. Minor diurnal fluctuations are caused by operation of Juliette mills, 1 mile upstream, and the hydroelectric plant on Towaliga River at High Falls, about 15 miles away.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve well defined between 600 and 25,000 second-feet and fairly well defined between 25,000 and 45,000 second-feet; extended above 45,000 second-feet. Gage did not operate satisfactorily during periods indicated in footnote to daily-discharge table. Daily discharge determined by use of discharge integrator. Records good.

The following discharge measurement was made by W. E. Hall and B. M. Hall, jr.:

May 25, 1921: Gage height, 4.87 feet; discharge, 1,700 second-feet.

Daily discharge, in second-feet, of Ocmulgee River at Juliette, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,250	1,080	2,380	2,940	3,520	2,150	1,150	1,850	------	1,250	1,660
2	1,960	1,700	2,260	2,960	3,360	1,760	1,420	1,820	------	1,800	1,580
3	1,250	1,830	3,080	2,620	3,140	1,220	2,140	------	------	1,970	1,500
4	1,630	1,780	3,380	2,490	2,710	1,660	2,120	------	------	2,310	1,120
5	2,230	1,570	3,140	2,640	2,460	2,260	1,880	------	------	3,510	940
6	2,280	1,220	2,610	2,060	2,100	2,200	1,830	------	------	5,100	1,440
7	2,220	920	2,030	2,800	2,220	1,840	1,740	------	------	2,200	1,580
8	2,120	950	1,800	9,880	2,780	1,690	1,040	------	------	1,820	1,580
9	1,820	1,440	1,620	19,000	2,760	1,510	1,230	------	------	2,360	1,560
10	1,230	1,450	2,710	30,000	2,520	1,100	1,800	------	------	2,060	1,440
11	1,600	1,280	4,410	30,400	2,320	1,340	1,860	------	------	1,820	1,100
12	2,120	1,150	3,940	18,200	2,300	1,980	1,800	------	------	1,880	840
13	2,140	1,130	4,210	9,890	1,740	2,030	2,890	------	------	1,880	------
14	1,920	995	4,220	7,460	1,820	1,880	2,040	------	------	1,100	------
15	1,900	940	6,100	5,500	2,760	1,650	1,230	------	------	1,280	------
16	1,620	3,500	5,340	3,890	2,740	1,560	1,460	------	------	2,300	------
17	1,200	2,750	4,820	3,430	2,450	1,840	2,090	------	------	3,750	------
18	1,410	2,160	3,850	3,160	2,220	1,600	1,930	------	------	2,470	------
19	2,140	1,950	3,060	2,990	2,100	2,040	1,700	------	10,700	2,200	------
20	2,250	1,880	2,740	3,620	1,480	1,980	1,620	------	3,880	1,880	------
21	2,150	1,380	2,480	6,980	1,690	1,720	1,600	------	2,900	1,860	------
22	1,780	1,500	2,340	5,700	2,520	1,640	1,090	------	5,800	2,480	------
23	1,500	------	1,820	4,760	2,520	1,750	1,270	------	4,660	2,190	------
24	945	------	2,200	3,740	2,410	1,160	1,840	------	2,410	2,080	------
25	1,200	------	2,750	3,380	2,150	1,380	1,850	------	2,330	2,230	------
26	1,890	------	2,820	3,140	2,020	1,960	1,690	------	2,540	2,400	------
27	1,970	------	2,680	2,510	1,380	2,100	1,640	------	2,420	2,280	------
28	1,640	------	2,490	2,870	1,680	2,040	1,530	------	2,250	1,720	------
29	1,200	------	2,290	------	2,520	1,760	1,120	------	2,160	1,590	------
30	1,100	------	1,940	------	2,540	1,700	1,220	------	2,100	1,780	------
31	970	------	2,500	------	2,310	------	1,860	------	1,300	1,790	------

NOTE.—Recorder not operating Nov. 23 to Dec. 31 and June 3 to July 18. Record somewhat doubtful Feb. 26 to Mar. 19 and Sept. 10–12.

Monthly discharge, in second-feet, of Ocmulgee River at Juliette, Ga., for the year ending Sept. 30, 1921

[Drainage area, 2,100 square miles]

Month	Maximum	Minimum	Mean
October	2,280	945	1,730
November 1–22	3,500	920	1,570
January	6,100	1,620	3,030
February	30,400	2,060	7,110
March	3,520	1,380	2,360
April	2,260	1,100	1,750
May	2,890	1,040	1,670
July 19–31	10,700	1,300	3,500
August	5,100	1,100	2,170
September 1–12	1,660	840	1,360

OCONEE RIVER NEAR GREENSBORO, GA.

LOCATION.—At highway bridge connecting Morgan and Greene counties, Ga., 1½ miles downstream from Town Creek, 4 miles upstream from mouth of Apalachee River, and 5 miles west of Greensboro, Greene County, on road to Madison, Ga.

DRAINAGE AREA.—1,100 square miles.

RECORDS AVAILABLE.—July 25, 1903, to September 30, 1921.

GAGE.—Chain gage attached to bridge; read by N. T. Oakes. Since July 21, 1919, when bridge was repaired, gage has read 0.1 foot too high, but readings have been corrected for this error.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed composed chiefly of sand, slightly shifting. Control section not known, but practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 20.6 feet at 4 p. m. February 11 (discharge, 25,400 second-feet); minimum stage recorded, 0.5 foot at 4 p. m. September 16 (discharge, 205 second-feet).

1903–1921: Maximum stage recorded, 35.4 feet August 26, 1908 (discharge, about 70,000 second-feet; revised determination); minimum stage, 0.2 foot in forenoon of July 15, 1918 (discharge, 141 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Considerable diurnal fluctuation caused by operation of power plants.

ACCURACY.—Stage-discharge relation practically permanent. No discharge measurements have been made since 1919. Rating curve well defined between 250 and 6,000 second-feet; extended above 6,000 second-feet on basis of area and mean velocity curves and the discharge for crest of flood on December 11, 1919, as computed, using concrete dam at Athens as weir and correcting for difference in drainage area. Rating curve has not been checked by current-meter measurements since July 26, 1919. Gage read to tenths twice daily. No corrections for possible elongation of gage chain since July 26, 1919, have been made. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Daily discharge, in second-feet, of Oconee River near Greensboro, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Apr.	May	June	July	Aug.	Sept.
1	1,720	750	960	1,280	1,360	1,460	1,110	750	614	647	750	490
2	995	680	960	1,150	1,360	1,410	1,410	995	550	550	647	490
3	820	750	925	1,190	1,280	1,360	1,110	890	550	550	750	432
4	820	820	855	1,190	1,230	1,280	1,070	890	550	715	1,920	432
5	855	750	1,030	1,190	1,280	1,190	995	820	490	715	5,410	378
6	890	785	1,150	1,110	2,020	1,280	960	785	520	490	3,830	490
7	715	680	995	1,030	1,780	1,190	960	750	614	432	1,110	490
8	680	715	2,880	960	6,740	1,230	960	750	550	404	1,540	378
9	715	750	2,660	1,640	8,480	1,280	995	785	550	432	995	432
10	614	680	1,680	2,080	14,100	1,280	1,030	750	520	490	750	1,640
11	715	680	1,190	3,350	25,100	1,190	855	715	550	404	614	890
12	680	647	1,110	2,440	23,300	1,110	890	2,120	404	995	614	614
13	520	680	1,110	1,780	12,400	1,110	890	2,660	404	1,410	925	520
14	614	614	3,230	2,440	3,470	1,190	890	2,940	550	1,460	3,710	460
15	680	680	4,280	4,610	2,330	1,110	925	1,410	490	1,360	2,330	432
16	680	4,870	2,550	3,350	2,020	1,110	1,030	1,280	1,590	1,460	1,920	314
17	614	4,540	1,920	2,440	1,920	1,110	1,780	1,880	2,990	2,330	1,720	378
18	680	1,820	1,230	1,720	1,720	1,230	2,020	1,190	1,030	3,290	925	378
19	680	1,190	1,110	1,460	1,720	1,280	1,460	890	680	1,540	960	326
20	614	1,030	1,110	1,360	2,990	1,110	1,110	890	614	1,280	680	432
21	614	960	1,110	1,280	4,220	1,110	960	960	680	1,640	550	520
22	680	785	1,280	1,240	2,720	1,070	960	1,360	614	1,980	647	490
23	647	750	3,170	1,290	2,280	1,030	1,410	1,190	614	4,020	890	490
24	520	960	2,550	1,190	1,920	1,500	1,280	925	614	3,230	1,230	490
25	647	890	1,460	1,190	1,880	1,720	1,030	820	582	1,780	960	276
26	680	820	1,280	1,460	1,640	1,500	925	785	1,190	960	750	326
27	820	820	1,780	2,280	1,540	1,280	960	750	750	820	680	680
28	785	960	2,600	1,640	1,540	1,190	1,030	785	750	647	550	1,110
29	750	1,110	1,980	1,720	-------	1,110	960	680	1,460	614	614	890
30	715	995	1,540	1,540	-------	1,030	890	680	1,110	647	582	1,030
31	614	-------	1,320	1,460	-------	995	-------	680	-------	614	550	-------

***Monthly discharge** of Oconee River near Greensboro, Ga., for the year ending Sept. 30, 1921*

[Drainage area, 1,100 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,720	520	735	0.668	0.77
November	4,870	614	1,110	1.01	1.13
December	4,280	855	1,710	1.55	1.79
January	4,610	960	1,740	1.58	1.82
February	25,100	1,230	4,800	4.36	4.54
March	1,720	995	1,230	1.12	1.29
April	2,020	855	1,100	1.00	1.12
May	2,940	680	1,090	.991	1.14
June	2,990	404	772	.702	.78
July	4,020	404	1,220	1.11	1.28
August	5,410	550	1,290	1.17	1.35
September	1,640	276	557	.506	.56
The year	25,100	276	1,420	1.29	17.57

OCONEE RIVER AT FRALEY'S FERRY, NEAR MILLEDGEVILLE, GA.

LOCATION.—At Fraley's Ferry, in Baldwin County, 4 miles downstream from mouth of Little River and 6 miles upstream from Milledgeville.

DRAINAGE AREA.—2,840 square miles.

RECORDS AVAILABLE.—May 23, 1906, to December 31, 1908; October 6, 1909, to September 30, 1921.

GAGE.—A combination sloping and vertical rod gage on left bank. Low-water section, inclined, is 75 feet upstream from ferry cable and extends to 8.5 feet; vertical section, 8.5 to 10.0 feet, is at same site. High-water section, 10.0 to 20.0 feet, is attached to tree 75 feet upstream from inclined section. Read by Susie Simmons and H. H. Taylor.

DISCHARGE MEASUREMENTS.—Made from ferryboat.

CHANNEL AND CONTROL.—Sandy and shifting at measuring section. Control formed by a rock ledge extending across river 200 feet downstream; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.4 feet at noon February 11 (discharge, 46,700 second-feet); minimum stage, 4.5 feet at 5 p. m. September 26 (discharge, 520 second-feet);

1906–1921: Maximum stage recorded, May 23, 1906, to December 31, 1908, and October 6, 1909, to September 30, 1921, approximately 24.6 feet March 17, 1913 (discharge, about 93,600 second-feet); minimum stage recorded, 3.88 feet at 5 p. m. October 8, 1918 (discharge, 182 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Operation of power plants a great distance upstream can cause only slight fluctuations.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 400 and 4,200 second-feet, and above 4,200 second-feet based on flood run-off obtained from stations at Greensboro and Dublin. Rating curve has not been checked by current-meter measurements since May 30, 1919. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records below 4,200 second-feet probably good; above that stage probably fair.

Daily discharge, in second-feet, of Oconee River at Fraley's Ferry, near Milledgeville, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,920	1,200	2,680	2,680	3,000	3,160	2,210	1,530	1,300	3,160	1,200	1,100
2	3,720	1,150	2,520	3,000	3,000	3,000	2,360	1,530	1,150	1,790	1,300	1,060
3	3,340	1,100	2,520	3,160	3,000	2,840	2,360	1,530	1,100	1,790	1,250	920
4	2,840	1,100	2,520	3,340	2,680	2,840	2,210	1,660	1,060	1,790	2,680	830
5	2,680	1,100	2,520	3,160	2,680	2,680	2,060	1,660	1,100	1,410	16,600	750
6	2,680	1,100	1,360	3,000	3,340	2,680	1,920	1,530	1,010	1,150	9,510	830
7	2,060	1,100	2,060	3,000	3,920	2,680	1,920	1,530	920	1,300	3,720	875
8	1,660	1,100	6,480	2,840	15,800	2,680	1,920	1,410	1,100	1,300	3,340	830
9	1,660	1,150	5,720	3,000	22,600	2,680	1,920	1,410	1,010	1,250	2,360	750
10	1,660	1,200	4,140	7,590	36,000	2,840	1,920	1,410	1,010	965	1,790	1,410
11	1,360	1,200	3,340	7,300	45,800	2,680	1,920	1,410	1,010	1,200	1,530	2,360
12	1,300	1,100	3,000	5,480	33,400	2,520	1,660	3,160	965	965	1,360	1,410
13	1,300	1,150	2,680	3,720	25,400	2,360	1,660	4,580	875	2,060	1,920	1,100
14	1,300	1,200	5,250	5,020	15,800	2,520	1,660	8,210	750	4,360	2,520	965
15	1,200	1,300	7,300	9,180	5,970	2,520	1,790	4,140	1,010	3,340	5,020	830
16	1,200	8,850	5,480	7,590	5,020	2,360	2,060	3,340	1,200	4,140	3,720	750
17	1,200	19,600	3,720	5,020	4,580	2,360	3,160	3,340	1,920	4,140	6,480	670
18	1,200	5,020	3,000	3,920	4,140	2,360	3,340	2,680	3,160	7,590	4,140	670
19	1,200	3,720	2,680	3,160	3,720	2,520	3,000	2,210	1,410	5,480	2,060	670
20	1,100	3,520	2,210	2,840	5,480	2,680	2,360	1,790	1,060	3,000	1,530	590
21	1,100	2,840	2,210	2,680	7,020	2,360	1,920	1,790	1,410	4,800	1,410	920
22	1,100	2,680	3,000	2,520	6,480	2,360	1,920	2,060	1,100	8,210	2,840	875
23	1,100	2,360	10,800	2,520	4,800	2,360	2,360	2,210	1,010	5,480	2,060	790
24	1,100	2,360	5,970	2,360	4,140	2,520	2,680	2,060	1,060	6,220	2,210	920
25	1,100	2,360	3,160	2,360	2,840	3,160	2,360	1,660	1,200	4,140	2,520	790
26	1,200	2,360	2,680	2,680	3,520	3,000	1,920	1,530	2,060	2,520	1,790	590
27	1,300	2,360	4,140	5,020	3,340	2,680	1,920	1,530	2,210	1,790	1,300	1,530
28	1,530	2,520	4,800	4,360	3,160	2,680	1,920	1,410	1,300	1,530	1,200	2,360
29	1,410	2,520	2,060	3,720	-------	2,360	2,060	1,410	2,680	1,300	1,100	1,660
30	1,300	2,680	3,520	3,160	-------	2,060	1,790	1,200	3,160	1,250	1,150	1,530
31	1,250	-------	2,840	3,160	-------	2,060	-------	1,200	-------	1,250	1,150	-------

Monthly discharge of Oconee River at Fraley's Ferry, near Milledgeville, Ga., for the year ending Sept. 30, 1921

[Drainage area, 2,840 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,920	1,100	1,680	0.592	0.68
November	19,600	1,100	2,770	.975	1.09
December	10,800	1,360	3,750	1.32	1.52
January	9,180	2,360	3,950	1.39	1.60
February	45,800	2,680	10,000	3.52	3.66
March	3,160	2,060	2,600	.915	1.05
April	3,340	1,660	2,140	.754	.84
May	8,210	1,200	2,200	.775	.89
June	3,160	750	1,390	.488	.54
July	8,210	965	2,920	1.03	1.19
August	16,600	1,100	2,990	1.05	1.21
September	2,360	590	1,040	.366	.41
The year	45,800	590	3,080	1.08	14.68

ST. MARYS RIVER BASIN

ST. MARYS RIVER AT MONIAC, GA.

LOCATION.—At wooden highway bridge 200 feet upstream from railroad trestle and 200 yards west of Moniac station, Charlton County, on Georgia Southern & Florida Railway (Valdosta-Jacksonville line).

DRAINAGE AREA.— Not determined.

RECORDS AVAILABLE.—January 26 to September 30, 1921.

GAGE.—Enameled staff gage fastened to an ash tree on the left bank 20 feet downstream from highway bridge; read to hundredths twice daily by R. E. Knabb.

DISCHARGE MEASUREMENTS.—Low-water measurements made from downstream side of highway bridge; high-water measurements made from railroad trestle.

CHANNEL AND CONTROL.—Bed of stream composed of sand. One channel at low water and two or three at high stages; straight for short distances above and below gage. Current rather boily but fairly swift. Right bank low, flat, and wooded, and subject to overflow; left bank high and clear. Control not apparent.

EXTREMES OF STAGE.—Maximum stage recorded, 9.9 feet at 8 a. m. August 2, 1921; minimum stage, 0.81 foot at 6 a. m. and 6 p. m. June 20, 1921.

ICE.—None.

DIVERSIONS.—None.

REGULATION.—None.

Discharge measurements of St. Marys River at Moniac, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Jan. 26	4.44	156
Mar. 11	3.02	69.4

Daily gage height, in feet, of St. Marys River at Moniac, Ga., for the year ending Sept. 30, 1921

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		4.04	2.80	2.03	1.43	1.32	0.92	(a)	2.52
2		4.02	2.74	1.99	1.36	1.24	1.10	9.85	2.42
3		3.98	2.68	1.95	1.30	1.19	1.38	9.20	2.34
4		3.92	2.62	1.92	1.23	1.18	1.58	8.20	2.28
5		4.30	2.59	1.90	1.19	1.18	1.85	7.80	2.22
6		4.28	2.53	1.87	1.15	1.22	2.08	7.55	2.12
7		4.18	2.51	1.83	1.11	1.13	2.32	7.65	1.98
8		4.08	2.50	1.79	1.07	1.06	2.35	7.35	1.88
9		3.99	3.00	1.75	1.04	1.01	2.78	6.82	1.82
10		3.90	3.12	1.74	1.01	.95	3.20	6.48	1.73
11		3.98	3.00	1.69	.98	.93	3.90	6.25	1.71
12		3.88	2.92	1.66	.99	.90	4.30	6.00	1.68
13		3.66	2.86	1.63	1.10	.90	5.00	5.70	1.66
14		3.52	2.80	1.60	1.10	.88	5.35	5.48	1.63
15		3.42	2.72	1.58	1.19	.87	4.44	5.25	1.61
16		3.36	2.66	1.54	1.37	.86	4.40	4.90	1.58
17		3.28	2.66	1.52	1.40	.84	4.49	4.52	1.56
18		3.19	2.62	1.53	1.36	.84	4.38	4.22	1.56
19		3.16	2.56	1.49	1.36	.84	4.20	3.95	1.56
20		3.10	2.55	1.45	1.34	.81	3.72	3.65	1.47
21		3.09	2.39	1.40	1.67	.84	3.25	3.45	1.40
22		3.03	2.36	1.35	2.07	.86	3.30	3.25	1.35
23		2.99	2.32	1.70	2.03	.83	3.61	3.08	1.26
24		2.96	2.29	1.72	1.93	.85	4.12	3.28	1.19
25		2.98	2.26	1.65	1.85	.87	5.10	3.02	1.04
26	4.42	2.96	2.23	1.62	1.77	.89	5.67	2.98	1.00
27	4.61	2.92	2.19	1.57	1.67	.88	5.50	2.85	1.00
28	4.52	2.84	2.14	1.54	1.56	.85	5.40	2.68	1.19
29	4.41		2.09	1.52	1.54	.87	7.05	2.58	1.90
30	4.29		2.04	1.49	1.48	.90	(a)	2.55	1.00
31	4.18		2.03		1.38		(a)	2.59	

[a] Above gage height 10.10 feet which is top of gage.

SUWANNEE RIVER BASIN

SUWANNEE RIVER AT FARGO, GA.

LOCATION.—At railroad trestle a few hundred feet east of Fargo depot, Clinch County, on Georgia Southern & Florida Railway (Valdosta–Jacksonville line).

DRAINAGE AREA.—Not determined.

RECORDS AVAILABLE.—January 27 to September 30, 1921.

GAGE.—Enameled staff gage attached to seventeenth bent from right bank abutment of railroad trestle; read to hundredths twice daily by L. L. Sloan.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge 200 feet downstream from railroad trestle.

CHANNEL AND CONTROL.—Full of vegetation. One channel at low water about 110 feet wide; at stages above 10 feet water spreads out over swamp which is 2,175 feet wide. Channel is very boily with many snags; straight for 100 feet below bridge and slightly curved above. Control not apparent.

EXTREMES OF STAGE.—Maximum stage recorded, 9.69 feet at 5 p. m. August 12; minimum stage recorded, —2.17 feet at 5 p. m. June 23, 1921. Highest known flood is said to have reached a stage corresponding to gage height 16.0 feet, date unknown.

DIVERSIONS.—None.

REGULATION.—None.

Discharge measurements of Suwannee River at Fargo, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Jan. 27	8.18	2,830
Mar. 11	2.76	589

Daily gage height, in feet, of Suwannee River at Fargo, Ga., for the year ending Sept. 30, 1921

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		7.41	3.62	0.97	0.09	0.04	0.50	8.58	6.56
2		7.30	3.53	.92	— .04	— .06	.82	8.58	6.26
3		7.17	3.40	.84	— .16	— .14	1.39	8.38	5.94
4		7.06	3.25	.76	— .31	— .26	2.14	8.18	5.56
5		6.98	3.11	.65	— .39	— .08	2.59	8.12	5.31
6		6.85	2.92	.56	— .48	.17	2.80	8.74	5.02
7		6.73	2.70	.48	— .56	.11	4.12	9.04	4.66
8		6.60	2.50	.40	— .65	.06	4.39	9.20	4.40
9		6.46	2.60	.32	— .73	— .02	4.14	9.27	4.24
10		6.34	2.70	.22	— .81	— .10	3.71	9.33	3.98
11		6.26	2.75	.14	— .94	— .18	3.11	9.47	3.62
12		6.13	2.70	.06	—1.04	— .36	2.83	9.64	3.30
13		5.98	2.62	— .02	— .81	— .48	2.77	9.60	2.98
14		5.78	2.54	— .07	— .73	— .60	2.65	9.56	2.69
15		5.58	2.46	— .11	— .81	— .78	2.48	9.43	2.36
16		5.38	2.40	— .16	— .64	— .90	2.69	9.30	2.07
17		5.18	2.36	— .17	— .35	—1.04	3.00	9.14	1.81
18		5.00	2.34	.21	— .33	—1.20	2.61	8.97	1.56
19		4.83	2.31	.25	— .43	—1.37	2.22	8.80	1.36
20		4.67	2.24	.14	— .52	—1.60	1.80	8.63	1.14
21		4.52	2.16	.06	— .18	—1.79	1.36	8.46	.90
22		4.36	2.05	.03	.25	—1.96	1.05	8.28	.74
23		4.25	1.92	.33	.37	—2.12	1.11	8.11	.61
24		4.12	1.79	.84	.23	—2.00	.90	7.96	.46
25		4.06	1.70	.70	.13	—1.54	.68	7.82	.37
26		3.98	1.60	.56	.09	—1.29	1.03	7.66	.27
27	8.19	3.86	1.49	.48	.14	—1.17	1.50	7.50	.16
28	8.04	3.74	1.35	.40	.25	—1.02	1.83	7.36	.08
29	7.85		1.20	.34	.30	— .16	3.66	7.16	.10
30	7.69		1.07	.23	.24	.68	6.30	6.96	.02
31	7.56		1.01		.15		7.87	6.76	

ALLAPAHA RIVER AT STATENVILLE, GA.

LOCATION.—At steel highway bridge on road from Valdosta to Statenville, a quarter mile west of Statenville, Echols County.

DRAINAGE AREA.—Not determined.

RECORDS AVAILABLE.—January 28 to June 30, 1921, when station was discontinued.

GAGE.—Enameled staff fastened to large tree on left bank 150 feet below bridge; read to hundredths twice daily by L. M. Minton, jr.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Right bank about 20 feet high; is overflowed occasionally 500 feet back from channel. Left bank high, wooded, and not subject to overflow. Channel straight for 600 feet above and 300 feet below bridge. Current smooth and swift. Control indefinite; a rock ledge a quarter mile downstream is probably the main factor.

EXTREMES OF STAGE.—Maximum stage from flood marks, about 26.5 feet, date unknown; minimum stage during period of records, 0.63 foot at 4.30 p. m. June 26, 1921.

ICE.—No ice effect.

DIVERSIONS.—None.

REGULATION.—Probably negligible.

Discharge measurements of Allapaha River at Statenville, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Jan. 28	5.75	1,530
Mar. 10	1.45	460

Daily gage height, in feet, of Allapaha River at Statenville, Ga., for the period Jan. 28 to June 30, 1921

Day	Jan.	Feb.	Mar.	Apr.	May	June	Day	Jan.	Feb.	Mar.	Apr.	May	June
1	------	4.66	2.49	1.91	2.70	6.50	16	------	3.75	1.94	1.07	1.18	1.19
2	------	4.41	2.46	2.89	2.30	5.44	17	------	3.54	1.88	1.12	1.42	1.14
3	------	4.38	2.42	1.86	1.55	4.30	18	------	3.38	1.90	1.21	1.54	1.11
4	------	4.36	2.40	1.82	1.86	3.50	19	------	3.28	1.84	1.28	1.72	1.07
5	------	4.48	2.38	1.84	1.68	3.55	20	------	3.10	1.96	1.75	2.32	.82
6	------	4.75	2.34	1.82	1.48	3.50	21	------	2.94	2.22	2.35	2.80	.84
7	------	4.86	2.25	1.52	1.32	3.08	22	------	2.75	1.52	3.35	3.28	.80
8	------	4.81	2.16	1.52	1.28	2.78	23	------	2.61	1.94	3.20	3.68	.77
9	------	4.89	2.12	1.44	1.20	2.48	24	------	2.64	1.91	3.08	4.12	.72
10	------	4.86	2.28	1.46	1.16	2.22	25	------	2.64	1.90	2.05	4.65	.68
11	------	5.04	2.39	1.46	1.13	1.55	26	------	2.54	1.89	2.16	5.28	.64
12	------	5.04	2.30	1.38	1.11	1.85	27	------	2.52	1.90	2.24	6.12	.70
13	------	4.60	2.20	1.18	1.09	1.68	28	5.77	2.66	1.91	3.19	6.72	.76
14	------	4.26	2.10	1.10	1.11	1.52	29	5.53	------	1.85	3.12	7.19	.86
15	------	3.96	1.99	1.08	1.12	1.38	30	5.20	------	1.72	2.52	7.32	.85
							31	4.90	------	1.62	------	7.08	------

WITHLACOOCHEE RIVER NEAR OUSLEY, GA.

LOCATION.—At wooden highway bridge near Ousley, Lowndes County.

DRAINAGE AREA.—Not determined.

RECORDS AVAILABLE.—Fragmentary records October 16, 1920, to March 9, 1921, when station was discontinued.

GAGE.—Enameled staff attached to east side of mudsill of second bent from left bank, at upstream side of bridge; read by J. C. Spencer and W. W. Joy.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of hard chalky rock; practically permanent.

ICE.—None.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 50 and 3,000 second-feet. Gage read to hundredths twice daily; gage-height records considered poor. Daily discharge ascertained by applying mean daily gage height to rating table. Records poor.

Discharge measurements of Withlacoochee River near Ousley, Ga., 1916–1921

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1916		*Feet*	*Sec.-ft.*	1920		*Feet*	*Sec.-ft.*
Sept. 29	W. E. Hall	0.59	84.2	Oct. 16	B. M. Hall, jr	0.62	72.8
				Dec. 9	do	1.78	381
1919				1921			
Nov. 7	W. E. Hall and A. H. Condron.	.74	95.0	Jan. 20	do	8.26	2,810
				29	do	5.12	1,600

Daily discharge, in second-feet, of Withlacoochee River near Ousley, Ga., for the period Oct. 16, 1920, to Mar. 9, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1		186			1,360		16	73	686	618			
2		284			1,320		17	68	866	686	2,040		
3		270			1,360		18	61	980	686			
4		228			1,400		19	56	1,130	686			
5		186			1,400		20	49	1,170	586	2,820		
6		164					21	44		686	2,700		
7		156					22	39		792	2,540		
8		154					23	39		904	2,310		
9		143	400			400	24	34		1,060	2,160		
10		136	385				25	34		1,090	1,850		
11		326	370	4,020			26	30			1,630		
12		385	355				27	30		2,820	1,550		
13		370	385				28	89			1,550		
14		355	430				29	102			1,550		
15		430	522				30	71			1,510		
							31	146			1,470		

APALACHICOLA RIVER BASIN

CHATTAHOOCHEE RIVER NEAR NORCROSS, GA.

LOCATION.—At Medlock's Bridge, 1½ miles upstream from mouth of John Creek, 4½ miles north of Norcross, Gwinnett County, 5 miles below Suwannee Creek, 17 miles upstream from Bull Sluice dam, 30 miles below mouth of Chestatee River, and 35 miles below Dunlap dam.

DRAINAGE AREA.—1,170 square miles.

RECORDS AVAILABLE.—January 9, 1903, to September 30, 1921.

GAGE.—Chain gage on toll bridge; read by W. O. Medlock. January 1 to September 30, 1916, a Dexter water-stage recorder on right bank just above bridge, and referred to chain gage without change in datum, was also used for recording stages below 7 feet. See "Regulation."

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed sandy; shifts. Control is a rock shoal about 2½ miles downstream and is more pronounced for higher stages than for low. Medium stages are affected somewhat by shifting bottom conditions between gage and rock shoal. However at extremely low stages control seems to be practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 20.4 feet at 6 p. m. February 10 (discharge, 33,300 second-feet); minimum stage, 1.4 feet at 7 a. m. September 25 (discharge, 720 second-feet).

1903–1921: Maximum stage recorded, 27.1 feet at 3 p. m. December 10, 1919 (discharge, 54,700 second-feet); minimum stage, 1.02 feet October 21, 1911 (discharge, 294 second-feet). It is believed that this low stage was caused by shutting off flow at the two power dams near Gainesville, Ga.

ICE.—Never enough to affect stage-discharge relation.

REGULATION.—Diurnal fluctuation is caused by operation of hydroelectric plants on Chattahoochee and Chestatee rivers near Gainesville, Ga. Monthly discharge, January to September, 1916, determined from records of water-stage recorder, agreed very closely with that obtained by using mean daily gage heights from two readings of chain per day, indicating that monthly discharge obtained by using records from chain gage is not seriously in error. See Water-Supply Paper 472, p. 34.

ACCURACY.—Stage-discharge relation practically permanent during the year. Rating curve well defined between 800 and 55,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Chattahoochee River near Norcross, Ga., during the year ending Sept. 30, 1921

[Made by W. E. Hall]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Nov. 13	2.31	1,300
18	3.55	2,470
May 19	3.05	1,910

Daily discharge, in second-feet, of Chattahoochee River near Norcross, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,050	1,290	1,550	2,380	2,380	3,260	2,380	2,050	1,640	1,070	1,210	970
2	1,640	1,550	1,640	2,160	2,160	3,260	2,600	1,940	1,550	1,140	1,070	970
3	1,550	1,640	1,550	2,160	2,160	3,040	2,380	2,050	1,550	1,140	1,040	940
4	1,370	1,840	1,550	2,160	2,160	3,040	2,160	2,050	1,550	1,210	1,370	880
5	1,550	1,460	1,640	2,160	2,600	3,040	2,160	1,940	1,460	1,140	1,640	880
6	1,370	1,290	1,940	1,940	3,370	2,930	2,160	1,940	1,550	1,070	1,740	850
7	1,460	1,290	1,840	1,940	2,710	2,820	2,160	1,940	1,460	1,070	1,370	880
8	1,370	1,140	2,600	1,940	6,440	2,600	2,050	1,840	1,460	1,210	1,210	820
9	1,370	1,370	2,380	2,600	16,400	2,820	2,050	1,740	1,460	1,210	1,210	820
10	1,290	1,370	2,160	6,440	31,600	3,150	2,050	1,740	1,370	1,370	1,140	1,000
11	1,370	1,370	2,050	4,800	26,800	2,710	1,940	2,820	1,460	1,210	1,290	970
12	1,210	1,210	1,840	3,260	13,700	2,600	1,940	3,920	1,370	1,070	1,370	850
13	1,290	1,210	2,050	2,820	6,200	2,600	1,940	3,040	1,370	1,070	1,210	1,040
14	1,290	1,070	8,600	4,140	5,020	2,600	2,050	3,040	1,370	1,140	1,210	820
15	1,290	1,370	14,800	8,120	4,580	2,600	2,380	2,600	1,290	1,210	1,640	820
16	1,290	3,150	5,020	4,360	4,140	2,600	2,600	2,380	1,550	1,640	1,940	880
17	1,370	4,360	3,480	3,480	3,920	2,490	3,260	2,380	1,740	3,590	2,160	795
18	1,210	2,600	2,930	3,040	3,700	2,600	3,260	2,160	1,140	1,940	1,460	795
19	1,210	1,940	2,600	2,820	3,480	2,490	2,600	1,940	940	2,600	1,210	770
20	1,210	1,640	2,380	2,600	8,720	2,380	2,270	1,840	1,290	1,550	1,140	795
21	1,370	1,640	2,270	2,490	9,080	2,380	2,160	2,050	1,370	2,380	1,040	1,210
22	1,210	1,550	2,600	2,600	5,130	2,380	2,490	6,200	1,370	7,640	1,000	940
23	1,210	1,550	3,920	2,160	4,470	2,380	3,150	3,700	1,370	4,800	1,070	880
24	1,210	1,460	3,150	2,160	4,250	2,820	3,260	3,040	1,370	1,940	1,210	795
25	1,210	1,370	2,600	2,160	3,920	3,150	2,710	2,600	1,290	1,840	1,210	720
26	1,290	1,370	2,270	2,380	3,700	3,040	2,270	2,380	1,550	1,550	1,070	770
27	1,290	1,370	3,480	2,600	3,480	2,820	2,820	2,160	1,550	1,370	1,070	1,070
28	1,550	1,840	5,480	2,600	3,370	2,380	2,600	1,940	1,370	1,210	1,040	2,160
29	1,550	1,940	3,260	2,600	-------	2,380	2,380	1,940	1,210	1,210	1,000	1,550
30	1,290	1,740	2,820	2,380	-------	2,270	2,160	1,740	1,370	1,210	940	1,550
31	1,290	-------	2,600	2,380	-------	2,380	-------	1,740	-------	1,940	970	-------

Monthly discharge of Chattahoochee River near Norcross, Ga., for the year ending Sept. 30, 1921

[Drainage area, 1,170 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,050	1,210	1,360	1.16	1.34
November	4,360	1,070	1,670	1.43	1.60
December	14,800	1,550	3,200	2.74	3.16
January	8,120	1,940	2,960	2.53	2.92
February	31,600	2,160	6,770	5.79	6.03
March	3,260	2,270	2,710	2.32	2.68
April	3,260	1,940	2,410	2.06	2.30
May	6,200	1,740	2,410	2.06	2.38
June	1,740	940	1,410	1.21	1.35
July	7,640	1,070	1,800	1.54	1.78
August	2,160	940	1,270	1.09	1.26
September	2,160	720	973	.832	.93
The year	31,600	720	2,390	2.04	27.73

CHATTAHOOCHEE RIVER AT WEST POINT, GA.

LOCATION.—At West Point waterworks pumping plant, just below Oseligee Creek, one-fourth mile east of Alabama-Georgia State line, in Troup County, and 1 mile upstream from West Point railroad station. Prior to October 20, 1912, station was at Montgomery Street Bridge in West Point.

DRAINAGE AREA.—3,300 square miles.

RECORDS AVAILABLE.—July 30, 1896, to September 30, 1921.

GAGE.—Original gage was a chain on downstream handrail of Montgomery Street Bridge. On October 20, 1912, the gage was moved 1 mile upstream to a point opposite city pumping plant. A staff gage (0–18 feet) was placed on left bank. This gage was read from October 20, 1912, to December 10, 1919, by using a telescope from pumping station which is on right bank. The flood of December 10, 1919, put the gage out of commission. On January 14, 1920, the rod on left bank was replaced but could not be read below 6 feet because of a sand bar formed by flood. A short section of rod (0–6.7 feet) was located on right bank. Both rods were set to same datum but the right-bank section reads slightly higher than the left-bank section. Since January 14, 1920, the observer has read right-bank gage during stages below 6 feet and left-bank gage for stages above 6 feet. The observer is Mr. J. H. Miller.

DISCHARGE MEASUREMENTS.—Made from the Montgomery Street Bridge 1 mile downstream. No tributaries enter between gage and bridge. Bridge washed away December 10, 1919, and replaced by a new one before this year's measurements were made. Measurements have sometimes been made from the Atlanta & West Point Railroad bridge.

CHANNEL AND CONTROL.—Bed rough and rocky; fairly permanent. Banks subject to overflow at high stages. Control is a rock ledge extending across river just below gage and is not affected by Langdale dam 5 miles downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.3 feet at 5 p. m. February 10 (discharge, 53,000 second-feet); minimum stage recorded, 2.25 feet at 7 a. m. September 21 (discharge, 1,050 second-feet).

1896–1921: Maximum stage recorded, 30.0 feet at 2 p. m. December 10, 1919 (discharge, 134,000 second-feet); minimum stage recorded (old gage), 0.8 foot September 18–21, 1896 (discharge, 780 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Operation of power plants a great distance upstream causes some diurnal fluctuation.

ACCURACY.—Stage-discharge relation permanent since December 10, 1919. Rating curve well defined between 1,000 and 60,000 second-feet; above 60,000 second-feet the curve is extended on basis of the discharge computed for the crest of the flood on December 10, 1919, using the Goat Rock dam, 12 miles above Columbus, as a weir and correcting for difference in drainage area. Gage read to tenths twice daily; during high water oftener. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Chattahoochee River at West Point, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Sept. 20	2.42	1,240
Sept. 23	2.36	1,130

Daily discharge, in second-feet, of Chattahoochee River at West Point, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,760	2,580	4,260	5,500	4,750	6,750	5,500	4,260	2,950	2,950	2,250	1,810
2	2,950	2,250	3,800	5,250	4,750	6,500	5,250	4,260	2,580	2,250	2,580	1,540
3	3,360	2,950	3,360	5,250	4,750	6,000	4,750	3,360	2,580	2,950	1,950	1,420
4	2,950	3,360	3,360	5,500	4,500	5,750	4,750	4,260	2,580	2,580	1,810	1,670
5	2,950	2,950	3,800	5,250	4,750	5,750	4,260	3,800	2,580	1,950	2,250	1,670
6	2,760	3,360	4,260	4,750	9,750	5,500	3,800	3,580	2,760	1,950	7,250	1,420
7	2,410	2,950	3,360	4,750	9,250	5,750	4,030	3,800	2,250	1,810	7,250	1,950
8	2,580	2,580	4,500	4,260	19,800	5,750	4,030	3,800	2,410	2,410	8,250	2,250
9	2,580	2,410	5,750	4,750	29,800	5,750	4,030	3,580	2,410	1,810	8,750	1,420
10	2,580	2,580	5,250	7,250	50,600	5,750	4,030	2,950	2,250	1,950	4,260	1,540
11	2,950	2,250	4,750	10,800	42,700	5,750	3,800	3,360	2,250	3,360	2,580	1,420
12	2,100	2,580	4,500	11,200	35,900	6,000	3,360	4,030	2,250	2,250	2,580	1,310
13	2,410	2,580	4,750	7,750	38,900	6,750	3,800	8,000	2,100	2,950	2,250	1,420
14	2,580	2,580	15,200	9,750	32,500	5,750	4,500	6,250	1,950	5,000	4,260	1,420
15	2,250	2,950	17,000	13,200	11,000	5,750	5,750	5,000	2,760	4,570	2,580	1,420
16	2,410	7,250	18,800	12,800	9,500	5,500	6,000	5,250	2,580	3,800	3,580	1,420
17	2,580	10,800	19,800	11,800	8,250	5,250	13,200	5,750	2,410	4,750	7,250	1,200
18	2,250	9,250	8,500	8,250	8,250	5,750	12,200	5,750	3,150	7,250	7,750	1,540
19	2,100	7,750	6,500	6,500	7,750	8,250	8,750	3,580	2,580	6,250	4,750	1,810
20	2,580	5,250	5,250	5,750	14,000	5,750	6,250	3,360	2,250	3,800	2,950	1,420
21	2,250	4,260	5,000	4,500	15,500	5,250	5,500	3,360	2,250	4,500	2,410	1,100
22	2,250	3,580	8,000	5,250	16,800	4,750	5,250	3,360	2,580	4,750	1,950	1,200
23	2,250	3,360	24,000	4,750	12,200	4,750	8,250	3,580	2,580	9,500	2,250	1,420
24	2,410	3,150	14,800	5,000	9,250	5,250	8,000	8,000	2,580	12,200	1,810	1,420
25	2,100	3,150	10,000	4,750	8,000	5,250	6,500	6,250	2,950	6,250	3,360	1,310
26	2,250	3,150	7,000	5,000	8,000	6,250	6,250	4,750	2,580	3,580	6,250	1,200
27	2,760	2,950	7,750	4,260	7,250	6,000	5,000	4,260	2,100	2,950	2,950	1,420
28	2,950	3,800	8,750	5,750	6,750	5,500	5,000	3,800	2,950	2,580	2,250	1,950
29	2,950	4,260	9,250	5,500	-------	5,250	4,750	3,360	2,950	2,250	1,950	1,950
30	2,950	4,030	8,750	5,500	-------	4,750	4,500	3,150	2,250	2,950	1,670	3,580
31	2,580	-------	6,500	5,250	-------	4,750	-------	2,580	-------	1,950	2,250	-------

Monthly discharge of Chattahoochee River at West Point, Ga., for the year ending Sept. 30, 1921

[Drainage area, 3,300 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,360	2,100	2,570	0.779	0.90
November	10,800	2,250	3,900	1.18	1.32
December	24,000	3,360	8,280	2.51	2.89
January	13,200	4,260	6,640	2.01	2.32
February	50,600	4,500	15,500	4.70	4.89
March	8,250	4,750	5,730	1.74	2.01
April	18,200	3,360	6,700	1.73	1.93
May	8,000	2,580	4,340	1.32	1.52
June	3,150	1,950	2,510	.761	.85
July	12,200	1,810	3,880	1.18	1.36
August	8,750	1,670	3,750	1.14	1.31
September	3,580	1,100	1,590	.482	.54
The year	50,600	1,100	5,310	1.61	21.84

FLINT RIVER NEAR WOODBURY, GA.

LOCATION.—At Macon & Birmingham Railroad bridge one-fourth mile downstream from mouth of Elkins Creek, one-third mile upstream from mouth of Cane Creek, and 3 miles east of Woodbury, Pike County.

DRAINAGE AREA.—1,090 square miles.

RECORDS AVAILABLE.—March 29, 1900, to September 30, 1921.

GAGE.—Chain gage attached to guardrail on downstream side of Macon & Birmingham Railroad bridge; installed May 24, 1918. Prior to that date gage was a vertical staff in four sections on left bank about 300 feet above present gage. Gages set to same datum. Slope between gages negligible at low and medium stages since the low wagon bridge immediately below the old staff gage was washed out in July, 1916. Zero of gage, 660 feet above sea level. Gage read twice daily by E. T. Riggins.

DISCHARGE MEASUREMENTS.—Made from downstream side of railroad bridge which does not make a right angle with the current.

CHANNEL AND CONTROL.—Bottom consists chiefly of rock; rough; current irregular. Control formed by a shoal 1 mile downstream; shifts occasionally.

EXTREMES OF STAGE.—Maximum stage recorded during year, 10.0 feet at 5 p. m. February 11; minimum stage recorded, —0.18 foot at 7 a. m. and 5 p. m. September 26.

1900–1921: Maximum stage recorded, 17.1 feet at 7 a. m. December 11, 1919 (discharge, 38,400 second-feet); minimum stage recorded, —0.4 foot October 8–10, 1911 (discharge, 86 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Some slight diurnal fluctuations caused by operation of small mills on tributary streams.

No determinations of discharge have been made, as the rating curve has not been verified by discharge measurements since September 20, 1919.

Daily gage height, in feet, of Flint River at Woodbury, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.75	0.65	1.27	1.50	1.44	1.33	1.00	0.74	0.29	0.31	0.14	0.53
2	.60	.57	1.17	1.38	1.32	1.30	1.15	.70	.24	.57	.14	.37
3	.60	.85	1.05	1.51	1.30	1.30	1.06	.69	.22	.80	.14	.25
4	.57	.76	1.05	1.80	1.30	1.30	.99	.71	.31	.75	.41	.20
5	.54	.76	1.21	1.70	1.39	1.27	.93	.69	.29	.82	1.53	.20
6	.53	.75	1.25	1.49	1.80	1.23	.90	.65	.23	.59	3.20	.18
7	.52	.69	1.40	1.40	2.10	1.22	.89	.61	.20	.19	3.45	.14
8	.50	.66	1.61	1.32	2.60	1.20	.85	.58	.20	.11	2.68	.10
9	.50	.60	1.60	1.40	3.95	1.20	.81	.58	.19	.08	2.33	.10
10	.50	.65	1.55	1.71	7.70	1.23	.78	.56	.16	.13	2.21	.10
11	.48	.69	1.47	1.95	9.99	1.29	.72	.55	.13	.18	1.45	.08
12	.39	.73	1.40	2.00	9.26	1.27	.68	.50	.11	.70	1.00	.08
13	.36	.63	1.66	1.70	6.19	1.31	.68	1.14	.06	1.54	.66	.07
14	.40	.62	2.22	2.00	3.55	1.35	.69	1.35	.06	1.61	.49	.04
15	.40	.64	2.25	2.60	2.46	1.36	1.04	1.21	.08	1.28	.46	.00
16	.40	2.62	2.07	2.48	2.05	1.28	1.15	1.12	.13	1.20	.75	.00
17	.40	2.60	1.90	2.20	1.77	1.30	2.60	1.04	.33	1.56	1.10	.00
18	.40	2.35	1.74	1.86	1.69	1.28	2.70	1.05	.88	2.25	1.41	.40
19	.38	2.10	1.60	1.60	1.80	1.28	1.90	.90	.21	2.59	1.45	.19
20	.41	1.76	1.30	1.41	2.55	1.27	1.45	.71	.10	2.35	1.16	.16
21	.44	1.40	1.28	1.33	2.79	1.17	1.15	.60	.08	1.91	.89	.09
22	.42	1.16	2.59	1.30	2.58	1.12	.99	.58	.08	1.75	.38	.04
23	.45	1.10	4.75	1.30	2.20	1.10	1.57	.56	.14	1.58	.30	.00
24	.48	1.06	3.76	1.29	1.95	1.32	1.75	.55	.41	1.47	.65	.00
25	.48	1.00	3.16	1.26	1.65	1.45	1.63	.53	.17	1.36	1.95	−.10
26	.46	.97	2.51	1.55	1.62	1.25	1.29	.50	.16	1.42	1.60	−.18
27	1.25	.96	2.75	2.00	1.50	1.20	1.11	.64	.20	.55	1.26	.15
28	1.05	1.10	2.61	1.94	1.39	1.06	.99	.49	.23	.38	.95	.70
29	.87	1.31	2.25	1.70	-------	1.02	.90	.42	.54	.30	.86	1.08
30	.77	1.34	2.10	1.56	-------	.99	.79	.35	.60	.29	.68	.96
31	.70	-------	1.71	1.50	-------	.96	-------	.31	-------	.20	.60	-------

FLINT RIVER NEAR CULLODEN, GA.

LOCATION.—At Grays Ferry, Upson County, 1½ miles upstream from mouth of Auchumpkee Creek and 14 miles southwest of Culloden.

DRAINAGE AREA.—2,000 square miles.

RECORDS AVAILABLE.—July 1, 1911, to September 30, 1921.

GAGE.—Original gage was a staff in four sections on left bank at old ferry landing. In August, 1918, a Stevens continuous water-stage recorder with a standard wooden well and shelter was installed on left bank about 100 feet upstream from old rod gage; the Stevens gage was replaced by a Gurley 7-day graph recorder on May 29, 1919. Gage inspected by Arthur Preston.

DISCHARGE MEASUREMENTS.—Made from rowboat held in place by a small galvanized cable stretched taut across river.

CHANNEL AND CONTROL.—Channel sandy and shifting at gage. Control is a rock ledge half a mile downstream; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 19.4 feet at 8 a. m. February 11 (discharge, 29,800 second-feet); minimum stage, 1.34 feet from 2 p. m. September 27 to 2 a. m. September 28 (discharge, 270 second-feet).

1911–1921: Maximum stage recorded, 33.3 feet during night of July 9, 1916 (discharge not determined); minimum stage recorded, 1.0 foot October 8, 1911 (discharge, 165 second-feet).

ICE.—None.

DIVERSIONS.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 250 and 5,000 second-feet; extension above 5,000 second-feet based on discharge at crest of floods at Woodbury corrected for difference in drainage area. Operation of water-stage recorder unsatisfactory owing to frequent stopping of clock, but observer read rod gage when clock was not running. Diurnal fluctuation at this station is negligible. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for extremely high stages.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Flint River near Culloden, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,120	840	1,600	2,230	1,900	2,120	1,500	1,100	655	920	550	800
2	1,200	840	1,700	2,120	1,800	2,120	1,600	1,010	585	1,100	550	655
3	1,100	880	1,700	2,120	1,800	2,010	1,500	1,010	585	1,010	550	585
4	1,010	880	1,400	2,580	1,800	1,900	1,400	1,010	800	1,100	620	550
5	1,010	880	1,200	2,580	1,800	1,800	1,300	1,010	760	1,200	1,400	480
6	1,010	840	1,200	2,340	1,900	1,800	1,200	1,010	655	1,300	4,280	480
7	1,010	840	1,200	2,120	2,230	1,700	1,200	920	620	800	5,540	480
8	920	800	1,600	1,900	2,580	1,700	1,200	920	585	620	3,830	450
9	760	760	1,900	2,010	4,130	1,800	1,200	840	585	515	3,240	450
10	725	760	1,900	2,340	21,000	2,010	1,100	840	550	515	2,960	420
11	725	760	1,800	2,580	29,200	1,900	1,010	840	515	480	2,460	390
12	690	760	1,600	2,580	25,100	1,800	1,010	1,100	515	515	1,400	390
13	690	760	1,600	2,230	16,100	1,800	1,010	1,800	480	1,400	1,100	480
14	690	760	2,830	2,960	8,080	1,900	1,010	2,460	450	2,460	840	390
15	690	760	3,100	4,280	4,740	2,010	1,300	2,230	480	1,800	690	360
16	655	2,580	2,830	3,830	3,530	1,900	1,600	1,900	515	1,500	760	330
17	655	4,130	2,460	3,380	2,960	1,800	3,830	1,900	550	3,380	2,230	390
18	655	3,380	2,010	2,700	2,580	1,800	4,130	1,700	620	4,430	2,010	420
19	655	2,960	1,800	2,340	2,460	1,800	3,100	1,400	620	3,830	2,120	420
20	655	2,230	1,600	2,010	5,220	1,800	2,230	1,200	515	3,240	1,600	420
21	655	1,800	1,500	1,800	5,220	1,700	1,800	1,100	480	2,700	1,200	420
22	655	1,500	2,580	1,700	4,430	1,600	1,700	1,010	450	3,240	1,010	390
23	655	1,300	9,460	1,700	3,830	1,500	2,340	920	480	3,380	840	360
24	655	1,200	7,400	1,600	3,240	1,800	2,460	920	655	3,240	760	300
25	655	1,100	5,220	1,600	2,830	2,230	2,230	880	655	2,120	1,800	275
26	655	1,100	3,830	1,700	2,580	2,010	1,900	880	515	1,300	2,230	275
27	690	1,100	5,380	2,340	2,340	1,700	1,500	1,200	550	1,300	1,500	275
28	1,300	1,300	5,060	2,580	2,230	1,600	1,400	1,010	585	880	1,200	620
29	1,400	1,500	3,830	2,340	-------	1,500	1,200	800	620	760	1,010	1,200
30	1,010	1,600	3,100	2,120	-------	1,400	1,200	725	920	725	1,700	1,200
31	840	-------	2,460	2,010	-------	1,400	-------	690	-------	620	920	-------

NOTE.—Gage did not operate properly during the following periods: Midnight Oct. 23 to 9 a. m. Oct. 29; 6.30 a. m. Dec. 23 to 7 a. m. Dec. 25; 10 p. m. Dec. 28 to 2 p. m. Dec. 30; 10.35 a. m. Jan. 8 to 8 a. m. Jan. 13; 8 p. m. Feb. 12 to 7.20 a. m. Feb. 14; May 21 to June 4; July 23–30; 8 a. m. Sept. 28 to 8.15 a. m. Oct. 1. Graph has been estimated for these periods from rod readings by observer and by comparison with gage heights of Flint River near Woodbury, Ga.

Monthly discharge of Flint River near Culloden, Ga., for the year ending Sept. 30, 1921

[Drainage area, 2,000 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,120	655	864	0.432	0.50
November	4,130	760	1,360	.680	.76
December	9,460	1,200	2,860	1.40	1.61
January	4,280	1,600	2,350	1.18	1.36
February	29,200	1,800	5,990	3.00	3.12
March	2,230	1,400	1,800	.900	1.04
April	4,130	1,010	1,710	.855	.95
May	2,460	690	1,170	.585	.67
June	920	450	585	.292	.33
July	4,430	480	1,690	.845	.97
August	5,540	550	1,710	.855	.99
September	1,200	275	488	.244	.27
The year	29,200	275	1,850	.925	12.57

FLINT RIVER AT ALBANY, GA.

LOCATION.—At Dougherty County highway bridge in Albany, 700 feet below Atlantic Coast Line Railroad bridge and 2 miles downstream from mouth of Muckafoonee Creek.

DRAINAGE AREA.—5,000 square miles.

RECORDS AVAILABLE.—April 10, 1893, to June 30, 1921, when station was discontinued. (United States Weather Bureau gage heights). Discharge measurements were begun by the Geological Survey in 1901 and determinations of daily discharge have been made since January 1, 1902.

GAGE.—Chain gage installed at the bridge April 20, 1904; read daily by D. W. Brosnan. Original staff gage washed out in 1898. It was again damaged in 1902 and on June 18 of that year a new gage was installed by the United States Weather Bureau at a datum 0.75 foot lower than that of the former gage. All gage heights published for 1902 by the United States Weather Bureau and the United States Geological Survey refer to the new datum. Present gage conforms with the United States Weather Bureau gage.

DISCHARGE MEASUREMENTS.—Fairly accurate measurements can be obtained at the section at the Atlantic Coast Line bridge, although it is very rough, and train switching in the yard interferes with the work. The section at the Georgia Northern Railway bridge, 1 mile above, at which measurements are sometimes made, is considered better especially for medium and low stages.

CHANNEL AND CONTROL.—Channel at and below gage may shift slightly but control is such that conditions of flow are practically permanent. The river overflows both banks but only under approaches to the bridge.

EXTREMES OF DISCHARGE.—Maximum stage during year, 17.3 feet February 18 (discharge, 26,200 second-feet); minimum stage, 0.0 foot October 21, June 14 and 21 (discharge, 2,180 second-feet).

1902–1921: Maximum stage recorded, 30.3 feet at 7 a. m. March 21, 1913 (discharge, 53,700 second-feet); minimum stage recorded, 1.1 feet October 9–12, 1911 (discharge, 1,110 second-feet).

A stage of 32.4 feet occurred on March 25, 1897 (discharge, 63,000 second-feet).

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

DIVERSIONS.—None.

REGULATION.—Power development on Muckalee Creek, which joins Flint River about 2 miles above the station, causes considerable diurnal fluctuation, especially at low stages. The flow is probably also affected by other power plants farther up the river.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 1,800 and 50,000 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair; discharge for low stages as determined from one reading of gage daily may be somewhat in error owing to fluctuations in stage caused by operation of power plants on tributary streams above the station.

The following discharge measurement was made by B. M. Hall, jr.:
March 29, 1921: Gage height, 2.87 feet; discharge, 4,520 second-feet.

Daily discharge, in second-feet, of Flint River at Albany, Ga., for the period Oct. 1, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3,500	3,600	3,410	13,600	5,960	7,040	4,010	5,260	2,750
2	4,800	3,230	3,600	12,500	5,720	6,440	4,230	4,120	2,620
3	5,610	2,900	3,600	10,900	5,610	5,960	4,800	3,140	2,550
4	6,680	2,750	3,600	8,480	5,610	5,610	4,340	3,060	2,550
5	4,340	3,060	3,500	7,160	5,610	5,260	3,500	3,230	2,490
6	3,500	3,060	3,410	6,680	6,320	4,920	3,320	3,410	2,430
7	3,230	2,900	3,410	7,520	5,840	4,690	3,230	3,410	2,430
8	2,900	2,820	3,410	7,520	5,610	4,690	3,140	3,060	2,380
9	2,900	2,820	3,800	7,400	5,380	4,690	3,060	2,900	2,380
10	2,820	2,900	3,800	7,160	5,960	5,260	2,980	2,820	2,320
11	2,750	2,680	4,800	6,800	6,320	5,500	2,980	2,680	2,320
12	2,620	2,680	5,260	6,080	7,040	5,500	2,820	2,750	2,270
13	2,490	2,680	5,380	5,960	8,240	5,380	2,750	3,140	2,220
14	2,490	2,680	4,230	5,960	10,500	5,750	2,820	5,260	2,180
15	2,430	2,620	4,340	6,800	14,300	5,380	2,820	7,040	2,320
16	2,430	3,140	4,800	7,640	20,000	5,040	4,010	9,240	2,270
17	2,430	3,900	5,610	8,000	24,400	5,260	4,920	9,630	2,270
18	2,750	5,500	6,080	8,720	25,800	5,500	5,840	9,370	2,220
19	2,430	6,800	6,440	8,980	23,200	5,720	7,160	8,600	2,270
20	2,380	7,760	6,440	8,980	16,600	5,720	7,640	7,280	2,220
21	2,180	8,000	5,260	7,760	9,630	5,500	8,120	6,440	2,180
22	2,320	8,000	4,800	6,800	7,400	5,380	8,360	5,840	2,270
23	2,430	6,800	5,380	6,320	8,000	5,150	7,040	5,260	2,280
24	2,380	4,690	6,080	5,840	8,550	4,230	6,320	4,920	2,320
25	2,380	4,010	6,080	5,260	9,500	4,010	6,080	4,690	2,320
26	2,380	3,700	8,850	4,690	9,630	3,800	6,320	4,230	2,380
27	2,490	3,600	10,700	4,690	8,980	4,460	6,440	4,120	2,430
28	2,490	3,410	12,300	4,920	8,120	5,380	6,440	3,900	2,430
29	2,490	3,230	15,200	5,840	-------	4,690	6,320	3,800	2,620
30	2,900	3,320	16,300	6,920	-------	4,120	6,080	3,800	2,380
31	3,060	-------	14,900	6,680	-------	3,900	-------	3,320	-------

Monthly discharge of Flint River at Albany, Ga., for the period Oct. 1, 1920, to June 30, 1921

[Drainage area, 5,000 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	6,680	2,180	3,000	0.600	0.69
November	8,000	2,620	3,970	.794	.89
December	16,300	3,410	6,280	1.26	1.45
January	13,600	4,690	7,370	1.47	1.70
February	25,800	5,380	10,100	2.02	2.10
March	7,040	3,800	5,160	1.03	1.19
April	8,360	2,750	4,930	.986	1.10
May	9,630	2,680	4,830	.966	1.11
June	2,750	2,180	2,370	.474	.53

KINCHAFOONEE CREEK NEAR LEESBURG, GA.

LOCATION.—At Jackson's Bridge, a single-span steel highway bridge, 1 mile west of Leesburg, Lee County.

DRAINAGE AREA.—480 square miles.

RECORDS AVAILABLE.—August 30, 1905, to December 31, 1909, and December 14, 1920, to June 1, 1921, when the station was discontinued.

GAGE.—An enameled staff graduated from 1.0 to 3.34 feet, fastened to root of a water oak tree on left bank, 100 feet above bridge; read by E. M. Yow. Staff gage used 1905–1909 was on right bank 150 feet below bridge. Zero of old gage was 1.0 foot lower than that of present gage.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Composed of rock and sand, probably shifting; practically straight for 500 feet above and below bridge. Right bank about 16 feet high and wooded; left bank higher and wooded.

ICE.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during the year. Rating curve is well defined between 150 and 700 second-feet and is based upon three discharge measurements of this year and the form of the curve defined by measurements made 1905–1909. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good but meagre.

Discharge measurements of Kinchafoonee Creek near Leesburg, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Oct. 25	0.33	196
Dec. 14	1.96	469
Mar. 28	2.09	495

Daily discharge, in second-feet, of Kinchafoonee Creek near Leesburg, Ga., for the period Dec. 14, 1920, to June 1, 1921

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			559	580	440	459	331
2			559	559	499	402	
3			559	539	479	384	
4			580	499	519	384	
5			580	499	421	440	
6			601	479	402	421	
7			559	479	366	366	
8			559	459	348	348	
9		735	559	440	331		
10		711	580	479	314		
11		643	601	559			
12		601	711	559			
13		580	735	539		559	
14	479	580	735	539		735	
15	479	580	665	539	665		
16	479	580	601	559			
17	559	643	580	580			
18	559	711	539	601			
19	559	813	479	601			
20	559	665	499	643			
21	601	601	539	665		735	
22	643	580	559	622		711	
23		559	559	559		643	
24		580	580	519		559	
25		559	601	499	761	519	
26		559	665	479	761	499	
27		539	601	519	711	479	
28		559	580	499	687	440	
29		559		479	559	384	
30		580		440	479	366	
31		580		459		348	

NOTE.—Dec. 23 to Jan. 8, Apr. 16–24, and May 15–20 discharge was greater than 774 second-feet (water above top of gage). Apr. 11–14, May 9–12, and June 2–30 discharge was less than 297 second-feet (water below gage).

ICHAWAYNOCHAWAY CREEK NEAR NEWTON, GA.

LOCATION.—At Barnett's Bridge, on road from Newton, Baker County, to Colquitt, Miller County, 2½ miles below dam of Baker County Power Co. (under construction).

DRAINAGE AREA.—1,020 square miles (measured on map compiled by U. S. Geol. Survey; scale, 1:500,000).

RECORDS AVAILABLE.—October 9, 1920, to June 30, 1921, when station was discontinued.

GAGE.—Enameled staff fastened to a tupelo gum tree on right bank 150 feet above bridge; read by J. W. Powell and Ewell Wilkins.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Composed of solid rock and boulders; straight for 800 feet upstream and 600 feet downstream. Control is a solid rock shoal extending from upper side of bridge to 300 feet below; permanent.

ICE.—None.

REGULATION.—Practically none.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined for range of gage readings. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Ichawaynochaway Creek near Newton, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 3	1.20	426	Mar. 28	2.11	922
Dec. 11	1.90	762	Apr. 22	5.73	3,450
Feb. 7	2.49	1,150			

Daily discharge, in second-feet, of Ichawaynochaway Creek near Newton, Ga., for the period Oct. 9, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	------	375	575	------	1,100	915	795	1,340	975
2	------	325	575	------	1,040	855	975	1,220	855
3	------	425	550	------	1,100	855	1,100	1,160	740
4	------	475	550	------	1,100	795	1,100	1,100	685
5	------	575	525	------	1,160	795	855	1,100	685
6	------	602	525	------	1,160	795	740	1,040	685
7	------	500	575	------	1,220	740	658	975	630
8	------	425	630	------	1,160	740	630	855	575
9	325	375	602	1,520	1,100	740	575	795	550
10	325	325	658	1,460	1,100	795	602	795	500
11	275	375	740	1,400	1,100	975	602	740	475
12	300	425	685	1,340	1,160	1,040	550	740	450
13	275	400	658	1,280	1,220	1,040	500	855	400
14	275	400	630	1,340	1,220	975	500	1,340	375
15	275	375	712	1,460	1,100	975	740	2,270	375
16	275	500	740	1,590	1,040	1,040	1,220	3,190	375
17	275	685	740	1,590	975	1,100	2,420	3,190	375
18	230	1,040	795	1,590	915	1,220	3,670	3,030	350
19	252	1,160	630	1,460	915	1,460	------	2,870	300
20	275	1,160	575	1,340	915	1,920	------	2,640	300
21	252	1,100	602	1,280	915	2,130	4,260	2,270	375
22	230	855	712	1,220	915	1,990	3,270	1,990	425
23	230	712	975	1,220	975	1,460	3,270	1,859	450
24	290	630	1,220	1,160	975	1,220	3,110	1,720	475
25	285	575	1,400	1,160	1,100	1,100	3,030	1,520	400
26	275	575	1,660	1,100	1,160	975	2,870	1,400	375
27	275	575	------	1,100	1,100	975	2,500	1,280	300
28	400	550	------	1,160	1,040	915	2,130	1,280	320
29	550	525	------	1,220	------	855	1,780	1,160	350
30	685	630	------	1,160	------	740	1,590	1,100	400
31	575	------	------	1,160	------	740	------	1,040	------

NOTE.—From afternoon of Dec. 26 to Jan. 8 stage was above gage; discharge greater then 1,690 second-feet. From afternoon of Apr. 18 to morning of Apr. 21 stage was above addition to gage; discharge greater than 4,310 second-feet.

Monthly discharge of Ichawaynochaway Creek near Newton, Ga., for the period Oct. 9, 1920, to June 30, 1921

[Drainage area, 1,020 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October 9–31	685	230	322	0.316	0.27
November	1,160	325	588	.576	.64
December 1–26	1,660	525	740	.725	.70
January 9–31	1,590	1,100	1,320	1.29	1.10
February	1,220	915	1,070	1.05	1.09
March	2,130	740	1,060	1.04	1.20
May	3,190	740	1,540	1.51	1.74
June	975	300	484	.475	.53

SPRING CREEK NEAR IRON CITY, GA.

LOCATION.—At wooden highway bridge 2 miles south of Miller County line and 5 miles northeast of Iron City, Decatur County, on road to Eldorendo.

DRAINAGE AREA.—471 square miles (measured on map compiled by United States Geological Survey; scale, 1:500,000).

RECORDS AVAILABLE.—October 21, 1920, to June 30, 1921, when station was discontinued.

GAGE.—Enameled staff gage fastened to the upstream side of a cypress tree on right bank, 20 feet upstream from the bridge; read by D. B. Brinson.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Straight above and below; composed of rock and sand. Right bank 20 feet high and wooded, not subject to overflow; left bank 10 feet high and wooded, slopes gently a long distance; subject to overflow. Control is solid bedrock 200 feet below bridge; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.2 feet at 6 a. m. April 20 (discharge, 5,160 second-feet); minimum stage, 0.94 foot at 6 p. m. October 26 (discharge, 77 second-feet).

ICE.—None.

REGULATION.—Probably none.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths twice daily. High-water gage heights possibly in error due to improvised high-water gage section. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except for high stages.

Discharge measurements of Spring Creek near Iron City, Ga., during the year ending Sept. 30, 1921

[Made by B. M. Hall, jr.]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 21	1.00	80.7	Jan. 15	6.38	861
Nov. 9	1.14	88.0	Mar. 19	3.64	351
Dec. 1	1.74	136	Apr. 19	13.08	4,270

Daily discharge, in second-feet, of Spring Creek near Iron City, Ga., for the period Oct. 21, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		100	138	2,230	520	312	200	865	384
2		100	130	2,750	520	298	200	722	354
3		100	130	2,630	502	286	200	700	326
4		100	136	2,450	484	274	191	616	298
5		93	130	2,180	484	262	200	576	286
6		100	130	1,980	484	250	210	538	262
7		93	130	1,800	484	240	210	502	250
8		93	138	1,620	484	240	191	484	230
9		93	146	1,460	484	230	173	432	220
10		87	155	1,320	484	250	155	384	210
11		87	155	1,180	484	250	146	326	200
12		87	155	1,060	484	250	138	368	191
13		87	164	940	448	262	130	384	173
14		87	155	865	432	286	122	384	173
15		87	155	865	416	326	164	520	164
16		122	146	865	400	354	191	766	155
17		164	146	865	416	340	484	970	146
18		173	146	890	368	340	1,180	1,660	138
19		210	146	915	354	326	3,620	940	130
20		220	146	915	326	326	4,840	1,030	130
21	81	220	138	865	326	326	3,410	1,030	138
22	81	210	155	790	312	326	2,450	1,180	138
23	81	210	230	722	312	326	1,580	1,120	155
24	81	182	262	678	312	354	1,280	1,000	182
25	81	164	286	636	312	326	1,120	970	210
26	81	155	312	596	312	274	940	915	312
27	87	146	556	596	312	312	915	815	384
28	93	138	766	616	312	230	1,280	722	312
29	107	138	1,030	556	-------	220	1,090	596	230
30	107	138	1,350	538	-------	210	970	502	220
31	100	-------	1,750	538	-------	200	-------	448	-------

NOTE.—Discharge interpolated Apr. 1 and 2.

Monthly discharge of Spring Creek near Iron City, Ga., for the period Oct. 21, 1920, to June 30, 1921

[Drainage area, 471 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October 21–31	107	81	89.1	0.189	0.08
November	220	87	133	.282	.31
December	1,750	130	313	.665	.77
January	2,750	538	1,190	2.53	2.92
February	520	312	413	.877	.91
March	354	200	284	.603	.70
April	4,840	122	933	1.98	2.21
May	1,660	326	725	1.54	1.78
June	384	130	223	.473	.53

MOBILE RIVER BASIN

CARTECAY RIVER NEAR CARTECAY, GA.

LOCATION.—At wooden bridge on Ellijay-Dahlonega highway, 1 mile below Licklog Creek, 2 miles northwest of Cartecay, Gilmer County, 6 miles southeast of Ellijay, and 7 miles upstream from point where Cartecay and Ellijay rivers unite to form Coosawattee River.

DRAINAGE AREA.—90 square miles (measured on topographic map).

RECORDS AVAILABLE.—July 1, 1904, to December 31, 1905; May 4, 1907, to November 2, 1907; December 12, 1918, to June 30, 1921, when station was discontinued.

GAGE.—Vertical staff in two sections installed December 13, 1918; lower section, 0 to 10 feet, is attached to a large birch tree on right bank 25 feet below bridge; upper section, 10 to 13.5 feet, attached to left bank pier of bridge. Gage used 1904 to 1907 was a vertical staff attached to the bridge. Relation between datum of the two gages not known as bench marks were destroyed when bridge was rebuilt.

DISCHARGE MEASUREMENTS.—Made from downstream side of wooden wagon bridge just above gage.

CHANNEL AND CONTROL.—Channel straight; cross section rocky and uneven but probably permanent; current very swift. Control is a rock ledge across bed of stream 500 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 22.0 feet at 8 a. m., February 10 (estimated discharge, 13,400 second-feet based on extension of rating curve above 723 second-feet and should be used with caution); minimum stage, 2.2 feet at 8 a. m., June 27–30 (discharge, 220 second-feet).

1904–5; 1907; 1919–1921: Maximum stage recorded, that of February 10, 1921, as given above; minimum stage, 0.6 foot, referred to old gage, October 20 and 26, 1904 (discharge, 56 second-feet).

ICE.—Not enough to affect stage-discharge relation.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation probably permanent, but no discharge measurements were made during year. Rating curve previously developed fairly well defined between 76 and 800 second-feet; extended above 800 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair except those for stages above 1,000 second-feet, which are subject to error.

Daily discharge, in second-feet, of Cartecay River near Cartecay, Ga., for the period October 1, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	332	272	300	428	332	460	364	332	272
2	332	300	272	396	332	460	332	332	272
3	332	300	272	332	332	460	332	332	244
4	332	272	272	332	332	428	332	332	244
5	332	272	396	300	524	428	332	332	300
6	300	272	332	300	428	428	332	332	300
7	300	244	244	300	396	428	332	300	364
8	300	244	300	332	1,200	428	332	272	300
9	272	244	272	428	4,650	396	300	272	300
10	272	244	272	588	[a] 13,400	396	300	272	300
11	272	244	272	460	1,980	396	300	556	272
12	272	244	272	396	796	396	300	332	272
13	272	244	272	396	760	396	300	524	272
14	272	244	1,670	868	724	396	428	428	272
15	272	428	588	524	588	396	396	332	272
16	272	524	428	428	588	396	396	428	244
17	272	332	396	428	588	396	724	332	244
18	272	272	332	396	524	396	524	300	244
19	272	272	332	396	492	364	428	300	244
20	272	272	300	364	688	364	428	272	244
21	272	272	300	332	556	332	428	460	244
22	272	300	332	332	524	332	428	428	244
23	272	272	524	332	588	396	460	364	332
24	272	272	428	332	556	460	428	300	272
25	272	272	364	364	524	460	364	300	244
26	272	272	332	428	460	428	364	300	244
27	332	272	688	396	492	364	428	300	220
28	300	272	460	364	460	364	364	300	220
29	300	272	396	364	-------	364	364	300	220
30	272	332	364	364	-------	332	332	272	220
31	272	-------	364	364	-------	332	-------	272	-------

[a] Determined from extension of rating curve and may be considerably in error.

Monthly discharge of Cartecay River near Cartecay, Ga., for the period Oct. 1, 1920, to June 30, 1921

[Drainage area, 92 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	332	272	288	3.13	3.61
November	524	244	285	3.10	3.46
December	1,670	244	398	4.33	4.99
January	868	300	399	4.34	5.00
February	13,400	332	1,210	13.2	13.80
March	460	332	399	4.34	5.00
April	724	300	382	4.15	4.63
May	556	272	339	3.68	4.24
June	364	220	265	2.88	3.21

COOSAWATTEE RIVER AT CARTERS, GA.

LOCATION.—At iron highway bridge at Carters, Murray County, 1,000 feet above Louisville & Nashville Railroad bridge, half a mile below mouth of Talking Rock Creek, and 14 miles below Junction of Ellijay and Cartecay rivers.

DRAINAGE AREA.—531 square miles.

RECORDS AVAILABLE.—August 15, 1896, to December 31, 1908; December 20, 1918, to September 30, 1921.

GAGE.—Chain gage attached to downstream side of highway bridge in third panel from right bank. Datum of gage unchanged since its establishment in August, 1896.

DISCHARGE MEASUREMENTS.—Made from downstream side of highway bridge.

CHANNEL AND CONTROL.—Channel is curved above and below bridge. Current is swift and broken. Banks fairly high but subject to overflow during extremely high stages. Bed of stream mostly rock and gravel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 27.5 feet at 4 p. m. February 10 (estimated discharge, 20,100 second-feet, determined from rating curve extended above 6,000 second-feet); minimum stage, 1.50 feet at 7 a. m. September 5–7, 9–11, 14–17, 25, and 30 (discharge, 505 second-feet).

1896–1908; 1919–1921: Maximum stage recorded, 28.6 feet at 6 a. m. November 19, 1906 (discharge, not determined); minimum stage, 0.4 foot September 20–22, October 9 to November 3, and November 11–21, 1904 (discharge, 184 second-feet).

ICE.—Practically none.

DIVERSIONS.—None.

REGULATION.—Operation of a few small mills on tributaries probably has no effect on stage at the gage.

ACCURACY.—Stage-discharge relation probably permanent but no measurements have been made since February 6, 1920. Rating curve previously developed fairly well defined between 500 and 3,000 second-feet; extended above 6,000 second-feet. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair except those for stages above 6,000 second-feet which are subject to error.

Daily discharge, in second-feet, of Coosawattee River at Carters, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	910	820	1,050	1,700	1,400	2,280	1,700	1,400	910	735	615	575
2	910	775	1,050	1,640	1,400	2,210	1,640	1,350	1,150	735	615	540
3	910	775	1,050	1,580	1,350	2,140	1,640	1,400	1,050	775	575	540
4	910	735	1,000	1,520	1,580	2,070	1,580	1,400	955	735	575	540
5	865	735	1,400	1,460	1,640	1,820	1,520	1,350	910	695	575	505
6	865	695	1,300	1,400	1,820	1,700	1,460	1,350	865	655	540	505
7	865	695	1,250	1,350	1,580	1,700	1,350	1,300	1,050	615	615	505
8	865	695	1,460	1,700	4,900	1,760	1,300	1,300	955	655	575	540
9	865	695	1,350	2,770	7,300	1,760	1,250	1,250	910	695	575	505
10	820	655	1,250	2,210	7,700	1,700	1,200	1,460	865	655	575	505
11	820	655	1,100	2,070	11,300	1,700	1,150	1,700	910	615	540	505
12	775	615	1,050	1,820	6,100	1,640	1,150	2,000	865	695	540	540
13	775	615	1,050	1,760	4,500	1,640	1,100	5,300	865	655	540	540
14	775	695	18,900	4,900	3,050	1,580	1,100	3,050	820	615	615	505
15	775	695	9,300	3,050	2,910	1,580	1,150	2,350	775	615	695	505
16	775	1,700	4,500	2,140	2,770	1,520	1,150	1,460	735	3,050	1,460	505
17	775	1,150	3,050	2,000	2,630	1,520	4,500	1,350	735	1,700	2,420	505
18	775	910	2,000	1,940	2,490	1,640	2,350	1,300	865	1,400	1,150	865
19	735	820	1,700	1,880	2,350	1,580	2,000	1,250	820	1,300	910	820
20	735	775	1,640	1,700	5,460	1,520	1,760	1,200	775	1,250	820	775
21	695	735	1,580	1,520	4,500	1,460	1,700	1,460	735	6,100	775	695
22	695	735	4,500	1,460	3,050	1,460	2,210	1,580	735	1,760	1,050	615
23	695	695	4,900	1,350	2,770	3,050	2,560	1,400	695	1,250	1,000	575
24	695	695	3,050	1,350	2,350	2,350	2,070	1,350	655	1,150	955	540
25	695	655	2,350	1,400	2,210	2,210	2,000	1,250	655	1,100	910	505
26	695	655	2,280	1,400	2,000	2,070	2,350	1,200	655	1,050	820	2,700
27	1,400	615	2,210	1,350	2,350	2,000	2,210	1,150	735	865	735	910
28	1,150	1,700	2,210	1,350	2,280	1,940	1,940	1,100	695	775	695	695
29	1,050	1,150	2,140	1,460	-------	1,820	1,700	1,050	695	735	655	540
30	955	1,050	2,070	1,460	-------	1,700	1,580	955	655	695	615	505
31	865	-------	2,070	1,460	-------	1,760	-------	910	-------	655	575	-------

Monthly discharge of Coosawattee River at Carters, Ga., for the year ending Sept. 30, 1921

[Drainage area, 531 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	1,400	695	842	1.59	1.83
November	1,700	615	820	1.54	1.72
December	18,900	1,000	2,770	5.22	6.02
January	4,900	1,350	1,810	3.41	3.93
February	11,300	1,350	3,420	6.44	6.71
March	3,050	1,460	1,830	3.45	3.98
April	4,500	1,100	1,750	3.30	3.68
May	5,300	910	1,550	2.92	3.37
June	1,150	655	823	1.55	1.73
July	6,100	615	1,130	2.13	2.46
August	2,420	540	784	1.48	1.71
September	2,700	505	654	1.23	1.37
The year	18,900	505	1,500	2.82	38.51

OOSTANAULA RIVER AT RESACA, GA.

LOCATION.—At Dixie Highway bridge at Resaca, Gordon County, 400 feet below Nashville, Chattanooga & St. Louis Railroad bridge and 3 miles below point where Coosawattee and Conasauga rivers unite to form Costanaula River.

DRAINAGE AREA.—1,610 square miles (measured on topographic maps).

RECORDS AVAILABLE.—1891–1898 (gage heights by U. S. Weather Bureau and discharge measurements by U. S. Geol. Survey); 1894–1904, incomplete records of gage heights only; continuous records January 1, 1905, to September 30, 1921.

GAGE.—Chain gage attached to downstream handrail of highway bridge. Prior to March 23, 1919, when chain gage was installed, the gage was a rod attached to downstream end of midstream pier of Nashville, Chattanooga & St. Louis Railroad bridge, 400 feet upstream from present gage. Gage read by United States Weather Bureau.

DISCHARGE MEASUREMENTS.—Made from downstream side of steel highway bridge. Prior to 1919 measurements were made from the Nashville, Chattanooga & St. Louis Railroad bridge and from a boat, at very low stages.

CHANNEL AND CONTROL.—Bed composed of rock and sand. Right bank high and is not overflowed; left bank is overflowed at very high stages. Control has never been definitely located but is practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 33.0 feet at 3 p. m. February 11 (discharge, 29,700 second-feet); minimum stage recorded, 2.2 feet September 17, 24, and 25 (discharge, 710 second-feet).

1896–1921: Maximum stage recorded,[2] that of February 11, 1921; minimum stage, 0.95 foot during discharge measurement made September 26, 1904 (discharge, 273 second-feet).

[2] Gage-height records not obtained during the following periods: May 1 to July 31, 1896; May 1 to October 31, 1899; July 1 to October 31, 1900; May 1 to November 12, 1901; and January 1, 1902, to December 31, 1904.

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Practically none from the few small mills upstream.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 450 and 8,000 second-feet. Above 8,000 second-feet curve is extended on a tangent and should be used with caution. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records below 9,000 second-feet good; above that stage they should be used with caution.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Oostanaula River at Resaca, Ga., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,390	1,210	2,900	3,860	3,380	3,620	5,180	2,470	1,450	1,090	1,330	990
2	1,390	1,390	2,330	3,700	3,300	3,540	5,000	2,260	1,450	1,040	1,270	990
3	1,450	1,700	2,120	3,460	3,060	3,380	3,540	2,470	1,390	1,150	1,090	940
4	1,510	1,570	1,840	3,380	2,900	3,220	2,980	2,540	1,270	1,090	1,150	940
5	1,450	1,330	2,680	3,140	2,900	3,060	2,750	2,400	1,270	1,150	1,330	890
6	1,450	1,270	3,140	2,900	5,450	2,980	2,540	2,330	1,330	1,040	1,270	840
7	1,510	1,270	2,900	2,610	5,270	2,900	2,470	2,190	1,270	940	1,210	940
8	1,450	1,210	3,620	2,400	8,400	2,900	2,470	2,050	1,270	990	2,260	890
9	1,450	1,210	5,000	3,300	18,700	2,820	2,400	1,980	1,330	1,090	1,700	795
10	1,450	1,150	4,190	10,500	24,900	2,750	2,260	1,840	1,390	1,570	1,510	795
11	1,390	1,150	3,060	10,900	29,500	2,680	2,120	2,400	1,330	1,910	1,090	750
12	1,330	1,090	2,470	8,100	28,400	2,680	1,980	3,460	1,270	1,270	1,390	795
13	1,270	1,090	2,680	6,000	25,500	2,610	1,910	3,060	1,270	1,150	1,270	795
14	1,270	1,090	16,500	8,600	22,200	2,540	2,050	2,680	1,210	1,040	1,450	750
15	1,270	1,150	19,700	11,500	16,700	2,540	2,540	2,540	1,210	1,840	1,840	750
16	1,210	2,610	20,900	8,400	12,100	2,470	2,330	2,400	3,220	1,700	3,700	750
17	1,210	2,900	18,800	5,810	5,720	2,470	11,400	2,190	1,910	2,900	6,300	710
18	1,270	2,400	13,700	5,000	4,640	2,400	12,800	2,120	1,630	3,140	4,730	795
19	1,270	1,910	4,020	4,460	4,280	2,470	12,900	1,910	1,210	2,050	2,610	940
20	1,270	2,260	3,300	3,460	5,270	2,400	12,200	1,770	1,570	1,510	1,980	890
21	1,210	1,510	2,680	3,300	7,800	2,330	4,460	1,630	1,570	2,820	1,510	840
22	1,210	1,450	4,100	3,220	7,200	2,330	3,380	2,820	1,450	6,000	1,330	840
23	1,210	1,450	14,200	3,060	6,400	2,470	4,100	2,330	1,330	5,090	1,150	795
24	1,150	1,390	15,100	2,900	5,180	2,900	4,020	2,120	1,270	2,540	1,390	710
25	1,090	1,330	12,000	2,820	4,820	4,190	3,220	1,840	1,210	1,980	2,400	710
26	1,090	1,330	5,720	2,820	4,460	4,100	2,980	1,630	1,210	1,570	1,910	840
27	1,390	1,270	8,000	3,540	4,020	3,380	3,300	1,770	1,150	1,330	1,700	1,570
28	2,190	2,680	11,100	3,460	3,780	2,820	3,540	1,630	1,090	1,270	1,390	3,060
29	1,570	3,780	9,000	3,860	-------	2,900	3,220	1,570	1,040	1,270	1,150	1,570
30	1,330	3,220	5,720	3,220	-------	2,540	2,680	1,510	1,090	1,210	1,040	1,270
31	1,210	-------	4,370	3,540	-------	2,400	-------	1,510	-------	1,210	1,040	-------

Monthly discharge of Oostanaula River at Resaca, Ga., for the year ending Sept. 30, 1921

[Drainage area, 1,610 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,190	1,090	1,350	0.839	0.97
November	3,780	1,090	1,680	1.04	1.16
December	20,900	1,840	7,350	4.57	5.27
January	11,500	2,400	4,750	2.95	3.40
February	29,500	2,900	9,870	6.13	6.38
March	4,190	2,330	2,860	1.78	2.05
April	12,900	1,910	4,290	2.66	2.97
May	3,460	1,510	2,170	1.35	1.56
June	3,220	1,040	1,390	.863	.96
July	6,000	940	1,800	1.12	1.29
August	6,300	1,040	1,820	1.13	1.30
September	3,060	710	971	.603	.67
The year	29,500	710	3,320	2.06	27.98

COOSA RIVER AT CHILDERSBURG, ALA.

LOCATION.—At Central of Georgia Railway bridge half a mile west of Childersburg, Talladega County, 35 miles above site of Lock 12, and 75.3 miles above Wetumpka.

DRAINAGE AREA.—8,390 square miles (determined by Alabama Power Co.).

RECORDS AVAILABLE.—February 22, 1914, to September 30, 1921.

GAGE.—Gurley printing water-stage recorder attached to downstream end of second pier from right bank of river; installed May 5, 1914. Prior to that date readings were taken from a vertical staff gage fastened to upstream side of same pier to which Gurley gage is now attached. Datum of Gurley gage is about 0.1 foot higher than that of the staff gage. This difference in datum is believed constant since 1914. All records from 1915 to 1921 are referred to datum of Gurley gage. Sea-level elevation of zero of staff gage is 421.00 feet (United States Engineer Corps datum).

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel straight for half a mile below gage. Left bank high; right bank subject to overflow at extremely high stages. Control not well defined; bed of stream probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 20.3 feet at 6 a. m. February 12 (discharge, 92,500 second-feet); minimum stage, 1.3 feet at 11 a. m. September 24 (discharge, 2,520 second-feet).

1914–1921: Maximum stage from water-stage recorder, 24.7 feet from 3 to 9 and 11 to 12 p. m. July 11, 1916 (discharge, 121,000 second-feet); minimum discharge, 2,370 second-feet, September 20, 1914.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 3,000 and 70,000 second-feet; extended above 70,000 second-feet. Operation of water-stage recorder satisfactory except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height obtained by averaging

hourly gage height. Records good below 70,000 second-feet; fair above that point.

COOPERATION.—Gage-height record furnished by Alabama Power Co.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Coosa River at Childersburg, Ala., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,900	5,340	8,870	25,300	14,800	15,900	13,300	11,200	5,620	4,530	4,530	4,270
2	5,900	5,070	8,870	20,000	14,400	15,100	14,400	10,500	5,620	4,530	4,530	4,010
3	5,620	4,800	7,930	17,700	13,700	14,400	15,500	9,520	5,340	4,270	4,270	4,010
4	5,620	4,800	7,330	16,600	13,000	13,700	15,100	9,190	5,340	4,270	4,270	4,010
5	5,340	5,070	7,330	15,100	14,400	13,300	14,000	8,870	5,340	4,530	4,270	3,750
6	5,340	5,620	7,040	14,800	19,600	13,000	12,600	8,870	5,070	4,530	4,800	3,750
7	5,340	5,340	7,330	13,700	20,400	11,900	11,200	8,870	5,340	4,530	7,040	4,270
8	5,340	5,070	9,520	13,000	53,700	11,600	13,300	8,550	5,620	4,270	8,870	4,010
9	5,340	4,800	12,200	16,600	65,600	11,900	9,850	8,240	5,340	4,270	8,870	3,750
10	5,070	4,530	13,700	30,700	78,200	13,000	9,190	8,240	5,340	4,800	7,630	3,750
11	5,070	4,530	13,300	37,300	88,100	12,600	8,870	8,240	5,070	4,800	8,550	3,750
12	5,070	4,270	12,600	40,700	91,900	14,800	8,550	10,200	4,800	4,530	7,040	3,500
13	5,070	4,270	18,900	39,200	86,900	16,600	8,240	9,850	4,800	4,800	5,620	3,500
14	4,800	4,270	59,800	49,400	81,900	14,800	11,900	10,500	5,070	5,340	5,070	3,250
15	4,800	4,530	66,200	51,600	80,100	13,300	13,000	11,200	4,800	5,900	7,040	3,250
16	4,800	4,800	64,500	47,300	81,300	12,200	17,700	10,200	4,800	7,040	8,240	3,250
17	4,530	5,070	59,800	44,200	81,900	12,200	41,700	9,850	5,070	9,520	8,870	3,250
18	4,530	6,460	56,500	39,200	80,100	13,000	38,700	8,550	5,340	7,630	11,600	3,000
19	4,530	12,200	55,900	31,600	76,400	14,000	42,200	7,930	6,460	6,750	14,400	3,000
20	4,530	11,900	54,300	23,200	75,800	13,000	40,200	7,630	6,750	8,870	13,700	3,250
21	4,530	9,190	50,500	18,500	62,700	11,900	33,900	7,040	7,630	9,850	10,200	3,000
22	4,530	6,750	51,600	16,600	38,200	11,200	28,000	7,040	5,900	10,200	7,630	3,000
23	4,530	5,900	55,900	15,100	30,300	10,500	23,600	6,750	5,620	8,240	5,900	2,760
24	4,270	5,620	48,400	14,400	27,100	10,500	17,700	6,750	5,620	8,870	5,340	2,760
25	4,270	5,340	43,400	13,700	23,200	10,900	14,800	7,630	5,340	11,200	5,620	3,000
26	4,530	5,070	44,700	14,000	20,000	11,900	14,800	7,630	5,070	9,850	6,180	3,500
27	4,530	5,070	46,300	15,900	18,100	13,700	14,400	7,040	5,070	7,630	6,460	4,800
28	4,270	5,340	43,200	16,260	16,600	14,800	13,700	6,750	5,070	6,180	6,180	8,550
29	4,270	5,900	38,700	16,200	-------	13,000	12,200	6,460	4,530	5,340	5,900	10,900
30	4,800	7,330	35,800	15,500	-------	11,900	11,900	6,180	4,530	5,070	5,070	9,190
31	5,900	-------	31,600	15,500	-------	12,200	-------	5,900	-------	4,800	4,800	-------

NOTE.—Water-stage recorder did not operate satisfactorily Apr. 1, 2, and May 10; discharge interpolated.

Monthly discharge of Coosa River at Childersburg, Ala., for the year ending Sept. 30, 1921

[Drainage area, 8,390 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	5,900	4,270	4,930	0.588	0.68
November	12,200	4,270	5,810	.692	.77
December	66,200	7,040	33,800	4.03	4.65
January	51,600	13,000	24,500	2.92	3.37
February	91,900	13,000	48,900	5.83	6.07
March	16,600	10,500	13,000	1.55	1.79
April	42,200	8,240	18,200	2.17	2.42
May	11,200	5,900	8,430	1.00	1.15
June	7,630	4,530	5,380	.641	.72
July	11,200	4,270	6,350	.757	.87
August	14,400	4,270	7,090	.840	.97
September	10,900	2,760	4,130	.492	.55
The year	91,900	2,760	14,800	1.76	24.01

ELLIJAY RIVER AT ELLIJAY, GA.

LOCATION.—At steel highway bridge on Ellijay-Blue Ridge road half a mile northeast of Gilmer County courthouse in Ellijay, half a mile north of Louisville & Nashville Railroad station, and three-fourths mile upstream from point where Ellijay and Cartecay rivers unite to form Coosawattee River.

DRAINAGE AREA.—90 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 4 to December 31, 1907, and December 10, 1918, to June 30, 1921, when station was discontinued.

GAGE.—Gage used in 1907 was a vertical staff fastened to downstream bridge post on right bank. Between 1907 and 1918 the old bridge was replaced by a steel structure and the county officials removed rod from bridge and fastened it to an oak tree on right bank 4 feet above bridge. Apparently the gage was reset to read same as in first position. When station was reestablished December 10, 1918, the rod, as replaced by county officials, was used without changing position or datum. On April 5, 1919, a chain gage was installed on upstream side of new steel bridge and adjusted to read with rod.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge half a mile downstream from gage, where section is better than at the bridge where gage is located.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and below gage. Bottom rough with many riffles. Banks subject to overflow at about 11-foot stage. Control formed by rock riffles below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period October 1, 1920, to June 30, 1921, 12.5 feet at 12.15 p. m. February 10 (discharge, 4,170 second-feet); minimum stage, 1.7 feet numerous days in November, 1920, and June, 1921 (discharge, 96 second-feet).

1907 and 1919–1921: Maximum stage recorded, 14.1 feet at 9.45 a. m. April 2, 1920 (discharge, 4,970 second-feet); minimum stage, 1.4 feet September 29, 30, October 1–3, and 10–12, 1919 (discharge, 40 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 70 and 3,420 second-feet. Gage read to half-tenths twice daily. Chain length not checked since April 2, 1920. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Ellijay River at Ellijay, Ga., for the period Oct. 1, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	176	116	176	280	268	292	232	198	136
2	156	176	156	292	268	292	232	198	136
3	156	166	156	268	256	268	220	198	136
4	156	136	146	292	244	268	220	198	136
5	156	116	220	280	331	268	220	198	344
6	156	116	187	244	280	268	220	198	146
7	156	116	176	220	460	268	220	198	136
8	156	116	232	232	1,350	268	209	187	126
9	156	116	198	580	2,940	268	198	176	96
10	146	116	198	460	4,020	268	198	176	96
11	146	116	176	372	1,350	268	198	268	96
12	146	116	176	280	895	268	198	268	96
13	136	116	755	292	650	268	198	244	96
14	136	100	1,820	755	580	244	232	166	136
15	136	198	580	460	580	244	198	156	116
16	136	460	400	400	520	244	198	156	116
17	136	220	331	344	490	256	930	156	116
18	136	187	280	318	460	244	550	156	100
19	136	156	244	305	400	232	400	156	96
20	136	136	209	268	550	220	331	136	116
21	136	136	198	268	520	220	268	244	96
22	126	136	1,210	268	490	220	400	209	96
23	126	126	650	256	490	232	409	176	96
24	126	116	430	244	460	305	331	156	96
25	126	116	344	244	400	256	268	156	96
26	116	106	292	280	344	232	256	136	156
27	220	126	720	280	331	220	490	136	126
28	166	209	460	268	318	268	268	116	96
29	156	156	400	244	------	232	220	116	136
30	136	166	344	244	------	220	198	116	126
31	126	------	318	292	------	198	------	156	------

Monthly discharge of Ellijay River at Ellijay, Ga., for the period Oct. 1, 1920, to June 30, 1921

[Drainage area, 90 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	220	116	145	1.61	1.86
November	460	100	150	1.67	1.86
December	1,820	146	393	4.37	5.04
January	755	220	317	3.52	4.06
February	4,020	244	723	8.03	8.36
March	305	198	252	2.80	3.23
April	930	198	290	3.22	3.59
May	268	116	178	1.98	2.28
June	344	96	123	1.37	1.53

ETOWAH RIVER NEAR BALL GROUND, GA.

LOCATION.—At iron highway bridge one-fourth mile below mouth of Longswamp Creek and 3 miles southeast of Ball Ground, Cherokee County, on Ball Ground-Dawsonville road.

DRAINAGE AREA.—466 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 16, 1907, to September 30, 1915, and November 25, 1918, to June 30, 1921, when the station was discontinued.

GAGE.—Chain gage attached to upstream lower chord of bridge, installed August 18, 1908, to replace vertical staff on left bank 75 feet downstream from bridge. Both gages set to same datum.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge to which gage is attached.

CHANNEL AND CONTROL.—Channel has rather sharp bend just above bridge; straight below. Left bank not subject to overflow, but right bank is overflowed for 500 feet beyond end of bridge approach. Current rather irregular owing to bend upstream. Control is a rocky riffle 500 feet downstream from gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.0 feet at 8 a. m. February 9 (discharge, 11,800 second-feet); minimum stage, 2.85 feet at 4 p. m. June 30 (discharge, 552 second-feet).

1907–1915; 1918–1921: Maximum stage recorded, 25.5 feet at 3 p. m. December 22, 1918 (discharge, 22,200 second-feet); minimum stage, 1.4 feet at 6 a. m. July 28, 1914 (discharge, 165 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Operation of a few small mills upstream may cause slight variations in stage during low water.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 360 and 7,000 second-feet; above that point should be used with caution. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records considered good except those for low and high stages which are probably fair.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Etowah River near Ball Ground, Ga., for the period Oct. 1, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	620	620	820	1,120	1,170	1,580	1,460	1,070	720
2	720	1,020	770	1,120	1,120	1,580	1,120	1,020	670
3	720	1,120	720	1,120	1,120	1,460	1,120	1,120	720
4	720	720	720	1,070	1,070	1,340	1,120	1,070	720
5	720	620	1,020	1,020	1,580	1,340	1,120	1,020	770
6	720	598	920	1,020	1,220	1,400	1,070	970	720
7	720	620	820	970	1,170	1,340	1,020	820	720
8	670	598	1,280	1,120	7,200	1,400	1,020	770	720
9	720	598	1,070	2,230	11,800	1,400	1,070	820	720
10	670	598	920	3,820	11,800	1,340	1,020	1,580	720
11	670	620	820	1,700	6,100	1,340	1,020	1,340	670
12	620	598	770	1,460	3,420	1,280	1,020	1,400	620
13	620	670	920	1,400	1,760	1,340	1,020	1,460	620
14	620	620	5,550	3,100	2,230	720	1,220	1,340	575
15	620	1,460	6,000	2,230	2,020	720	1,220	1,220	552
16	598	3,180	2,020	1,170	1,880	1,220	1,120	1,170	770
17	598	1,460	1,580	3,820	1,820	1,220	1,760	1,120	720
18	620	1,220	1,340	1,700	1,700	1,220	1,460	1,120	620
19	620	820	1,220	1,460	1,700	1,220	1,220	1,070	598
20	598	770	1,170	1,400	1,760	1,170	1,170	1,120	620
21	598	720	1,020	3,100	2,230	1,220	1,120	1,760	620
22	575	720	2,230	2,720	1,950	1,170	1,340	1,220	620
23	575	720	1,700	1,820	1,950	1,170	2,440	1,070	720
24	620	720	1,340	1,760	1,820	1,760	2,370	1,070	620
25	598	670	1,170	1,700	1,760	1,700	2,020	1,020	575
26	598	620	1,760	1,580	1,700	1,460	1,760	970	620
27	920	620	2,940	1,400	1,640	1,280	1,580	970	620
28	720	1,170	1,950	1,340	1,580	1,070	1,220	870	598
29	620	820	1,580	1,220	-------	920	1,070	820	575
30	598	770	1,220	1,220	-------	770	1,120	820	552
31	620	-------	1,170	1,340	-------	720	-------	770	-------

Monthly discharge of Etowah River near Ball Ground, Ga., for the period Oct. 1, 1920, to June 30, 1921

[Drainage area, 466 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	920	575	652	1.40	1.61
November	3,180	598	869	1.86	2.08
December	6,000	720	1,570	3.37	3.88
January	3,820	970	1,720	3.69	4.25
February	11,800	1,070	2,800	6.01	6.26
March	1,760	720	1,250	2.68	3.09
April	2,440	1,020	1,310	2.81	3.14
May	1,760	770	1,100	2.36	2.72
June	770	552	656	1.41	1.57

ETOWAH RIVER NEAR ROME, GA.

LOCATION.—At Freemans Ferry, a stop on the Nashville, Chattanooga & St. Louis Railway branch line from Kingston to Rome, Ga., 1 mile downstream from mouth of Dikes Creek and 5 miles upstream from Rome, Floyd County, where Etowah and Oostanaula rivers unite to form Coosa River.

DRAINAGE AREA.—1,800 square miles.

RECORDS AVAILABLE.—August 17, 1904, to June 30, 1921, when the station was discontinued.

GAGE.—Vertical staff in three sections on left bank 250 feet downstream from ferry; read by D. F. Ellis.

DISCHARGE MEASUREMENTS.—Made from boat held in place by ferry cable.

CHANNEL AND CONTROL.—Bed composed of rock, boulders, and gravel; practically permanent. Banks subject to overflow at extremely high stages. A shoal immediately below gage forms control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 25.0 feet at 7 a. m. February 11 (discharge, 41,800 second-feet); minimum stage, 1.95 feet from 6 p. m. May 29 to 7 a. m. June 2, and from 6 p. m. June 12 to 6 p. m. June 13 (discharge, 1,040 second-feet).

1904–1921: Maximum stage recorded, 28.0 feet at 7 a. m. December 11, 1919 (discharge, 47,200 second-feet); minimum stage, 1.2 feet October 10 and 24, 1904 (discharge, 360 second-feet).

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

REGULATION.—The operation of a few mill dams upstream apparently has no effect on flow.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined below 4,400 second-feet and extended as a tangent above that point. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fairly good below 4,400 second-feet; determinations above that point subject to error.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Etowah River near Rome, Ga., for the period Oct. 1, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1,200	1,660	1,660	2,920	4,000	4,000	1,790	1,480	1,040
2	1,200	1,660	1,790	2,200	4,000	4,000	1,790	1,480	1,090
3	1,300	1,600	2,200	2,080	4,000	4,000	1,790	1,480	1,250
4	2,340	1,540	4,540	2,060	4,000	3,640	1,790	1,420	1,090
5	2,340	1,480	5,620	2,490	4,000	3,640	1,920	1,420	1,090
6	1,790	1,420	5,080	2,200	5,620	3,640	1,920	1,420	1,090
7	1,660	1,420	7,420	2,800	5,800	3,640	1,790	1,420	1,090
8	1,660	1,420	5,800	2,640	11,600	3,300	1,790	1,660	1,090
9	1,660	1,420	5,080	4,900	35,000	3,640	1,790	1,790	1,090
10	1,540	1,360	5,260	13,400	39,800	4,360	1,660	1,420	1,090
11	1,540	3,640	4,900	10,800	40,900	5,440	1,660	1,360	1,090
12	1,540	6,700	4,360	5,440	33,900	6,520	1,660	1,360	1,090
13	1,540	4,720	33,500	5,620	26,700	5,800	1,660	1,360	1,040
14	1,540	3,820	36,400	9,580	21,600	4,360	1,660	1,360	4,000
15	1,540	2,340	33,900	16,800	19,800	4,660	1,660	1,360	2,640
16	1,540	2,340	27,800	6,160	15,700	4,000	1,660	1,300	2,060
17	2,060	2,060	21,100	5,080	7,060	3,820	2,340	1,250	1,660
18	2,340	2,640	12,100	4,180	5,620	3,820	2,340	1,250	1,600
19	1,920	2,340	6,880	4,000	4,180	3,470	2,060	1,250	1,480
20	1,660	3,820	5,800	4,000	7,060	3,300	1,920	1,200	1,360
21	1,600	6,160	5,800	4,000	5,800	3,130	1,660	1,200	1,200
22	1,540	5,800	6,160	4,000	5,800	3,130	1,660	1,200	1,200
23	1,480	4,360	6,520	4,000	5,800	3,130	1,660	1,200	1,200
24	1,420	3,640	4,720	4,000	7,340	3,130	1,600	1,140	1,140
25	1,420	3,130	4,000	4,000	6,160	4,360	1,600	1,140	1,090
26	1,420	3,640	3,470	4,000	4,360	6,700	1,600	1,090	1,090
27	1,540	2,640	3,820	4,720	4,000	6,880	1,600	1,090	1,090
28	3,130	2,340	3,640	4,000	4,000	5,800	1,540	1,090	1,090
29	2,340	1,790	3,300	3,820	.....	4,360	1,540	1,090	1,090
30	2,200	1,660	3,130	5,440	.....	4,000	1,540	1,040	1,090
31	1,920	.....	3,640	4,360	.....	3,820	.....	1,040	.....

NOTE.—No gage-height record Jan. 1; discharge interpolated.

Monthly discharge of Etowah River near Rome, Ga., for the period Oct. 1, 1920, to June 30, 1921

[Drainage area, 1,800 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	3,130	1,200	1,740	0.967	1.11
November	6,700	1,360	2,820	1.57	1.75
December	36,400	1,660	9,010	5.01	5.78
January	13,400	2,060	4,830	2.68	3.09
February	40,900	4,000	12,300	6.83	7.11
March	6,880	3,130	4,220	2.34	2.70
April	2,340	1,540	1,760	.978	1.09
May	1,790	1,040	1,300	.722	.83
June	4,000	1,040	1,340	.744	.83

LONGSWAMP CREEK NEAR BALL GROUND, GA.

LOCATION.—At wooden wagon bridge half a mile upstream from mouth of creek that enters Etowah River one-fourth mile above gaging station on that river. Bridge is 2 miles southeast of Ball Ground, Cherokee County.

DRAINAGE AREA.—74 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 30, 1918, to June 30, 1921, when the station was discontinued.

GAGE.—A vertical rod with enameled face, spiked to downstream post of left-hand bridge bent; read by Mrs. H. J. Wheeler.

DISCHARGE MEASUREMENTS.—Made from downstream side of 3-span wooden wagon bridge to which gage is attached.

CHANNEL AND CONTROL.—Channel straight for several hundred feet above and below bridge. Bed smooth and sandy; section very shallow at low water; current swift. Control is formed by a gravel and boulder shoal 300 feet downstream. Though gage is only half a mile above junction with Etowah River it is believed that there is seldom backwater from the river, as there seems to be considerable fall on creek below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.3 feet at 8 a. m. February 9 (discharge, 3,490 second-feet); minimum stage recorded, 0.7 foot at 8.30 a. m. June 10 (discharge, 70 second-feet).

1919–1921: Maximum stage recorded, 17.5 feet at 7 a. m. December 22, 1918 (discharge, 3,540 second-feet); minimum stage recorded, 0.18 foot at 7 a. m. September 26–30, 1919 (discharge, 22 second-feet).

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Though there is one or more small water-power plants upstream, the daily fluctuation seems to be negligible.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve well defined between 30 and 800 second-feet; extended above 800 second-feet on basis of run-off of Etowah River near Ball Ground. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except those for stages above 800 second-feet which are subject to error.

Daily discharge, in second-feet, of Longswamp Creek near Ball Ground, Ga., for the period Oct. 1, 1920, to June 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	104	98	92	152	158	217	178	128	92
2	104	116	98	165	158	217	165	128	92
3	98	98	92	152	152	204	165	146	86
4	98	92	86	152	152	204	165	134	86
5	98	86	140	146	165	204	158	128	86
6	92	86	110	146	178	204	165	128	81
7	92	86	104	140	165	191	158	128	76
8	98	86	134	134	430	191	152	122	76
9	92	86	116	286	3,490	191	140	116	70
10	92	86	110	510	2,080	191	140	116	70
11	92	81	104	272	1,120	191	134	134	81
12	86	81	104	217	542	191	134	140	81
13	81	81	134	191	385	191	128	152	81
14	81	81	3,170	764	356	191	230	134	76
15	86	191	1,110	400	300	178	146	116	76
16	81	478	300	258	286	178	140	140	104
17	86	191	230	230	286	165	272	128	92
18	86	116	191	204	272	165	191	122	86
19	86	110	165	191	258	165	178	116	81
20	86	110	230	178	526	165	152	104	76
21	86	104	165	178	314	165	140	110	86
22	81	98	152	165	272	158	217	140	81
23	81	92	128	165	272	152	258	128	92
24	81	92	191	152	258	217	191	176	86
25	86	92	165	152	258	204	165	104	86
26	81	86	152	204	244	204	152	140	81
27	204	86	430	204	230	178	165	128	86
28	98	122	258	178	230	158	162	116	86
29	86	104	204	165	------	178	140	104	81
30	86	92	178	165	------	158	140	98	81
31	86	------	165	158	------	152	------	92	------

Monthly discharge of Longswamp Creek near Ball Ground, Ga., for the period Oct. 1, 1920, to June 30, 1921

[Drainage area, 74 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	204	81	92.7	1.25	1.44
November	478	81	114	1.54	1.72
December	3,170	86	291	3.93	4.53
January	764	134	219	2.96	3.41
February	3,490	152	483	6.53	6.80
March	217	152	184	2.49	2.87
April	272	128	167	2.26	2.52
May	152	92	124	1.68	1.94
June	104	70	83.2	1.12	1.25

TALLAPOOSA RIVER AT STURDIVANT, ALA.

LOCATION.—2,000 feet above bridge of Central of Georgia Railway, which is one-fourth mile west of Sturdivant, Tallapoosa County, 1 mile below Stow's Ferry, and 5 miles below mouth of Hillabee Creek.

DRAINAGE AREA.—2,460 square miles.

RECORDS AVAILABLE.—July 19, 1900, to September 30, 1921.

GAGE.—Vertical staff, 0-24 feet, on right bank 2,000 feet upstream from bridge; installed August 20, 1906; read by A. L. Stow. Original gage, a staff attached to pier of railroad bridge and later a chain gage on railroad bridge, was read until July, 1905, when the present gage was substituted for the chain gage because it was impossible to obtain an observer for gage at bridge. From August 21, 1906, to September 30, 1915, readings on the present staff gage were reduced to datum of original gage by means of comparative readings. Since October 1, 1915, gage heights have been obtained from readings on the present staff gage without reference to datum of old gage which has been removed, and a new rating has been made based on present gage datum.

DISCHARGE MEASUREMENTS.—Made from a plank walk resting on lower members of deck of railroad bridge.

CHANNEL AND CONTROL.—Bed rough and rocky; permanent. At extremely high stages water overflows banks but is confined entirely under bridge. Control is a series of rock ledges, shoals, and bluffs below bridge; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.3 feet April 17 (discharge, 49,500 second-feet); minimum stage, —0.35 foot at 8 a. m. September 24 (discharge, 358 second-feet).

1900–1921: Maximum stage recorded, 33.3 feet at noon December 11, 1919 (discharge, 104,000 second-feet); minimum stage, —0.2 foot (old gage) October 25–29, 1904 (discharge, 250 second-feet).

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

REGULATION.—Practically none.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 300 and 30,000 second-feet; extended above 30,000 second-feet on basis of crest run-off of Chattahoochee River during flood of December 11, 1919. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

No discharge measurements were made at this station during the year.

Daily discharge, in second-feet, of Tallapoosa River at Sturdivant, Ala., for the year ending Sept. 30, 1921

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,340	1,260	2,270	3,820	3,310	4,190	6,270	2,880	1,500	2,270	975	790
2	1,260	1,340	2,270	3,640	3,310	4,190	5,220	2,750	1,420	2,270	910	790
3	1,180	1,770	2,160	4,590	3,160	3,820	5,640	2,880	1,340	1,420	975	735
4	1,180	1,860	1,960	4,590	3,020	3,820	3,640	2,880	1,340	1,500	1,590	850
5	1,500	1,770	2,060	4,000	5,010	3,640	3,310	2,880	1,340	1,500	1,590	1,040
6	1,180	1,500	2,160	3,820	9,580	3,640	3,160	2,750	1,420	1,040	5,640	1,040
7	1,110	1,340	2,270	3,470	5,010	3,640	3,020	2,620	1,500	1,040	5,220	910
8	1,110	1,340	3,470	3,160	22,000	3,470	2,880	2,380	1,590	1,180	12,300	910
9	1,110	1,260	4,390	4,800	32,500	3,820	2,270	2,500	1,340	1,110	5,220	1,340
10	1,110	2,060	3,020	7,560	48,400	4,190	2,750	2,380	1,260	1,260	4,600	790
11	1,040	1,260	2,620	7,560	32,200	3,640	2,620	3,160	1,180	1,340	2,880	735
12	1,040	1,260	2,620	6,060	18,600	6,690	2,500	4,000	1,180	2,060	1,680	630
13	1,040	1,180	3,310	5,220	10,500	8,440	2,500	4,800	1,180	1,860	1,340	1,180
14	1,040	2,060	32,500	12,500	6,900	5,640	5,640	3,640	1,340	3,310	1,770	708
15	975	6,900	27,400	13,400	6,480	4,590	6,900	2,750	4,000	1,960	2,060	605
16	975	8,440	17,900	9,580	5,430	4,000	6,900	2,620	5,220	1,860	2,160	655
17	975	5,640	14,500	6,270	5,220	4,390	32,800	2,380	2,060	3,640	2,380	655
18	910	5,640	5,640	5,010	5,010	4,800	15,700	2,270	1,680	5,220	4,000	655
19	850	3,310	3,640	6,480	3,160	6,060	9,100	2,160	1,590	2,160	3,310	630
20	790	2,500	3,640	5,220	17,300	5,010	6,270	2,060	1,680	2,270	1,960	580
21	910	1,770	2,380	4,800	11,000	4,190	5,220	1,960	1,180	2,270	1,500	655
22	850	1,960	24,000	4,190	8,220	3,640	4,800	2,270	2,060	3,820	1,180	708
23	850	1,860	34,500	3,640	6,690	3,470	6,060	2,270	2,160	5,430	1,110	558
24	850	1,770	17,900	3,470	6,060	4,190	5,220	2,160	1,590	3,640	1,040	375
25	910	1,770	12,500	3,470	5,430	4,190	4,390	2,060	1,420	1,680	1,500	410
26	1,260	1,680	6,060	3,640	5,010	4,000	3,820	1,960	1,420	1,340	2,060	430
27	2,060	1,680	11,500	3,310	4,590	3,820	4,000	2,270	1,420	1,260	1,770	1,040
28	1,960	2,380	10,100	4,390	4,390	3,640	3,820	2,160	1,260	1,340	1,340	2,500
29	1,960	2,500	7,560	3,820	-------	3,640	3,310	1,680	1,110	1,180	975	1,590
30	1,770	2,500	5,220	3,310	-------	3,640	3,020	1,180	1,340	1,110	850	1,180
31	1,260	-------	4,190	3,470	-------	4,390	-------	1,590	-------	1,040	790	-------

Monthly discharge of Tallapoosa River at Sturdivant, Ala., for the year ending Sept. 30, 1921

[Drainage area, 2,460 square miles]

Month	Discharge in second-feet				Run-off in inches
	Maximum	Minimum	Mean	Per square mile	
October	2,060	790	1,170	0.476	0.55
November	8,440	1,180	2,450	.996	1.11
December	32,500	1,960	8,890	3.61	4.16
January	13,400	3,160	5,230	2.13	2.46
February	48,400	3,020	10,600	4.31	4.49
March	8,440	3,470	4,340	1.76	2.03
April	32,800	2,270	5,760	2.34	2.61
May	4,800	1,180	2,530	1.03	1.19
June	5,220	1,150	1,670	.679	.76
July	5,430	1,040	2,080	.846	.98
August	12,300	790	2,480	1.01	1.16
September	2,500	375	856	.348	.39
The year	48,400	375	3,970	1.61	21.89

MISCELLANEOUS MEASUREMENTS

Miscellaneous discharge measurements in eastern Gulf of Mexico drainage basins during the year ending Sept. 30, 1921

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Nov. 12	Ochlockonee Creek	Gulf of Mexico	Hadleys Ferry Bridge near Calvary, Ga.		186
Jan. 22	do	do	do		1,270
Nov. 12	do	do	Whidden Bridge, 4 miles east of Concord, Fla.		176
Oct. 12	Sowhatchee Creek	Chattahoochee River	Bridge near Saffold, Ga.		23.6
Nov. 9	Spring Creek	Flint River	Bridge near Brinson, Ga.		152
Oct. 11	do	do	Site of Bainbridge Power Co.'s dam, 1 mile east of Reynoldsville, Ga.	*97.38	286
18	do	do	do	*97.07	247
26	do	do	do	*96.99	229
Nov. 9	do	do	do	*96.97	221
Jan. 14	do	do	do	*101.60	1,050
18	do	do	do	*101.36	986
Feb. 19	do	do	do	*99.28	558
Apr. 20	do	do	do	*104.15	2,140

* Referred to datum of dam.

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