Surface Water Supply of the United States 1954

Part 4. St. Lawrence River Basin

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1337

Prepared in cooperation with the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Vermont, and Wisconsin, and with other agencies

A, Kalamazoo River Near Battle Creek, Mich.

B, Huron River at Milan, Ohio

C, Fall Creek Near Ithaca, N. Y. (Photo by Ithaca Journal)

FIGURE 1.—GAGING STATION STRUCTURES

At most gaging stations in the northern part of the United States and at some in the mountainous regions of other parts the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins. If the stage-discharge relation is affected by ice, this information is given in a note to the table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge and runoff of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the water year 1954 is shown on page IV for the purpose of finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "Location" for some stations, is that determined and used by the Corps of Engineers unless otherwise noted. Under "Records available" are given the periods for which there are published records generally equivalent to those at the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has

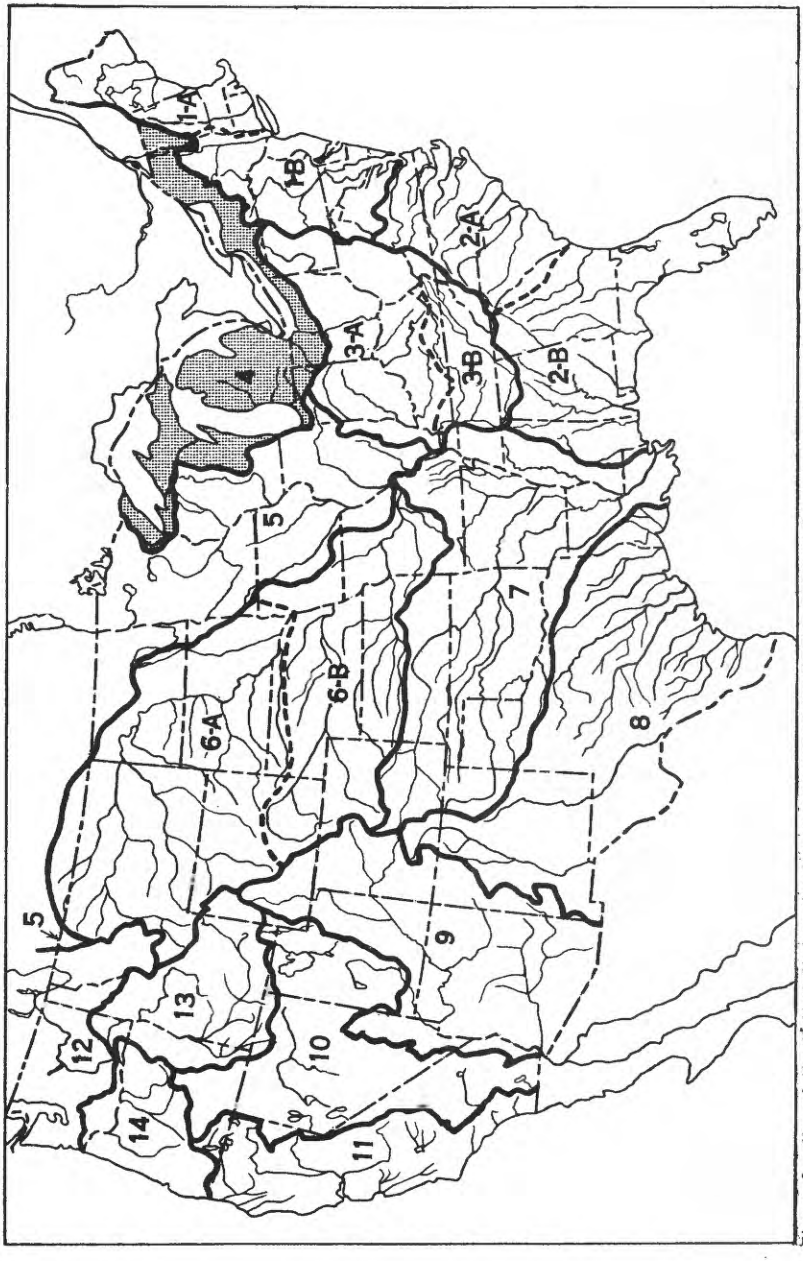

Figure 2. Map of the United States showing areas covered by the 18 annual volumes on surface-water supply. The area covered by this report is shaded.

State reports containing compilations of records of discharge--Continued

State	Period	Report	Issued by
Ohio.....	1898-1921	Bull. 73, Ohio streamflow, Part 1.....	Engineering Experiment Station, Ohio State University.
Do.....	1898-1944	Bull. 127, Ohio streamflow, Part 2.....	Do.
Do.....	1902-39	Bull. 200, Compilation of streamflow.....	Department of Agriculture, Division of Conservation.
Do.....	1898-1939	Bull. 111, Ohio stream-drainage areas and flow-duration tables.	Engineering Experiment Station, Ohio State University.
Wisconsin.....	1888-1914	1st report of Railroad Commission of Wisconsin to Legislature on Water powers.	Railroad Commission of Wisconsin.
Do.....	1914-23	2nd report of Railroad Commission of Wisconsin to Legislature on water powers.	Do.

Note.--In addition to the records contained in the reports listed above, annual or biennial reports in which are contained records of discharge are issued by the State of New York, Board of Water Supply, city of New York, and the city of Rochester.

The reports listed in the foregoing tables contain the customary records of discharge collected during the systematic operation of gaging stations. Detailed information on the stage and discharge of many streams during major floods has been included in special reports on these floods published by the Geological Survey or other agencies. The more recent of these special reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier notable floods. The following list gives the numbers and titles of these reports:

Report	Issued by
WSP 147: Destructive floods in the United States in 1904.	U. S. Geological Survey.
WSP 162: Destructive floods in the United States in 1905.	Do.
WSP 636-C: The New England flood of November 1927.	Do.
WSP 771: Floods in the United States, magnitude and frequency.	Do.
WSP 773-E: The New York State flood of July 1935.	Do.
WSP 798: The floods of March 1936, part 1, New England Rivers.	Do.
WSP 799: The floods of March 1936, part 2, Hudson River to Susquehannah River region.	Do.
WSP 847: Maximum discharges at stream-measurement stations through September 1938.	Do.
WSP 867: Hurricane floods of September 1938.	Do.
WSP 1137-G: Floods of 1950 in the Upper Mississippi River and Lake Superior basins in Minnesota.	Do.
WSP 1137-I: Summary of floods in the United States during 1950.	U. S. Geological Survey.
Bull. 1: Magnitude and frequency of floods in Minnesota.	Minnesota Division of Waters.
Bull. 7: Floods in Ohio, magnitude and frequency.	Ohio Water Resources Board.
Bull. 14: Local floods in Ohio during 1947.	Do.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The table below contains a list of gaging stations for the area covered by this report, at which records of discharge were collected during the water year October 1952 to September 1954 by agencies other than the Geological Survey. The records of these stations are not contained in publications of the Geological Survey, nor have they been published elsewhere.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by
Cayuga Lake Outlet...	Lock 1 (Mud lock), N. Y.....	1926-54	State Department of Public Works, Syracuse, N. Y.
Clyde River.....	Clyde, N. Y.....	1924-54	Do.
Indian River.....	Theresa, N. Y.....	1934-54	Niagara Mohawk Power Corporation, Syracuse, N. Y.
New York Barge Canal a/	Brewerton, N. Y.....	1925-54	State Department of Public Works, Syracuse, N. Y.
Do.....	Bypass and lock 30, Macedon, N. Y.	1938-54	Do.
Oneida River.....	Caughdenoy, N. Y.....	1929-54	Oswego River Watershed Corporation, Fulton, N. Y.
Oswegatchie River, East Branch.	Brown Falls, N. Y.....	1934-54	Niagara Mohawk Power Corporation, Syracuse, N. Y.
Oswego River.....	Dam O-5, Minetto, N. Y.....	1928-54	State Department of Public Works, Syracuse, N. Y.
Do.....	Lower Dam, Fulton, N. Y.....	1928-54	Oswego River Watershed Corporation, Fulton, N. Y.
Do.....	High Dam, Oswego, N. Y.....	1940-54	Niagara Mohawk Power Corporation, Syracuse, N. Y.

a/ Diversion around station on Oneida River at Caughdenoy, N. Y.

Records of discharge collected by agencies other than the Geological Survey--Continued

Stream	Location	Period	Collected by
Raquette River.....	Colton, N. Y.....	1934-54	Niagara Mohawk Power Corporation, Syracuse, N. Y.
St. Regis River, West Branch.	Parishville, N. Y.....	1934-54	Do.
Salmon River.....	Bennetts Bridge, Altmar, N. Y..	1934-54	Do.
Saranac River.....	Kents Falls, N. Y.....	1934-54	System Properties, Inc., Cadyville, N. Y.
Seneca River.....	Baldwinsville, N. Y.....	1928-54	Oswego River Watershed Corporation, Fulton, N. Y.
Do.....	Jacks Reef, near Baldwinsville, N. Y.	1933-54	State Department of Public Works, Syracuse, N. Y.
Do.....	Seneca Falls, N. Y.....	1931-54	New York State Electric & Gas Corp., Geneva, N. Y.
Do.....	Waterloo, N. Y.....	1931-54	Do.
Skaneateles Lake Outlet.	Skaneateles, N. Y.....	1922-54	City of Syracuse, N. Y.

Note.--Records for the stations given in the above table are unpublished but are available at the office of the organization by which the station was operated. In addition to the records listed in the above table, the Agricultural Research Service of the U. S. Department of Agriculture (beginning in 1941) has collected records of runoff from 3 areas of less than 2 acres each near East Lansing, Mich.

HYDROLOGIC CONDITIONS

The water year 1954 was characterized by near median runoff for most of the area covered by this report except Indiana and Ohio which were deficient. Drought conditions existed in Indiana and Ohio during the first six months of the water year. Record low flows were experienced at a number of gaging stations in Indiana and Ohio during October and December. Michigan also experienced some record-low flows during October, November, and January which were broken by heavy rains and snowmelt during February. No outstanding floods occurred during the year although in Michigan during June a few lakes in the northern part of Southern Peninsula were record high as was the flow at Manistee River near Sherman. For two key gaging stations in the area covered by this report, a comparison of the monthly and yearly mean discharge during the 1954 water year with the median discharge for the 25-year period 1921-45 is shown in figure 3 on the following page.

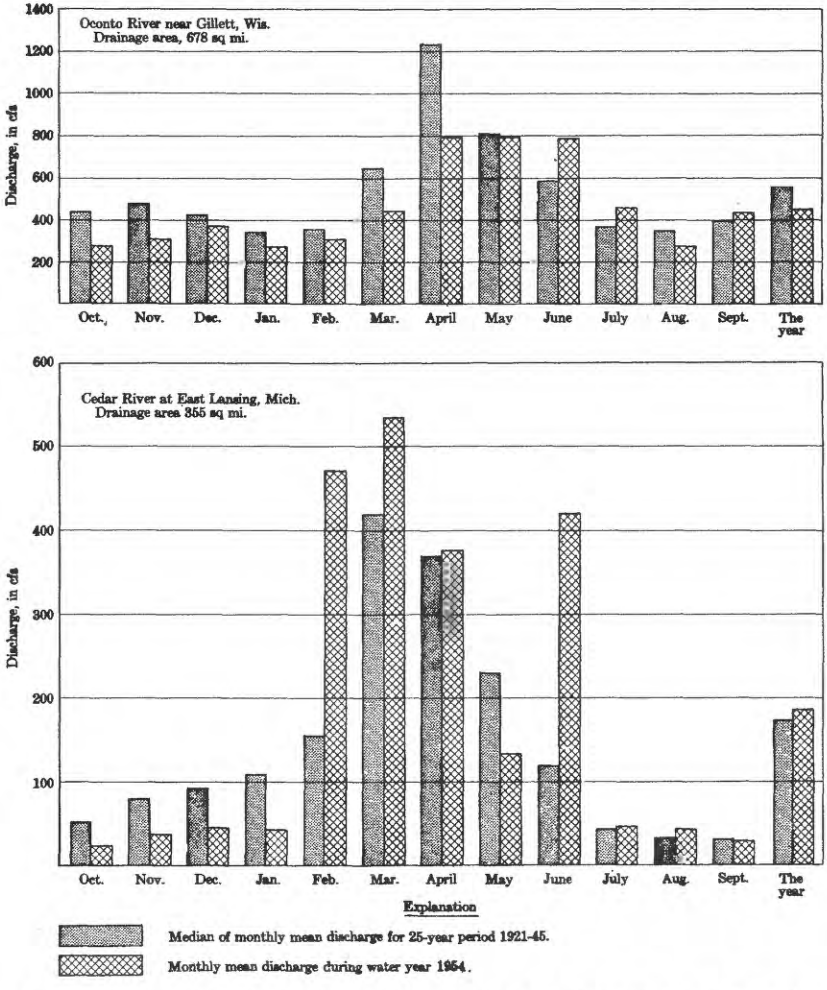

Figure 3. Comparison of discharge at two key gaging stations during 1954 water year with median discharge for 25-year period.