IOWA GEOLOGICAL SURVEY
IOWA CITY, IOWA
H. GARLAND HERSHEY, Director and State Geologist

WATER-SUPPLY BULLETIN NO. 6

SURFACE WATER RESOURCES OF IOWA

OCTOBER 1, 1950, TO SEPTEMBER 30, 1955

Prepared under the direction of
V. R. BENNION, District Engineer
WATER RESOURCES DIVISION
UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY

Records collected in cooperation with
CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY
IOWA GEOLOGICAL SURVEY
IOWA INSTITUTE OF HYDRAULIC RESEARCH
IOWA STATE CONSERVATION COMMISSION
CERTAIN IOWA CITIES

PUBLISHED BY
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FOREWORD

This report, Water-Supply Bulletin No. 6, on the streamflow records of Iowa for the period 1950-55 is part of the continuing series of basic data reports on the water resources of the State. Although these streamflow records have been previously published in several Federal publications, they are collected and conveniently arranged here for maximum usefulness to the people who will require them.

Adequate information on the quantity of surface water available and the range of stages that has been experienced is essential in the construction and operation of hydraulic works of all kinds, including structures for flood protection, navigation developments, municipal supplies, power and industrial plants, irrigation and drainage of lands, pollution control, and conservation of water for various uses. Streamflow data are also necessary for the proper design of bridge and culvert openings, the establishment of highway and railway grade elevations, as well as the maintenance and operation of all facilities and developments utilizing the surface water resources of Iowa.

The systematic collection of streamflow records in Iowa was begun in 1914 on a cooperative basis by the State and Federal governments, although some authenticated records extend back to 1873. Measurements of stage, flow, sediment, and mineral content and temperature of Iowa lakes and streams are being continued on a systematic state-wide basis, and it is hoped that the results can be arranged, printed, and distributed at five-year intervals.

H. GARLAND HERSHEY,
State Geologist

Iowa City, Iowa
November 1, 1956

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ILLUSTRATIONS

Surface Water Resources of Iowa[1]

for the Period

October 1, 1950 to September 30, 1955

Introduction

This bulletin is one of a series of water-supply bulletins presenting streamflow and lake-level data collected in Iowa for the water years ending September 30, 1951, to September 30, 1955.

The State and Federal cooperative program for the systematic collection of streamflow records in Iowa began in 1914, although a few records were obtained by special arrangements during an earlier period. Since the beginning of the cooperative program, measurements of stage or discharge have been obtained at about 100 stations on Iowa streams or lakes for periods of various lengths. The longest records available are those for the Mississippi River at LeClaire combined with Clinton, and at Keokuk where authenticated data have been used to extend the record back to 1873. In addition to the records of daily stages or discharges at stream-gaging stations, hundreds of discharge measurements have been made at partial-record and miscellaneous sites on streams throughout the State.

The gaging stations that have been maintained on streams and lakes in Iowa at various times are listed in table 1, pages to , which shows the periods of operation and other pertinent data. Summaries of streamflow records were published in Iowa Geological Survey Water-Supply Bulletins No. 1 (1873-1940), No. 2 (1941-42), and No. 3 (1943-50). The location of all stream-gaging stations and lake-level gages that have been operated by the U. S. Geological Survey in cooperation with other agencies is shown in plate . Although gaging stations are now maintained on all the principal rivers of the State, a relatively large number of stations have been in operation only a few years. In Table 1, stations with dates followed by a dash were active on September 30, 1955.

During the period October 1, 1950, to September 30, 1955, about 90 stations were maintained on streams and lakes in Iowa by the Water Resources Division of the U. S. Geological Survey in cooperation with various State and municipal or other Federal agencies, especially the Corps of Engineers, Department of the Army, and the Iowa Geological Survey.

The State of Iowa is naturally divided into two major drainage basins (see pl.), one of which, comprising about two-thirds of the total area, is in the Upper Mississippi River basin, and includes the Upper Iowa, Turkey, Maquoketa, Wapsipinicon, Iowa-Cedar, Skunk, Des Moines Rivers, and other small-river systems. The remainder of the State, from the Big Sioux River on the north to the Chariton River on the south, is in the Missouri River basin.

[1] Published with the approval of the Director, Geological Survey, United States Department of Interior.

Table 1.—List of Gaging Stations and Lake Gages Maintained in Iowa Showing Periods of Record and Related Summary Data.

Stream (or Lake) Station	Place	Drainage Area (sq. mi.)	Type of Gage	Altitude of zero above M.S.L. (feet)	Records Available	Maximum Gage Height (feet)	Discharge				
							Maximum		Minimum Daily		Average (cfs)
							Date	Flow (cfs)	Date	Flow (cfs)	
1	2	3	4	5	6	7	8	9	10	11	12
MISSISSIPPI RIVER BASIN											
Bear Creek	Ladora	185	Recorder		1945-	13.10	Jan. 5, 1946	9,050	Sept. 10, 1955	0.4	108
Beaver Creek	New Hartford	350	Wire-weight		1948-	11.7	Mar. 29, 1951	11,600	Jan. 27, 28, 1954	5.8	157
Blackhawk Creek	Hudson	295	Recorder	865.03	1952-	*15.46	July 7, 1953	2,100	Sept. 12, 1955	3.2	
Boone River	Webster City	842	Recorder		1940-	18.55	June 22, 1954	20,300	July 25, 1940	2.4	392
Cedar Creek	Bussey	384	Recorder	682.15	1947-	27.50	May 9, 1950	29,300	Sept. 6-20, 1955	0	171
Cedar River	Cedar Rapids	6,640	Recorder	700.33	1903-	20.1	Mar. 19, 1929	72,000	Dec. 10, 1949	212	3,120
Cedar River	Conesville	7,840	Recorder	581.85	1939-	15.35	June 18, 1947	60,000	Feb. 2, 1940	323	4,105
Cedar River	Janesville	1,660	Recorder		1905-6, 1915-27, 1932-42, 1946-	15.43	April 1, 1933	30,400	Oct. 21, 1922	28	705
Cedar River	Mitchell	845	Staff		1933-42	89.7	April 14, 1934	13,000	1933-35	5	288
Cedar River	Waterloo	5,190	Recorder	824.09	1941-	18.83	April 9, 1951	56,400	Feb. 2, 1950	230	2,802
Clear Lake	Clear Lake		Staff	1,222.24	1933-	5.94	July 3, 1951				
Des Moines River	Boone	5,490	Recorder	871.52	1920-27, 1933-	25.35	June 22, 1954	57,400	Jan. 28, 1940	17	1,740
Des Moines River	Des Moines	6,180	Recorder	773.84	1893-94, 1897-1927, 1932-	30.16	June 24, 1954	60,200	Jan. 29, 30, 1940	24	2,167
Des Moines River below Raccoon River	Des Moines	9,770	Recorder	773.84	1940-	21.6	June 26, 1947	77,000	July 27, 1940, Feb. 2-5, 1950	80	4,312
Des Moines River	Fort Dodge (near)	3,770	Chain		1911-13	8.9	Mar. 29, 1912		Aug. 4, 1911	29	
Des Moines River	Fort Dodge (at)	4,207	Recorder	969.38	1905-6, 1913-27, 1949-	19.28	June 21, 1954	35,400	Dec. 24, 1923	26	1,548
Des Moines River	Keosauqua	13,900	Recorder	558.10	1903-6, 1910-	27.85	June 1, 1903	135,000	Jan. 30, 1940	40	5,284
Des Moines River	Ottumwa	13,200	Recorder	622.77	1917-	20.2	June 7, 1947	135,000	Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940	30	4,743
Des Moines River	Tracy	12,400	Wire-weight	671.78	1920-27, 1933-35, 1940-	26.5	June 14, 1947	155,000	Feb. 28, 1940	95	4,729
E. Fk. Des Moines River	Burt	466	Recorder		1951-	12.67	June 21, 1954	3,870	Sept. 11, 12, 17, 18, 1955	.1	
E. Fk. Des Moines River	Dakota City	1,262	Recorder	1,038.71	1940-	24.02	June 21, 1954	17,400	Sept. 23, 1948	5.0	534
E. Fk. Hardin Creek	Churdan	22.7	Recorder		1952-	7.73	Aug. 26, 1954	423	In every year	0	
E. Fk. Iowa River	Klemme	120	Wire-weight	1,180.13	1948-	11.2	June 19, 1954	5,960	Sept. 16, 1948	0.8	56.0
English River	Kalona	580	Recorder	633.45	1939-	19.74	Jan. 7, 1946	16,400	Oct. 2, 1953	1.6	319
Fox River	Cantril	161	Recorder	657.98	1940-51	18.94	June 18, 1946	16,500	Aug. 9-16, Aug. 31 to Sept. 3, 1941	0	97.7
Iowa River	Belle Plaine	2,420	Recorder	749.82	1939-	17.07	June 14, 1947	34,000	Jan. 5, 1940	19	1,278
Iowa River	Iowa City	3,230	Recorder	627.27	1903-	19.45	June 7, 1918	38,200	Dec. 26, 1916	10	1,536
Iowa River	Marshalltown	1,530	Recorder	853.10	1915-27, 1933-	17.74	June 4, 1918	42,000	Nov. 24, 1917	2	719
Iowa River	Rowan	396	Recorder	1,143.35	1940-	14.88	June 21, 1954	8,460	Aug. 26, 27, 1948, Feb. 4, 5, 1950	4.2	201

Iowa River	Wapello	12,480	Recorder	548.98	1915-	*16.85	June 18, 1947	94,000	Dec. 15-17, 1916	400	6,171
Lake Ahquabi	Indianola		Recorder	862.77	1936-	9.95	June 5, 1947				
Lake Keomah	Oskaloosa		Staff		1936-	7.80	July 3, 1951				
Lake Macbride	Solon	26.6	Recorder	675.54	1936-	13.04	May 20, 1944				
Lake Wapello	Drakesville	7.6	Recorder		1936-	12.70	June 12, 1941				
Lime Creek	Mason City	535	Recorder	1,069.59	1932-	15.70	Mar. 30, 1933	9,400	Aug. 30 to Sept. 1, 1933	0	220
Little Cedar River	Ionia	328	Recorder		1954-	7.54	June 4, 1955	1,500	Sept. 10-12, 18, 1955	9.6	
Little Maquoketa River	Durango	130	Recorder	612.03	1934-	21.23	June 13, 1947	23,000	July 12, 13, 1936	5	80.3
Lower Pine Lake	Eldora	15.0	Staff		1936-	7.59	June 2, 1942				
Maquoketa River	Delhi	348	Recorder	774.32	1933-40	89.2	Mar. 4, 1937	6,130		5	136
Maquoketa River	Manchester	306	Recorder	895.06	1933-	21.36	June 13, 1947	20,000	June 8, 29, 1934	6	194
Maquoketa River	Maquoketa	957	Chain		1913-14	14.1					
Maquoketa River	Maquoketa	1,550	Recorder	636.52	1913-	24.70	June 27, 1944	48,000	Feb. 11-20, 1936	105	964
Middle River	Indianola	502	Recorder	773.34	1940-	26.40	June 13, 1947	34,000	Jult 27, 1940	1.4	269
Mississippi River	Clayton	79,200	Staff	602.60	1920-36	15.36	April 3, 1936	137,000	Dec. 14, 1933	5,540	
Mississippi River	Clinton	85,600	Recorder	568.16	1939-	21.24	April 27, 1952	†225,400	Dec. 27-30, 1939	12,000	47,640
Mississippi River	Keokuk	119,000	Recorder	477.41	1878-	19.6	May 16, 1888	314,000	Dec. 27, 1933	5,000	61,680
Mississippi River	Le Claire	88,600	Recorder	562.61	1873-1939	14.5	June 25, 1880	250,000	Dec. 25-27, 1933	6,500	47,760
Mississippi River	Mc Gregor	67,500	Recorder	605.30	1936-	*20.69	April 22, 1952	†197,500	Dec. 9, 1936	6,200	33,590
North River	Norwalk	348	Recorder	788.45	1940-	25.3	June 13, 1947	32,000	July 20-22, July 25 to Aug. 13, 1954, Sept. 4-15, 1955	0	186
North Lizard Creek	Clare	257	Recorder		1940-	16.0	June 23, 1947	10,000	Sept. 30, 1943	0	108
North Skunk River	Sigourney	750	Recorder	651.53	1945-	22.57	Jan. 7, 1946	13,900	Sept. 10, 11, 1955	.6	404
Paint Creek	Waterville	42.7	Recorder		1952-	8.53	July 26, 1953	2,840	Jan. 25, 27, 1955	4.2	
Raccon River	Jefferson	1,630	Recorder		1940-	22.3	June 23, 1947	29,100	Sept. 28, 1948, Jan. 30 to Feb. 5, 1950, Sept. 7, 10, 16, 17, 1955	12	745
Raccoon River	Van Meter	3,410	Recorder	841.16	1915-	21.6	June 13, 1947	46,800	Jan. 22-31, 1940	10	1,224
Ralston Creek	Iowa City	3.01	Recorder	663.81	1924-	8.32	July 1, 1950	1,510	Many years	0	1.44
Rapid Creek	Iowa City	24.5	Recorder		1938-	13.05	Feb. 20, 1953	3,800	1940-41, 1945, 1947-49, 1953-55	0	13.0
Salt Creek	Elberon	200	Recorder	781.58	1945-	17.6	June 13, 1947		Jan. 16-29, 1954	2.4	112
Shell Rock River	Clarksville	1,660	Chain		1915-27, 1932-34	16.7	Mar. 31, 1933	19,800	Aug. 2, 1934	10	556
Shell Rock River	Marble Rock	1,330	Staff	961.17	1933-53	9.35	April 7, 1951	22,700	Jan. 20, 23, 30, 31, 1935	6	611
Shell Rock River	Northwood	380	Wire-weight	1,176.48	1948-	*11.38	April 10, 1951	2,430	Nov. 30, 1952	8.0	126
Shell Rock River	Shell Rock	1,770	Recorder	885.34	1953-	14.00	June 22, 1954	21,300	Sept. 12, 19, 1955	85	
Skunk River	Ames	322	Recorder	893.6	1920-27, 1933-	*13.90	June 10, 1954	8,630	1934, 1937, 1953-55	0	133
Skunk River	Augusta	4,290	Recorder	521.69	1913, 1915-	23.04	May 26, 1944	44,800	Aug. 27 to Sept. 1, 1934	7	2,177
Skunk River	Coppock	2,890	Wire-weight		1914-44	22.27	May 24, 1944	41,500	Jan. 27, 28, 1940	8	1,382
Skunk River	Oskaloosa	1,640	Recorder		1948-	*18.46	Mar. 9, 1949	10,800	Jan. 13, 1951	7.5	681
Skunk River below Squaw Creek	Ames	565	Recorder		1952-	12.36	Aug. 28, 1954	8,700	Dec. 17-19, 24-29, 1953, Jan. 11 to Feb. 4, 1954	0	
South River	Ackworth	475	Recorder	761.91	1940-	24.60	June 5, 1947	34,000	July 21-25, 1940	.3	240
South Raccoon River	Redfield	995	Recorder		1940-	24.3	June 12, 1947	23,800	July 27, 1940	19	440
Springbrook Lake	Guthrie Center		Staff		1936-	7.00	July 25, 1942, June 1, 1947				
Squaw Creek	Ames	210	Chain		1910-27	14.5	June 4, 1918	6,900	Aug. and Sept. 1919	0	110
Sugar Creek	Keokuk	113	Recorder		1922-26	*20.6	Sept. 16, 1926	3,040		0	

Table 1.—List of Gaging Stations and Lake Gages Maintained in Iowa Showing Periods of Record and Related Summary Data.—(Continued)

Stream (or Lake) Station	Place	Drainage Area (sq. mi.)	Type of Gage	Altitude of zero above M.S.L. (feet)	Records Available	Maximum Gage Height (feet)	Discharge				
							Maximum		Minimum Daily		Average (cfs)
							Date	Flow (cfs)	Date	Flow (cfs)	
1	2	3	4	5	6	7	8	9	10	11	12
Turkey River	Elkader	892	Wire-weight	701.61	1933-42	*34.3	May 31, 1941	19,300	Jan. 23, 26, 29, 31, 1940	21	484
Turkey River	Garber	1,530	Recorder	635.34	1913-16, 1919-27, 1929-30, 1932-	*28.06	June 13, 1947	29,000	Jan. 28, 29, 1940	49	880
Upper Iowa River	Decorah (near)	560	Recorder	829.8	1913-14, 1919-27, 1933-51	15.19	May 29, 1941	28,500	Many days in 1933-34	10	338
Upper Iowa River	Decorah (at)	500	Recorder	850.00	1951-	10.12	June 21, 1954	13,600	Jan. 31 to Feb. 2, 1954	41	
Upper Pine Lake	Eldora		Staff		1936-	8.06	June 2, 1942				
Wapsipinicon River	Dewitt	2,300	Recorder	599.73	1934-	12.07	June 27, 1944	26,000	Jan. 17-24, 1940	70	1,362
Wapsipinicon River	Independence	1,060	Recorder	882.85	1933-	18.74	June 14, 1947	21,500	Many days in 1933-34	7	520
Wapsipinicon River	Stone City	1,310	Chain		1903-14	14.9					
W. Fk. Des Moines River	Estherville	1,408	Recorder		1951-	15.53	June 8, 1953	10,800	Sept. 18, 1955	.6	
W. Fk. Iowa River	Klemme	110	Wire-weight	1,180.83	1948-	14.97	June 21, 1954	1,920	Jan. 12, 1950	0	50.0
W. Fk. Shell Rock River	Finchford	860	Recorder	867.06	1945-	17.28	June 27, 1951	31,900	Sept. 9-12, 1955	15	423
Whitebreast Creek	Knoxville	380	Recorder	734.73	1945-	19.6	June 6, 1947	14,000	Sept. 5, 11, 17, 18, 1955	.5	181
Yellow River	Ion	224	Wire-weight	604.64	1934-51	15.2	May 29, 1941	18,500	Dec. 30, 31, 1939	14	140
MISSOURI RIVER BASIN											
Big Sioux River	Akron	8,851	Recorder	1,118.90	1928-						
Boyer River	Logan	810	Wire-weight**	1,009.38	1918-25, 1937-	*20.7	Mar. 28, 1951	23,000	July 16, 1938	1.5	326
Chariton River	Centerville	727	Recorder	825.68	1938-	24.20	June 20, 1946	21,700	Oct. 11, 1938, Sept. 30 to Oct. 3, 1940	0.1	354
Davids Creek	Hamlin	26.1	Recorder	1,266.54	1952-	*14.26	Aug. 15, 1952	860	In many years	0	
Dry Creek	Hawarden	48	Recorder	1,170.42	1948-	17.57	June 7, 1953	10,900	In many years	0	10.5
E. Nishnabotna River	Red Oak	890	Recorder	1,010.45	1918-25, 1936-	23.23	June 13, 1947	36,200	Aug 18, 1936	6	348
Floyd River	James	918	Recorder	1,102.59	1934-	25.3	June 8, 1953	71,500	Aug. 20, 27, 1936	1	207
Honey Creek	Russell	13.8	Recorder	901.73	1952-	9.86	June 21, 1952	586	In many years	0	
Indian Creek	Council Bluffs	7.99	Recorder		1954-						
Little Sioux River	Correctionville	2,450	Recorder	1,096.49	1918-25, 1928-32, 1936-	23.36	June 21, 1954	20,900	July 17, 25, 1936	2.6	764
Little Sioux River	Kennebec	2,730	Recorder	1,027.89	1939-	*26.63	June 22, 1954	13,500	Jan. 25-31, 1940, Sept. 16-18, 1955	24	879
Little Sioux River	Spencer	1,030	Wire-weight	1,294.56	1936-42	*15.4	Sept. 16, 1938	5,000	Jan. 23, 1937	4.7	198
Little Sioux River	Turin	4,460	Wire-weight	1,020.00	1939-	*26.0	June 22, 1954	7,920	In many years	0	310
Maple River	Mapleton	661	Wire-weight**	1,085.86	1941-	*22.1	June 20, 1954	15,600	Sept. 21, 22, 1945	0	200
Maple River	Turin	725	Wire-weight	1,028.45	1939-41	19.42	June 4, 1940	2,920	Jan. 18-23, 1940	4	
Missouri River	Nebraska City	414,400	Recorder	903.94	1929-	*27.66	April 19, 1952	414,000	Dec. 31 1946	1,600	34,970

Missouri River	Omaha	322,800	Recorder	958.24	1928-	30.20	April	18, 1952	396,000	Jan. 6, 1937	2,200	29,420
Missouri River	Sioux City	314,600	Recorder	1,076.96	1928-31, 1938-	*24.28	April	14, 1952	441,000	Dec. 29, 1941	2,500	30,370
Monona-Harrison ditch	Turin	4,460	Recorder	1,020.00	1939-	*25.6	June	20, 1954	21,000	Sept. 8, 1941	3	1,061
Mule Creek	Malvern	10.6	Recorder	974.20	1954-	15.84	Aug.	21, 1954	1,990	July, Aug., Sept., 1955	0.1	
Nishnabotna River	Hamburg	2,800	Recorder	894.17	1922-23, 1928-	20.03	June	24, 1947	55,500	Aug. 30, 1934	4.5	933
Nodaway River	Clarinda	740	Wire-weight	960.30	1918-25, 1930-	25.3	June	13, 1947	31,100	Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923	1	276
Okoboji Lake	Milford		Recorder	1,391.76	1933-	5.42	June	15, 1945				
Perry Creek	Sioux City	60	Recorder	1,117.04	1945-	21.80	Sept.	10, 1949	7,780	July 14, 20, Aug. 30 to Sept. 2, 1946	0	21.5
Rock River	Rock Valley	1,630	Recorder	1,216.00	1948-	*15.99	June	21, 1954	19,200	Mar. 16-26, 1951	1	374
Soldier River	Pisgah	417	Recorder	1,036.53	1940-	28.17	June	12, 1950	22,500	Jan. 2-10, 1945	2	141
Spirit Lake	Orleans		Recorder	1,387.25	1933-	15.74	June	19, 1944				
Tarkio River	Blanchard	200	Recorder	940.32	1934-40	23.12	Mar.	12, 1939	9,980	1934, 1937, 1939	0	43.0
Thompson River	Davis City	702	Recorder	875.55	1918-25, 1941-	20.14	June	14, 1947	21,300	Oct. 25, 26, 1953, Sept. 16-18, 1955	.8	362
Waubonsie Creek	Bartlett	30	Recorder	936.96	1946-	37.8	May	8, 1950	14,500	Many days in 1954-55	0	13.0
W. Fork ditch	Holly Springs	395	Wire-weight	1,052.82	1939-	22.91	June	20, 1954	7,860	Several days in 1941, 1943 and 1944	1	107
W. Nishnabotna River	Randolph	1,310	Recorder	932.99	1948-	*24.8	May	9, 1950	29,600	Sept. 18, 1955	11	560
W. Nishnabotna River	White Cloud	920	Chain		1918-24	18.9	April	19, 1920	12,000	Sept. 15-18, 1918	9	
W. Nodaway River	Villisca	306	Chain		1918-25	*21.2	June	9, 1924	6,200	1918, 1921, 1925	1	

*Occurred at a time other than date given for maximum discharge.
**Auxiliary high-stage recorder.
†Maximum daily discharge.

To facilitate publication of the annual series of water-supply reports, the U. S. Geological Survey has divided the United States into areas comprising 14 major drainage basins. Beginning with the reports for 1951, four of the larger basins, Parts 1, 2, 3, and 6, were each divided into two parts. The basins of various parts are indicated by the following list.

Part 1. North Atlantic slope basins:
- A. North Atlantic slope basins, Maine to Connecticut.
- B. North Atlantic slope basins, New York to York River.

2. South Atlantic slope and eastern Gulf of Mexico basins:
- A. South Atlantic slope basins, James River to Savannah River.
- B. South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.

3. Ohio River basin:
- A. Ohio River basin except Cumberland and Tennessee River basins.
- B. Cumberland and Tennessee River basins.

4. St. Lawrence River basin.

5. Hudson Bay and upper Mississippi River basins.

6. Missouri River basin:
- A. Missouri River basin above Sioux City, Iowa.
- B. Missouri River basin below Sioux City, Iowa.

7. Lower Mississippi River basin.

8. Western Gulf of Mexico basins.

9. Colorado River basin.

10. The Great Basin.

11. Pacific Slope basins in California.

12. Pacific basins in Washington and upper Columbia River basin.

13. Snake River basin.

14. Pacific Slope basins in Oregon and lower Columbia River basin.

In this classification, rivers of Iowa are included in two of the major drainage basins, Parts 5 and 6 with Part 6 currently being divided into Parts 6A and 6B. Water-supply papers are compiled annually by the U.S. Geological Survey presenting streamflow records for each of the above parts. However, a State publication to be most useful should contain records on a state-wide basis in one volume. Therefore this bulletin has been prepared as one of a series of water-supply bulletins of the Iowa Geological Survey presenting records of streamflow and lake levels collected in Iowa for the water years ending September 30, 1951 to September 30, 1955. These records are also published in 15 U. S. Geological Survey Water-Supply Papers.

Since 1933, the general cooperative program has included records of lake levels and supplementary discharge measurements as a part of the cooperation because of the authorized jurisdiction of the State Conservation Commission over artificial State-owned lakes, meandered streams, and natural lakes of Iowa. Therefore, the records of stage of water surface in lakes have been included in this publication in order that the data may be readily accessible to all interests.

Cooperation and Acknowledgments

The data presented in this report were collected and compiled by the Iowa City district of the Surface Water Branch of the U. S. Geological Survey with offices located in the Hydraulics Laboratory of the Iowa Institute of Hydraulic Research at the State University of Iowa. The activities of the Survey office are carried out in cooperation with several agencies and under the general sanction of State and Federal statutes authorizing the investigations and providing certain funds therefor. The availability of basic U. S. Geological Survey funds in the Federal appropriation acts is made contingent upon the State or municipalities contributing at least one-half of the total cost of the work.

Several State, Federal, and municipal agencies as well as private organizations have cooperated in the execution of work whereby the records of streamflow have been obtained. The various agencies and organizations have cooperated either by supplying data or by assisting in the collection of data through cooperative agreements with the U. S. Geological Survey. Acknowledgments for cooperation of the first kind are made in the description of the station, while cooperation of the second kind in effect at the time of this report is outlined in the following paragraphs.

During the period (1950-55) covered by this report the program in Iowa was accomplished under cooperative agreements between the U. S. Geological Survey and the following State organizations: Iowa State Conservation Commission, Bruce Stiles, Director; State University of Iowa Institute of Hydraulic Research, F. M. Dawson, Dean of College of Engineering, and Hunter Rouse, Director; and the Iowa Geological Survey, H. Garland Hershey, Director and State Geologist.

The following cities, counties and other organizations also assisted by furnishing services of gage observers or by providing financial cooperation through the Institute of Hydraulic Research, or in various other ways: the cities of Ames, Boone, Cedar Rapids, Clarinda, Council Bluffs, Des Moines, Estherville, Fort Dodge, Iowa City, Marshalltown, Ottumwa, Sioux City, and Waterloo; Des Moines Water Works; Jacob E. Decker & Sons; Iowa Electric Light & Power Co.; Union Electric Power Co.; the State University of Iowa; Iowa Natural Resources Council; and the Iowa Highway Research Board. Much valuable assistance has thus been afforded the program, the cooperation being of mutual benefit to the State and the agencies involved.

The Corps of Engineers, Department of the Army, St. Paul, Minnesota, gave financial assistance in the operation and maintenance of gaging stations on the Mississippi, Yellow, and Upper Iowa Rivers in northeastern Iowa. In the Des Moines River basin and other river basins in eastern Iowa, the Corps of Engineers, Department of the Army, Rock Island, Illinois, rendered financial assistance in the establishment of several stations and assistance with the operation of many gaging stations. In the Missouri River Basin in western Iowa the Corps of Engineers, Department of the Army, Omaha, Nebraska, and Kansas City, Missouri, assisted in the maintenance of several gaging stations by providing operational funds.

The Soil Conservation Service of the U. S. Department of Agriculture gave financial assistance in the operation and maintenance of the gaging station on Mule Creek near Malvern.

Acknowledgment is made to the U.S. Weather Bureau for the cooperative collection of several river-stage records; for the use of certain climatological data; and more particularly, for rainfall reports of the Hydroclimatic Network.

The streamflow records for the station on the Big Sioux River at Akron, Iowa, were collected and furnished by the district office of the U. S. Geological Survey at Pierre, South Dakota, in cooperation with the Corps of Engineers.

The stream-gaging work in Iowa was done by the personnel of the Water Resources Division of the U. S. Geological Survey, under the immediate supervision of V. R. Bennion, district engineer, Surface Water Branch. The station records were arranged and prepared for State and Federal publications and local requests under his general direction. Field data were analyzed and computations incident to the presentation of the records and their assembly for publication were made by the technical staff of the U. S. Geological Survey district office in Iowa City and the sub-office in Council Bluffs.

So far as practical, an attempt has been made to give individual and appropriate acknowledgment throughout the report for all data or assistance obtained from the varied sources working in Iowa. Finally, acknowledgment is made of the general effectiveness of the cooperation of the several participating agencies.

Other State and Federal Publications

The records of the U. S. Geological Survey and cooperating agencies form the original source of practically all the existing quantitative streamflow information in Iowa. The annual water-supply papers of the U. S. Geological Survey that include basic data for rivers in Iowa are shown (Part 5 and 6) in table 2. This table gives by years the serial numbers of the water-supply papers published from 1899 to 1955 that contain results of stream measurements. Table 2 will be convenient as a source reference to daily discharge records and related information. An index of gaging stations maintained in the United States prior to 1904 has been published in Water-Supply Paper 119.

Numbers of U. S. Geological Survey water-supply papers containing results of stream measurements in Iowa, 1899-1955.

Year	Part 5	Part 6	Year	Part 5	Part 6	Year	Part 5	Part 6
1899.....	36	37	1919-20...	505	506	1938.....	855	856
1900.....	49	49	1921.....	525	526	1939.....	875	876
1901.....	66, 75	66, 75	1922.....	545	546	1940.....	895	896
1902.....	85	84	1923.....	565	566	1941.....	925	926
1903.....	99	99	1924.....	585	586	1942.....	955	956
1904.....	130	130	1925.....	605	606	1943.....	975	976
1905.....	171	172	1926.....	625	626	1944.....	1005	1006
1906.....	207	208	1927.....	645	646	1945.....	1035	1036
1907-8....	215	216	1928.....	665	666	1946.....	1055	1056
1909.....	265	266	1929.....	685	686	1947.....	1085	1086
1910.....	285	286	1930.....	700	701	1948.....	1115	1116
1911.....	305	306	1931.....	715	716	1949.....	1145	1146
1912.....	325	326	1932.....	730	731	1950.....	1175	1176
1913.....	355	356	1933.....	745	746	1951.....	1208	1209, 1210
1914.....	385	386	1934.....	760	761	1952.....	1238	1239, 1240
1915.....	405	406	1935.....	785	786	1953.....	1278	1279, 1280
1916.....	435	436	1936.....	805	806	1954.....	1338	1339, 1340
1917.....	455	456	1937.....	825	826	1955.....	1388	1389, 1390
1918.....	475	476						

The data for any particular station will, in general, be found in U. S. Geological Survey reports covering the years during which the station was maintained. These reports contain station records for a number of States in the Upper Mississippi and Missouri basins for that year. Measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of the reports.

The U. S. Geological Survey Water-Supply Papers 875 and 876 contain summaries of yearly discharge at certain gaging stations in the Upper Mississippi and Missouri River basins in Iowa and adjacent states. Only gaging stations at which ten or more complete years of record have been collected were included in those summaries. Such summaries are available also in separate reprints. The U. S. Geological Survey is now in the process of compiling all surface-water records through September 1950 into a series of reports. When published, Water-Supply Papers 1308, 1309, and 1310 will contain the compilation of records for Parts 5, 6A, and 6B respectively.

Records of discharge have been published also in a few reports by State agencies in Iowa. In 1935, the Iowa State Planning Board sponsored and published a State Report, "Stream Flow Records of Iowa, 1873-1932." That report was prepared in cooperation with the Iowa Institute of Hydraulic Research, various relief administrations, and the U. S. Geological Survey. It contains records that are largely based on field data collected by the U. S. Geological Survey and previously published (some of which have been revised), as well as some records not included in the annual series of water-supply papers. It presents in one volume the daily streamflow records for 37 gaging stations in Iowa prior to December 31, 1932, together with a gazetteer of streams supplementing Water-Supply Paper 345-I published in 1915, entitled "Gazetteer of Surface Waters of Iowa." Unfortunately, it has not been financially possible to publish a similar one-cover summary of all the daily discharge data collected and published in the annual series of water-supply papers of the U. S. Geological Survey during the period since 1932.

A condensed compilation report, "Summaries of Yearly and Flood Flow relating to Iowa streams, 1873-1940," was published in 1942 by the Iowa Geological Survey, as Water-Supply Bulletin No. 1 of this series. The principal, basic data in that report consists of summaries for gaging stations on rivers in Iowa and rivers adjacent thereto for which records for five or more complete years had been collected. The summaries include a comprehensive description and history of each station, followed by a table of maximum and minimum daily discharge, yearly mean discharge, runoff for the water and calendar years, for the period of record prior to 1941. In addition, the results of approximately 300 miscellaneous discharge measurements made within the State of Iowa are included with some other previously unpublished material. A summary of maximum discharges at 115 places is given, together with other data pertinent to flood flow in Iowa.

A compilation report for the water years 1941 and 1942 was published in 1944 by Iowa Geological Survey, as Water-Supply Bulletin No. 2 of this series. That report contains data for the water years 1941 and 1942 similar to those contained in this report for the years 1951-55. In addition, duration curves, flood discharge hydrographs, deficiency tables, and hourly precipitation were published for a few stations.

Water-Supply Bulletin No. 3 of this series published in 1953 is a compilation of the data for the water years 1943-50 similar to the data in this report for the years 1951-55.

Water-Supply Bulletin No. 4 published in 1955 by the Iowa Geological Survey contains data on the geology and groundwater resources of Webster County. Water-Supply Bulletin No. 5 of this series published in 1955 presents the results of quality-of-surface-water investigations in Iowa from 1886 to 1954.

The Iowa Natural Resources Council is publishing a series of reports covering the water resources and water problems of stream basins in Iowa. Their Bulletin No. 1 published in 1953 dealt with the Des Moines River basin; Bulletin No. 2 published in 1955, the Nishnabotna River basin; and Bulletin No. 3 published in 1955, the Iowa-Cedar River basins.

Much valuable information is included in the Iowa Highway Research Board, Bulletin No. 1 published in 1953, which presents data concerning the magnitude and frequency of floods in Iowa.

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 U. S. Geological Survey. The following list gives the water-supply paper numbers and titles of flood reports which contain records on Iowa streams.

Water-Supply Paper	*Title*
1260-B	Floods of 1952 in Missouri River basin.
1260-C	Floods of 1952 in the Upper Mississippi and Red River of the North basins.
1320-A	Floods of June 1953 in Northwestern Iowa.
1370-A	Floods of June 1954 in Iowa.

For supplementary related technical data, certain reports of the Corps of Engineers that contain the results of river surveys and studies are valuable sources of reference.

Some of the State and Federal publications to which reference has been given are out of print. Water-Supply Bulletin No. 1 is now out of print, but Nos. 2, 3, 4 and 5 may be obtained from the Iowa Geological Survey, Iowa City. Water-supply papers not out of print may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C.; price lists will be furnished on application. Complete sets of these publications may be consulted at the office of the U. S. Geological Survey in Iowa City, and at public libraries in the principal cities. Lists of U. S. Geological Survey publications, both for the State of Iowa and the United States, may be obtained upon application.

All basic data, such as gage-height records, discharge measurements, and related data used to compute the records for the stream-gaging stations, together with many discharge measurements at other sites throughout the State are on file and may be consulted at the U. S. Geological Survey offices in Iowa City and Council Bluffs.

Although records kept by various commercial interests, such as utilities, railroads, and milling companies, may sometimes be a source of data, information of this kind is usually unpublished or not readily available, and

is therefore frequently overlooked. It should also be mentioned that engineering officials of counties and cities, and occasionally other individuals, have kept records, particularly of flood elevations, that are of considerable value for some purposes. It may be desirable to include such data in future reports as they are discovered, authenticated, and made available to the cooperative program.

Downstream Order of Listing Stations

In this report, the order of listing gaging-station records has been changed to correspond to the order of listing used in the U. S. Geological Survey water-supply papers since 1951. In a downstream direction along the main stem of a stream, all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention show which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

The order of listing used in the previous reports listed first all stations on the main stem from headwaters toward mouth, then all stations on the uppermost tributary to the main stem from the tributary's source to mouth, and then all stations from source to mouth of the uppermost tributary to the tributary.

Definition of Terms and Abbreviations

The following definitions of terms are used in connection with the presentation of streamflow and other hydrologic data and are taken from the water-supply papers of the U. S. Geological Survey.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Cubic feet per second per square mile (cfsm) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Runoff in inches is the depth to which an area would be covered if all the water draining from it in a given period were uniformly distributed on its surface. The term is used for comparing runoff with rainfall, which is also usually expressed in inches.

Acre-foot is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet. The term is commonly used in relation to storage for irrigation.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Explanation of Field and Office Work

This report contains records for the water years ending September 30, 1951, to September 30, 1955. At the beginning of January in Iowa and in most parts of the United States, much of the precipitation that occurred in approximately the preceding three months is stored in the form of snow or ice, or in ponds, lakes and swamps, or as ground water, and this accumulation of stored water passes off in the streams during the spring months. At the end of September, on the other hand, the only stored water available for runoff is possibly a small quantity in the ground; therefore, the runoff for the year beginning October 1 may usually be considered to have been derived from the precipitation within that year. For the convenience of the users of the records, however, annual summaries of gaging-station data are now prepared for both calendar and water years.

A gaging station is essentially a selected section in a stream channel equipped with a gage and facilities for measuring the flow of water; in other words, a place on a stream where data can be gathered from which records of discharge can be computed. Basic data systematically collected at gaging stations consist of records of stage, current-meter measurements of flow, and general related information used to supplement the gage heights and discharge measurements in determining the instantaneous and daily flow.

The records of stage are obtained either from direct observations on a nonrecording gage, or from a water-stage recorder that gives a continuous record of the water-level fluctuations in the stream channel. A diagrammatic sketch of an installation of a typical structure for housing recording equipment at gaging stations in Iowa is shown in Figure 1. A total of some 80 water-stage recorder installations were being operated in Iowa by the Survey on September 30, 1955. Typical structures and equipment in use at gaging stations are shown on plates 1, 2, 3.

Measurements of discharge are usually made with a U. S. Geological Survey type-A, pygmy, or other models of the small Price current meter. Occasionally, determinations of extraordinary peak flows must be made from a study of the channel characteristics, particularly the water-surface slope and the cross-sectional area. The equipment and methods perfected by the U. S. Geological Survey for streamflow measurements are described in "Stream-gaging Procedure—A manual describing methods and practices of the Geological Survey" published as Water-Supply Paper 888.

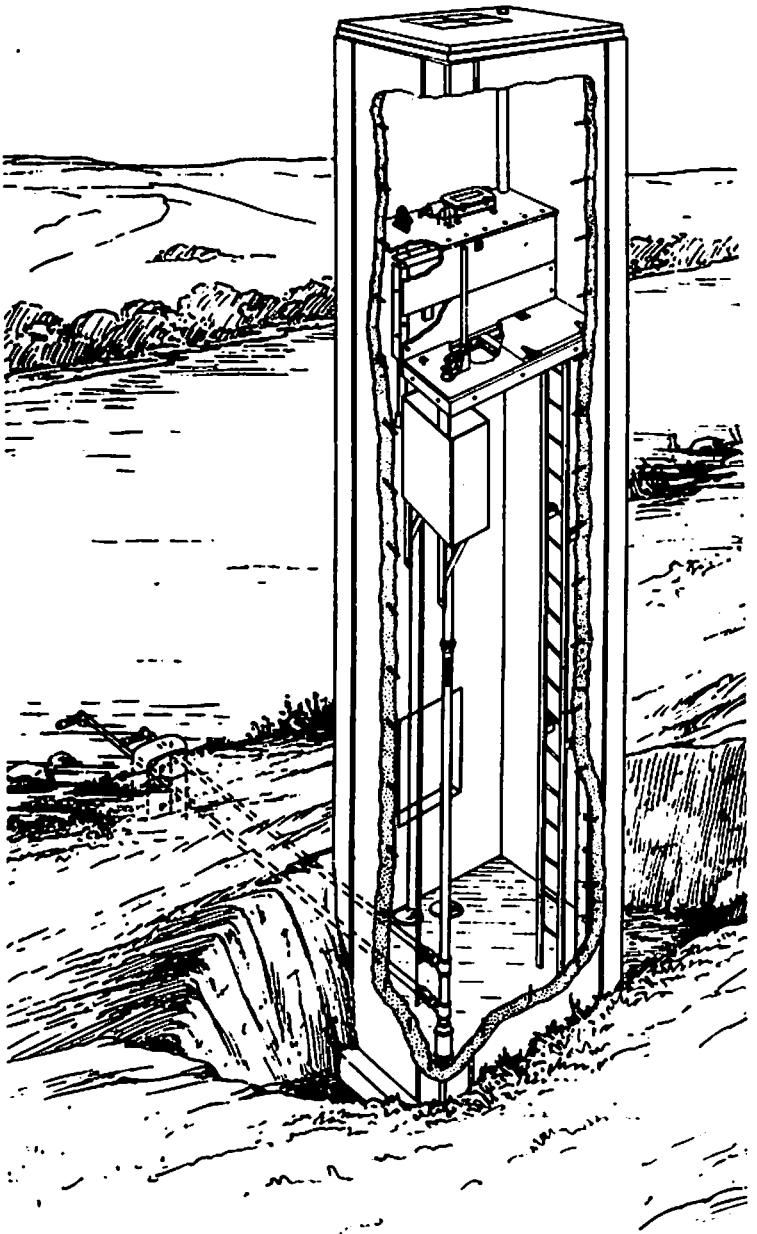


Figure 1. Typical design of river-measurement station showing reinforced concrete well and house for water-stage recorder.

From the results of discharge measurements, rating curves are prepared that show the relation between stage and discharge. Ordinarily, these curves are well defined, except for extremely low or high stages for which extensions can be made by the use of area and velocity curves, slope-area measurements, weir tables, logarithmic curves, comparison with previous curves, knowledge of the station, or a combination of these methods. After a satisfactory station-rating curve has been developed, the next step in the computation of daily discharge is the preparation of the station rating table or tables that give the discharge at any stage with proper consideration for slope, if that is one of the significant variables. Daily discharges are ascertained by applying the rating tables to daily mean gage heights obtained from the water-stage recorder graphs, or to observed gage heights or graphs of observed gage heights at non-recording stations. The proper application of these rating tables to the daily means gage heights gives the daily mean discharges from which the monthly and yearly mean discharges are computed. Graphs of the discharges thus obtained are usually plotted, often on semilogarithmic paper for comparison with the flow of comparable streams, and any inconsistencies that appear are either verified or corrected.

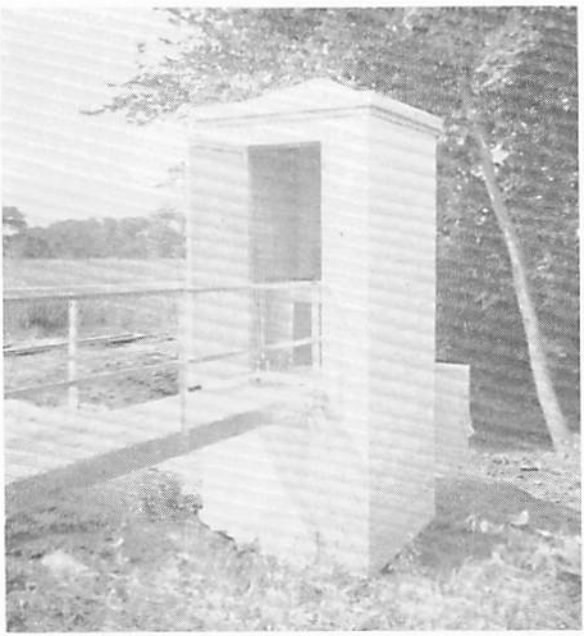
It should be mentioned that a permanent stage-discharge relation as revealed by the station-rating curve is by no means the rule for most gaging stations in Iowa. During the 5-year period ending September 30, 1955, more than 5,000 current-meter discharge measurements were made to determine and verify relation between stage and discharge. Attention is called to the fact that the zero of a gage is placed at an arbitrary datum and, therefore, has no particular significant relation to zero flow or the bottom of the river bed. Gage heights, as obtained by any gage, are referred merely to the origin (or zero) of the gage scale and do not necessarily show actual stream depths, especially when the channel is of a continuously shifting character. In fact, the zero of the gage at most stations is placed somewhat below the stage of the lowest known flow in order that negative gage readings will be avoided.

At stations on streams subject to sudden or rapid diurnal fluctuation, the discharge obtained from the application of the rating table to the daily mean gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders, the daily mean discharge may be obtained by averaging the discharge at intervals during the day, or by means of an instrument known as the discharge integrator in which a flexible curve is set to correspond with the rating curve of a station and the daily mean discharge is determined directly from a continuous gage-height graph.

At most gaging stations in Iowa the stage-discharge relation is affected by ice during the winter, so that it is often impossible to compute the discharge from an open-water relationship of stage and discharge. Discharge for periods of ice effect is computed on the basis of available winter discharge measurements and gage heights, due consideration being given to all available information relative to temperature and precipitation records, notes by gage observers and engineers, and comparable records of discharge for stations in the same or nearby basins.

At gaging stations on the Mississippi River the stage-discharge relation is affected by the operation of the locks and dams in the navigation development. The existence of those variable conditions necessitates the considera-

A. CONCRETE GAGE HOUSE ON WAPSIPINICON RIVER AT INDEPENDENCE, IOWA



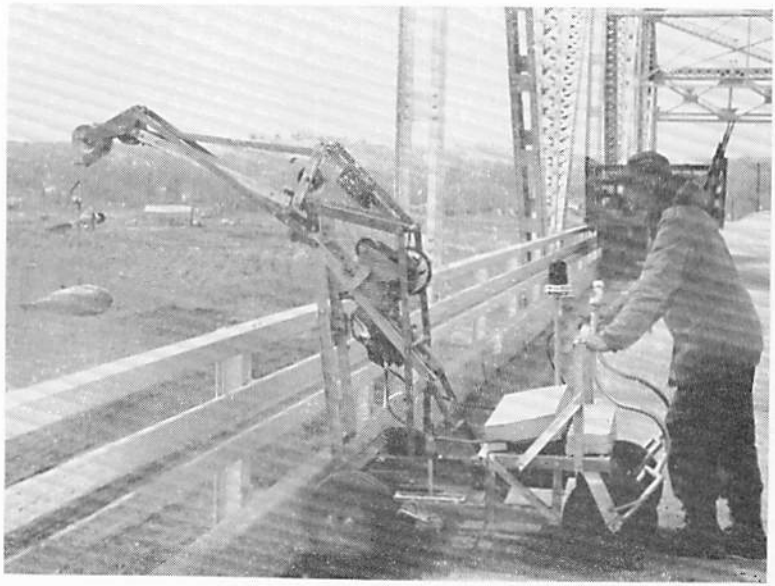
B. CONCRETE BLOCK GAGE HOUSE ON WEST FORK SHELL ROCK RIVER AT FINCHFORD, IOWA

A. CABLEWAY AND MEASURING EQUIPMENT USED ON WAPSIPINICON RIVER NEAR DE WITT, IOWA

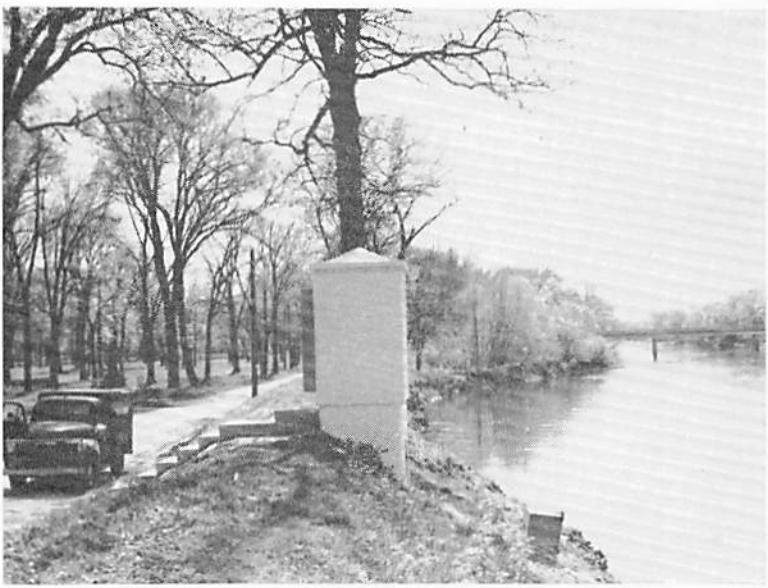
B. HAND OPERATED EQUIPMENT USED FOR MEASURING FLOODS FROM BRIDGES

A. BRICK GAGE HOUSE AND CONCRETE WELL ON DES MOINES RIVER AT FORT DODGE, IOWA

B. GAGE HOUSE AND ARTIFICIAL CONCRETE CONTROL ON RAPID CREEK NEAR IOWA CITY, IOWA



A. HEAVY POWER EQUIPMENT USED FOR MEASURING FLOW OF MISSOURI RIVER



B. CONCRETE BLOCK GAGE HOUSE AND CONCRETE WELL ON IOWA RIVER AT MARSHALLTOWN, IOWA

tion of the slope or fall in a reach of the river as a factor in the determination of discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary gage located several miles from the base gage. At some other gaging stations, such as on the Nishnabotna River above Hamburg, the stage-discharge relation is at times affected by backwater from tributary streams or other sources.

Accuracy of Data and Computed Results

The accuracy of streamflow records depends primarily on: (1) the permanency of the stage-discharge relation, and (2) the accuracy and frequency of observations of stage, measurements of discharge, and interpretation of basic data. The permanency of the stage-discharge relation will be affected by any change in the control due to growth of vegetation in the streambed, effects of floods, and any artificial or natural changes.

In this report the degree of accuracy of the records is stated under "Remarks" in the station description. "Excellent" indicates that, in general, the daily discharge records are accurate within 5 percent; "good," within 10 percent; "fair," within 15 percent; and "poor," more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Gaging Station Records

The data presented in this report cover the five years beginning October 1, 1950, and ending September 30, 1955. The technical data given for each gaging station comprise a description of the station, yearly tables of daily discharge, tables of monthly discharge and runoff, a yearly summary table, and a table showing momentary peak discharges.

In general, the description of the station gives: location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, remarks relative to accuracy of records and other pertinent facts affecting the records, and a statement relating to cooperation. The location of the gaging station and the drainage area are obtained from the most accurate maps available. The gage paragraph gives the type of gage currently in use and the datum of the present gage above mean sea level, together with a condensed history of the types, locations and datums of all previous gages for which discharge records are generally equivalent to those at the present site. The average discharge is given for the total years of record where five or more complete years of record are available. The extremes paragraph gives the maximum discharge and gage height and the minimum daily discharge recorded during the period of record together with occasional historical data antedating the period of record. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately.

The streamflow data presented in this report are given in daily, monthly, and annual summary tables for the 5-year period ending Sptember 30, 1955. The tables of daily discharge give, in general, the discharge in cubic feet per second corresponding to the daily gage height as explained in the section "Explanation of Field and Office Work."

The first monthly table is a tabulation of monthly mean discharge in cubic feet per second with each monthly figure representing the mean flow for the entire month. The second monthly table is a tabulation of monthly

discharge in cubic feet per second per square mile, and the third monthly table is a tabulation of runoff in inches. For those stations in the Missouri River basin a fourth monthly table is given tabulating the runoff in acre-feet.

Following the monthly tables is a table containing a yearly summary of the streamflow data for the 5-year period. This table includes, for each water year, the minimum daily discharge; the annual mean discharge; the annual mean discharge in cubic feet per second per square mile; the annual runoff in inches; and the annual runoff in acre-feet for stations in the Missouri River basin. The annual mean discharge and runoff in inches, and acre-feet where applicable, are given for the calendar year.

Following the annual summary is a list of peak discharges with their corresponding gage height, and time and date of occurrence. All independent peaks above a selected base are listed. In general, for stations with more than five years of record, this base is selected from a frequency curve of annual floods such that the discharge will have a recurrence interval of 1.15 years. In general, with this base, the number of peaks listed will average about three per year. For some stations during dry years, no peak discharge will exceed the base. In such cases, the maximum discharge for the year will be found in annual summary table.

For lake-level stations, the data presented comprise a description of the station and tables showing daily lake level elevations for the 5-year period.

UPPER MISSISSIPPI RIVER BASIN

Upper Iowa River at Decorah, Iowa

LOCATION.—Lat. 43°18'10", long. 91°47'50", in SW¼ sec. 16, T. 98 N., R. 8 W., on right bank 1,200 ft. upstream from bridge on State Highway 52, 1,500 ft. downstream from Dry Run cutoff, and 3 miles upstream from Trout Run.

DRAINAGE AREA.—500 square miles, approximately.

RECORDS AVAILABLE.—August 1951 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 850.00 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

EXTREMES.—1951-55: Maximum discharge, 13,600 cfs June 21, 1954 (gage height, 10.12 feet); minimum daily, 41 cfs Jan. 31 to Feb. 2, 1954.

REMARKS.—Records good except those for periods of ice effect, which are poor. Records for discontinued station "near Decorah" at site 4.4 miles downstream not considered equivalent because of intervening area.

Daily Discharge, in Cubic Feet Per Second, for Period Aug. 29 to Sept. 30, 1951

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1951								
1		322	11		270	21		191
2		208	12		260	22		196
3		280	13		255	23		191
4		270	14		245	24		191
5		240	15		230	25		187
6		240	16		226	26		187
7		255	17		217	27		180
8		245	18		*204	28		177
9		255	19		200	29	328	174
10		292	20		196	30	322	174
						31	310	

* Discharge measurement made on this day.

Upper Iowa River at Decorah, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	174	260	235	147	148	396	6,020	334	250	184	112	109
2	177	230	235	143	154	368	2,350	327	235	175	109	106
3	482	210	260	143	154	328	1,570	334	220	275	109	103
4	418	190	275	140	154	270	1,190	310	225	188	112	101
5	334	205	316	143	*151	213	1,010	295	260	168	115	95
6	316	215	310	143	148	*240	872	285	235	158	112	95
7	265	226	280	137	146	226	790	320	216	230	109	95
8	235	230	260	*137	148	204	*730	403	206	206	121	95
9	217	230	250	143	148	196	750	470	188	180	175	92
10	208	230	221	140	208	221	750	462	184	175	134	89
11	200	226	213	137	221	347	730	398	175	164	*118	89
12	191	280	*204	140	298	544	720	355	175	158	109	87
13	184	375	120	137	375	670	730	334	175	147	106	81
14	177	*508	110	146	396	580	740	310	188	255	106	87
15	180	482	140	187	316	562	883	*300	184	198	109	87
16	184	426	160	213	292	562	1,400	290	172	175	134	*87
17	177	340	170	230	334	750	1,430	275	*172	*168	115	87
18	177	298	170	230	382	2,000	1,060	265	164	147	109	89
19	177	240	174	215	270	2,160	905	255	161	144	106	89
20	180	260	174	180	226	1,890	810	250	172	172	483	87
21	310	275	174	160	210	1,750	730	245	180	198	320	84
22	580	255	164	150	200	1,370	690	250	175	158	438	81
23	*1,140	200	164	140	190	847	680	376	270	140	250	81
24	690	170	161	130	180	643	641	355	295	134	184	81
25	517	190	154	150	175	571	569	290	230	124	154	79
26	442	210	154	150	208	499	497	275	216	124	140	76
27	389	226	151	145	240	450	454	275	235	121	128	76
28	354	240	154	140	361	482	422	270	230	140	121	74
29	322	235	154	130	450	1,580	383	250	211	124	118	76
30	304	240	152	140	.....	4,800	362	255	198	121	118	76
31	280	.....	150	143	.....	7,900	.....	290	.....	115	118	.....
1952-53												
1	74	70	72	63	68	88	237	805	245	534	660	253
2	74	72	70	65	66	80	234	860	230	415	*5,730	245
3	72	72	70	63	64	75	253	710	222	346	*8,550	237
4	72	70	70	63	62	70	253	578	226	314	8,350	234
5	74	70	72	58	62	66	266	475	279	298	3,680	226
6	76	70	72	52	62	62	253	394	237	283	1,940	222
7	79	70	62	56	62	63	234	340	215	266	1,490	215
8	76	70	66	60	62	68	237	314	283	249	1,220	211
9	76	70	70	64	63	75	*262	287	279	237	1,030	207
10	79	70	70	66	65	270	382	270	262	230	893	203
11	76	70	64	62	68	1,200	408	253	230	222	794	200
12	76	70	66	58	65	1,800	388	253	237	222	710	192
13	*74	70	55	55	67	1,600	324	266	400	270	632	188
14	74	70	57	60	70	1,370	283	245	1,910	352	560	188
15	72	70	60	80	73	1,140	382	234	2,320	*388	500	185
16	72	70	*62	85	*76	710	500	230	827	320	460	177
17	72	*79	66	75	70	650	578	222	518	324	422	177
18	74	76	70	84	62	*710	452	215	388	279	394	174
19	79	74	62	81	62	614	364	207	329	270	376	174
20	74	72	55	*79	87	492	324	*203	292	245	352	*177
21	72	70	58	79	87	400	346	218	266	329	340	174
22	70	70	60	79	67	468	274	484	*249	352	324	170
23	70	67	62	79	72	670	253	400	237	937	314	166
24	72	67	62	81	79	543	266	382	253	543	303	163
25	74	76	60	79	79	422	335	329	319	346	298	163
26	74	85	58	75	76	335	346	710	340	4,790	283	163
27	72	70	58	70	89	292	484	704	445	*3,370	274	159
28	70	60	58	62	103	270	445	460	1,200	1,720	266	159
29	70	65	58	67	.....	245	438	358	1,420	982	266	156
30	72	80	63	68	.....	237	587	314	860	740	270	152
31	72	.....	63	70	.....	241	.....	274	.....	680	266	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 1-6, 19, 20, 23-26, Dec. 13-16, 30, 31, 1951; Jan. 1, 19-29, Feb. 21-25, Nov. 26-30, Dec. 7-29, 1952; Jan. 5-17, Jan. 26 to Feb. 19, Mar. 1-13, 1953.

Upper Iowa River at Decorah, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	148	124	102	74	41	65	96	926	222	400	196	249
2	148	124	118	72	41	62	96	1,350	211	388	170	230
3	148	121	131	72	42	58	92	1,290	226	364	159	211
4	145	121	159	70	45	56	86	1,100	218	340	152	203
5	145	121	148	69	53	54	86	740	203	324	145	196
6	141	118	148	68	62	54	145	534	192	303	141	188
7	141	118	148	67	72	58	102	430	185	283	134	181
8	141	118	141	66	82	64	152	376	170	266	138	174
9	141	118	134	65	93	72	134	340	166	253	141	188
10	141	118	124	64	106	80	131	314	174	245	134	185
11	141	115	112	62	120	74	128	287	163	237	128	174
12	141	115	102	61	138	70	*118	266	170	230	128	166
13	141	115	90	60	148	66	108	245	185	222	124	177
14	138	115	82	59	152	65	102	234	188	215	128	188
15	138	112	*77	58	154	63	112	222	*166	207	124	181
16	134	112	71	57	152	*66	112	215	177	203	124	185
17	138	*115	70	56	*148	84	112	207	266	200	118	188
18	141	115	76	54	134	120	118	*196	314	196	177	177
19	145	124	80	*53	130	152	121	192	262	*192	166	177
20	*141	166	82	52	140	125	118	181	4,030	188	*134	*174
21	148	166	83	51	280	108	279	174	9,600	188	134	159
22	141	152	84	50	250	99	215	170	6,180	181	124	152
23	141	145	84	48	200	92	185	163	2,720	177	1,080	148
24	138	138	84	47	148	92	237	163	1,050	174	1,470	145
25	134	128	83	46	110	134	262	156	650	170	1,090	138
26	134	124	82	45	83	166	226	156	552	163	1,090	134
27	128	121	81	43	75	138	266	177	422	156	1,090	131
28	128	115	80	42	70	124	253	382	400	163	560	131
29	128	108	79	42	.....	115	234	292	249	163	400	138
30	128	100	77	42	.....	105	358	287	438	166	329	174
31	124	.....	76	41	.....	99	.....	241	.....	287	283	.....
1954-55												
1	222	230	132	110	76	141	388	260	208	151	501	70
2	230	218	148	112	78	211	331	252	582	229	157	67
3	266	211	152	111	79	400	298	248	303	240	125	64
4	438	211	154	110	80	780	294	264	361	521	112	64
5	605	203	148	110	81	460	341	240	346	285	106	62
6	376	200	120	122	81	300	871	229	351	221	100	62
7	303	200	133	115	81	200	542	218	298	303	97	62
8	283	196	144	105	80	320	393	203	285	236	94	60
9	266	192	150	96	79	660	331	206	264	203	94	60
10	314	188	145	96	78	1,460	294	206	256	178	92	57
11	460	185	138	95	78	1,400	276	196	244	168	89	57
12	700	181	130	94	77	982	264	188	229	157	86	60
13	526	181	128	93	77	599	276	182	221	148	86	64
14	750	177	*124	93	76	*464	341	171	210	138	83	64
15	750	*174	120	92	75	432	599	168	199	131	83	*64
16	641	174	120	91	*74	445	452	164	192	131	*80	62
17	518	170	120	90	73	376	*351	*154	185	128	78	62
18	*422	170	120	89	71	308	308	151	178	128	75	60
19	364	166	136	*88	70	276	285	148	178	122	75	62
20	335	163	102	86	250	260	264	141	*178	119	72	65
21	319	163	120	85	220	252	240	144	171	112	72	72
22	292	159	130	84	200	210	232	141	164	*110	75	75
23	279	163	126	82	178	199	229	141	157	102	76	72
24	262	166	122	82	165	170	303	192	154	141	72	70
25	249	163	118	79	150	150	432	154	151	125	75	70
26	249	159	118	73	145	136	642	157	148	116	75	70
27	253	159	120	70	138	150	452	568	144	109	75	75
28	266	159	116	70	131	170	356	376	138	103	78	75
29	274	150	107	70	.....	200	312	484	164	100	75	78
30	262	142	100	70	.....	505	280	331	171	100	75	78
31	241	.....	106	73	.....	505	.....	294	.....	163	72	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29, 30, Dec. 12-31, 1953; Jan. 1 to Feb. 16, Feb. 19-23, 25, Feb. 27 to Mar. 7, Mar. 13-18, 20, 21, Nov. 29 to Dec. 31, 1954; Jan. 1 to Feb. 25, Mar. 3-9, 22-29, 1955.

Upper Iowa River at Decorah, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	228
1951–52	322	263	194	155	237	1,084	1,029	313	207	166	154	87.8
1952–53	73.6	70.8	63.6	69.0	71.0	494	346	390	517	673	1,353	190
1953–54	130	123	99.6	56.6	117	90.6	162	387	1,025	234	339	175
1954–55	378	179	127	91.5	109	423	366	225	234	171	102	66.1

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.456
1951–52	0.644	0.526	0.388	0.310	0.474	2.17	2.06	0.626	0.414	0.332	0.308	.176
1952–53	.147	.142	.127	.138	.142	.988	.692	.780	1.03	1.35	2.71	.380
1953–54	.278	.246	.199	.113	.234	.181	.324	.774	2.05	.468	.678	.350
1954–55	.756	.358	.254	.183	.218	.846	.732	.450	.468	.342	.204	.132

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.51
1951–52	0.74	0.59	0.45	0.36	0.51	2.50	2.30	0.72	0.46	0.38	0.36	.20
1952–53	.17	.16	.15	.16	.15	1.14	.77	.90	1.15	1.55	3.12	.42
1953–54	.32	.27	.23	.13	.24	.21	.36	.89	2.29	.54	.78	.39
1954–55	.87	.40	.29	.21	.23	.98	.82	.52	.82	.40	.24	.15

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1951 (1)	Aug. 29, 1951.	5.49	334	.....	.....	.....	.....	.....	.....
1952	Mar. 31, 1952.	9.17	8,850	74	351	0.702	9.57	303	8.27
1953	Aug. 3, 1953.	9.58	11,100	50	363	.726	9.84	378	10.18
1954	June 21, 1954.	10.12	13,600	41	245	.490	6.65	273	7.39
1955	Aug. 1, 1955.	(2)6.64	1,700	57	207	.414	5.63	.....	.....

(1) Period Aug. 29 to Sept. 30, 1951.
(2) Maximum gage height, 7.85 ft., Mar. 4, 1955 (backwater from ice).

Peak Discharge (base, 3,000 cfs)

1952: Mar. 31 (3 p.m.) 8,850 cfs (9.17 ft.).

1953: Mar. 11 (12 p.m.) about 2,500 cfs (7.60 ft.); June 15 (3 a.m.) 3,980 cfs (7.77 ft.); July 26 (11 p.m.) 9,600 cfs (9.32 ft.); Aug. 3 (7:30 p.m.) 11,100 cfs (9.58 ft.).

1954: June 21 (8 p.m.) 13,600 cfs (10.12 ft.).

1955: No peak above base.

Upper Iowa River near Decorah, Iowa

LOCATION.—Lat. 42°44'25", long. 91°15'45", in sec. 36, T. 92 N., R. 4 W., on R. 8 W., on left bank 500 feet upstream from county highway bridge in Freeport, 1.4 miles downstream from Trout Run, and 3 miles downstream from Decorah.

DRAINAGE AREA.—560 square miles.

RECORDS AVAILABLE.—August 1913 to November 1914 "(no winter record)", May 1919 to June 1927, July 1933 to September 1951 (discontinued).

GAGE.—Water-stage recorder. Datum of gage is 829.8 feet above mean sea level, datum of 1929 (Winneshiek County bench mark). Aug. 27, 1913, to Nov. 21, 1914, and May 12, 1919, to Aug. 27, 1920, chain gage at same site at datum 3.96 feet lower. Aug. 28, 1920, to June 30, 1927, water-stage recorder at present site and datum. July 1, 1933, to Sept. 30, 1936, staff gage 4 miles downstream at different datum.

AVERAGE DISCHARGE.—25 years (1919-26, 1933-51), 338 cfs.

EXTREMES.—1913-14, 1919-27, 1933-51: Maximum discharge, 28,500 cfs May 29, 1941 (gage height, 15.19 feet, from floodmarks), by slope-area method; minimum daily, 10 cfs on many days during 1933-34.

REMARKS.—Records good except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	101	77	67	84	59	850	1,790	1,630	500	742	465	352
2	106	75	67	82	58	598	1,670	1,350	1,010	636	370	343
3	104	73	65	81	57	500	1,630	1,160	1,180	653	305	330
4	101	73	67	80	57	460	2,170	1,050	1,230	565	277	313
5	99	73	69	80	57	425	3,610	940	766	480	342	305
6	94	73	69	80	56	545	5,240	980	614	430	2,420	305
7	111	71	69	80	56	600	9,210	850	535	388	1,280	297
8	126	77	71	80	56	485	*8,750	790	485	1,600	1,590	285
9	*106	79	73	81	*57	379	4,000	719	445	1,050	1,270	313
10	114	75	67	82	58	340	3,340	675	406	1,030	808	379
11	100	62	69	83	61	310	2,980	631	370	760	604	313
12	104	62	*71	84	62	289	3,250	592	350	653	505	297
13	94	77	65	85	62	265	3,610	550	334	592	859	297
14	94	73	67	86	61	245	2,890	515	313	530	1,680	273
15	92	75	69	86	60	230	2,080	490	305	480	1,350	265
16	89	75	71	84	59	215	1,670	480	297	1,090	980	257
17	87	*67	74	*82	61	205	1,350	465	285	658	1,120	245
18	87	65	76	80	62	195	1,050	450	285	525	850	*234
19	87	67	80	77	62	185	838	455	343	470	766	224
20	85	53	82	75	61	180	820	475	*317	425	*724	220
21	85	58	85	73	60	185	1,470	415	293	1,200	697	214
22	85	64	86	71	60	185	2,440	397	277	692	631	217
23	83	53	86	70	60	180	2,350	379	269	*485	582	214
24	83	57	86	68	60	172	1,590	366	253	425	520	214
25	83	67	83	67	80	189	*2,040	356	257	388	515	206
26	79	77	83	66	350	192	2,350	370	2,630	356	576	203
27	81	77	84	64	800	520	1,910	370	2,780	338	465	196
28	81	73	85	63	796	2,120	1,430	343	1,940	317	430	189
29	79	71	86	62	.....	3,250	2,530	321	1,830	301	402	186
30	79	67	86	61	.....	2,890	2,260	309	1,020	297	388	186
31	77	.....	86	60	.....	*2,170	.....	325	.....	356	370	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 16-31, 1950; Jan. 1 to Feb. 27, Mar. 4, 10, 11, 18-23, 1951.

Upper Iowa River near Decorah, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	93.1	69.5	75.6	76.0	123	631	2,744	620	731	610	779	262

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.166	0.124	0.135	0.136	0.220	1.13	4.90	1.11	1.31	1.09	1.39	0.468

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.19	0.14	0.16	0.16	0.23	1.30	5.47	1.28	1.46	1.26	1.60	0.52

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maxium			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	371	8.98
1951....	Apr. 7, 1951..	9.96	9,900	53	567	1.01	13.77	.....	.....

Peak Discharge (base, 3,500 cfs)

1951: Apr. 7 (5 p.m.) 9,900 cfs (9.96 ft.); Apr. 29 (6:30 a.m.) 3,520 cfs 5.70 ft.); June 26 (6 a.m.) 6,030 cfs (8.12 ft.); June 27 (7:30 p.m.) 4,500 cfs (6.67 ft.); Aug. 6 (4:30 a.m.) 4,000 cfs (6.24 ft.).

Paint Creek at Waterville, Iowa

LOCATION.—Lat. 43°12'35", long. 91°18'15", in NE¼NW¼ sec. 22, T. 97 N., R. 4 W., on right bank 20 feet downstream from highway bridge and 0.5 mile northwest of Waterville.

DRAINAGE AREA.—42.7 square miles.

RECORDS AVAILABLE.—November 1952 to September 1955.

GAGE.—Water-stage recorder and concrete control.

EXTREMES.—1952-55: Maximum discharge, 2,840 cfs July 26, 1953 (gage height, 8.53 feet); minimum daily, 4.2 cfs Jan. 25, 27, 1955.

REMARKS.—Records good except those for periods of ice effect, doubtful or no gage-height record, which are poor. Records of water temperatures and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet Per Second, for Period Nov. 14, 1952 to Sept. 30, 1953

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53											
1	.....	9.8	9.2	7.4	11	18	24	18	14	25	15
2	.....	9.8	9.2	7.4	9.8	18	23	18	13	141	15
3	.....	9.8	9.2	7.4	9.8	24	23	18	12	117	14
4	.....	11	9.2	7.4	9.2	21	23	17	12	80	15
5	.....	10	8.0	8.0	9.2	19	22	17	15	55	15
6	.....	10	8.0	8.6	*8.6	18	21	18	17	49	15
7	.....	9.8	8.6	8.0	8.0	18	21	18	13	42	15
8	.....	10	8.6	8.0	8.0	18	20	18	12	37	15
9	.....	10	8.9	7.4	14	20	19	18	12	36	15
10	.....	10	*9.2	8.0	141	37	21	18	11	32	15
11	.....	10	8.6	9.2	164	27	20	18	11	30	14
12	.....	9.8	8.6	8.6	179	24	18	17	12	30	14
13	.....	9.8	8.6	*8.6	*86	22	17	56	14	27	14
14	9.8	9.8	8.6	8.0	83	21	18	23	13	26	*14
15	*9.8	9.2	11	8.0	77	*30	17	20	11	25	14
16	10	9.2	9.0	7.4	35	28	*16	18	11	25	14
17	13	9.2	8.8	7.4	56	25	16	16	40	23	13
18	13	9.2	8.6	7.4	40	24	17	15	15	*23	13
19	9.8	9.8	8.4	8.0	29	23	17	*15	12	21	13
20	9.8	10	8.2	44	23	21	17	15	12	21	13
21	9.8	9.8	8.0	15	23	20	20	14	15	20	13
22	9.8	9.8	7.8	13	23	19	25	13	13	19	13
23	9.8	9.8	7.6	13	39	18	19	12	*10	19	13
24	9.8	9.2	7.5	13	26	20	51	12	10	18	13
25	9.2	9.2	7.5	11	22	26	31	13	10	18	13
26	8.0	9.8	7.4	11	19	21	24	17	*858	17	14
27	9.3	9.2	7.4	14	18	20	23	13	57	17	13
28	9.7	9.2	7.4	15	17	20	20	30	36	16	13
29	9.8	9.2	7.4	.....	16	20	20	19	30	16	13
30	9.8	9.2	7.4	.....	16	21	19	15	26	16	13
31	.....	9.2	7.4	.....	18	.....	18	.....	27	16	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 25-28, 1952; Jan. 16-25, Feb. 21, 1953. Doubtful or no gage-height record Jan. 9, June 22, 24, June 27 to July 22, Aug. 10, 14, Sept. 1, 2, 5-9, 12, 13, 1953; discharge estimated on basis of weather records and records for nearby stations.

Paint Creek at Waterville, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	13	19	18	8.6	6.8	8.0	7.4	229	18	16	11	9.2
2	13	20	18	8.6	6.8	7.4	7.4	88	12	56	10	6.8
3	13	18	22	8.6	6.8	6.2	6.8	55	77	28	9.0	7.4
4	13	18	27	8.6	11	6.0	6.8	40	23	22	8.6	8.0
5	12	18	21	8.6	23	6.4	8.3	34	17	16	8.6	8.6
6	11	18	22	8.6	18	6.4	29	27	15	*14	8.6	9.2
7	11	18	20	8.6	9.8	6.8	30	*24	*15	13	8.0	9.2
8	11	19	19	8.6	15	6.8	13	23	16	13	8.0	9.2
9	12	18	19	8.0	39	6.8	9.8	21	15	13	7.4	9.2
10	12	19	*18	7.0	35	6.8	9.2	19	16	13	7.4	9.8
11	12	19	15	7.0	13	6.8	8.6	17	13	13	7.4	7.4
12	11	19	10	7.2	10	7.4	7.4	16	13	13	*7.4	6.8
13	11	*18	9.8	*7.4	9.2	7.4	6.8	15	13	12	6.8	8.6
14	10	19	9.8	7.4	36	7.4	6.8	14	13	12	6.8	10
15	11	19	9.0	7.4	54	6.8	115	13	12	12	6.8	*8.6
16	10	20	8.0	7.4	20	10	30	12	13	12	6.8	8.0
17	*11	19	8.2	6.8	*9.8	13	17	12	12	11	6.8	9.2
18	12	18	8.0	6.8	9.8	*12	13	11	13	11	25	11
19	13	21	8.2	6.8	9.8	16	10	11	33	11	8.6	11
20	13	26	8.0	7.4	17	9.2	9.2	10	120	11	8.0	10
21	14	23	8.2	6.8	35	8.6	*23	9.8	76	11	8.0	10
22	14	19	8.4	6.8	12	8.6	13	9.8	53	11	8.0	10
23	16	18	8.6	6.8	11	8.0	9.2	9.8	27	11	8.0	10
24	17	18	8.6	6.8	9.8	8.8	9.8	9.2	24	11	17	10
25	18	18	8.6	6.8	9.8	55	25	9.2	22	11	30	10
26	18	17	8.6	6.8	8.6	14	17	9.2	18	12	15	9.8
27	18	18	8.6	6.8	8.6	10	15	11	18	11	11	8.6
28	18	18	8.6	6.8	8.0	9.8	12	20	18	11	11	6.8
29	18	18	8.6	6.8	.....	8.6	11	12	17	11	10	7.4
30	19	18	8.6	6.8	.....	8.0	139	9.8	16	11	10	9.8
31	20	.....	8.6	6.8	.....	8.0	.....	15	.....	30	10	.....
1954-55												
1	8.0	9.2	8.0	6.8	5.0	15	12	13	12	6.8	8.6	6.1
2	8.0	8.0	*8.0	6.8	5.0	32	10	13	73	17	8.0	6.1
3	8.0	8.0	8.0	6.8	5.0	235	9.2	14	96	36	8.0	6.1
4	6.8	8.6	8.0	6.4	5.0	56	9.8	21	14	212	7.4	6.1
5	6.4	8.6	7.4	7.4	5.7	13	13	11	*89	15	13	6.1
6	6.4	8.6	6.8	6.8	5.7	6.8	9.8	10	20	9.8	9.2	6.1
7	6.4	8.6	6.8	6.4	5.4	6.1	9.2	11	15	12	9.2	6.1
8	6.8	8.6	6.8	6.4	5.4	61	8.0	9.8	14	110	8.6	6.1
9	6.8	*8.0	7.4	6.4	*5.4	*127	8.0	11	13	14	8.6	6.1
10	13	8.0	6.8	6.4	5.0	66	7.4	12	13	10	*8.0	*5.7
11	12	8.0	6.8	6.4	4.8	29	6.8	9.8	13	24	6.8	5.7
12	*8.6	8.6	6.8	6.4	4.7	18	7.4	9.2	13	15	7.4	5.7
13	11	8.6	6.8	6.4	4.6	13	8.0	9.2	13	9.8	7.4	6.1
14	176	8.6	6.8	* 6.4	4.8	14	*10	*8.6	13	*9.8	6.8	6.1
15	18	8.6	6.8	6.1	5.0	19	9.8	7.4	13	10	6.8	6.1
16	13	8.6	6.8	6.1	5.0	10	8.6	8.0	13	10	6.8	6.1
17	12	8.6	6.8	6.1	5.0	8.0	8.0	7.4	12	10	6.8	5.7
18	10	9.2	6.8	5.7	5.0	8.6	10	7.4	10	9.8	6.4	5.7
19	9.8	8.6	6.8	5.7	5.7	8.0	14	7.4	41	9.2	6.1	5.7
20	9.8	8.6	6.8	5.7	150	8.0	10	7.4	14	9.2	6.1	6.1
21	9.8	8.6	6.4	5.5	16	8.0	9.2	6.8	9.8	8.6	6.1	6.8
22	9.8	8.6	6.8	5.1	8.8	8.0	8.6	6.4	9.8	8.0	6.1	6.8
23	9.2	9.2	6.8	4.7	8.0	7.4	11	8.0	9.8	18	6.1	7.4
24	9.2	9.8	7.4	4.4	6.8	7.4	52	39	9.8	8.6	6.4	6.4
25	8.6	9.2	6.8	4.2	6.1	6.8	32	11	8.6	8.0	6.8	6.1
26	9.2	8.6	6.6	4.2	6.1	6.8	24	9.8	7.4	8.0	6.8	6.1
27	9.2	9.2	6.2	4.2	6.1	6.4	19	9.8	6.8	8.0	6.4	6.8
28	9.2	9.2	6.2	4.1	5.7	6.4	17	26	6.8	7.4	6.4	6.1
29	9.2	8.6	6.4	4.6	.....	30	15	18	6.8	7.4	6.4	6.8
30	9.2	8.0	6.6	4.8	.....	35	13	15	6.8	35	6.1	6.1
31	9.2	.....	6.8	5.0	.....	18	.....	14	.....	20	6.1	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 15-22, 1953; Jan. 10-12, Feb. 11, 12, March 3, 4, Dec. 26-30, 1954; Jan. 21 to Feb. 2, Feb. 11-14, 1955. No gage-height record June 6-11, 1955; discharge estimated on basis of weather records and records for nearby stations.

Paint Creek at Waterville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53	.....	.....	9.67	8.40	10.7	39.9	22.0	21.3	18.3	44.3	34.1	13.9
1953-54	13.7	18.9	12.4	7.43	16.5	10.0	20.8	26.3	25.9	14.9	10.2	8.99
1954-55	14.8	8.64	6.94	5.76	11.1	28.8	13.0	12.0	19.9	22.8	7.28	6.17

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53	.....	.....	0.226	0.197	0.251	0.934	0.515	0.499	0.429	1.04	0.799	0.326
1953-54	0.321	0.443	.290	.174	.380	.234	.487	.616	.607	.349	.239	.211
1954-55	.347	.202	.163	.135	.260	.674	.304	.281	.466	.534	.170	.144

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53	.....	.....	0.26	0.23	0.26	1.08	0.58	0.57	0.48	1.20	0.92	0.36
1953-54	0.37	0.49	.33	.20	.40	.27	.54	.71	.68	.40	.27	.23
1954-55	.40	.23	.19	.16	.27	.78	.34	.32	.52	.61	.20	.16

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per Square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1953 (1)	July 26, 1953	8.53	2,840	.....	.....	.....	.....	21.0	0.87
1954	May 1, 1954	6.79	1,300	5.0	15.5	0.363	4.89	14.3	4.52
1955	Oct. 14, 1954	6.20	930	4.2	13.1	.307	4.18	.....	.....
1955	July 4, 1955	6.20	930						

(1) Period Nov. 14, 1952 to Sept. 30, 1953.

Peak Discharge (base, 500 cfs)

1953: July 26 (1:30 p.m.) 2,840 cfs (8.53 ft.).

1954: Apr. 15 (1:30 p.m.) 608 cfs (5.67 ft.); May 1 (2:00 a.m.) 1,300 cfs (6.79 ft.); June 20 (8:00 a.m.) 630 cfs (5.72 ft.); Oct. 14 (1:30 a.m.) 930 cfs (6.20 ft.).

1955: Mar. 3 (5:30 a.m.) 785 cfs (5.92 ft.); June 3 (5:00 a.m.) 536 cfs (5.36 ft.); July 3 (11:00 p.m.) 900 cfs (6.15 ft.); July 4 (4:00 p.m.) 930 cfs (6.20 ft.).

Yellow River at Ion, Iowa

LOCATION.—Lat. 43°06'35", long. 91°14'45", in SE¼SW¼ sec. 24, T. 96 N., R. 4 W., on downstream side of highway bridge at Ion, 7.5 miles northwest of McGregor, and 8 miles upstream from mouth.

DRAINAGE AREA.—224 square miles.

RECORDS AVAILABLE.—October 1934 to September 1951 (discontinued).

GAGE.—Wire-weight gage and crest-stage indicator; gage read once daily, more often at high stages. Datum of gage is 664.64 feet above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.—17 years, 140 cfs.

EXTREMES.—1934-51: Maximum discharge, 18,500 cfs May 29, 1941 (gage height, 15.2 feet, from floodmarks), by slope-area method; minimum observed, 14 cfs Dec. 30, 31, 1939.

REMARKS.—Records fair except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	45	41	35	29	367	507	471	143	154	136	139
2	53	44	215	35	29	250	396	404	241	131	134	134
3	51	42	72	35	30	256	404	368	202	145	132	130
4	51	42	68	34	32	228	714	329	166	145	130	128
5	50	42	54	33	33	202	1,010	311	141	123	132	128
6	50	42	49	32	33	761	1,010	311	139	121	1,730	128
7	58	40	49	31	34	830	*4,440	275	136	119	364	121
8	65	37	46	31	34	418	1,390	241	132	1,640	408	121
9	64	37	47	33	*33	228	*810	225	128	519	275	130
10	*56	40	48	33	33	218	744	215	123	269	195	290
11	54	41	47	34	35	182	668	205	121	244	188	171
12	50	41	*44	34	35	165	1,010	188	125	228	164	255
13	46	40	41	33	35	149	780	183	117	198	261	145
14	46	38	42	32	34	140	631	178	113	180	236	145
15	46	*41	40	32	33	131	507	157	107	171	350	145
16	49	70	37	31	33	111	453	148	101	1,640	269	134
17	49	51	36	*30	33	115	364	159	101	568	396	130
18	49	47	35	31	33	110	360	150	101	314	269	128
19	47	45	36	31	33	110	302	166	143	258	241	*121
20	49	40	37	32	33	110	269	190	103	263	238	119
21	49	40	38	32	33	115	384	152	*101	622	*223	111
22	49	40	38	31	33	121	476	164	101	329	198	109
23	49	40	35	31	34	123	364	141	96	252	183	107
24	46	40	33	31	38	121	*364	134	90	*223	168	107
25	46	40	32	31	1,000	115	929	134	87	205	164	105
26	45	40	33	31	*3,300	109	957	143	971	190	269	105
27	45	40	34	30	1,390	1,160	684	139	368	180	178	103
28	45	40	34	30	676	3,670	569	121	287	176	166	101
29	44	40	35	29	.....	4,730	660	*121	215	157	154	101
30	44	40	35	29	.....	*1,600	534	121	168	148	152	101
31	44	.....	36	29	.....	780	.....	134	.....	141	148	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-11, 18-24, 26-31, 1950; Jan. 1-6, Jan. 8 to Feb. 25, Mar. 18-21, 1951.

Yellow River at Ion, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	49.7	42.2	47.3	31.8	256	572	757	206	172	325	266	133

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.222	0.188	0.211	0.142	1.14	2.55	3.38	0.920	0.768	1.45	1.19	0.594

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.26	0.21	0.24	0.16	1.19	2.94	3.77	1.06	0.86	1.67	1.37	0.66

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	186	11.30
1951....	Apr. 7, 1951..	10.34	10,500	29	238	1.06	14.39	.....	.....

Peak Discharge (base, 3,500 cfs)

1951: Feb. 25 (11 p.m.) about 4,500 cfs (8.05 ft.); Mar. 29 (12 m.) 9,580 cfs (9.90 ft.); Apr. 7 (9:30 a.m.) 10,500 cfs (10.34 ft.); July 8 (1 p.m.) 4,840 cfs (7.57 ft.); July 16 (4 p.m.) 4,840 cfs (7.62 ft.); Aug. 6 (4:30 a.m.) 6,100 cfs (8.26 ft.).

Mississippi River at McGregor, Iowa

LOCATION.—Lat. 43°01'40", long. 91°10'22", in SE¼SE¼ sec. 22, T. 95 N., R. 3 W., on right bank in city park at north end of Main Street in McGregor, 2.6 miles upstream from Wisconsin River, 4.0 miles downstream from Yellow River, and at mile 633.6 above Ohio River.

DRAINAGE AREA.—67,500 square miles, approximately.

RECORDS AVAILABLE.—August 1936 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 605.30 feet above mean sea level, adjustment of 1912. Auxiliary water-stage recorder 14.1 miles upstream in tailwater of dam 9, at datum 5.30 feet lower.

AVERAGE DISCHARGE.—19 years, 33,590 cfs.

EXTREMES.—1936-55: Maximum daily discharge, 197,500 cfs Apr. 22, 1952; maximum gage height 20.89 feet Apr. 23, 1952; minimum daily discharge, 6,200 cfs Dec. 9, 1936 (discharge measurement); minimum gage height, -0.86 feet Aug. 18, 1936.

Maximum stage known, about 21.0 feet in June 1880.

REMARKS.—Records good except those for periods of ice effect, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and dam 10. Flow regulated by reservoirs and navigation dams.

COOPERATION.—Gage-height record at dam 9 collected in cooperation with Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	15,500	15,200	11,000	13,000	14,500	26,800	38,200	131,800	52,100	61,300	40,300	31,200
2.....	16,500	14,400	13,500	13,000	14,600	27,200	35,700	124,900	53,000	64,000	37,000	35,100
3.....	17,800	14,700	13,500	13,000	12,800	26,000	32,100	115,900	56,900	67,600	35,600	33,400
4.....	18,900	15,200	13,500	13,200	12,500	26,000	30,500	112,500	57,600	70,900	29,700	34,600
5.....	19,800	16,200	13,500	13,400	12,200	26,800	36,000	107,700	56,800	71,300	27,800	39,600
6.....	19,200	15,400	14,800	13,400	12,200	27,000	47,000	104,300	57,300	71,300	27,900	41,000
7.....	19,000	15,400	16,300	13,400	12,100	27,200	55,200	101,300	55,200	70,900	26,300	40,000
8.....	19,300	15,100	16,800	13,400	*12,300	28,500	66,100	97,000	54,900	71,700	28,200	39,900
9.....	19,700	13,500	17,200	13,400	12,300	28,500	73,400	92,100	55,000	73,300	32,800	39,900
10.....	19,900	12,900	17,100	13,400	13,000	27,500	79,600	88,900	55,200	74,000	34,800	40,700
11.....	*19,200	13,100	15,800	13,300	13,200	26,500	86,300	86,500	55,000	76,100	37,100	41,600
12.....	17,800	13,000	15,300	13,300	14,500	24,500	92,000	82,700	55,700	77,700	37,500	42,300
13.....	17,500	13,600	13,700	13,300	15,500	22,500	96,400	80,200	54,500	80,200	37,600	42,900
14.....	16,000	14,500	13,700	13,500	15,500	23,800	101,900	78,500	51,300	81,900	35,400	43,100
15.....	15,800	13,700	14,000	15,300	15,400	24,700	114,200	77,200	47,300	84,300	30,600	47,500
16.....	16,200	*13,500	14,500	16,000	15,400	24,800	129,100	74,500	43,600	84,500	32,000	50,600
17.....	15,700	14,600	13,800	15,800	15,000	24,800	144,500	72,200	41,300	82,800	37,800	54,600
18.....	16,400	15,500	13,800	16,000	14,700	23,800	159,500	70,100	39,300	79,500	39,400	59,000
19.....	15,500	14,600	13,700	16,000	14,500	21,500	*171,000	67,700	38,300	75,200	40,400	*64,000
20.....	15,500	15,100	13,600	16,500	14,600	21,000	*178,200	66,900	36,600	70,000	41,100	67,700
21.....	15,500	15,700	*13,600	15,800	15,500	21,500	183,700	64,800	35,700	68,800	*37,700	70,600
22.....	15,200	15,800	14,500	15,200	15,800	21,800	185,700	64,700	*32,800	72,500	34,700	71,300
23.....	15,200	14,800	15,300	15,400	16,500	20,500	177,800	65,100	32,500	74,400	31,900	70,900
24.....	14,900	14,300	15,300	15,700	17,800	19,000	174,700	66,000	33,500	75,700	30,200	69,600
25.....	14,900	14,200	16,200	15,800	20,500	18,000	169,800	65,800	35,000	*75,700	30,600	68,900
26.....	14,900	14,000	16,500	14,800	25,500	16,200	163,400	64,500	43,000	73,700	31,600	65,800
27.....	15,400	12,500	16,500	14,000	26,200	20,600	156,400	63,700	49,400	69,600	32,100	62,600
28.....	15,700	10,000	16,500	13,800	26,000	27,500	149,700	59,300	54,000	63,100	32,100	59,000
29.....	15,400	9,900	16,300	13,800	.....	35,100	144,100	*56,200	54,400	55,400	30,500	56,100
30	14,700	9,900	15,700	14,000	.....	38,500	136,100	53,900	56,000	51,300	25,300	54,200
31.....	15,200	.....	15,400	14,200	.....	39,600	.....	51,600	.....	46,700	26,600	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1950; Jan. 1 to Mar. 26, 1951.

Mississippi River at McGregor, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	51,400	43,900	49,700	28,800	23,800	27,400	63,100	149,600	39,900	50,600	85,600	33,200
2	49,000	44,000	47,000	29,200	23,800	28,600	75,800	140,400	37,900	50,300	86,700	37,600
3	49,100	41,300	44,400	29,200	23,800	28,400	85,000	131,300	38,400	51,100	85,100	38,400
4	51,600	38,000	43,500	30,200	23,600	27,800	91,900	123,300	39,500	50,900	83,400	37,700
5	53,200	35,800	43,600	*30,000	23,200	27,400	101,200	116,000	41,700	50,900	79,600	37,600
6	51,100	36,800	44,100	29,800	*23,000	27,600	106,000	108,300	42,500	51,600	75,000	36,700
7	49,200	37,600	44,100	29,800	23,000	27,400	105,000	102,800	42,100	52,600	71,800	36,500
8	46,700	36,400	43,600	29,600	22,800	25,800	103,700	98,100	40,400	56,100	67,600	34,400
9	46,800	30,600	44,200	29,400	22,800	26,000	*101,800	92,700	35,500	56,900	64,900	35,500
10	47,400	31,000	45,600	28,600	22,600	25,800	101,000	88,000	26,400	58,500	62,700	34,700
11	47,500	32,600	47,800	28,200	22,800	26,200	102,400	84,300	21,900	58,200	60,800	33,800
12	48,600	32,700	38,000	27,200	23,000	27,600	108,600	80,300	26,000	57,900	59,000	32,300
13	47,600	34,600	28,600	26,600	23,400	28,800	116,700	76,300	29,500	56,800	*58,800	29,800
14	46,800	38,200	27,000	26,400	23,800	29,400	129,500	*73,400	36,900	56,600	57,400	27,800
15	45,500	*40,000	25,000	25,000	24,000	30,600	143,800	71,400	38,200	*56,400	55,100	26,400
16	42,200	44,100	24,000	24,200	24,200	30,800	*154,700	68,700	35,100	54,100	54,000	23,500
17	40,300	49,100	24,600	24,600	24,400	30,600	166,000	66,600	31,800	52,900	54,200	*23,000
18	39,900	49,000	25,200	24,800	24,600	32,900	176,000	63,000	35,000	51,900	52,600	23,100
19	38,800	50,100	25,400	27,400	24,400	35,800	187,000	60,800	*34,400	50,700	51,100	22,100
20	34,900	51,500	24,800	27,400	24,200	37,300	194,000	59,400	35,500	53,100	50,900	22,400
21	36,700	56,100	24,600	27,200	24,400	38,500	*196,100	57,000	38,200	56,000	48,700	22,300
22	39,500	59,500	24,200	27,200	24,600	38,300	*197,500	54,700	38,000	55,400	46,600	21,900
23	39,500	60,600	24,400	25,800	24,800	38,900	195,900	54,800	38,600	54,600	46,600	21,800
24	*41,000	59,200	24,800	23,600	24,400	38,100	194,900	53,800	43,400	54,400	46,600	21,800
25	41,000	41,600	26,600	23,600	22,600	35,600	190,400	50,700	47,100	55,300	47,700	21,200
26	40,300	39,600	28,400	22,200	24,000	36,200	*186,600	48,200	46,800	59,800	47,300	20,100
27	40,400	35,000	28,200	20,800	24,600	34,900	182,500	44,100	44,700	65,100	44,400	18,900
28	41,800	39,000	28,800	21,000	25,400	36,700	175,800	42,800	45,700	70,300	41,900	19,000
29	42,500	44,500	29,200	21,600	26,800	39,000	168,200	38,800	50,000	74,800	34,700	18,400
30	42,900	49,500	28,800	22,200	.....	42,000	159,900	36,800	50,300	79,800	29,700	17,200
31	44,400	.....	29,000	23,600	.....	49,600	.....	40,000	.....	83,600	29,500	.....
1952-53												
1	15,700	15,600	16,100	17,500	15,500	16,500	83,000	52,100	74,000	84,600	58,500	46,600
2	15,900	15,300	14,700	17,400	16,300	16,800	82,600	51,700	75,000	86,000	58,500	43,700
3	16,600	15,400	13,700	17,200	16,800	17,000	83,200	52,600	74,300	86,200	59,500	40,000
4	16,300	15,700	13,700	17,000	17,000	17,000	82,300	54,900	74,000	85,500	65,700	37,400
5	15,800	15,600	13,500	16,300	17,000	17,200	80,100	56,200	72,600	85,100	*68,100	34,200
6	15,200	15,700	15,400	14,700	16,800	17,300	70,300	56,200	70,700	83,300	69,800	33,600
7	14,600	16,600	16,300	14,700	16,600	17,200	66,300	58,100	68,900	81,600	68,900	31,300
8	14,600	16,700	18,100	16,200	16,800	17,200	64,900	58,900	68,900	80,500	68,900	27,100
9	13,900	16,800	18,100	17,500	16,700	17,400	74,900	59,400	66,400	79,000	68,100	25,500
10	14,300	17,500	17,800	17,900	16,500	19,500	70,900	59,200	63,700	75,400	66,500	28,400
11	14,300	17,500	18,300	17,500	16,600	20,900	73,900	60,300	61,900	74,500	64,900	28,500
12	14,900	17,300	17,600	16,500	16,600	23,700	74,400	60,400	59,300	72,700	65,100	29,000
13	16,100	*16,500	17,200	16,300	16,600	28,700	73,900	56,200	58,400	70,400	68,100	25,500
14	16,500	16,000	19,200	16,700	16,700	32,300	72,800	55,700	55,800	*69,700	70,300	23,900
15	*16,900	15,600	21,500	17,000	16,700	37,200	*74,000	54,100	55,500	67,900	73,700	22,900
16	16,300	15,200	22,200	16,200	16,800	36,800	73,200	52,700	55,700	64,700	74,700	24,100
17	15,800	17,500	21,200	16,200	16,800	*35,900	72,700	50,800	54,600	62,800	76,900	24,200
18	16,600	21,100	19,000	16,700	16,900	36,800	73,200	50,800	53,100	61,000	77,200	*24,000
19	15,300	18,900	17,000	16,900	16,900	37,500	73,300	51,000	51,200	59,000	76,900	25,000
20	16,000	17,700	16,500	16,900	17,000	40,200	73,000	51,100	50,600	56,000	77,200	24,200
21	16,500	15,900	16,500	16,800	16,900	43,500	70,500	*50,700	51,200	56,100	75,800	24,700
22	16,500	14,400	16,300	16,500	16,700	51,000	67,400	50,900	53,500	54,600	74,400	24,300
23	16,300	14,500	15,700	16,000	16,500	58,700	64,400	51,100	55,100	54,400	72,500	22,800
24	16,300	14,300	15,700	15,500	16,500	63,600	58,800	50,600	*56,000	52,200	70,300	20,500
25	16,400	14,400	15,700	15,500	16,600	66,700	58,400	52,000	62,300	51,500	68,400	18,900
26	15,900	16,600	15,900	15,500	16,900	70,700	57,300	54,100	67,400	51,800	65,700	16,200
27	15,900	16,400	16,000	15,500	16,900	77,700	53,200	60,300	70,600	53,100	60,600	16,900
28	15,900	17,600	16,000	15,500	16,500	81,300	49,000	65,300	74,200	56,200	57,000	17,800
29	16,500	16,800	15,900	15,500	.....	82,500	40,300	69,500	78,400	60,000	53,300	19,000
30	16,100	16,500	16,800	15,500	.....	83,200	50,700	73,000	82,000	59,300	50,600	18,800
31	15,300	.....	17,400	15,500	.....	83,500	.....	74,300	.....	58,600	48,900	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 5-7, 24-28, Dec. 11-31, 1951; Jan. 1 to Mar. 17, Nov. 29 to Dec. 3, Dec. 13-31, 1952; Jan. 1 to Mar. 10, 1953.

Mississippi River at McGregor, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	19,000	16,400	23,400	18,200	17,000	26,500	43,000	67,400	46,700	80,700	21,200	19,900
2.....	19,400	17,100	23,100	18,200	17,700	29,300	41,200	80,400	45,300	78,100	22,000	19,000
3.....	19,700	16,500	23,300	18,200	18,200	29,000	40,100	87,700	44,200	77,900	22,300	18,500
4.....	18,700	*16,100	25,600	18,000	18,200	24,000	36,800	96,200	45,500	76,800	23,100	18,100
5.....	19,000	16,000	26,500	17,500	18,200	22,100	33,500	109,700	45,600	76,600	23,600	17,400
6.....	18,300	16,800	26,100	17,000	18,200	20,700	31,000	128,900	46,200	75,600	23,400	17,300
7.....	19,000	17,300	26,200	17,000	18,100	20,700	31,000	146,000	48,700	75,900	22,600	16,200
8.....	18,600	17,800	24,000	17,100	18,000	24,500	32,400	158,000	51,100	75,000	21,500	15,800
9.....	17,500	17,900	19,200	17,000	18,000	20,900	31,600	165,500	52,300	72,800	20,400	15,900
10.....	17,500	18,100	17,800	17,000	18,000	19,500	33,000	163,800	53,400	72,100	18,300	18,400
11.....	17,400	17,700	*17,000	17,500	18,000	19,600	33,700	*160,500	53,800	71,000	17,400	20,000
12.....	17,500	18,600	17,100	20,500	18,000	18,700	34,400	158,200	53,700	71,100	17,200	20,000
13.....	17,400	18,900	17,600	21,500	18,000	19,300	*37,600	149,500	53,400	71,400	16,900	21,500
14.....	17,400	19,200	18,100	22,000	17,700	20,000	41,500	*139,600	50,900	70,500	16,800	24,800
15.....	17,400	19,500	19,200	21,500	17,000	22,000	43,300	129,600	45,800	68,200	16,400	28,500
16.....	17,700	19,000	19,800	20,500	18,200	21,600	45,800	120,400	*44,500	65,500	18,500	30,100
17.....	17,800	19,400	20,300	19,200	*19,200	*20,000	45,800	112,800	44,200	61,700	20,700	30,100
18.....	17,800	*19,100	20,800	18,000	20,000	20,700	49,000	104,200	43,800	59,100	21,900	35,000
19.....	17,800	18,900	21,000	17,200	20,600	22,200	51,500	*95,900	44,900	57,300	*22,600	38,300
20.....	18,200	20,000	20,600	17,000	22,000	24,400	54,700	88,200	51,200	52,400	22,300	40,000
21.....	*19,000	21,000	19,800	16,900	24,000	32,600	57,800	83,100	57,600	*47,200	22,100	*41,700
22.....	18,900	20,100	19,000	16,300	25,600	39,000	61,600	77,700	68,600	41,900	22,400	41,700
23.....	18,500	20,100	18,500	16,300	26,400	45,200	62,100	71,300	73,500	32,900	21,500	42,100
24.....	17,800	21,800	17,000	16,300	24,700	44,500	62,700	65,000	79,500	31,100	21,100	41,400
25.....	17,200	24,100	16,000	16,300	24,100	45,800	63,000	57,600	85,400	30,800	22,700	39,500
26.....	15,300	24,300	16,000	16,300	25,600	45,100	61,100	53,700	91,600	26,000	24,700	37,000
27.....	14,600	24,100	16,200	16,300	28,600	43,000	59,800	52,400	92,600	20,500	25,600	34,500
28.....	13,700	24,100	16,800	16,300	23,200	43,200	55,700	51,100	89,600	18,900	26,600	25,700
29.....	14,100	23,100	17,100	16,400	.....	43,900	53,600	48,100	86,400	20,000	26,800	22,000
30.....	14,600	22,700	17,500	16,500	.....	44,400	56,200	44,900	84,400	20,300	24,700	22,900
31.....	14,900	.....	18,000	16,800	.....	43,700	.....	45,700	.....	20,200	21,500	.....
1954-55												
1.....	25,000	31,800	23,800	19,000	15,000	20,700	35,900	43,600	44,100	16,500	28,400	25,200
2.....	27,000	29,600	24,900	18,000	14,900	20,800	38,700	39,000	54,100	17,800	32,500	22,200
3.....	29,900	25,900	25,200	17,000	15,000	20,900	40,500	36,000	55,900	19,600	36,000	20,700
4.....	37,600	26,100	24,800	16,000	15,100	21,500	43,300	34,300	56,400	19,900	36,400	20,700
5.....	38,900	25,700	22,200	17,200	15,300	22,000	49,500	31,500	48,700	21,400	34,900	20,700
6.....	42,100	25,900	19,500	17,800	15,000	23,000	54,100	26,700	46,300	21,600	31,200	21,800
7.....	41,600	25,600	15,000	18,400	15,900	24,500	57,500	24,700	46,000	26,500	29,100	21,200
8.....	39,100	26,600	*15,400	18,600	16,000	25,400	59,400	23,800	46,300	34,900	32,200	19,200
9.....	35,800	27,200	15,500	18,800	15,900	25,500	63,000	22,300	44,800	52,200	38,000	17,800
10.....	30,300	26,700	16,400	19,000	16,000	25,100	65,800	22,200	43,100	51,700	42,200	15,000
11.....	28,900	23,500	17,100	18,900	*16,000	31,300	67,400	25,200	43,900	49,900	43,400	15,000
12.....	25,600	21,500	16,500	18,700	16,000	40,600	68,700	29,400	43,700	47,700	42,000	14,800
13.....	23,900	22,600	18,900	18,400	15,900	43,400	70,900	29,600	43,700	43,200	40,400	15,300
14.....	29,200	21,400	20,800	17,800	15,700	43,200	73,700	27,000	43,100	41,500	37,100	*14,100
15.....	35,400	22,400	19,800	17,500	15,500	43,300	73,200	21,000	45,000	39,200	33,200	14,500
16.....	41,300	22,700	19,500	17,400	15,300	*43,800	72,800	18,200	44,700	37,400	30,900	14,800
17.....	42,800	*23,600	19,400	17,400	15,200	42,600	70,700	19,200	*42,100	34,500	*29,900	15,400
18.....	44,600	24,100	19,300	17,400	15,200	44,200	*69,200	*19,200	37,300	30,200	29,200	14,000
19.....	48,900	24,400	19,000	17,000	15,600	44,900	70,200	18,900	32,700	24,700	27,400	13,400
20.....	*52,500	25,200	19,600	16,400	17,500	45,800	70,200	19,100	22,000	23,100	26,000	13,700
21.....	54,100	24,300	21,000	16,200	19,000	46,100	70,400	18,400	22,700	*24,900	24,000	14,700
22.....	52,700	23,500	21,800	16,300	19,800	42,600	68,500	17,200	24,600	25,000	21,300	16,400
23.....	49,900	22,900	23,800	16,200	20,000	39,200	64,900	16,500	21,800	26,300	17,600	18,100
24.....	43,700	22,100	24,400	16,200	20,000	35,900	63,300	16,100	17,400	27,000	16,600	18,600
25.....	39,100	21,400	24,600	16,500	20,500	32,300	59,100	16,100	14,700	25,600	16,000	19,300
26.....	37,200	21,200	24,900	16,300	20,800	25,400	55,300	17,300	13,300	22,700	18,600	18,300
27.....	36,000	21,200	24,500	16,100	20,400	28,500	*52,000	20,700	13,100	18,900	24,300	17,500
28.....	34,600	21,100	23,800	15,600	20,700	29,900	48,600	22,600	13,900	19,200	30,500	17,400
29.....	34,900	21,100	22,500	15,400	.....	31,000	48,800	27,200	14,300	20,700	35,600	18,400
30.....	33,900	22,000	21,200	15,300	.....	32,300	47,200	29,500	15,500	21,700	36,400	18,500
31.....	33,800	.....	20,200	15,100	.....	33,800	.....	34,600	.....	23,100	31,100	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1953; Jan. 1 to Feb. 19, Dec. 5-8, 14-31, 1954; Jan. 1 to Mar. 8, 1955.

Mississippi River at McGregor, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	16,720	14,010	14,870	14,350	15,740	25,410	113,000	80,920	48,110	71,460	33,310	51,280
1951-52	44,440	42,730	33,460	26,300	23,800	32,580	142,000	76,660	38,380	57,650	57,420	27,640
1952-53	15,780	16,390	16,940	16,340	16,680	40,820	69,390	56,590	63,890	67,540	66,940	26,640
1953-54	17,470	19,520	19,050	17,770	20,700	29,610	46,150	100,400	59,150	55,470	21,580	27,180
1954-55	37,750	24,110	20,840	17,160	16,920	33,210	59,760	24,750	35,170	29,310	30,720	17,580

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.248	0.208	0.220	0.213	0.233	0.376	1.68	1.20	0.713	1.06	0.493	0.760
1951-52	.658	.633	.496	.390	.354	.483	2.10	1.14	.569	.854	.851	.409
1952-53	.234	.243	.251	.242	.247	.605	1.03	.838	.947	1.00	.992	.395
1953-54	.259	.289	.296	.263	.307	.439	.684	1.49	.876	.822	.320	.403
1954-55	.559	.357	.309	.254	.251	.492	.885	.367	.521	.434	.455	.260

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.29	0.23	0.25	0.25	0.24	0.43	1.88	1.38	0.80	1.22	0.57	0.85
1951-52	.76	.71	.57	.45	.38	.56	2.35	1.31	.63	.98	.98	.46
1952-53	.27	.27	.29	.28	.26	.70	1.15	.97	1.06	1.15	1.14	.44
1953-54	.30	.32	.34	.30	.32	.51	.76	1.72	.98	.95	.37	.45
1954-55	.64	.40	.36	.29	.26	.57	.99	.42	.58	.50	.52	.20

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30						Calendar year	
	Maximum day		Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Discharge						
1950							33,890	6.82
1951	Apr. 22, 1951	185,700	9,900	41,709	0.618	8.39	47,990	9.66
1952	Apr. 22, 1952	107,500	17,200	50,270	.745	10.14	44,290	8.93
1953	July 3, 1953	86,200	13,500	39,630	.587	7.98	40,290	8.11
1954	May 9, 1954	165,500	13,700	36,309	.539	7.32	38,530	7.76
1955	Apr. 14, 1955	73,700	13,100	28,980	.429	5.82		

Turkey River at Garber, Iowa

LOCATION.—Lat. 42°44'25", long. 91°15'45", in sec. T. 92 N., R. 4 W., on left bank 10 feet downstream from highway bridge at Garber, 800 feet upstream from Wayman Creek, 2,000 feet downstream from Elk Creek and 1 mile downstream from Volga River.

DRAINAGE AREA.—1,530 square miles, approximately.

RECORDS AVAILABLE.—August 1913 to November 1916, May 1919 to September 1927, and November 1932 to September 1955 in reports of Geological Survey. August 1913 to November 1916, May 1919 to September 1927, and April 1929 to September 1930 in report of Iowa State Planning Board.

GAGE.—Water-stage recorder. Datum of gage is 635.34 feet above mean sea level, adjustment of 1912. Prior to Feb. 8, 1935, chain gage at same site and datum.

AVERAGE DISCHARGE.—34 years (1913-16, 1919-27, 1929-30, 1933-55), 880 cfs.

EXTREMES.—1913-16, 1919-27, 1929-30, 1932-55: Maximum discharge, 29,000 cfs June 13, 1947; maximum gage height, 28.06 feet Feb. 23, 1922 (from floodmarks); minimum daily discharge, 49 cfs Jan. 28, 29, 1940.

REMARKS.—Records good except those for periods of ice effect, which are poor. Slight diurnal fluctuation at low flow caused by powerplant at Elkader.

COOPERATION.—Several discharge measurements furnished by the Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	405	202	174	150	115	2,990	5,650	6,620	2,250	2,050	730	755
2	389	199	550	150	115	2,420	4,250	4,160	5,160	1,630	708	730
3	345	202	473	150	115	2,340	3,620	3,440	3,890	1,490	685	708
4	311	207	330	150	115	2,190	4,950	2,690	2,740	1,490	618	685
5	304	204	250	150	110	2,050	8,810	2,580	2,050	1,660	1,310	640
6	290	193	210	150	110	6,140	9,480	2,660	1,660	1,600	930	640
7	290	196	190	145	110	5,900	17,000	2,260	1,460	1,050	805	618
8	290	196	180	145	*110	3,260	16,700	1,950	1,400	11,800	1,600	595
9	322	199	180	140	110	1,980	11,100	1,840	1,250	10,800	1,630	595
10	334	188	170	140	115	1,560	5,650	1,840	1,140	4,850	1,310	1,340
11	*262	174	170	145	120	1,370	4,850	1,840	1,140	3,260	1,110	1,250
12	259	164	170	145	125	1,110	5,750	1,520	1,030	2,820	955	980
13	262	179	*165	145	130	955	7,240	1,370	1,170	2,340	1,530	930
14	250	196	160	150	135	905	5,150	1,250	880	2,050	2,120	830
15	243	*222	160	150	140	930	3,980	1,170	855	1,840	2,780	730
16	237	282	155	*150	140	855	3,080	1,110	905	3,040	2,990	662
17	234	204	150	150	140	780	2,580	1,170	780	2,660	2,260	640
18	216	193	150	150	140	830	2,260	1,080	1,140	2,050	1,460	595
19	196	193	145	150	140	730	2,050	1,080	1,220	1,740	1,200	572
20	213	159	145	150	145	640	1,840	1,110	1,030	1,430	1,110	*550
21	213	164	145	140	145	662	1,840	1,110	830	2,730	1,030	528
22	219	174	150	125	145	685	4,750	1,060	805	3,800	*955	528
23	216	149	150	130	150	880	5,150	1,030	*730	2,260	905	528
24	219	190	150	130	150	730	*3,350	855	655	1,560	830	505
25	213	190	145	125	2,100	662	5,170	905	662	*1,280	986	505
26	213	190	145	120	12,000	830	8,880	1,340	*4,500	*1,110	2,000	493
27	216	188	145	125	*9,270	4,340	5,450	1,080	9,840	1,000	1,840	481
28	210	202	150	130	4,850	16,400	3,980	955	7,250	930	1,220	461
29	207	202	150	125	.....	*21,100	13,900	855	4,320	855	980	449
30	199	190	150	120	.....	13,700	13,000	*780	3,620	805	880	445
31	210	.....	150	120	.....	7,300	.....	855	.....	780	830	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1950; Jan. 1 to Feb. 25, 1951.

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	445	708	755	540	840	g1,570	g9,580	1,000	1,930	497	424	541
2.....	445	640	760	520	1,000	g1,390	g6,890	980	1,450	550	340	515
3.....	477	572	855	500	900	g1,280	g4,080	980	1,180	537	352	466
4.....	1,970	501	930	480	830	g1,100	g3,090	955	1,060	488	404	441
5.....	1,140	481	930	460	*800	880	g2,530	930	1,030	497	360	416
6.....	855	528	905	450	760	g782	g2,140	880	2,000	449	364	396
7.....	755	595	g830	430	750	g*830	g1,870	880	1,960	445	344	372
8.....	662	595	g780	420	750	g830	g1,690	1,300	1,200	454	344	372
9.....	618	572	730	*410	750	g782	g1,630	1,930	1,000	642	493	356
10.....	595	550	685	400	900	2,680	*1,690	1,630	905	573	352	310
11.....	572	550	*662	390	2,000	4,080	1,810	1,420	830	502	372	321
12.....	550	662	595	390	3,500	3,270	1,750	1,260	758	441	*352	313
13.....	528	1,700	445	390	4,700	2,850	1,870	*1,100	758	416	344	306
14.....	493	1,910	500	450	4,440	2,610	g2,370	1,030	782	*619	321	317
15.....	485	1,630	600	800	2,370	2,610	g3,450	980	782	806	630	372
16.....	528	*1,460	650	1,200	1,510	1,930	g3,630	930	734	1,210	726	298
17.....	595	1,200	660	1,500	1,300	1,750	g3,540	880	688	855	462	*317
18.....	755	955	670	1,800	g1,230	3,580	g2,930	855	642	665	437	310
19.....	760	880	660	2,500	g1,200	7,330	2,370	806	*596	596	546	302
20.....	708	830	630	6,000	g1,160	4,530	2,000	782	830	532	4,330	287
21.....	955	830	600	g5,050	g1,000	3,990	1,810	782	880	546	2,380	280
22.....	g1,960	880	580	g4,450	g 830	3,720	1,690	980	758	734	2,090	276
23.....	g2,340	755	560	g1,980	g 855	2,850	1,570	2,510	711	758	1,690	269
24.....	g2,050	708	550	1,500	g 806	g1,930	1,480	2,010	758	573	1,100	265
25.....	*1,770	640	540	1,200	g 734	g1,570	1,390	2,370	688	488	830	265
26.....	1,280	685	550	1,000	g 758	g1,480	1,300	1,750	642	546	711	262
27.....	1,080	708	570	880	g1,030	g1,420	1,230	1,360	642	416	642	251
28.....	955	730	590	780	g1,930	g1,420	1,160	1,330	665	424	596	237
29.....	905	730	600	720	g2,000	g1,570	1,100	1,260	688	384	988	234
30.....	830	730	580	700	.....	6,340	1,060	1,160	619	550	688	240
31.....	760	.....	560	730	.....	g8,160	.....	1,300	.....	408	573	.....
1952-53												
1.....	232	218	240	175	230	700	1,010	1,410	557	1,010	g1,210	515
2.....	225	212	250	170	220	600	1,060	2,130	532	750	g1,740	499
3.....	229	215	240	170	215	520	1,140	2,280	515	643	g5,280	499
4.....	225	208	230	170	210	470	1,560	1,800	499	557	12,800	478
5.....	218	215	220	200	220	440	1,410	1,560	969	1,070	14,000	430
6.....	215	215	210	250	300	420	1,240	1,440	708	1,010	*9,200	434
7.....	225	222	200	230	280	400	1,040	1,290	600	708	4,950	420
8.....	225	218	210	210	240	410	935	1,180	1,490	622	3,160	418
9.....	225	218	220	200	220	450	910	1,060	1,320	549	2,360	418
10.....	229	215	210	190	210	1,200	1,380	985	1,140	507	1,920	418
11.....	229	229	200	180	240	3,500	2,600	1,730	935	470	1,680	407
12.....	229	225	180	170	220	3,700	2,130	1,080	815	442	1,500	403
13.....	225	215	160	165	200	3,100	1,500	935	2,080	*438	1,350	391
14.....	*235	*225	170	160	180	2,700	*1,210	860	3,040	391	1,240	384
15.....	232	222	*175	700	190	3,500	1,240	815	5,140	430	1,110	376
16.....	229	229	185	1,000	195	*2,920	2,270	794	3,580	407	1,010	365
17.....	239	353	200	650	*200	1,990	3,400	772	*1,680	482	960	*372
18.....	225	346	220	500	200	1,620	2,130	750	1,160	528	*885	357
19.....	225	288	210	400	190	1,440	1,500	703	960	466	860	350
20.....	218	266	190	*350	3,500	1,210	1,260	*680	838	643	815	361
21.....	225	270	180	320	2,500	1,110	1,140	838	720	698	772	353
22.....	222	242	190	300	1,500	1,040	1,040	750	664	540	720	350
23.....	218	242	200	280	1,300	2,020	960	772	*600	664	708	350
24.....	222	232	190	260	1,400	2,840	910	838	557	643	680	*342
25.....	222	302	185	250	1,100	2,130	1,010	860	708	544	664	346
26.....	222	350	180	235	1,000	1,500	1,680	935	794	8,110	622	331
27.....	218	250	180	220	1,100	1,180	1,740	815	703	g7,520	600	327
28.....	229	160	180	220	900	1,040	1,680	794	750	g2,760	578	320
29.....	222	200	175	250	.....	910	1,440	729	688	g1,920	557	320
30.....	212	230	175	250	.....	860	1,320	664	885	g1,500	540	309
31.....	218	.....	175	240	.....	885	.....	600	.....	g1,260	523	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1-20, Jan 24 to Feb. 13, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 15, 1953.

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	298	274	220	167	100	215	232	7,140	1,410	838	365	395
2	291	266	239	163	110	185	239	5,150	1,400	1,080	338	346
3	295	274	302	157	140	170	218	g5,460	2,840	1,140	346	313
4	288	256	365	153	*170	160	205	g4,450	2,920	985	316	306
5	288	256	320	148	190	175	g222	g3,000	1,920	910	320	306
6	280	252	338	142	215	200	g600	g2,130	1,470	772	298	270
7	291	256	327	136	238	220	g985	g1,740	1,240	708	284	239
8	288	249	327	133	263	230	g1,180	g1,500	1,110	664	288	270
9	291	249	313	130	274	239	g794	1,350	985	622	270	*274
10	288	263	298	126	274	235	g578	1,210	910	578	277	298
11	277	260	284	124	274	232	g438	1,110	838	544	274	284
12	288	252	266	120	201	210	g399	1,010	772	515	266	270
13	288	252	260	116	205	200	g346	935	686	494	246	240
14	284	256	270	113	263	195	g*309	860	643	446	266	302
15	277	246	235	110	280	179	g838	815	578	434	260	277
16	266	*240	120	108	255	*222	g1,740	772	*578	399	239	277
17	280	256	150	106	250	249	1,040	729	549	395	270	277
18	274	*252	170	104	*288	266	708	686	523	380	*316	235
19	342	260	200	*102	309	309	600	664	600	353	338	246
20	331	306	210	100	320	302	532	*643	643	*380	335	239
21	*302	309	220	99	466	242	686	664	4,130	395	277	242
22	*291	316	222	99	426	229	664	578	8,160	387	266	*239
23	291	298	221	98	365	256	910	557	4,450	372	235	208
24	270	302	220	98	361	242	935	536	3,320	507	246	212
25	270	277	210	98	320	536	1,470	523	2,130	418	357	212
26	277	263	200	98	288	466	1,060	499	1,500	368	750	208
27	277	260	192	98	274	357	1,080	*733	1,210	*365	643	189
28	274	252	186	98	255	284	*910	1,970	1,060	338	578	202
29	270	235	180	98	.....	277	860	1,110	960	327	600	317
30	274	220	175	98	.....	252	1,840	1,210	960	324	482	748
31	274	.....	170	99	.....	249	.....	1,180	.....	387	403	.....
1954–55												
1	415	382	277	235	155	470	905	750	960	g348	1,430	178
2	628	375	250	255	158	450	850	675	2,540	g358	*452	122
3	2,070	358	255	265	162	510	700	714	7,260	g348	393	142
4	1,270	358	248	280	165	2,500	628	*775	3,800	g2,040	304	135
5	825	351	230	300	165	1,850	650	628	2,560	g2,320	298	135
6	725	344	200	260	165	1,300	700	592	2,460	g805	271	140
7	582	334	178	240	165	1,700	1,430	564	1,880	g650	274	*135
8	496	331	250	200	170	2,100	960	524	1,370	g650	292	132
9	444	328	280	245	170	2,400	750	605	1,110	g650	244	125
10	750	328	275	235	168	2,090	650	800	932	g476	228	152
11	1,050	298	289	225	160	2,520	596	750	932	g415	222	g74
12	750	307	292	220	155	1,960	560	650	825	g365	209	100
13	650	319	274	205	152	1,530	592	578	725	g351	204	*130
14	750	310	*262	200	148	1,430	700	536	675	g361	198	148
15	905	298	270	210	143	1,430	960	492	*628	g348	193	138
16	990	322	270	205	140	*1,080	1,170	452	574	g322	*193	132
17	1,080	310	250	200	*140	878	960	433	516	g301	190	120
18	990	*316	250	203	150	775	750	*386	492	g289	188	100
19	775	301	230	*195	280	675	*675	382	516	295	180	118
20	*650	313	210	193	600	628	628	390	532	*286	170	120
21	560	286	230	180	1,000	580	569	372	*484	274	160	125
22	520	295	230	160	850	500	528	365	464	262	168	132
23	492	304	235	150	730	460	472	354	440	552	160	152
24	460	313	240	170	660	430	2,010	478	415	700	160	152
25	436	289	235	170	600	380	g2,440	592	390	358	162	142
26	429	274	230	163	560	360	g2,440	556	365	292	165	148
27	426	307	230	152	520	380	1,850	548	358	271	168	162
28	368	298	220	142	500	415	1,340	675	g337	259	155	140
29	408	274	210	138	.....	440	1,050	1,050	g348	g262	168	158
30	404	240	200	135	.....	*650	850	2,270	g372	g259	165	160
31	393	.....	215	142	.....	825	.....	1,430	.....	214	155	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 30, Dec. 1, 16-31, 1953; Jan. 1 to Feb. 6, Feb. 16, 17, Feb. 28 to Mar. 8, Mar. 12, 13, Nov. 30, Dec. 3-10, 15-31, 1954; Jan. 1 to Mar. 9, Mar. 21-27, 1955.

Turkey River at Garber, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	258	193	191	140	1,118	3,459	6,382	1,730	2,213	2,542	1,300	666
1951-52.....	931	830	602	1,278	1,436	2,617	2,490	1,256	939	568	793	330
1952-53.....	225	241	198	292	659	1,510	1,462	1,060	1,188	1,235	2,420	388
1953-54.....	286	264	239	117	270	251	754	1,642	1,683	543	347	282
1954-55.....	700	316	242	204	326	1,106	979	657	1,176	516	255	135

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.109	0.126	0.125	0.092	0.731	2.26	4.17	1.13	1.45	1.66	0.850	0.435
1951-52.....	.608	.542	.433	.835	.939	1.71	1.63	.821	.614	.371	.518	.216
1952-53.....	.147	.158	.129	.191	.431	.987	.956	.693	.776	.807	1.58	.254
1953-54.....	.187	.173	.156	.076	.176	.164	.493	1.07	1.10	.355	.227	.184
1954-55.....	.458	.207	.158	.133	.213	.723	.640	.429	.769	.337	.167	.088

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.19	0.14	0.14	0.11	0.76	2.61	4.65	1.31	1.61	1.92	0.98	0.49
1951-52.....	.70	.61	.50	.95	1.01	1.97	1.82	.95	.68	.43	.60	.24
1952-53.....	.17	.18	.15	.22	.45	1.14	1.07	.80	.87	.93	1.82	.28
1953-54.....	.22	.19	.18	.09	.18	.19	.55	1.24	1.23	.41	.26	.21
1954-55.....	.53	.23	.18	.15	.22	.83	.71	.50	.86	.39	.19	.10

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	1,069	9.47
1951....	Mar. 28, 1951.	22.79	21,900	110	1,080	1.10	14.91	1,830	16.25
1952....	Apr. 1, 1952..	15.88	9,840	234	1,176	.769	10.47	1,029	9.16
1953....	July 27, 1953..	20.62	16,900	160	909	.594	8.08	920	8.17
1954....	June 21, 1954.	19.94	16,400	98	557	.364	4.95	596	5.30
1955....	June 3, 1955..	15.32	9,640	74	552	.361	4.89	.....	.....

Peak Discharge (base, 6,000 cfs)

1951: Feb. 26 (about 8 p.m.) 14,600 cfs (18.72 ft.); Mar. 7 (6 a.m.) 7,130 cfs (13.3 ft.); Mar. 28 (3 a.m.) 21,900 cfs (22.79 ft.); Apr. 5 (7:30 a.m.) 9,480 cfs (15.20 ft.); Apr. 7 (6:30 p.m.) 18,300 cfs (20.90 ft.); Apr. 13 (7:30 a.m.) 7,830 cfs (13.92 ft.); Apr. 22 (10:30 a.m.) 6,580 cfs (12.77 ft.); Apr. 26 (8 a.m.) 10,500 cfs (15.94 ft.); Apr. 30 (10 a.m.) 17,400 cfs (20.44 ft.); June 2 (8 a.m.) 9,620 cfs (15.28 ft.); June 27 (3 p.m.) 11,600 cfs (16.71 ft.); July 8 (6 p.m.) 19,200 cfs (21.44 ft.).

1952: Jan. 20 (4 a.m.) about 8,000 cfs (15.22 ft.); Mar. 19 (11 a.m.) 9,320 cfs (15.50 ft.); Apr. 1 (9 p.m.) 9,840 cfs (15.88 ft.); Aug. 20 (10 a.m.) 8,930 cfs (15.19 ft.).

1953: Feb. 20 (6:30 p.m.) about 6,500 cfs (15.17 ft.); June 15 (5 a.m.) 6,120 cfs (12.73 ft.); July 27 (1 a.m.) 16,900 cfs (20.62 ft.); Aug. 4 (3:30 a.m.) 15,300 cfs (19.71 ft.); Aug. 6 (2 a.m.) 15,700 cfs (19.85 ft.).

1954: May 1 (11:30 a.m.) 10,000 cfs (15.84 ft.); June 21 (11:30 p.m.) 16,400 cfs (19.94 ft.).

1955: June 3 (1 p.m.) 9,840 cfs (15.32 ft.); July 4 (10:30 p.m.) 8,150 cfs (14.03 ft.).

Little Maquoketa River near Durango, Iowa

LOCATION.—Lat. 42°33'20", long. 90°44'40", in NE¼ sec. 5, T. 89 N., R. 2 E., on left bank 10 feet upstream from highway bridge, 1⅛ miles east of Durango, 5 miles northwest of Dubuque, and 7.5 miles upstream from mouth.

DRAINAGE AREA.—130 square miles, approximately.

RECORDS AVAILABLE.—October 1934 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 612.03 feet above mean sea level, datum of 1929. Prior to Jan. 5, 1939, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—21 years, 80.3 cfs.

EXTREMES.—1934-55: Maximum discharge, 23,000 cfs June 13, 1947 (gage height, 21.23 feet), from rating curve extended above 6,300 cfs on basis of slope-area determinations at gage heights 17.05, 19.82, 20.75 and 22.1 feet; minimum daily, 5 cfs July 12, 13, 1936.

Maximum stage known, about 22.1 feet June 15, 1925 (discharge, about 29,000 cfs, computed by Corps of Engineers).

REMARKS.—Records good except those for periods of ice effect or backwater from debris, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	13	13	13	15	13	130	232	227	267	39	38	35
2	13	13	17	15	13	103	191	181	183	37	37	34
3	13	13	19	15	13	366	160	153	363	46	37	34
4	13	13	13	16	13	185	163	151	167	50	33	31
5	13	13	13	14	14	394	143	135	138	41	35	30
6	13	13	14	14	14	318	145	162	120	35	166	29
7	13	13	14	14	*14	176	308	128	114	33	59	27
8	15	14	13	14	15	118	198	111	122	*4,970	74	26
9	14	17	13	15	16	77	151	106	106	857	47	28
10	13	15	14	15	17	74	130	222	92	263	37	57
11	13	14	13	15	16	69	124	189	85	183	32	45
12	*14	14	14	15	20	63	236	137	85	145	30	122
13	13	14	14	15	19	63	191	118	82	126	109	89
14	13	14	*13	15	21	65	158	101	70	110	104	39
15	13	*16	13	15	27	65	128	95	68	93	224	32
16	13	143	13	14	26	53	109	89	66	316	75	28
17	13	25	12	14	24	59	95	118	60	169	51	27
18	13	17	12	*14	23	82	89	95	57	106	42	27
19	13	16	12	14	*23	84	77	86	106	84	40	26
20	13	15	13	15	40	69	72	88	77	71	42	*26
21	13	14	13	14	54	64	113	76	54	124	51	28
22	13	14	14	14	51	70	122	82	68	86	*39	34
23	13	14	14	14	50	163	92	80	53	69	33	32
24	13	13	15	13	50	89	*97	68	*50	58	31	29
25	13	12	14	13	1,600	82	533	86	47	*52	32	29
26	13	13	14	13	2,100	351	247	714	86	*48	100	30
27	13	13	14	13	288	684	191	215	*51	47	53	30
28	13	14	14	13	169	*890	215	155	60	44	45	27
29	13	14	14	13	.....	1,090	1,040	134	47	41	41	26
30	13	14	15	13	.....	514	320	*110	41	40	38	26
31	13	.....	15	13	.....	300	.....	114	.....	40	38	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 27 to Feb. 26, 1951.

Little Maquoketa River near Durango, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	27	86	74	54	357	82	285	70	66	30	26	30
2	28	80	74	49	755	84	219	74	58	30	24	30
3	47	72	86	44	245	80	185	72	50	29	25	28
4	1,190	74	81	43	183	65	160	69	53	27	33	26
5	117	68	72	50	117	63	146	66	50	26	28	25
6	77	66	71	48	*84	69	134	63	52	25	26	24
7	175	62	70	45	74	*62	122	60	47	25	24	24
8	96	59	60	47	104	71	117	90	45	26	25	24
9	76	62	60	46	84	72	113	74	46	25	74	23
10	68	63	54	*41	181	1,200	*110	76	42	24	32	23
11	60	59	*60	41	230	698	100	68	40	23	26	23
12	57	318	45	41	153	571	103	60	40	23	*25	22
13	50	923	46	39	170	399	174	*60	43	23	*21	21
14	46	331	45	65	124	232	226	59	52	25	23	37
15	45	215	40	354	100	208	206	62	46	72	24	31
16	86	*172	41	148	86	185	160	57	40	35	125	25
17	215	140	41	497	85	204	142	56	39	32	35	23
18	236	122	44	227	80	683	130	53	36	38	27	*24
19	212	110	51	748	74	518	124	53	32	30	25	26
20	150	102	54	263	76	302	116	53	*96	34	1,480	24
21	558	100	54	140	71	269	110	53	80	29	102	23
22	302	97	52	135	64	254	132	75	53	*26	56	23
23	212	84	49	96	75	212	116	192	47	42	43	23
24	390	70	48	85	68	178	104	394	44	33	38	23
25	208	71	53	89	94	162	99	165	40	26	34	23
26	*169	74	56	89	93	156	93	86	36	122	32	22
27	143	66	54	76	158	163	90	80	38	37	30	21
28	129	70	58	65	157	225	86	77	38	27	30	21
29	114	71	61	56	113	357	81	66	33	24	75	21
30	107	77	64	39	.....	364	77	65	30	77	46	21
31	95	.....	59	48	.....	380	.....	82	.....	35	33	.....
1952-53												
1	20	21	23	28	18	30	171	121	35	24	48	19
2	20	g20	24	28	18	30	121	120	34	24	74	18
3	20	g20	24	25	20	33	105	111	*33	21	69	17
4	20	g20	25	23	20	28	88	96	34	58	152	21
5	20	g18	g26	20	550	27	77	89	100	645	70	20
6	20	g19	g26	18	253	28	70	116	45	469	*115	20
7	21	g19	g26	19	89	22	64	93	36	74	314	19
8	21	g20	g28	21	57	25	61	84	142	55	77	19
9	21	g19	g31	23	43	29	64	76	61	*43	61	20
10	21	g18	29	25	37	443	85	68	43	37	52	21
11	21	g20	25	24	150	167	69	67	38	33	48	20
12	21	g20	22	21	102	105	62	58	36	30	62	19
13	22	g20	20	25	51	85	57	54	190	30	43	17
14	22	20	22	33	38	251	54	51	121	32	37	17
15	*22	*20	*24	778	33	596	76	51	51	30	34	17
16	21	19	24	100	29	112	*70	48	42	26	33	17
17	21	67	24	58	27	82	57	48	36	81	31	17
18	22	89	24	41	*46	*78	53	47	34	40	*29	17
19	21	43	23	36	258	68	52	*43	30	30	27	17
20	21	32	130	33	*4,460	60	50	41	28	27	26	17
21	21	29	70	*31	212	58	46	125	25	26	25	*17
22	21	27	52	30	76	72	45	80	23	24	24	17
23	21	26	47	30	66	352	43	68	23	22	21	17
24	21	25	38	26	76	137	41	62	*24	20	24	18
25	21	25	30	22	63	102	81	70	82	20	23	18
26	21	30	31	20	52	82	68	66	55	1,340	21	18
27	21	88	27	18	56	72	56	50	36	109	21	18
28	20	49	24	17	44	64	57	44	46	60	20	18
29	20	28	26	18	.....	58	60	43	32	52	19	18
30	20	22	28	19	.....	63	70	41	28	63	19	17
31	21	.....	28	20	.....	100	.....	38	.....	74	19	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 18-29, 1951; Jan. 1, 2, Nov. 28 to Dec. 4, Dec. 10-14, 20, 21, 24-28, 1952; Jan. 4-9, Jan. 25 to Feb. 2, Feb. 14-16, 22-24, Mar. 2-8 1953.

Little Maquoketa River near Durango, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	16	19	20	19	14	19	21	480	1,510	39	20	16
2	16	19	21	19	16	20	20	305	501	40	20	15
3	17	19	30	20	*21	17	20	224	1,310	45	20	15
4	17	18	45	18	25	15	18	g153	466	42	19	15
5	17	18	30	19	44	14	20	g130	265	37	20	16
6	16	18	28	19	39	16	313	g102	186	34	20	15
7	17	18	26	18	30	17	194	g81	153	54	18	15
8	17	19	23	19	26	17	84	g70	121	38	20	14
9	17	19	24	17	26	17	55	g55	102	33	20	*15
10	18	20	24	15	26	17	50	g55	99	30	19	21
11	18	20	25	14	24	17	41	g54	91	28	17	18
12	17	20	20	13	20	17	33	g48	74	27	16	17
13	17	20	24	12	18	17	30	g45	64	25	16	17
14	17	20	21	12	20	16	*28	g41	61	24	19	19
15	17	20	18	12	33	16	40	g37	55	24	21	18
16	17	20	*19	12	42	17	84	g34	*67	22	21	18
17	17	*20	16	12	24	18	47	g31	58	22	21	19
18	17	20	15	12	*24	*18	41	g30	48	23	*25	19
19	25	*22	18	*11	23	21	30	g32	72	22	30	17
20	*21	33	20	11	28	21	39	*g31	181	21	20	15
21	18	30	21	11	36	19	62	30	945	*29	18	15
22	*17	25	22	11	28	17	54	29	495	30	17	*16
23	18	22	20	11	24	17	44	27	118	25	17	15
24	17	21	19	11	22	19	62	26	86	26	20	15
25	17	21	20	11	21	53	537	24	70	25	25	15
26	19	20	21	11	19	44	120	24	61	*23	25	15
27	19	21	22	11	21	30	*148	*437	54	21	25	15
28	19	20	22	11	20	26	*106	713	45	21	21	15
29	19	21	22	12	.....	24	88	122	50	23	19	31
30	19	21	21	12	.....	21	78	82	64	22	17	43
31	19	.....	19	12	.....	22	.....	72	.....	21	16	.....
1954-55												
1	31	17	19	19	15	279	37	50	25	23	*334	9.2
2	33	19	18	20	15	224	35	45	571	21	46	8.8
3	42	19	17	19	14	191	34	42	101	20	26	8.6
4	28	18	16	20	15	141	33	*46	51	19	20	8.2
5	24	18	15	35	15	54	51	36	43	18	19	7.9
6	24	19	15	29	14	25	50	33	78	44	18	7.3
7	22	19	15	24	14	22	40	31	72	27	16	7.3
8	21	18	16	22	15	28	35	28	64	20	14	*7.3
9	21	17	17	21	15	42	32	51	51	24	13	7.3
10	473	18	17	18	15	58	30	104	45	22	12	8.0
11	74	17	16	17	14	68	30	54	93	19	12	8.0
12	35	17	17	17	13	45	30	44	80	17	11	8.0
13	26	17	16	16	13	36	37	41	62	16	10	*8.6
14	27	17	15	16	13	42	55	36	54	15	10	9.0
15	28	17	*19	15	13	91	41	33	*44	16	9.8	8.6
16	24	18	16	15	13	45	36	30	40	21	10	8.6
17	22	18	19	15	*15	*31	32	27	36	18	9.6	8.8
18	20	*18	19	15	15	30	30	*26	34	16	*9.0	8.8
19	19	18	17	15	154	30	*30	26	46	*15	8.6	9.0
20	18	18	15	*15	1,830	30	33	25	37	*14	8.4	9.2
21	*18	17	16	15	60	56	27	24	*31	14	8.2	10
22	18	17	18	15	43	43	24	24	28	14	8.2	11
23	17	18	19	14	33	36	28	30	26	15	8.2	10
24	17	20	18	14	26	31	636	35	25	18	8.4	9.6
25	17	20	17	14	22	27	221	41	24	15	8.6	8.4
26	17	19	16	13	310	24	129	32	22	14	9.2	8.6
27	18	19	15	12	496	27	98	73	21	14	9.2	10
28	18	18	14	12	88	30	80	41	20	16	9.2	11
29	17	18	16	12	.....	33	66	51	20	15	9.2	12
30	17	17	18	13	.....	*37	55	33	23	16	9.6	13
31	17	.....	19	14	.....	40	.....	28	.....	17	9.6	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage discharge relation affected by ice Dec. 21-23, 1953; Jan. 11 to Feb. 2, Mar. 4, 5, Dec. 4-7, 20, 21, 25-30, 1954; Jan. 4-16, 21-30, Feb. 3, 6, 7, 11-16, 21-25, Mar. 6-9, 25-27 1955. Backwater from debris Aug. 4 to Sept. 30, 1955.

Little Maquoketa River near Durango, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	13.1	18.7	13.8	14.1	109	223	203	146	99.6	272	58.5	36.1
1951-52.....	177	132	57.4	123	147	276	135	85.5	47.5	35.0	85.4	24.5
1952-53.....	20.8	29.5	32.3	52.6	248	112	69.1	70.0	51.4	117	52.9	18.2
1953-54.....	17.8	20.8	22.5	13.8	25.5	20.6	84.3	117	251	28.9	20.1	17.6
1954-55.....	38.8	18.0	16.8	17.1	118	61.2	69.8	39.4	62.2	18.5	23.0	9.0

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.101	0.144	0.106	0.108	1.30	1.72	1.56	1.12	0.766	2.09	0.450	0.278
1951-52.....	1.36	1.02	.442	.946	1.13	2.12	1.04	.658	.365	.269	.657	.188
1952-53.....	.160	.227	.248	.405	1.91	.862	.532	.538	.395	.909	.407	.140
1953-54.....	.137	.160	.173	.106	.196	.158	.648	.900	1.93	.222	.155	.135
1954-55.....	.298	.138	.129	.132	.909	.471	.537	.303	.478	.142	.177	.069

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.12	0.16	0.12	0.13	1.30	1.98	1.74	1.30	0.85	2.41	0.52	0.31
1951-52.....	1.57	1.13	.51	1.09	1.22	2.45	1.16	.76	.41	.31	.76	.21
1952-53.....	.18	.25	.29	.47	1.99	.99	.59	.62	.44	1.04	.47	.16
1953-54.....	.16	.18	.20	.12	.20	.18	.72	1.04	2.15	.26	.18	.15
1954-55.....	.34	.15	.15	.15	.95	.54	.60	.35	.53	.16	.20	.08

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	73.7	7.70
1951....	July 8, 1951...	19.98	14,800	12	105	0.808	11.00	132	13.81
1952....	Aug. 20, 1952..	14.22	6,180	21	111	.854	11.58	86.8	9.09
1953....	Feb. 20, 1953.	18.40	11,100	17	71.7	.552	7.49	69.9	7.31
1954....	June 1, 1954..	14.35	6,460	11	53.1	.408	5.54	54.2	5.64
1955....	Feb. 20, 1955.	12.93	5,120	7.3	40.4	.311	4.20	.....	.....

Peak Discharge (base, 3,000 cfs)

1951: Feb. 25 (6:30 p.m.) about 5,500 cfs (14.76 ft.); Apr. 29 (6 a.m.) 3,340 cfs (10.82 ft.); July 8 (10 p.m.) 14,800 cfs (19.98 ft.); Oct. 4 (9 a.m.) 4,160 cfs (11.88 ft.); Nov. 13 (11:30 a.m.) 3,200 cfs (10.65 ft.).

1952: Aug. 20 (12 m.) 6,180 cfs (14.22 ft.).

1953: Feb. 20 (5 a.m.) 11,100 cfs (18.40 ft.); July 5 (11 p.m.) 4,880 cfs (12.58 ft.); July 26 (10:30 a.m.) 4,560 cfs (12.18 ft.).

1954: May 28 (7 a.m.) 3,140 cfs (10.25 ft.); June 1 (8:30 a.m.) 6,460 cfs (14.35 ft.); June 21 (11 p.m.) 5,750 cfs (13.49 ft.).

1955: Feb. 20 (5 a.m.) 5,120 cfs (12.93 ft.); June 2 (3 p.m.) 3,420 cfs (10.59 ft.).

Maquoketa River near Manchester, Iowa

LOCATION.—Lat. 42°27'20", long. 91°25'50", in NE¼ sec. 9, T. 88 N., R. 5 W., on left bank, 2 miles southeast of Manchester and 5 miles downstream from Honey and Prairie Creeks.

DRAINAGE AREA.—306 square miles.

RECORDS AVAILABLE.—April 1933 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 895.06 feet above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.—22 years, 194 cfs.

EXTREMES.—1933-55: Maximum discharge, 20,000 cfs June 13, 1947 (gage height, 21.36 feet, from floodmarks), from rating curve extended above 9,000 cfs by velocity-area studies; minimum daily, 6 cfs June 8, 29, 1934.

REMARKS.—Records good except those for periods of ice effect, doubtful, or no gage-height record, which are fair. Large diurnal fluctuation caused by hydroelectric plant 2 miles above station.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	a120	54	47	35	45	630	*578	738	1,020	150	200	231
2	a110	50	104	40	47	398	496	496	*4,550	148	146	186
3	a100	51	77	41	47	392	*470	402	1,830	227	112	186
4	a80	64	65	40	36	532	930	384	660	154	129	178
5	a80	59	56	40	44	780	1,520	359	496	222	154	140
6	a90	72	64	39	45	2,180	960	352	418	166	163	154
7	a95	72	58	36	36	1,480	4,130	341	370	171	163	164
8	a85	76	61	39	42	648	*2,020	310	386	3,730	236	154
9	*89	71	55	42	40	418	810	275	360	*9,200	364	140
10	72	46	52	46	*37	305	624	290	303	1,480	236	254
11	66	41	*54	45	39	201	600	334	286	666	274	476
12	71	48	61	50	35	207	1,300	282	256	496	244	347
13	66	102	55	49	34	198	1,270	198	336	470	212	336
14	50	96	51	48	34	178	756	196	282	430	276	271
15	47	54	50	47	34	180	540	214	239	359	408	232
16	75	61	46	*46	39	214	455	219	287	317	446	169
17	58	56	42	45	35	184	401	187	305	357	310	*159
18	60	*54	46	48	36	190	333	226	237	374	240	164
19	61	45	43	47	37	192	388	205	*220	360	193	131
20	60	52	41	44	36	152	324	280	221	284	174	160
21	44	46	42	38	37	194	338	240	194	606	240	161
22	48	44	44	42	38	260	660	218	218	1,140	*219	164
23	69	28	46	44	50	168	550	200	208	*512	167	111
24	41	54	36	46	60	176	422	221	139	343	171	126
25	59	47	40	48	1,000	231	1,200	189	221	299	175	142
26	65	45	37	49	6,780	504	1,880	556	212	238	1,180	94
27	32	46	41	49	4,450	2,100	*654	482	303	215	1,470	95
28	65	49	41	44	1,170	5,660	540	320	240	212	484	118
29	46	43	37	47	.....	6,620	3,470	220	279	150	338	129
30	48	43	38	42	.....	2,580	2,610	*196	218	216	284	126
31	63	.....	38	45	.....	804	.....	202	.....	197	253	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
Note—Stage-discharge relation affected by ice Dec. 14-31, 1950; Jan. 1 to Feb. 25, 1951.

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	160	257	190	119	a204	268	d1,300	157	137	116	69	89
2.....	131	221	168	128	239	191	d788	159	201	77	60	86
3.....	148	222	273	135	278	272	d523	155	165	83	a71	87
4.....	475	162	310	138	*252	113	d398	115	145	92	a100	66
5.....	613	229	309	138	240	*175	d320	150	135	82	a74	72
6.....	325	191	242	134	196	189	d251	149	126	80	a66	76
7.....	347	188	283	130	189	168	d*257	166	129	96	a64	65
8.....	290	183	226	*125	226	157	284	235	97	74	a64	67
9.....	196	167	173	124	161	144	268	235	133	68	a83	73
10.....	214	211	175	124	384	930	260	224	135	69	a80	70
11.....	187	158	169	125	808	2,460	248	193	120	73	*71	57
12.....	195	358	184	126	553	1,340	246	180	79	68	61	58
13.....	185	807	*218	132	544	1,070	323	171	86	75	70	63
14.....	118	1,170	139	147	449	838	509	146	113	105	69	71
15.....	165	587	105	195	332	665	862	*138	111	105	71	*66
16.....	162	405	129	182	250	484	583	144	a*108	91	142	64
17.....	258	326	110	283	219	435	414	149	a104	83	101	64
18.....	370	*206	162	350	217	404	345	103	a100	87	69	62
19.....	518	289	178	634	139	1,400	309	142	a98	118	69	61
20.....	438	238	173	932	179	878	273	118	a100	68	756	64
21.....	484	244	159	831	220	623	251	112	a102	*69	729	66
22.....	*1,110	148	157	772	113	d501	257	219	a112	69	297	66
23.....	876	243	155	a530	214	d419	244	1,120	a120	94	159	64
24.....	879	181	152	a390	136	d387	218	648	a106	86	84	62
25.....	707	150	152	a300	174	d346	207	428	a92	76	92	62
26.....	528	193	156	a228	170	d361	212	265	a89	69	100	53
27.....	414	183	162	a210	260	d405	144	251	90	85	92	63
28.....	363	179	170	a196	448	d520	196	228	110	69	91	60
29.....	339	173	160	a188	415	d800	181	231	77	66	82	55
30.....	303	177	190	a188	.....	d911	154	176	85	68	88	60
31.....	282	.....	146	a195	.....	d1,050	.....	244	.....	72	84	.....
1952-53												
1.....	52	55	60	54	50	220	366	261	119	94	203	88
2.....	54	54	63	57	56	180	354	281	113	90	205	85
3.....	50	53	65	57	52	140	302	266	72	116	*370	83
4.....	52	57	62	51	54	83	307	282	69	75	1,970	89
5.....	50	56	63	47	84	137	275	224	210	96	1,090	82
6.....	57	54	64	44	94	124	226	217	114	532	484	81
7.....	49	48	59	43	78	100	121	215	80	321	399	82
8.....	56	50	62	45	68	81	192	205	152	211	351	79
9.....	57	54	65	49	63	122	203	194	264	102	264	82
10.....	53	52	64	55	60	346	210	108	176	90	222	86
11.....	56	54	72	46	91	636	343	103	98	94	201	82
12.....	56	57	*64	51	88	445	222	264	145	96	191	61
13.....	*56	52	56	54	70	340	242	210	198	*190	176	67
14.....	57	55	49	57	60	335	*193	111	728	100	155	95
15.....	56	64	52	150	53	783	163	101	400	79	148	79
16.....	56	58	56	120	47	*568	331	182	267	70	139	77
17.....	55	93	53	84	47	369	313	100	174	92	130	*73
18.....	53	101	64	82	56	279	230	131	156	89	128	78
19.....	57	*86	57	78	83	270	129	113	84	88	127	44
20.....	55	63	77	74	2,590	239	213	107	107	232	120	66
21.....	57	62	78	71	2,340	190	114	*189	93	241	93	92
22.....	55	64	72	69	a1,700	194	144	240	*135	373	105	73
23.....	57	61	71	64	a1,200	780	141	179	88	178	106	74
24.....	57	61	68	*65	a830	854	137	127	81	92	107	76
25.....	55	60	57	59	630	422	168	207	127	90	103	78
26.....	54	70	50	58	397	302	193	172	202	827	105	41
27.....	58	66	52	58	462	252	310	120	96	1,160	84	65
28.....	56	62	50	54	351	185	204	134	100	427	98	90
29.....	58	58	50	52	.....	203	198	144	154	276	88	64
30.....	53	59	50	55	.....	244	200	83	89	198	87	68
31.....	55	.....	51	56	.....	293	.....	91	.....	382	88	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 13, 24-31, 1951; Jan. 2-13, Feb. 3, 4, Nov. 25-30, Dec. 1, 13-15, 25-31, 1952; Jan. 5-8, 15-19, Feb. 14-18, Mar. 2, 3, 1953.

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	66	31	72	49	38	76	53	2,260	627	125	54	70
2	74	81	64	43	35	60	55	1,360	608	152	97	65
3	53	60	73	35	33	49	40	1,520	1,520	144	66	60
4	37	65	85	50	32	53	23	711	1,400	120	80	61
5	87	65	95	52	38	59	52	439	561	159	68	47
6	62	64	45	43	38	56	87	348	372	143	86	74
7	62	55	86	43	30	30	155	277	331	130	52	68
8	56	30	71	43	35	75	122	194	277	120	75	61
9	67	95	75	43	42	49	150	195	186	158	95	69
10	62	55	67	30	40	53	91	253	261	86	70	73
11	30	58	67	41	39	53	50	216	157	59	70	56
12	72	60	63	43	46	54	*97	174	142	105	67	44
13	57	61	38	41	53	60	80	135	119	95	68	80
14	64	68	*62	42	34	29	60	143	*165	90	54	64
15	61	33	60	38	64	*66	124	109	150	84	72	58
16	60	*87	50	34	*55	51	428	82	129	82	96	62
17	61	56	45	30	51	53	257	*163	166	84	72	58
18	31	60	54	*32	59	50	155	173	106	57	88	60
19	*84	63	54	37	81	66	203	87	115	*82	96	38
20	61	82	45	33	72	55	119	131	78	101	*85	*73
21	66	75	48	31	32	27	157	88	222	102	97	64
22	68	36	53	33	72	72	225	81	1,270	97	49	59
23	72	91	45	28	74	44	190	61	653	111	81	50
24	57	63	47	27	58	46	113	140	330	157	89	55
25	31	63	50	31	60	74	280	106	239	81	81	48
26	76	57	53	34	56	63	426	71	170	104	83	35
27	65	59	39	36	59	64	473	111	88	100	91	62
28	69	56	54	35	28	31	526	663	152	81	97	61
29	64	46	48	40	.....	78	302	517	182	84	51	88
30	56	68	44	35	.....	44	308	295	108	87	91	132
31	67	.....	47	34	.....	50	.....	238	.....	84	64	.....
1954–55												
1	130	79	65	61	46	195	118	83	89	56	50	39
2	118	84	63	44	43	569	119	148	127	54	60	37
3	97	78	65	74	47	560	76	144	177	40	57	38
4	137	81	57	74	40	582	119	180	133	61	55	32
5	123	71	39	101	44	321	199	151	92	94	49	30
6	92	77	74	92	50	136	134	162	132	365	51	43
7	94	36	64	83	54	128	138	95	145	204	38	38
8	92	95	55	82	50	157	180	86	100	191	43	37
9	64	71	71	53	45	174	88	172	106	125	52	38
10	91	69	66	77	34	170	49	303	106	114	53	36
11	188	71	61	84	40	173	103	257	88	158	41	28
12	176	72	33	65	44	105	176	180	59	166	51	26
13	130	70	*69	62	40	84	127	192	104	74	45	42
14	114	35	70	78	47	175	305	125	125	61	37	40
15	114	*88	64	68	40	248	280	65	82	65	*43	39
16	110	72	59	38	45	203	*168	*104	65	66	53	*38
17	61	65	63	63	*41	132	124	98	69	50	51	43
18	*102	67	60	*68	45	*138	152	84	71	81	42	30
19	107	74	30	57	130	91	204	109	48	*62	42	27
20	87	65	65	58	1,800	51	130	90	*92	67	40	39
21	91	34	75	60	a800	102	80	63	70	63	35	41
22	111	86	51	45	a360	99	50	57	68	64	40	44
23	83	69	60	37	a250	93	100	89	68	60	36	67
24	45	73	60	58	a210	102	717	88	57	50	39	44
25	80	69	63	53	a170	107	807	80	64	87	42	37
26	107	69	37	48	a270	86	473	81	38	61	42	70
27	91	61	63	43	401	62	316	93	57	59	44	63
28	89	34	70	46	294	99	243	101	57	55	34	77
29	82	79	62	53	.....	107	201	49	64	59	33	55
30	74	67	64	38	.....	113	127	85	58	48	42	57
31	34	.....	70	52	.....	125	.....	88	.....	42	42	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 16-31, 1953; Jan. 1 to Feb. 11, Dec. 27-30, 1954; Jan. 6-9, 13-15, Jan. 22 to Feb. 20, Mar. 26-28, 1955.

Maquoketa River near Manchester, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	68.2	55.6	50.6	43.9	513	937	1,041	301	530	772	312	183
1951-52.....	383	282	184	272	284	613	361	231	114	81.7	133	66.4
1952-53.....	54.9	61.3	60.5	63.2	420	314	225	173	163	229	268	76.2
1953-54.....	61.2	61.4	58.0	37.6	48.4	54.5	180	366	363	105	76.9	63.5
1954-55.....	99.5	68.7	60.3	61.8	196	179	204	119	87.0	90.6	44.9	42.5

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.223	0.182	0.165	0.143	1.68	3.06	3.40	0.984	1.73	2.52	1.02	0.598
1951-52.....	1.25	.922	.601	.889	.928	2.00	1.18	.755	.373	.267	.435	.217
1952-53.....	.179	.200	.198	.207	1.37	1.03	.735	.565	.533	.748	.876	.249
1953-54.....	.200	.201	.190	.123	.158	.178	.588	1.20	1.19	.343	.251	.208
1954-55.....	.325	.225	.197	.202	.641	.585	.667	.389	.284	.296	.147	.139

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.26	0.20	0.19	0.17	1.75	3.53	3.60	1.13	1.03	2.91	1.18	0.67
1951-52.....	1.44	1.03	.69	1.02	1.00	2.31	1.32	.87	.41	.31	.50	.24
1952-53.....	.21	.22	.23	.24	1.43	1.18	.82	.65	.59	.86	1.01	.28
1953-54.....	.23	.22	.22	.14	.16	.21	.66	1.38	1.32	.40	.29	.23
1954-55.....	.37	.25	.23	.23	.67	.67	.74	.45	.32	.34	.17	.15

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....								180	7.98
1951.....	July 9, 1951...	19.65	16,800	28	399	1.30	17.72	456	20.23
1952.....	Mar. 11, 1952.	9.12	2,780	53	251	.820	11.14	194	8.64
1953.....	Feb. 20, 1953.	10.66	4,260	41	174	.569	7.72	174	7.73
1954.....	May 1, 1954..	9.60	3,230	23	123	.402	5.46	127	5.64
1955.....	Feb. 20, 1955.	9.32	2,500	26	104	.340	4.59	.....	.....

Peak Discharge (base, 2,200 cfs)

1951: Feb. 26 (6 p.m.) 8,060 cfs (14.03 ft.); Mar. 6 (4:30 a.m.) 2,300 cfs (8.41 ft.); Mar. 29 (7 a.m.) 7,940 cfs (13.90 ft.); Apr. 7 (4 p.m.) 5,440 cfs (11.77 ft.); Apr. 26 (4 a.m.) 2,620 cfs (8.90 ft.); Apr. 29 (9 p.m.) 7,340 cfs (13.37 ft.); June 2 (5:30 p.m.) 7,940 cfs (13.94 ft.); July 9 (2 a.m.) 16,800 cfs (19.65 ft.); Aug. 26 (11 p.m.) 2,380 cfs (8.59 ft.).

1952: Mar. 11 (3 a.m.) 2,780 cfs (9.12 ft.).

1953: Feb. 20 (10 p.m.) 4,260 cfs (10.66 ft.); July 26 (8:30 p.m.) 2,260 cfs (8.40 ft.); Aug. 4 (10:30 a.m.) 2,300 cfs (8.46 ft.).

1954: May 1 (6:30 p.m.) 3,230 cfs (9.60 ft.).

1955: Feb. 20, about 2,500 cfs.

Maquoketa River near Maquoketa, Iowa

LOCATION.—Lat. 42°05'10", long. 90°38'20", in SW¼NE¼ sec. 17, T. 84 N., R. 3 E., on right bank 20 feet upstream from bridge on State Highway 62, 1,200 feet upstream from Mill Creek, 2 miles downstream from North Fork, and 3 miles northeast of Maquoketa.

DRAINAGE AREA.—1,550 square miles, approximately.

RECORDS AVAILABLE.—September 1913 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 636.52 feet above mean sea level, adjustment of 1912. Prior to July 14, 1924, chain gage at site 20 feet downstream at same datum.

AVERAGE DISCHARGE.—42 years, 964 cfs.

EXTREMES.—1913-55: Maximum discharge, 48,000 cfs June 27, 1944 (gage height, 24.70 feet); minimum daily, 105 cfs Feb. 11-20, 1936.

REMARKS.—Records good except those for periods of ice effect, which are poor. Diurnal fluctuation caused by powerplant 4 miles above station.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	634	313	325	190	210	3,550	3,150	5,410	1,170	857	852	928
2	455	320	388	190	210	2,380	2,450	2,660	2,050	728	806	845
3	424	322	360	200	215	2,250	*2,010	2,130	4,200	844	778	842
4	392	328	320	220	225	2,520	2,070	1,770	4,920	1,130	792	768
5	441	317	290	215	240	2,190	2,130	1,470	2,440	806	780	718
6	405	332	280	230	250	3,150	2,590	1,530	2,010	739	1,220	73
7	439	334	270	220	*240	3,870	2,870	1,710	1,340	719	925	73
8	412	334	265	220	230	2,940	5,300	1,370	1,430	3,730	1,110	621
9	399	363	260	220	245	2,070	4,570	1,320	1,300	*16,900	1,020	624
10	366	359	250	220	255	1,420	2,380	2,100	1,330	*15,700	880	695
11	399	350	250	240	265	1,260	2,070	2,870	1,270	8,880	890	728
12	*419	324	240	220	310	1,100	2,250	2,010	1,090	3,070	840	742
13	401	354	240	235	320	1,030	2,730	1,710	1,240	2,350	839	1,020
14	394	*346	240	230	310	962	3,010	1,440	1,010	2,240	934	1,460
15	366	343	240	240	320	958	2,250	1,270	1,030	1,940	1,010	1,070
16	380	527	255	250	330	925	1,830	1,200	1,080	2,090	1,250	828
17	366	508	240	250	330	874	1,470	1,120	1,150	2,850	1,280	772
18	329	435	230	*240	360	936	1,590	1,100	972	2,040	1,130	693
19	340	376	230	310	2,000	915	1,300	1,170	937	1,670	1,000	648
20	350	364	225	340	2,000	728	1,220	1,170	916	1,460	868	*780
21	370	336	215	260	2,400	800	1,220	1,100	978	1,470	1,250	1,070
22	384	328	*210	240	2,100	900	1,270	1,040	1,310	1,570	1,120	1,110
23	381	320	220	260	1,600	1,320	*1,320	1,040	1,050	1,980	*960	1,120
24	352	310	210	250	1,700	1,240	1,370	1,040	1,160	*1,670	862	1,100
25	326	335	200	240	8,000	1,140	1,470	1,020	*956	1,360	824	1,060
26	350	350	200	235	19,800	1,120	2,130	2,250	912	*1,100	1,400	1,110
27	348	360	200	250	*15,500	5,600	3,230	2,520	858	1,160	1,360	1,030
28	356	330	195	240	*10,500	8,140	2,010	1,950	864	1,070	2,160	1,020
29	332	315	200	230	.....	10,600	4,470	1,650	830	940	1,490	970
30	336	310	200	220	.....	12,400	5,500	1,470	834	930	1,320	945
31	326	.....	200	210	.....	7,270	.....	*1,240	.....	926	1,070	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 23-30, Dec. 4-31, 1950; Jan. 1 to Feb. 25, 1951.

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	525	1,280	946	800	1,660	1,240	3,080	1,060	856	548	410	446
2	458	1,250	946	770	2,040	1,200	2,940	1,010	914	600	440	406
3	600	1,140	1,000	750	1,790	1,040	2,380	981	830	702	456	418
4	1,050	960	1,040	720	1,620	851	2,060	943	845	600	1,460	436
5	3,030	897	1,040	700	1,460	792	1,830	931	807	506	619	393
6	1,720	841	1,020	710	1,320	747	1,650	818	788	478	438	363
7	1,550	888	1,080	720	*1,170	862	1,500	906	738	499	444	380
8	1,520	912	1,020	730	1,150	*940	1,370	981	752	489	424	386
9	1,260	1,060	986	740	1,220	940	1,420	950	763	474	832	386
10	1,070	960	924	*750	1,350	3,840	*1,360	1,020	642	500	527	444
11	948	924	*917	740	1,880	12,000	1,330	1,040	646	483	475	408
12	860	*1,210	884	730	1,880	8,070	1,200	1,020	679	504	423	344
13	830	2,730	574	730	1,750	6,900	1,370	*902	746	447	401	345
14	788	4,200	480	770	1,760	4,560	1,440	934	832	501	*424	349
15	738	3,320	700	1,200	1,570	2,940	1,770	937	754	532	410	403
16	708	2,480	850	1,800	1,430	2,450	1,890	887	689	534	548	414
17	1,250	1,850	900	2,300	1,360	2,190	1,740	792	694	580	486	382
18	1,720	1,670	920	3,000	1,160	2,250	1,650	833	648	588	440	375
19	1,600	1,470	920	4,500	1,090	3,870	1,560	788	659	596	425	*372
20	1,760	1,420	900	6,070	992	3,630	1,500	684	*668	550	3,000	356
21	4,890	1,330	870	2,820	950	2,870	1,370	767	784	504	2,330	342
22	3,620	1,220	840	1,960	924	2,450	1,470	922	1,030	460	1,720	369
23	3,010	1,170	820	1,600	932	2,310	1,440	1,240	965	*463	1,210	358
24	3,260	1,100	800	1,200	901	2,070	1,420	1,500	812	460	920	312
25	3,260	1,020	780	1,150	933	1,890	1,300	2,310	750	466	646	322
26	*2,640	984	770	1,100	856	1,770	1,320	1,370	750	441	542	312
27	2,160	908	760	1,100	960	1,650	1,200	1,420	752	408	492	320
28	1,960	988	750	1,100	1,130	1,770	1,120	1,140	666	460	526	311
29	1,600	1,030	760	1,200	1,150	1,830	985	994	666	440	516	360
30	1,430	968	780	1,300	.....	2,190	1,100	900	636	410	474	363
31	1,400	.....	820	1,500	.....	2,520	.....	978	.....	400	462	.....
1952-53												
1	352	352	427	410	410	1,200	1,310	873	501	484	1,070	334
2	327	338	467	410	420	1,130	1,410	938	*502	518	942	327
3	321	350	472	380	450	992	1,310	1,070	520	516	938	374
4	345	339	495	360	484	796	1,220	932	538	494	1,150	390
5	342	340	540	370	750	744	1,110	877	1,040	760	1,090	360
6	347	349	516	410	6,400	743	1,040	900	966	2,080	2,270	378
7	332	340	452	420	2,500	666	828	931	650	1,600	*1,080	419
8	316	346	452	430	1,500	582	905	883	1,170	1,240	1,490	358
9	333	338	552	420	1,260	642	797	833	1,320	*1,050	1,170	332
10	343	338	490	420	800	1,190	852	700	885	794	961	334
11	352	354	446	410	*1,600	4,030	788	760	722	645	780	352
12	391	320	*413	430	1,070	2,120	823	654	793	536	818	376
13	343	331	350	450	1,200	1,500	824	670	842	587	754	346
14	354	324	299	600	890	1,500	723	646	1,510	*1,160	625	339
15	370	372	334	1,200	700	3,870	851	670	1,340	614	630	338
16	*340	*367	365	2,000	600	2,270	*954	646	1,240	590	568	333
17	350	2,490	410	1,000	500	1,560	878	632	1,140	635	*606	342
18	355	2,730	415	702	*534	1,410	796	620	976	602	492	362
19	361	774	442	659	892	*1,230	760	*535	738	558	477	363
20	352	514	1,380	704	21,200	1,100	852	547	659	642	480	336
21	349	408	1,390	649	22,300	907	647	846	661	499	447	*334
22	336	459	939	661	4,990	1,020	680	1,110	598	460	496	326
23	373	427	700	670	2,620	1,570	667	1,190	500	580	432	334
24	360	416	550	610	1,470	1,330	683	1,410	530	718	438	318
25	387	456	480	574	1,660	1,670	697	1,350	*692	566	402	332
26	366	500	440	513	1,610	1,300	740	934	652	488	361	338
27	360	430	400	460	1,400	1,240	699	830	624	1,160	390	364
28	328	368	370	430	1,300	1,310	634	835	701	1,020	412	344
29	312	347	370	410	.....	988	810	782	682	1,310	395	354
30	318	352	380	390	.....	830	832	707	569	1,110	386	*330
31	354	.....	400	390	.....	948	.....	635	.....	1,600	334	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1-19, 25-31, Nov. 26, 27, Dec. 28-31, 1952; Jan. 1-17, Jan. 27 to Feb. 3, Feb. 7, 8, 15-17, 1953.

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	310	350	333	370	360	366	315	1,070	2,240	666	432	375
2	318	336	346	365	400	330	330	2,150	3,320	637	395	376
3	316	338	411	360	460	298	318	3,040	2,580	668	370	390
4	302	284	442	350	540	228	278	2,640	3,700	646	368	384
5	297	295	424	330	*720	216	308	1,960	3,250	690	402	339
6	287	295	449	310	660	256	406	1,390	2,140	541	399	371
7	270	304	424	300	490	301	551	1,220	1,660	574	380	362
8	320	313	366	270	560	362	402	1,100	1,420	595	388	276
9	324	318	378	300	680	398	463	864	1,110	532	384	303
10	334	312	274	450	520	336	448	802	1,040	506	398	*325
11	340	308	354	410	440	316	408	634	924	452	364	361
12	310	310	371	390	510	324	490	670	885	520	344	360
13	331	322	366	370	664	326	378	676	862	434	347	312
14	320	297	418	365	396	278	*334	648	746	418	364	308
15	298	333	360	360	486	283	398	564	790	419	356	320
16	288	332	300	360	490	312	428	530	1,100	408	886	294
17	302	*330	250	355	403	296	479	429	*650	408	706	304
18	314	291	290	350	*394	*288	656	488	680	388	*3,000	368
19	305	334	320	350	422	290	640	462	621	412	1,680	446
20	324	*372	350	*350	422	306	514	*465	625	388	841	388
21	342	382	365	345	432	277	668	455	870	364	576	307
22	*360	370	375	340	414	280	733	400	2,030	*438	480	*277
23	*338	360	380	340	380	294	594	418	2,160	438	454	270
24	296	348	385	340	352	318	579	417	1,760	436	454	256
25	297	332	385	340	376	436	682	348	1,170	476	430	237
26	338	360	380	340	366	332	710	340	922	484	641	151
27	342	373	380	340	364	363	1,540	409	828	432	609	187
28	308	356	380	340	386	348	1,170	*665	750	454	533	278
29	310	309	378	345	.....	340	*1,120	1,610	583	400	507	502
30	332	343	370	345	.....	328	1,020	1,440	644	413	492	472
31	330	.....	370	350	.....	318	.....	1,140	.....	526	448	.....
1954-55												
1	450	388	331	450	250	1,010	577	1,010	486	420	*908	225
2	553	358	348	450	245	1,340	534	*870	904	401	403	245
3	600	338	330	415	235	1,390	525	705	920	364	324	246
4	538	340	315	400	240	1,630	546	744	726	352	309	234
5	564	346	280	460	240	1,600	510	761	696	353	989	238
6	478	380	313	520	230	1,100	565	732	1,170	499	1,200	243
7	489	322	304	460	220	610	614	708	1,230	442	750	*232
8	464	370	284	460	220	656	577	645	979	580	424	213
9	441	348	304	470	220	882	566	646	805	1,520	360	206
10	1,190	356	340	410	205	872	539	978	697	1,020	316	212
11	1,950	340	340	370	205	*768	570	1,110	662	636	311	197
12	1,020	320	304	360	195	720	490	1,030	676	468	304	204
13	762	333	328	350	185	750	517	902	706	469	298	*218
14	734	296	326	330	195	687	601	874	604	466	284	242
15	696	347	*308	340	200	590	843	752	605	503	263	252
16	612	352	338	350	205	686	796	692	570	467	288	238
17	604	318	340	350	205	641	868	584	526	344	251	232
18	506	*342	325	350	*210	*590	714	560	540	*352	*274	223
19	428	350	270	320	450	500	*1,870	*556	504	354	280	222
20	420	340	285	*310	11,100	502	872	548	686	332	290	237
21	*441	309	295	300	4,760	537	776	529	605	334	261	235
22	427	340	300	290	1,700	482	680	538	*473	310	280	240
23	403	320	300	280	1,300	496	638	556	484	*328	260	404
24	400	334	310	270	1,100	505	2,480	608	441	292	230	401
25	408	340	305	260	950	480	2,580	562	461	358	229	274
26	408	337	305	260	1,590	430	2,450	599	440	382	248	326
27	304	332	330	260	3,550	400	1,850	660	411	342	256	320
28	370	290	350	260	2,450	440	1,580	738	338	336	238	300
29	381	328	320	260	.....	476	1,270	638	306	320	273	954
30	374	320	260	260	.....	511	1,050	601	428	306	257	445
31	364	.....	350	255	.....	542	.....	510	.....	278	248	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 16-31, 1953; Jan. 1 to Feb. 12, Dec. 3-5, 18-31, 1954; Jan. 1 to Feb. 19, Feb. 22-25, Mar. 6, 7, 24-28, 1955.

Maquoketa River near Maquoketa, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	386	351	247	236	2,556	2,792	2,441	1,705	1,421	2,739	1,065	893
1951-52	1,718	1,403	863	1,460	1,326	2,731	1,613	1,032	759	506	740	372
1952-53	347	542	521	579	2,953	1,372	871	840	800	875	787	350
1953-54	317	331	367	349	467	314	583	950	1,403	489	594	330
1954-55	577	340	314	352	1,173	756	968	711	638	450	375	282

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.249	0.226	0.159	0.152	1.65	1.80	1.57	1.10	0.917	1.77	0.687	0.576
1951-52	1.11	.905	.557	.942	.855	1.76	1.04	.666	.490	.326	.477	.240
1952-53	.224	.350	.336	.374	1.91	.885	.562	.542	.522	.565	.508	.226
1953-54	.205	.214	.237	.225	.301	.203	.376	.613	.905	.315	.383	.213
1954-55	.372	.219	.203	.227	.757	.488	.625	.459	.412	.290	.242	.182

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.29	0.25	0.18	0.18	1.72	2.08	1.76	1.27	1.02	2.04	0.79	0.64
1951-52	1.28	1.01	.64	1.09	.92	2.03	1.16	.77	.55	.38	.55	.27
1952-53	.26	.39	.39	.43	1.98	1.02	.63	.62	.58	.65	.59	.25
1953-54	.24	.24	.27	.26	.31	.23	.42	.71	1.01	.36	.44	.24
1954-55	.43	.24	.23	.26	.79	.56	.70	.53	.46	.33	.28	.20

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								972	8.52
1951	Feb. 26, 1951	(1)18.20	21,200	190	1,395	0.900	12.22	1,647	14.43
1952	Mar. 11, 1952	15.57	14,000	311	1,212	.782	10.65	998	8.76
1953	Feb. 20, 1953	21.61	33,900	299	890	.574	7.79	857	7.50
1954	Aug. 18, 1954	8.52	4,080	151	540	.348	4.73	559	4.88
1955	Feb. 20, 1955	15.04	13,000	185	573	.370	5.01		

(1) Maximum gage height, 18.43 ft. July 9, 1951.

Peak Discharge (base, 7,500 cfs)

1951: Feb. 26 (8 a.m.) 21,200 cfs (18.20 ft.); Mar. 30 (4 a.m.) 12,500 cfs (14.72 ft.); July 9 (3:30 p.m.) 19,100 cfs (18.43 ft.).

1952: Jan. 19 (10 p.m.) 9,080 cfs (12.26 ft.); Mar. 11 (1:30 p.m.) 14,000 cfs (15.57 ft.).

1953: Feb. 6 (8 a.m.) 8,500 cfs (12.00 ft.); Feb. 20 (11 p.m.) 33,900 cfs (21.61 ft.).

1954: No peak above base.

1955: Feb. 20 (5 p.m.) 13,000 cfs (15.04 ft.).

Mississippi River at Clinton, Iowa

LOCATION.—Lat. 41°53'40", long. 90°09'24", in NE¼ sec. 16, T. 22 N., R. 3 E., on left bank in downstream end of lower lock guide wall of dam 13, 1.2 miles upstream from Otter Creek, 2 miles north of Fulton, Ill., 2.1 miles upstream from bridge on U. S. Highway 30 at Clinton, Iowa, and at mile 522.6 above Ohio River.

DRAINAGE AREA.—85,600 square miles, approximately, at U. S. Highway 30, where discharge measurements are made.

RECORDS AVAILABLE.—October 1932 to September 1955 (prior to October 1939, published as "at Le Claire") in reports of Geological Survey. June 1873 to December 1932 (published as "at Le Claire") in report of Iowa State Planning Board.

GAGE.—Water-stage recorder. Datum of gage is 568.16 feet above mean sea level, datum of 1929. June 1873 to June 2, 1934, staff gage in stone well and June 3, 1934, to May 26, 1939, water-stage recorder 23 miles downstream at Le Claire, at different datum. Auxiliary water-stage recorder 10.8 miles downstream from base gage at datum 5.48 feet lower.

AVERAGE DISCHARGE.—16 years, 47,640 cfs.

EXTREMES.—1939-55: Maximum daily discharge, 225,400 cfs Apr. 27, 1952; maximum gage height, 21.24 feet Apr. 27, 1952 (auxiliary gage); minimum daily discharge, 12,000 cfs Dec. 27-30, 1939; minimum gage height, -0.70 feet Dec. 30, 1939.

Flood of June 25, 1880, reached a discharge of 243,000 cfs (estimated by Corps of Engineers).

REMARKS.—Records good except those for periods of ice effect, which are fair. Flow regulated by reservoirs and navigation dams.

COOPERATION.—Gage-height record at dam 13 and several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	22,000	21,200	14,400	20,500	19,500	64,600	81,400	206,900	*69,600	69,900	67,700	35,600
2	22,800	20,200	16,000	20,800	18,800	53,500	74,200	204,600	73,300	68,900	56,200	35,800
3	23,300	20,500	18,500	19,200	17,800	47,500	69,000	*195,800	80,000	69,000	47,200	42,200
4	26,800	21,200	20,300	19,100	17,600	49,800	61,900	186,600	82,800	76,600	44,800	47,100
5	26,600	22,200	20,300	19,100	18,500	49,700	56,100	176,800	79,900	78,100	38,500	44,400
6	25,600	21,700	19,500	19,100	*19,500	54,600	61,200	167,200	77,500	78,900	39,000	43,800
7	25,200	20,600	24,000	19,100	19,800	54,300	73,400	157,900	75,400	79,900	52,500	46,100
8	24,700	20,800	25,000	19,100	19,600	50,500	82,400	149,500	75,500	89,500	50,900	45,500
9	25,100	22,700	25,000	19,100	18,800	45,600	94,800	141,100	75,000	116,400	44,200	44,500
10	25,700	22,400	24,300	19,000	18,000	39,400	99,100	135,400	74,900	126,900	44,000	45,700
11	25,000	17,500	24,500	19,000	17,600	43,000	99,600	129,000	75,400	144,800	45,800	50,200
12	24,300	17,000	23,200	19,000	17,300	40,100	102,800	123,000	75,600	116,200	48,000	49,700
13	*24,500	16,200	23,000	19,100	17,200	36,100	110,600	116,200	75,800	103,200	47,200	52,200
14	23,000	*15,500	23,000	19,200	18,500	34,600	118,000	106,300	73,300	99,700	48,400	52,400
15	23,300	15,500	22,500	19,200	19,200	42,800	126,700	100,600	68,900	98,700	51,300	53,500
16	21,800	19,500	21,300	19,200	19,800	44,100	137,600	97,100	64,900	99,200	51,500	55,300
17	21,300	22,900	20,500	19,500	20,500	40,100	150,600	95,400	60,400	102,000	44,600	55,900
18	21,500	22,300	20,400	21,400	22,500	41,000	165,100	90,900	52,500	105,000	48,000	57,000
19	20,400	22,200	20,500	22,300	28,000	42,000	179,900	88,900	50,200	100,100	49,900	60,700
20	20,300	22,500	20,500	23,000	32,000	38,100	193,800	87,200	52,800	100,100	49,700	64,100
21	20,400	24,100	20,600	23,000	29,500	35,200	202,300	84,900	52,700	96,600	51,300	70,300
22	20,100	23,400	*20,700	23,000	26,500	34,800	213,800	82,200	46,400	95,300	51,100	75,800
23	20,700	20,500	20,800	22,800	25,000	39,700	*220,200	80,800	44,500	91,500	45,300	76,300
24	21,000	17,500	22,300	22,600	25,000	34,300	*219,700	80,300	45,400	89,500	*39,300	76,700
25	20,600	14,000	22,200	22,500	46,200	31,100	220,400	77,300	43,500	91,900	36,800	*78,300
26	20,800	14,000	22,100	22,500	57,500	34,800	221,500	81,700	42,200	96,600	39,700	80,000
27	20,600	14,200	22,000	21,200	65,300	*37,100	218,600	87,200	*54,500	*98,200	45,200	80,900
28	21,200	14,800	22,000	20,200	71,100	56,400	218,100	83,400	65,800	95,000	44,300	77,600
29	21,500	14,900	22,000	19,900	.....	76,200	211,600	76,800	69,800	89,400	43,200	69,600
30	21,100	13,800	22,000	19,500	.....	92,600	209,500	75,200	70,000	85,400	41,200	66,600
31	21,400	.....	22,000	19,400	.....	94,400	.....	70,800	.....	77,700	37,400	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 11-15, Nov. 23 to Dec. 31, 1950; Jan. 1 to Feb. 24, 1951.

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	65,600	58,300	56,400	38,000	31,800	40,000	[75,100	208,500	49,100	57,500	99,000	40,800
2.....	63,000	58,100	62,500	38,300	34,900	41,300	81,100	200,700	50,600	58,500	94,500	43,200
3.....	61,000	58,800	64,000	38,400	35,500	39,400	85,400	192,700	50,100	59,100	95,300	45,400
4.....	61,500	60,000	61,900	39,000	35,300	31,600	93,500	183,300	47,900	60,000	100,500	45,500
5.....	65,700	56,200	61,200	38,600	35,100	32,700	99,600	174,200	45,600	59,800	99,400	45,200
6.....	65,300	50,600	59,000	38,500	35,000	36,200	106,900	164,200	47,000	60,000	97,000	43,100
7.....	66,700	50,300	59,200	38,300	*35,100	36,600	114,500	154,100	51,600	59,200	94,300	44,100
8.....	65,300	44,500	59,400	38,700	34,000	35,200	119,400	145,500	52,500	61,300	89,400	42,000
9.....	60,600	48,900	58,400	40,100	33,600	34,400	123,200	137,000	54,500	63,100	89,100	40,900
10.....	59,600	54,600	*58,100	40,000	33,100	42,900	127,200	128,600	49,000	64,500	86,200	42,800
11.....	59,700	48,500	59,200	39,100	34,000	63,100	*128,200	121,400	34,200	67,500	82,100	42,600
12.....	60,100	46,400	61,900	37,600	35,400	*73,400	128,500	*113,300	31,700	69,200	79,200	41,400
13.....	61,300	55,900	59,600	36,900	36,100	69,000	128,800	103,800	37,600	68,400	74,900	40,300
14.....	60,900	64,200	31,900	36,800	36,900	65,400	132,600	97,200	40,000	68,000	*71,400	38,900
15.....	59,700	65,000	21,200	38,400	38,800	58,100	137,500	95,800	47,000	69,800	70,800	38,800
16.....	58,600	61,400	23,800	40,800	38,500	54,000	145,200	89,100	47,300	69,600	71,300	35,200
17.....	57,400	60,700	27,400	41,700	38,400	50,700	154,900	85,900	46,600	68,500	70,600	32,100
18.....	58,400	62,000	29,100	44,000	36,300	49,500	166,800	82,900	46,200	73,500	68,200	30,100
19.....	58,400	64,400	29,000	44,700	36,000	61,900	177,900	79,300	43,500	69,000	64,500	*29,600
20.....	55,700	*64,300	29,000	49,300	35,800	69,700	190,200	76,700	42,400	65,300	67,000	29,300
21.....	56,100	66,000	29,100	52,800	36,200	69,300	198,000	73,300	*42,800	64,100	79,300	29,000
22.....	60,000	73,600	30,400	50,300	34,900	66,000	208,200	71,800	46,000	65,100	71,100	29,000
23.....	61,200	75,600	30,500	46,400	33,900	66,800	214,000	73,600	48,100	68,700	63,600	29,300
24.....	63,600	74,200	31,600	43,700	33,000	70,700	219,900	73,200	49,300	*72,700	60,500	29,200
25.....	65,300	73,000	32,100	40,100	33,800	64,800	222,900	72,600	53,600	73,500	58,200	28,400
26.....	63,100	72,200	32,800	37,700	34,600	60,500	224,600	70,800	56,000	73,200	57,000	27,500
27.....	*62,100	69,300	33,100	35,400	36,300	57,800	225,400	64,700	58,300	73,300	55,200	27,900
28.....	61,100	64,600	34,500	33,200	37,900	53,400	*223,300	61,800	57,700	74,000	54,600	27,800
29.....	59,800	51,300	35,200	31,800	39,500	52,500	*220,500	56,100	57,300	75,200	53,900	28,000
30.....	57,800	50,000	37,300	30,500	.....	56,000	215,500	47,000	57,400	81,600	50,100	26,300
31.....	57,500	.....	37,800	30,400	.....	67,800	.....	47,700	.....	87,300	39,600	.....
1952-53												
1.....	25,600	24,100	22,800	22,500	21,000	27,500	98,500	68,000	*60,900	84,200	73,900	59,100
2.....	25,100	24,100	24,700	21,300	20,200	26,500	100,400	68,900	80,500	88,400	72,900	57,700
3.....	24,000	24,200	24,500	21,200	19,900	27,500	101,700	68,000	80,400	90,100	71,000	53,900
4.....	23,000	25,100	23,300	21,000	20,100	28,000	102,800	67,900	80,200	92,700	80,200	53,100
5.....	22,500	24,300	25,100	21,000	20,800	27,700	104,100	69,100	83,000	95,000	88,600	49,100
6.....	23,200	23,200	27,000	20,500	30,000	27,500	103,100	70,300	84,000	99,600	92,700	42,800
7.....	23,300	23,300	28,200	20,500	34,500	25,500	99,100	71,500	81,300	100,800	*99,900	40,300
8.....	21,000	22,900	27,700	20,500	27,500	24,200	96,800	72,300	81,300	101,400	99,700	39,100
9.....	21,000	22,600	26,700	20,400	25,800	23,800	96,600	72,300	82,500	98,200	97,000	36,000
10.....	22,800	22,400	26,300	20,400	24,300	26,000	96,600	73,300	84,900	*95,700	94,700	34,800
11.....	23,300	22,700	*27,000	20,800	24,200	33,900	95,300	74,500	78,500	92,200	*92,900	34,600
12.....	22,900	23,200	26,600	21,200	27,000	43,100	93,000	74,900	76,400	88,900	91,600	34,600
13.....	23,800	24,200	26,900	21,400	26,500	45,300	92,000	75,200	73,900	86,600	89,400	35,800
14.....	24,700	23,900	26,500	21,500	24,700	48,100	89,700	73,900	75,400	85,200	85,600	33,700
15.....	25,600	*23,400	26,600	23,500	24,700	59,700	91,800	72,300	72,700	82,800	83,400	30,800
16.....	25,000	23,500	29,000	26,200	22,500	65,600	90,400	68,700	71,200	*70,600	83,200	29,600
17.....	*24,700	26,300	28,200	27,000	21,200	56,200	*91,800	67,000	69,400	78,900	83,500	29,500
18.....	25,400	34,200	27,000	26,000	21,600	55,600	92,500	* 66,300	64,500	78,800	83,300	29,900
19.....	24,900	32,600	26,400	24,900	*25,200	56,900	93,700	64,100	62,700	77,600	85,400	29,700
20.....	25,100	28,500	28,500	23,500	48,000	*54,000	94,800	60,200	61,800	73,700	87,500	30,200
21.....	25,300	26,600	30,600	23,000	77,700	52,000	94,500	58,500	60,000	72,900	86,900	30,400
22.....	24,400	24,700	27,300	*23,000	54,000	53,300	94,300	64,900	57,100	69,300	87,300	*30,900
23.....	24,300	24,100	27,300	23,000	39,700	62,900	91,400	64,500	57,100	66,700	87,300	30,600
24.....	25,100	23,300	27,600	23,000	40,100	70,600	87,200	62,700	58,400	63,600	85,600	28,800
25.....	25,300	23,600	26,800	22,800	38,400	71,700	84,700	63,700	63,100	61,300	83,800	*27,700
26.....	24,900	27,800	27,100	22,200	35,200	76,400	83,400	64,800	*68,200	62,900	80,900	27,000
27.....	24,600	27,300	29,100	21,800	26,500	80,100	76,000	66,900	69,600	73,200	78,800	24,100
28.....	24,300	27,800	28,300	21,500	25,000	82,500	73,600	65,500	71,200	80,100	76,700	24,100
29.....	24,900	26,300	26,900	21,400	.....	87,100	67,500	65,900	75,400	77,200	71,600	25,800
30.....	24,900	24,600	26,300	21,300	.....	90,800	64,100	69,800	80,400	72,800	68,600	25,500
31.....	24,400	.....	26,100	21,300	.....	95,200	.....	76,700	.....	73,100	63,400	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Mar. 9, 1952; Jan. 1 to Feb. 19, Feb. 27 to Mar. 10, 1953.

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	26,300	22,100	27,700	24,600	22,700	32,500	51,300	70,400	68,400	105,700	28,900	27,300
2	26,100	22,500	27,900	24,500	22,700	34,700	48,700	75,500	69,200	102,000	29,900	26,300
3	26,500	22,300	28,300	24,600	23,000	36,600	48,700	86,100	70,000	100,000	31,100	26,300
4	25,800	21,800	30,100	24,700	23,200	32,800	48,400	93,600	72,100	100,100	30,800	26,400
5	26,000	21,800	30,700	24,200	23,500	27,000	44,600	98,800	72,200	98,900	30,800	25,900
6	26,100	22,600	32,600	24,200	24,200	28,100	43,100	101,800	66,600	95,500	31,100	25,200
7	25,800	23,700	33,300	24,400	25,200	28,600	45,000	110,100	65,200	96,100	30,600	24,900
8	26,000	24,000	33,400	23,900	25,200	29,300	44,800	121,700	64,800	95,800	29,400	23,000
9	24,100	23,700	33,700	24,300	25,000	*29,300	43,700	131,000	64,400	95,800	29,100	22,000
10	23,600	23,700	28,800	24,000	25,000	29,100	42,800	143,500	64,400	93,100	26,500	22,900
11	23,600	23,300	27,100	24,200	25,200	27,400	44,400	157,400	64,100	91,100	25,700	25,700
12	23,100	23,400	27,200	25,500	25,500	24,700	*44,800	166,000	63,900	90,800	24,300	26,400
13	23,400	23,600	27,000	27,100	25,600	26,600	45,700	172,000	64,200	88,000	23,900	26,900
14	23,900	23,700	28,100	26,200	25,700	28,700	47,500	*175,000	63,400	89,000	24,100	28,900
15	24,000	23,800	25,600	26,000	25,600	28,700	*49,300	172,300	61,300	87,600	24,100	31,800
16	24,200	24,100	25,000	26,000	26,800	29,200	50,500	166,900	57,000	87,000	23,700	34,400
17	24,100	24,800	*26,200	26,800	26,600	28,500	55,600	160,000	*55,800	84,700	*23,700	36,700
18	24,200	25,500	27,000	25,100	27,400	27,600	57,300	149,600	53,400	81,900	29,100	39,600
19	*24,000	26,200	29,400	23,800	*28,000	*29,300	59,000	139,100	53,300	78,400	34,400	43,100
20	24,000	*27,100	31,300	23,000	32,800	31,200	60,700	128,000	51,500	78,300	34,700	44,400
21	23,600	28,600	30,800	22,800	37,800	34,200	62,200	*117,400	56,800	72,600	31,600	46,500
22	23,800	27,300	29,100	22,200	35,100	36,500	64,100	102,300	75,700	67,800	28,100	50,100
23	*24,100	26,200	26,000	22,000	33,000	44,600	65,100	94,100	93,100	*58,400	27,800	*50,100
24	23,600	26,400	24,200	22,000	33,100	47,800	66,500	88,400	92,900	49,100	28,600	50,400
25	24,000	26,900	24,000	22,100	32,700	51,400	73,000	81,600	91,400	40,900	28,900	48,200
26	22,700	26,800	23,800	22,300	32,800	55,100	79,700	72,700	82,100	40,500	31,700	48,700
27	22,000	26,800	23,800	22,500	32,300	55,600	78,800	65,900	64,400	34,300	33,400	48,400
28	22,500	27,300	24,000	22,600	32,300	51,200	78,400	67,000	99,100	28,400	34,800	49,100
29	22,600	28,100	24,000	22,800	.....	50,000	73,700	70,800	102,700	26,500	36,300	46,400
30	21,300	27,900	24,600	*23,200	.....	50,900	70,000	65,600	106,700	27,800	34,400	38,900
31	20,900	.....	25,400	22,800	.....	51,500	.....	58,200	.....	28,600	32,000	.....
1954-55												
1	36,600	48,200	32,200	28,000	20,700	32,200	46,700	70,300	43,700	24,800	28,800	32,600
2	35,600	47,800	34,500	25,500	20,200	29,600	49,100	62,100	49,500	25,700	35,100	29,200
3	38,700	44,600	35,500	26,800	20,000	30,400	49,800	55,900	60,900	26,900	40,200	25,000
4	47,900	41,500	35,300	28,400	20,000	32,200	51,100	48,800	73,500	28,800	41,000	24,400
5	55,500	38,100	35,200	29,700	20,100	33,700	56,200	46,500	75,300	30,100	*41,800	23,400
6	56,500	36,900	35,300	29,600	20,600	34,200	62,000	*45,800	74,200	34,000	44,200	*24,300
7	*55,800	37,200	*33,600	29,000	21,500	30,600	65,500	41,300	74,700	35,000	42,000	24,400
8	54,700	39,400	29,200	28,800	21,500	30,000	68,800	36,200	71,300	35,100	38,100	24,300
9	50,600	41,700	26,000	29,500	21,600	33,800	70,600	34,100	64,000	44,000	39,900	22,300
10	63,500	41,200	24,400	29,400	21,700	36,000	73,300	39,900	60,600	52,600	43,000	20,900
11	71,300	39,900	26,000	*28,700	22,100	36,300	76,600	37,800	62,300	58,300	43,800	20,400
12	62,900	37,000	26,600	28,800	22,000	40,300	80,900	37,700	63,100	55,100	44,600	*20,400
13	50,000	35,900	27,200	27,400	21,600	50,300	85,800	42,000	63,800	54,700	46,200	20,300
14	47,100	33,700	27,900	25,100	21,600	61,900	92,300	43,200	65,100	54,700	45,600	20,700
15	49,700	34,200	27,200	25,100	21,500	68,100	93,800	40,300	64,600	53,800	43,500	19,800
16	51,900	34,300	26,900	24,200	21,300	67,200	94,600	37,200	66,100	50,500	38,800	20,500
17	55,200	35,000	28,200	24,000	20,000	*63,100	94,100	31,800	67,300	45,400	34,200	20,700
18	58,000	35,900	28,500	23,400	19,800	58,800	*92,300	30,300	67,700	*43,300	32,000	20,200
19	63,500	*35,800	29,600	22,800	20,700	55,000	95,500	30,000	66,800	39,400	*31,100	19,500
20	70,600	36,100	29,400	23,100	34,800	55,000	*94,800	*29,900	59,500	34,000	30,100	19,300
21	*70,800	36,300	29,300	23,200	51,000	57,200	93,700	30,000	46,800	31,000	28,800	19,400
22	72,800	33,500	31,400	22,300	42,000	62,000	90,800	29,500	34,800	30,400	27,500	19,200
23	75,700	32,700	32,300	22,100	33,100	59,000	91,100	28,400	*34,200	30,000	24,900	20,500
24	76,500	32,500	33,100	22,200	31,400	55,300	93,400	26,200	30,900	30,200	22,100	22,400
25	77,000	33,200	34,300	22,600	31,300	49,400	96,900	24,900	28,600	30,600	19,400	22,400
26	70,100	33,400	35,500	22,800	31,700	45,700	93,800	24,500	27,200	31,200	20,700	22,500
27	61,100	32,900	38,600	22,600	37,300	41,200	86,300	27,600	24,900	31,700	22,200	23,800
28	53,100	32,000	39,200	22,200	39,100	41,200	81,800	30,800	24,100	31,000	26,900	22,700
29	48,900	32,400	36,000	22,100	.....	44,100	78,600	34,700	24,300	27,300	31,100	23,900
30	47,200	31,800	32,800	21,800	.....	44,000	73,600	39,500	24,700	25,800	33,100	*26,200
31	46,900	.....	30,200	21,000	.....	*45,200	.....	*39,100	.....	26,000	33,900	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 16, 17, 23-29, 1953; Jan. 10 to Feb. 13, 1954; Jan. 1 to Mar. 12, 1955.

Mississippi River at Clinton, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	22,660	19,190	21,500	20,370	26,660	47,680	143,100	117,300	64,050	94,740	46,590	57,790
1951–52	61,040	59,430	43,120	39,660	35,510	53,890	156,300	108,000	48,030	67,760	74,160	35,790
1952–53	24,230	25,160	26,850	22,250	30,220	51,780	91,380	68,440	72,870	82,050	84,110	35,310
1953–54	24,060	24,870	27,750	24,010	27,820	36,090	56,250	113,100	72,340	74,700	29,470	35,500
1954–55	57,470	36,840	31,340	25,230	26,080	45,900	79,130	37,950	53,150	37,140	34,070	22,520

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	0.205	0.224	0.251	0.238	0.311	0.557	1.67	1.37	0.759	1.11	0.544	0.675
1951–52	.713	.694	.504	.463	.415	.630	1.83	1.26	.561	.792	.866	.418
1952–53	.283	.294	.314	.260	.353	.605	1.07	.800	.851	.959	.983	.412
1953–54	.281	.291	.324	.280	.325	.422	.657	1.32	.845	.873	.344	.415
1954–55	.671	.430	.366	.295	.305	.536	.924	.443	.621	.434	.405	.263

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	0.31	0.25	0.29	0.27	0.32	0.64	1.87	1.58	0.85	1.28	0.63	0.75
1951–52	.82	.77	.58	.53	.45	.73	2.04	1.45	.63	.91	1.00	.47
1952–53	.33	.33	.36	.30	.37	.70	1.19	.92	.95	1.11	1.13	.46
1953–54	.32	.32	.37	.32	.34	.49	.73	1.52	.94	1.01	.40	.46
1954–55	.77	.48	.42	.34	.32	.62	1.03	.51	.69	.50	.47	.29

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30						Calendar year	
	Maximum day		Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Discharge						
1950							44,870	7.13
1951	Apr. 25, 1951	221,500	13,800	56,970	0.906	9.04	65,380	10.36
1952	Apr. 27, 1952	225,400	21,200	65,280	.763	10.38	57,970	9.23
1953	Apr. 5, 1953	104,100	19,900	51,340	.600	8.15	51,380	8.14
1954	May 14, 1954	175,900	20,900	45,620	.533	7.22	49,750	7.88
1955	Apr. 25, 1955	96,900	19,200	40,600	.475	6.44		

Wapsipinicon River at Independence, Iowa

LOCATION.—Lat. 42°27'50", long. 91°53'50", in sec. 4, T. 88 N., R. 9 W., on right bank at 6th Street in Independence, 1,800 feet downstream from Interstate Power Company's hydroelectric plant, 4¾ miles downstream from Otter Creek, and 9½ miles upstream from Pine Creek.

DRAINAGE AREA.—1,060 square miles, approximately

RECORDS AVAILABLE.—July 1933 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 882.85 feet above mean sea level, datum of 1929. Prior to May 24, 1941, staff gage in tailrace of powerplant 1,800 feet upstream at same datum.

AVERAGE DISCHARGE.—22 years, 529 cfs.

EXTREMES.—1933-55: Maximum discharge, 21,500 cfs June 14, 1947 (gage height, 18.74 feet); minimum, about 7 cfs many times in period 1933-34.

REMARKS.—Records good except those for periods when stop logs were out of control dam, which are fair, and those for periods of ice effect and no gage-height record, which are poor. Diurnal fluctuation caused by powerplant above station.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	67	37	104	40	a50	2,470	6,080	13,500	683	2,910	349	773
2	192	142	78	45	a50	1,290	*5,790	7,020	1,860	2,500	334	620
3	152	92	31	100	a50	1,120	4,500	4,250	1,140	2,100	316	553
4	86	110	116	96	a50	1,380	4,690	2,960	1,610	1,580	200	530
5	84	34	29	42	a50	1,960	4,870	2,110	2,030	1,210	227	452
6	92	122	110	94	a50	3,400	5,570	1,500	1,920	1,060	319	430
7	96	95	40	42	a50	3,620	8,040	1,230	*1,360	1,040	204	380
8	53	107	40	98	a50	2,840	*10,600	1,010	1,090	3,090	582	359
9	*215	83	114	82	*a50	2,080	10,300	854	884	11,000	1,080	330
10	152	105	40	34	78	1,610	8,420	804	675	7,740	865	683
11	45	31	*40	90	19	1,180	6,180	746	600	4,240	751	904
12	218	34	112	40	65	713	5,200	675	508	2,920	620	853
13	144	142	40	113	23	674	4,600	665	442	2,550	586	744
14	143	107	87	37	76	683	3,870	640	382	2,080	1,030	652
15	37	84	42	*a55	51	632	3,140	536	357	1,500	1,180	575
16	155	127	114	a55	52	484	2,730	522	338	2,300	*1,420	457
17	*141	80	42	a55	52	455	2,250	534	286	3,490	1,590	*516
18	105	*34	48	a55	23	422	1,900	465	*318	1,930	1,600	404
19	107	48	45	a55	78	342	1,520	437	266	1,460	1,250	274
20	34	169	112	a55	48	300	1,140	436	196	1,100	953	170
21	111	117	40	a55	74	305	996	518	218	1,750	799	168
22	37	34	117	a55	26	322	1,410	551	230	2,840	728	154
23	141	37	90	a55	92	342	1,610	492	249	*2,060	647	88
24	132	138	40	a55	116	284	1,690	428	183	1,790	550	175
25	89	100	45	a55	518	349	2,820	390	286	1,320	599	140
26	89	37	102	a55	6,240	328	*4,950	412	*262	866	3,550	126
27	34	84	80	a55	8,660	588	4,620	375	1,120	668	4,130	163
28	140	29	34	a55	5,080	4,040	3,780	376	2,840	540	3,030	125
29	34	82	76	a55	.....	11,800	7,880	338	3,750	450	2,360	27
30	140	31	90	a55	.....	11,600	*19,200	293	3,830	4 4	1,010	104
31	90	.....	31	a55	.....	6,380	.....	*340	.....	391	1,070	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stop logs out of control dam Sept. 19-30; discharge computed on basis of recorder graph and records for nearby stations.

Wapsipinicon River at Independence, Iowa

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	294	.626	304	114	228	693	4,080	415	662	376	58	209
2	198	401	262	196	276	704	4,020	370	1,080	334	128	285
3	206	388	491	170	365	792	5,900	380	1,150	309	32	215
4	278	269	480	150	*397	684	5,760	331	775	244	157	164
5	879	385	488	143	350	*712	4,500	303	568	236	64	158
6	725	310	480	90	362	722	3,110	302	458	208	76	150
7	392	300	470	*181	295	612	*2,330	340	437	288	108	49
8	475	292	424	152	318	540	1,560	552	590	243	74	142
9	342	204	302	143	365	398	1,230	1,030	912	220	142	122
10	290	398	464	100	364	990	1,070	1,440	1,070	264	20	122
11	249	200	402	184	734	2,510	1,060	1,520	725	324	*154	105
12	232	428	295	152	828	1,880	1,140	1,490	526	303	122	89
13	76	862	*148	95	946	1,950	1,200	1,260	429	184	68	19
14	170	1,040	278	194	1,100	2,330	1,680	1,010	385	282	80	24
15	296	1,110	220	180	1,040	2,090	2,210	775	400	272	86	*204
16	232	1,060	132	220	974	1,790	2,250	*616	*574	260	167	114
17	220	890	264	308	930	1,550	2,140	524	484	324	34	18
18	256	*610	191	408	1,010	1,560	1,980	434	377	*606	130	114
19	353	604	188	540	945	2,450	1,070	427	310	700	164	113
20	318	484	190	1,020	848	2,030	1,870	362	301	478	318	138
21	534	480	185	1,110	706	2,450	1,550	330	358	428	380	22
22	*1,260	381	189	890	574	2,210	1,230	481	376	342	327	134
23	1,870	408	120	748	628	2,090	1,010	1,350	423	354	458	123
24	1,940	302	226	668	422	2,010	884	2,250	338	454	562	80
25	1,880	175	118	596	537	2,040	806	2,140	267	430	756	80
26	1,460	333	190	443	436	1,900	722	1,540	289	343	945	84
27	1,140	252	156	291	464	1,590	650	1,250	300	183	767	24
28	1,040	315	156	398	583	1,350	601	1,200	409	284	418	31
29	910	274	153	298	668	1,530	558	990	345	110	310	136
30	711	301	102	251	.....	1,820	506	782	451	108	252	26
31	558	.....	216	224	.....	2,880	.....	696	.....	102	151	.....
1952-53												
1	130	37	159	42	75	987	629	1,150	352	323	694	156
2	29	34	111	91	163	850	675	1,240	237	543	723	124
3	75	136	109	45	101	684	732	1,230	259	368	*823	124
4	80	34	40	45	93	614	886	1,280	234	493	1,370	127
5	29	90	40	95	88	292	940	1,360	250	258	1,670	122
6	75	34	149	45	83	536	918	1,380	276	361	2,070	32
7	29	89	42	48	48	475	833	1,250	398	384	4,360	34
8	80	34	145	50	48	380	723	985	544	331	5,860	260
9	29	37	95	50	85	321	647	782	656	247	4,230	148
10	29	134	136	50	82	473	703	694	751	246	3,160	100
11	126	34	92	50	131	1,010	1,090	742	771	231	2,420	102
12	*29	34	*40	50	105	1,130	1,270	612	675	63	1,600	124
13	26	123	140	50	84	1,440	1,270	211	638	*356	1,020	31
14	124	34	42	53	112	1,450	*1,290	435	443	203	581	131
15	104	71	127	111	37	1,600	1,190	409	474	195	629	130
16	29	34	97	153	*115	*1,450	1,220	367	590	205	540	32
17	65	140	42	111	101	1,520	1,290	362	703	238	436	*101
18	62	147	133	107	35	1,850	1,320	232	996	240	368	98
19	29	*40	42	*89	40	1,790	1,380	403	1,410	323	410	90
20	95	154	138	85	*897	1,270	1,580	234	1,830	529	326	31
21	29	93	42	85	2,150	875	1,440	*442	1,710	329	273	99
22	79	134	126	85	1,060	732	897	*251	*962	413	274	32
23	82	34	89	85	702	875	703	221	577	371	297	32
24	31	132	89	85	1,220	1,200	620	370	343	267	264	185
25	80	96	42	82	1,500	1,270	620	517	463	247	254	31
26	29	151	86	82	1,270	1,280	807	490	412	385	174	30
27	132	37	89	82	1,230	1,200	1,140	425	347	1,060	213	31
28	78	137	45	82	1,170	908	1,190	505	533	1,140	154	108
29	37	40	90	78	.....	604	1,150	372	490	1,060	154	148
30	37	45	94	78	.....	629	1,130	546	481	823	34	32
31	83	.....	77	78	.....	612	.....	270	.....	703	274	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3, Dec. 25, 1951; Jan. 1, 2, 4, 5, 15-20, Feb. 11, Mar. 4, 14, 1952. Stop logs out of control dam Oct. 1, 1951 to July 28, 1952; discharge computed on basis of recorder graph and records for nearby stations.

Wapsipinicon River at Independence, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	30	35	87	37	42	148	108	2,250	711	765	29	382
2	29	77	87	104	39	150	109	2,420	1,010	603	131	385
3	30	80	147	36	35	143	108	2,720	1,330	638	120	229
4	28	263	144	91	39	66	27	2,540	1,720	476	81	234
5	110	151	110	79	41	70	113	2,290	1,580	667	123	36
6	108	60	31	80	25	75	203	2,220	1,320	695	106	245
7	35	28	241	76	26	42	244	2,100	920	454	105	213
8	35	28	168	63	45	129	248	1,710	711	434	27	32
9	64	28	150	78	46	122	188	1,130	554	373	168	39
10	36	29	114	37	52	121	226	855	469	279	128	309
11	35	29	138	71	50	118	47	738	450	260	81	32
12	76	29	114	69	51	90	373	364	342	271	27	34
13	71	58	29	69	54	90	278	585	292	232	78	244
14	66	88	*170	37	30	28	147	439	*285	143	86	129
15	137	31	114	38	*94	*121	253	405	262	185	34	106
16	93	*92	39	38	81	108	*488	450	257	169	136	132
17	92	88	61	37	*80	103	451	*260	255	138	108	129
18	35	76	74	*34	83	94	295	267	231	34	132	128
19	*89	86	89	28	90	141	627	377	200	*252	132	27
20	70	71	31	28	42	91	288	232	79	132	*131	*131
21	65	114	116	26	50	39	241	257	486	124	110	133
22	82	29	121	23	258	146	279	217	1,310	135	29	131
23	99	148	91	19	220	146	401	230	1,520	32	136	79
24	67	143	92	20	142	117	352	244	1,300	267	133	77
25	37	138	46	21	145	150	531	193	1,230	32	109	93
26	90	28	102	22	148	118	711	221	1,110	237	157	27
27	68	110	36	24	140	131	702	210	1,280	135	235	132
28	65	90	79	24	39	36	738	244	1,650	106	480	97
29	78	31	82	23	.....	170	666	722	1,590	100	281	105
30	100	148	76	24	.....	105	639	720	1,020	84	678	144
31	104	.....	108	24	.....	134	.....	666	.....	126	657	.....
1954–55												
1	134	467	124	36	56	294	340	684	579	110	84	36
2	212	462	134	42	62	516	472	451	528	107	158	36
3	40	36	144	172	62	633	305	390	651	94	158	36
4	547	281	143	167	62	807	586	454	720	194	125	34
5	765	258	36	138	32	910	512	470	828	594	53	32
6	666	250	142	132	32	840	460	314	910	770	124	27
7	556	82	143	130	66	760	571	264	960	482	47	29
8	352	346	146	149	68	711	605	358	960	577	47	32
9	462	256	144	36	64	729	703	280	774	561	128	32
10	330	290	146	163	36	720	674	547	619	525	132	29
11	560	49	143	147	54	747	578	418	366	568	47	27
12	426	304	36	150	94	837	483	423	404	408	112	25
13	585	277	*145	135	32	828	475	484	400	350	52	27
14	443	42	143	133	62	*792	720	351	270	242	47	20
15	666	*194	150	100	64	828	855	130	199	244	*44	20
16	980	200	139	34	*61	855	*900	*354	310	246	44	*18
17	1,040	234	146	122	64	828	819	294	216	36	44	20
18	*900	226	146	*121	68	678	756	272	208	232	44	23
19	864	168	36	94	68	502	628	242	43	139	44	23
20	792	135	152	94	429	398	638	173	*204	*129	47	25
21	684	34	142	88	1,050	578	370	193	222	138	58	27
22	511	239	138	96	588	474	378	44	144	112	42	25
23	432	228	130	29	405	327	361	193	123	159	39	20
24	410	228	152	88	538	389	590	236	125	34	39	18
25	484	36	36	88	404	282	920	174	124	238	39	18
26	242	190	42	88	306	247	1,190	256	39	97	42	18
27	374	186	256	84	236	107	1,220	260	186	108	39	18
28	288	39	157	81	513	368	1,110	258	71	92	39	18
29	430	222	139	83	.....	350	980	428	107	82	36	66
30	229	206	138	29	.....	284	819	536	134	62	36	27
31	93	.....	140	84	.....	314	.....	581	.....	89	36	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 27, 31, Feb. 11, Mar. 6, 7, 1955. Stop logs out of control dam Nov. 5-9, 1953, Jan. 22 to Feb. 4, 1954; discharge computed on basis of recorder graph and records for nearby stations.

Wapsipinicon River at Independence, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	108	82.4	68.7	60.8	779	2,064	5,012	1,465	997	2,288	1,117	398
1951-52.....	630	469	267	343	610	1,595	2,016	870	529	309	242	110
1952-53.....	63.6	78.0	89.9	74.9	458	981	1,012	638	627	417	1,150	94.2
1953-54.....	68.6	80.2	99.6	44.5	78.1	110	330	912	852	277	160	140
1954-55.....	500	209	129	101	199	578	607	339	385	255	65.4	26.9

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.102	0.078	0.065	0.057	0.735	1.95	4.73	1.38	0.941	2.16	1.05	0.375
1951-52.....	.603	.442	.252	.324	.575	1.50	1.90	.821	.499	.292	.228	.104
1952-53.....	.060	.075	.085	.071	.432	.925	.955	.602	.592	.393	1.08	.089
1953-54.....	.065	.076	.094	.042	.074	.104	.320	.860	.804	.261	.151	.132
1954-55.....	.472	.197	.122	.095	.188	.545	.629	.320	.363	.241	.062	.025

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.12	0.09	0.07	0.07	0.77	2.25	5.27	1.59	1.05	2.49	1.21	0.42
1951-52.....	.70	.49	.29	.37	.62	1.74	2.12	.95	.56	.34	.26	.12
1952-53.....	.07	.08	.10	.08	.45	1.07	1.07	.69	.66	.45	1.25	.10
1953-54.....	.07	.08	.11	.05	.08	.12	.36	.99	.90	.30	.17	.15
1954-55.....	.54	.22	.14	.11	.20	.63	.70	.37	.41	.28	.07	.03

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	497	6.35
1951....	Apr. 30, 1951.	18.20	20,800	19	1,202	1.13	15.40	1,296	16.60
1952....	Apr. 3, 1952..	9.76	6,460	18	666	.628	8.56	570	7.33
1953....	Aug. 8, 1953..	9.72	6,350	26	474	.447	6.07	475	6.08
1954....	May 3, 1954..	7.30	2,780	19	264	.294	3.38	314	4.02
1955....	Feb. 21, 1955.	6.35	1,560	18	288	.272	3.70	.....	.....

Peak Discharge (base, 2,000 cfs)

1951: Feb. 26 (9:30 p.m.) 9,100 cfs (12.00 ft.); Mar. 29 (9 p.m.) 13,700 cfs (14.50 ft.); Apr. 8 (9 p.m.) 10,800 cfs (12.84 ft.); Apr. 30 (6 a.m.) 20,800 cfs (18.20 ft.); June 2 (1 a.m.) 3,830 cfs (8.14 ft.); June 29 (7 p.m.) 4,430 cfs (8.60 ft.); July 9 (2:30 p.m.) 12,000 cfs (13.57 ft.); Aug. 26 (9:30 p.m.) 5,130 cfs (9.13 ft.).

1952: Apr. 3 (3 p.m.) 6,460 cfs (9.76 ft.).

1953: Feb. 21 (8 a.m.) 2,310 cfs (6.83 ft.); Mar. 18 (10 a.m.) 2,220 cfs (6.76 ft.); Aug. 8 (2 a.m.) 6,350 cfs (9.72 ft.).

1954: May 3 (1:30 p.m.) 2,780 cfs (7.30 ft.).

1955: No peak above base.

Wapsipinicon River near DeWitt, Iowa

LOCATION.—Lat. 41°46′, long. 90°32′, in NE¼ sec. 6, T. 80 N., R. 4 E., on left bank 15 feet downstream from bridge on U. S. Highway 61, 3 miles south of DeWitt, 6 miles upstream from Brophy Creek, and 18 miles upstream from mouth.

DRAINAGE AREA.—2,300 square miles, approximately.

RECORDS AVAILABLE.—June 1934 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 599.73 feet above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.—21 years, 1,362 cfs.

EXTREMES.—1934-55: Maximum discharge, 26,000 cfs June 27, 1944 (gage height, 12.07 feet); minimum daily, 70 cfs Jan. 17-24, 1940.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	612	270	270	150	180	7,700	7,700	5,800	*1,640	1,680	1,430	3,680
2	612	282	280	150	180	7,450	9,700	6,360	2,130	2,280	1,200	3,060
3	550	273	300	160	180	8,000	10,500	6,550	1,920	2,960	1,200	2,200
4	510	282	280	160	180	8,300	10,500	7,700	2,870	3,570	1,110	1,750
5	482	273	270	160	180	8,000	9,350	11,300	3,570	3,570	1,050	1,460
6	478	264	260	155	180	5,450	7,700	11,300	4,140	3,260	990	1,290
7	466	276	250	155	*180	3,900	7,450	9,350	3,900	2,780	930	1,170
8	447	287	250	150	180	4,020	7,450	7,200	4,140	2,600	880	1,080
9	414	296	250	150	180	4,140	7,200	5,120	4,520	4,960	855	990
10	410	279	250	*155	180	4,390	7,450	5,280	3,680	5,280	855	960
11	393	273	235	155	220	4,660	8,300	6,050	2,960	5,620	905	905
12	*365	273	225	160	310	4,140	9,350	6,550	2,600	5,500	1,170	880
13	372	*273	215	160	400	2,870	9,700	4,520	2,520	6,360	1,230	1,170
14	376	267	210	160	360	2,200	9,700	3,460	2,060	7,700	1,200	1,290
15	372	273	*200	165	310	1,920	9,350	2,780	1,780	9,000	1,780	1,320
16	343	436	200	170	290	1,850	8,650	2,520	1,680	8,650	1,640	1,200
17	356	314	195	175	330	1,850	7,700	2,360	1,500	7,450	1,360	1,110
18	340	314	185	195	1,000	1,780	6,750	2,130	1,360	5,620	1,540	1,020
19	340	299	185	300	5,800	1,680	5,980	1,990	1,280	4,390	1,600	905
20	321	284	180	350	9,000	1,540	4,960	1,920	1,200	4,140	1,780	855
21	324	276	180	250	7,000	1,400	4,140	1,780	1,200	4,390	1,920	*805
22	333	264	175	210	4,500	1,260	3,900	1,780	1,780	3,900	1,920	780
23	324	270	175	190	2,800	1,460	*3,260	1,780	1,710	2,960	1,780	730
24	308	280	175	190	2,600	1,540	2,960	1,710	1,570	*2,870	1,540	705
25	302	250	170	185	5,000	1,500	2,870	1,040	1,570	3,260	1,360	680
26	308	260	165	185	8,000	*1,500	3,060	2,200	*1,400	3,460	1,500	930
27	296	290	160	185	*6,750	2,440	3,360	2,960	1,200	*3,160	1,400	880
28	299	290	155	185	7,200	3,460	3,790	2,870	1,200	2,690	*1,360	705
29	302	280	155	185	.....	5,250	4,390	2,440	1,110	2,200	2,280	635
30	296	275	150	180	.....	6,500	5,120	1,990	1,140	1,850	3,160	590
31	284	.....	150	180	.....	6,050	.....	1,780	.....	1,600	3,570	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1950; Jan. 1 to Feb. 25, 1951.

Wapsipinicon River near DeWitt, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	590	1,920	1,320	650	3,000	1,780	3,680	1,710	1,990	905	506	780
2.....	570	1,780	1,320	640	2,550	1,710	3,680	1,640	1,850	880	474	705
3.....	530	1,570	1,290	630	2,300	1,680	3,790	1,540	1,780	880	462	635
4.....	510	1,460	1,290	620	2,120	1,570	4,020	1,460	1,660	880	550	570
5.....	550	1,360	1,290	610	1,880	1,320	4,390	1,400	1,640	880	550	530
6.....	612	1,200	1,320	600	1,700	1,230	4,520	1,360	1,710	855	510	510
7.....	960	1,140	1,400	590	1,550	1,400	4,810	1,290	1,680	830	442	502
8.....	1,080	1,110	1,360	580	1,480	1,570	5,280	1,320	1,500	780	422	486
9.....	1,110	1,140	1,320	580	1,400	1,710	5,450	1,290	1,850	755	419	462
0.....	1,050	1,140	*1,290	580	1,380	2,580	5,460	1,360	1,990	705	419	438
11.....	930	1,140	1,230	*580	1,400	5,820	*3,900	1,460	1,500	680	411	422
12.....	855	1,170	1,200	580	1,480	*7,700	2,960	*1,570	1,430	658	422	400
13.....	780	3,660	1,110	580	1,600	9,000	2,780	1,780	1,760	658	396	385
14.....	730	*7,200	800	660	1,780	8,300	2,690	1,920	5,440	635	381	381
15.....	680	5,250	1,000	2,000	1,990	6,950	2,780	1,990	3,840	635	*360	353
16.....	658	3,680	980	2,200	1,990	6,170	2,780	1,990	2,280	658	360	339
17.....	635	*3,160	940	2,160	1,990	5,120	3,060	1,850	1,780	658	367	325
18.....	805	2,690	900	2,000	2,060	4,660	3,260	1,680	1,570	892	367	*306
19.....	1,110	2,520	870	2,200	1,990	5,280	3,360	1,500	1,430	1,570	367	303
20.....	1,140	2,280	840	2,400	1,850	4,960	3,260	1,400	*1,360	1,080	367	312
21.....	1,140	2,060	810	2,700	1,780	4,660	3,060	1,290	1,430	780	442	303
22.....	1,640	1,920	800	2,600	1,780	4,660	3,060	1,380	1,570	780	530	281
23.....	1,920	1,850	780	2,500	1,780	4,960	3,060	4,000	1,430	*780	570	278
24.....	2,600	1,710	760	3,100	1,680	4,960	2,960	3,050	1,290	730	550	278
25.....	2,900	1,540	740	3,000	1,600	4,810	2,690	2,440	1,260	680	550	275
26.....	3,060	1,430	720	3,900	1,570	4,260	2,360	2,690	1,200	635	590	257
27.....	3,060	1,360	710	4,100	1,920	4,020	2,200	2,690	1,170	612	635	257
28.....	2,960	1,320	700	4,050	2,690	3,790	1,990	2,870	1,230	612	705	254
29.....	2,690	1,290	690	3,900	2,280	3,790	1,920	2,690	1,080	612	755	249
30.....	*2,360	1,290	670	3,700	.....	3,680	1,780	2,360	960	570	605	240
31.....	2,060	.....	660	3,300	.....	3,570	.....	2,200	.....	510	830	.....
1952-53												
1.....	235	221	430	400	450	2,600	3,160	2,280	1,080	905	1,400	g374
2.....	232	232	520	400	450	2,440	3,570	2,360	*1,020	930	1,460	g353
3.....	227	229	580	370	450	2,100	2,780	2,360	990	880	1,290	g342
4.....	229	216	640	350	460	1,900	2,440	2,360	905	830	1,140	g342
5.....	227	213	705	350	500	1,650	2,200	2,280	930	780	1,110	g342
6.....	229	213	635	350	2,000	1,500	2,130	2,280	1,050	1,310	1,200	g325
7.....	232	208	590	350	4,300	1,400	2,060	2,200	1,020	1,320	*1,600	g309
8.....	227	218	530	370	4,140	1,350	2,060	2,200	1,140	1,290	1,920	g296
9.....	232	229	478	400	2,600	1,300	1,990	2,200	1,230	1,080	1,850	g293
10.....	232	221	442	420	1,780	1,500	1,920	2,130	1,170	*905	*1,920	g287
11.....	229	224	*430	430	1,350	2,870	1,850	1,920	1,140	855	2,200	g272
12.....	229	221	422	440	1,500	2,870	1,780	1,710	1,290	755	2,690	g260
13.....	227	221	392	450	1,100	2,360	1,710	1,540	1,360	705	3,060	258
14.....	227	213	340	460	860	2,200	1,780	1,500	2,600	*830	3,360	256
15.....	221	221	370	480	740	2,600	1,020	1,460	1,780	755	2,780	g254
16.....	*224	*238	400	900	660	3,260	*2,060	1,290	1,430	612	1,990	g249
17.....	232	1,030	420	900	560	2,960	2,060	1,080	1,290	680	1,500	g243
18.....	221	1,360	450	840	600	2,870	2,060	*1,050	1,200	658	1,170	g238
19.....	227	960	480	780	800	*2,690	1,990	*900	1,080	570	1,110	g246
20.....	238	590	1,000	820	4,000	2,520	2,060	960	1,008	550	905	g240
21.....	235	478	1,780	800	8,650	2,520	2,060	930	1,140	570	805	*221
22.....	224	430	1,170	750	8,300	2,600	2,060	1,520	1,290	880	680	218
23.....	221	400	840	700	7,200	2,690	2,130	2,280	1,460	1,140	635	218
24.....	224	378	700	660	4,520	2,520	2,130	2,130	1,040	930	590	218
25.....	224	419	590	610	3,680	2,280	2,130	3,060	*1,570	830	550	210
26.....	227	635	500	580	2,960	2,360	1,920	2,320	1,320	755	510	205
27.....	221	540	450	540	2,780	2,280	1,710	1,570	1,140	680	494	202
28.....	227	450	410	510	2,780	2,200	1,680	1,400	1,460	635	470	198
29.....	229	380	400	490	.....	2,200	1,780	1,290	1,290	612	446	200
30.....	218	380	400	470	.....	2,130	1,920	1,260	1,050	905	g418	*198
31.....	218	.....	400	460	.....	2,360	.....	1,140	.....	1,080	g392	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Feb. 13, Nov. 27 to Dec. 4, Dec. 14-20, 23-31, 1952; Jan. 1 to Feb. 6, Feb. 11-20, Mar. 3-9, 1953.

Wapsipinicon River near DeWitt, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	183	206	239	210	105	327	359	1,360	2,660	1,670	300	644
2	180	206	248	208	110	304	342	1,630	3,300	1,700	296	618
3	200	200	276	203	130	260	363	2,260	3,700	1,670	203	682
4	213	210	276	200	170	230	307	2,840	3,400	1,300	203	724
5	210	219	276	192	*205	210	355	3,110	3,200	1,220	460	630
6	194	213	296	185	250	230	415	3,300	3,200	1,080	359	566
7	192	203	293	180	255	250	497	3,500	3,110	1,010	308	541
8	189	213	290	178	245	330	497	3,400	2,840	910	304	516
9	186	255	270	172	240	323	428	3,110	2,570	942	286	446
10	192	265	250	165	240	296	424	2,030	2,160	910	300	*433
11	206	248	235	148	240	293	446	2,750	1,830	766	272	438
12	206	229	237	138	245	286	*442	2,260	1,590	718	262	402
13	192	213	244	130	250	279	438	1,830	1,400	660	245	359
14	189	200	260	127	260	282	*438	1,550	1,250	587	262	380
15	192	197	200	120	290	279	464	1,360	1,180	541	262	376
16	186	194	*155	117	355	*265	536	1,140	1,070	521	255	338
17	180	192	180	113	315	265	546	1,110	*1,140	483	*265	334
18	186	189	210	109	330	*255	536	975	975	456	1,460	359
19	189	*197	240	108	*338	262	551	942	880	428	3,700	330
20	200	*222	270	105	334	265	694	880	880	411	2,590	315
21	206	226	285	104	323	262	850	790	1,140	402	1,220	308
22	206	232	290	*103	308	262	880	*724	1,400	*376	850	304
23	*200	226	290	102	296	262	975	718	1,110	372	688	*296
24	192	229	285	102	286	290	790	654	942	372	688	279
25	197	229	280	102	282	406	724	597	1,320	351	644	276
26	210	232	270	101	276	428	790	566	1,590	330	975	276
27	213	229	260	100	323	393	910	582	1,670	311	1,110	276
28	219	229	250	100	342	380	1,080	694	1,630	319	910	276
29	216	252	235	100	.....	389	1,160	910	1,510	330	790	334
30	206	258	*220	100	.....	384	1,220	975	1,590	311	688	446
31	200	.....	215	102	.....	372	.....	850	.....	315	634	.....
1954–55												
1	350	790	483	600	330	2,000	1,010	2,080	541	424	393	150
2	338	820	478	640	320	1,800	975	1,950	*634	402	338	*137
3	334	742	440	620	300	1,750	910	1,750	694	376	*268	121
4	355	688	465	600	275	1,630	910	1,590	712	359	242	121
5	428	760	483	720	260	1,590	1,110	1,440	700	351	462	116
6	556	772	460	860	255	1,590	1,080	1,250	850	355	880	110
7	531	670	445	760	250	1,200	1,010	1,160	1,080	338	670	112
8	571	623	420	680	250	1,000	1,080	1,110	1,040	338	420	109
9	712	628	410	650	245	1,590	1,010	1,080	1,040	766	330	105
10	1,790	623	420	610	245	1,550	1,010	1,670	1,080	1,110	290	102
11	5,440	592	420	570	240	*1,670	1,040	1,630	1,140	942	272	102
12	4,630	602	420	530	240	1,630	1,110	1,590	1,250	820	255	*102
13	2,550	602	420	510	240	1,480	1,320	1,480	1,080	766	230	112
14	1,990	608	425	510	240	1,400	1,360	1,440	942	700	242	125
15	1,990	576	*426	500	*240	1,090	1,400	1,220	790	766	242	114
16	1,790	561	425	505	250	1,830	1,400	1,140	724	688	226	121
17	1,550	582	425	505	250	1,630	1,480	1,080	670	616	222	109
18	1,440	546	430	505	*260	1,550	1,440	942	602	551	*210	105
19	1,440	*526	410	505	700	1,480	2,200	*820	607	*497	203	102
20	1,550	551	406	490	2,000	1,440	*3,940	850	1,080	464	192	105
21	*1,510	561	402	*475	5,000	1,400	2,230	820	1,040	411	183	109
22	1,440	556	402	460	3,500	1,250	*1,590	760	*754	384	175	112
23	1,400	546	405	450	2,200	*1,140	1,400	748	670	389	172	114
24	1,290	536	405	430	1,700	1,050	2,800	736	613	469	164	118
25	1,220	511	405	420	1,400	960	4,340	660	561	355	157	145
26	1,080	492	410	410	2,000	900	3,940	618	516	327	152	186
27	1,010	507	450	390	2,800	930	2,930	602	483	323	147	229
28	975	531	520	380	3,000	990	2,570	644	442	304	140	210
29	942	507	475	370	.....	1,040	2,390	618	433	290	150	222
30	850	483	450	360	.....	1,080	2,210	618	442	296	152	293
31	820	.....	530	350	.....	1,010	.....	608	.....	279	147	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1953; Jan. 1 to Feb. 15, Mar. 3-7, Dec. 3, 4, 7-19, 28-31, 1954; Jan. 1 to Mar. 2, Mar. 7, 8, 24-28, 1955.

Wapsipinicon River near DeWitt, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	385	284	210	183	2,274	3,845	6,743	4,325	2,178	4,194	1,503	1,192
1951-52	1,366	2,078	1,004	1,000	1,882	4,118	3,366	1,912	1,753	707	500	394
1952-53	227	309	577	543	2,509	2,203	2,103	1,776	1,272	846	1,343	262
1953-54	198	220	252	136	262	301	618	1,622	1,895	707	709	417
1954-55	1,383	603	438	528	1,035	1,405	1,773	1,120	780	502	208	134

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.167	0.123	0.091	0.080	0.989	1.67	2.93	1.88	0.947	1.82	0.653	0.518
1951-52	.594	.903	.437	.826	.818	1.79	1.46	.831	.762	.333	.217	.171
1952-53	.099	.173	.251	.236	1.00	.997	.914	.772	.553	.368	.584	.114
1953-54	.086	.096	.110	.059	.114	.131	.269	.705	.824	.307	.308	.181
1954-55	.601	.262	.190	.230	.450	.611	.771	.487	.339	.218	.117	.058

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.19	0.14	0.11	0.09	1.03	1.93	3.27	2.17	1.06	2.10	0.75	0.58
1951-52	.68	1.01	.50	.95	.88	2.06	1.63	.96	.85	.38	.25	.19
1952-53	.11	.19	.29	.27	1.14	1.15	1.02	.89	.62	.42	.67	.13
1953-54	.10	.11	.13	.07	.12	.15	.30	.81	.92	.35	.36	.20
1954-55	.69	.29	.22	.26	.47	.70	.86	.56	.38	.25	.13	.07

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								1,296	7.65
1951	May 6, 1951	11.30	11,800	150	2,273	0.988	13.42	2,571	15.17
1952	Mar. 13, 1952.	10.88	9,350	240	1,751	.761	10.34	1,481	8.74
1953	Feb. 21, 1953.	10.73	9,350	198	1,170	.509	6.89	1,125	6.65
1954	Apr. 19, 1954.	8.15	3,940	100	612	.266	3.62	760	4.48
1955	Oct. 11, 1954.	(1)9.33	5,620	102	829	.360	4.88		

(1) Maximum gage height, 10.22 ft. Feb. 21, 1955 (backwater from ice).

Peak Discharge (base, 3,500 cfs)

1951: Feb. 20 (6:30 a.m.) about 9,800 cfs (10.81 ft.); Feb. 26 (5 p.m.) 11,300 cfs (11.20 ft.); Apr. 3 (11 p.m.) 10,900 cfs (11.07 ft.); Apr. 14 (1 a.m.) 10,100 cfs (10.87 ft.); May 6 (1 a.m.) 11,800 cfs (11.30 ft.); June 8 (10 p.m.) 4,810 cfs (8.70 ft.); July 15 (12 m.) 9,350 cfs (10.87 ft.); Sept. 1 (6 a.m.) 3,680 cfs (7.83 ft.); Nov. 14 (6:30 p.m.) 8,000 cfs (10.27 ft.).

1952: Jan. 25 (5 a.m.) about 3,600 cfs (9.62 ft.); Mar. 13 (8 p.m.) 9,350 cfs (10.88 ft.); Apr. 10 (2 a.m.) 5,620 cfs (9.39 ft.); May 23 (8:30 p.m.) 5,280 cfs (9.03 ft.); June 14 (7 p.m.) 5,800 cfs (9.34 ft.).

1953: Feb. 8 (1:30 a.m.) 5,620 cfs (9.16 ft.); Feb. 21 (4 p.m.) 9,350 cfs (10.73 ft.); Apr. 2 (3 a.m.) 3,790 cfs (7.87 ft.).

1954: May 7 (2 p.m.) 3,500 cfs (7.84 ft.); June 3 (3 a.m.) 3,700 cfs (8.04 ft.); Aug. 19 (12:30 a.m.) 3,940 cfs (8.15 ft.); Oct. 11 (11:30 p.m.) 5,620 cfs (9.33 ft.).

1955: Feb. 21 about 5,100 cfs; Apr. 20 (about 2:30 p.m.) 4,780 cfs (8.76 ft.); Apr. 25 (12 p.m.) 4,630 cfs (8.68 ft.).

West Fork Iowa River near Klemme, Iowa

LOCATION.—Lat. 42°53'00", long. 93°42'20", between secs. 8 and 17, T. 94 N., R. 24 W., on downstream side of highway bridge 8 miles southwest of Klemme, and 9 miles upstream from confluence with East Fork Iowa River.

DRAINAGE AREA.—110 square miles, approximately.

RECORDS AVAILABLE.—April 1948 to September 1955.

GAGE.—Wire-weight gage read once daily, more often at high stages. Datum of gage is 1,180.83 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—7 years, 50.0 cfs.

EXTREMES.—1948-55: Maximum discharge observed, 1,920 cfs June 21, 1954, (gage height, 14.97 feet, from floodmark); no flow for part of day Jan. 12, 1950.

REMARKS.—Records fair except those for periods of ice effect or doubtful gage-height record, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	13	6.6	3.8	2.7	1.0	*90	450	468	63	610	29	29
2	17	6.8	3.7	2.7	1.6	64	520	535	174	455	29	28
3	19	7.2	3.0	2.6	1.5	54	650	379	102	390	29	26
4	15	7.0	3.5	2.6	1.5	46	820	270	109	313	28	25
5	13	7.0	3.4	2.5	1.5	40	1,000	198	80	245	28	23
6	11	6.8	3.3	2.5	1.5	48	*1,240	166	68	198	63	22
7	16	6.6	3.2	2.4	1.4	41	*1,390	146	61	174	54	22
8	19	5.6	3.1	2.4	1.4	35	1,060	130	54	429	44	21
9	15	*4.8	3.0	2.3	1.4	31	912	109	50	535	34	21
10	15	5.7	2.9	2.3	1.4	26	772	103	46	*390	*30	35
11	14	5.8	*2.8	2.2	1.4	24	670	91	38	291	29	38
12	*13	5.8	2.8	2.1	1.4	21	655	83	35	245	26	46
13	9.3	5.7	2.8	2.1	1.4	19	640	70	32	214	35	118
14	9.3	5.6	2.7	2.0	1.4	18	507	66	*28	174	52	83
15	9.1	5.5	2.7	1.9	1.4	17	379	61	26	154	73	59
16	9.1	5.4	2.7	1.9	1.3	16	260	59	25	118	63	49
17	10	5.2	2.7	1.8	1.4	15	240	*57	24	94	59	43
18	10	5.1	2.7	*1.8	1.5	15	210	52	22	80	49	37
19	10	5.0	2.7	1.8	1.9	14	174	50	*20	70	50	35
20	10	4.9	2.7	1.8	3.0	14	158	46	20	63	57	*32
21	9.1	4.8	2.7	1.8	6.0	14	230	42	19	115	52	30
22	8.3	4.7	2.7	1.8	20	13	324	41	18	66	50	29
23	7.7	4.6	2.7	1.8	45	13	235	36	18	54	48	27
24	7.3	4.5	2.7	1.8	100	13	202	31	18	50	42	26
25	7.2	4.4	2.7	*1.8	200	*13	260	34	25	45	38	24
26	7.2	4.3	2.7	1.7	450	15	250	29	*1,140	43	37	23
27	7.9	4.2	2.7	1.7	*350	60	206	26	1,240	41	68	22
28	7.7	4.2	2.7	1.7	180	580	194	25	1,150	37	50	21
29	7.3	4.1	2.7	1.7	.....	*560	260	25	*1,000	34	41	20
30	7.2	3.9	2.7	1.6		500	291	24	806	32	34	20
31	6.6	.....	2.7	1.6	.....	460	.....	24	.....	29	31	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 8 to Dec. 31, 1950; Jan. 1 to Apr. 4, 1951.

West Fork Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	20	29	19	11	13	100	501	38	43	51	15	20
2	19	19	23	11	14	64	354	*36	40	63	16	16
3	19	17	26	11	14	55	286	35	38	60	15	13
4	47	17	25	11	14	46	206	34	37	57	16	13
5	43	17	24	11	13	47	164	32	*55	53	18	13
6	38	17	24	11	12	36	136	29	50	58	18	12
7	33	17	23	11	12	31	115	32	44	464	18	11
8	27	18	20	11	12	28	111	47	38	501	16	10
9	*26	19	16	11	19	26	107	57	39	290	15	9.5
10	24	20	12	11	37	24	119	54	35	159	14	9.1
11	24	23	11	11	120	46	127	52	34	*127	15	*8.9
12	22	29	*14	11	250	57	132	49	36	93	15	8.5
13	21	33	14	11	341	60	136	45	82	96	15	7.8
14	20	*29	14	11	248	57	150	42	534	100	13	7.1
15	20	31	13	11	*174	55	200	38	501	93	*11	6.8
16	18	29	13	12	140	54	189	35	328	80	14	7.0
17	16	28	12	12	103	66	132	34	184	68	13	7.1
18	17	26	12	*13	77	270	116	33	119	52	11	7.0
19	18	24	12	14	71	328	107	30	89	42	10	6.8
20	16	23	11	15	62	*381	89	30	77	39	9.5	6.6
21	37	22	11	15	54	409	86	30	77	41	8.9	6.6
22	74	21	11	14	50	308	93	33	69	39	8.4	7.0
23	63	21	11	13	45	242	83	34	60	36	8.0	6.6
24	*56	20	11	12	38	140	71	34	54	32	7.6	6.8
25	51	20	11	12	35	100	63	33	51	31	7.3	7.3
26	44	20	11	12	37	93	58	32	54	29	7.1	7.6
27	37	20	11	12	56	89	55	40	63	27	8.0	7.8
28	37	19	11	12	140	132	50	63	57	24	9.9	8.4
29	36	18	11	12	127	474	46	57	51	21	23	8.5
30	32	18	11	12	.....	840	42	53	48	20	39	9.7
31	30	.....	11	12	.....	704	.....	47	.....	16	29	.....
1952-53												
1	9.2	5.7	1.5	2.0	1.9	2.9	59	215	18	27	22	5.1
2	8.8	5.4	1.8	2.0	1.9	2.9	*55	240	17	24	107	4.7
3	8.6	5.2	2.0	2.0	1.9	2.9	66	210	21	23	341	4.5
4	8.3	4.8	2.2	1.9	1.9	2.8	68	164	19	22	378	4.3
5	8.1	4.4	2.4	1.9	1.9	2.7	64	142	15	21	305	3.8
6	7.8	4.2	2.5	1.9	2.0	2.7	61	106	14	26	146	3.4
7	7.6	3.9	2.5	1.9	2.1	2.7	55	84	37	24	92	3.3
8	7.2	4.2	2.5	1.9	2.1	2.7	50	78	329	17	81	3.1
9	7.0	4.3	2.5	1.9	2.2	2.7	48	75	261	14	72	3.4
10	6.8	4.5	2.4	1.9	2.2	10	50	71	142	13	63	3.8
11	6.6	5.0	2.4	2.0	2.2	30	49	80	102	12	52	4.0
12	6.6	5.7	2.4	2.0	2.2	90	47	73	76	12	47	4.3
13	6.5	6.0	2.3	2.0	2.3	135	48	55	68	15	38	4.0
14	6.4	6.5	2.3	2.0	2.3	150	48	40	54	19	28	4.0
15	6.2	6.1	2.2	2.0	2.3	145	49	39	44	51	20	3.3
16	6.0	6.0	2.1	2.0	2.3	135	54	42	39	48	17	3.1
17	*5.7	10	2.0	2.0	2.3	125	45	40	37	36	14	3.0
18	6.1	7.3	1.9	2.0	2.4	115	41	33	35	30	13	3.0
19	6.5	*6.5	1.9	2.0	2.4	100	37	42	32	18	11	2.6
20	5.8	4.4	1.8	2.0	2.4	90	36	39	29	8.6	*10	2.8
21	5.0	4.2	1.8	2.0	2.4	80	39	45	27	18	9.8	3.6
22	4.8	4.3	1.8	2.0	2.5	68	34	48	24	22	9.5	4.0
23	5.2	4.3	1.8	*2.0	2.7	60	29	49	22	*10	9.2	5.6
24	6.0	4.2	1.8	2.1	2.7	55	30	50	19	14	9.2	*4.9
25	5.5	4.2	1.8	2.1	2.6	52	71	52	55	13	8.9	4.7
26	5.2	3.5	1.8	2.1	*2.5	48	113	50	*40	11	8.6	4.7
27	5.0	2.7	1.8	2.1	2.6	44	106	48	38	9.5	8.3	4.5
28	4.7	2.1	1.8	2.1	2.8	40	91	45	33	8.3	8.0	4.3
29	5.2	1.6	1.9	2.0	.....	36	*72	*40	27	13	7.8	4.3
30	5.5	1.2	1.9	2.0	.....	34	*92	30	26	32	6.6	4.0
31	6.0	.....	2.0	2.0	.....	75	.....	24	.....	24	5.4	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3-10, Dec. 11-31, 1951; Jan. 1 to Feb. 12, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 23, 1953.

West Fork Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	4.3	4.3	6.1	3.8	0.8	7.8	11	79	30	338	36	116
2	4.5	4.2	5.4	3.7	.7	7.2	8.6	92	35	282	34	95
3	4.5	4.0	7.9	3.6	.7	6.6	9.0	95	48	271	*29	79
4	4.6	3.8	*0.1	3.5	*.7	5.8	9.5	88	*63	240	25	69
5	4.7	*3.6	9.5	3.3	.9	*5.4	10	66	68	210	23	62
6	4.7	3.5	10	3.3	1.0	5.0	11	*50	67	183	19	56
7	4.8	3.5	9.9	*3.1	1.1	5.2	11	46	60	174	17	47
8	4.9	3.5	9.0	2.9	1.2	5.6	12	40	52	148	15	42
9	*5.0	3.7	9.2	2.6	1.3	7.2	11	33	38	188	16	*41
10	5.0	3.8	8.9	2.3	1.5	7.9	10	29	23	178	14	37
11	5.0	4.0	8.5	2.2	1.8	7.2	9.3	28	24	148	13	35
12	5.0	4.0	7.6	2.0	2.0	5.7	8.6	26	26	120	11	34
13	5.0	4.1	8.0	1.8	2.2	6.5	8.9	24	24	98	10	33
14	5.0	4.0	7.5	1.6	2.5	7.5	9.8	23	20	76	11	31
15	5.0	3.9	6.0	1.5	2.8	10	11	22	18	72	11	30
16	5.0	3.8	5.1	1.4	3.2	29	11	20	19	68	10	29
17	5.0	3.7	4.6	1.4	3.7	52	9.5	17	21	61	9.2	28
18	5.1	3.7	4.1	1.3	4.2	71	8.9	15	*1,200	54	9.2	27
19	5.1	4.5	4.8	1.2	5.0	56	8.6	12	*1,840	50	12	27
20	5.1	5.7	5.9	1.2	9.0	37	8.9	11	1,580	44	14	27
21	5.1	7.5	6.0	1.1	16	30	10	10	*1,880	43	16	26
22	5.1	6.5	5.4	1.1	15	25	20	9.8	1,700	43	67	26
23	5.0	5.7	4.2	1.0	13	22	33	11	1,080	40	289	25
24	5.0	4.6	3.4	1.0	12	19	23	19	1,550	36	410	24
25	5.0	3.8	4.0	.9	11	18	19	17	*1,410	39	338	23
26	5.0	3.2	4.4	.9	9.8	17	20	17	1,270	32	410	23
27	4.9	4.5	4.4	.9	9.2	16	19	25	1,070	30	386	23
28	4.8	5.3	4.3	.9	8.5	16	18	56	812	29	326	23
29	4.7	6.0	4.3	.9	.....	15	18	61	599	28	255	26
30	4.6	6.6	4.2	.8	.....	14	17	63	434	26	183	28
31	4.5	.....	3.9	.8	.....	*12	.....	57	.....	40	144	.....
1954-55												
1	33	42	24	16	7.1	15	35	64	30	26	13	2.6
2	40	41	*27	16	7.1	20	32	53	278	25	11	2.6
3	62	40	29	17	*7.1	50	31	39	176	24	8.8	2.5
4	69	*38	27	16	7.2	92	30	*31	163	22	*7.2	2.5
5	67	37	25	15	7.2	72	29	28	143	200	6.6	2.5
6	60	37	24	*15	7.1	59	29	27	127	305	6.4	2.8
7	*50	37	22	14	7.0	45	*27	26	98	195	6.4	3.2
8	76	35	23	14	6.9	35	27	24	68	*143	6.4	3.9
9	85	34	23	13	6.8	58	26	24	*52	151	6.6	4.5
10	109	34	23	13	6.7	*128	26	28	48	139	6.6	4.8
11	124	33	22	12	6.6	140	26	27	42	108	6.2	5.2
12	95	32	22	12	6.4	93	26	26	37	68	5.9	4.8
13	128	32	21	12	6.3	71	27	24	32	40	5.7	5.5
14	148	31	20	12	6.2	60	27	21	24	32	5.2	5.2
15	165	31	19	11	6.1	52	26	20	20	26	4.7	4.7
16	160	30	18	11	6.1	45	25	18	18	24	4.4	4.5
17	140	29	16	11	6.3	40	25	17	17	22	4.2	4.4
18	124	29	16	11	8.0	36	25	17	16	20	3.9	4.2
19	98	28	16	11	10	33	26	16	16	19	3.8	4.4
20	78	27	16	11	15	30	26	16	14	17	3.5	4.1
21	72	27	17	11	13	28	27	15	13	16	3.3	4.2
22	69	26	17	10	12	27	27	14	13	14	3.2	4.4
23	66	26	17	10	10	25	32	13	12	13	3.1	4.1
24	61	26	17	9.3	9.3	24	124	14	12	12	4.5	3.8
25	56	26	17	8.8	8.6	22	136	16	11	12	4.0	3.5
26	55	25	16	8.4	8.2	21	131	16	11	11	3.6	3.5
27	54	25	15	7.9	8.4	25	115	14	10	8.8	3.4	3.6
28	52	24	14	7.5	10	32	94	11	12	7.7	3.2	3.2
29	48	23	14	7.2	.....	45	73	15	13	6.1	3.0	3.0
30	46	22	15	7.2	.....	42	72	14	18	6.6	2.8	2.7
31	44	.....	15	7.1	.....	37	.....	13	.....	14	*2.7	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1953; Jan. 1 to Mar. 15, Nov. 26 to Dec. 31, 1954; Jan. 1 to Mar. 28, 1955. Doubtful gage-height record Oct. 3 to Nov. 25, 1953; Mar. 22 to Apr. 11, Apr. 24-30, Oct. 6, Nov. 17-25, 1954; Mar. 29 to Apr. 11, Aug. 3-9, Aug. 24 to Sept. 5, 1955; discharge computed on basis of discharge measurements, weather records, and by comparison with records for nearby stations.

West Fork Iowa River near Klemme, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	11.0	5.39	2.92	2.05	49.4	93.2	505	112	219	187	43.6	34.5
1951–52.....	31.8	22.1	14.8	11.9	80.3	173	136	39.9	99.6	92.5	14.3	9.22
1952–53.....	6.45	4.75	2.06	1.99	2.29	56.2	57.0	75.8	56.7	20.7	62.8	3.97
1953–54.....	4.87	4.43	6.34	1.87	5.03	17.7	13.2	37.6	582	109	102	39.7
1954–55.....	81.7	30.9	19.6	11.5	8.10	48.5	40.1	22.7	51.5	55.7	5.27	3.83

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.100	0.049	0.027	0.019	0.449	0.847	4.59	1.02	1.99	1.70	0.396	0.314
1951–52.....	.289	.201	.135	.108	.730	1.57	1.24	.363	.905	.841	.130	.084
1952–53.....	.059	.043	.019	.018	.021	.511	.518	.689	.515	.188	.571	.036
1953–54.....	.044	.040	.058	.017	.046	.161	.120	.341	5.29	.991	.927	.361
1954–55.....	.743	.281	.178	.105	.074	.441	.419	.206	.468	.506	.048	.035

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.12	0.05	0.03	0.02	0.47	0.98	5.13	1.18	2.22	1.96	0.46	0.35
1951–52.....	.33	.22	.16	.12	.79	1.81	1.38	.42	1.01	.97	.15	.09
1952–53.....	.07	.05	.02	.02	.02	.59	.58	.79	.57	.22	.66	.04
1953–54.....	.05	.04	.07	.02	.05	.19	.13	.39	5.90	1.15	1.07	.40
1954–55.....	.86	.31	.21	.12	.08	.51	.47	.24	.52	.58	.06	.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	23.8	2.95
1951....	Apr. 7, 1951..	(1)11.84	1,420	1.3	105	0.955	12.97	109	13.48
1952....	Mar. 30, 1952.	9.12	860	0.6	60.3	.548	7.45	55.6	6.88
1953....	June 8, 1953..	6.16	391	1.2	29.4	.267	3.63	29.6	3.65
1954....	June 21, 1954.	14.97	1,920	.7	76.7	.697	9.46	86.5	10.68
1955....	July 6, 1955...	5.9	349	2.5	33.3	.294	4.00	.....	.....

(1) Maximum gage height observed, 12.38 ft. June 26, 1951.

Peak Discharge (base, 500 cfs)

1951: Feb. 26 (12:30 p.m.) about 550 cfs (9.63 ft.); Mar. 28 (5 p.m.) about 740 cfs (10.68 ft.); Apr. 7 (3 a.m.) 1,420 cfs (11.84 ft.); May 2 (2 a.m.) 565 cfs (8.33 ft.); June 26 (1:30 p.m.) 1,340 cfs (12.38 ft.); July 9 (8 p.m.) 580 cfs (8.38 ft.).

1952: Mar. 30 (5 a.m.) 860 cfs (9.12 ft.); June 14 (5 p.m.) 568 cfs (7.36 ft.); July 7 (7 p.m.) 653 cfs (7.93 ft.).

1953: No peak above base.

1954: June 21 (4 a.m.) 1,920 cfs (14.97 ft.).

1955: No peak above base.

East Fork Iowa River near Klemme, Iowa

LOCATION.—Lat. 43°01', long. 93°37', between secs. 25 and 26, T. 95 N., R. 24 W., on upstream side of highway bridge 1½ miles northwest of Klemme and 12½ miles upstream from confluence with West Fork Iowa River.

DRAINAGE AREA.—120 square miles, approximately.

RECORDS AVAILABLE.—April 1948 to September 1955.

GAGE.—Wire-weight gage read once daily, more often at high stages. Datum of gage is 1,180.13 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—7 years, 56.0 cfs.

EXTREMES.—1948-55: Maximum discharge, 5,960 cfs June 19, 1954 (gage height, 11.2 feet, from floodmark); minimum daily, 0.8 cfs Sept. 16, 1948.

Maximum stage known prior to April 1948, about 10 feet in June 1944, from information by local residents.

REMARKS.—Records good except those for periods of ice effect or doubtful gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	9.9	9.1	4.6	4.1	2.6	100	550	505	220	422	24	38
2.....	10	9.1	4.4	4.2	2.5	70	550	555	348	379	24	36
3.....	9.6	8.9	4.3	4.3	2.4	62	690	348	302	363	26	33
4.....	10	8.9	4.2	4.3	2.3	55	850	265	250	320	25	31
5.....	13	8.6	4.0	4.4	2.3	50	1,050	231	150	260	95	29
6.....	13	8.4	3.9	4.5	2.2	60	1,760	190	118	222	79	27
7.....	18	8.4	3.7	4.5	2.2	50	*1,760	168	100	190	65	26
8.....	17	8.4	3.6	4.5	2.1	41	*1,100	141	76	387	60	24
9.....	16	*8.3	3.5	4.6	2.1	35	*742	132	58	422	55	71
10.....	15	8.2	3.4	4.6	2.0	30	615	106	52	*302	*46	68
11.....	14	8.0	*3.3	4.6	2.0	26	555	112	49	236	43	67
12.....	*13	7.8	3.3	4.6	2.0	24	542	96	48	208	42	218
13.....	13	7.7	3.3	4.6	2.0	22	542	92	46	177	42	213
14.....	12	7.5	3.3	4.6	2.0	20	265	91	*45	159	90	200
15.....	12	7.4	3.2	4.6	2.0	19	290	79	43	146	104	136
16.....	12	7.2	3.2	4.6	2.0	18	245	70	41	118	84	107
17.....	11	7.0	3.2	4.6	2.0	17	208	*73	39	101	79	82
18.....	11	6.8	3.2	*4.6	2.0	16	186	71	35	87	62	67
19.....	10	6.6	3.2	4.5	2.2	15	159	68	*33	76	59	61
20.....	10	6.4	3.2	4.3	2.5	15	164	67	28	69	78	*51
21.....	10	6.3	3.3	4.1	6.0	14	168	61	27	72	63	43
22.....	9.9	6.1	3.3	4.0	15	13	208	59	25	62	58	42
23.....	9.6	5.9	3.4	3.8	40	13	213	53	25	51	51	41
24.....	9.0	5.7	3.5	3.5	100	13	208	50	24	43	51	40
25.....	9.4	5.5	3.6	*3.4	270	*13	200	49	28	40	48	38
26.....	9.4	5.4	3.6	3.2	600	14	204	48	*2,090	38	43	37
27.....	9.4	5.3	3.7	3.1	400	100	*204	46	*1,910	32	48	34
28.....	9.4	5.1	3.8	3.0	200	680	280	44	1,360	29	50	30
29.....	9.4	5.0	3.9	2.9	.....	800	280	39	900	27	52	30
30.....	9.4	4.8	3.9	2.8	.....	680	270	36	662	27	55	29
31.....	9.1	.....	4.0	2.7	.....	600	.....	95	.....	24	44	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 7 to Dec. 31, 1950; Jan. 1 to Apr. 5, 1951.

East Fork Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	28	41	26	15	16	140	450	44	30	41	17	18
2	27	37	27	15	16	100	355	*42	28	37	20	16
3	32	36	30	15	16	80	314	41	28	34	19	16
4	40	35	32	15	16	66	265	40	28	32	16	16
5	40	35	34	14	16	60	226	39	*27	25	16	16
6	38	36	41	14	16	58	159	45	26	24	16	16
7	35	37	43	14	16	50	150	50	26	280	15	15
8	32	38	33	14	16	45	146	66	56	530	15	15
9	*31	40	28	14	25	42	146	83	54	*460	15	14
10	30	43	25	14	50	40	146	72	53	275	15	13
11	29	48	27	14	200	99	150	59	51	226	14	*12
12	29	55	*30	14	350	79	150	50	46	204	14	12
13	28	61	30	14	380	63	159	48	141	159	14	12
14	27	*60	29	14	300	53	168	46	408	97	*13	11
15	26	47	28	15	*230	48	195	40	530	71	16	10
16	25	48	27	15	170	70	222	39	431	61	10	9.9
17	28	55	26	15	120	100	190	38	255	57	15	10
18	29	51	24	*16	90	387	172	35	150	54	15	9.9
19	34	48	23	16	82	492	154	35	91	51	14	9.6
20	123	40	22	17	75	*460	130	35	53	46	13	9.6
21	118	47	21	17	68	470	123	37	60	41	13	9.4
22	123	45	20	17	60	355	114	38	67	37	13	9.4
23	123	45	19	17	56	290	103	39	63	34	13	9.4
24	*97	43	18	16	52	226	96	38	52	31	12	9.4
25	83	41	17	15	50	164	87	37	48	29	12	9.4
26	82	35	17	15	50	132	80	35	43	26	12	9.2
27	79	30	16	15	81	141	74	34	42	23	12	9.2
28	72	28	16	15	170	208	69	32	43	25	12	9.2
29	58	27	16	15	150	255	62	32	43	22	13	9.2
30	47	27	16	15	.....	680	46	32	45	16	20	9.0
31	43	.....	15	15	.....	680	.....	31	.....	15	20	.....
1952-53												
1	9.0	9.0	1.7	2.8	4.3	5.3	d50	170	28	28	28	10
2	9.0	8.6	2.2	2.9	4.3	5.1	d*45	200	28	28	27	10
3	9.0	9.2	2.6	2.9	4.3	4.9	d56	175	27	26	200	9.7
4	9.0	9.0	2.8	2.9	4.3	4.8	d64	150	26	25	240	9.5
5	8.8	9.0	3.0	3.0	4.3	4.7	d61	140	24	80	160	9.5
6	8.8	8.8	3.0	3.0	4.3	4.7	57	d125	23	101	112	9.2
7	8.8	9.0	3.1	3.1	4.3	4.6	60	d115	78	86	82	9.0
8	8.8	9.4	3.1	3.1	4.3	4.7	61	d105	340	56	65	8.8
9	8.8	9.4	3.1	3.2	4.3	5.0	61	d96	325	34	55	8.8
10	8.8	9.2	3.1	3.2	4.3	25	60	d88	270	29	50	8.8
11	8.6	9.4	3.0	3.3	4.3	90	62	d80	210	22	38	8.6
12	8.6	9.0	3.0	3.4	4.4	130	61	d72	170	21	29	8.6
13	8.6	9.0	3.0	3.5	4.4	150	62	d68	128	20	26	8.4
14	9.0	9.4	2.9	3.5	4.4	160	80	64	59	78	21	8.2
15	9.0	9.4	2.9	3.6	4.5	150	88	58	46	56	20	8.2
16	9.4	9.6	2.8	3.7	4.5	d130	90	54	35	48	20	8.2
17	*9.0	11	2.8	3.8	4.6	d120	96	52	33	34	19	8.0
18	8.8	d10	2.8	3.9	4.6	d105	99	48	32	29	18	8.0
19	9.0	d*8.8	*2.8	4.0	4.7	d98	91	43	29	24	17	8.0
20	9.0	d8.8	2.7	4.0	4.7	d90	68	48	28	20	* 16	8.0
21	9.0	d8.8	2.7	4.1	4.8	d84	49	54	27	19	16	8.0
22	8.8	d8.8	2.7	*4.2	5.0	d74	49	52	22	17	15	7.8
23	8.8	8.2	2.7	4.2	5.1	d67	42	52	21	*16	14	7.6
24	8.8	7.4	2.7	4.3	5.2	d60	57	51	21	15	12	*7.6
25	9.0	5.5	2.7	4.3	5.3	55	94	48	54	14	12	7.6
26	9.0	4.0	2.7	4.3	*5.5	50	140	48	*52	14	12	7.6
27	8.8	3.2	2.7	4.3	5.6	45	145	47	48	13	11	7.6
28	8.8	2.6	2.7	4.3	5.6	38	82	47	44	13	11	7.6
29	9.0	1.7	2.8	4.3	.....	38	70	*45	38	42	11	7.6
30	9.0	1.2	2.8	4.3	.....	46	*100	41	28	34	10	7.6
31	9.0	.....	2.8	4.3	.....	56	.....	30	.....	28	10	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 1-7, Dec. 9-31, 1951; Jan. 1 to Mar. 10, Nov. 23 to Dec. 31, 1952; Jan. 1 to Mar. 15, 1953.

East Fork Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	7.4	5.8	9.2	6.6	3.0	10	8.4	17	23	240	40	126
2	7.4	5.8	9.8	6.4	3.1	8.5	8.2	84	34	215	36	107
3	7.4	5.8	11	6.3	3.2	7.5	7.8	92	*44	385	*34	88
4	7.2	5.8	*11	6.2	*3.3	*7.0	8.4	57	51	318	29	78
5	7.2	*5.8	11	6.0	3.5	6.3	9.0	45	44	215	26	69
6	7.0	6.0	11	5.8	3.7	5.7	8.0	*45	39	200	23	61
7	7.0	6.0	11	*5.7	4.0	5.4	10	34	29	220	22	50
8	6.9	6.0	11	5.4	4.3	6.0	9.5	30	29	185	20	42
9	*0.9	6.0	10	4.0	4.7	8.7	9.5	27	22	*165	19	*41
10	6.9	6.0	9.0	4.5	5.1	7.5	9.0	22	18	150	18	36
11	6.9	6.0	9.5	4.0	5.6	6.5	8.0	20	20	130	18	33
12	6.9	5.8	9.5	3.6	6.3	6.0	8.2	20	18	97	17	33
13	6.9	5.8	9.5	3.4	7.0	7.3	8.4	18	17	87	17	33
14	6.9	6.0	8.8	3.3	8.3	8.1	8.2	15	17	71	19	33
15	6.9	6.0	8.0	3.2	9.7	11	9.0	15	16	66	17	29
16	6.9	5.8	7.1	3.1	11	14	9.2	15	16	61	16	38
17	6.9	6.0	6.2	3.0	14	26	9.0	14	17	51	16	37
18	7.0	6.0	5.8	3.0	17	31	8.6	14	*1,780	49	100	37
19	6.9	8.0	7.0	2.9	20	22	8.2	14	3,040	47	82	35
20	6.9	16	8.0	2.9	22	12	9.2	14	*2,110	47	48	31
21	6.9	11	9.0	2.9	24	11	28	14	3,880	53	47	27
22	6.2	10	8.2	2.8	20	10	18	14	2,140	58	102	24
23	6.2	8.8	7.1	2.8	18	9.7	17	14	1,280	47	438	26
24	6.2	7.5	6.0	2.8	16	11	18	14	*888	44	445	24
25	6.2	5.4	6.8	2.8	15	10	18	14	697	40	400	20
26	6.2	6.5	7.2	2.8	13	10	15	17	614	39	430	22
27	6.2	8.0	7.2	2.8	12	10	15	22	536	37	370	24
28	6.2	11	7.2	2.8	11	9.2	15	28	442	37	280	26
29	6.2	10	7.1	2.8	.....	8.6	16	33	363	39	220	26
30	6.2	9.8	6.9	2.9	.....	8.6	17	29	291	41	175	27
31	5.8	.....	6.8	2.9	.....	*9.0	.....	26	.....	42	145	.....
1954-55												
1	28	36	21	15	8.0	19	34	37	19	30	8.3	4.6
2	28	33	*24	15	8.0	30	31	35	50	28	8.3	4.7
3	44	45	23	16	*8.0	50	39	32	35	33	8.1	4.7
4	51	*37	21	16	8.2	90	32	*26	35	46	*8.1	4.7
5	46	36	20	15	8.2	82	35	24	33	261	7.2	4.8
6	44	36	19	*15	8.2	60	32	18	45	295	7.1	4.7
7	*39	36	18	15	8.1	47	*30	18	35	*205	6.8	4.7
8	48	35	18	15	8.0	32	30	20	24	*135	6.0	4.8
9	59	34	20	14	7.8	30	30	28	*22	79	6.0	4.8
10	68	34	20	14	7.6	*85	30	21	22	70	6.6	4.8
11	102	33	20	13	7.5	90	30	21	20	44	6.6	4.9
12	85	33	20	13	7.3	70	31	20	19	32	6.3	4.9
13	102	33	20	13	7.2	61	32	20	18	24	6.3	5.7
14	118	32	19	12	7.1	55	30	19	14	19	6.2	5.6
15	119	31	18	12	7.0	51	29	19	14	16	6.0	5.4
16	112	31	17	12	8.5	47	28	16	14	14	6.0	5.3
17	96	30	17	11	9.5	42	28	16	14	14	5.7	5.3
18	76	28	17	11	14	37	30	15	12	13	5.7	5.3
19	70	28	17	11	20	34	30	15	12	12	5.7	5.2
20	64	27	17	11	30	31	25	15	11	11	5.7	5.3
21	62	27	17	11	26	29	18	15	11	9.4	5.4	5.4
22	56	26	17	11	22	27	20	15	11	10	5.4	5.7
23	52	26	18	10	17	26	24	15	11	9.7	5.3	5.8
24	50	27	18	10	16	24	93	14	11	10	6.3	5.7
25	48	26	18	9.5	15	23	135	12	11	10	5.8	5.7
26	48	24	18	9.1	13	22	109	14	11	10	5.6	5.7
27	50	26	18	8.7	12	22	89	15	11	9.4	5.2	6.2
28	56	27	17	8.4	11	27	69	15	11	9.0	4.9	5.8
29	53	21	16	8.2	.....	40	52	14	34	8.7	4.9	5.7
30	50	19	15	8.0	.....	52	42	15	33	8.7	4.8	5.6
31	46	.....	14	8.0	.....	38	.....	16	.....	8.5	*4.5	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1953; Jan. 1 to Mar. 15, Nov. 2, 3, 26, Nov. 29 to Dec. 31, 1954; Jan. 1 to Mar. 29, 1955.

East Fork Iowa River near Klemme, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	11.4	7.13	3.61	4.07	59.8	119	502	131	304	164	56.3	65.0
1951-52	52.8	42.3	25.0	15.0	101	201	164	43.0	101	98.8	14.8	11.8
1952-53	8.90	7.88	2.79	3.67	4.65	61.4	73.3	79.5	76.5	34.5	44.4	8.40
1953-54	6.74	7.28	8.50	3.91	10.3	10.4	11.7	27.0	637	112	118	42.8
1954-55	63.5	30.6	18.5	12.0	11.8	44.3	42.2	19.2	21.1	47.0	6.19	5.25

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.095	0.059	0.030	0.034	0.498	0.992	4.18	1.09	2.53	1.37	0.469	0.542
1951-52	.440	.352	.208	.125	.842	1.67	1.37	.358	.842	.823	.123	.098
1952-53	.074	.066	.023	.031	.039	.512	.611	.662	.637	.287	.370	.070
1953-54	.056	.061	.071	.033	.086	.087	.097	.225	5.31	.933	.983	.357
1954-55	.529	.255	.154	.100	.098	.369	.352	.160	.176	.399	.052	.044

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.11	0.07	0.03	0.04	0.52	1.14	4.67	1.25	2.83	1.58	0.54	0.60
1951-52	.51	.39	.24	.14	.91	1.93	1.52	.41	.94	.95	.14	.11
1952-53	.09	.07	.03	.04	.04	.59	.68	.76	.71	.33	.43	.08
1953-54	.06	.07	.08	.04	.09	.10	.11	.26	5.92	1.08	1.14	.40
1954-55	.61	.28	.18	.11	.10	.43	.39	.18	.20	.46	.06	.05

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950	.....	.....	.....	.....	.....	.....	.....	26.3	2.96
1951	June 26, 1951	10.80	3,440	2.0	118	0.983	13.38	127	14.31
1952	Mar. 30, 1952	7.60	900	9.0	72.2	.602	8.19	63.8	7.24
1953	June 8, 1953	5.70	385	1.2	34.0	.283	3.85	34.2	3.87
1954	June 19, 1954	11.2	5,960	2.8	82.6	.688	9.35	90.2	10.21
1955	July 5, 1955	5.47	348	4.5	27.0	.225	3.05	.....	.....

Peak Discharge (base, 700 cfs)

1951: Mar. 29 (1 a.m.) about 1,000 cfs (8.59 ft.); Apr. 7 (1 a.m.) 1,940 cfs (8.61 ft.); June 26 (1 p.m.) 3,440 cfs (10.80 ft.).

1952: Mar. 30 (1 p.m.) 900 cfs (7.60 ft.).

1953: No peak above base.

1954: June 19 (about 2 a.m.) 5,960 cfs (11.2 ft.); June 21 (time unknown) 4,820 cfs (10.74 ft.).

1955: No peak above base.

Iowa River near Rowan, Iowa

LOCATION.—Lat. 42°45'35", long. 93°37'20", in NE¼ sec. 25, T. 92 N., R. 24 W., on left bank 10 feet downstream from highway bridge, 3½ miles northwest of Rowan, and 10¼ miles downstream from confluence of East and West Forks.

DRAINAGE AREA.—396 square miles.

RECORDS AVAILABLE.—October 1940 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,143.35 feet above mean sea level, datum of 1929. Prior to Oct. 14, 1948, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—14 years (1941-55), 201 cfs.

EXTREMES.—1940-55: Maximum discharge, 8,460 cfs June 21, 1954 (gage height, 14.88 feet); minimum daily, 4.2 cfs Aug. 26, 27, 1948, Feb. 4, 5, 1950.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers, U. S. Army.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	35	35	19	16	10	*800	2,200	1,200	178	2,460	172	178
2	41	36	19	16	9.4	500	2,050	1,650	453	2,050	166	166
3	52	35	18	16	8.9	380	1,900	1,860	773	1,750	166	154
4	62	36	18	16	8.4	350	2,370	1,600	773	1,500	155	146
5	49	35	18	16	8.0	430	3,170	1,180	665	1,260	160	137
6	46	34	17	16	*7.5	480	3,280	950	460	1,070	297	132
7	53	33	17	16	7.2	400	3,930	773	353	890	306	127
8	77	32	17	16	7.0	310	*3,930	640	306	950	241	123
9	66	28	16	16	6.8	260	2,950	552	272	*1,550	212	124
10	63	*22	16	16	6.7	230	2,280	482	241	1,700	*192	178
11	65	28	*16	16	6.7	200	1,980	436	212	1,600	166	212
12	*62	32	15	16	6.7	170	1,800	403	192	1,300	150	234
13	54	31	15	15	6.7	150	1,800	363	172	1,140	205	506
14	50	30	15	15	6.7	140	1,750	324	*160	1,010	330	590
15	50	29	15	15	6.7	120	1,550	297	172	830	615	517
16	48	28	14	15	6.7	110	1,220	280	198	640	517	373
17	47	27	14	15	6.7	100	980	272	178	517	393	272
18	46	26	14	*15	8.0	90	800	*272	160	423	297	226
19	44	26	14	14	14	83	628	264	*152	373	248	192
20	44	25	14	14	16	77	590	248	143	324	248	*185
21	43	24	14	14	15	74	665	234	136	757	306	178
22	42	23	14	14	15	72	980	219	130	1,180	288	172
23	42	23	14	13	25	74	1,070	212	126	719	256	166
24	40	22	15	13	40	78	950	198	121	482	210	160
25	39	22	15	13	450	*82	860	192	162	373	198	155
26	39	22	15	*13	1,500	200	950	185	2,180	315	192	152
27	37	21	15	12	*2,100	500	*920	178	*4,480	280	285	148
28	38	21	15	12	1,600	1,600	800	172	5,250	248	425	138
29	36	20	15	11	.....	*3,200	890	166	*3,930	226	324	132
30	36	20	16	11	.....	2,800	1,070	156	3,060	205	248	120
31	36	.....	16	10	.....	2,400	.....	155	.....	192	212	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 7 to Dec. 31, 1950; Jan. 1 to Apr. 3, 1951.

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	120	160	108	52	60	425	2,050	178	138	166	86	98
2.....	126	140	117	52	66	353	1,650	*172	130	172	89	80
3.....	125	130	125	52	72	272	1,220	172	125	205	85	70
4.....	140	120	129	52	74	264	950	166	125	185	81	64
5.....	172	115	137	52	73	241	746	155	*134	154	79	58
6.....	172	115	140	52	66	212	580	147	137	136	80	53
7.....	159	115	140	52	60	185	494	147	129	363	79	51
8.....	146	120	141	52	70	172	448	198	122	1,140	74	48
9.....	*136	122	95	52	110	158	414	241	120	1,400	73	46
10.....	133	128	62	52	200	140	403	248	112	1,180	72	44
11.....	130	133	64	52	400	146	414	241	103	*1,010	69	*43
12.....	127	141	*68	52	800	198	471	226	99	692	72	42
13.....	125	158	68	51	1,100	241	506	205	112	403	68	41
14.....	122	*166	65	51	1,200	241	552	192	514	383	66	40
15.....	123	166	62	50	1,100	241	773	178	1,070	414	*65	40
16.....	120	160	61	54	900	234	830	160	1,180	373	85	39
17.....	121	140	60	54	720	288	746	150	1,140	315	86	39
18.....	118	134	58	58	540	506	618	142	920	256	68	40
19.....	117	126	57	*70	350	1,010	528	137	565	219	61	41
20.....	117	120	56	80	290	*1,300	460	135	324	241	58	41
21.....	166	117	56	90	270	1,450	403	133	264	241	56	40
22.....	288	112	55	98	260	1,300	383	133	241	192	54	41
23.....	373	108	54	90	250	1,010	393	133	219	166	52	41
24.....	343	104	53	60	250	710	353	134	198	144	50	40
25.....	*297	102	53	58	250	482	306	134	172	130	50	39
26.....	250	100	52	58	250	414	272	134	160	122	51	38
27.....	234	100	52	57	297	448	248	143	178	110	50	37
28.....	219	100	52	57	460	540	226	147	205	105	51	36
29.....	198	100	52	56	471	950	205	160	212	103	61	35
30.....	182	102	52	56	.....	1,600	192	156	178	95	87	35
31.....	172	.....	52	58	.....	2,120	.....	153	.....	91	108	.....
1952-53												
1.....	33	30	13	20	20	44	218	*475	120	121	76	32
2.....	32	29	16	21	20	44	*202	625	113	106	70	30
3.....	32	28	19	21	21	43	248	625	113	93	280	28
4.....	31	27	21	21	22	41	340	545	115	82	545	30
5.....	32	26	23	21	22	39	314	485	111	85	605	30
6.....	31	27	25	21	23	37	255	416	100	142	445	28
7.....	31	28	25	20	23	36	240	360	98	182	289	26
8.....	32	27	25	20	23	35	218	323	210	131	202	26
9.....	31	26	24	20	24	40	218	289	525	102	158	26
10.....	31	26	23	21	25	80	240	264	545	85	129	25
11.....	31	26	23	22	26	200	255	280	366	74	114	25
12.....	29	26	22	22	26	350	248	306	255	65	102	25
13.....	29	29	21	23	27	420	225	248	210	64	90	25
14.....	29	29	21	24	27	460	210	225	183	65	80	23
15.....	29	28	20	24	27	500	225	210	160	100	74	23
16.....	31	28	20	22	28	525	323	202	141	160	68	23
17.....	*28	34	20	21	28	455	314	195	129	106	64	22
18.....	29	35	19	20	28	425	280	182	113	80	59	21
19.....	29	*31	19	21	28	400	248	168	104	67	55	23
20.....	29	30	*19	21	28	340	225	164	93	59	51	22
21.....	29	29	19	22	28	306	210	170	86	55	*49	23
22.....	27	28	19	*22	29	306	202	194	80	48	47	24
23.....	29	29	19	22	30	280	184	210	76	*51	44	23
24.....	29	29	19	22	32	232	186	218	71	52	44	*19
25.....	29	28	19	22	33	202	272	218	104	47	42	22
26.....	29	23	18	22	*35	176	400	210	*180	46	40	24
27.....	29	18	18	21	38	165	425	186	180	46	38	22
28.....	28	14	17	20	42	158	391	170	225	44	34	21
29.....	29	11	17	20	.....	146	*340	*160	177	55	32	20
30.....	26	10	18	20	.....	156	332	154	141	90	32	19
31.....	28	.....	19	20	.....	202	.....	140	.....	94	32	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3-10, Nov. 18 to Dec. 1, Dec. 9-31, 1951; Jan. 1 to Feb. 25, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 15, 1953.

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	19	22	25	22	6.9	29	35	160	166	1,140	130	340
2.....	18	22	26	22	8.0	26	35	264	153	930	127	286
3.....	17	22	28	22	9.5	18	32	357	190	810	*113	244
4.....	19	21	*42	21	*11	16	33	340	*248	780	*103	212
5.....	18	21	30	21	13	*21	36	264	236	810	95	193
6.....	19	*19	36	21	14	24	42	210	196	705	85	174
7.....	21	19	36	*21	14	26	44	*172	162	582	79	154
8.....	21	16	32	20	15	29	47	147	135	534	76	137
9.....	*20	19	21	19	16	32	44	129	115	510	75	126
10.....	23	21	30	17	16	34	38	117	118	*486	70	119
11.....	23	23	35	15	16	36	40	106	120	426	63	*110
12.....	24	22	31	13	16	18	38	98	372	379	61	103
13.....	23	22	33	12	14	23	34	90	243	330	59	102
14.....	22	20	26	11	17	28	34	82	274	320	63	98
15.....	24	20	22	10	19	35	34	76	201	277	62	94
16.....	22	20	19	9.0	21	45	40	70	198	252	58	91
17.....	22	21	18	8.5	22	66	42	65	188	236	54	94
18.....	22	21	17	8.0	24	107	38	61	989	228	61	102
19.....	24	25	19	7.5	28	134	38	59	*5,790	210	164	101
20.....	24	44	22	7.0	38	100	38	56	*6,700	196	193	92
21.....	23	46	28	6.6	58	65	148	53	*7,640	191	132	82
22.....	22	40	22	6.2	48	56	192	52	7,330	188	122	76
23.....	21	32	18	6.0	46	50	113	52	5,310	182	405	72
24.....	24	26	15	5.9	42	47	82	55	3,920	170	810	70
25.....	23	21	17	5.9	38	44	80	60	*3,140	156	960	67
26.....	21	18	20	5.9	35	42	76	60	2,740	143	1,100	63
27.....	23	23	23	6.0	31	44	72	71	2,480	129	1,180	60
28.....	23	26	23	6.1	28	42	72	357	2,200	122	1,060	62
29.....	22	26	23	6.2	.....	38	65	400	1,830	120	870	72
30.....	22	24	23	6.2	.....	36	80	280	1,450	129	606	91
31.....	21	.....	22	6.4	.....	*35	.....	192	.....	129	438	.....
1954-55												
1.....	99	154	80	50	29	55	162	133	50	71	29	*14
2.....	130	122	*89	52	32	110	134	126	118	57	30	13
3.....	412	140	82	52	*34	200	130	116	285	47	26	13
4.....	414	*164	76	50	34	235	124	105	228	71	24	12
5.....	320	135	71	47	33	260	134	*96	206	119	*22	13
6.....	260	132	64	45	32	170	137	88	171	410	23	12
7.....	*228	127	72	*43	31	110	*131	80	147	520	22	11
8.....	230	124	74	42	32	92	121	83	126	*410	21	12
9.....	260	119	67	42	33	150	116	79	*104	267	20	12
10.....	294	118	66	41	31	*210	111	83	90	190	19	10
11.....	390	116	66	40	28	300	109	84	82	144	18	11
12.....	370	115	65	39	27	310	109	79	75	116	18	11
13.....	330	110	65	39	26	230	110	75	68	94	17	20
14.....	330	113	65	38	26	200	113	71	62	78	16	18
15.....	414	109	65	37	25	165	115	64	56	67	16	15
16.....	402	105	65	37	25	145	111	61	51	57	16	15
17.....	340	106	64	37	25	135	108	59	48	55	16	13
18.....	294	103	64	36	42	120	97	56	45	51	15	11
19.....	260	98	64	36	53	115	101	55	44	47	15	11
20.....	244	95	64	35	110	108	90	52	44	43	14	12
21.....	228	92	64	35	90	95	88	50	40	39	14	17
22.....	220	92	64	35	76	87	84	49	39	37	14	16
23.....	204	89	64	34	64	85	82	50	37	37	14	15
24.....	194	91	64	33	55	79	109	50	36	36	20	16
25.....	185	80	63	33	47	74	267	47	35	36	19	15
26.....	182	79	62	32	39	72	350	47	34	34	18	15
27.....	185	88	60	32	36	84	285	71	32	32	17	16
28.....	188	96	56	31	34	100	218	71	31	29	16	16
29.....	188	70	52	31	.....	135	181	63	33	28	16	16
30.....	177	62	48	30	.....	208	148	60	36	26	16	15
31.....	164	.....	47	28	.....	206	.....	55	.....	25	14	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 25-27, 30, Dec. 1, Dec. 5-31, 1953; Jan. 1 to Mar. 9, Mar. 12-16, Mar. 31 to Apr. 4, Nov. 29 to Dec. 1, Dec. 3-31, 1954; Jan. 1 to Mar. 28, 1955.

Iowa River near Rowan, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	47.8	27.5	15.0	14.4	211	531	1,070	522	860	913	264	210
1951-52.....	174	125	77.3	59.0	380	576	595	166	311	352	99.9	46.7
1952-53.....	29.7	26.3	20.0	21.3	27.2	221	266	278	171	83.8	129	24.3
1953-54.....	21.0	24.0	25.2	12.1	23.7	43.4	58.1	147	1,828	381	306	123
1954-55.....	263	108	65.5	38.5	41.0	150	130	72.8	81.8	106	18.5	13.9

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.121	0.069	0.039	0.036	0.533	1.34	4.24	1.32	2.17	2.31	0.667	0.530
1951-52.....	.439	.316	.195	.149	.960	1.45	1.50	.419	.785	.889	.177	.118
1952-53.....	.075	.066	.051	.054	.069	.558	.672	.702	.432	.212	.326	.061
1953-54.....	.055	.061	.064	.031	.060	.110	.147	.371	4.62	.962	.773	.311
1954-55.....	.664	.273	.165	.097	.104	.379	.351	.184	.207	.268	.047	.035

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.14	0.08	0.05	0.04	0.56	1.55	4.73	1.52	2.42	2.66	0.77	0.59
1951-52.....	.51	.35	.23	.17	1.03	1.68	1.68	.48	.88	1.02	.20	.13
1952-53.....	.09	.07	.06	.06	.07	.64	.75	.81	.48	.24	.37	.07
1953-54.....	.06	.07	.07	.04	.06	.13	.16	.43	5.15	1.11	.89	.35
1954-55.....	.77	.30	.19	.11	.11	.44	.39	.21	.23	.31	.05	.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	101	3.46
1951....	June 28, 1951.	13.18	5,610	6.7	440	1.11	15.11	464	15.93
1952....	Mar. 31, 1952.	10.61	2,200	35	243	.614	8.36	218	7.49
1953....	May 2, 1953..	(1)6.87	645	10	109	.275	3.71	108	3.69
1954....	June 21, 1954.	14.88	8,460	5.9	248	.626	8.52	279	9.58
1955....	July 7, 1955...	6.54	551	10	92.0	.232	3.15	.....	.....

(1) Maximum gage height, 7.44 ft. Mar. 13, 1953 (ice jam).

Peak Discharge (base, 1,200 cfs)

1951: Feb. 26 (10 p.m.) about 2,200 cfs (11.09 ft.); Mar. 29 (1 p.m.) about 3,300 cfs (12.78 ft.); Apr. 7 (11 p.m.) 4,230 cfs (12.38 ft.); May 3 (12 m.) 1,860 cfs (10.10 ft.); June 28 (2 a.m.) 5,610 cfs (13.18 ft.); July 10 (7 a.m.) 1,700 cfs (9.85 ft.); July 22 (3 a.m.) 1,400 cfs (9.17 ft.).

1952: Feb. 14 (8 p.m.) about 1,250 cfs (9.17 ft.); Mar. 21 (3 p.m.) 1,450 cfs (9.32 ft.); Mar 31 (8 p.m.) 2,200 cfs (10.61 ft.); June 16 (7 p.m.) 1,220 cfs (8.75 ft.); July 9 (8 a.m.) 1,400 cfs (9.30 ft.).

1953: No peak above base.

1954: June 21 (8 p.m.) 8,460 cfs (14.88 ft.); Aug. 27 (8 a.m.) 1,220 cfs (8.78 ft.).

1955: No peak above base.

Upper Pine Lake at Eldora, Iowa

LOCATION.—Lat 42°22', long. 93°04', in SE¼ sec. 4, T. 87 N., R. 19 W., on concrete pier set in bed of lake at Pine Lake State Park at Eldora.

RECORDS AVAILABLE.—June 1936 to September 1955.

GAGE.—Staff gage read once daily, except during winter period. Datum of gage is 1.0 feet below crest of dam forming lake.

EXTREMES.—1936-55: Maximum gage height observed, 8.06 feet June 2, 1942, from floodmark; minimum, below staff gage several times since 1947 when lake has been drained.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1												1.08
2									3.38			1.08
3												1.06
4												1.06
5												1.06
6												1.04
7												1.04
8												1.02
9												1.52
10												1.26
11												1.20
12												1.15
13												1.12
14												1.10
15												1.08
16												1.06
17												1.06
18												1.06
19												1.04
20												1.04
21												1.04
22												1.04
23												.....
24												1.04
25											0.99	1.04
26											2.12	1.04
27											1.20	1.02
28											1.20	1.02
29											1.16	1.02
30											1.12	1.02
31											1.10	.....

Upper Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	1.02	1.08	1.08					1.08	1.06		0.86	0.82
2	1.02	1.08	1.10					1.08	1.06	1.08	.84	.82
3	1.04	1.08	1.10					1.08	1.04	1.08	.90	.80
4	1.89	1.08	1.10					1.06	1.04	1.06	.92	.80
5	1.25	1.06	1.08					1.06	1.04	1.06	.90	.80
6	1.12	1.06	1.08				1.10	1.06	1.04	1.04	.90	.80
7	1.08	1.06	1.06				1.10	1.14	1.02	1.26	.88	.78
8	1.08	1.04	1.06				1.08	1.12	1.02	1.16	.92	.78
9	1.06	1.04	1.06				1.12	1.10	1.02	1.10	.94	.76
10	1.06	1.04	1.06				1.10	1.10	1.02	1.08	.94	.76
11	1.06	1.06	1.06				1.08	1.08	1.02	1.08	.92	.74
12	1.06	1.22	1.04				1.10	1.08	1.00	1.06	.92	.72
13	1.06	1.14	1.04				1.16	1.08	1.00	1.06	.90	.70
14	1.06	1.10	1.04				1.16	1.08	1.17	1.12	.88	.68
15	1.06	1.08	1.02				1.26	1.06	1.10	1.10	.92	.....
16	1.08	1.08			1.08		1.16	1.06	1.06	1.08	.90	
17	1.06	1.06					1.16	1.06		1.08	.90	.60
18	1.08	1.06					1.14	1.06		1.06	.90	.56
19	1.08	1.06		1.82			1.12	1.06		1.06	.88	.52
20	1.10	1.06					1.12	1.06		1.04	.86	.48
21	1.37	1.08					1.12	1.08	1.08	1.02	.86	.40
22	1.32						1.12	1.10	1.08	1.00	.84	.44
23	1.16						1.12	1.12	1.06	1.00	.84	.44
24	1.12						1.10	1.10	1.00	.98	.84	.42
25	1.10						1.10	1.08		.98	.82	.42
26	1.08						1.10	1.06		.98	.84	.40
27	1.08	1.08					1.10	1.08		.96	.82	.40
28	1.08	1.08					1.08	1.08		.94	.82	.38
29	1.08	1.08					1.08	1.06		.92	.84	.36
30	1.08	1.08					1.08	1.06		.90	.82	.34
31	1.08							1.06		.88	.82	
1952-53												
1	0.32	0.12	0.54					1.20	0.88	1.08	0.40	—0.24
2	.30	.12	.56					1.14	.82	1.04	1.30	—.32
3	.28	.12	.58					1.10	.78	1.02	1.36	—.38
4	.27	.12	.60						.74	1.00	1.10	—.44
5	.26	.12	.60					1.08	.70	1.86	1.04	—.50
6	.24	.12	.62					1.06	.65	1.38	1.02	—.54
7	.22	.12	.64					1.04	.63	1.14	1.00	—.58
8	.20	.12	.66					1.02	.76	1.04	.98	—.62
9	.20	.14	.68					1.00	.78	1.02	.98	—.66
10	.20	.14	.70					1.02	.75	1.00	.96	—.70
11	.18	.14	.72					1.00	1.54	.98	.96	—.72
12	.18	.16	.74					.98	1.10	.96	.96	—.76
13	.18	.16	.76					.98	1.04	.94	.92	—.80
14	.18	.16						.98	1.00	.92	.88	—.82
15	.18	.18	.78					.98	1.00	.92	.84	—.86
16	.18	.18					1.06	.98	.95	.90	.80	—.90
17	.16	.30	.80				1.04	.98	.94	.88	.74	—.94
18	.16	.38	.80				1.02	.96	.92	.86	.68	—.96
19	.16	.38	.82				1.01	.96	.90	.84	.64	—.98
20	.16	.38					1.00	.96	.94		.50	—1.02
21	.16						1.00	.98	.84	.82		—1.04
22	.14	.36						.98	.78	1.00	.44	—1.08
23	.14	.36	.90				1.00	.98	.72		.40	—1.12
24	.14	.36	.90				1.06	1.24	.66	.84	.34	—1.14
25	.14	.48	.92				1.10	1.08	1.75	.72	.28	—1.14
26	.14	.50	.92				1.06	1.04	1.28	.66	.20	—1.16
27	.14	.56	.93				1.05	1.00	1.72	.60	.14	—1.18
28	.12	.56					1.05	.98	1.20	.52	.08	—1.22
29	.12	.54					1.04	.96	1.14	.56	.00	—1.26
30	.12	.54					1.10	.96	1.10	.50	—.08	—1.30
31	.12							.92		.44	—.16	

Upper Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	—1.34	—1.72	—1.62	—1.56	.....	—2.72	.....	—0.20	1.54	1.18	0.16	1.24
2	—1.36	—1.74	—1.62	—1.58	.....	.....	.....	.62	1.64	1.16	.10	1.22
3	—1.40	—1.74	—1.54	—1.62	.....	.....	.....	.92	1.50	1.16	.06	1.18
4	—1.44	—1.76	—1.44	—1.64	.....	.....	.....	1.06	1.42	1.12	.23	1.16
5	—1.48	—1.76	—1.40	—1.64	.....	.....	.....	1.00	1.36	1.10	.20	1.16
6	—1.50	—1.78	—1.34	—1.66	.....	.....	.....	1.00	1.30	1.08	.20	1.14
7	—1.52	—1.78	—1.34	—1.66	.....	.....	.....	.98	1.24	1.06	.20	1.14
8	—1.54	—1.78	—1.32	—1.68	.....	.....	.....	.98	1.20	1.04	.20	1.12
9	—1.56	—1.78	—1.32	—1.68	.....	.....	.....	.98	1.22	1.02	.18	1.16
10	—1.58	—1.78	—1.30	—1.68	.....	—2.70	—0.62	.98	1.90	1.00	.16	1.14
11	—1.58	—1.78	—1.28	—1.70	.....	.....	—.64	.98	1.28	.98	.14	1.12
12	—1.60	—1.78	—1.28	—1.74	.....	.....	—.66	.96	1.20	.94	.10	1.12
13	—1.60	—1.76	.....	—1.76	.....	.....	—.68	.96	1.20	.90	.08	1.14
14	—1.62	—1.76	—1.26	—1.78	.....	.....	—.68	.96	1.20	.86	.12	1.16
15	—1.62	—1.74	—1.26	—1.80	.....	.....	.....	.94	1.16	.84	.10	1.18
16	—1.62	—1.74	—1.28	—1.84	.....	.....	—.68	.90	1.30	.78	.27	1.18
17	—1.64	—1.72	—1.28	—1.88	.....	.....	—.68	.84	1.30	.74	.30	1.16
18	—1.64	—1.72	—1.30	—2.00	.....	.....	—.70	.78	1.28	.70	.48	1.16
19	—1.64	—1.68	—1.32	—2.04	.....	.....	—.70	.70	1.26	.....	.50	1.14
20	—1.64	—1.60	—1.32	—2.10	—3.02	—3.02	—.68	.62	1.24	.64	.50	1.14
21	—1.64	—1.60	—1.32	—2.18	.....	.....	—.60	.52	1.62	.60	.48	1.12
22	—1.64	—1.60	—1.32	.....	.....	.....	—.54	.42	1.40	.58	1.00	1.12
23	—1.64	—1.62	—1.34	.....	.....	.....	—.50	.34	1.36	.....	1.16	1.10
24	—1.66	—1.62	—1.36	.....	.....	.....	—.48	.32	1.24	.....	1.14	1.10
25	—1.66	—1.62	—1.40	.....	.....	.....	—.46	.28	1.20	.48	1.10	1.08
26	—1.68	—1.60	—1.44	.....	.....	.....	—.42	.32	1.18	.44	3.31	1.08
27	—1.68	.....	—1.46	.....	.....	.....	—.40	.39	1.18	.40	1.99	1.08
28	—1.70	—1.60	—1.50	.....	.....	.....	—.42	1.18	1.18	.36	1.36	1.16
29	—1.70	—1.62	—1.52	—2.16	.....	.....	—.44	1.06	1.18	.32	1.32	1.22
30	—1.70	—1.62	—1.54	.....	.....	.....	—.30	1.00	1.18	.26	1.28	.....
31	—1.72	.....	—1.54	.....	.....	.....	.....	1.00	.....	.22	1.26	.....
1954-55												
1	1.26	1.10	.....	1.04	.....	.....	.....	.....	.....	0.16	—0.18	—1.16
2	1.38	1.08	.....	.....	.....	.....	1.06	1.02	0.98	.10	— .26	—1.18
3	1.38	1.08	.....	1.04	.....	1.54	.....	.....	.....	.04	— .32	—1.22
4	.....	1.08	.....	.....	.....	1.16	1.12	1.10	.96	— .04	— .44	—1.26
5	1.30	1.08	.....	1.10	1.02	.....	1.14	1.04	.92	— .10	— .32	—1.30
6	1.30	1.08	1.04	.....	.....	.....	.....	1.02	.88	.10	— .34	—1.36
7	1.30	1.08	1.04	1.06	1.02	1.12	.....	1.00	.84	.00	— .40	—1.42
8	1.30	1.08	.....	1.04	.....	.....	1.10	.....	.80	— .02	— .52	—1.46
9	1.32	1.08	.....	.....	.....	1.10	1.08	1.12	.76	.12	— .58	—1.50
10	1.32	1.08	1.04	1.04	.....	.....	.....	1.10	.....	1.31	— .64	—1.52
11	1.30	1.06	1.04	.....	.....	1.08	1.06	.....	.74	1.08	— .70	—1.54
12	1.30	1.06	.....	1.04	1.02	1.06	.....	1.08	.70	1.02	— .74	—1.56
13	1.28	1.08	1.04	1.00	1.02	.....	1.16	.....	.66	1.00	— .82	—1.18
14	1.46	1.08	.....	.....	.....	1.12	.....	1.06	.62	.96	— .86	—1.20
15	1.24	1.08	1.04	.98	.....	.....	1.10	.....	.58	.90	— .90	—1.22
16	1.16	1.08	.....	.....	.....	1.06	1.10	1.06	.54	.86	— .94	—1.26
17	1.16	1.08	1.04	1.00	1.18	.....	.....	.....	.50	.82	—1.00	—1.28
18	1.14	1.08	1.04	.....	1.34	.....	1.10	1.04	.46	.78	—1.04	—1.30
19	1.12	1.08	.....	1.00	1.68	1.06	.....	.....	.44	.72	—1.08	—1.30
20	1.12	1.08	1.04	.....	.....	.....	1.08	.....	.72	.66	—1.12	—1.32
21	1.12	1.08	.....	1.00	.....	.....	.....	1.00	.....	.58	—1.18	—1.18
22	1.12	1.08	1.04	.....	.....	1.06	.....	.....	.68	.52	—1.22	—1.22
23	1.12	1.08	.....	1.00	.....	.....	1.08	.98	.....	.46	—1.28	—1.20
24	1.14	1.08	1.04	.....	1.12	.....	1.10	.96	.58	.36	— .86	—1.18
25	1.14	1.06	.....	1.02	.....	.....	.....	.94	.56	.30	— .88	—1.20
26	1.16	1.06	.....	.....	1.06	.....	1.08	1.02	.54	.24	— .90	—1.20
27	1.14	1.06	1.04	.....	.....	.....	.....	.98	.50	.16	— .94	—1.20
28	1.12	.....	.....	.....	.....	1.06	1.06	1.02	.36	.08	— .98	—1.20
29	1.12	1.02	.....	1.02	.....	.....	.....	1.00	.30	.02	—1.02	—1.18
30	1.10	.....	1.04	.....	.....	1.06	1.04	.....	.22	— .04	—1.06	—1.18
31	1.10	.....	.....	1.02	.....	1.06	.....	.98	.....	— .10	—1.10	.....

Lower Pine Lake at Eldora, Iowa

LOCATION.—Lat. 42°22', long. 93°05', in NW¼ sec. 9, T. 87 N., R. 19 W., on abutment of highway bridge at spillway in Pine Lake State Park at Eldora.

DRAINAGE AREA.—15.0 square miles above outlet.

RECORDS AVAILABLE.—June 1936 to September 1955.

GAGE.—Staff gage read once daily. Datum of gage is 2.0 feet below crest of spillway of dam forming lake.

EXTREMES.—1936-55: Maximum gage height observed, 7.59 feet June 2, 1942, from highwater mark; minimum observed, below staff gage when lake was drained in 1950, 1951, and 1952.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	.....	.....	.....	.....	.....	2.96	3.08	3.50	2.92	2.50	2.02	2.52
2	.....	.....	.....	.....	.....	2.92	3.00	3.30	5.16	2.50	.....	2.50
3	.....	.....	.....	.....	.....	2.80	2.96	3.28	3.67	2.78	.....	2.48
4	.....	.....	.....	.....	.....	2.76	2.95	3.24	3.46	2.78	1.98	2.42
5	.....	.....	.....	.....	.....	2.68	2.92	2.80	3.17	2.78	1.98	2.38
6	.....	.....	.....	.....	.....	2.88	3.00	2.58	2.66	2.80	1.98	2.34
7	.....	.....	.....	.....	.....	2.88	3.10	2.56	2.70	2.78	1.98	2.32
8	.....	.....	.....	.....	.....	2.66	3.12	2.54	2.78	3.00	1.98	2.30
9	.....	.....	.....	.....	.....	2.48	3.20	2.48	2.80	3.08	1.98	2.80
10	.....	.....	.....	.....	.....	2.38	2.74	2.50	2.66	3.20	1.98	2.78
11	.....	.....	.....	.....	.....	2.32	.....	2.48	2.56	3.20	1.98	2.50
12	.....	.....	.....	.....	.....	2.26	.....	2.48	2.60	3.26	1.98	2.42
13	.....	.....	.....	.....	.....	2.22	.....	2.48	2.64	3.30	2.04	2.36
14	.....	.....	.....	.....	.....	2.18	.....	2.48	2.68	3.16	2.04	2.32
15	.....	.....	.....	.....	.....	2.16	.....	2.48	2.70	3.16	2.02	2.30
16	.....	.....	.....	.....	.....	2.16	.....	2.50	2.68	3.12	2.02	2.30
17	.....	.....	.....	.....	.....	2.14	.....	2.50	2.58	3.12	2.00	2.28
18	.....	.....	.....	.....	.....	2.14	.....	2.28	2.60	2.70	2.00	2.28
19	.....	.....	.....	.....	.....	2.14	.....	3.28	.....	2.24	1.98	2.26
20	.....	.....	.....	.....	.....	2.14	.....	2.52	2.70	2.32	2.08	2.26
21	.....	.....	.....	.....	.....	2.14	.....	2.60	2.72	2.26	2.05	2.26
22	.....	.....	.....	.....	.....	2.16	.....	2.60	2.66	2.20	2.04	2.26
23	.....	.....	.....	.....	.....	2.22	.....	2.50	2.62	2.16	2.04	.....
24	.....	.....	.....	.....	0.06	2.28	.....	2.44	2.60	2.14	2.02	2.26
25	.....	.....	.....	.....	1.79	2.32	0.19	2.38	2.60	2.12	2.36	2.24
26	.....	.....	.....	.....	3.78	2.38	1.40	2.32	2.70	2.10	4.28	2.24
27	.....	.....	.....	.....	2.96	2.90	2.26	2.28	2.66	2.08	2.93	2.24
28	.....	.....	.....	.....	2.94	4.58	2.68	2.26	2.60	2.06	2.60	2.22
29	.....	.....	.....	.....	.....	3.85	3.06	2.26	2.58	2.06	2.60	2.22
30	.....	.....	.....	.....	.....	3.16	3.20	2.26	2.52	2.04	2.60	2.31
31	.....	.....	.....	.....	.....	3.10	.....	2.38	.....	2.04	2.56	.....

Lower Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	2.22	3.47	2.38	2.26	2.02	.....	2.60	2.28	2.20	.....	1.91	1.98
2	2.24	3.40	2.40	2.26	2.54	.....	2.48	2.28	2.18	2.10	1.90	1.98
3	2.30	3.44	2.40	2.26	2.40	.....	2.44	2.28	2.18	2.08	1.94	1.96
4	3.71	3.44	2.40	2.26	2.32	.....	2.44	2.28	2.18	2.08	1.96	1.96
5	3.47	3.44	2.40	2.20	.....	.....	2.42	2.26	2.16	2.06	1.96	1.96
6	3.02	3.44	2.38	2.26	2.28	.....	2.42	2.26	2.16	2.08	1.96	1.96
7	3.00	3.41	2.34	2.26	2.27	.....	2.40	2.30	2.14	2.28	1.98	1.94
8	3.00	3.12	2.30	2.26	2.34	.....	2.40	2.32	2.14	2.30	1.96	1.94
9	2.98	2.55	2.30	2.26	2.34	.....	2.42	2.36	2.12	2.24	2.00	1.94
10	2.98	2.39	2.30	2.26	2.38	0.98	2.40	2.34	2.10	2.20	2.00	1.94
11	2.96	2.36	2.29	2.26	2.40	2.90	2.40	2.34	2.10	2.16	1.98	1.96
12	2.96	2.58	2.28	2.26	2.35	2.59	2.42	2.32	2.08	2.14	1.98	1.96
13	2.96	2.80	2.28	2.26	2.32	2.82	2.44	2.32	2.08	2.14	1.96	1.96
14	2.94	2.80	2.28	2.38	2.30	2.62	2.46	2.30	2.20	2.18	1.96	1.96
15	2.92	2.78	2.26	2.50	2.30	2.40	2.59	2.28	2.26	2.20	1.98	.....
16	2.92	2.78	2.26	2.43	2.30	2.34	2.60	2.28	2.22	2.18	1.98	.....
17	2.92	2.80	2.28	2.52	2.29	2.30	2.60	2.26	.....	2.18	1.98	1.94
18	3.00	2.84	2.28	2.42	2.28	2.56	2.60	2.26	.....	2.16	1.98	1.94
19	3.04	2.86	2.28	2.60	.....	2.70	2.60	2.26	.....	2.16	1.96	1.92
20	3.08	2.90	.....	2.42	.....	2.46	2.60	2.26	.....	2.14	1.96	1.90
21	3.55	2.90	2.28	2.40	2.26	2.38	2.60	2.28	2.18	2.12	1.96	1.92
22	3.62	2.52	2.28	2.38	.....	2.40	2.60	2.30	2.18	2.08	1.96	1.92
23	3.77	.....	2.28	2.38	.....	2.44	2.60	2.32	2.18	2.04	1.94	1.92
24	3.70	2.28	2.26	2.38	.....	2.42	2.60	2.30	2.16	2.02	1.94	1.94
25	3.68	2.28	2.26	2.36	.....	2.42	2.60	2.28	.....	2.02	1.94	1.94
26	3.64	2.28	2.26	2.35	.....	2.44	2.60	2.28	.....	2.00	1.96	1.94
27	3.60	2.32	2.26	2.34	.....	2.44	2.60	2.30	.....	1.98	1.96	1.94
28	3.58	2.32	2.26	2.32	.....	2.44	2.59	2.28	.....	1.96	1.96	1.94
29	3.58	2.32	2.26	2.30	.....	2.46	2.58	2.26	.....	1.96	1.98	1.94
30	3.54	2.34	2.26	2.28	.....	2.44	2.40	2.24	.....	1.94	1.98	1.94
31	3.50	.....	2.28	2.26	.....	2.66	.....	2.22	.....	1.92	1.98	.....
1952-53												
1	1.92	2.04	.....	.....	.....	.....	.....	2.40	2.18	2.54	2.30	2.26
2	1.90	2.04	.....	.....	.....	.....	.....	2.36	2.18	2.50	2.65	2.24
3	1.90	2.04	.....	.....	.....	.....	.....	2.32	2.18	2.44	3.40	2.26
4	1.89	2.04	.....	.....	.....	.....	.....	.....	2.20	2.38	2.58	2.24
5	1.88	2.06	.....	.....	.....	.....	.....	2.40	2.20	2.84	2.38	2.22
6	1.88	2.06	.....	.....	.....	.....	.....	2.48	2.20	2.66	2.34	2.22
7	1.88	2.06	.....	.....	.....	.....	.....	2.50	2.18	2.46	2.30	2.20
8	1.90	2.06	.....	.....	.....	.....	.....	2.50	2.25	2.38	2.28	2.20
9	1.90	2.06	.....	.....	.....	.....	.....	2.52	2.20	2.32	2.26	2.18
10	1.92	2.06	.....	.....	.....	.....	.....	2.54	2.18	2.28	2.26	2.18
11	1.92	2.06	.....	.....	.....	.....	.....	2.55	2.78	2.26	2.24	2.18
12	1.94	2.08	.....	.....	.....	.....	.....	2.50	2.60	2.28	2.22	2.16
13	1.94	2.08	.....	.....	.....	.....	.....	2.38	2.60	2.28	2.22	2.16
14	1.94	2.08	.....	.....	.....	.....	.....	2.30	2.60	2.26	2.22	2.16
15	1.96	2.08	.....	.....	.....	.....	.....	2.29	2.58	2.28	2.22	2.14
16	1.96	2.08	.....	.....	.....	.....	2.08	2.30	2.52	2.28	2.24	2.12
17	1.96	2.16	.....	.....	.....	.....	2.08	2.30	2.48	2.26	2.24	2.12
18	1.96	2.10	.....	.....	.....	.....	2.08	2.30	2.46	2.26	2.24	2.12
19	1.98	2.10	.....	.....	.....	.....	2.08	2.28	2.40	2.24	2.24	2.10
20	1.98	2.10	.....	.....	.....	.....	2.00	2.28	2.43	.....	2.24	2.10
21	1.98	.....	.....	.....	.....	.....	2.09	2.30	2.38	2.24	.....	2.10
22	1.98	2.08	.....	.....	.....	.....	.....	2.30	2.36	2.40	2.28	2.10
23	1.98	2.08	.....	.....	.....	.....	2.00	2.30	2.36	.....	2.30	2.10
24	1.98	2.10	.....	.....	.....	.....	2.16	2.46	2.36	2.38	2.30	2.10
25	2.00	2.14	.....	.....	.....	.....	2.20	2.40	3.09	2.38	2.30	2.10
26	2.00	2.16	.....	.....	.....	.....	2.20	2.32	3.02	2.38	2.30	2.10
27	2.00	2.16	.....	.....	.....	.....	2.19	2.30	3.36	2.38	2.30	2.10
28	2.00	2.16	.....	.....	.....	.....	2.18	2.26	2.86	2.38	2.28	2.10
29	2.02	.....	.....	.....	.....	.....	2.17	2.22	2.70	2.40	2.26	2.12
30	2.02	.....	.....	.....	.....	.....	2.20	2.20	2.60	2.38	2.20	2.14
31	2.02	.....	.....	.....	.....	.....	.....	2.18	.....	2.36	2.20	.....

Lower Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	.....	0.60	1.32	2.00	2.18	2.16	2.08	2.26	4.76	2.20	2.08	2.40
2	.....	.60	1.34	2.00	2.18	2.16	2.08	2.30	3.10	2.18	2.10	2.36
3	.....	.62	1.42	2.02	2.18	2.16	2.08	2.30	3.58	2.18	2.10	2.34
4	2.12	.64	1.44	2.02	2.16	2.14	2.08	2.28	3.33	2.18	2.10	2.32
5	2.10	.66	1.48	2.02	2.16	2.14	2.08	2.28	2.50	2.16	2.12	2.32
6	2.10	.68	1.52	2.00	2.14	2.14	2.17	2.28	2.70	2.16	2.12	2.30
7	2.10	.70	1.54	2.00	2.14	2.14	.....	2.26	2.72	2.14	2.10	2.30
8	2.08	.72	1.56	2.00	2.14	2.16	.....	2.26	2.40	2.12	2.10	2.28
9	2.08	.76	1.58	2.00	2.14	2.16	2.16	2.26	2.34	2.12	2.10	2.30
10	2.08	.78	1.60	2.00	2.14	2.20	2.16	2.26	3.86	2.10	2.08	2.26
11	2.08	.78	1.62	1.98	2.14	2.22	2.16	2.24	2.61	2.08	2.08	2.24
12	2.08	.80	1.62	1.98	2.14	2.24	2.16	2.24	2.26	2.08	2.08	2.24
13	2.08	.84	.....	2.02	2.14	2.24	2.16	2.24	2.26	2.10	2.08	2.24
14	.....	.86	1.64	2.02	2.14	2.22	2.16	2.26	2.28	2.08	2.12	2.24
15	.....	.88	1.66	2.04	2.14	2.20	.....	2.28	2.28	2.08	2.10	2.24
16	.....	.92	1.68	2.04	2.14	2.18	2.18	2.28	3.49	2.08	2.17	2.26
17	.....	.94	1.70	2.06	2.14	2.16	2.18	2.28	2.64	2.08	2.16	2.26
18	.....	.96	1.72	2.06	2.16	2.14	2.20	2.28	2.42	2.08	2.16	2.26
19	.....	1.04	1.74	2.08	2.16	2.12	2.18	2.28	2.44	.....	2.16	2.24
20	.....	1.10	1.78	2.10	2.18	2.08	2.18	2.28	2.42	2.08	2.14	2.24
21	.40	1.12	1.80	2.12	2.18	2.08	2.20	2.26	2.68	2.08	2.12	2.22
22	.40	1.14	1.84	2.14	2.18	2.08	2.20	2.26	2.70	2.08	2.30	2.20
23	.42	1.16	1.86	2.16	2.18	2.08	2.18	2.26	2.50	2.08	2.32	2.20
24	.44	1.18	1.88	2.16	2.18	2.10	2.16	2.28	2.40	.....	2.30	2.20
25	.46	1.20	1.90	2.10	2.20	2.12	2.22	2.28	2.32	2.08	2.28	2.18
26	.48	1.22	1.94	2.18	2.20	2.12	2.20	2.32	2.26	2.08	4.49	2.18
27	.50	.....	1.96	2.18	2.20	2.10	2.20	2.37	.....	2.08	3.08	2.22
28	.52	1.26	1.96	2.18	.....	2.08	2.22	2.45	.....	2.08	2.90	2.28
29	.54	1.28	1.96	2.19	.....	2.10	2.22	2.40	.....	2.08	2.90	2.44
30	.56	1.30	1.98	2.19	.....	2.10	2.26	2.36	.....	2.08	2.84	.....
31	.58	.....	1.98	2.19	.....	2.08	.....	2.36	.....	2.08	2.56	.....
1954-55												
1	2.68	2.64	2.84	2.48	2.32	.....	2.28	2.22	2.16	2.06	2.08	2.08
2	2.72	2.62	2.86	2.48	2.30	2.76	2.28	2.20	2.16	2.06	2.08	2.08
3	2.78	2.62	2.88	2.48	.....	2.94	2.28	2.20	.....	2.08	2.08	2.06
4	.....	2.62	2.90	2.48	.....	2.68	2.36	2.28	2.16	2.08	2.08	2.06
5	2.60	2.62	2.90	2.50	2.32	2.46	.....	2.26	2.16	2.08	2.40	2.06
6	2.56	2.62	2.90	2.50	.....	.....	2.54	2.20	2.14	2.10	2.20	2.06
7	2.50	2.64	2.90	2.50	2.32	2.42	2.56	2.18	2.12	2.08	2.10	2.06
8	2.52	2.64	2.90	2.50	2.30	2.40	2.54	2.18	2.10	2.08	2.14	2.06
9	2.52	2.64	2.90	2.50	2.28	2.38	2.52	2.30	2.08	2.10	2.12	2.06
10	2.56	2.66	2.90	2.48	2.26	2.38	2.52	2.30	.....	2.48	2.10	2.06
11	2.56	2.66	2.90	2.48	2.24	2.36	2.52	2.28	2.06	2.34	2.10	2.04
12	2.56	2.70	2.90	2.46	2.22	2.36	2.52	2.28	2.06	2.22	2.08	2.00
13	2.58	2.70	2.90	2.42	2.22	2.36	2.60	2.20	2.06	2.12	2.08	2.10
14	3.30	2.78	2.90	2.40	.....	2.38	2.66	2.26	2.08	2.08	2.08	2.08
15	3.02	2.80	2.88	2.38	.....	2.40	2.74	2.26	2.08	2.08	2.08	2.08
16	2.88	2.78	2.88	2.38	2.24	2.36	2.66	2.24	2.08	2.08	2.06	2.08
17	2.76	2.76	2.88	2.36	2.26	2.36	2.60	2.24	2.08	2.08	2.06	2.06
18	2.66	2.70	2.88	2.36	2.40	2.36	2.52	2.24	2.08	2.08	2.06	2.06
19	2.60	2.68	2.88	2.36	3.10	2.36	2.48	2.24	2.08	2.08	2.06	2.08
20	2.60	2.66	2.90	2.34	3.26	2.36	2.42	.....	2.08	2.06	2.06	2.08
21	2.58	2.66	2.82	2.34	2.46	2.34	2.40	2.24	.....	2.06	2.06	2.12
22	2.58	2.66	2.70	2.34	2.42	2.32	2.36	2.24	2.08	2.06	2.10	2.10
23	2.58	2.68	2.60	2.34	2.36	2.32	2.30	.....	2.08	2.06	2.10	2.10
24	2.60	2.68	2.54	2.34	2.32	2.32	2.30	2.22	2.06	2.06	2.36	2.08
25	2.62	2.70	2.50	2.34	2.28	2.30	2.30	2.20	2.06	2.08	2.22	2.08
26	2.66	2.70	2.50	2.34	2.26	2.30	2.28	2.22	2.06	2.08	2.18	2.08
27	2.68	2.70	2.48	2.34	.....	.....	2.28	2.18	2.06	2.08	2.10	2.08
28	2.70	2.72	2.48	2.34	.....	2.28	2.26	2.18	2.06	2.08	2.14	2.10
29	2.66	2.76	2.48	2.34	.....	2.28	2.24	2.18	2.08	2.06	2.12	2.10
30	2.62	2.80	2.48	.....	.....	2.28	2.22	.....	2.08	2.06	2.12	2.08
31	2.64	.....	2.48	2.32	.....	2.30	.....	2.16	.....	2.08	2.10	.....

Iowa River at Marshalltown, Iowa

LOCATION.—Lat. 42°04', long. 92°54', in SW¼ sec. 24, T. 84 N., R. 18 W., on right bank in city park in Marshalltown, 300 feet upstream from Burnett Creek, 0.2 mile downstream from bridge on State Highway 14, 2 miles upstream from Linn Creek, and at mile 189. Records include flow of Burnett Creek.

DRAINAGE AREA.—1,530 square miles, approximately, including that of Burnett Creek.

RECORDS AVAILABLE.—February to August 1903 (gage heights and discharge measurements only), May 1915 to September 1927, February 1933 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 853.10 feet above mean sea level, datum of 1929. Feb. 23 to Aug. 8, 1903, staff gage at site 1 mile upstream at different datum. May 21, 1915 to Sept. 30, 1927, and Feb. 1, 1933, to May 8, 1934, chain gage 1,000 feet upstream at present datum. May 9 to Aug. 21, 1934, staff gage at present site and datum.

AVERAGE DISCHARGE.—34 years, 719 cfs.

EXTREMES.—1915-27, 1933-55: Maximum discharge observed, 42,000 cfs June 4, 1918 (gage height, 17.74 feet), from rating curve extended above 19,000 cfs; minimum daily about 2 cfs (regulated) Nov. 24, 1917.

REMARKS.—Records good except those for periods of ice effect, which are poor. Some diurnal fluctuation caused by powerplant at Iowa Falls.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	284	*137	67	60	48	3,990	6,500	3,610	3,840	5,440	600	1,180
2	360	136	70	60	47	3,300	5,940	5,290	*11,500	5,290	586	1,000
3	307	134	70	60	47	2,810	5,150	5,600	*10,100	5,760	572	892
4	348	132	68	60	47	2,260	4,790	4,900	*4,900	6,300	518	805
5	384	123	66	59	47	1,910	4,900	4,350	3,610	5,600	492	738
6	348	128	65	58	47	3,830	4,900	3,770	2,430	4,460	468	690
7	324	118	64	57	47	2,950	5,940	3,100	2,680	3,380	456	660
8	307	130	65	57	46	2,390	7,000	2,490	3,030	3,240	468	586
9	460	128	66	56	46	1,750	6,750	2,070	2,550	4,790	544	722
10	422	125	66	55	46	1,300	6,500	2,070	2,070	3,030	544	1,450
11	307	94	66	54	70	900	5,940	1,950	1,750	2,550	492	1,000
12	348	100	66	54	100	700	5,440	1,650	1,500	2,610	492	962
13	319	127	65	54	90	600	5,600	1,400	1,260	2,880	480	1,140
14	280	130	64	54	85	560	5,150	1,260	*1,140	3,170	480	1,220
15	266	127	62	54	85	580	4,350	1,100	1,100	2,680	645	1,100
16	241	119	61	55	90	560	3,690	1,020	1,350	2,430	892	1,100
17	232	128	60	56	110	500	3,170	910	1,100	2,010	1,000	1,100
18	210	118	61	57	620	440	2,750	858	1,100	1,800	1,000	980
19	206	119	62	58	1,200	410	2,250	945	2,020	1,500	875	805
20	202	86	62	59	1,200	360	1,900	1,060	3,380	1,300	840	706
21	185	94	62	59	900	390	1,800	875	1,700	1,220	892	660
22	169	100	62	58	1,000	430	2,370	822	1,400	1,350	788	615
23	173	90	62	58	1,000	420	2,490	770	1,180	1,300	910	572
24	181	80	61	56	1,000	410	2,310	690	1,060	1,450	788	544
25	169	74	61	54	1,400	486	2,820	660	945	1,550	962	544
26	160	70	60	52	*7,000	552	*4,350	645	962	1,300	4,340	531
27	158	68	60	51	5,050	3,100	4,050	586	1,800	1,060	4,170	505
28	154	66	*59	50	4,420	9,300	3,380	558	*3,170	910	2,680	492
29	152	64	58	*49	.....	*14,500	2,890	544	4,050	788	2,010	468
30	*146	*65	58	49	.....	10,000	3,310	505	4,790	706	*1,750	468
31	137	.....	59	48	.....	7,500	.....	*615	.....	*675	1,500	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1950; Jan. 1 to Feb. 26, Mar. 11-23, 1951.

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	456	*645	540	230	900	800	4,680	910	822	1,060	*374	175
2.....	456	615	558	230	1,300	850	4,680	875	805	1,140	363	178
3.....	468	558	586	230	1,200	860	4,460	840	788	1,400	363	181
4.....	1,880	420	580	220	1,100	722	3,950	770	738	1,160	*398	182
5.....	*1,650	410	572	220	1,050	615	3,170	805	706	945	352	190
6.....	1,020	400	586	220	960	630	2,080	754	675	875	340	156
7.....	840	410	586	220	900	770	2,250	738	645	962	330	160
8.....	754	420	558	220	870	840	1,900	770	645	1,900	330	141
9.....	690	440	544	220	850	1,100	1,700	822	645	2,750	340	143
10.....	645	460	505	210	840	2,920	1,600	928	600	2,610	309	136
11.....	615	531	400	210	860	5,580	1,550	962	572	2,250	299	128
12.....	586	700	300	210	880	3,580	1,550	962	544	2,190	289	130
13.....	544	910	230	210	900	5,020	1,650	910	555	1,950	270	126
14.....	518	822	210	210	920	4,150	1,850	840	2,360	1,850	260	125
15.....	505	754	200	350	940	2,370	2,190	805	2,430	2,070	270	123
16.....	480	706	210	700	950	1,800	2,250	754	1,950	2,070	270	115
17.....	492	645	250	800	960	1,450	2,070	706	1,750	2,310	250	114
18.....	492	600	300	1,000	950	1,860	2,070	690	1,180	1,950	260	108
19.....	492	586	320	1,400	970	3,690	1,950	660	1,650	1,600	250	112
20.....	480	572	340	2,500	970	2,820	1,750	645	1,650	1,300	241	110
21.....	660	615	350	2,000	980	2,750	1,650	660	1,700	1,060	228	106
22.....	1,300	615	330	1,400	970	2,890	1,500	1,300	1,500	962	204	102
23.....	1,140	492	310	1,100	960	2,650	1,450	3,220	1,220	892	196	106
24.....	1,000	420	290	950	940	2,310	1,450	1,750	1,060	770	184	104
25.....	950	420	270	850	920	2,130	1,350	1,450	980	706	186	102
26.....	962	440	260	820	890	1,800	1,260	1,260	892	600	187	94
27.....	892	480	250	740	900	1,750	1,180	1,100	2,430	544	184	94
28.....	822	510	*240	620	920	1,800	1,100	*1,100	1,350	505	180	94
29.....	770	*530	240	500	*900	2,250	1,020	962	1,300	460	*181	96
30.....	738	530	240	*380	.....	2,820	*962	875	*1,180	444	182	93
31.....	675	.....	230	450	.....	*3,690	.....	840	.....	409	176	.....
1952-53												
1.....	*83	70	*81	72	68	1,100	1,010	1,700	475	925	224	94
2.....	91	76	83	71	67	920	965	1,900	428	750	233	81
3.....	87	*70	85	70	66	840	945	1,750	428	645	804	85
4.....	78	76	86	70	66	760	985	1,650	428	558	1,120	89
5.....	85	78	86	69	80	700	945	1,600	558	508	985	83
6.....	83	83	86	68	200	640	905	1,500	428	1,010	825	76
7.....	85	81	86	67	450	620	865	1,350	382	805	785	74
8.....	89	83	85	67	520	740	785	1,210	1,230	680	750	72
9.....	91	78	84	66	400	900	750	1,100	680	575	645	74
10.....	85	70	83	66	600	1,200	805	985	592	508	508	74
11.....	89	78	82	65	900	1,400	865	945	2,490	443	397	72
12.....	94	78	81	65	620	1,210	825	825	1,570	382	368	68
13.....	87	78	80	65	450	1,210	785	732	1,050	353	312	61
14.....	96	76	80	66	330	1,300	750	732	865	342	275	61
15.....	85	81	81	250	270	1,550	732	715	698	347	253	61
16.....	89	83	83	210	240	1,450	750	662	628	302	238	61
17.....	89	142	86	180	220	*1,400	825	628	541	287	222	61
18.....	85	165	88	160	210	1,300	885	610	475	275	213	68
19.....	85	154	91	145	200	1,160	865	575	443	307	191	61
20.....	87	141	92	130	1,000	985	768	575	541	277	183	61
21.....	85	117	90	120	5,000	945	698	715	412	271	174	50
22.....	85	117	88	110	4,000	885	645	826	347	524	161	55
23.....	87	117	86	105	3,000	865	628	698	333	443	156	51
24.....	83	115	83	98	3,400	825	.10	698	304	294	150	51
25.....	85	125	81	91	4,000	732	805	925	2,150	240	136	59
26.....	85	85	79	87	2,800	680	1,010	785	2,170	220	130	59
27.....	87	64	77	82	1,700	*610	1,100	732	1,350	266	119	55
28.....	78	70	76	78	1,300	558	1,100	*698	1,800	209	115	49
29.....	81	75	75	*74	.....	541	1,100	610	*1,350	220	106	55
30.....	83	78	73	72	.....	645	*1,140	575	1,100	251	100	*40
31.....	85	.....	*72	70	.....	885	.....	524	.....	*262	*95	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 5-10, Nov. 26 to Dec. 1, Dec. 11-31, 1951; Jan. 1 to Mar. 3, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 10, 1953. Discharge computed from gage readings or graph based on gage readings Mar. 4 to Aug. 20, 1952.

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	53	63	78	58	34	*120	126	420	3,600	*2,490	194	1,970
2	49	66	92	58	34	107	120	747	5,010	2,070	192	1,640
3	44	63	76	58	*35	50	109	1,360	2,670	1,820	179	1,320
4	44	63	82	58	35	35	90	1,130	2,020	1,600	251	1,130
5	53	61	87	58	30	45	105	990	1,040	1,400	351	955
6	49	63	89	58	37	66	202	885	1,360	1,200	210	832
7	42	76	90	57	39	97	192	750	1,160	1,130	175	750
8	51	74	94	55	41	105	172	645	990	1,100	182	675
9	61	59	80	54	45	109	158	570	920	1,020	154	615
10	74	63	60	52	49	110	147	510	3,100	920	120	600
11	66	68	82	50	53	120	132	465	*7,850	815	126	540
12	51	66	72	48	58	110	128	435	4,280	765	107	495
13	49	68	84	47	68	81	114	390	2,190	705	101	480
14	49	70	66	46	77	89	103	345	1,770	630	105	480
15	51	70	47	44	92	97	132	330	1,740	585	107	420
16	55	72	60	43	120	110	158	324	7,640	510	118	405
17	49	70	59	42	115	139	162	283	*7,020	465	165	405
18	55	70	54	41	132	170	137	274	*2,810	465	210	378
19	61	87	58	40	115	237	126	250	1,870	450	228	366
20	61	102	64	39	124	265	110	234	1,560	435	175	336
21	76	113	62	39	140	254	130	220	2,130	390	135	324
22	74	128	59	38	139	248	165	210	5,370	390	312	297
23	59	109	56	37	139	207	189	202	7,600	363	555	274
24	59	106	54	37	126	199	306	210	9,400	354	910	256
25	59	104	56	36	116	182	330	207	9,400	330	850	245
26	59	88	50	36	105	167	363	189	8,100	*309	3,690	234
27	59	70	58	35	182	170	450	248	6,340	274	*7,580	218
28	*61	56	57	35	126	135	306	*525	4,760	223	*10,600	228
29	63	64	*57	35	.....	130	*265	955	3,590	220	5,680	390
30	66	*73	58	34	.....	*123	309	832	2,880	205	*3,390	*357
31	66	.....	58	34	.....	118	.....	832	.....	202	2,550	.....
1954-55												
1	390	705	336	280	138	360	510	562	285	123	*85	*53
2	596	660	342	285	140	1,030	528	*562	262	108	*91	50
3	885	645	309	*285	140	1,200	510	440	242	87	91	46
4	955	630	305	278	138	1,000	545	402	233	98	85	41
5	990	585	260	276	130	800	598	440	244	147	79	38
6	1,060	585	195	272	134	668	580	412	307	138	110	36
7	990	585	210	270	130	528	580	380	374	174	96	34
8	920	570	230	270	125	590	545	354	317	545	69	30
9	920	555	244	255	120	650	510	458	288	930	69	29
10	990	525	246	244	117	680	492	615	265	1,540	64	25
11	1,100	525	244	230	114	630	440	528	270	1,750	61	24
12	1,060	510	242	220	113	580	430	458	240	1,430	61	23
13	1,060	495	230	208	112	570	475	430	223	1,070	58	50
14	2,540	405	200	200	111	690	685	394	203	755	55	91
15	2,550	480	218	190	110	930	720	350	196	550	53	90
16	2,130	460	220	182	110	810	632	340	181	458	50	47
17	1,770	465	216	174	110	720	562	288	163	377	52	56
18	1,520	480	218	168	260	615	545	278	163	311	50	44
19	1,360	480	220	160	1,500	545	510	267	166	267	46	48
20	1,200	510	222	155	2,500	475	475	258	175	235	42	42
21	1,100	435	222	152	2,240	510	440	258	166	217	41	55
22	990	420	222	150	1,190	398	367	227	138	201	50	52
23	955	405	222	148	740	350	327	227	138	181	50	61
24	885	330	222	145	550	300	458	225	118	170	75	50
25	832	339	224	144	*470	255	562	227	121	149	240	47
26	850	360	225	136	445	210	668	225	108	144	186	53
27	920	372	218	125	420	300	720	246	101	130	121	64
28	*815	378	145	114	380	340	910	250	96	120	96	56
29	775	*330	140	120	.....	390	772	334	*104	108	82	59
30	705	321	185	126	.....	*422	668	398	108	104	71	*53
31	720	.....	250	*134	.....	475	.....	*317	.....	98	63	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26-30, Dec. 2-31, 1953; Jan. 1 to Feb. 21, Feb. 25, Mar. 3-7, 12-14, 30, 31, Dec. 4-31, 1954; Jan. 1 to Feb. 20, Feb. 23 to Mar. 5, Mar. 8-14, 28-29, 1955. Discharge computed from gage readings or graph based on gage readings Apr. 21-28, 1955.

Iowa River at Marshalltown, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	262	107	63.2	55.5	946	2,558	4,279	1,828	2,782	2,063	1,072	810
1951-52.....	774	556	307	634	954	2,235	2,090	980	1,177	1,346	266	128
1952-53.....	86.0	94.1	82.9	97.1	1,148	953	802	953	875	435	354	65.9
1953-54.....	57.0	76.8	68.0	45.2	86.1	136	188	516	4,020	769	1,281	587
1954-55.....	1,114	488	232	197	458	581	559	303	202	411	76.0	48.2

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.171	0.070	0.041	0.036	0.618	1.67	2.80	1.19	1.82	1.74	0.701	0.529
1951-52.....	.506	.363	.240	.414	.624	1.46	1.37	.646	.769	.880	.174	.084
1952-53.....	.056	.062	.054	.063	.750	.623	.503	.623	.572	.284	.231	.043
1953-54.....	.037	.050	.044	.030	.056	.089	.123	.337	2.63	.503	.837	.384
1954-55.....	.728	.319	.152	.129	.299	.380	.365	.237	.132	.269	.052	.032

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.20	0.08	0.05	0.04	0.64	1.93	3.12	1.38	2.03	2.01	0.81	0.59
1951-52.....	.58	.41	.28	.48	.67	1.68	1.53	.75	.86	1.01	.20	.09
1952-53.....	.06	.07	.06	.07	.78	.72	.63	.72	.64	.33	.27	.05
1953-54.....	.04	.06	.05	.03	.06	.10	.14	.39	2.94	.58	.97	.43
1954-55.....	.84	.36	.17	.15	.31	.44	.41	.27	.15	.31	.06	.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....								668	5.03
1951.....	Mar. 29, 1951.	16.13	15,200	46	1,450	0.948	12.88	1,557	13.82
1952.....	Mar. 11, 1952.	13.99	6,500	93	960	.627	8.54	840	7.46
1953.....	Feb. 21, 1953.	16.70	7,000	46	495	.324	4.40	490	4.36
1954.....	Aug. 28, 1954.	16.09	11,500	34	651	.425	5.79	789	7.01
1955.....	Feb. 20, 1955.	11.75	3,290	23	395	.258	3.51	.....	.....

Peak Discharge (base, 3,000 cfs)

1951: Feb. 26 (10:30 a.m.) about 10,000 cfs (16.05 ft.); Mar. 6 (1:30 p.m.) 4,150 cfs (11.59 ft.); Mar. 29 (9 a.m.) 15,200 cfs (16.13 ft.); Apr. 8 (10:30 p.m.) 7,000 cfs (14.20 ft.); Apr. 26 (6 p.m.) 4,570 cfs (12.69 ft.); May 3 (3 a.m.) 5,760 cfs (13.60 ft.); June 2 (9 p.m.) 14,500 cfs (15.95 ft.); June 20 (11 a.m.) 4,050 cfs (12.23 ft.); July 4 (5 p.m.) 6,300 cfs (13.93 ft.); July 9 (12 m.) 5,150 cfs (13.15 ft.); July 14 (4 a.m.) 3,310 cfs (11.32 ft.); Aug. 27 (2 a.m.) 6,750 cfs (14.10 ft.); Oct. 4 (6 p.m.) 3,380 cfs (11.35 ft.).

1952: Mar. 11 (2 p.m.) 6,500 cfs (13.99 ft.); Mar. 13 (8 p.m.) 5,290 cfs (13.30 ft.); Mar. 19 (8:30 a.m.) 3,850 cfs (11.95 ft.); Apr. 1 (3 p.m.) 4,790 cfs (12.92 ft.); May 23 (8:30 a.m.) 4,050 cfs (12.21 ft.).

1953: Feb. 21 (6 a.m.) about 7,000 cfs (16.70 ft.); Feb. 25 (5 a.m.) about 4,200 cfs (13.42 ft.); June 11 (4 p.m.) 4,250 cfs (12.43 ft.); June 25 (11 p.m.) 3,530 cfs (11.64 ft.).

1954: June 2 (6 a.m.) 6,520 cfs (14.21 ft.); June 11 (1 p.m.) 8,850 cfs (15.21 ft.); June 16 (8:30 p.m.) 11,200 cfs (16.02 ft.); June 25 1:30 a.m.) 9,700 cfs (15.51 ft.); Aug. 28 (9 a.m.) 11,500 cfs (16.09 ft.); Oct. 14 (3 p.m.) 3,200 cfs (11.70 ft.).

1955: Feb. 20 (5 p.m.) 3,290 cfs (11.75 ft.).

Salt Creek near Elberon, Iowa

LOCATION.—Lat. 41°58′, long. 92°19′, in SW¼ sec. 25, T. 83 N., R. 13 W., near center of span on downstream side of bridge on U. S. Highway 30, 1.2 miles northwest of Irving, 2.5 miles south of Elberon, and 7 miles upstream from mouth.

DRAINAGE AREA.—200 square miles, approximately.

RECORDS AVAILABLE.—October 1945 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 781.58 feet above mean sea level (Iowa Highway Commission benchmark). Prior to Oct. 15, 1945, and June 14, 1947, to Feb. 10, 1949, wire-weight gage on upstream side of bridge at present datum. Oct. 15, 1945, to June 13, 1947, water-stage recorder at upstream side of bridge at present datum.

AVERAGE DISCHARGE.—10 years, 112 cfs.

EXTREMES.—1945-55: Maximum discharge, not determined, occurred June 13, 1947 (gage height, 17.6 feet); minimum daily, 2.4 cfs Jan. 16-29, 1954.

Flood of June 17, 1944, reached a stage of 21.3 feet (from floodmark).

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	4.4	5.1	3.4	3.8	3.2	120	191	*134	457	104	42	97
2	*4.4	4.9	3.4	3.8	3.2	81	177	152	1,990	*93	41	89
3	4.4	4.9	3.4	3.8	3.1	145	167	129	*1,440	205	42	83
4	4.4	5.1	3.4	3.8	3.1	191	250	111	320	184	35	75
5	4.4	5.1	3.5	3.8	3.0	166	205	92	235	134	33	*70
6	4.4	4.9	3.6	3.8	3.0	198	220	90	205	111	34	67
7	4.4	4.8	3.6	3.8	2.9	85	417	81	205	100	31	61
8	4.6	4.8	3.7	3.7	2.9	198	242	76	336	840	29	59
9	4.6	4.6	3.7	3.7	2.9	33	*184	67	228	925	25	88
10	4.6	4.4	3.8	3.7	3.0	18	159	205	177	212	21	177
11	4.8	4.0	3.8	3.7	13	12	162	250	163	220	18	100
12	4.9	4.0	3.8	3.7	110	10	258	162	149	176	18	80
13	4.9	3.8	3.9	3.6	*23	8.2	250	129	129	198	18	73
14	4.9	4.0	3.9	3.6	21	7.0	177	106	110	220	24	62
15	4.9	4.2	3.9	3.6	20	7.4	142	90	401	159	111	56
16	5.1	4.4	3.9	3.5	20	9.0	118	81	1,570	138	60	50
17	4.9	4.2	3.9	3.5	25	11	106	84	320	122	34	46
18	4.9	4.0	3.9	3.5	350	11	103	83	228	113	27	46
19	4.9	4.0	3.9	3.4	1,040	10	86	117	462	113	24	43
20	5.1	3.8	3.9	3.3	880	11	76	145	820	110	62	42
21	5.3	3.8	3.9	3.3	475	12	89	85	304	107	135	39
22	5.3	3.6	3.9	3.3	398	14	117	79	280	92	55	39
23	5.3	3.4	4.0	3.3	345	30	94	70	212	84	40	37
24	5.1	3.3	4.0	3.3	380	65	92	58	191	73	32	36
25	4.9	3.2	4.0	3.3	1,820	45	205	58	163	68	463	37
26	4.8	3.1	4.0	3.3	2,930	70	212	272	184	64	1,820	38
27	4.8	3.1	3.9	3.3	*417	1,100	198	143	159	*60	760	33
28	5.1	3.2	*3.9	3.3	163	3,200	220	94	135	57	198	32
29	5.3	3.3	3.9	3.3	.....	2,530	170	80	121	52	156	31
30	5.3	*3.4	3.9	*3.3	.....	*380	160	69	115	*48	132	33
31	*5.1	.....	3.8	3.2	.....	228	.....	80	.....	47	114	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1950; Jan. 1 to Feb. 14, Mar. 1, 10-20, 1951.

Salt Creek near Elberon, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	*34	*69	78	45	450	58	280	110	117	*65	19	14
2.....	34	60	80	44	400	63	223	106	116	69	18	14
3.....	34	56	88	44	250	63	190	113	223	69	20	14
4.....	36	53	83	43	200	30	175	104	131	60	74	13
5.....	50	51	78	43	160	47	162	*98	121	63	29	12
6.....	39	50	78	42	140	54	153	89	106	51	23	12
7.....	47	49	72	42	130	76	144	106	96	50	21	12
8.....	42	56	65	42	120	70	*140	118	150	53	21	12
9.....	41	59	66	42	120	76	139	112	632	49	24	12
10.....	38	52	60	41	140	1,450	133	120	171	44	20	12
11.....	36	57	71	41	160	*2,810	132	107	132	43	*18	12
12.....	35	134	53	41	120	*882	133	102	*118	39	18	12
13.....	34	158	50	41	100	2,190	178	94	150	36	16	12
14.....	33	141	40	45	90	577	223	91	352	50	15	12
15.....	33	116	43	80	82	265	251	88	173	62	14	12
16.....	33	107	47	180	75	209	202	88	131	45	16	12
17.....	53	91	51	350	71	196	182	91	112	42	22	12
18.....	61	116	54	300	68	300	169	86	98	43	22	11
19.....	68	107	57	450	66	535	157	83	91	42	22	11
20.....	62	98	59	800	65	295	147	81	97	38	20	9.8
21.....	109	89	60	350	65	244	140	81	125	36	20	9.8
22.....	223	85	60	250	65	251	167	319	111	33	19	9.8
23.....	137	73	60	210	66	216	161	1,270	99	32	19	9.8
24.....	118	84	58	170	66	209	167	333	91	29	19	9.8
25.....	108	80	56	150	67	190	150	230	81	27	19	9.3
26.....	95	79	54	120	72	202	143	180	74	26	18	8.8
27.....	88	78	51	100	76	202	132	170	65	24	18	8.4
28.....	84	79	*49	86	72	210	122	176	86	23	17	8.0
29.....	78	*79	48	75	67	265	117	145	75	21	*16	7.5
30.....	75	80	47	69	.....	265	112	139	68	*21	16	7.5
31.....	73	.....	46	*78	.....	302	.....	120	.....	20	16	.....
1952-53												
1.....	*9.8	8.0	*10	12	12	71	333	210	79	122	27	12
2.....	9.3	8.0	11	*13	*12	60	229	172	76	113	25	12
3.....	9.3	*8.8	11	12	11	60	190	140	*76	97	26	12
4.....	9.3	9.8	12	11	11	56	160	135	57	93	26	16
5.....	8.8	9.8	12	11	60	50	138	124	*792	160	25	14
6.....	8.8	9.3	12	11	170	42	127	126	140	668	24	12
7.....	8.8	8.8	13	11	240	36	117	115	112	143	22	11
8.....	8.8	9.3	13	11	260	45	110	107	1,160	113	22	10
9.....	8.8	9.8	15	11	150	60	109	98	235	*101	20	11
10.....	8.4	9.3	17	11	200	229	126	97	152	91	20	12
11.....	8.4	9.8	18	11	700	107	121	105	1,030	84	21	12
12.....	8.0	11	16	12	110	81	112	84	1,670	79	28	9.9
13.....	8.0	12	12	12	78	72	105	77	220	76	20	9.6
14.....	8.0	12	11	12	92	398	101	72	503	73	19	9.6
15	8.0	11	11	350	66	406	107	72	178	69	17	9.2
16.....	8.0	12	10	200	50	132	102	70	150	62	17	8.5
17.....	8.0	36	9.7	145	41	102	98	68	131	60	16	8.2
18.....	8.0	34	9.3	100	34	91	89	66	120	60	16	7.6
19.....	8.0	17	9.2	60	41	79	88	60	105	53	16	7.6
20	8.0	13	23	45	*2,900	72	80	57	92	65	16	7.6
21.....	8.4	12	22	36	*1,700	72	84	322	82	49	15	7.0
22.....	8.4	12	19	27	220	101	80	808	79	45	15	7.0
23.....	8.4	11	17	23	140	400	76	250	74	38	15	7.9
24.....	8.4	11	15	21	200	203	84	597	70	36	14	8.2
25	8.8	14	13	19	140	133	130	350	325	34	15	7.9
26.....	8.8	33	15	18	110	105	126	172	172	31	14	8.2
27.....	8.8	14	14	17	*147	*95	117	133	1,030	33	13	8.5
28.....	9.3	11	13	16	95	84	110	119	403	31	13	7.9
29.....	9.3	9.0	12	15	.....	75	106	108	*100	30	12	7.0
30.....	9.3	9.5	12	14	.....	106	*133	100	140	29	12	*6.7
31.....	8.8	.....	12	13	.....	280	.....	88	.....	*27	*12	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3-6, Dec. 13-31, 1951; Jan. 1 to Feb. 23, Nov. 28 to Dec. 26, 1952; Jan. 4 to Feb. 26, Mar. 2-9, 1953. Discharge computed from gage readings or graph based on gage readings Aug. 11 to Nov. 2, 1952.

Salt Creek near Elberon, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	8.2	7.3	12	7.6	2.9	0.2	11	460	431	24	6.7	79
2.....	8.2	7.6	12	7.0	3.2	*9.6	11	476	190	24	6.7	84
3.....	7.0	*7.0	15	7.6	3.0	8.6	9.0	378	360	23	*5.9	88
4.....	6.7	7.3	16	7.6	*4.6	7.2	8.0	*178	244	23	16	71
5.....	6.4	6.4	12	7.6	5.8	7.0	10	134	162	23	83	112
6.....	5.5	5.5	14	7.5	9.0	7.3	*78	113	162	*21	14	82
7.....	5.2	6.7	12	7.4	8.8	7.9	34	97	*123	21	8.5	55
8.....	5.5	5.5	12	7.2	8.6	8.5	18	85	104	19	9.8	40
9.....	6.1	5.8	11	7.0	8.2	11	14	79	108	17	10	65
10.....	6.1	5.8	10	6.1	8.0	12	12	73	106	17	7.6	81
11.....	6.4	5.8	8.8	4.8	7.8	13	9.8	69	114	14	6.7	71
12	6.1	5.8	7.8	3.7	8.0	13	8.5	61	87	13	6.7	65
13	6.1	6.1	6.9	2.9	8.3	8.2	8.0	59	73	13	6.7	64
14	6.4	6.1	6.0	*2.5	8.8	7.8	7.6	53	73	12	7.2	65
15.....	6.4	6.4	5.3	2.5	9.6	7.8	60	49	66	11	7.6	64
16.....	6.4	6.7	4.7	2.4	11	10	98	47	63	11	17	62
17.....	6.4	*7.3	4.2	2.4	12	11	42	40	58	10	19	63
18.....	6.7	7.3	3.6	2.4	13	13	26	38	53	11	381	63
19.....	6.7	7.9	6.0	2.4	14	16	22	36	44	12	82	61
20.....	6.7	8.8	7.0	2.4	19	16	28	35	44	12	30	54
21.....	6.4	8.5	7.8	2.4	16	12	207	32	96	12	19	52
22.....	7.6	7.9	8.8	2.4	11	10	69	31	436	12	17	49
23.....	7.9	7.9	8.5	2.4	10	10	46	31	100	11	16	47
24.....	7.9	8.8	8.2	2.4	9.6	12	38	31	70	12	91	46
25.....	7.6	8.5	8.0	2.4	10	28	77	28	56	10	*56	44
26.....	*7.6	8.8	7.9	2.4	9.2	26	62	26	45	9.4	*3,100	44
27.....	7.6	9.2	7.8	2.4	9.9	16	201	38	41	9.8	*2,100	44
28.....	7.3	9.6	7.8	2.4	11	13	94	61	34	9.0	785	45
29.....	7.3	10	*7.8	2.4	.....	9.4	71	59	31	9.8	280	294
30.....	7.3	*11..	7.7	2.5	.....	*8.5	153	40	27	8.5	202	410
31.....	7.3	.....	7.7	2.6	.....	13	.....	83	.....	7.6	130	.....
1954-55												
1.....	196	*81	40	40	27	150	62	101	55	21	*11	*7.2
2.....	651	69	39	37	27	220	62	97	*52	20	10	6.7
3.....	420	70	39	36	26	184	61	86	61	20	9.8	6.7
4.....	214	70	38	45	26	*146	62	87	52	19	9.4	6.7
5.....	300	68	40	52	27	96	*65	76	45	*24	35	6.3
6.....	*312	69	40	64	27	53	56	71	44	333	478	6.3
7.....	220	68	39	70	27	40	51	68	45	87	57	6.3
8.....	196	57	36	55	27	70	49	60	44	77	26	6.3
9.....	178	63	32	47	27	82	47	92	39	62	*21	6.3
10.....	843	65	44	*40	27	69	44	226	*37	300	19	5.9
11.....	616	61	40	42	25	68	45	151	42	169	17	5.5
12.....	256	60	39	40	26	59	53	123	42	66	15	5.5
13.....	196	60	39	47	27	51	96	110	40	45	15	9.0
14.....	178	59	39	38	28	107	108	96	37	36	13	14
15.....	168	56	38	34	29	239	122	84	33	31	13	8.0
16.....	156	*58	*37	31	31	109	101	80	31	28	13	6.7
17.....	140	58	32	28	33	88	85	*75	30	24	13	5.5
18.....	127	55	26	28	40	83	78	70	30	24	12	5.5
19.....	120	54	28	28	150	81	82	66	30	22	12	12
20.....	117	54	32	28	900	77	88	61	38	*21	12	14
21.....	111	53	32	27	450	88	70	56	29	19	11	12
22.....	105	51	32	27	200	60	64	55	27	18	11	12
23.....	101	50	31	26	170	60	75	67	25	17	11	10
24.....	96	49	31	26	140	59	319	54	24	16	11	9.4
25.....	92	45	32	26	110	56	250	52	23	15	11	8.5
26.....	97	44	35	25	160	54	190	54	23	15	10	9.0
27.....	109	46	60	21	300	62	162	80	21	13	9.0	15
28.....	*90	38	61	23	210	72	134	76	21	12	8.0	12
29.....	91	*33	54	24	.....	*79	*118	105	*20	11	8.5	13
30.....	86	36	50	25	.....	73	108	70	23	10	8.5	11
31.....	84	.....	45	*26	.....	67	.....	60	.....	11	7.6	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27, 28, Dec. 11-31, 1953; Jan. 1 to Feb. 18, Mar. 3-5, 14, 15, Nov. 28 to Dec. 31, 1954; Jan. 1 to Mar. 2, Mar. 7, 8, 21-27, 1955.

Salt Creek near Elberon, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	4.85	4.08	3.79	3.53	339	293	175	112	394	169	149	60.7
1951-52.....	65.5	82.8	60.1	142	125	414	164	167	140	42.1	21.2	11.0
1952-53.....	8.62	13.2	13.5	41.3	285	132	123	165	322	89.2	18.5	9.60
1953-54.....	6.81	7.44	8.85	4.14	9.32	11.7	51.1	97.4	120	14.3	246	82.1
1954-55.....	215	56.7	38.4	35.7	116	90.4	98.9	84.2	35.4	51.2	29.6	8.74

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.024	0.020	0.019	0.018	1.70	1.46	0.875	0.560	1.97	0.845	0.745	0.304
1951-52.....	.328	.414	.300	.710	.625	2.07	.820	.835	.700	.210	.106	.055
1952-53.....	.043	.066	.068	.206	1.42	.660	.615	.825	1.61	.446	.092	.048
1953-54.....	.034	.037	.044	.021	.047	.058	.256	.487	.600	.072	1.23	.410
1954-55.....	1.08	.284	.192	.178	.580	.452	.494	.421	.177	.256	.148	.044

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.03	0.02	0.02	0.02	1.76	1.69	0.98	0.65	2.20	0.97	0.86	0.34
1951-52.....	.38	.46	.35	.82	.67	2.38	.92	.96	.78	.24	.12	.06
1952-53.....	.05	.07	.08	.24	1.49	.76	.69	.95	1.80	.51	.11	.05
1953-54.....	.04	.04	.05	.02	.05	.07	.29	.56	.67	.08	1.42	.46
1954-55.....	1.24	.32	.22	.21	.61	.52	.55	.49	.20	.29	.17	.05

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	84.7	5.74
1951....	June 2, 1951..	(1)13.67	4,250	2.9	141	0.705	9.54	157	10.66
1952....	Mar. 11, 1952.	14.26	4,050	7.5	120	.600	8.14	105	7.15
1953....	Feb. 20, 1953.	15.40	7,000	6.7	100	.500	6.80	99.0	6.73
1954....	Aug. 26, 1954.	15.21	5,410	2.4	55.2	.276	3.75	70.4	5.40
1955....	Oct. 10, 1955..	(2)11.83	1,360	5.5	71.7	.358	4.87	.....	.....

(1) Maximum gage height, 14.12 ft. Feb. 25, 1951.
(2) Maximum gage height, 12.90 ft. Feb. 20, 1955 (backwater from ice).

Peak Discharge (base, 700 cfs)

1951: Feb. 19 (9 p.m.) 1,080 cfs (10.90 ft.); Feb. 25 (9:30 p.m.) 3,860 cfs (14.12 ft.); Mar. 29 (2 a.m.) 3,680 cfs (13.40 ft.); June 2 (9 p.m.) 4,250 cfs (13.67 ft.); June 16 (1 p.m.) 2,340 cfs (12.34 ft.); June 20 (12:30 a.m.) 1,630 cfs (11.34 ft.); July 8 (6:30 p.m.) 2,600 cfs (12.56 ft.); Aug. 27 (2 a.m.) 2,810 cfs (12.78 ft.).

1952: Jan. 20 (11 a.m.) about 1,000 cfs (12.05 ft.); Mar. 11 (9:30 a.m.) 4,050 cfs (14.26 ft.); Mar. 13 (5 p.m.) 2,600 cfs (12.85 ft.); Mar. 19 (4 a.m.) 760 cfs (9.22 ft.); May 23 (2 p.m.) 1,750 cfs (11.50 ft.); June 9 (7 a.m.) 1,160 cfs (10.37 ft.).

1953: Jan. 16 (12:30 a.m.) about 1,200 cfs (11.38 ft.); Feb. 11 (1 p.m.) about 1,100 cfs (11.58 ft.); Feb. 20 (3 p.m.) about 7,000 cfs (15.40 ft.); Mar. 14 (10:30 p.m.) 1,200 cfs (10.46 ft.); May 22 (3 p.m.) 1,350 cfs (10.77 ft.); May 24 (9 p.m.) 1,300 cfs (10.69 ft.); June 5 (10.30 a.m.) 1,400 cfs (10.93 ft.); June 8 (5 p.m.) 1,750 cfs (11.48 ft.); June 12 (3 a.m.) 4,250 cfs (13.70 ft.); June 14 (6 a.m.) 1,040 cfs (10.10 ft.); June 27 (6 p.m.) 1,570 cfs (11.17 ft.); July 6 (10:30 a.m.) 1,200 cfs (10.47 ft.).

1954: May 1 (7 a.m.) 700 cfs (9.22 ft.); June 22 (5:30 a.m.) 800 cfs (9.74 ft.); Aug. 18 (1:30 p.m.) 820 cfs (9.80 ft.); Aug. 26 (4 p.m.) 5,410 cfs (15.21 ft.); Sept. 30 (3 a.m.) 740 cfs (9.39 ft.); Oct. 2 (10 p.m.) 1,180 cfs (11.19 ft.); Oct. 10 (8:30 p.m.) 1,360 cfs (11.83 ft.).

1955: Feb. 20, about 1,000 cfs; July 6 (1 p.m.) 700 cfs (9.15 ft.); July 10 (5:30 p.m.) 700 cfs (9.20 ft.); Aug. 6 (7 a.m.) 928 cfs (10.28 ft.).

Iowa River near Belle Plaine, Iowa

LOCATION.—Lat. 41°51'20", long. 92°14'20", in NW¼ sec. 5, T. 81 N., R. 12 W., on right bank 5 feet downstream from bridge on State Highway 212, 0.5 mile downstream from Walnut Creek, and 2.7 miles south of Belle Plaine.

DRAINAGE AREA.—2,420 square miles, approximately.

RECORDS AVAILABLE.—September 1939 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 749.82 feet above mean sea level, datum of 1929. Prior to Mar. 13, 1940, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—16 years, 1,278 cfs.

EXTREMES.—1939-55: Maximum discharge, 34,000 cfs June 14, 1947 (gage height, 17.07 feet); minimum daily, 19 cfs Jan. 5, 1940.

A discharge of 38,600 cfs was measured June 5, 1918, at railroad bridge 1 mile above gage and at a stage somewhat below crest of that flood.

REMARKS.—Records good except those for period of ice effect, which are poor. Records include flow which occasionally bypasses gage through old channel of Salt Creek.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	347	195	*105	79	71	5,200	15,700	*4,160	1,760	3,710	1,140	1,930
2.....	*305	184	110	80	69	6,000	11,300	4,160	4,250	*4,160	1,050	1,630
3.....	335	180	105	80	68	5,060	9,150	4,400	*7,880	4,020	1,030	1,420
4.....	370	180	100	79	67	3,710	8,010	4,920	11,300	5,820	960	1,320
5.....	352	178	100	78	66	2,930	6,660	5,820	14,900	6,420	892	1,230
6.....	412	176	90	79	66	2,610	6,660	6,200	9,620	6,910	850	1,140
7.....	432	174	86	80	65	3,010	7,160	5,820	7,160	6,000	810	1,030
8.....	375	176	86	80	64	3,170	6,910	5,060	6,000	6,910	770	938
9.....	367	169	89	79	64	2,530	*6,910	4,040	4,920	8,730	730	982
10.....	415	167	90	*78	65	1,990	7,700	3,820	4,400	6,420	730	960
11.....	448	167	91	78	67	1,750	8,010	4,040	3,510	6,420	750	1,520
12.....	432	161	91	78	500	1,400	8,350	3,510	2,850	6,000	750	1,520
13.....	403	157	91	77	390	1,000	8,350	2,850	2,460	4,280	710	1,280
14.....	370	157	90	77	320	1,000	7,700	2,390	2,180	3,820	710	1,280
15.....	352	157	88	76	260	1,000	7,160	2,110	2,420	3,710	830	1,320
16.....	324	159	87	76	240	1,000	6,660	1,930	3,470	3,610	1,050	1,280
17.....	314	161	87	76	240	938	6,000	1,810	3,170	3,170	1,050	1,320
18.....	288	161	87	80	400	850	5,200	1,930	2,390	2,930	1,140	1,230
19.....	278	159	87	150	2,200	750	4,280	2,150	2,250	2,530	1,140	1,180
20.....	265	155	86	200	3,100	730	3,330	2,450	3,590	2,250	1,180	1,100
21.....	261	145	86	130	2,400	690	2,850	1,930	4,280	2,110	1,320	982
22.....	253	130	85	100	2,000	670	2,690	1,690	4,010	1,930	1,280	850
23.....	242	115	85	92	1,700	611	2,850	1,570	3,010	1,870	1,140	750
24.....	230	96	84	87	1,800	611	3,090	1,470	2,530	1,810	1,050	750
25.....	226	96	83	84	3,300	630	3,330	1,420	2,110	1,810	1,520	750
26.....	228	105	82	81	6,000	650	3,710	2,530	1,930	1,870	3,100	730
27.....	221	105	80	78	*4,660	1,340	4,280	1,750	1,930	1,810	4,160	730
28.....	215	105	78	77	4,040	4,580	5,200	1,420	2,250	1,520	3,710	650
29.....	208	105	76	75	.....	8,010	5,340	1,280	3,010	1,420	3,820	611
30.....	202	105	75	*73	.....	*9,150	5,060	1,230	3,420	*1,280	3,010	592
31.....	*197	.....	76	72	.....	19,200	.....	1,230	.....	1,230	2,250	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 21 to Dec. 31, 1950; Jan. 1 to Feb. 26, Mar. 12-16, 1951. Discharge computed from gage readings or graph based on gage readings Oct. 6-9, 1950; Aug. 13, Sept. 7-30, 1951.

Iowa River near Belle Plaine, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1951-52												
1.....	592	1,000	870	470	1,000	1,370	4,160	1,470	1,520	*1,750	573	251
2.....	*611	*960	850	460	1,500	1,280	4,530	1,420	1,420	1,630	554	*256
3.....	611	892	870	*460	2,000	1,320	4,920	1,370	1,660	1,810	536	251
4.....	592	830	870	450	2,200	1,320	5,490	1,320	*1,570	1,810	670	249
5.....	1,120	770	870	450	2,000	1,180	5,650	*1,280	1,420	1,630	*670	242
6.....	1,810	730	870	450	1,800	1,140	5,490	1,180	1,320	1,470	573	233
7.....	1,320	730	850	440	1,600	1,100	4,490	1,180	1,230	1,320	518	224
8.....	870	750	830	440	1,500	1,140	*3,330	1,230	1,230	1,280	500	230
9.....	1,000	790	810	430	1,400	1,180	2,850	1,180	1,760	1,750	500	224
10.....	915	830	770	430	1,400	3,230	2,610	1,230	1,370	2,530	500	215
11.....	870	850	770	420	1,400	7,600	2,460	1,320	1,180	2,610	448	204
12.....	810	1,000	640	420	1,400	8,350	2,320	1,320	1,070	2,390	432	199
13.....	770	1,280	450	420	1,400	9,150	2,460	1,280	1,060	2,250	403	185
14.....	730	1,630	350	410	1,500	9,620	2,690	1,230	2,270	2,180	384	195
15.....	690	1,420	300	500	1,500	6,910	2,850	1,180	3,170	2,180	378	202
16.....	690	1,280	330	1,000	1,500	6,660	3,010	1,180	3,170	2,180	370	191
17.....	750	1,180	360	1,500	1,500	4,530	3,010	1,140	2,530	2,180	358	182
18.....	730	1,050	400	2,000	1,500	3,170	2,850	1,100	2,250	2,390	338	180
19.....	730	960	450	2,500	1,500	3,930	2,690	1,030	2,110	2,180	327	178
20.....	730	960	500	3,500	1,500	4,160	2,530	982	2,180	1,870	319	167
21.....	970	960	550	3,100	1,500	4,530	2,320	960	2,690	1,630	322	167
22.....	1,180	1,000	570	2,800	1,500	4,530	2,320	1,190	2,690	1,420	324	161
23.....	1,930	938	580	2,500	1,500	4,280	2,180	3,640	2,320	1,260	305	159
24.....	1,630	870	570	2,200	1,400	4,040	2,180	4,220	1,990	1,180	288	146
25.....	1,470	790	560	1,900	1,400	3,710	2,180	3,780	1,870	1,100	273	144
26.....	1,370	750	550	1,700	1,400	3,420	2,050	2,690	1,660	1,000	261	161
27.....	1,320	750	530	1,600	1,500	3,170	1,930	2,250	1,570	892	265	155
28.....	1,260	790	520	1,500	1,520	2,930	1,750	2,110	1,630	810	258	148
29.....	1,180	790	500	1,400	*1,520	3,010	1,630	1,990	1,750	750	263	142
30.....	1,140	*870	490	1,100	.....	3,170	1,520	1,750	1,630	690	258	140
31.....	1,070	.....	480	*770	.....	3,710	.....	1,630	.....	611	251	.....
1952-53												
1.....	*131	133	135	145	185	1,630	2,080	*2,200	1,020	1,630	385	146
2.....	128	133	140	*140	*175	1,420	2,140	2,410	*945	*1,460	378	140
3.....	126	133	145	135	175	1,180	1,940	2,020	900	1,290	*340	140
4.....	126	*135	*150	135	175	1,050	1,750	2,480	855	1,120	402	149
5.....	124	135	155	130	190	1,000	1,690	2,270	1,550	1,060	855	146
6.....	121	135	160	130	900	*938	*1,570	2,200	1,400	1,340	945	137
7.....	121	135	165	125	1,050	830	1,510	2,140	1,040	1,120	900	134
8.....	118	135	170	125	1,250	810	1,460	2,010	1,850	1,220	832	131
9.....	116	137	170	125	1,200	790	1,400	1,820	2,550	*1,040	810	134
10.....	116	137	170	125	1,350	1,140	1,370	1,690	1,630	922	765	128
11.....	123	137	165	125	1,500	1,570	1,370	1,630	2,150	832	685	125
12.....	128	137	160	125	1,700	1,690	1,370	1,460	3,840	765	605	119
13.....	133	135	155	125	1,450	1,520	1,340	1,340	2,830	745	*512	116
14.....	142	137	155	130	1,200	1,570	1,290	1,240	2,140	685	444	116
15.....	146	137	160	500	900	2,620	1,260	1,190	1,630	665	412	113
16.....	155	142	165	700	600	2,140	1,240	1,160	1,370	625	372	110
17.....	155	261	170	620	470	2,010	1,240	1,120	1,240	605	355	110
18.....	152	298	175	560	430	1,880	1,220	1,060	1,140	565	336	107
19.....	*152	261	175	510	520	1,750	1,260	990	1,020	530	313	104
20.....	150	237	180	460	2,500	1,630	1,260	945	922	512	297	101
21.....	146	202	180	420	5,100	1,510	1,190	1,320	855	512	281	98
22.....	146	191	175	370	4,400	1,510	1,120	2,320	855	478	252	95
23.....	142	180	170	330	4,920	2,140	1,040	2,340	765	405	233	95
24.....	142	170	165	300	6,000	2,080	990	2,140	705	645	224	92
25.....	140	182	155	280	3,250	1,630	1,320	2,140	810	548	214	86
26.....	139	220	150	260	2,390	1,460	1,570	1,750	2,200	461	205	83
27.....	139	180	150	240	2,100	1,320	1,630	1,510	4,000	428	193	80
28.....	137	150	150	230	1,870	1,240	1,630	1,370	2,970	444	180	83
29.....	137	120	150	215	.....	1,140	1,630	1,290	2,410	444	174	83
30.....	135	130	145	205	.....	1,260	1,750	1,190	2,010	398	159	*80
31.....	133	.....	145	190	.....	1,750	.....	1,090	.....	385	*152	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 12-31, 1951; Jan. 1 to Feb. 27, Nov. 26 to Dec. 31, 1952; Jan. 1 to Feb. 22, Feb. 27, 1953. Discharge computed from daily gage readings or graph based on daily gage readings Oct. 1 to Nov. 4, 1952; Apr. 14-30, May 14-21, June 17, July 3-11, 1953.

Iowa River near Belle Plaine, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	80	80	112	74	*41	183	*193	1,460	2,480	4,860	382	7,420
2	80	92	*107	72	41	*174	190	1,510	2,830	3,360	375	4,300
3	80	*89	110	70	*42	170	174	2,010	4,100	2,690	*362	2,620
4	83	86	122	70	43	135	162	*2,270	4,300	2,340	362	2,010
5	80	86	131	69	44	90	171	2,010	4,300	2,140	418	1,630
6	74	86	131	70	45	100	*645	1,690	3,120	*1,880	512	1,400
7	74	86	134	*70	46	115	565	1,460	2,410	1,630	444	1,260
8	74	83	140	68	49	131	461	1,290	2,010	1,510	382	1,120
9	77	86	120	64	52	146	365	1,120	1,750	1,400	362	990
10	77	98	90	59	54	162	316	990	1,570	1,340	342	968
11	77	101	118	55	60	180	284	922	2,020	1,240	316	900
12	77	98	110	52	68	186	265	810	3,600	1,140	303	832
13	83	95	118	50	78	165	249	745	*4,200	1,040	294	765
14	86	95	95	*48	95	135	239	685	5,380	990	287	745
15	*83	95	62	47	120	130	375	605	5,240	922	281	705
16	77	95	72	47	165	143	530	565	3,120	832	278	685
17	74	*98	77	46	170	149	428	548	3,440	788	284	645
18	74	101	77	46	199	183	362	512	*3,680	725	415	625
19	74	110	77	46	174	221	339	478	6,420	685	665	605
20	71	116	78	46	193	262	313	461	7,420	665	461	565
21	71	122	75	45	214	281	748	461	3,680	645	382	548
22	74	131	73	45	211	281	495	444	4,100	605	346	512
23	80	131	70	44	205	278	385	444	4,100	585	323	495
24	95	131	70	44	186	281	365	415	4,300	548	565	478
25	95	131	70	43	180	294	425	405	4,980	530	*746	461
26	95	128	71	43	170	300	495	398	6,660	495	3,430	444
27	92	120	72	42	170	265	765	405	9,620	478	6,070	428
28	80	90	72	42	162	233	878	*461	10,100	461	*5,820	418
29	89	107	72	42	.....	227	725	530	8,730	444	4,860	1,270
30	92	110	71	41	.....	199	725	900	6,420	418	5,660	1,460
31	92	.....	69	41	.....	183	.....	990	.....	402	8,010	.....
1954-55												
1	1,020	*1,120	*570	500	285	1,740	680	1,060	554	203	*182	122
2	1,340	1,060	550	530	290	1,700	700	*940	*505	200	172	*107
3	1,580	1,040	540	550	285	2,100	720	890	489	198	159	94
4	1,370	1,020	530	560	280	*2,560	740	845	473	185	154	91
5	1,580	990	510	560	280	1,970	740	780	458	*174	154	81
6	1,900	940	420	560	275	1,490	760	740	*427	427	447	73
7	*1,760	915	465	560	270	1,280	760	720	458	489	221	68
8	1,640	915	480	560	265	1,040	760	680	505	308	172	68
9	1,520	868	475	520	260	1,120	740	700	489	328	*164	60
10	2,040	845	460	*490	250	1,220	700	1,060	473	866	154	57
11	3,280	822	455	460	245	1,190	680	1,160	442	2,040	141	55
12	2,480	822	450	450	235	1,190	680	990	442	2,040	133	52
13	2,040	780	440	415	230	1,060	780	890	427	1,520	120	60
14	1,900	780	430	390	225	1,060	940	800	412	1,240	115	63
15	2,560	760	430	370	220	1,580	990	740	382	915	112	68
16	3,280	*760	425	355	220	1,340	1,040	700	353	740	109	73
17	3,120	740	430	350	220	1,240	965	*640	342	605	99	89
18	2,640	720	430	345	230	1,140	890	622	319	537	94	76
19	2,250	700	425	335	1,500	1,040	940	588	333	473	91	78
20	2,040	700	415	325	2,500	940	1,020	570	382	427	89	91
21	1,830	720	415	320	3,100	915	890	537	314	397	86	91
22	1,700	700	420	310	2,800	890	780	521	294	368	86	86
23	1,580	660	420	305	2,600	845	780	521	277	336	83	94
24	1,460	640	425	300	2,400	740	1,700	489	264	319	78	81
25	1,340	622	430	295	2,250	610	1,400	473	250	*291	151	76
26	1,320	588	445	280	2,100	520	1,260	473	237	269	182	76
27	1,340	588	380	260	1,950	580	1,220	505	*229	247	216	109
28	1,400	588	300	250	1,800	640	*1,220	537	219	229	200	109
29	1,200	605	270	250	.....	*680	1,160	588	211	216	167	151
30	1,220	588	370	260	.....	700	1,140	588	206	200	154	112
31	1,140	.....	440	*275	.....	*680	.....	570	.....	193	148	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27-29, Dec. 1, 9-31, 1953; Jan. 1 to Feb. 17, Feb. 25-27, Mar. 3-7, 13-15, Dec. 2-31, 1954; Jan. 1 to Mar. 3, Mar. 7, 8, 24-27, 1955.

Iowa River near Belle Plaine, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	312	149	88.3	87.4	1,224	2,993	6,320	2,938	4,319	3,786	1,440	1,100
1951-52.....	1,016	947	610	1,217	1,529	3,634	3,102	1,640	1,845	1,637	401	193
1952-53.....	135	165	160	265	1,712	1,491	1,454	1,691	1,653	773	426	113
1953-54.....	81.3	103	92.4	52.9	118	193	421	003	4,556	1,219	1,411	1,243
1954-55.....	1,837	788	440	396	984	1,155	926	707	372	548	149	83.7

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.129	0.062	0.036	0.036	0.506	1.24	2.61	1.21	1.78	1.56	0.595	0.455
1951-52.....	.420	.391	.252	.503	.632	1.58	1.24	.678	.762	.676	.166	.080
1952-53.....	.056	.068	.066	.110	.707	.616	.601	.699	.683	.319	.176	.047
1953-54.....	.034	.043	.038	.022	.049	.080	.174	.373	1.88	.504	.583	.514
1954-55.....	.759	.326	.182	.164	.407	.477	.383	.292	.154	.226	.062	.035

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.15	0.07	0.04	0.04	0.53	1.43	2.91	1.40	1.99	1.80	0.69	0.51
1951-52.....	.48	.44	.29	.58	.68	1.63	1.39	.78	.85	.78	.19	.09
1952-53.....	.06	.08	.08	.13	.74	.71	.67	.81	.76	.37	.20	.05
1953-54.....	.04	.05	.04	.03	.05	.09	.19	.43	2.10	.58	.07	.57
1954-55.....	.88	.36	.21	.19	.42	.55	.43	.34	.17	.26	.07	.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	1,000	5.61
1951....	Mar. 31, 1951.	15.72	20,100	64	2,060	0.851	11.56	2,230	12.51
1952....	Mar. 14, 1952.	14.58	11,300	140	1,490	.616	8.38	1,313	7.39
1953....	Feb. 21, 1953.	13.82	6,500	80	829	.343	4.66	814	4.57
1954....	June 28, 1954.	14.50	10,700	41	864	.357	4.84	1,099	6.16
1955....	Oct. 11, 1954.	(1)11.02	3,600	52	698	.288	3.92	.....	.....

(1) Maximum gage height, 13.29 ft. Feb. 21, 1955 (backwater from ice).

Peak Discharge (base, 3,500 cfs)

1951: Feb. 26 (1:30 p.m.) about 7,000 cfs (14.33 ft.); Mar. 2 (8 a.m.) 6,200 cfs (13.15 ft.); Mar. 31 (2 p.m.) 20,100 cfs (15.72 ft.); Apr. 12 (10 p.m.) 8,730 cfs (14.06 ft.); Apr. 28 (2 a.m.) 5,650 cfs (12.87 ft.); May 6 (9 a.m.) 6,200 cfs (13.25 ft.); June 5 (3 a.m.) 15,700 cfs (15.24 ft.); June 16 (2 p.m.) 3,820 cfs (11.50 ft.); June 22 (6 a.m.) 5,060 cfs (12.46 ft.); July 9 (1 p.m.) 10,100 cfs (14.36 ft.); Aug. 27 (7 p.m.) 4,530 cfs (12.08 ft.).

1952: Mar. 12 (2 a.m.) 9,620 cfs (14.30 ft.); Mar. 14 (6 a.m.) 11,300 cfs (14.58 ft.); Mar. 21 (10 p.m.) 4,660 cfs (12.02 ft.); Apr. 5 (4 p.m.) 5,650 cfs (12.65 ft.); May 24 (2 a.m.) 4,530 cfs (11.99 ft.).

1953: Feb. 21 (8 p.m.) about 6,500 cfs (13.82 ft.); Feb. 24 (5 p.m.) 6,200 cfs (13.24 ft.); June 12 (7:30 p.m.) 4,740 cfs (12.17 ft.); June 27 (2 p.m.) 4,740 cfs (12.23 ft.).

1954: June 3 (7:30 p.m.) 4,400 cfs (11.70 ft.); June 15 (4 a.m.) 6,000 cfs (12.86 ft.); June 20 (5 a.m.) 8,010 cfs (13.90 ft.); June 28 (3:30 a.m.) 10,700 cfs (14.50 ft.); Aug. 27 (7:30 p.m.) 7,160 cfs (13.79 ft.); Aug. 31 (6 p.m.) 8,350 cfs (14.27 ft.); Oct. 11 (9 a.m.) 3,600 cfs (11.02 ft.).

1955: No peak above base.

Bear Creek at Ladora, Iowa

LOCATION.—Lat. 41°45', long. 92°11', in SW¼ sec. 7, T. 80 N., R. 11 W., on right bank 10 feet downstream from highway bridge, a quarter of a mile south of Ladora, and 2½ miles above Little Bear Creek.

DRAINAGE AREA.—185 square miles.

RECORDS AVAILABLE.—October 1945 to September 1955.

GAGE.—Water-stage recorder. Prior to June 26, 1946, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—10 years, 108 cfs.

EXTREMES.—1945-55: Maximum discharge observed, 9,050 cfs Jan. 5, 1946 (gage height, 13.10 feet); minimum daily, 0.4 cfs Sept. 10, 1955.

REMARKS.—Records fair except those below 10 cfs and those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	6.8	*3.4	*1.0	0.7	1.5	76	265	*170	275	132	50	32
2.....	6.4	4.2	.9	.7	1.5	87	275	198	250	120	51	30
3.....	5.0	4.2	.9	.7	1.4	100	206	180	1,020	228	55	28
4.....	4.7	3.9	.9	.7	1.4	120	371	168	350	192	47	28
5.....	4.7	3.9	.8	.6	1.4	100	335	156	260	*147	43	28
6.....	4.4	3.6	.8	.6	1.4	*85	208	141	*228	126	41	*28
7.....	5.0	3.9	.8	.6	1.4	45	701	128	239	117	38	24
8.....	5.3	4.4	.8	.6	1.4	39	356	118	458	853	35	23
9.....	6.0	5.0	.8	.6	1.3	33	248	115	277	1,400	32	27
10.....	6.0	4.9	.8	*.6	1.3	31	*210	520	232	347	30	30
11.....	5.0	4.7	.8	.6	100	28	330	562	221	317	27	28
12.....	4.2	4.5	.8	.6	350	26	510	285	210	200	25	36
13.....	3.6	4.4	.7	.6	250	24	425	232	166	210	22	32
14.....	3.9	4.2	.7	.6	200	23	288	194	156	184	27	26
15.....	4.2	4.2	.7	.6	150	22	228	172	468	160	49	22
16.....	3.4	4.7	.7	.6	130	21	192	160	573	209	43	22
17.....	3.4	5.3	.7	.7	150	19	160	162	275	198	31	21
18.....	3.1	4.7	.7	.7	1,000	19	145	256	221	262	28	21
19.....	2.9	4.4	.7	16	670	19	122	170	196	154	26	21
20.....	3.1	*3.9	.7	14	750	18	122	497	178	154	34	19
21.....	3.1	3.5	.7	13	450	18	139	204	217	143	44	18
22.....	3.1	3.1	.7	11	300	18	166	184	298	126	29	21
23.....	3.4	2.7	.7	11	180	31	130	170	219	109	26	21
24.....	3.4	2.4	.7	11	300	50	118	160	427	99	23	20
25.....	3.4	2.0	.7	11	700	80	166	248	228	90	176	20
26.....	3.1	1.8	.7	12	500	170	262	*1,720	215	84	72	20
27.....	2.9	1.6	.7	4.5	*180	406	260	458	204	79	42	18
28.....	2.9	1.4	.7	2.0	110	1,220	272	288	182	72	39	17
29.....	2.9	1.2	.7	1.7	.....	840	213	239	154	66	38	17
30.....	2.9	1.0	.7	*1.6	.....	*410	188	213	143	*61	35	18
31.....	2.9	.....	.7	1.5	.....	312	.....	260	.....	56	34	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 10, 12, Nov. 21 to Dec. 31, 1950; Jan. 1 to Mar. 26, 1951.

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	18	84	99	43	*300	69	309	135	139	*117	19	12
2.....	*17	79	99	42	260	71	253	132	133	115	18	*12
3.....	17	59	100	*41	230	81	228	143	128	311	22	10
4.....	16	52	91	40	270	63	215	128	*120	109	28	7.8
5.....	15	*66	88	39	200	61	198	118	118	88	*23	6.8
6.....	18	70	88	39	170	100	186	*113	109	81	22	6.4
7.....	35	70	78	38	170	113	174	152	102	79	20	6.8
8.....	28	64	72	38	180	84	168	147	100	88	20	6.8
9.....	22	62	76	37	160	99	*164	156	120	72	24	6.4
10.....	21	60	67	37	130	1,830	164	172	95	67	21	6.0
11.....	19	61	62	37	110	*1,160	156	147	*86	61	22	6.0
12.....	19	279	58	37	98	787	158	137	70	55	24	5.3
13.....	18	584	50	37	90	942	206	124	102	53	18	4.7
14.....	17	404	38	37	84	338	230	118	298	58	16	6.0
15.....	16	228	43	60	78	248	215	115	156	67	19	9.4
16.....	33	196	48	150	73	213	190	130	108	56	18	5.6
17.....	182	172	54	350	68	200	180	135	95	55	15	5.0
18.....	115	158	58	300	65	257	176	118	83	50	14	4.4
19.....	91	150	59	800	63	571	170	113	78	52	14	4.4
20.....	128	141	60	350	61	312	162	108	258	45	13	4.4
21.....	607	135	60	360	60	260	158	106	201	42	14	4.4
22.....	395	130	59	600	60	312	210	275	178	39	14	4.4
23.....	200	122	58	500	60	293	213	1,040	141	36	11	4.4
24.....	166	113	57	540	60	255	221	377	130	33	8.9	4.4
25.....	143	114	56	450	63	245	196	272	120	31	8.0	4.4
26.....	128	122	54	340	65	202	182	223	115	29	8.9	4.4
27.....	118	111	52	260	69	277	172	206	611	26	8.9	4.4
28.....	111	108	50	230	72	306	160	190	207	25	8.4	4.4
29.....	100	100	48	220	*79	326	149	176	141	*23	9.4	4.2
30.....	95	*99	46	220	.....	285	141	160	124	22	9.4	*4.2
31.....	86	.....	45	240	.....	371	.....	154	.....	20	9.4	.....
1952-53												
1.....	3.9	4.4	9.1	6.2	12	65	344	*344	111	141	20	*6.8
2.....	3.6	4.4	9.5	6.1	*12	60	243	232	*109	*685	18	6.8
3.....	3.6	4.4	9.8	6.1	11	56	215	194	103	100	*17	6.8
4.....	3.9	4.2	*9.8	6.1	11	52	178	172	162	113	18	6.8
5.....	3.9	4.4	10	*6.1	60	44	149	164	656	117	18	6.0
6.....	4.2	4.4	10	6.2	150	*37	*143	162	186	320	18	5.3
7.....	4.2	*4.4	11	6.2	250	34	130	152	139	104	18	4.4
8.....	4.4	4.4	12	6.2	190	40	124	137	1,700	83	15	4.4
9.....	4.7	4.4	13	6.4	140	60	122	124	221	74	14	5.3
10.....	4.7	4.4	14	6.5	180	200	130	117	166	*63	14	4.2
11.....	5.0	4.4	15	6.6	250	143	113	137	732	56	14	3.6
12.....	5.3	4.4	13	6.9	80	104	104	104	196	55	14	3.6
13.....	5.0	4.4	11	7.3	100	95	95	91	164	55	13	3.6
14.....	5.0	4.7	10	19	80	156	95	91	150	53	12	3.6
15.....	5.0	5.0	9.4	500	62	200	109	90	135	49	11	3.6
16.....	4.7	6.0	9.1	320	46	126	106	86	128	45	10	3.1
17.....	4.7	63	8.8	160	38	111	97	86	115	42	10	3.1
18.....	4.7	72	8.5	100	32	108	90	84	111	43	9.4	3.1
19.....	4.4	32	8.5	60	80	100	86	74	100	39	8.9	3.1
20.....	4.4	22	23	42	2,600	91	84	72	100	38	8.9	3.1
21.....	4.4	19	20	32	200	91	79	152	93	38	8.4	3.1
22.....	4.4	17	17	26	150	147	74	609	93	36	7.8	3.1
23.....	4.7	16	14	22	130	484	*67	225	91	32	7.8	3.1
24.....	4.7	16	11	20	115	267	90	*2,230	84	32	7.3	3.1
25.....	4.7	20	10	18	100	184	200	724	141	29	7.3	3.1
26.....	5.0	30	8.8	17	82	154	162	317	106	28	7.3	3.1
27.....	4.7	15	7.8	16	88	137	147	232	1,210	26	7.3	2.9
28.....	4.4	10	7.3	15	74	122	141	200	894	25	6.8	2.9
29.....	4.7	8.0	7.0	14	.....	109	135	176	221	24	6.8	2.9
30.....	4.4	8.7	6.6	13	.....	*344	186	152	172	22	7.3	*2.7
31.....	4.4	.....	6.3	12	.....	410	.....	126	.....	22	7.3	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-10, Dec. 11-31, 1951; Jan. 1 to Feb. 28, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 10, 1953. Discharge computed from gage readings or graph based on gage readings Sept. 1-30, 1952; Mar. 22-24, Mar. 30 to Apr. 5, June 9, 10, July 3, 4, July 6 to Aug. 2, Aug. 30 to Sept. 30, 1953.

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	2.6	2.4	4.8	1.7	*1.4	7.2	*8.5	133	410	12	2.6	17
2.....	2.6	2.4	*5.5	1.6	1.6	*7.6	9.6	88	122	12	2.6	12
3.....	2.9	*2.3	6.5	1.6	2.0	10	9.6	135	*345	12	*2.4	9.6
4.....	3.1	2.3	6.9	1.5	*3.0	7.6	8.5	*90	226	12	3.6	9.0
5.....	3.2	2.3	5.9	1.5	3.5	6.6	20	58	113	12	80	7.2
6.....	2.9	2.6	6.5	1.5	4.0	6.2	*157	46	118	*11	15	5.5
7.....	2.9	2.6	6.2	*1.4	4.6	6.5	28	35	70	9.6	4.8	5.2
8.....	3.2	2.6	5.2	1.4	5.2	6.9	14	29	54	9.0	4.5	4.5
9.....	3.2	3.1	5.5	1.4	5.9	7.2	11	24	44	7.9	4.3	5.9
10.....	3.2	3.2	6.2	1.4	6.6	11	11	22	38	7.9	3.6	9.6
11.....	3.2	3.2	5.9	1.4	7.2	13	7.9	19	33	7.9	2.9	5.5
12.....	3.6	3.2	6.5	1.4	8.2	12	6.9	16	28	7.6	2.6	4.8
13.....	3.6	3.4	5.9	1.4	9.3	11	5.5	14	18	7.6	2.5	4.8
14.....	3.6	3.4	5.2	*1.4	10	8.5	5.9	12	29	5.9	2.7	4.8
15.....	*3.6	3.4	4.8	1.4	12	6.9	20	11	19	5.2	2.6	4.5
16.....	3.6	3.6	4.5	1.3	13	7.6	50	9.6	18	4.5	2.6	4.5
17.....	3.6	*3.6	4.2	1.3	13	8.5	19	8.5	17	4.5	2.7	4.5
18.....	3.2	3.6	3.9	1.3	14	9.0	11	7.2	14	5.5	3.2	4.3
19.....	3.2	3.8	3.6	1.3	7.6	11	9.0	6.9	11	5.2	3.6	3.8
20.....	3.2	4.5	3.4	1.3	13	14	34	6.2	10	5.5	3.1	3.4
21.....	3.2	5.5	3.2	1.3	11	11	59	5.9	18	5.5	2.4	3.1
22.....	3.2	6.2	3.0	1.3	9.6	8.5	26	6.2	224	6.5	2.5	2.7
23.....	3.2	5.2	2.8	1.3	8.5	6.9	17	7.6	47	4.8	2.4	2.7
24.....	3.2	4.5	2.7	1.3	7.6	6.9	12	6.2	24	4.3	103	2.6
25.....	3.1	4.3	2.5	1.3	7.6	12	23	4.8	19	4.0	*135	2.6
26.....	2.9	5.5	2.3	1.3	8.5	21	47	5.9	17	3.2	*1,770	2.4
27.....	2.9	4.8	2.2	1.3	7.9	9.6	26	7.6	16	2.9	654	2.4
28.....	2.6	4.4	2.1	1.3	7.6	11	21	20	15	2.9	*140	3.4
29.....	2.6	4.1	2.0	1.3	.....	11	16	15	14	2.9	53	510
30.....	2.5	4.5	1.9	1.3	.....	11	109	7.2	12	2.9	34	226
31.....	2.5	.....	1.8	1.3	.....	9.6	.....	13	.....	2.9	22	.....
1954-55												
1.....	56	*31	*18	31	16	102	47	105	35	13	3.3	0.7
2.....	91	32	21	30	16	108	43	98	*32	12	*2.7	*.5
3.....	56	29	17	*28	16	99	43	89	32	8.9	2.6	.6
4.....	37	29	14	36	16	98	45	*95	31	7.5	2.6	1.0
5.....	155	27	17	43	17	74	43	77	30	*6.5	2.6	.7
6.....	158	26	19	51	17	41	41	71	29	7.9	5.5	.5
7.....	*85	26	17	54	17	68	38	66	33	8.2	4.0	.5
8.....	64	24	17	41	17	65	37	61	*32	6.5	3.3	.5
9.....	52	23	16	33	17	68	35	86	25	8.2	*3.1	.5
10.....	555	22	15	30	16	54	33	191	24	74	2.9	.4
11.....	432	22	15	31	16	*53	33	122	26	56	2.9	.5
12.....	177	22	15	29	15	47	47	106	27	22	2.7	.5
13.....	121	20	14	26	15	43	83	102	26	12	2.6	2.6
14.....	96	19	*14	24	15	41	102	89	24	9.6	2.6	2.3
15.....	82	19	14	23	15	71	71	81	20	7.5	2.4	1.1
16.....	68	19	14	22	16	54	61	77	18	8.2	2.2	1.1
17.....	59	19	14	21	18	48	54	*70	16	7.2	2.2	1.0
18.....	50	19	14	20	20	48	52	68	17	6.2	2.2	.9
19.....	45	*19	14	20	1,000	48	102	64	24	6.2	2.2	1.0
20.....	45	19	17	19	500	47	129	61	20	4.8	1.9	1.5
21.....	46	19	17	19	250	74	79	58	12	4.8	1.6	4.0
22.....	50	19	17	18	190	60	67	56	12	4.4	1.9	4.4
23.....	40	18	17	18	150	54	200	56	9.6	4.4	1.4	4.0
24.....	34	19	17	18	115	51	695	52	9.6	4.6	1.5	2.7
25.....	33	18	18	17	92	47	286	51	10	4.2	2.2	2.0
26.....	34	14	22	17	130	45	213	52	11	*4.4	1.6	1.8
27.....	44	16	30	17	190	47	175	55	10	3.8	2.2	3.1
28.....	36	14	36	16	143	*47	*148	50	*8.9	3.5	.8	5.5
29.....	33	13	33	16	.....	61	124	48	8.9	3.8	1.0	66
30.....	28	15	35	16	.....	59	111	44	13	3.3	1.6	52
31.....	26	.....	32	*16	.....	*53	.....	38	.....	3.3	.8	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 28, 29, Dec. 14-31, 1953; Jan. 1 to Feb. 17, Mar. 4-7, Nov. 28, 29, Dec. 5-31, 1954; Jan. 1 to Feb. 27, Mar. 22-27, 1955. Discharge computed from gage readings or graph based on gage readings Dec. 3-13, 1953; Feb. 18 to Mar. 3, Mar. 8 to Apr. 30, June 7 to Aug. 23, Oct. 1-4, 6, 12-31, 1954; Feb. 28 to Mar. 21, Mar. 28 to Apr. 14, Apr. 20-22, July 2-5, Aug. 2-28, Aug. 30 to Sept. 1, 1955.

Bear Creek at Ladora, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	4.05	3.57	0.76	3.93	230	145	257	282	285	220	41.7	23.9
1951-52.....	96.6	140	63.6	210	119	349	199	188	152	64.9	16.2	5.99
1952-53.....	4.51	14.0	11.0	48.0	190	140	135	253	290	86.6	11.7	4.01
1953-54.....	3.10	3.68	4.31	1.38	7.62	9.57	27.0	28.1	71.4	6.70	99.2	29.6
1954-55.....	93.2	21.0	19.0	25.8	109	60.5	108	75.5	20.9	10.9	2.36	5.40

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.022	0.019	0.0041	0.021	1.29	0.784	1.39	1.52	1.54	1.19	0.225	0.129
1951-52.....	.522	.757	.344	1.14	.643	1.89	1.03	1.02	.822	.351	.088	.032
1952-53.....	.024	.076	.059	.259	1.03	.757	.730	1.37	1.57	.468	.063	.022
1953-54.....	.017	.020	.023	.0075	.041	.052	.146	.152	.386	.036	.536	.160
1954-55.....	.504	.114	.103	.139	.589	.327	.584	.408	.113	.059	.013	.030

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.03	0.02	0.005	0.02	1.34	0.90	1.55	1.75	1.72	1.37	0.26	0.14
1951-52.....	.60	.84	.40	1.31	.69	2.17	1.15	1.17	.92	.40	.10	.04
1952-53.....	.03	.08	.07	.30	1.07	.87	.81	1.58	1.75	.54	.07	.02
1953-54.....	.02	.02	.03	.009	.04	.06	.16	.17	.43	.04	.62	.18
1954-55.....	.58	.13	.12	.16	.61	.38	.65	.47	.13	.07	.01	.03

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								89.0	6.54
1951....	July 8, 1951...	9.47	3,950	0.6	124	0.670	9.10	149	10.89
1952....	Mar. 10, 1952.	8.62	3,050	4.2	133	.719	9.79	111	8.13
1953....	May 24, 1953.	(1)9.95	5,800	2.7	98.1	.530	7.19	96.5	7.08
1954....	Aug. 26, 1954.	10.74	4,010	1.3	24.4	.132	1.78	34.7	2.54
1955....	Oct. 10, 1954..	(2)6.62	1,360	.4	45.5	.246	3.34	.....	.....

(1) Maximum gage height, 10.81 ft. Feb. 20, 1953 (ice jam).
(2) Maximum gage height, 12.13 ft. Feb. 19, 1955 (ice jam).

Peak Discharge (base, 700 cfs)

1951: Feb. 17 (9:30 p.m.) about 2,500 cfs (9.12 ft.); Feb. 25 (7 a.m.) about 1,600 cfs (8.45 ft.); Mar. 28 (4 p.m.) 1,970 cfs (7.33 ft.); Apr. 7 (2 a.m.) 1,100 cfs (5.81 ft.); May 10 (7 p.m.) 1,120 cfs (5.87 ft.); May 20 (7 a.m.) 780 cfs (5.08 ft.); May 26 (5 a.m.) 2,860 cfs (8.44 ft.); June 3 (7 a.m.) 1,520 cfs (6.58 ft.); June 15 (1 p.m.) 975 cfs (5.51 ft.); June 16 (12 m.); 928 cfs (5.41 ft.); July 8 (9:30 p.m.) 3,950 cfs (9.47 ft.); Oct. 21 (5 p.m.) 928 cfs (5.38 ft.); Nov. 13 (7 p.m.) 928 cfs (5.46 ft.).

1952: Jan. 19 (2 p.m.) about 2,500 cfs (10.74 ft.); Mar. 10 (3 p.m.) 3,050 cfs (8.62 ft.); Mar. 13 (1:30 a.m.) 1,640 cfs (6.83 ft.); Mar. 19 (5:30 a.m.) 740 cfs (5.00 ft.); May 23 (12:30 a.m.) 2,180 cfs (7.56 ft.); June 27 (9 p.m.) 1,020 cfs (5.36 ft.).

1953: Feb. 7 (10:30 p.m.) about 750 cfs (6.52 ft.); Feb. 20 (3:30 a.m.) about 4,800 cfs (10.81 ft.); May 22 (12 m.) 1,080 cfs (5.67 ft.); May 24 (10:30 a.m.) 5,800 cfs (9.95 ft.); June 5 (3 a.m.) 1,250 cfs (5.92 ft.); June 8 (7 a.m.) 4,170 cfs (8.71 ft.); June 11 (11 a.m.) 1,640 cfs (6.40 ft.); June 27 (9:30 p.m.) 3,950 cfs (8.64 ft.); July 2 (11 a.m.) 1,220 cfs (6.38 ft.).

1954: June 1 (3 a.m.) 922 cfs (5.63 ft.); Aug. 26 (6:30 a.m.) 4,010 cfs (10.74 ft.); Sept. 29 (11 a.m.) 1,060 cfs (5.90 ft.); Oct. 10 (7 p.m.) 1,360 cfs (6.62 ft.).

1955: Feb. 19, about 1,300 cfs; Apr. 24 (2:30 a.m.) 1,220 cfs (6.29 ft.).

Lake Macbride near Solon, Iowa

LOCATION.—Lat. 41°48', long. 91°34', in NE¼ sec. 29, T 81 N., R. 6 W., in Macbride State Park, 3 miles west of Solon.

DRAINAGE AREA.—26.6 square miles above outlet.

RECORDS AVAILABLE.—October 1936 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 675.54 feet above mean sea level, adjustment of 1912, and 8.0 feet below crest of spillway of dam forming lake. Prior to Mar. 31, 1949, tape-float gage at same site and datum.

EXTREMES.—1936-55: Maximum gage height observed, 13.64 feet May 20, 1944; minimum observed, -0.50 feet Dec. 5, 1936 (gate in dam open).

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	7.88	7.63	7.57	7.69	8.05	8.18	8.32	8.21	8.20	8.15	8.09	8.09
2.....	7.88	7.62	7.60	7.70	8.05	8.16	8.31	8.19	8.20	8.14	8.08	8.08
3.....	7.87	7.61	7.62	7.73	8.05	8.18	8.29	8.18	8.20	8.27	8.09	8.08
4.....	7.85	7.59	7.62	7.74	8.05	8.17	8.29	8.18	8.19	8.31	8.08	8.07
5.....	7.85	7.58	7.62	7.74	8.05	8.16	8.25	8.18	8.18	8.22	8.07	8.07
6.....	7.83	7.57	7.63	7.74	8.07	8.16	8.28	8.20	8.18	8.19	8.06	8.07
7.....	7.83	7.57	7.66	7.74	8.07	8.15	8.50	8.20	8.21	8.17	8.07	8.06
8.....	7.83	7.60	7.66	7.74	8.07	8.15	8.34	8.19	8.28	8.34	8.19	8.06
9.....	7.83	7.62	7.66	7.74	8.07	8.14	8.27	8.21	8.24	8.53	8.14	8.10
10.....	7.82	7.62	7.66	7.74	8.07	8.13	8.24	8.64	8.20	8.26	8.11	8.16
11.....	7.81	7.61	7.67	7.74	8.21	8.12	8.26	8.50	8.18	8.24	8.08	8.11
12.....	7.80	7.61	7.68	7.74	8.49	8.15	8.42	8.33	8.27	8.24	8.07	8.09
13.....	7.78	7.61	7.68	7.74	8.21	8.13	8.34	8.26	8.39	8.24	8.06	8.08
14.....	7.77	7.61	7.68	7.74	8.16	8.11	8.28	8.24	8.22	8.23	8.06	8.08
15.....	7.76	7.62	7.69	7.74	8.15	8.10	8.24	8.22	8.22	8.19	8.11	8.07
16.....	7.75	7.63	7.70	7.73	8.15	8.11	8.22	8.21	8.21	8.19	8.11	8.06
17.....	7.75	7.63	7.70	7.76	8.20	8.11	8.21	8.22	8.19	8.19	8.09	8.05
18.....	7.74	7.63	7.70	7.93	8.53	8.15	8.20	8.20	8.17	8.18	8.07	8.05
19.....	7.72	7.63	7.70	8.27	9.12	8.16	8.19	8.19	8.17	8.17	8.06	8.04
20.....	7.71	7.62	7.69	8.26	8.48	8.16	8.17	8.20	8.15	8.16	8.08	8.04
21.....	7.70	7.61	7.69	8.14	8.23	8.16	8.20	8.18	8.27	8.17	8.11	8.03
22.....	7.70	7.61	7.69	8.10	8.20	8.16	8.21	8.18	8.33	8.17	8.09	8.06
23.....	7.69	7.62	7.69	8.09	8.17	8.18	8.19	8.18	8.25	8.16	8.08	8.07
24.....	7.68	7.61	7.69	8.09	8.25	8.21	8.18	8.17	8.42	8.14	8.06	8.07
25.....	7.66	7.60	7.69	8.09	8.91	8.20	8.24	8.18	8.26	8.14	8.10	8.08
26.....	7.64	7.58	7.69	8.09	8.35	8.19	8.23	8.68	8.23	8.14	8.20	8.10
27.....	7.65	7.58	7.69	8.05	8.21	8.33	8.23	8.37	8.22	8.13	8.20	8.11
28.....	7.65	7.57	7.69	8.05	8.18	8.60	8.30	8.27	8.20	8.12	8.13	8.08
29.....	7.64	7.57	7.69	8.05	.....	8.55	8.34	8.23	8.18	8.11	8.12	8.07
30.....	7.64	7.57	7.69	8.05	.....	8.50	8.26	8.21	8.17	8.11	8.12	8.06
31.....	7.64	.....	7.69	8.04	.....	8.38	.....	8.21	.....	8.11	8.11	.....

Lake Macbride near Solon, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	8.06	8.18	8.17	8.17	8.26	8.20	8.26	8.18	8.15	8.16	7.93	8.07
2.....	8.06	8.16	8.18	8.17	8.21	8.19	8.24	8.18	8.14	8.15	7.91	8.07
3.....	8.07	8.16	8.18	8.16	8.19	8.19	8.22	8.18	8.15	8.15	8.08	8.05
4.....	8.08	8.16	8.18	8.16	8.23	8.15	8.22	8.17	8.15	8.13	8.28	8.03
5.....	8.08	8.15	8.18	8.16	8.18	8.14	8.22	8.16	8.15	8.12	8.14	8.01
6.....	8.10	8.15	8.17	8.16	8.16	8.15	8.21	8.17	8.15	8.11	8.11	8.00
7.....	8.19	8.15	8.17	8.16	8.16	8.15	8.19	8.24	8.15	8.10	8.09	7.98
8.....	8.15	8.14	8.17	8.16	8.17	8.16	8.20	8.25	8.29	8.10	8.10	7.98
9.....	8.12	8.15	8.17	8.16	8.17	8.18	8.20	8.23	8.40	8.09	8.11	7.97
10.....	8.11	8.15	8.16	8.16	8.17	8.71	8.20	8.26	8.20	8.08	8.10	7.96
11.....	8.11	8.15	8.17	8.15	8.18	8.81	8.20	8.23	8.16	8.08	8.09	7.95
12.....	8.10	8.33	8.16	8.15	8.17	8.64	8.21	8.21	8.15	8.06	8.08	7.95
13.....	8.10	8.46	8.16	8.15	8.17	8.57	8.32	8.19	8.15	8.06	8.07	7.93
14.....	8.09	8.38	8.16	8.16	8.17	8.36	8.32	8.18	8.55	8.12	8.06	7.95
15.....	8.08	8.28	8.16	8.41	8.17	8.30	8.27	8.17	8.28	8.15	8.08	7.95
16.....	8.17	8.24	8.15	8.34	8.16	8.26	8.25	8.18	8.20	8.12	8.12	7.95
17.....	8.40	8.22	8.16	8.30	8.16	8.25	8.24	8.19	8.17	8.12	8.11	7.95
18.....	8.33	8.20	8.17	8.31	8.16	8.42	8.24	8.18	8.16	8.19	8.09	7.94
19.....	8.25	8.19	8.16	8.72	8.16	8.51	8.24	8.16	8.15	8.17	8.08	7.94
20.....	8.20	8.19	8.16	8.40	8.16	8.36	8.23	8.16	8.15	8.12	8.10	7.92
21.....	8.32	8.19	8.17	8.27	8.15	8.31	8.21	8.16	8.23	8.10	8.12	7.91
22.....	8.31	8.20	8.17	8.25	8.15	8.35	8.29	8.29	8.25	8.09	8.10	7.91
23.....	8.25	8.18	8.16	8.20	8.16	8.36	8.25	8.80	8.21	8.06	8.08	7.89
24.....	8.35	8.17	8.16	8.20	8.15	8.29	8.26	8.32	8.19	8.05	8.07	7.88
25.....	8.27	8.17	8.16	8.19	8.15	8.30	8.24	8.25	8.18	8.03	8.05	7.87
26.....	8.23	8.18	8.17	8.19	8.21	8.31	8.23	8.21	8.17	8.03	8.05	7.86
27.....	8.22	8.17	8.16	8.18	8.39	8.28	8.21	8.20	8.20	8.02	8.05	7.85
28.....	8.21	8.17	8.16	8.18	8.35	8.27	8.19	8.18	8.27	8.01	8.05	7.84
29.....	8.20	8.17	8.15	8.17	8.25	8.26	8.19	8.17	8.20	7.99	8.07	7.83
30.....	8.19	8.17	8.16	8.16	.....	8.25	8.18	8.16	8.17	7.97	8.07	7.81
31.....	8.19	.....	8.16	8.16	.....	8.26	.....	8.15	.....	7.05	8.06	.....
1952-53												
1.....	7.80	7.58	.....	8.12	8.10	.....	8.40	.....	.....	8.12	7.97	7.38
2.....	7.78	7.58	.....	8.12	8.10	.....	8.30	.....	.....	8.18	8.08	7.35
3.....	7.76	7.58	8.10	8.11	8.09	.....	8.25	8.37	.....	8.13	8.10	7.31
4.....	7.75	7.57	8.10	8.11	8.10	.....	8.23	8.32	.....	8.15	8.07	7.30
5.....	7.72	7.58	8.10	8.11	8.34	.....	8.20	8.28	.....	8.47	8.05	7.26
6.....	7.70	7.58	8.10	8.10	8.08	.....	8.20	8.25	.....	8.50	8.04	7.24
7.....	7.69	7.58	8.10	8.10	8.41	.....	8.19	8.25	.....	8.20	8.03	7.23
8.....	7.68	7.57	8.10	8.09	8.25	.....	8.18	8.25	.....	8.15	8.01	7.19
9.....	7.68	7.57	8.12	8.10	8.17	8.10	8.19	8.23	.....	8.13	7.99	7.22
10.....	7.67	7.57	8.12	8.10	8.16	8.34	8.20	8.20	.....	8.12	7.97	7.22
11.....	7.66	7.57	8.11	8.10	8.24	8.33	8.18	8.18	.....	8.11	7.96	7.21
12.....	7.66	7.57	8.11	8.10	8.20	8.21	8.17	8.17	.....	8.10	7.96	7.17
13.....	7.66	7.57	8.09	8.10	8.15	8.18	8.17	8.17	.....	8.10	7.95	7.14
14.....	7.66	7.57	8.09	8.15	8.15	8.39	8.16	8.15	.....	8.13	7.92	7.11
15.....	7.65	7.57	8.09	8.42	8.14	8.33	8.19	8.14	.....	8.12	7.90	7.08
16.....	7.64	7.61	8.09	8.20	8.14	8.23	8.18	8.15	.....	8.11	7.88	7.08
17.....	7.63	8.46	8.09	8.16	8.13	8.20	8.17	8.15	.....	8.10	7.85	7.04
18.....	7.63	8.28	8.09	8.13	8.13	8.21	8.16	8.14	.....	8.10	7.82	7.02
19.....	7.63	8.17	8.10	8.12	8.29	8.20	8.16	8.14	.....	8.09	7.79	7.00
20.....	7.62	8.14	8.40	8.12	9.82	8.17	8.16	8.14	.....	8.10	7.75	6.97
21.....	7.61	.....	8.24	8.11	8.23	8.17	.....	8.19	.....	8.12	7.72	6.94
22.....	7.60	.....	8.19	8.11	.....	8.17	.....	8.49	8.06	8.10	7.69	6.90
23.....	7.60	.....	8.19	8.11	.....	8.22	.....	8.28	8.05	8.07	7.66	6.88
24.....	7.60	.....	8.18	8.11	.....	8.19	.....	8.73	8.05	8.04	7.64	6.86
25.....	7.60	.....	8.15	8.11	.....	8.12	.....	.....	.....	8.03	7.71	6.84
26.....	7.60	.....	8.14	8.10	.....	8.16	.....	.....	.....	8.00	7.58	6.82
27.....	7.60	.....	8.13	8.10	.....	8.15	.....	.....	.....	8.00	7.54	6.79
28.....	7.60	.....	8.13	8.10	.....	8.15	8.20	.....	.....	7.97	7.50	6.77
29.....	7.59	.....	8.12	8.10	.....	8.14	8.19	.....	.....	7.97	7.47	6.75
30.....	7.58	.....	8.12	8.10	.....	8.31	8.45	.....	8.15	7.95	7.44	6.72
31.....	7.58	.....	8.12	8.10	.....	8.40	.....	.....	.....	7.96	7.41	.....

Lake Macbride near Solon, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	6.68	6.12	5.78	5.83	.....	5.80	6.41	8.39	8.57	7.96	7.15	8.03
2	6.65	6.10	5.79	5.83	5.29	5.82	6.45	8.33	8.31	7.94	.....	8.01
3	6.62	6.08	5.84	5.82	5.30	5.82	6.45	8.33	8.36	7.91	.....	7.99
4	6.60	6.06	5.89	5.82	5.30	5.81	6.45	8.21	8.28	7.90	.....	7.97
5	6.57	6.03	5.89	5.81	5.32	5.79	6.47	8.16	8.22	7.88	.....	7.95
6	6.54	6.01	5.90	5.80	5.33	5.78	6.64	8.15	8.18	7.86	.....	7.92
7	6.54	5.99	5.90	5.80	5.33	5.77	6.75	8.13	8.20	7.85	.....	7.93
8	6.53	5.98	5.90	5.79	5.33	5.79	6.78	8.12	8.17	7.83	.....	7.90
9	6.53	5.96	5.94	5.78	5.33	5.82	6.78	8.11	8.15	7.80	.....	7.90
10	6.53	5.95	5.97	5.77	5.35	5.86	6.80	8.10	8.13	7.77	.....	7.89
11	.....	5.94	5.97	5.75	5.36	5.90	6.81	8.10	8.12	7.73	.....	7.86
12	.....	5.93	5.97	5.73	5.36	5.95	6.81	8.10	8.10	7.70	.....	7.85
13	.....	5.92	5.97	5.70	5.35	5.97	6.81	8.09	8.09	7.67	.....	7.83
14	.....	5.91	5.97	5.68	5.36	5.97	6.81	8.08	8.10	7.63	.....	7.81
15	.....	5.90	5.96	5.66	5.41	5.97	6.93	8.08	8.09	7.60	.....	7.79
16	.....	5.89	5.95	5.64	5.47	5.97	7.00	8.08	8.08	7.56	.....	7.76
17	.....	5.88	5.93	5.61	5.48	5.98	7.02	8.08	8.08	7.53	.....	7.75
18	.....	5.88	5.90	5.58	5.50	6.00	7.02	8.07	8.06	7.50	.....	7.73
19	.....	5.88	5.88	5.56	5.52	6.04	7.03	8.06	8.08	7.47	.....	7.71
20	.....	5.91	5.86	5.54	5.60	6.06	7.15	8.06	8.11	7.45	.....	7.68
21	.....	5.90	5.91	5.52	5.65	6.06	7.30	8.05	8.20	7.46	.....	7.65
22	.....	5.89	5.94	5.50	5.67	6.07	7.37	8.04	8.39	7.43	.....	7.61
23	.....	5.88	5.93	5.47	5.69	6.07	7.40	8.03	8.17	7.40	.....	7.58
24	.....	5.87	5.90	5.44	5.70	6.11	7.42	8.02	8.12	7.38	.....	7.56
25	.....	5.85	5.89	5.42	5.75	6.25	7.48	8.01	8.08	7.35	.....	7.55
26	.....	5.83	5.87	.....	5.78	6.30	7.58	7.99	8.06	7.32	.....	7.53
27	.....	5.83	5.86	.....	5.79	6.31	8.08	8.03	8.05	7.29	.....	7.79
28	.....	5.82	5.86	.....	5.80	6.33	8.13	8.16	8.02	7.25	8.13	7.93
29	.....	5.81	5.86	.....	.....	6.36	8.11	8.13	8.00	7.23	8.10	7.93
30	6.14	5.80	5.85	.....	.....	6.38	8.16	8.11	7.98	7.20	8.07	7.93
31	6.13	.....	5.84	.....	.....	6.40	.....	8.11	.....	7.18	8.05	.....
1954-55												
1	7.93	8.10	8.06	8.11	8.09	8.18	8.12	8.16	8.08	7.95	7.50	6.40
2	7.92	8.09	8.06	8.11	8.09	8.17	8.12	8.16	8.08	7.92	7.47	6.35
3	.....	8.09	8.06	8.10	8.09	8.16	8.11	8.17	8.08	7.90	7.42	6.32
4	.....	8.09	8.06	8.12	8.10	8.16	8.10	8.17	8.07	7.87	7.37	6.28
5	8.13	8.09	8.06	8.28	8.11	8.15	8.12	8.16	8.07	7.85	7.35	6.25
6	8.13	8.09	8.05	8.31	8.10	8.13	8.12	8.15	8.07	7.82	7.37	6.20
7	8.11	8.08	8.05	8.21	8.10	8.13	8.11	8.14	8.07	7.80	7.37	6.16
8	8.10	8.08	8.04	8.20	8.10	8.12	8.10	8.13	8.06	7.77	7.34	6.12
9	8.10	8.08	8.05	8.18	8.10	8.11	8.10	8.18	8.05	7.90	7.30	6 08
10	8.47	8.09	8.05	8.16	8.10	8.11	8.10	8.30	8.03	8.05	7.27	6.05
11	8.38	8.09	8.05	8.14	8.10	8.11	8.11	8.22	8.05	8.11	7.22	6.01
12	8.22	8.09	8.05	8.15	8.10	8.11	8.12	8.18	8.06	8.07	7.18	5.96
13	8.17	8.09	8.05	8.12	8.10	8.11	8.14	8.17	8.06	8.05	7.14	6.09
14	8.22	8.09	8.05	8.12	8.09	8.14	8.17	8.17	8.07	8.02	7.11	6.28
15	8.19	8.10	8.06	8.12	8.09	8.23	8.15	8.15	8.08	7.99	7.07	6.27
16	8.16	8.10	8.06	8.12	8.09	8.17	8.13	8.15	8.07	7.95	7.03	6.25
17	8.15	8.10	8.07	8.11	8.09	8.14	8.12	8.13	8.05	7.93	7.00	6.22
18	8.13	8.10	8.07	8.12	8.11	8.13	8.12	8.13	8.03	7.90	6.96	6.18
19	8.12	8.10	8.07	8.11	8.45	8.13	8.24	8.13	8.06	7.88	6.93	6.18
20	8.11	.....	8.07	8.10	8.93	8.12	8.24	8.13	8.10	7.85	6.89	6.17
21	8.11	8.12	8.07	8.11	8.23	8.15	8.18	8.12	8.08	7.83	6.85	6.16
22	8.11	8.10	8.07	8.11	8.18	8.13	8.15	8.13	8.05	7.79	6.81	6.15
23	8.11	.....	8.07	8.10	8.17	8.13	8.27	8.14	8.02	7.77	6.77	6.14
24	8.10	.....	8.07	8.10	8.19	8.15	8.68	8.14	8.00	7.73	6.72	6.10
25	8.10	8.07	8.07	8.10	8.15	8.15	8.40	8.12	7.98	7.69	6.69	6.07
26	8.11	.....	8.09	8.09	8.25	8.14	8.27	8.11	7.95	7.67	6.65	6.05
27	8.12	.....	8.16	8.09	8.44	8.13	8.22	8.15	7.93	7.64	6.61	6.09
28	8.11	.....	8.16	8.09	8.24	8.13	8.20	8.13	7.99	7.60	6.57	6.10
29	8.10	.....	8.13	8.09	.....	8.13	8.18	8.13	7.94	7.57	6.54	6.30
30	8.10	8.06	8.13	8.09	.....	8.14	8.17	8.12	7.97	7.54	6.50	6.50
31	8.09	.....	8.12	8.09	.....	8.13	.....	8.10	.....	7.51	6.45	.....

Rapid Creek near Iowa City, Iowa

LOCATION.—Lat. 41°42′, long 91°29′, in NE¼ sec. 36, T. 80 N., R. 6 W., on left bank 80 feet upstream from bridge on State Highway 261, 3 miles northeast of Iowa City, and 3 miles upstream from mouth.

DRAINAGE AREA.—24.5 square miles.

RECORDS AVAILABLE.—January 1938 to September 1955.

GAGE.—Water-stage recorder and concrete control with sharp-crested weir.

AVERAGE DISCHARGE.—17 years, 13.0 cfs.

EXTREMES.—1938-55: Maximum discharge, 3,800 cfs Feb. 20, 1953 (gage height, 13.05 feet); no flow at times in 1940-41, 1945, 1947-49, 1953-55.

REMARKS.—Records good except those for periods of ice effect, no gage-height record, or backwater from debris, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.23	*0.22	0.34	0.30	2.2	a7.0	60	16	*19	9.3	2.9	0.82
2	.22	.22	9.5	.35	0.1	a8.0	50	14	20	8.5	*3.0	.89
3	.17	.22	.89	.30	.52	a20	48	13	19	*24	3.0	.99
4	.16	.20	.52	.39	.82	a13	44	*12	16	13	2.3	.85
5	.20	.22	*.41	*.37	.71	a8.0	35	12	14	10	2.0	.82
6	*.20	.22	.45	.37	.99	*8.5	*59	14	13	9.3	2.4	.71
7	.18	.28	.48	.40	.63	6.9	88	12	18	8.5	2.2	.63
8	.20	.55	.50	.35	1.6	5.1	a76	11	29	119	22	.60
9	.23	.89	.50	.33	.48	3.6	a45	12	18	82	3.4	5.4
10	.24	.55	.50	.30	.85	2.9	a30	82	16	26	2.3	3.0
11	.26	.37	.48	.41	78	2.0	a50	61	14	19	1.8	1.0
12	.24	.28	.50	.39	a60	.82	75	39	35	16	1.5	.71
13	.19	.30	.48	.35	a25	.94	57	31	28	19	1.8	.63
14	.18	.35	.48	.50	a10	1.8	43	26	14	17	2.2	.52
15	.18	.48	.43	.78	a3.0	3.6	33	22	14	13	4.4	.45
16	.17	.63	.30	2.0	a30	5.1	29	20	13	11	2.2	a.41
17	.16	.55	.19	21	a250	4.2	27	20	11	9.3	1.6	a.54
18	.16	.43	.13	92	a400	8.0	24	17	9.3	8.3	1.3	.39
19	.16	.39	.20	69	a*500	11	20	16	9.9	7.6	1.1	.39
20	.16	.30	.23	16	65	10	18	16	8.8	6.9	3.6	*.32
21	.17	.30	.26	5.7	30	7.4	a25	a22	42	6.9	2.6	.30
22	.18	.32	.33	2.8	28	8.3	a18	a23	26	6.0	1.4	.99
23	.16	.30	.37	2.5	16	10	a17	a15	19	5.8	1.1	.82
24	.14	.18	.50	2.0	92	15	a17	a12	29	5.5	.94	.63
25	.14	.13	.66	1.5	425	13	a28	a50	20	4.8	7.8	.68
26	.17	.11	.71	1.0	a20	24	a21	a100	19	4.8	3.6	5.0
27	.17	.11	.55	.70	a10	92	a26	a40	17	11	2.2	1.8
28	.18	.11	.22	.50	a8.0	194	a23	a25	14	5.8	1.6	.66
29	.19	.16	.23	.40	.....	138	a19	a19	12	4.6	1.6	.55
30	.22	.24	.23	.35	.....	105	17	a14	11	4.1	1.2	.50
31	.22	.....	.26	*.30	.....	65	.....	a17	.....	3.6	.89	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Jan. 6-8, 22-31, 1951.

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951–52												
1.....	0.63	4.8	7.7	6.4	28	15	26	16	13	7.7	0.76	0.19
2.....	.55	3.6	*8.1	5.0	21	12	23	16	13	7.3	.76	.23
3.....	.45	3.2	8.6	4.5	18	*9.8	21	14	12	6.2	22	.24
4.....	.39	3.0	7.5	5.0	35	6.4	19	13	11	6.0	11	.18
5.....	.35	3.2	7.3	4.0	18	9.8	18	12	10	5.8	2.3	.14
6.....	1.6	*3.4	7.0	3.7	15	11	17	11	8.8	5.4	2.1	.13
7.....	9.9	3.3	6.6	3.3	12	10	*16	27	8.1	4.8	a1.9	.12
8.....	2.4	3.4	6.0	3.5	*11	10	16	18	127	4.8	a2.3	.13
9.....	*1.6	3.8	5.4	3.4	10	12	15	23	43	4.2	a2.0	.16
10.....	1.2	3.4	5.0	3.2	9.6	263	15	22	17	3.9	a1.5	.17
11.....	1.2	3.3	4.7	3.1	9.1	237	14	18	13	*3.4	a1.7	.13
12.....	1.3	13	4.8	3.2	8.5	227	15	16	11	2.8	a1.2	.11
13.....	.87	64	4.0	3.3	8.0	160	33	14	9.8	2.7	a1.0	.10
14.....	.76	36	3.5	10	7.4	75	26	*14	*108	8.7	a1.0	.56
15.....	1.0	25	3.7	50	7.9	53	22	*13	22	5.8	3.4	.50
16.....	3.2	19	3.4	41	7.0	41	22	15	16	a4.0	2.1	.20
17.....	7.9	15	3.1	34	8.0	37	22	13	13	a5.0	.87	.17
18.....	10	14	3.3	30	7.1	111	20	12	11	a24	.67	.13
19.....	7.3	12	3.7	64	7.6	91	18	11	8.8	a9.0	.57	.11
20.....	5.0	11	4.1	40	7.0	59	16	11	13	4.4	.48	.09
21.....	12	10	4.5	27	6.0	46	16	11	44	3.2	a.80	.09
22.....	12	8.0	4.1	19	6.5	59	58	46	19	2.6	.55	.10
23.....	10	7.0	3.7	14	7.0	50	80	350	15	2.3	.45	.11
24.....	21	6.3	3.5	11	7.5	44	40	56	16	2.0	.35	.13
25.....	12	6.7	4.0	10	7.6	41	33	40	12	1.8	.32	.11
26.....	9.1	7.2	3.5	11	35	37	29	32	10	1.6	.28	.09
27.....	7.7	7.5	4.0	8.0	100	33	25	27	55	1.4	4.0	.07
28.....	6.8	7.7	3.6	6.0	49	31	21	22	13	1.3	.65	.07
29.....	6.2	8.6	*4.4	5.0	24	20	19	*19	10	1.2	.37	.05
30.....	5.8	7.9	4.4	5.5	.....	27	18	17	8.6	1.0	.27	.05
31.....	5.0	.....	5.4	45	.....	30	.....	15	.....	.84	.23	.....
1952–53												
1.....	0.00	0.30	2.7	8.1	3.3	6.0	72	73	11	3.3	0.8	a0.05
2.....	.07	.37	2.8	7.7	3.0	5.6	51	50	10	31	14	a.05
3.....	.06	.37	3.0	5.8	3.0	5.0	42	42	9.6	5.8	3.6	a.05
4.....	.07	.35	3.1	3.6	3.3	5.8	34	36	8.4	27	2.7	a.20
5.....	.08	.33	3.2	2.5	308	5.4	29	33	8.6	142	2.2	a.10
6.....	.07	.30	3.0	1.7	150	4.4	25	30	7.7	128	2.0	a.05
7.....	.08	.28	3.0	1.3	40	3.8	21	26	8.1	13	2.0	a.04
8.....	.08	.30	4.2	1.4	15	5.0	21	23	53	8.8	1.6	a.03
9.....	.09	.32	5.6	2.3	8.0	5.0	20	20	12	7.0	1.4	a.03
10.....	.10	.35	4.4	3.2	10	109	18	18	9.8	5.8	1.3	a.03
11.....	.11	.35	3.4	2.7	23	33	16	16	9.6	5.0	1.3	.03
12.....	.11	.35	2.6	2.5	10	21	14	14	8.6	4.4	5.5	.04
13.....	.13	.33	2.2	3.0	7.0	15	*13	14	8.4	11	1.3	.06
14.....	.14	.35	1.8	10	7.4	88	13	13	7.7	39	.91	.06
15.....	.16	.37	1.5	*80	4.5	57	16	12	7.3	7.5	.76	.04
16.....	.17	1.8	1.6	47	3.5	30	13	10	6.6	5.6	.73	.02
17.....	.19	214	1.7	31	4.0	24	11	10	5.6	4.6	.67	0
18.....	.20	33	1.8	24	5.0	29	10	9.6	5.2	4.0	.65	0
19.....	.23	7.0	3.3	19	181	23	10	*8.4	4.4	3.3	.57	0
20.....	.24	4.8	124	16	*1,300	20	9.8	8.1	3.6	135	.52	0
21.....	.27	3.2	47	12	18	18	9.8	12	3.0	55	.45	0
22.....	.28	2.4	26	10	13	16	9.1	71	3.0	*17	.41	0
23.....	.32	2.2	19	9.1	11	23	8.6	22	*2.7	9.8	.37	0
24.....	.32	2.0	17	8.1	9.6	18	12	271	2.4	7.5	.33	0
25.....	.33	3.0	15	7.0	8.4	15	16	56	3.8	6.0	.30	0
26.....	.35	8.0	12	6.0	7.9	13	16	34	2.8	5.0	.24	0
27.....	.35	5.0	11	5.4	7.5	12	14	26	24	4.4	.19	0
28.....	.37	3.8	10	4.6	6.4	11	14	22	27	3.8	.12	0
29.....	.37	3.0	9.8	4.0	.....	10	14	19	6.0	3.4	.11	0
30.....	.39	2.7	9.4	3.9	.....	60	85	16	4.4	2.8	.07	0
31.....	.39	.....	8.6	3.9	.....	83	.....	13	.....	2.6	.06	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 3-5, 21-26, Dec. 9-27, 1951; Jan. 2 to Feb. 26, Nov. 25 to Dec. 4, Dec. 11-19, 26, 27, 1952; Jan. 3-7, 11-15, Feb. 6-18, 21-28, Mar. 1, 1953. Backwater from debris Aug. 29, Sept. 1, 2, 20-27, 29, 30, Oct. 7 to Nov. 6, Nov. 8, 9, 11-13, 1952.

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	0	0	0.19	a0.16	a0.07	a1.0	1.5	27	34	0.52	0	0.39
2.....	0	0	.20	a.12	a.30	a.74	*2.3	46	20	.48	*0	.27
3.....	0	0	.76	a.00	a1.1	*.57	1.6	33	*30	.30	0	.19
4.....	0	0	*.80	a.07	a.64	a.36	1.3	20	19	.37	9.3	.14
5.....	0	0	.52	a.05	a1.2	a.25	1.5	*14	13	.41	13	.09
6.....	0	0	.48	a.03	a.18	a.16	8.7	11	11	.32	.80	.06
7.....	0	0	.43	a.02	a.08	a.70	5.1	*8.4	8.6	*.26	.27	.02
8.....	0	0	.39	a.02	a*.15	a3.5	3.1	7.1	6.7	.23	.20	0
9.....	0	0	.30	a.02	a.32	a2.3	2.5	6.2	6.0	.22	.14	0
10.....	0	0	.46	a.01	a.58	a2.7	2.3	5.4	5.2	.17	.10	0
11.....	0	0	.35	a0	a.88	a2.0	1.8	4.9	4.6	.11	.03	0
12.....	0	0	.27	a0	a.20	a1.4	1.4	4.4	3.6	.06	0	0
13.....	0	0	.28	a0	a.24	a.70	1.3	3.8	3.1	0	0	0
14.....	0	0	.28	a0	a.60	a.25	1.3	3.2	3.0	0	0	0
15.....	0	0	.17	a0	a1.6	.54	3.3	2.8	2.5	0	0	0
16.....	0	0.06	.11	a0	a1.4	.80	2.5	2.6	2.6	0	0	0
17.....	0	.18	.07	a0	a1.3	.80	1.6	2.3	2.2	0	0	0
18.....	0	.16	.05	a0	1.2	1.0	1.4	2.0	1.9	0	0	0
19.....	0	.19	.03	a0	a1.3	1.5	1.3	2.0	5.9	0	0	0
20.....	0	.45	.05	a0	a1.4	1.2	4.2	1.8	3.2	0	0	0
21.....	0	.30	.35	a0	1.2	.76	4.7	1.6	3.2	0	.05	0
22.....	0	.23	.23	a0	a1.0	.67	3.8	1.5	11	0	.05	0
23.....	0	.19	.13	a0	.84	.62	3.1	1.4	2.6	0	.01	0
24.....	0	.16	.05	a0	a1.4	2.3	2.5	1.4	1.7	0	0	0
25.....	0	.14	.03	a0	a2.5	7.6	2.4	1.2	1.3	0	4.7	0
26.....	0	.13	.05	a0	a2.0	3.0	7.6	1.2	1.1	0	83	0
27.....	0	.12	.08	a0	a1.5	1.9	15	1.5	.87	0	*7.4	0
28.....	0	.12	.14	a0	a1.2	1.6	7.1	3.2	.69	0	3.5	0
29.....	0	.15	.20	a0	.....	1.4	5.8	2.4	.55	.16	1.6	11
30.....	*0	.17	.29	a.01	.....	1.2	20	1.3	.60	.01	.91	1.3
31.....	0	.....	.21	a.03	.....	1.4	.....	1.7	.....	0	.57	.....
1954-55												
1.....	0.4	1.2	*0.8	1.8	*2.3	12	7.6	21	*3.6	0.8	0	0
2.....	.2	1.2	.9	2.1	2.7	9.0	6.7	19	3.6	.6	0	0
3.....	.1	*1.2	.9	2.5	3.1	9.0	6.7	*16	3.2	.4	*0	0
4.....	.1	1.2	.8	4.3	2.9	7.5	*6.7	13	2.8	.3	0	0
5.....	*17	1.2	.9	38	2.6	6.0	7.6	11	2.7	.3	0	0
6.....	4.4	1.2	.7	*34	2.4	4.5	6.0	10	3.2	*.2	.0	0
7.....	1.9	1.3	.6	20	2.2	4.0	5.6	9.6	2.7	.2	.1	0
8.....	1.3	1.3	.6	12	2.0	6.9	5.1	8.9	2.4	.2	0	0
9.....	1.0	1.2	.8	7.2	1.8	6.5	4.9	31	1.9	3.6	0	0
10.....	108	1.2	.8	5.2	1.7	6.4	4.7	55	1.8	3.2	0	0
11.....	33	1.2	.8	4.5	1.6	*6.2	5.6	27	2.8	1.4	0	0
12.....	16	1.2	.9	3.9	1.5	6.0	6.2	22	3.0	.5	0	0
13.....	9.4	1.2	.7	3.5	1.5	5.4	7.1	20	2.4	.3	0	0
14.....	13	1.2	.7	3.1	1.5	6.2	8.9	16	2.1	.2	0	0
15.....	9.4	1.2	.9	2.9	1.5	12	8.1	13	1.6	.2	0	0
16.....	7.9	1.2	1.0	2.7	1.5	8.1	7.6	11	1.4	.2	0	0
17.....	6.2	1.2	1.0	2.6	1.5	6.9	6.5	9.6	1.3	.1	0	0
18.....	5.2	1.2	1.0	2.4	2.5	6.7	6.4	8.9	1.2	5.2	0	0
19.....	4.4	1.1	.9	2.3	100	6.2	79	7.9	2.1	.7	0	0
20.....	4.1	1.0	.7	2.3	200	6.4	40	6.9	1.6	.2	0	0
21.....	3.9	1.1	.8	2.2	22	6.7	26	6.9	1.0	.1	0	0
22.....	3.3	1.2	.9	2.2	17	3.9	18	7.6	.8	.1	0	0
23.....	3.0	1.2	1.0	2.1	12	7.0	89	6.9	.8	.1	0	0
24.....	2.7	1.1	1.1	2.0	7.8	8.4	231	6.9	.7	.1	0	0
25.....	2.3	1.0	1.0	1.9	5.4	7.6	76	6.5	.8	0	0	0
26.....	2.0	1.0	1.4	1.8	50	7.0	51	5.8	.6	0	0	0
27.....	1.7	1.0	2.5	1.6	120	7.2	40	7.6	.5	0	0	0
28.....	1.4	1.0	2.0	1.5	40	7.0	32	5.8	.4	0	0	0
29.....	1.3	1.0	1.8	1.5	.....	9.1	26	5.6	3.7	0	0	0
30.....	1.3	.9	1.6	1.5	.....	9.4	22	4.9	1.6	0	0	0
31.....	1.2	.....	1.5	1.9	.....	8.6	.....	4.4	.....	0	*0	.....

* Discharge measurement or observation of no flow made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 26-30, Dec. 10-19, 21-25, 29-31, 1953; Mar. 30, Dec. 26-31, 1954; Jan. 1, 2, Jan. 5 to Mar. 7, Mar. 21-27, 1955. Backwater from debris Oct. 25 to Nov. 2, 1954.

Rapid Creek near Iowa City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.190	0.320	0.704	7.22	73.7	26.1	37.4	25.9	18.2	16.1	2.97	1.07
1951-52.....	5.33	10.8	4.92	15.6	17.2	60.5	24.4	30.5	23.0	4.68	2.19	.155
1952-53.....	.200	10.0	11.7	11.2	77.5	25.0	21.9	33.2	9.48	22.9	1.81	.029
1953-54.....	0	.092	.256	.020	.942	1.45	4.07	7.30	6.99	.120	4.05	.449
1954-55.....	8.62	1.15	1.03	5.73	21.8	7.24	28.3	13.1	1.94	.62	.03	0

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.008	0.013	0.029	0.295	3.01	1.07	1.53	1.06	0.743	0.657	0.121	0.044
1951-52.....	.218	.441	.201	.637	.702	2.47	.996	1.24	.939	.191	.089	.0063
1952-53.....	.0082	.408	.478	.457	3.16	1.02	.894	1.36	.387	.935	.074	.0012
1953-54.....	0	.0038	.010	.00082	.038	.059	.166	.298	.285	.0049	.165	.018
1954-55.....	.352	.047	.042	.234	.890	.296	1.16	.535	.079	.025	.0012	0

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.01	0.02	0.03	0.34	3.13	1.23	1.70	1.22	0.83	0.76	0.14	0.05
1951-52.....	.25	.49	.23	.73	.76	2.85	1.11	1.43	1.05	.22	.10	.007
1952-53.....	.009	.46	.55	.53	3.30	1.17	1.00	1.56	.43	1.08	.09	.001
1953-54.....	0	.004	.01	.001	.04	.07	.19	.34	.32	.006	.19	.02
1954-55.....	.41	.05	.05	.27	.03	.34	1.29	.62	.09	.03	.002	0

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	18.1	10.00
1951....	Feb. 25, 1951.	11.25	1,300	0.11	17.1	0.698	9.46	18.7	10.37
1952....	May 23, 1952.	10.94	1,840	.05	16.6	.678	9.23	16.7	9.28
1953....	Feb. 20, 1953.	13.05	3,800	0	18.3	.747	10.18	16.5	9.18
1954....	Aug. 26, 1954.	6.17	216	0	2.15	.088	1.19	3.03	1.69
1955....	Apr. 24, 1955.	(1)9.95	750	0	7.34	.300	4.08	.....	.....

(1) Maximum gage height, 10.50 ft. Feb. 19, 1955 (backwater from ice).

Peak Discharge (base, 400 cfs)

1951: Feb. 19 (unknown) 1,220 cfs (11.07 ft.); Feb. 25 (7:30 a.m.) 1,300 cfs (11.25 ft.); July 8 (9:15 p.m.) 865 cfs (10.35 ft.).

1952: Jan. 19 (10 a.m.) about 430 cfs (9.95 ft.); Mar. 10 (6:30 p.m.) 600 cfs (9.06 ft.); Mar. 12 (7 p.m.) 480 cfs (8.36 ft.); May 23 (2 a.m.) 1,840 cfs (10.94 ft.); June 8 (6 p.m.) 685 cfs (9.36 ft.); June 14 (6 a.m.) 524 cfs (8.67 ft.); Nov. 17 (7 p.m.) 560 cfs (9.02 ft.).

1953: Feb. 5 (7 p.m.) 1,200 cfs (10.97 ft.); Feb. 20 (4 a.m.) 3,800 cfs (13.05 ft.); May 24 (10:30 a.m.) 1,280 cfs (11.07 ft.); July 6 (12:30 a.m.) 680 cfs (9.66 ft.); July 20 (8 p.m.) 700 cfs (9.75 ft.).

1954: Oct. 10 (3 p.m.) 416 cfs (7.87 ft.).

1955: Feb. 19, about 650 cfs; Feb. 27, about 430 cfs; Apr. 24 (1 a.m.) 750 cfs (9.95 ft.).

Iowa River at Iowa City, Iowa

LOCATION.—Lat. 41°39'15", long. 91°32'20", in SE¼SE¼ sec. 9, T. 79 N., R. 6 W., on right bank 25 feet downstream from University of Iowa hydraulics laboratory in Iowa City, 175 feet downstream from university dam, 0.9 mile upstream from Ralston Creek, 3.3 miles downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.—3,230 square miles, approximately.

RECORDS AVAILABLE.—June 1903 to July 1906 and October 1913 to September 1955 in reports of Geological Survey. June 1903 to December 1932 in report of Iowa State Planning Board.

GAGE.—Water-stage recorder. Datum of gage is 39.00 feet above Iowa City datum, and 627.27 feet above mean sea level, datum of 1929. June 1, 1903, to July 21, 1906, chain gage 1,200 feet upstream at datum 3.05 feet higher. July 22, 1906, to Oct. 29, 1913, type, datum, and location of gage unknown. Oct. 30, 1913 to Nov. 18, 1921, chain gage 2,600 feet downstream at datum 0.2 feet higher. Nov. 19, 1921, to Sept. 30, 1922, water-stage recorder at datum 1.0 feet higher.

AVERAGE DISCHARGE.—52 years, 1,536 cfs.

EXTREMES.—1903-55: Maximum discharge, 36,200 cfs June 7, 1918 (gage height, 19.45 feet, site and datum then in use); minimum daily, about 10 cfs Dec. 26, 1916; practically no flow Sept. 3, 1925.

Floods of 1851 and 1881 exceeded flood of 1918, stage and discharge not known.

REMARKS.—Records good except those for periods of ice effect which are fair. Diurnal fluctuation at low stages caused by powerplants above station.

Records of water temperatures, chemical analysis, and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	488	166	123	96	93	5,000	8,080	5,610	2,260	3,580	1,820	3,060
2	399	270	181	98	92	5,800	10,700	5,720	2,340	3,760	1,380	2,500
3	453	177	100	98	92	5,500	*15,000	5,720	3,490	*4,300	*1,420	2,260
4	323	110	123	96	92	5,400	14,300	*5,280	4,580	4,680	1,380	2,020
5	370	160	201	96	92	6,000	11,800	4,980	4,980	4,080	1,300	1,820
6	*326	*255	*88	*90	92	*5,830	10,700	4,980	5,610	4,880	1,220	1,660
7	264	123	90	92	*92	4,210	10,700	5,180	*8,200	5,080	1,140	1,540
8	424	140	106	94	91	3,670	10,300	5,390	12,000	5,830	1,260	1,420
9	368	264	110	92	89	3,760	9,630	5,940	11,100	7,600	1,020	1,340
10	361	*101	110	92	88	3,580	8,980	7,240	9,370	7,360	920	1,420
11	408	255	111	92	102	2,900	8,330	7,960	7,960	8,330	871	1,380
12	327	134	109	92	600	2,100	8,460	6,760	6,880	9,500	822	1,500
13	383	181	111	92	360	1,420	9,110	6,160	5,940	8,080	836	1,980
14	358	150	110	92	445	1,220	10,000	5,390	4,030	7,720	843	1,820
15	424	163	106	92	570	1,380	10,200	4,030	3,490	7,000	885	1,580
16	402	238	100	93	372	1,460	9,630	3,400	3,760	6,160	913	*1,580
17	333	93	100	95	450	1,460	8,850	3,060	4,120	4,980	1,020	1,660
18	259	215	105	140	1,000	1,300	8,090	2,980	4,300	4,300	1,140	1,580
19	305	120	107	280	*3,900	1,200	7,600	2,740	3,940	3,940	1,220	1,540
20	302	201	97	230	3,700	1,000	7,000	2,900	3,140	3,580	1,300	1,500
21	292	158	95	140	2,500	940	6,520	3,400	3,580	3,140	1,380	1,460
22	285	214	101	148	2,300	1,000	5,610	2,980	4,880	2,900	1,460	1,380
23	264	112	100	210	2,200	1,150	4,120	2,660	4,880	2,660	1,540	1,220
24	328	97	100	125	2,100	1,050	3,760	2,420	5,610	2,500	1,460	1,140
25	250	101	100	130	4,000	1,000	4,030	2,260	4,080	2,340	1,460	1,060
26	190	123	94	120	4,000	1,140	4,210	4,680	3,670	2,260	2,980	1,060
27	237	124	103	105	3,700	1,700	4,480	5,610	3,140	2,260	3,060	955
28	175	124	100	100	4,300	3,400	4,880	5,080	2,980	2,260	3,490	913
29	199	124	95	105	.....	5,390	5,080	3,670	2,900	2,100	3,850	864
30	252	127	90	100	.....	6,050	5,390	2,580	3,140	1,900	3,850	843
31	220	.....	93	95	.....	6,520	.....	2,340	.....	1,820	3,760	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 8-10, 19, 20, Jan. 25 to Feb. 2, Feb. 12, 13, Feb. 17 to Mar. 5, Mar. 18-25, 1951.

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	787	1,740	1,420	762	1,900	2,260	4,390	2,420	2,340	2,160	836	344
2	774	1,620	*1,460	878	2,180	2,180	4,580	2,340	2,180	*2,100	780	409
3	756	1,540	1,500	801	2,500	1,940	4,680	2,180	2,020	2,020	806	328
4	*738	1,420	1,460	*774	2,980	1,540	4,780	2,100	2,020	2,100	1,100	331
5	625	1,300	1,460	732	3,310	1,380	4,880	2,020	2,180	2,100	750	309
6	774	1,180	1,460	726	3,220	1,380	5,080	1,980	2,020	1,980	768	330
7	1,430	1,100	1,380	720	2,820	1,580	5,280	2,100	1,820	1,780	780	227
8	1,900	1,140	1,340	690	2,340	1,700	5,380	2,180	2,080	1,620	720	*358
9	1,540	1,140	1,300	666	2,100	1,700	5,380	2,100	2,240	1,580	768	306
10	1,340	1,220	1,260	650	1,940	3,120	4,580	2,100	1,980	1,540	815	287
11	1,220	1,220	1,220	655	1,980	6,940	*3,670	2,100	2,100	2,100	690	227
12	1,140	1,620	1,100	660	2,020	8,360	3,310	2,100	1,740	2,580	660	360
13	1,060	2,660	702	655	2,020	8,850	3,400	*2,020	1,580	2,580	605	156
14	955	*3,140	486	666	2,020	9,370	3,670	1,980	2,580	2,580	533	349
15	920	3,140	389	1,220	2,100	10,300	3,760	1,940	2,260	2,660	660	233
16	955	2,740	355	1,340	2,020	10,300	3,760	1,860	2,980	2,500	690	317
17	1,580	2,420	520	1,780	2,100	10,300	3,760	1,860	3,310	2,420	635	226
18	2,340	2,180	635	2,100	2,180	9,370	3,850	1,860	3,060	2,580	*540	237
19	1,900	1,980	774	3,490	2,180	9,240	3,760	1,780	2,660	2,580	515	162
20	1,540	1,820	857	4,390	2,180	7,840	3,670	1,700	2,500	2,580	449	283
21	1,940	1,700	927	4,030	2,180	6,280	3,490	1,660	2,820	2,420	432	178
22	2,980	1,700	920	3,850	2,100	5,830	3,760	1,780	3,140	2,100	423	232
23	2,740	1,700	948	3,500	2,100	6,160	3,670	4,830	3,220	1,860	412	196
24	2,980	1,540	948	3,200	2,020	5,940	3,580	4,880	2,980	1,700	412	347
25	2,980	1,210	955	2,900	1,940	5,940	3,490	4,680	2,580	1,540	408	98
26	2,580	1,340	934	2,500	1,940	5,720	3,310	4,080	2,340	1,420	389	239
27	2,340	1,140	843	2,300	2,420	5,300	3,140	4,360	2,610	1,300	385	116
28	2,180	1,380	815	*2,100	*2,580	4,880	2,980	3,490	2,500	1,050	271	256
29	2,100	1,460	794	1,900	2,420	4,580	2,740	*2,980	2,340	1,020	396	*115
30	1,980	1,460	780	1,800	.....	4,300	2,580	2,820	2,100	990	309	275
31	1,860	.....	768	1,800	.....	4,300	.....	2,580	.....	885	300	.....
1952-53												
1	130	124	225	266	250	3,100	3,620	2,830	1,710	*3,620	692	244
2	102	160	*200	232	210	2,510	3,530	2,010	1,590	2,070	662	*228
3	288	223	250	222	310	*2,110	*3,350	3,170	1,470	2,510	439	130
4	100	*161	260	228	238	1,450	2,990	*3,170	*1,300	2,270	656	154
5	100	168	260	216	630	1,400	2,670	3,170	1,300	2,270	*424	198
6	214	199	272	98	2,350	1,500	2,510	2,990	1,910	2,430	462	178
7	110	128	260	*200	2,110	1,380	2,350	2,910	2,190	1,830	805	268
8	237	107	250	194	2,030	1,310	2,190	2,750	2,350	1,870	1,020	180
9	*102	262	265	231	1,950	1,470	2,110	2,590	2,830	1,630	1,020	216
10	174	147	250	116	1,870	1,700	2,070	2,430	3,080	1,550	950	159
11	158	183	270	188	1,750	2,910	1,990	2,270	2,750	1,390	950	192
12	146	179	250	254	1,870	2,430	1,950	2,190	2,670	1,270	980	242
13	215	214	110	125	2,060	2,510	1,910	2,030	3,440	1,200	890	112
14	159	160	120	333	2,100	2,830	1,870	1,830	3,800	1,200	830	194
15	111	160	303	800	1,500	3,260	1,870	1,710	3,080	1,060	752	191
16	244	157	246	740	960	3,260	1,870	1,630	2,510	980	710	102
17	89	1,630	219	320	700	3,080	1,790	1,630	2,030	860	650	268
18	244	1,207	192	806	620	2,750	1,710	1,500	1,790	890	443	100
19	85	642	274	869	860	2,590	1,670	1,470	*1,630	860	406	214
20	294	566	807	698	7,910	2,430	1,630	1,430	1,470	920	443	100
21	92	361	813	592	6,970	2,270	1,670	1,470	1,310	980	484	265
22	179	310	564	590	5,200	2,110	1,670	2,240	1,200	752	388	98
23	209	250	454	494	5,400	2,270	1,590	2,830	1,160	656	355	128
24	113	290	489	422	5,400	2,750	1,550	4,400	1,090	662	416	99
25	147	350	310	380	5,600	3,080	1,710	5,400	1,020	662	227	144
26	246	440	245	320	5,700	2,590	1,790	4,990	1,020	746	319	118
27	163	270	280	350	5,600	2,270	2,030	3,620	1,550	722	322	98
28	158	220	255	310	4,250	2,030	2,110	2,670	4,160	686	312	235
29	170	190	228	327	.....	1,830	2,110	2,270	4,800	662	250	94
30	169	260	302	316	.....	2,030	2,510	2,110	4,990	628	264	90
31	167	.....	252	*320	.....	2,990	.....	1,910	.....	531	174	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 23 to Feb. 1, Nov. 22 to Dec. 4, Dec. 9-14, 26-28, 1952; Jan. 15-17, 25-28, Feb. 1-3, 13-19, Mar. 1, 4-7, 1953.

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	*95	60	72	114	65	212	198	2,010	1,850	5,990	433	4,700
2.....	118	179	175	78	65	230	*236	2,200	3,100	*7,300	417	4,000
3.....	92	57	182	155	66	225	205	2,290	3,370	7,560	433	5,110
4.....	135	*105	*105	*78	69	*145	148	2,290	*3,910	6,820	429	5,770
5.....	94	*59	165	69	71	132	275	2,160	4,100	4,000	*512	5,770
6.....	105	60	172	158	76	126	*309	2,200	4,200	2,740	384	2,920
7.....	80	164	162	83	83	161	789	*1,850	4,100	2,290	485	2,110
8.....	132	54	190	81	91	241	702	1,690	3,190	1,980	539	1,770
9.....	77	103	96	84	95	222	562	1,490	2,560	1,770	552	1,610
10.....	173	209	118	91	*104	211	485	1,330	2,200	1,610	457	1,450
11.....	74	64	226	84	*115	229	330	1,210	1,890	1,490	460	1,290
12.....	151	92	147	80	119	259	330	1,050	1,930	1,410	465	2,110
13.....	73	108	84	76	115	213	281	980	2,920	1,250	325	1,170
14.....	119	97	246	74	127	177	275	910	3,370	1,170	483	1,050
15.....	140	183	76	73	188	208	338	850	3,820	1,090	232	980
16.....	76	140	65	71	244	227	259	700	4,100	1,020	353	910
17.....	187	72	67	70	*212	231	349	730	4,100	945	455	910
18.....	73	101	71	68	264	222	482	675	3,640	880	476	850
19.....	186	185	75	67	317	229	462	635	3,640	820	507	820
20.....	70	157	81	67	257	217	440	580	3,910	670	451	799
21.....	207	142	134	67	322	223	427	514	4,200	730	710	786
22.....	71	165	94	66	216	222	429	525	4,800	702	567	756
23.....	70	133	86	65	236	259	641	476	4,900	675	485	668
24.....	258	159	88	65	216	293	570	548	5,110	655	546	617
25.....	74	149	91	64	253	312	557	446	4,600	625	490	702
26.....	70	163	95	66	217	388	473	495	4,200	582	2,020	675
27.....	218	123	91	67	273	238	998	445	4,300	589	2,650	655
28.....	57	146	94	67	279	356	*730	753	4,400	576	3,910	670
29.....	181	150	90	66	.....	254	730	665	4,700	532	4,000	730
30.....	69	145	173	65	.....	268	896	800	5,110	460	4,200	945
31.....	182	.....	74	65	.....	342	.....	1,000	.....	444	*4,500	.....
1954-55												
1.....	1,930	1,410	760	375	*381	2,500	980	1,650	*799	372	404	150
2.....	1,730	1,330	*682	470	381	2,300	945	1,650	790	394	170	*100
3.....	1,530	*1,250	676	580	377	2,200	910	*1,490	760	352	276	132
4.....	1,810	1,250	668	730	381	2,400	945	1,530	702	242	*256	159
5.....	2,020	1,210	668	1,020	373	2,600	980	1,410	670	427	366	126
6.....	2,020	1,170	598	1,050	369	2,150	945	1,250	665	253	618	97
7.....	2,290	1,170	554	*730	361	1,750	945	1,180	635	*330	529	138
8.....	*2,060	1,130	550	700	353	1,400	980	1,090	615	624	400	126
9.....	1,890	1,090	675	880	341	1,600	945	1,130	615	1,170	525	118
10.....	2,560	1,050	521	820	337	*1,610	945	1,610	645	1,130	252	102
11.....	2,920	1,020	530	645	321	1,570	945	1,570	675	832	356	98
12.....	3,640	1,020	625	675	300	1,570	945	1,690	670	1,330	*164	95
13.....	3,370	980	453	590	280	1,530	980	1,610	640	2,060	297	116
14.....	2,830	980	453	356	300	1,490	1,050	1,450	615	1,930	144	182
15.....	2,380	909	539	445	285	1,530	1,210	1,250	605	1,690	94	100
16.....	2,380	945	702	465	285	1,690	1,290	1,250	530	1,450	272	102
17.....	2,020	910	644	449	285	1,850	1,330	1,090	525	1,170	122	101
18.....	3,190	880	668	481	297	1,610	1,290	1,020	485	980	117	100
19.....	3,010	934	462	441	650	1,490	1,770	820	490	850	142	106
20.....	2,050	878	437	420	3,300	1,370	2,060	880	508	730	158	121
21.....	2,380	819	530	400	*3,200	1,330	1,690	850	503	665	110	121
22.....	2,160	850	590	420	3,080	1,290	1,490	850	556	570	146	119
23.....	2,020	934	674	330	2,950	1,250	1,490	850	458	575	98	182
24.....	1,850	864	622	350	2,800	1,210	3,910	820	518	548	148	108
25.....	1,730	820	672	370	3,050	1,210	3,820	874	384	421	128	126
26.....	1,650	774	655	370	3,160	1,130	3,010	790	508	418	134	124
27.....	1,570	726	730	340	3,300	1,020	2,380	820	316	431	106	138
28.....	1,530	683	700	315	2,800	945	2,060	790	308	394	200	136
29.....	1,570	776	500	330	.....	*945	1,890	790	514	264	256	501
30.....	1,530	647	410	350	.....	*980	1,770	700	362	311	302	242
31.....	1,450	.....	350	369	.....	1,020	.....	790	.....	294	228	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 18, 19, 22, 23, 1953; Jan. 12, 13, 16-18, 21-23, Mar. 2, 3, Dec. 29-31, 1954; Jan. 1-3, 20-30, Feb. 12, 13, Feb. 19 to Mar. 9, 1955.

Iowa River at Iowa City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	322	161	109	117	1,340	3,017	8,185	4,487	5,042	4,596	1,645	1,535
1951–52.....	1,643	1,698	991	1,750	2,269	5,448	3,946	2,564	2,409	1,950	588	261
1952–53.....	165	324	306	373	2,726	2,329	2,146	2,591	2,243	1,322	571	168
1953–54.....	120	127	122	78.8	170	235	466	116	3,741	1,015	1,062	1,777
1954–55.....	2,212	980	593	528	1,226	1,566	1,530	1,149	572	749	243	138

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.100	0.050	0.033	0.036	0.415	0.934	2.53	1.39	1.56	1.42	0.509	0.475
1951–52.....	.509	.526	.307	.542	.702	1.69	1.22	.794	.746	.604	.182	.081
1952–53.....	.051	.100	.095	.115	.844	.721	.664	.802	.694	.409	.177	.052
1953–54.....	.037	.039	.038	.024	.053	.073	.144	.346	1.16	.593	.329	.550
1954–55.....	.085	.303	.184	.163	.380	.485	.474	.350	.177	.232	.075	.043

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.12	0.06	0.04	0.04	0.43	1.08	2.83	1.60	1.74	1.64	0.59	0.53
1951–52.....	.59	.59	.35	.62	.76	1.94	1.36	.92	.83	.70	.21	.09
1952–53.....	.06	.11	.11	.13	.88	.83	.74	.92	.77	.47	.20	.06
1953–54.....	.04	.04	.04	.03	.05	.08	.16	.40	1.29	.68	.38	.61
1954–55.....	.79	.34	.21	.19	.40	.56	.53	.41	.20	.27	.09	.05

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	1,375	5.78
1951....	Apr. 3, 1951..	13.70	15,700	88	2,543	0.787	10.70	2,857	12.01
1952....	Mar. 17, 1952.	10.70	10,400	98	2,126	.658	8.96	1,830	7.71
1953....	Feb. 20, 1953.	11.85	11,900	85	1,261	.390	5.28	1,225	5.12
1954....	July 3, 1954...	8.31	7,690	54	910	.282	3.80	1,198	5.02
1955....	Apr. 24, 1955.	5.65	4,600	94	957	.296	4.04	.....	.....

Peak Discharge (base, 6,000 cfs)

1951: Mar. 2 (2 p.m.) about 6,200 cfs (8.40 ft.); Mar. 5 (7 p.m.) about 8,000 cfs (9.45 ft.); Apr. 3 (9 p.m.) 15,700 cfs (13.70 ft.); Apr. 15 (4 a.m.) 10,200 cfs (10.53 ft.); May 11 (3 a.m.) 8,460 cfs (9.19 ft.); June 8 (8 p.m.) 12,300 cfs (11.98 ft.); July 12 (12 noon) 9,500 cfs (10.10 ft.).

1952: Mar. 17 (5 a.m.) 10,400 cfs (10.70 ft.).

1953: Feb. 20 (7 p.m.) 11,900 cfs (11.85 ft.).

1954: July 3 (4 a.m.) 7,690 cfs (8.31 ft.); Sept. 5 (9:30 a.m.) 6,340 cfs (7.17 ft.).

1955: No peak above base.

Ralston Creek at Iowa City, Iowa

LOCATION.—Lat. 41°40'10", long. 91°30'40", in SE¼ NW¼ sec. 11, T. 79 N., R. 6 W., on left bank 10 feet upstream from bridge on State Highway 1, at east edge of Iowa City, and 2.8 miles upstream from mouth.

DRAINAGE AREA.—3.01 square miles.

RECORDS AVAILABLE.—October 1932 to September 1955 in reports of Geological Survey. September 1924 to December 1935 in University of Iowa Engineering Bulletin No. 9.

GAGE.—Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 663.81 feet above mean sea level, datum of 1929 (University of Iowa benchmark).

AVERAGE DISCHARGE.—23 years (1932-55), 1.44 cfs.

EXTREMES.—1924-55: Maximum discharge, 1,510 cfs July 1, 1950 (gage height, 8.32 feet); no flow at times during most years.

REMARKS.—Records fair except those for periods of ice effect, no gage-height record, or backwater from debris, which are poor.

Records of water temperatures and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	0.02	0.02	0.06	0.05	0.57	0.80	6.4	1.1	*1.7	0.72	0.24	0.11
2	.01	.02	2.3	*.07	.52	.84	4.5	1.0	3.4	.60	.31	.13
3	.01	*.02	.14	.10	.29	2.6	4.5	.93	2.2	*2.3	.27	.16
4	.01	.04	.06	.06	.20	.88	3.6	*.88	1.5	1.5	.19	.21
5	.01	.05	*.06	.05	.13	.84	2.6	.98	1.3	1.2	.18	.18
6	*.01	.03	.06	.03	.14	*.93	*8.1	1.2	1.3	.88	.20	.11
7	.01	.06	.07	.03	.16	.66	8.5	.93	1.9	.76	.19	.08
8	.02	.20	.07	.02	.13	.50	4.5	.80	2.4	38	.72	.08
9	.02	.80	.07	.02	.11	.31	3.2	1.1	1.7	5.5	.20	.81
10	.02	.43	.06	.03	.13	.32	2.4	9.6	1.2	2.3	.16	.38
11	.02	.32	.08	.02	15	.10	4.2	5.5	1.2	1.8	.14	.15
12	.01	.45	.09	.02	12	.23	8.1	3.4	6.4	1.5	.11	.11
13	.01	.43	.09	.08	4.0	.26	5.0	2.4	2.5	1.5	.16	.10
14	.01	.38	.09	.15	1.5	.41	3.6	1.6	1.3	1.2	.26	.07
15	.01	.43	.07	.36	.30	.48	2.4	1.4	1.5	.88	.50	.08
16	.01	.27	.05	1.3	12	.55	2.2	1.5	1.3	.80	.20	.06
17	.01	.16	.02	5.9	30	.57	2.0	1.6	.93	.76	.16	.05
18	.01	.09	.01	12	50	1.0	1.8	1.2	.88	.76	.13	.08
19	.01	.08	.02	7.3	*30	1.9	1.6	1.1	1.0	.69	.14	.05
20	.01	.10	.04	.08	4.7	1.0	1.5	1.0	.88	.57	.50	*.05
21	.01	.12	.05	.50	2.8	.88	2.8	.88	9.4	.57	.31	.05
22	.02	.08	.09	.55	1.4	1.4	2.0	2.4	3.2	.45	.21	.23
23	.02	.08	.07	.20	1.2	3.2	1.7	1.3	2.2	.41	.13	.11
24	.04	.02	.06	.21	7.5	2.2	1.6	.93	3.2	.34	.11	.09
25	.05	.01	.05	.16	65	1.7	3.0	3.8	1.8	.32	2.7	.12
26	.06	.01	.04	.15	3.2	4.2	2.0	14	1.8	4.1	.63	.95
27	.11	.01	.02	.15	1.0	11	2.4	3.6	1.8	2.4	.31	.14
28	.10	.01	.02	.15	1.3	25	2.2	2.3	1.1	.55	.23	.13
29	.03	.02	.02	.17	.....	15	1.8	1.7	.93	.41	.19	.13
30	.02	.01	.02	.20	.....	11	1.4	1.3	.84	.32	.16	.14
31	.04	.....	.02	*.24	.....	6.1	.....	1.0	.....	.29	.13	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 26-30, Feb. 9-13, 16-19, 1951.

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	0.12	0.36	0.88	1.3	2.4	1.7	2.8	1.4	1.2	0.57	0.10	0.20
2	.10	.29	*.98	.55	1.2	1.7	2.3	1.3	1.2	.50	.11	.20
3	.10	.29	1.0	.43	4.9	*1.2	2.0	1.3	1.3	.43	4.2	.12
4	.08	.27	.80	.43	1.5	.00	1.9	1.1	1.1	.36	.50	.13
5	.07	.27	.76	.45	.98	1.0	1.8	1.0	.88	.34	.23	.12
6	.32	*.29	.76	.44	.76	1.2	1.7	.98	.66	.31	.19	.09
7	1.1	.31	.60	.40	.93	1.1	*1.5	4.4	.60	.29	.16	.05
8	.29	.34	.55	.45	*.88	1.2	1.5	1.9	8.6	.31	.21	.04
9	*.23	.38	.50	.42	.88	2.1	1.6	2.6	1.4	.31	.19	.02
10	.18	.36	.45	.40	1.1	44	1.4	2.0	.88	.26	.12	.01
11	.16	.32	.40	.38	.93	20	1.3	1.8	.69	.24	.18	.01
12	.14	1.1	.37	.40	.93	27	1.6	1.5	.69	.20	.13	.01
13	.14	10	.31	.40	.93	12	5.9	1.4	1.1	.23	.11	.01
14	.12	2.8	.28	a3.5	.66	6.4	2.4	*1.3	21	*2.6	.11	.22
15	.12	1.6	.31	a0.0	.88	4.5	2.0	*1.2	1.6	.48	2.1	.05
16	.36	1.3	.30	a5.2	.72	3.8	1.8	1.6	1.1	.36	.36	.01
17	1.0	1.1	.34	a4.6	.84	3.8	1.7	1.3	.80	.41	.10	.01
18	1.8	.88	.40	a4.0	.76	16	1.7	1.1	.63	3.0	.13	.01
19	.69	.88	.45	a8.0	.80	10	1.6	.98	.55	.66	.10	.01
20	.52	.88	.47	a5.3	.76	6.4	1.4	.98	2.7	.41	.12	.01
21	1.8	.88	.46	a3.7	.63	4.7	1.6	.98	9.0	.31	.14	.01
22	1.0	.80	.54	a2.5	.69	6.4	5.2	7.9	2.3	.23	.09	.01
23	1.6	.68	.45	1.8	.80	5.0	6.1	27	1.7	.27	.07	.02
24	2.2	.58	.40	a1.5	.88	4.7	4.2	5.8	1.7	.19	.06	.01
25	1.0	.60	.43	1.2	.72	5.0	3.2	3.8	.98	.19	.06	.01
26	.72	.04	.35	1.5	3.4	4.2	2.4	2.6	.88	.15	.12	.01
27	.63	.69	.50	1.2	16	3.8	2.2	2.2	4.7	.14	.23	.02
28	.57	.80	.72	.76	9.1	3.4	1.8	1.9	1.0	.15	.21	.01
29	.48	.84	*.66	.57	2.4	3.2	1.7	*1.7	.72	.14	.21	.01
30	.48	.80	.60	.60	.....	3.0	1.5	1.6	.60	.12	.19	.01
31	.36	.....	.84	5.5	.....	4.2	.....	1.4	.....	.11	.14	.....
1952-53												
1	0.01	0.05	0.31	0.45	0.14	0.66	7.4	11	0.52	0.19	0.09	0
2	.01	.04	.36	.48	.14	.72	4.7	6.1	.52	.18	.13	0
3	.01	.04	.36	.38	.18	.72	3.8	4.2	.50	.14	.05	0
4	.01	.02	.41	.30	1.0	.72	2.8	3.6	.52	.18	.04	0
5	.01	.03	.45	.20	*40	.72	2.4	3.2	.60	5.2	.03	0
6	.01	.04	.41	.10	18	.57	2.2	2.8	.47	2.4	.04	0
7	.01	.02	.41	.24	4.5	.48	2.0	2.3	.43	.32	.04	0
8	.02	.02	.60	.29	2.2	.60	2.0	1.9	4.5	.23	.02	0
9	.02	.02	.60	.29	.98	.98	2.2	1.6	.76	.18	.02	0
10	.02	.02	.48	.31	1.2	15	1.8	1.5	.55	.16	.01	0
11	.02	.04	.38	.24	2.0	2.8	1.6	1.3	.57	.15	.05	0
12	.02	.05	.34	.20	1.6	2.4	1.5	1.1	.50	.13	.13	0
13	.04	.06	.27	1.4	.80	1.8	*1.2	1.0	.55	.13	.04	0
14	.03	.05	.22	5.9	.60	20	1.2	1.1	.48	.44	.02	0
15	.02	.06	.20	3.0	.50	5.5	1.8	.98	.34	.15	.01	0
16	.06	6.3	.23	.50	.40	3.0	1.3	.92	.36	.12	.01	0
17	.05	48	.20	.41	.47	2.4	1.1	.86	.31	.11	.01	0
18	.04	2.0	.29	.38	.54	2.8	.98	.80	.26	.11	.02	0
19	.03	.60	2.6	.36	59	1.9	.98	*.76	.23	.09	.01	0
20	.03	.41	*13	.32	*92	1.8	.88	.69	.18	.11	.01	0
21	.02	.32	1.0	.32	1.8	1.8	.84	1.0	.18	.72	0	0
22	.04	.27	1.7	.36	1.2	2.1	.84	4.1	.15	.14	0	0
23	.04	.27	1.8	.43	1.0	3.0	.72	1.3	.12	.09	.01	0
24	.03	.36	1.3	.36	.90	1.8	1.9	24	.12	.06	0	0
25	.03	3.7	.70	.27	.98	1.6	1.6	2.5	.18	.05	0	0
26	.03	1.3	.56	.23	1.0	1.4	1.6	1.8	.14	.04	0	0
27	.03	.50	.46	.20	.93	1.3	1.3	1.2	7.3	.05	0	0
28	.03	.34	.40	.19	.72	1.1	1.2	1.2	2.1	.05	0	0
29	.06	.38	.48	.18	.....	1.0	1.2	.93	*.36	.04	0	0
30	.08	.31	.45	.21	.....	13	16	.80	.24	.03	0	0
31	.07	.....	.45	.23	.....	12	.....	.63	.....	.05	0	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 22-26, Dec. 10-26, 1951; Jan. 4-13, Dec. 14-17, 25-28, 1952; Jan. 4-6, 15-17, 26-29, Feb. 4, 5, 13-18, 22-24, 1953. Backwater from debris Oct. 2-9, Nov. 11-21, 1951; May 5, Sept. 7, Oct. 24, 27-31, Nov. 1, 4, 5, 7-11, 1952; May 16-18, 25, June 6, 7, 22, 23, July 3, 4, 1953.

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	0	0	0	0	*0	0.05	0.20	1.6	1.8	0	0	0
2	0	0	.05	0	.04	.02	.31	4.7	1.2	0	0	0
3	0	0	.11	0	.10	0	.11	1.2	1.0	0	0	0
4	0	0	.05	0	.07	0	.13	.60	.43	0	0	0
5	0	0	.02	0	.15	0	.15	.38	.24	0	0	0
6	0	0	.05	0	.02	*0	1.6	.27	.21	0	0	0
7	0	0	.04	0	0	a.10	.29	.20	.14	0	0	0
8	0	0	.03	*0	.01	*.43	*.14	.16	.09	0	0	0
9	0	0	.03	0	.05	.23	.11	.14	.11	0	0	0
10	0	0	.04	0	.05	a.30	.11	.14	.18	0	0	0
11	0	0	.04	0	.08	a.25	.09	.12	.05	0	0	0
12	0	0	.02	0	a.01	.19	.05	.10	.03	0	0	0
13	0	0	.01	0	a.04	a.11	.05	.09	.01	0	0	0
14	0	0	.01	0	a.09	a.03	.05	.08	.02	0	0	0
15	0	0	.01	0	a.20	.05	.47	.09	.01	0	0	0
16	0	*0	0	0	a.18	.05	.16	.06	.01	0	0	0
17	0	0	0	0	a.16	.06	.08	.08	.01	0	0	0
18	0	0	0	0	a.15	.08	.06	.07	0	0	0	0
19	0	0	0	*0	a.16	.24	.06	.05	.05	0	0	0
20	0	0	.01	0	a.17	.11	.63	.05	.05	0	0	0
21	0	.01	.10	0	a.15	.05	.27	.05	.03	0	0	0
22	0	.01	0	*0	a.12	.05	.15	.04	.08	0	0	0
23	0	.02	0	0	a.11	.05	.11	.05	.02	0	0	0
24	0	.02	0	0	a.18	.87	.09	.05	.01	0	0	0
25	0	.01	0	0	a.30	1.2	.09	.02	.01	0	7.2	0
26	*0	.01	0	0	.18	.20	3.0	.03	0	0	7.5	0
27	0	.01	0	0	.13	.16	.85	.08	0	0	.48	0
28	0	.01	0	0	.10	.20	.27	.22	0	1.4	.05	0
29	0	.01	0	0	.....	.15	.21	.08	0	.07	0	2.4
30	0	.01	0	0	.....	.19	5.9	.04	0	0	0	0
31	0	.....	0	0	.....	.15	.....	.08	.....	0	0	.....
1954-55												
1	0	0.02	0.01	0.03	0.08	0.08	0.38	0.69	0.10	0.01	0	0
2	0	.02	.01	.06	.05	.84	.45	.52	.10	0	0	0
3	0	.03	.01	.07	.05	.84	.43	.45	.10	0	0	0
4	0	.02	.01	.26	.11	.66	.44	.38	.08	0	0	0
5	3.5	.02	0	*9.8	.11	.48	.55	.32	.07	0	.18	0
6	.12	.02	0	1.6	.08	.24	.34	.29	.08	0	1.3	0
7	.01	.01	0	.76	.13	.15	.23	.29	.10	0	0	0
8	0	.01	0	.35	.15	.43	.23	.29	.07	0	0	0
9	0	.01	0	.24	.10	.41	.23	5.5	.06	0	0	0
10	15	.01	0	.19	.08	.43	.20	3.8	.04	.04	0	0
11	*1.0	.01	0	.16	.07	.41	.41	1.3	.05	.01	0	0
12	.34	.01	0	.13	.06	.32	.36	.98	.07	0	0	0
13	.14	.01	0	.11	.08	.26	.62	.80	.07	0	0	0
14	1.2	.01	0	.09	.12	1.2	.69	.60	.08	0	0	0
15	.32	.01	0	.07	.15	1.4	.48	.54	.05	0	0	0
16	.18	.01	0	.06	.20	.50	.36	.40	.04	0	0	0
17	.11	.02	0	.05	.24	.41	.27	.34	.02	0	0	0
18	.07	.01	0	.05	3.7	.41	.26	.31	.02	0	0	0
19	.05	.01	0	.05	61	.32	*0.3	.27	.02	0	0	0
20	.05	.01	0	.05	20	.43	1.5	.24	.03	0	0	0
21	.05	.01	.01	.05	3.0	.60	.84	.21	.01	0	0	0
22	.04	.03	.01	.05	1.4	.28	.63	.20	.01	0	0	0
23	.04	.02	.01	.05	1.0	.56	*17	.24	.01	1.6	0	0
24	.02	.02	.01	.05	.70	.60	13	.24	0	.04	0	0
25	.02	.01	.01	.05	.50	.45	5.2	.21	0	0	0	0
26	.03	.01	.17	.05	10	.32	3.0	.27	0	0	0	0
27	.04	.01	.65	.05	12	.45	1.9	.40	0	0	0	0
28	.02	.01	.11	.05	*1.2	.57	1.5	.19	0	0	0	0
29	.02	.01	.03	.05	.....	.60	1.0	.20	.45	0	0	0
30	.02	.01	.02	.07	.....	.57	.84	.16	.07	0	0	0
31	.02	.....	.02	.09	.....	.48	.....	.12	.....	0	0	.....

* Discharge measurement or observation of no flow made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 21, 1953; Feb. 2-5, 26-28, Mar. 1, 2, Dec. 30, 31, 1954; Jan. 1, 8-30, Feb. 10-16, 21-27, Mar. 7, 22-28, 1955.

Ralston Creek at Iowa City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.024	0.161	0.127	1.01	8.76	3.13	3.39	2.37	2.09	2.40	0.325	0.171
1951-52.....	.596	1.04	.546	2.06	2.01	7.17	2.33	2.84	2.41	.460	.356	.048
1952-53.....	.031	2.19	1.04	.603	8.38	3.41	2.37	2.84	.801	.388	.025	0
1953-54.....	0	.004	.020	0	.107	.180	.528	.349	.193	.047	.491	.080
1954-55.....	.723	.014	.035	.477	4.44	.535	1.99	.671	.060	.055	.048	0

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.008	0.053	0.042	0.330	2.91	1.04	1.13	0.787	0.694	0.797	0.108	0.057
1951-52.....	.198	.346	.181	.684	.668	2.38	.774	.944	.801	.153	.118	.016
1952-53.....	.010	.728	.346	.202	2.78	1.13	.787	.944	.266	.129	.0083	0
1953-54.....	0	.0013	.0066	0	.036	.060	.175	.116	.064	.016	.163	.027
1954-55.....	.240	.0047	.012	.158	1.48	.178	.661	.223	.020	.018	.016	0

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.009	0.00	0.05	0.39	3.03	1.20	1.26	0.91	0.78	0.92	0.12	0.06
1951-52.....	.23	.30	.21	.79	.72	2.75	.86	1.09	.89	.18	.14	.02
1952-53.....	.01	.81	.40	.23	2.90	1.31	.88	1.09	.30	.15	.01	0
1953-54.....	0	.001	.008	0	.04	.07	.20	.13	.07	.02	.19	.03
1954-55.....	.28	.005	.01	.18	1.54	.21	.74	.26	.02	.02	.02	0

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	2.31	10.42
1951....	July 8, 1951...	4.81	454	0.01	1.95	0.048	8.79	2.10	9.50
1952....	May 23, 1952.	3.73	248	.01	1.83	.008	8.27	1.91	8.66
1953....	Feb. 19, 1953.	4.65	487	0	1.79	.505	8.09	1.52	0.88
1954....	Aug. 25, 1954.	2.72	122	0	.167	.055	.76	.230	1.05
1955....	Apr. 23, 1955.	3.41	181	0	.727	.242	3.28	.....	.....

Peak Discharge (base, 160 cfs)

1951: Feb. 18 (8 p.m.) about 232 cfs (3.74 ft.); Feb. 25 (6:30 a.m.) 300 cfs (4.07 ft.); July 8 (8 p.m.) 454 cfs (4.81 ft.).

1952: May 23 (12:30 a.m.) 248 cfs (3.73 ft.); June 14 (5:30 a.m.) 218 cfs (3.56 ft.); Nov. 17 (4:30 p.m.) 282 cfs (3.93 ft.).

1953: Feb. 5 (6 p.m.) 291 cfs (3.65 ft.); Feb. 19 (12 p.m.) 487 cfs (4.65 ft.); May 24 (9:30 a.m.) 300 cfs (3.71 ft.).

1954: No peak above base.

1955: Apr. 23 (8 p.m.) 181 cfs (3.41 ft.).

English River at Kalona, Iowa

LOCATION.—Lat. 41°28'10", long. 91°42'40", in SE¼ sec. 13, T. 77 N., R. 8 W., on right bank 30 feet upstream from bridge on State Highway 1, 1 mile south of Kalona, 4 miles downstream from Smith Creek, and 12 miles upstream from mouth.

DRAINAGE AREA.—580 square miles, approximately.

RECORDS AVAILABLE.—September 1939 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 633.45 feet above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to December 28, 1939, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—16 years, 319 cfs.

EXTREMES.—1939-55: Maximum discharge, 16,400 cfs January 7, 1946 (gage height, 19.74 feet); minimum daily, 1.6 cfs October 2, 1953.
Flood of June 1930 reached a stage of 19.9 feet from floodmark by local residents.

REMARKS.—Records good except those for periods of ice effect which are poor.

COOPERATION.—Several discharge measurments furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	5.2	10	5.0	4.0	7.7	*230	1,490	505	858	505	117	178
2.....	5.6	6.5	5.5	4.0	7.4	210	1,250	460	858	416	99	154
3.....	4.8	*4.4	6.0	3.9	7.2	272	1,060	505	1,730	2,360	*96	140
4.....	*5.6	4.0	5.7	3.9	7.0	320	1,450	388	1,410	2,570	93	124
5.....	7.5	4.4	5.6	3.9	6.7	300	1,410	335	*806	1,450	85	109
6.....	7.0	4.4	5.5	3.9	*6.4	282	1,330	302	625	755	69	101
7.....	7.0	4.8	*5.3	3.8	6.3	191	2,820	275	565	580	68	93
8.....	7.5	6.5	5.2	*3.8	6.2	154	3,280	245	1,200	565	71	83
9.....	7.0	8.7	5.1	3.8	6.2	110	1,650	*226	1,170	*2,520	53	74
10.....	7.5	7.5	5.0	3.8	6.2	97	912	1,260	721	3,050	46	140
11.....	7.5	7.5	4.9	3.7	100	88	*789	2,970	550	1,450	42	176
12.....	6.5	7.5	4.9	3.7	1,200	100	1,600	1,920	580	806	39	*127
13.....	5.6	6.5	4.8	3.7	800	110	2,120	1,040	672	640	37	127
14.....	5.6	6.0	4.7	3.7	500	110	1,460	704	416	580	34	98
15.....	4.8	17	4.7	3.7	400	70	948	550	620	520	45	77
16.....	5.6	14	4.6	4.0	600	55	704	460	1,740	460	68	65
17.....	4.4	12	4.6	16	1,200	57	580	550	1,490	1,100	66	54
18.....	5.6	12	4.5	70	2,000	60	520	490	672	1,060	50	51
19.....	4.8	11	4.5	100	3,400	54	445	388	520	1,170	35	51
20.....	4.8	12	4.4	65	2,800	62	375	694	445	535	29	48
21.....	4.4	11	4.4	50	1,500	70	375	672	730	840	38	46
22.....	4.0	10	4.3	45	600	78	475	610	2,520	580	51	52
23.....	4.4	8.7	4.3	65	470	90	402	789	1,440	388	35	54
24.....	4.4	7.4	4.3	53	430	105	350	550	1,660	300	29	52
25.....	4.4	6.7	4.2	45	1,100	125	416	402	1,790	250	1,730	47
26.....	4.4	6.0	4.2	120	2,070	182	738	2,360	2,190	214	5,260	47
27.....	4.4	5.7	4.1	100	948	375	505	4,070	1,130	191	3,100	47
28.....	4.0	5.4	4.1	90	416	1,940	948	2,170	1,170	187	672	42
29.....	4.0	5.2	4.1	15	.....	3,350	789	1,100	721	152	402	40
30.....	5.2	*5.1	4.0	8.4	.....	3,620	505	704	580	160	295	44
31.....	5.6	.....	.0	8.0	.....	2,370	.....	595	.....	221	220	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 31, 1950; Jan. 1 to Feb. 25, Mar. 1, 2, 9-25, 1951.

English River at Kalona, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	39	258	*340	150	460	416	984	*305	255	258	24	14
2.....	40	240	338	150	490	338	755	285	224	234	23	14
3.....	39	204	350	145	530	*310	610	270	209	*234	52	14
4.....	50	172	340	140	600	221	535	255	191	225	113	*15
5.....	*50	212	300	*130	900	202	475	240	176	170	72	16
6.....	43	243	285	125	600	268	430	209	*164	139	50	15
7.....	82	219	270	125	400	280	402	236	142	124	36	14
8.....	174	212	236	120	*250	275	375	348	129	113	31	12
9.....	118	200	219	120	240	260	350	320	156	110	43	12
10.....	83	262	212	120	235	1,520	*345	535	142	100	72	11
11.....	64	189	200	120	220	4,500	322	460	115	90	50	11
12.....	56	359	180	120	210	6,400	318	335	101	84	*73	10
13.....	50	2,740	160	120	200	5,420	445	282	94	77	95	11
14.....	52	*3,080	120	120	190	4,180	738	245	390	79	60	12
15.....	52	2,870	140	800	185	2,020	688	224	721	211	48	14
16.....	52	1,660	160	1,500	180	1,170	535	231	280	124	141	12
17.....	164	912	170	1,400	180	876	460	312	162	92	87	15
18.....	1,020	672	180	1,300	180	948	410	285	127	154	58	13
19.....	876	505	180	1,500	180	2,630	388	228	104	180	43	11
20.....	656	535	180	1,300	180	2,170	362	207	106	111	32	10
21.....	507	505	180	1,000	180	1,290	330	193	2,110	84	29	10
22.....	1,450	490	175	740	180	1,370	504	204	2,320	70	24	10
23.....	1,100	445	170	580	185	2,120	948	1,020	1,370	61	24	10
24.....	1,020	362	165	530	190	1,250	1,020	2,970	704	*52	23	9.6
25.....	755	328	160	500	205	984	780	1,290	475	48	20	9.2
26.....	580	362	155	470	250	894	595	704	328	40	18	8.8
27.....	460	350	150	450	700	894	505	535	1,160	34	16	8.4
28.....	416	362	140	440	1,570	912	430	460	1,360	34	15	8.4
29.....	362	342	140	430	738	912	375	388	535	32	15	8.4
30.....	330	342	140	430	.....	840	335	330	315	29	14	*8.4
31.....	290	.....	140	430	.....	876	.....	295	.....	26	14	.....
1952-53												
1.....	7.6	6.1	90	60	58	278	2,320	1,020	182	214	51	*6.8
2.....	8.0	6.4	76	58	54	223	*1,490	948	160	168	33	6.4
3.....	8.4	6.4	66	56	52	205	1,020	640	148	*285	25	6.8
4.....	8.8	6.4	62	55	*52	190	840	*520	141	180	22	7.2
5.....	8.8	6.1	*61	*54	200	*185	672	460	*576	225	*19	6.8
6.....	8.8	*6.1	62	53	1,400	175	580	430	403	769	25	8.4
7.....	8.0	*6.4	64	51	1,000	165	520	402	201	391	31	8.0
8.....	8.8	6.1	68	50	1,500	160	460	362	870	166	23	7.6
9.....	9.2	6.1	74	49	1,350	180	445	320	868	127	16	7.6
10.....	9.6	5.8	83	49	1,150	393	445	289	340	110	16	6.8
11.....	10	5.8	87	49	950	1,260	402	267	725	97	15	6.4
12.....	10	*5.8	75	51	700	806	362	249	1,780	88	16	5.8
13.....	10	6.1	70	60	560	640	335	216	430	90	15	5.4
14.....	10	6.4	75	120	450	874	310	201	305	103	14	4.8
15.....	10	6.6	90	250	360	1,770	338	199	256	82	13	4.5
16.....	9.6	8.4	72	90	300	1,130	388	194	230	73	12	4.5
17.....	9.6	959	62	180	270	704	350	186	205	68	11	4.5
18.....	9.2	1,300	56	350	300	625	305	182	176	66	11	3.5
19.....	9.2	430	62	270	450	550	280	174	156	78	10	3.8
20.....	9.2	148	300	200	*4,000	445	267	158	136	62	9.6	4.5
21.....	9.2	94	340	170	5,500	402	256	152	121	56	9.6	6.8
22.....	9.2	74	200	150	3,060	362	243	180	106	51	9.6	6.4
23.....	9.6	64	140	130	1,180	1,200	227	630	100	48	9.6	6.4
24.....	8.8	58	115	120	688	1,480	243	434	97	42	8.8	5.8
25.....	9.6	69	105	105	505	843	402	2,190	94	37	8.8	5.8
26.....	8.8	320	94	96	416	595	475	887	122	33	8.8	6.1
27.....	8.8	200	87	88	375	505	362	100	124	33	8.8	4.2
28.....	8.0	120	78	81	325	430	315	328	1,660	30	7.6	2.2
29.....	6.8	115	72	74	.....	375	289	282	991	28	7.2	2.2
30.....	6.8	110	67	68	.....	1,080	402	249	375	28	7.2	2.2
31.....	6.8	.....	63	63	.....	2,820	.....	216	.....	26	6.8	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec.11-31, 1951; Jan. 1 to Feb. 27, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 20, Mar. 3-9, 1953.

English River at Kalona, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	2.0	3.8	5.4	2.9	2.8	9.2	11	847	324	18	2.1	45
2	*1.6	2.8	7.2	2.9	2.8	9.6	*11	725	616	16	2.3	35
3	2.2	3.2	*9.2	2.8	3.0	13	10	635	410	15	2.1	30
4	2.4	*4.5	10	2.8	3.3	*11	10	278	*545	16	*2.3	25
5	4.2	4.2	8.8	2.7	*3.7	7.7	13	137	298	16	4.2	21
6	3.2	5.1	10	2.7	4.1	7.2	76	*86	175	15	69	17
7	2.8	5.4	8.8	2.7	4.6	6.8	138	67	165	14	50	16
8	2.4	5.4	8.8	2.7	5.1	7.6	*58	53	110	13	25	14
9	2.2	5.1	8.4	2.6	5.5	8.0	33	44	79	*8.5	15	13
10	2.8	5.1	7.6	2.6	6.0	9.6	25	39	63	7.3	13	13
11	2.8	5.1	6.5	2.6	7.0	*11	20	35	53	10	9.6	13
12	3.0	5.1	5.8	2.6	8.5	11	15	33	45	5.6	7.3	14
13	2.8	5.4	5.2	2.5	10	11	13	28	41	5.0	5.6	13
14	3.0	5.8	4.8	2.5	15	9.0	12	26	36	4.4	5.0	11
15	3.8	6.8	4.5	2.5	22	7.8	14	24	38	4.0	4.4	10
16	3.2	6.4	4.2	2.5	30	6.8	13	23	45	3.7	4.2	9.6
17	2.4	6.4	4.3	2.5	32	5.8	30	21	41	3.3	4.2	9.6
18	2.6	6.4	4.5	2.5	31	6.1	28	19	34	3.3	4.7	9.2
19	3.0	6.8	4.5	2.5	30	13	18	18	37	3.1	4.7	8.9
20	3.2	*8.0	4.2	2.5	29	10	23	17	34	3.1	4.7	8.1
21	2.8	8.8	4.0	2.5	36	10	45	16	38	4.4	4.7	7.7
22	2.8	9.2	3.8	2.5	24	11	79	16	610	4.4	8.1	7.0
23	5.8	8.0	3.7	2.5	16	10	46	16	318	4.4	25	6.0
24	4.2	7.2	3.6	2.5	16	12	34	16	119	4.7	13	6.0
25	3.8	7.6	3.4	2.5	12	19	25	16	58	4.4	22	5.3
26	*3.5	6.8	3.3	2.5	10	21	21	14	40	4.4	712	4.7
27	2.4	6.4	3.2	2.5	8.8	18	291	14	30	3.7	1,860	5.0
28	2.6	6.1	3.1	2.5	9.2	15	159	74	24	3.3	632	6.0
29	3.2	5.8	3.1	2.5	.....	14	86	79	20	3.3	217	23
30	3.0	5.4	3.0	2.5	.....	13	54	65	23	2.9	99	49
31	2.8	.....	*3.0	2.5	.....	11	.....	42	.....	2.5	*62	.....
1954-55												
1	58	43	19	45	*26	550	166	354	80	36	7.2	2.3
2	30	*44	*20	40	25	354	140	318	*74	27	6.6	2.3
3	19	39	22	38	25	354	123	281	70	22	6.2	2.1
4	14	40	20	45	25	346	114	*595	66	19	*5.6	2.1
5	*127	40	17	130	24	288	117	*396	62	17	21	1.9
6	262	40	16	300	23	192	115	241	59	*15	22	1.9
7	131	37	14	250	23	170	*101	196	57	14	17	2.1
8	80	37	16	220	22	160	95	174	64	12	*11	1.9
9	62	35	17	180	22	182	90	180	61	279	8.5	1.9
10	2,030	33	18	*140	21	*166	86	455	52	298	9.0	2.1
11	2,540	30	16	90	21	152	88	410	51	259	8.5	2.1
12	722	30	16	72	20	145	101	278	51	192	8.5	2.3
13	316	28	15	61	20	119	120	252	50	80	6.4	3.2
14	321	28	16	*52	20	117	324	254	47	47	6.0	2.8
15	*286	27	17	48	21	271	318	215	44	35	6.0	2.3
16	198	26	17	46	22	212	226	186	39	27	4.1	2.4
17	154	25	17	43	24	163	176	168	33	32	4.1	2.4
18	122	26	16	41	26	133	148	154	30	24	4.4	2.4
19	103	*25	15	38	350	125	1,460	145	39	22	3.9	3.2
20	94	25	14	36	1,100	122	2,140	136	*590	31	3.0	2.8
21	88	26	15	35	1,020	128	708	127	98	25	3.0	3.4
22	83	25	16	35	850	132	354	115	53	19	3.2	3.0
23	76	25	18	35	620	130	728	112	39	18	3.0	3.0
24	70	25	20	34	400	150	4,070	123	31	14	2.3	3.0
25	63	25	22	33	280	155	4,350	226	28	13	2.4	3.0
26	61	24	25	33	400	130	2,400	*145	26	12	2.3	3.0
27	57	23	35	32	1,000	125	988	154	23	11	2.3	3.2
28	57	21	56	31	800	*157	700	138	21	*10	2.4	3.0
29	53	19	62	30	.....	180	550	111	26	9.2	2.1	12
30	46	17	54	28	.....	219	425	103	62	8.4	*2.3	10
31	44	.....	50	27	.....	200	.....	92	.....	7.8	*2.1	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 10-31, 1953; Jan. 1 to Feb. 17, Feb. 26, Mar. 3-5, 14, 15, Nov. 29, 30, Dec. 4-31, 1954; Jan. 1 to Feb. 28, Mar. 7, 8, 22-27, 1955.

English River at Kalona, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	5.45	7.93	4.73	29.4	736	492	1,063	913	1,056	858	422	84.7
1951-52.....	356	675	202	503	373	1,511	525	477	489	110	45.6	11.6
1952-53.....	8.88	139	97.3	106	993	679	511	424	403	124	15.5	5.61
1953-54.....	2.98	5.94	5.48	2.58	13.8	10.8	47.0	114	149	7.31	120	15.2
1954-55.....	270	20.6	22.9	73.2	258	104	717	220	67.5	52.8	0.34	3.10

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.0094	0.014	0.0082	0.051	1.27	0.848	1.83	1.57	1.82	1.48	0.728	0.146
1951-52.....	.614	1.16	.348	.867	.643	2.61	.905	.822	.843	.190	.079	.020
1952-53.....	.015	.240	.168	.183	1.71	1.17	.881	.731	.695	.214	.027	.0097
1953-54.....	.0051	.010	.0094	.0044	.024	.019	.081	.197	.257	.013	.217	.026
1954-55.....	.466	.051	.039	.126	.445	.334	1.24	.379	.116	.091	.011	.0053

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.01	0.02	0.009	0.06	1.32	0.08	2.04	1.81	2.03	1.71	0.84	0.16
1951-52.....	.71	1.30	.40	1.00	.69	3.00	1.01	.95	.94	.22	.09	.02
1952-53.....	.02	.27	.19	.21	1.78	1.35	.98	.84	.77	.25	.03	.01
1953-54.....	.006	.01	.01	.005	.02	.02	.09	.23	.29	.01	.25	.03
1954-55.....	.54	.06	.05	.15	.46	.39	1.38	.44	.13	.10	.01	.006

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	232	5.43
1951....	Aug. 26, 1951.	14.74	6,130	3.7	469	0.809	10.99	571	13.36
1952....	Mar. 12, 1952.	15.47	6,840	8.4	441	.760	10.33	358	8.40
1953....	Feb. 21, 1953.	14.43	5,860	2.2	287	.495	6.70	268	6.25
1954....	Aug. 27, 1954.	8.90	2,270	1.6	41.7	.072	.97	67.8	1.60
1955....	Apr. 25, 1955.	13.4	5,020	1.9	158	.272	3.72	.....	.....

Peak Discharge (base, 1,500 cfs)

1951: Feb. 19 (6 p.m.) about 3,700 cfs (12.26 ft.); Feb. 26 (3 p.m.) 2,470 cfs (9.31 ft.); Mar. 30 (8 a.m.) 3,860 cfs (11.84 ft.); Apr. 4 (2 p.m.) 1,740 cfs (7.66 ft.); Apr. 8 (8 a.m.) 3,740 cfs (11.61 ft.); Apr. 13 (6 p.m.) 2,270 cfs (8.89 ft.); May 11 (6 a.m.) 3,080 cfs (10.46 ft); May 27 (5 p.m.) 4,490 cfs (12.70 ft.); June 3 (9 p.m.) 2,220 cfs (8.77 ft.); June 17 (2 a.m.) 2,070 cfs (8.50 ft.); June 22 (9 a.m.) 2,720 cfs (9.80 ft.); June 26 (12:30 a.m.) 3,500 cfs (11.24 ft.); July 4 (12:30 a.m.) 3,260 cfs (10.82 ft.); July 10 (1:30 p.m.) 3,440 cfs (11.06 ft.); July 17 (12:30 p.m.) 1,530 cfs (7.34 ft.); Aug. 26 (8 p.m.) 6,130 cfs (14.74 ft.); Oct. 22 (8:30 a.m.) 1,610 cfs (7.50 ft.); Nov 13 (4:30 p.m.) 3,930 cfs (12.09 ft).

1952: Jan. 19 (12 p.m.) about 2,000 cfs (9.35 ft.); Feb. 28 (8 a.m.) 2,270 cfs (8.92 ft.); Mar. 12 (5 a.m.) 6,840 cfs (15.47 ft.); Mar. 19 (11 a.m.) 2,870 cfs (10.12 ft.); Mar. 23 (10 a.m.) 2,370 cfs (9.11 ft.); May 24 (2 p.m.) 3,380 cfs (11.02 ft.); June 21 (4:30 p.m.) 2,920 cfs (10.18 ft.); June 28 (2 a.m.) 2,220 cfs (8.80 ft.); Nov. 17 (10 p.m.) 2,170 cfs (8.74 ft.).

1953: Feb. 6 (3:30 p.m.) about 1,900 cfs (12.00 ft.); Feb. 21 (6 p.m.) 5,860 cfs (14.43 ft.); Mar. 15 (10 a.m.) 1,920 cfs (8.17 ft.); Mar. 24 (1 a.m.) 1,840 cfs (7.97 ft.); Mar. 31 (2:30 p.m.) 2,970 cfs (10.27 ft.); May 25 (6 p.m.) 2,420 cfs (9.17 ft.); June 8 (12 p.m.) 1,700 cfs (7.74 ft.); June 12 (5:30 a.m.) 2,720 cfs (9.97 ft.); June 28 (6 p.m.) 2,370 cfs (9.09 ft).

1954: Aug. 27 (8 a.m.) 2,270 cfs (8.90 ft.); Oct. 10 (10:30 p.m.) 3,620 cfs (11.35 ft.)

1955: Apr. 20 (12:30 a.m.) 3,260 cfs (10.83 ft.); Apr. 25 (time unknown) 5,020 cfs (about 13.4 ft.).

Little Cedar River near Ionia, Iowa

LOCATION.—Lat. 43°02'06", long. 92°30'02", in SW¼NE¼ sec. 21, T. 95 N., R. 14 W., on left bank 12 ft. downstream from highway bridge, 2.5 miles west of Ionia, and 6.5 miles upstream from Cedar River.

DRAINAGE AREA.—328 square miles.

RECORDS AVAILABLE.—October 1954 to September 1955.

GAGE.—Water-stage recorder.

EXTREMES.—1954-55: Maximum discharge, 1,500 cfs June 4, 1955 (gage height, 7.54 ft.); minimum daily, 9.6 cfs Sept. 10-12, 18, 1955.

REMARKS.—Records excellent except those for periods of ice affect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1.....	a293	91	*50	36	19	32	139	99	76	51	a24	13
2.....	a236	88	68	37	*20	65	122	93	415	58	*23	13
3.....	a220	*81	56	39	21	150	112	*86	1,290	110	a22	11
4.....	a202	a82	40	*40	21	230	120	84	a935	194	a21	11
5.....	a192	84	43	40	22	300	*467	77	a720	120	a21	11
6.....	*170	82	40	39	22	250	580	71	a500	89	a20	11
7.....	134	82	45	38	22	180	346	68	a370	*72	a20	11
8.....	122	81	50	38	22	150	228	65	*262	64	a19	10
9.....	126	79	50	38	21	*125	176	68	154	56	a18	10
10.....	150	76	50	38	20	150	150	72	116	54	a18	9.6
11.....	332	76	50	36	19	300	139	72	99	51	a17	9.6
12.....	327	74	50	34	18	450	134	68	89	46	17	9.6
13.....	236	72	54	32	17	340	137	65	82	42	17	11
14.....	503	71	51	32	17	260	277	60	74	40	17	11
15.....	420	70	52	32	17	270	327	58	68	37	17	11
16.....	290	70	51	31	17	200	249	55	64	36	17	11
17.....	215	70	51	30	17	150	179	52	59	36	17	10
18.....	171	68	50	29	18	110	143	50	56	36	16	9.6
19.....	148	66	47	28	45	110	126	47	55	38	16	10
20.....	130	65	48	27	150	96	114	46	54	35	14	10
21.....	124	64	51	26	95	85	104	43	54	a32	15	16
22.....	118	64	52	26	62	75	93	42	54	a31	14	16
23.....	108	64	54	25	48	67	89	43	50	a30	13	16
24.....	99	64	54	24	40	60	102	46	46	a29	14	16
25.....	95	62	51	24	33	54	360	42	43	a31	14	14
26.....	95	60	52	23	29	58	360	43	41	a30	14	16
27.....	104	60	52	22	28	63	246	51	38	a29	14	18
28.....	110	62	45	21	28	68	169	70	36	28	14	20
29.....	124	47	41	20	.....	89	132	77	36	a27	14	21
30.....	100	40	37	19	.....	154	112	88	48	a26	*14	19
31.....	89	.....	35	18	.....	166	.....	72	.....	a25	14	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 29, 30, Dec 5-12, 18-20, 23-31, 1954; Jan. 1 to Mar. 27, 1955.

Little Cedar River near Ionia, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55.....	187	70.5	49.0	30.4	32.4	160	205	63.6	199	51.1	16.9	12.8

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55.....	0.570	0.215	0.149	0.093	0.099	0.488	0.625	0.194	0.607	0.156	0.052	0.039

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55.....	0.66	0.24	0.17	0.11	0.10	0.56	0.70	0.22	0.68	0.18	0.06	0.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955....	June 4, 1955..	7.54	1,500	9.6	89.9	0.274	3.72	.....	.....

Peak Discharge (base, 700 cfs)

1955: Mar. 11 about 800 cfs; June 3 (10 a.m.) 1,500 cfs (7.54 ft.).

Cedar River at Janesville, Iowa

LOCATION.—Lat. 42°39', long. 92°28', in NE¼ sec. 35, T. 91 N., R. 14 W., on left bank 300 feet downstream from highway bridge at Janesville and 3 miles upstream from Shell Rock River.

DRAINAGE AREA.—1,660 square miles, approximately.

RECORDS AVAILABLE.—April 1905 to September 1906, May 1915 to September 1927, November 1932 to September 1942, April 1946 to September 1955.

GAGE.—Water-stage recorder. Prior to July 26, 1919, chain gage 1,000 feet downstream at same datum. July 26, 1919, to Sept. 30, 1927, and Nov. 14, 1932, to Sept. 30, 1942, chain gage; and Apr. 26, 1946, to Nov. 10, 1949, wire-weight gage at highway bridge 300 feet upstream at same datum.

AVERAGE DISCHARGE.—30 years (1915-27, 1933-42, 1946-55), 705 cfs.

EXTREMES.—1905-6, 1915-27, 1932-42, 1946-55: Maximum discharge observed, 30,400 cfs Apr. 1, 1933 (gage height, 15.43 feet, site then in use); minimum daily, 28 cfs Oct. 21, 1922.

Flood of Mar. 17, 1945, reached a stage of 16.2 feet, from floodmark at site 300 feet upstream (discharge 34,300 cfs).

REMARKS.—Records good except those for periods of ice effect, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 9 miles above station.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1950-51												
1.....	245	182	130	130	110	6,120	3,400	5,500	880	3,040	587	758
2.....	187	195	140	135	110	4,300	2,740	3,400	1,830	1,720	483	758
3.....	205	130	140	135	105	3,000	2,080	3,400	2,250	1,660	533	515
4.....	168	151	135	130	105	2,700	3,520	3,760	4,260	1,830	515	435
5.....	178	173	135	130	100	2,500	5,070	3,040	5,070	1,310	533	722
6.....	195	*168	130	130	100	2,800	8,930	2,400	2,620	1,150	372	695
7.....	182	182	140	125	100	2,300	16,000	2,100	1,880	1,060	632	641
8.....	278	164	135	125	100	1,800	*22,200	1,880	1,610	1,880	*1,030	560
9.....	*200	143	110	125	100	1,400	23,800	1,720	1,440	3,160	1,100	560
10.....	210	210	110	125	100	1,100	16,500	1,560	1,250	1,560	930	641
11.....	191	182	130	125	100	850	10,700	1,720	1,070	1,360	1,020	740
12.....	225	160	125	125	100	670	9,120	1,500	*1,020	*1,240	900	880
13.....	182	210	*145	130	100	740	9,120	1,340	960	1,180	695	814
14.....	225	143	145	135	100	660	9,900	*1,170	900	1,120	980	758
15.....	187	182	140	*150	100	600	9,900	1,090	852	1,040	1,830	1,120
16.....	173	288	140	130	105	620	6,940	980	823	1,120	1,500	2,100
17.....	155	173	135	140	105	640	4,700	970	785	1,280	1,130	*1,390
18.....	151	151	130	150	115	570	3,520	1,020	623	1,060	1,020	1,020
19.....	195	182	130	160	125	480	2,860	1,070	814	970	940	900
20.....	173	168	130	160	135	400	2,620	1,080	*814	870	1,030	852
21.....	168	160	130	130	150	*370	2,520	980	861	1,250	1,160	794
22.....	182	139	135	150	140	410	3,160	1,120	832	1,300	1,070	722
23.....	160	97	140	*145	130	450	*3,880	1,120	776	731	1,030	722
24.....	168	120	145	135	130	410	4,650	1,030	731	842	1,000	467
25.....	168	130	150	130	1,000	400	4,000	960	533	749	1,160	686
26.....	191	140	140	130	2,500	400	4,130	880	4,080	*749	2,200	650
27.....	147	140	130	140	3,500	400	4,130	861	5,970	740	1,720	650
28.....	147	140	130	135	4,930	2,700	3,760	704	2,860	722	1,280	641
29.....	182	140	125	125	.....	4,100	13,500	804	3,280	587	980	475
30.....	178	140	130	115	.....	*4,500	9,900	767	4,260	372	900	578
31.....	134	.....	130	115	.....	3,800	.....	605	.....	641	832	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 21, Nov. 24 to Dec. 31, 1950; Jan. 1 to Feb. 27, Mar. 2-31, 1951.

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	393	713	587	460	600	1,150	10,900	950	1,120	1,560	459	305
2	578	695	596	455	600	1,130	14,200	823	731	1,170	587	256
3	650	713	551	450	600	1,050	12,300	722	*814	1,030	542	491
4	832	551	630	445	500	890	7,090	785	776	814	341	443
5	713	483	758	445	560	713	5,210	491	740	605	400	443
6	569	551	970	440	491	832	3,520	713	1,000	785	435	435
7	614	704	1,040	440	459	650	2,800	814	950	659	428	407
8	524	632	970	440	491	632	2,300	1,360	804	*1,010	379	266
9	695	560	870	435	459	632	2,250	1,240	551	1,020	386	*386
10	740	499	686	435	542	740	2,300	1,440	722	785	386	335
11	731	596	500	430	1,060	1,200	2,300	1,610	668	731	266	317
12	677	451	420	430	1,300	1,030	2,150	1,380	587	704	*500	278
13	614	832	330	440	1,440	1,370	2,100	1,310	569	677	414	278
14	614	794	280	450	1,560	1,940	2,150	1,160	677	428	475	347
15	407	767	310	*500	1,560	1,660	2,740	1,040	804	940	459	235
16	641	*1,040	340	524	1,340	1,310	2,980	940	467	890	533	359
17	605	1,560	370	650	1,130	1,260	3,520	890	587	740	880	272
18	533	1,320	400	713	940	*1,370	3,160	842	587	668	459	300
19	560	980	450	1,050	*832	2,680	2,520	587	578	551	475	250
20	524	1,000	470	1,380	804	4,930	2,100	814	578	578	475	235
21	695	785	480	1,230	776	5,050	1,830	794	560	451	970	311
22	*910	749	490	1,100	578	5,070	1,830	852	524	823	980	215
23	970	641	500	920	605	3,400	1,660	1,180	329	686	740	317
24	1,560	704	500	800	623	2,150	1,610	980	542	587	1,040	235
25	1,300	794	500	700	587	1,440	1,660	890	551	551	785	240
26	1,110	451	500	640	596	1,440	1,370	767	731	533	767	245
27	1,130	551	490	560	542	1,270	1,230	960	2,200	483	632	230
28	990	578	490	520	785	1,250	1,050	960	2,680	335	587	305
29	767	596	480	540	990	1,560	*1,090	861	1,830	443	483	200
30	804	542	475	560	.....	2,520	1,030	814	1,560	451	491	359
31	740	.....	470	580	.....	5,650	.....	980	.....	*421	475	.....
1952-53												
1	499	205	160	210	165	400	560	1,130	776	1,060	1,030	451
2	459	230	170	190	170	350	515	1,610	740	1,230	1,040	421
3	225	173	180	180	190	320	569	1,940	560	940	2,030	414
4	160	261	190	190	200	300	587	1,940	560	814	6,940	467
5	151	191	200	170	190	270	605	1,660	623	533	11,800	428
6	126	235	200	180	190	235	350	1,340	524	659	14,400	467
7	111	215	200	210	185	200	614	1,130	483	804	8,560	283
8	143	187	210	230	185	220	641	970	569	659	3,530	250
9	160	250	220	220	185	230	677	900	776	533	2,460	499
10	160	182	210	200	200	632	880	785	587	507	1,830	421
11	205	288	190	190	256	801	1,030	551	641	475	1,780	379
12	250	168	180	180	235	1,090	832	776	749	515	1,560	278
13	*147	278	190	200	210	1,500	551	767	677	294	1,390	323
14	250	195	230	210	220	1,560	713	668	668	641	1,260	261
15	178	195	290	220	200	1,780	704	596	1,860	910	1,160	499
16	205	288	*350	150	180	1,720	1,070	596	7,530	1,440	1,080	359
17	195	220	250	180	160	1,560	1,170	578	5,440	1,240	*880	283
18	215	305	230	190	180	1,500	910	365	2,100	1,180	1,030	386
19	230	240	220	205	210	1,500	832	587	1,440	950	920	256
20	151	235	240	*210	1,000	1,340	623	*524	1,230	605	870	317
21	201	*235	270	155	2,000	1,560	767	475	1,000	*659	785	*250
22	195	225	225	191	1,100	1,370	641	515	*731	870	704	353
23	195	256	283	151	*1,000	1,370	596	713	852	1,720	596	240
24	195	191	225	190	1,200	1,300	524	749	722	2,350	393	288
25	210	220	190	200	1,000	1,120	596	*605	740	2,150	533	300
26	215	230	170	170	800	970	767	852	713	1,610	483	250
27	182	190	180	200	600	870	758	1,180	1,080	1,300	407	206
28	335	160	190	170	500	740	*804	2,460	1,720	1,120	483	215
29	205	140	210	160	.....	632	900	1,060	1,390	1,560	499	341
30	178	150	180	155	.....	421	1,040	1,330	1,830	1,780	499	235
31	191	.....	200	170	.....	*695	.....	880	.....	1,310	300	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1951; Jan. 1-15, Jan. 24 to Feb. 3, Nov. 25 to Dec. 21, Dec. 25-31, 1952; Jan. 1-19, Jan. 24 to Feb. 10, Feb. 15 to Mar. 8, 1953.

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	241	243	*250	215	115	206	305	1,370	966	1,220	479	640
2	248	245	254	200	*115	*329	180	1,540	*821	1,150	*355	663
3	260	*282	275	205	125	186	224	2,330	886	1,160	428	609
4	318	235	349	195	135	150	223	*2,090	902	1,260	525	577
5	232	248	303	*175	145	180	192	2,030	854	980	426	538
6	297	245	401	180	140	200	242	2,220	763	830	284	393
7	*350	234	235	180	155	220	302	1,560	538	*920	418	373
8	245	259	340	180	170	196	274	1,170	719	906	312	*544
9	260	236	300	165	160	250	223	980	595	805	300	485
10	204	308	260	150	170	229	320	777	596	730	369	420
11	202	224	280	160	160	240	268	889	485	690	310	426
12	201	226	245	130	155	220	180	753	552	572	352	444
13	275	236	250	125	150	185	277	650	424	657	283	317
14	231	229	215	120	220	200	224	564	237	539	304	467
15	233	275	230	120	210	158	375	584	338	332	350	420
16	281	205	150	120	210	165	326	562	313	451	338	401
17	221	331	130	105	230	224	255	340	536	359	318	405
18	290	250	120	120	220	280	322	533	1,170	526	344	395
19	223	252	150	115	245	244	180	340	2,280	304	300	424
20	337	314	200	125	280	272	307	404	3,690	363	336	299
21	320	323	210	120	320	364	304	414	8,280	411	350	431
22	260	346	195	125	217	340	614	304	*16,700	430	271	442
23	283	236	180	110	330	525	609	382	17,300	428	389	452
24	339	397	195	115	320	475	381	272	12,900	524	1,480	316
25	265	275	205	105	330	380	482	424	6,540	494	3,290	328
26	219	415	190	110	320	359	362	375	3,640	297	1,940	342
27	318	236	240	115	300	246	552	350	2,310	411	1,500	303
28	222	170	215	115	338	220	442	591	1,710	364	1,500	328
29	233	210	200	115	.....	177	496	775	1,550	351	1,160	320
30	230	218	179	110	.....	*321	722	746	1,370	455	990	325
31	209	.....	196	120	.....	255	.....	812	.....	547	970	.....
1954-55												
1	491	470	320	250	*160	470	610	784	462	254	122	132
2	577	*545	359	280	210	460	638	542	348	370	*232	122
3	685	612	380	250	195	700	702	*986	1,140	492	247	146
4	*684	574	340	*310	195	1,130	470	656	1,610	324	162	134
5	783	512	360	300	200	1,100	*705	553	1,030	786	172	146
6	665	418	310	330	210	780	938	495	720	*888	193	121
7	700	505	330	360	180	670	1,130	408	*748	678	222	118
8	636	454	350	310	190	*1,020	1,030	454	748	444	270	136
9	613	404	310	290	210	780	979	340	789	558	209	150
10	615	511	340	310	180	620	830	495	694	508	138	160
11	580	558	370	340	210	800	592	476	544	367	154	128
12	634	504	340	310	190	2,200	745	376	598	323	158	114
13	828	367	360	260	210	3,680	646	389	345	345	134	125
14	1,140	436	330	250	190	3,880	722	349	370	315	128	122
15	1,190	412	320	230	170	2,380	750	450	410	334	120	139
16	1,170	446	330	230	200	1,630	820	354	336	266	158	122
17	935	379	320	230	190	1,220	760	509	404	288	199	133
18	770	370	340	220	200	1,210	534	326	298	296	160	120
19	894	382	320	230	350	965	706	318	368	250	126	118
20	696	355	300	230	1,300	684	678	319	320	239	131	116
21	730	433	280	220	1,000	570	624	332	285	286	130	132
22	644	362	310	210	1,450	600	573	314	376	252	154	134
23	646	334	340	220	1,150	520	471	266	490	242	121	160
24	650	437	320	230	900	540	664	352	356	248	110	147
25	564	578	350	230	700	430	961	280	331	272	134	154
26	552	293	300	210	700	370	1,040	333	290	208	156	142
27	602	424	250	210	570	400	1,110	296	216	182	156	136
28	614	407	300	200	480	360	1,260	430	347	311	144	152
29	604	*266	280	200	.....	502	1,130	560	301	292	148	136
30	590	404	240	205	.....	548	932	404	277	214	*153	188
31	585	.....	210	210	.....	632	.....	228	.....	140	143	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29, Dec. 1, 8-29, 1953; Jan. 1 to Feb. 21, Feb. 23-26, Mar. 4-7, 11-14, Dec. 3-31, 1954; Jan. 1 to Mar. 11, Mar. 22-28, 1955.

Cedar River at Janesville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	185	164	134	134	521	1,684	7,598	1,630	1,864	1,235	1,003	775
1951-52.....	748	728	546	618	804	1,889	3,458	966	861	713	556	310
1952-53.....	212	218	214	188	461	923	730	995	1,310	1,067	2,300	340
1953-54.....	262	263	230	140	216	259	341	924	2,999	928	678	428
1954-55.....	712	438	320	254	432	1,042	792	422	518	354	161	137

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.111	0.099	0.081	0.081	0.314	1.01	4.58	0.982	1.12	0.744	0.604	0.467
1951-52.....	.451	.439	.329	.372	.484	1.14	2.08	.582	.519	.430	.335	.187
1952-53.....	.128	.131	.129	.113	.278	.556	.440	.599	.789	.643	1.39	.205
1953-54.....	.158	.158	.139	.084	.130	.156	.205	.557	1.81	.378	.408	.258
1954-55.....	.429	.264	.193	.153	.260	.628	.477	.254	.312	.213	.097	.083

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.13	0.11	0.09	0.09	0.33	1.17	5.11	1.13	1.25	0.86	0.70	0.52
1951-52.....	.52	.49	.38	.43	.52	1.31	2.32	.67	.58	.50	.39	.21
1952-53.....	.15	.15	.15	.13	.29	.64	.49	.69	.88	.74	1.60	.23
1953-54.....	.18	.18	.16	.10	.13	.18	.23	.64	2.02	.44	.47	.29
1954-55.....	.49	.29	.22	.18	.27	.72	.53	.29	.35	.25	.11	.09

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	583	4.75
1951....	Apr. 9, 1951..	14.05	25,000	97	1,405	0.846	11.49	1,534	12.55
1952....	Apr. 2, 1952..	10.74	14,700	200	1,014	.611	8.32	899	7.38
1953....	Aug. 6, 1953..	10.80	15,000	111	750	.452	6.14	759	6.21
1954....	June 22, 1954.	12.08	18,400	105	640	.386	5.02	673	5.50
1955....	Mar. 14, 1955.	5.16	4,430	114	465	.280	3.79	.....	.....

Peak Discharge (base, 3,500 cfs)

1951: Mar. 1 (3 p.m.) 6,440 cfs (6.67 ft.); Mar. 30 (4:30 a.m.) about 5,200 cfs (6.37 ft.); Apr. 9 (2 a.m.) 25,000 cfs (14.05 ft.); Apr. 29 (1:30 p.m.) 19,300 cfs (12.43 ft.); June 5 (8 a.m.) 5,650 cfs (6.16 ft.); June 27 (2:30 a.m.) 8,360 cfs (7.77 ft.); July 9 (6 a.m.) 4,000 cfs (4.95 ft.).

1952: Mar. 21 (12M) 5,800 cfs (6.30 ft.); Apr. 2 (5 p.m.) 14,700 cfs (10.74 ft.); Apr. 17 (4:30 p.m.) 3,640 cfs (4.71 ft.).

1953: Feb. 21 (2:30 a.m.) about 4,000 cfs (6.66 ft.); June 16 (6:30 p.m.) 9,500 cfs (8.36 ft.); Aug. 6 (11 a.m.) 15,000 cfs (10.80 ft.).

1954: June 22 (12 p.m.) 18,400 cfs (12.08 ft.); Aug. 25 (11 a.m.) 3,650 cfs (4.60 ft.).

1955: Mar. 14 (12:30 a.m.) 4,430 cfs (5.16 ft.).

Shell Rock River near Northwood, Iowa

LOCATION.—Lat. 43°25', long. 93°13', between secs. 4 and 9, T. 99 N., R. 20 W., near center of span on downstream side of highway bridge, 1 mile south of Northwood, and about 85 miles upstream from mouth.

DRAINAGE AREA.—380 square miles, approximately.

RECORDS AVAILABLE.—April 1948 to September 1955.

GAGE.—Wire-weight gage read once daily, more often at high stages. Datum of gage is 1,176.48 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—7 years, 126 cfs.

EXTREMES.—1948-55: Maximum discharge, 2,430 cfs Apr. 10, 1951; maximum gage height, 11.38 feet Apr. 7, 1951 (ice jam); minimum daily discharge, 8.0 cfs Nov. 30, 1952.

REMARKS.—Records good, except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	21	19	28	23	15	57	66	830	134	336	54	87
2	31	25	28	23	15	60	82	900	218	345	49	81
3	36	22	28	23	15	46	140	1,010	235	351	41	75
4	37	20	28	23	15	40	250	985	235	348	35	69
5	33	19	28	23	15	42	490	935	212	342	33	66
6	29	19	27	22	14	46	850	910	202	309	116	61
7	29	19	27	22	*14	46	1,700	830	193	280	90	59
8	29	*24	27	22	14	41	*2,000	770	178	282	152	56
9	31	23	27	22	14	36	2,200	710	164	270	*130	54
10	30	20	27	21	14	33	*2,360	650	156	262	120	72
11	*28	16	27	21	14	31	2,290	570	134	*265	114	81
12	27	19	*27	21	14	29	2,220	510	113	262	94	138
13	26	21	27	20	14	28	2,290	435	*102	248	152	222
14	25	23	27	20	14	26	2,150	378	97	240	140	255
15	24	25	26	20	14	25	2,010	357	95	225	144	275
16	23	27	26	20	14	24	1,650	*351	87	218	140	268
17	21	27	26	*19	14	24	1,710	327	89	202	146	248
18	21	27	26	19	14	24	1,590	295	142	205	142	224
19	19	27	26	18	14	23	1,470	278	*180	185	138	*200
20	19	23	26	18	15	23	1,360	265	185	180	140	180
21	19	26	25	18	16	23	1,360	258	193	174	138	158
22	20	30	25	17	17	22	1,360	240	176	158	138	156
23	20	30	25	17	19	22	1,210	222	166	146	130	150
24	20	30	25	17	23	22	1,140	200	160	130	128	140
25	20	30	25	*16	30	22	1,110	176	158	116	120	134
26	20	30	24	16	43	24	*1,060	174	198	104	130	128
27	19	29	24	16	48	28	935	170	235	94	138	113
28	19	29	24	16	53	34	890	150	288	84	126	111
29	19	29	24	15	.....	44	850	122	306	78	116	109
30	19	29	24	15	.....	53	770	109	324	72	105	100
31	19	.....	23	15	.....	58	.....	111	.....	62	95	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 10-15, Nov. 20 to Dec. 31, 1950; Jan. 1 to Apr. 9, 1951.

Shell Rock River near Northwood, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	94	88	97	57	44	170	1,310	187	94	285	33	95
2	81	80	105	56	44	150	1,410	180	81	272	31	86
3	80	78	116	56	43	130	1,410	170	*75	268	31	74
4	84	77	120	55	44	115	1,310	158	78	258	32	59
5	134	76	116	55	44	108	1,210	142	70	230	32	43
6	146	77	118	54	44	103	1,110	136	70	189	31	40
7	148	78	114	53	45	100	1,010	140	72	189	31	40
8	152	80	128	52	46	98	935	265	68	198	32	36
9	*146	82	120	51	47	96	870	262	62	*185	43	36
10	138	86	107	51	56	100	810	262	54	172	45	*36
11	132	89	90	50	70	110	790	265	48	158	54	35
12	128	98	78	50	100	150	710	250	41	144	45	33
13	120	116	80	50	150	195	670	222	37	130	*39	31
14	120	126	*92	50	173	180	670	198	55	116	34	27
15	109	*136	88	50	140	167	650	182	43	102	33	28
16	109	136	80	51	110	170	590	162	43	93	33	27
17	102	130	70	*52	98	180	550	150	43	84	29	27
18	98	110	64	53	88	350	510	134	45	76	24	28
19	94	100	60	54	80	500	480	122	42	66	21	29
20	82	96	57	54	*72	550	435	110	50	61	34	28
21	97	92	56	54	70	600	420	109	58	55	33	27
22	122	91	55	53	68	580	405	100	55	50	28	27
23	*142	90	54	52	67	520	387	118	49	50	25	24
24	134	89	54	51	67	470	354	142	44	47	22	24
25	126	88	54	50	67	430	318	132	72	40	18	24
26	120	88	54	49	68	380	292	111	92	35	21	23
27	118	88	55	48	82	350	265	120	191	29	20	23
28	116	89	55	47	110	324	242	136	248	54	24	23
29	113	89	56	46	130	420	220	132	265	48	49	23
30	102	92	57	45	.....	935	*200	120	285	42	134	22
31	97	.....	57	45	.....	1,260	.....	105	.....	35	102	.....
1952-53												
1	22	21	10	21	23	34	*185	280	242	95	292	54
2	22	21	12	21	22	35	174	321	210	86	435	49
3	22	21	15	21	21	35	189	336	198	76	870	47
4	22	21	17	20	22	34	272	321	182	69	1,040	45
5	22	21	19	20	22	33	242	300	164	68	960	43
6	22	21	21	20	22	32	196	282	158	74	910	43
7	22	21	22	20	22	31	182	262	148	66	830	39
8	22	21	24	21	22	30	174	228	180	62	770	38
9	22	21	25	21	23	32	170	225	215	55	730	36
10	22	21	23	22	23	60	191	220	210	50	650	35
11	22	21	22	22	24	200	193	215	191	43	610	34
12	22	21	21	23	24	300	178	248	164	40	550	33
13	22	21	21	24	23	350	166	240	150	105	510	32
14	22	21	20	24	22	400	154	218	150	138	465	32
15	*22	21	20	24	21	420	144	182	150	193	435	32
16	22	21	20	23	20	350	202	156	124	200	390	32
17	22	21	20	22	20	380	174	144	124	180	345	32
18	22	22	*20	22	20	450	152	128	114	152	306	31
19	23	21	20	22	21	420	142	*120	104	130	*268	31
20	24	20	20	22	22	327	130	105	89	114	230	31
21	23	*20	20	*22	23	312	111	114	84	346	193	30
22	22	20	21	22	23	339	104	182	78	*435	172	*30
23	22	19	21	22	24	342	102	170	*70	435	148	30
24	21	19	20	23	*24	318	90	170	61	363	120	30
25	21	17	19	23	26	292	136	189	98	327	100	29
26	21	15	18	23	28	255	238	285	98	260	92	28
27	21	12	17	24	31	255	230	*333	98	242	81	28
28	21	10	17	24	33	235	222	309	107	225	74	28
29	21	9.0	18	24	.....	220	*225	290	122	275	63	28
30	21	8.0	20	24	.....	187	245	285	104	288	58	26
31	21	.....	22	24	.....	187	.....	265	.....	292	55	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 1-10, Nov. 17 to Dec. 2, Dec. 11-31, 1951; Jan. 1 to Mar. 27, Nov. 24 to Dec. 31 1952; Jan. 1 to Mar. 19, 1953. Doubtful gage-height record Oct. 1 to Nov. 23, 1952; Sept. 9-30, 1953; discharge computed on basis of weather records and records for nearby stations.

Shell Rock River near Northwood, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	25	19	32	a25	15	40	61	272	245	465	a42	63
2	25	19	*35	25	19	36	47	327	228	405	39	61
3	28	19	40	a24	*17	*27	31	405	*225	378	*35	61
4	25	*19	56	24	19	21	a40	420	232	a320	34	53
5	25	19	46	*24	20	17	50	*363	208	278	31	a50
6	25	18	42	23	22	19	40	327	a180	250	28	47
7	24	18	41	23	a23	a21	47	278	150	215	28	45
8	*23	18	41	23	25	23	76	260	146	*178	a28	49
9	23	21	27	21	26	31	45	a220	128	a160	27	*41
10	23	19	35	a20	25	39	38	191	120	142	26	44
11	23	19	43	18	22	33	39	168	102	a120	24	44
12	23	18	41	17	21	18	41	152	102	105	24	a41
13	21	18	37	16	19	22	40	138	a90	84	24	39
14	20	19	35	15	a22	26	39	118	80	84	24	43
15	19	19	31	14	25	33	54	104	75	74	23	44
16	19	19	28	13	30	43	63	98	102	72	22	44
17	19	19	25	a12	35	60	74	87	92	68	22	62
18	19	19	24	12	43	69	a56	80	411	a60	27	62
19	19	19	24	12	52	69	44	61	1,100	53	28	58
20	19	47	26	12	64	49	44	61	1,240	51	24	a55
21	19	40	30	11	a72	49	56	49	1,340	58	27	51
22	19	36	27	11	66	49	89	48	1,360	55	27	48
23	19	34	24	10	59	49	66	a50	1,300	51	86	42
24	19	32	24	a10	56	53	56	59	1,200	49	63	36
25	19	29	a25	a11	54	53	74	107	1,080	a45	60	35
26	19	22	26	12	54	55	74	95	930	41	130	a31
27	19	28	a26	12	51	56	104	111	858	38	116	29
28	19	32	27	12	46	a56	111	272	758	59	113	29
29	19	29	27	12	.....	52	120	260	670	51	a100	41
30	19	28	a26	12	.....	54	138	a255	562	47	87	66
31	19	.....	25	a13	.....	*49	.....	250	.....	47	78	.....
1954-55												
1	65	93	*82	34	23	45	202	a152	37	24	26	15
2	57	70	60	37	*26	75	202	138	315	110	26	14
3	a62	*78	56	37	27	130	a210	130	435	a101	*24	14
4	79	76	54	36	27	200	215	*120	485	90	24	a14
5	81	77	51	*36	26	160	225	124	a485	220	24	12
6	*74	80	41	36	26	120	*220	108	435	248	21	12
7	67	a79	47	34	26	90	220	74	402	262	21	12
8	79	77	47	33	25	70	182	a72	*360	*258	21	12
9	79	72	47	32	25	*135	167	69	324	250	18	12
10	76	69	47	31	24	200	a156	81	280	a222	18	12
11	136	69	47	31	22	260	152	76	255	196	17	12
12	136	65	48	30	21	310	146	69	a232	171	14	12
13	132	60	49	30	20	285	142	60	205	146	10	10
14	150	a62	50	29	20	255	152	56	163	126	a15	15
15	191	62	50	28	20	235	138	46	138	122	14	14
16	180	59	50	27	21	205	118	40	118	106	14	12
17	a163	60	49	27	24	180	a112	39	93	a103	13	11
18	134	62	47	27	31	165	101	35	79	99	12	a11
19	128	67	46	27	46	135	110	34	a77	69	13	12
20	118	67	40	26	70	110	90	34	76	69	12	11
21	114	a64	47	26	88	86	99	30	67	50	a12	15
22	108	60	48	25	72	63	112	a28	67	51	12	13
23	106	53	48	24	61	120	88	26	56	110	12	a13
24	a103	48	49	24	52	95	187	26	43	a97	14	13
25	99	46	49	24	43	85	309	26	40	67	14	a14
26	90	51	47	24	37	85	262	26	a30	50	19	15
27	126	59	45	23	34	90	228	26	22	37	17	17
28	126	53	43	22	34	130	191	34	26	36	a17	17
29	126	47	40	21	.....	174	208	40	41	32	17	a15
30	138	42	37	20	.....	200	169	a36	26	28	15	12
31	a108	.....	32	20	.....	215	.....	34	.....	26	*14	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1953; Jan. 1 to Mar. 7, Mar. 12-17, 26-30, Nov. 2-4, 24, 25, 27, Nov. 29 to Dec. 31, 1954; Jan. 1 to Mar. 28, 1955.

Shell Rock River near Northwood, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	24.3	24.6	26.0	19.3	19.4	34.1	1,319	461	178	212	114	136
1951-52.....	116	94.5	80.9	51.4	78.2	322	685	162	84.7	121	37.5	35.9
1952-53.....	21.9	19.0	19.5	22.3	23.2	222	177	229	140	177	412	34.5
1953-54.....	21.1	23.8	32.1	16.1	35.7	41.0	61.9	183	510	132	46.9	47.1
1954-55.....	111	64.4	47.4	28.4	34.7	152	170	60.9	180	110	17.0	13.3

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.064	0.065	0.068	0.051	0.051	0.090	3.47	1.21	0.468	0.558	0.300	0.358
1951-52.....	.305	.249	.213	.135	.206	.847	1.80	.426	.223	.318	.099	.094
1952-53.....	.058	.050	.051	.059	.061	.584	.466	.603	.368	.466	1.08	.091
1953-54.....	.056	.063	.084	.042	.094	.108	.163	.482	1.34	.347	.123	.124
1954-55.....	.292	.169	.125	.075	.091	.400	.447	.160	.474	.305	.045	.035

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.07	0.07	0.08	0.06	0.05	0.10	3.87	1.40	0.52	0.64	0.35	0.40
1951-52.....	.35	.28	.25	.16	.22	.98	2.01	.49	.25	.37	.11	.11
1952-53.....	.07	.06	.06	.07	.06	.67	.52	.70	.41	.54	1.25	.10
1953-54.....	.06	.07	.10	.05	.10	.12	.18	.56	1.50	.40	.14	.14
1954-55.....	.34	.19	.14	.09	.10	.46	.50	.18	.53	.35	.05	.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....								91.4	3.27
1951.....	Apr. 10, 1951.	(1)9.55	2,430	14	213	0.561	7.61	232	8.27
1952.....	Apr. 2, 1952..	8.26	1,470	18	155	.408	5.58	136	4.89
1953.....	Aug. 4, 1953..	7.54	1,060	8.0	126	.332	4.51	127	4.55
1954.....	June 22, 1954.	7.96	1,360	10	95.8	.252	3.42	108	3.86
1955.....	June 4, 1955..	(2)6.00	502	11	83.1	.219	2.97	.....	.....

(1) Maximum gage height, 11.38 ft. Apr. 7, 1951 (ice jam).
(2) Maximum gage height observed, 6.80 ft. Mar. 12, 1955 (ice jam).

Peak Discharge (base, 1,000 cfs)

1951: Apr. 10 (2 a.m.) 2,430 cfs (9.55 ft.); May 3 (9 a.m. to 6 p.m.) 1,010 cfs (7.19 ft.).

1952: Apr. 2 (6 p.m.) 1,470 cfs (8.26 ft.).

1953: Aug. 4 (9 a.m.) 1,060 cfs (7.54 ft.).

1954: June 22 (9 a.m.) 1,360 cfs (7.96 ft.).

1955: No peak above base.

Lime Creek at Mason City, Iowa

LOCATION.—Lat. 43°10′, long. 93°11′, in sec. 3, T. 96 N., R. 20 W., on right bank 650 feet upstream from Thirteenth Street Bridge in Mason City and 0.5 mile upstream from Willow Creek.

DRAINAGE AREA.—535 square miles.

RECORDS AVAILABLE.—December 1932 to September 1955.

GAGE.—Water-stage recorder. Concrete control since Nov. 7, 1934. Datum of gage is 1,069.59 feet above mean sea level, datum of 1929. Prior to Nov. 7, 1934, wire-weight gage at datum 6.47 feet lower. Nov. 7, 1934, to Mar. 22, 1935, staff gage at present datum.

AVERAGE DISCHARGE.—22 years (1933-55), 220 cfs.

EXTREMES.—1932-55: Maximum discharge, about 9,400 cfs Mar. 30, 1933 (gage height, 15.70 feet, present datum); practically no flow Aug. 30 to Sept. 1, 1933.

REMARKS.—Records good.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	21	22	15	17	12	678	2,030	2,370	207	1,200	114	207
2.....	43	21	17	18	9.9	612	2,270	3,060	755	1,020	114	187
3.....	49	22	14	19	9.6	410	2,160	1,850	684	972	127	170
4.....	43	20	12	19	10	265	3,700	1,500	498	875	108	168
5.....	38	19	12	19	12	332	5,650	1,220	388	750	108	158
6.....	37	21	12	17	14	330	6,210	1,060	319	651	127	154
7.....	42	20	13	17	*12	283	*7,020	925	271	568	97	144
8.....	41	*26	14	17	11	265	*5,080	800	250	750	104	137
9.....	37	28	14	18	12	207	3,730	750	225	950	*154	150
10.....	37	17	13	20	10	183	2,890	825	195	*900	150	245
11.....	*32	19	16	18	13	147	2,630	722	183	875	137	265
12.....	30	21	*18	18	13	108	2,820	651	172	825	121	387
13.....	30	22	18	19	13	94	2,060	558	*154	750	430	825
14.....	28	24	18	18	13	84	2,030	478	154	651	541	624
15.....	24	28	18	19	13	75	2,330	444	147	568	491	491
16.....	26	34	18	19	12	72	1,910	409	179	491	451	388
17.....	24	30	17	*20	11	72	1,610	*381	164	416	367	319
18.....	24	28	16	21	12	68	1,390	360	175	353	289	*283
19.....	24	28	17	20	14	56	1,290	332	187	295	405	240
20.....	22	17	17	21	17	52	1,160	325	172	289	875	215
21.....	22	18	17	17	19	51	1,440	295	158	313	825	195
22.....	21	20	17	17	19	51	1,730	283	150	295	541	187
23.....	22	18	21	21	19	54	1,390	260	144	271	388	187
24.....	24	13	20	19	21	*49	1,260	240	130	240	295	183
25.....	24	12	20	16	175	48	1,390	230	163	207	289	175
26.....	22	13	19	16	2,000	52	*1,360	230	2,460	187	339	175
27.....	24	13	19	16	*1,970	70	1,190	207	3,030	175	319	168
28.....	21	13	18	15	1,220	382	1,190	183	3,520	158	319	150
29.....	20	13	17	14	.....	1,640	3,180	179	2,270	140	289	150
30.....	24	13	17	13	.....	1,610	1,970	172	1,610	140	260	150
31.....	22	.....	16	13	.....	1,670	.....	175	.....	130	230	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 21-23, 26-28, 1950; Jan. 5, Feb. 25, 26, 1951.

Lime Creek at Mason City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	140	158	111	60	51	536	2,570	240	158	158	60	147
2	134	121	147	64	52	437	2,150	220	144	168	57	127
3	154	89	191	64	52	332	1,730	211	*130	140	56	108
4	183	72	203	62	54	230	1,440	195	130	130	57	97
5	211	140	195	62	57	207	1,220	183	154	134	54	92
6	235	121	191	60	56	191	1,040	172	140	124	54	77
7	230	111	187	49	59	168	950	195	121	318	52	68
8	207	114	172	60	60	154	850	367	103	465	59	68
9	195	124	164	62	62	147	825	402	94	*360	86	66
10	187	137	118	60	72	179	800	402	89	295	75	*57
11	175	150	108	59	108	510	800	374	81	240	72	52
12	164	187	70	60	255	612	800	353	81	191	70	51
13	150	215	75	59	580	510	800	319	86	164	*75	46
14	144	*225	*111	66	673	416	900	283	451	172	68	46
15	137	215	94	66	602	346	1,120	250	722	187	59	45
16	130	207	75	70	585	313	925	215	558	172	54	43
17	130	175	70	*68	491	478	800	203	353	158	52	45
18	127	114	66	72	400	1,730	722	183	240	137	49	62
19	130	137	66	73	265	*1,010	662	172	191	121	46	32
20	127	154	66	72	195	1,730	607	164	175	121	57	36
21	211	172	70	68	*207	1,670	580	161	172	118	51	43
22	472	134	62	75	195	1,080	585	161	168	103	46	46
23	360	100	59	62	183	629	541	199	158	89	46	45
24	*283	86	57	54	168	552	484	240	147	79	43	39
25	250	118	57	57	158	563	437	215	. 154	73	43	37
26	225	118	60	56	158	580	395	191	158	68	45	35
27	199	105	60	54	183	563	346	183	211	60	45	34
28	195	114	62	52	484	612	301	207	230	60	48	32
29	191	118	68	48	629	1,790	271	203	195	59	73	32
30	183	121	68	46	.....	3,730	*250	195	164	60	103	32
31	168	.....	72	48	.....	3,100	.....	199	.....	62	130	.....
1952-53												
1	30	32	16	24	25	43	*235	629	147	92	161	57
2	30	32	17	27	24	46	230	668	147	81	313	52
3	32	32	22	27	26	43	307	602	144	73	1,240	51
4	30	32	24	26	28	42	360	546	144	68	1,500	51
5	32	32	28	25	28	42	325	484	134	72	1,220	49
6	32	32	30	23	28	38	307	430	124	77	995	45
7	32	32	28	25	28	35	277	381	127	72	775	43
8	32	32	30	25	28	35	255	332	430	73	612	42
9	34	28	37	27	28	42	260	283	563	68	530	43
10	32	26	35	29	34	81	277	255	416	62	472	42
11	34	28	30	27	34	283	265	260	307	59	416	42
12	32	32	26	25	32	478	250	250	250	56	367	39
13	32	32	28	30	30	504	225	220	215	68	307	39
14	34	34	30	28	29	472	203	215	191	124	250	41
15	*32	34	28	30	27	517	220	211	168	230	211	39
16	32	32	30	28	26	430	255	191	154	168	187	38
17	32	35	*28	25	25	472	245	175	134	134	172	35
18	32	*37	26	26	24	662	240	172	118	111	154	37
19	32	35	26	27	31	590	203	164	108	92	*140	34
20	32	34	26	27	30	524	183	158	92	97	124	38
21	32	35	26	*28	28	437	175	172	79	225	114	37
22	34	35	28	30	24	465	168	183	79	*211	103	*30
23	35	32	30	30	28	444	154	211	75	172	94	28
24	32	32	26	28	*30	400	154	211	*75	124	89	26
25	32	30	25	30	30	367	301	220	103	103	84	30
26	32	17	24	28	35	325	491	220	92	105	77	30
27	32	14	23	30	42	295	465	*211	103	134	70	30
28	32	12	22	28	43	265	430	207	124	108	62	30
29	30	11	22	27	.....	240	*402	*199	111	255	59	30
30	32	12	26	26	.....	235	437	183	105	283	59	28
31	32	.....	30	26	.....	245	.....	161	.....	191	62	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 25-29, Dec. 11, 12, 24-30, 1952; Jan. 2-20, Jan. 29 to Feb. 1, Feb. 7, 14-19, 1953.

Lime Creek at Mason City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	30	26	35	24	10	54	56	437	289	750	168	225
2.....	30	28	*42	22	12	49	54	546	255	656	150	199
3.....	26	*28	56	24	*12	*24	38	750	*277	875	*134	175
4.....	22	30	79	22	14	32	37	568	301	850	118	164
5.....	26	28	46	*24	19	34	57	451	271	722	108	154
6.....	24	28	60	21	17	38	57	*367	230	563	100	140
7.....	26	28	57	22	17	42	*73	307	199	465	97	134
8.....	*28	26	68	22	21	43	72	255	164	*388	100	124
9.....	28	28	30	17	26	48	68	215	140	332	97	*127
10.....	28	30	46	13	24	48	66	199	130	307	86	121
11.....	28	30	54	14	22	51	62	179	121	271	81	111
12.....	30	30	42	14	20	24	56	161	124	240	75	111
13.....	30	30	46	13	18	28	56	144	111	211	73	114
14.....	30	32	34	14	20	35	56	134	100	195	84	111
15.....	28	30	32	13	28	42	72	127	103	179	64	111
16.....	30	32	28	11	28	49	86	114	215	168	70	118
17.....	28	32	25	9.0	32	108	89	105	172	161	66	144
18.....	28	32	23	9.9	35	185	92	103	*2,070	158	258	144
19.....	30	42	25	11	41	207	84	100	3,810	150	220	140
20.....	30	62	28	11	62	158	73	97	4,330	147	140	114
21.....	26	64	37	9.6	86	111	108	92	6,280	161	111	111
22.....	28	57	30	8.7	70	94	127	84	4,350	154	287	108
23.....	26	52	20	7.7	68	79	121	89	2,860	147	1,910	103
24.....	24	51	22	7.9	73	73	111	111	2,350	134	1,240	103
25.....	26	43	24	8.4	72	75	134	130	1,940	124	850	94
26.....	28	24	26	9.6	60	68	183	150	1,580	114	950	86
27.....	26	32	28	8.9	57	70	187	158	1,340	108	695	81
28.....	26	38	26	8.0	52	70	164	230	1,160	137	558	86
29.....	28	35	28	7.6	.....	62	161	451	1,030	172	423	105
30.....	28	30	24	8.4	.....	57	199	430	889	178	318	140
31.....	28	.....	24	8.9	.....	*56	.....	339	.....	179	260	.....
1954-55												
1.....	144	101	*84	67	30	51	319	199	198	172	60	28
2.....	101	144	121	70	*34	97	271	179	1,470	760	57	28
3.....	265	*158	94	72	32	215	245	161	1,800	722	*54	26
4.....	332	164	97	72	38	451	250	*147	2,090	552	51	24
5.....	260	168	100	*73	35	265	277	130	1,610	1,040	49	24
6.....	*230	158	70	66	35	170	*265	118	1,440	1,290	48	37
7.....	203	161	78	64	35	134	245	111	1,290	1,060	45	32
8.....	220	154	85	68	37	124	230	100	1,120	*875	43	11
9.....	250	150	84	66	37	380	215	114	*950	695	42	17
10.....	307	147	79	66	34	*624	199	127	800	629	42	21
11.....	472	144	89	66	30	634	195	114	656	530	39	21
12.....	437	137	84	62	28	662	191	103	563	465	39	21
13.....	353	137	84	54	26	722	195	92	484	388	38	26
14.....	402	130	89	50	28	634	211	86	395	313	35	28
15.....	465	127	92	57	28	596	203	77	313	271	35	24
16.....	430	134	86	52	30	437	191	75	265	230	34	24
17.....	367	134	89	51	32	307	172	70	220	203	32	21
18.....	307	127	84	49	42	260	158	68	187	187	32	21
19.....	271	121	81	48	66	245	150	68	179	168	30	21
20.....	250	118	86	45	245	190	147	62	172	158	30	21
21.....	235	118	92	46	100	125	134	57	158	147	28	28
22.....	215	121	89	45	82	75	121	54	144	127	28	26
23.....	203	121	94	39	73	130	118	57	130	114	26	28
24.....	195	111	92	42	60	124	277	59	118	103	30	41
25.....	187	100	94	43	51	118	673	57	111	114	43	21
26.....	195	118	94	43	48	118	580	62	103	105	42	18
27.....	215	130	92	37	45	128	465	77	94	89	43	30
28.....	220	121	73	34	45	168	367	77	86	79	42	32
29.....	215	84	67	32	.....	245	283	81	111	73	41	32
30.....	199	70	63	30	.....	332	230	77	172	68	30	28
31.....	191	.....	61	29	.....	374	.....	70	.....	64	*24	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30, Dec. 16-19, 23, 1953; Jan. 9-11, 16, 17, 28-30, Feb. 12-14, Mar. 5, Nov. 29, Dec. 6-8, 29-31, 1954; Jan. 1, Jan. 28 to Feb. 2, Feb. 21, 22, Mar. 19-27, 1955.

Lime Creek at Mason City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	29.0	20.4	16.5	17.8	203	325	2,588	693	637	531	307	250
1951-52.....	194	138	103	61.1	245	830	863	234	199	154	60.8	58.0
1952-53.....	32.1	29.1	26.7	27.2	29.5	294	277	284	169	122	355	38.5
1953-54.....	27.5	35.3	36.9	13.7	36.3	68.5	93.3	240	1,270	303	319	127
1954-55.....	271	133	80.0	53.0	50.2	205	253	94.5	581	380	39.1	25.3

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.054	0.038	0.031	0.033	0.379	0.607	4.84	1.30	1.19	0.993	0.574	0.467
1951-52.....	.363	.258	.193	.114	.458	1.55	1.61	.437	.372	.288	.114	.108
1952-53.....	.060	.054	.050	.051	.055	.550	.518	.531	.316	.228	.664	.072
1953-54.....	.051	.066	.069	.026	.068	.128	.174	.460	2.37	.566	.596	.237
1954-55.....	.507	.249	.161	.099	.094	.551	.473	.177	1.09	.710	.073	.047

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.06	0.04	0.04	0.04	0.40	0.70	5.40	1.49	1.33	1.14	0.66	0.52
1951-52.....	.42	.29	.22	.13	.49	1.79	1.80	.50	.41	.33	.13	.12
1952-53.....	.07	.06	.06	.06	.06	.63	.58	.61	.35	.26	.77	.08
1953-54.....	.06	.07	.08	.03	.07	.15	.19	.53	2.65	.65	.69	.26
1954-55.....	.58	.28	.19	.11	.10	.04	.53	.20	1.21	.82	.08	.05

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	124	3.16
1951....	Apr. 7, 1951..	12.44	7,560	9.6	466	0.871	11.82	497	12.61
1952....	Mar. 30, 1952.	8.70	4,360	32	261	.488	6.63	232	5.89
1953....	Aug. 3, 1953..	4.73	1,730	11	141	.264	3.59	142	3.61
1954....	June 21, 1954.	11.85	7,060	7.0	214	.400	5.43	247	6.27
1955....	June 3, 1955..	5.75	2,330	11	189	.353	4.79	.....	.....

Peak Discharge (base, 1,500 cfs)

1951: Feb. 26 (8 p.m.) about 3,000 cfs (8.75 ft.); Apr. 7 (7 a.m.) 7,560 cfs (12.44 ft.); Apr. 22 (1 a.m.) 1,910 cfs (5.10 ft.); Apr. 29 (7 a.m.) 3,880 cfs (8.11 ft.); May 2 (12:30 a.m.) 4,680 cfs (9.12 ft.); June 28 (3 a.m.) 4,600 cfs (9.05 ft.).

1952: Mar. 18 (6:30 p.m.) 2,450 cfs (5.97 ft.); Mar. 21 (12:30 a.m.) 2,090 cfs (5.42 ft.); Mar. 30 (2 a.m.) 4,360 cfs (8.70 ft.).

1953: Aug. 3 (10 p.m.) 1,730 cfs (4.73 ft.).

1954: June 18 (5 p.m.) 4,900 cfs (10.67 ft.); June 21 (5 a.m.) 7,060 cfs (11.85 ft.); Aug. 23 (12M) 2,210 cfs (5.65 ft.).

1955: June 3 (10:30 p.m.) 2,330 cfs (5.75 ft.).

Clear Lake at Clear Lake, Iowa

LOCATION.—Lat. 43°08′, long. 93°25′, in NE¼ sec. 14, T. 96 N., R. 22 W., at State Fish hatchery in town of Clear Lake.

RECORDS AVAILABLE.—May 1933 to September 1955. (No winter records).

GAGE.—Staff or Kinnison tape gage read once daily. Datum of gage is 1,222.24 feet above mean sea level, datum of 1929, and 4.5 feet below crest of spillway of dam at outlet. Prior to July 14, 1936, staff gage in wooden well at same site and datum. July 14, 1936, to April 20, 1944, staff gage at Clear Lake State Park at same datum. Apr. 21, 1944, to Nov. 7, 1951, staff gage three-quarters of a mile west of State Fish hatchery at same datum.

EXTREMES.—1933-55: Maximum gage height observed, 5.94 feet July 3, 1951; minimum observed, 1.44 feet Aug. 12, 1936.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	4.16							5.40	5.20	5.90	5.14	
2	4.16							5.57	5.30	5.90	5.14	
3	4.18							5.60	5.32	5.94	5.08	5.06
4	4.18							5.58	5.34	5.92	5.06	5.06
5	4.18							5.56	5.32	5.90	5.06	5.06
6	4.16							5.56	5.30	5.90	5.16	5.04
7	4.20							5.56	5.28	5.88	5.14	
8	4.20							5.54	5.26	5.90	5.12	
9	4.20							5.52	5.24	5.86	5.12	
10	4.20							5.50	5.22	5.78	5.10	
11	4.20							5.50	5.20	5.74	5.10	
12	4.18							5.48	5.20	5.74		
13	4.18							5.48	5.18	5.70		
14	4.16							5.48	5.16	5.68		
15	4.16							5.46	5.14	5.66		
16	4.16							5.44	5.12	5.64		
17	4.16							5.42	5.12	5.62		
18	4.16							5.40	5.16	5.62		
19	4.14							5.38	5.16	5.60		5.08
20	4.14							5.34	5.14	5.60		
21	4.14							5.34	5.12	5.64		
22	4.12							5.34	5.10	5.40		
23								5.32	5.10	5.40		
24								5.30	5.08	5.36		
25							5.38	5.28	5.08	5.34		
26							5.36	5.26	5.60	5.30		
27							5.38	5.18	5.78	5.28		
28							5.36	5.16	5.90	5.26		4.96
29							5.38	5.16	5.88	5.20		4.96
30							5.38	5.14	5.92	5.18		4.96
31								5.16		5.16		

Clear Lake at Clear Lake, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4.96	4.96						5.12		5.22	5.00	4.86
2	4.96	4.96						5.11		5.21	5.00	4.84
3	4.98	4.96						5.13		5.19	5.00	4.82
4	5.00	4.92						5.12	5.00	5.17	5.00	4.80
5	5.00	4.92						5.11		5.16	4.98	4.78
6	5.00	4.92						5.11		5.16	4.98	4.76
7	4.98	4.92						5.10		5.38	4.96	4.78
8	4.96							5.10	5.01	5.36	4.98	4.78
9	4.96							5.10	5.00	5.34	4.96	4.76
10	4.94							5.10	4.99	5.31	4.96	4.74
11	4.94							5.09	4.98	5.29	4.94	4.74
12	4.92							5.09	4.98	5.28	4.92	4.72
13	4.92							5.08	4.96	5.28	4.90	4.72
14	4.92							5.08	5.24	5.30	4.88	4.70
15	4.92							5.07	5.28	5.28	4.88	4.68
16	4.92							5.06	5.31	5.30	4.88	4.68
17	4.94							5.05	5.34	5.28	4.86	4.66
18	4.94							5.04	5.30	5.26	4.84	4.64
19	4.92							5.04	5.26	5.26	4.84	4.62
20	4.92							5.03	5.28	5.24	4.84	4.60
21	4.96							5.02	5.26	5.24	4.82	4.60
22	4.98							5.01	5.26	5.28	4.82	4.58
23	4.98							5.08	5.25	5.20	4.80	4.58
24	4.96							5.07	5.26	5.14	4.78	4.56
25	4.96							5.06	5.28	5.10	4.78	4.56
26	4.98							5.07	5.26	5.08	4.78	4.54
27	4.98							5.09	5.27	5.06	4.82	4.54
28	4.98							5.08	5.28	5.04	4.84	4.54
29	4.98							5.04	5.26	5.02	4.88	4.53
30	4.98						5.14	5.02	5.24	5.01	4.90	4.52
31	4.96							5.00		5.00	4.88	
1952-53												
1	4.50	4.12	4.12		4.26		4.14	4.84	4.74		4.75	4.49
2	4.50	4.12	4.12	4.18	4.26	4.30		4.84		4.64		4.42
3	4.48	4.10	4.12	4.18	4.24	4.30				4.62	4.92	4.40
4	4.46	4.09	4.14	4.18	4.24	4.30		4.84		4.60	4.90	4.39
5	4.42	4.07	4.15	4.18	4.24	4.30		4.85			4.88	4.38
6	4.38	4.06	4.16	4.18	4.24	4.30		4.85	4.76	4.64	4.86	
7	4.34	4.04	4.16	4.19	4.24	4.30		4.85			4.84	4.34
8	4.32	4.04	4.15	4.19				4.86	4.80	4.60	4.80	4.32
9	4.32	4.04	4.14	4.19	4.24	4.30		4.88	4.79	4.60		4.30
10	4.31	4.03	4.14	4.19	4.24	4.31			4.78	4.58	4.78	4.28
11	4.30	4.02	4.14	4.20	4.24	4.32		4.80	4.76	4.56	4.80	4.26
12	4.30	4.02	4.14	4.20	4.24	4.34		4.80	4.76		4.80	4.24
13	4.30	4.02	4.14	4.20	4.26	4.36			4.74	4.56	4.78	
14	4.30	4.01	4.14	4.20	4.26	4.38		4.80		4.54	4.76	
15	4.31	4.01	4.14		4.26	4.40		4.80	4.74	4.56	4.71	
16	4.26	4.01	4.13		4.26	4.42		4.78	4.74	4.55		
17	4.24	4.06			4.26	4.47		4.87	4.72	4.54	4.70	
18	4.24	4.05			4.26	4.44		4.88		4.54	4.70	
19	4.22	4.04		4.24	4.27	4.45		4.86			4.68	
20	4.22	4.02		4.24	4.27	4.46		4.80	4.68	4.54	4.68	
21	4.22	4.01		4.24	4.28	4.48		4.78	4.67	4.60	4.67	
22	4.20	4.00		4.24				4.78	4.64	4.58	4.66	
23	4.20	4.00	4.18	4.24	4.29	4.50		4.78		4.56		4.10
24	4.19	4.00	4.18	4.24	4.30	4.50			4.62	4.56	4.65	
25	4.18	4.00			4.30			4.80	4.70	4.56	4.63	
26	4.17		4.18	4.24	4.30			4.80	4.70		4.62	
27	4.17		4.18	4.24	4.30			4.78		4.56	4.60	
28	4.16	4.12	4.18	4.24	4.30			4.80		4.55	4.58	4.06
29	4.16	4.12	4.18	4.24			4.68	4.80	4.68	4.70	4.57	4.06
30	4.14		4.18	4.24				4.78	4.67	4.72		4.04
31	4.12		4.18	4.24						4.72	4.54	

Clear Lake at Clear Lake, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	4.04	.....	3.76	.....	.....	.....	3.88	4.08	3.95	5.16	4.97	.....
2	4.02	3.76	.....	3.80	.....	.....	3.80	4.08	3.95	5.15	4.95	.....
3	4.00	3.75	3.80	.....	3.80	3.89	3.80	4.08	4.00	5.25	4.92	5.26
4	.....	3.75	3.92	3.80	.....	.....	3.76	4.12	4.00	.....	4.90	5.25
5	3.92	3.72	3.92	3.80	.....	.....	3.56	4.10	4.02	.....	4.87	.....
6	3.90	3.73	.....	3.80	.....	.....	3.48	4.08	4.02	5.25	4.84	.....
7	3.90	3.72	3.90	3.80	.....	.....	3.86	4.07	4.00	5.26	4.83	5.17
8	3.90	.....	3.88	3.80	.....	.....	3.86	4.08	3.99	5.26	.....	5.16
9	3.88	3.72	3.86	3.80	.....	.....	3.86	4.04	3.96	5.24	4.81	.....
10	3.88	3.72	3.86	.....	.....	.....	3.84	4.02	4.00	5.25	4.77	.....
11	.....	.....	3.84	3.80	.....	.....	3.86	4.02	4.00	5.23	4.76	5.14
12	3.88	3.71	3.84	.....	.....	.....	3.86	4.01	3.97	5.21	4.74	5.13
13	3.88	3.71	.....	.....	.....	.....	3.86	4.01	3.99	5.21	4.72	5.12
14	3.88	.....	3.80	.....	.....	.....	3.84	4.01	3.98	5.18	4.74	5.12
15	3.88	.....	3.80	.....	.....	.....	3.86	4.00	3.90	5.15	.....	5.11
16	3.88	3.70	3.80	3.80	.....	.....	3.86	3.98	3.89	5.12	4.71	5.10
17	3.88	3.69	3.80	.....	.....	.....	3.90	3.96	3.87	5.13	4.70	5.10
18	.....	3.69	3.80	3.80	.....	.....	3.86	3.96	4.70	.....	4.79	5.09
19	3.88	3.76	3.82	.....	.....	.....	3.84	3.93	4.73	5.08	4.78	.....
20	3.87	3.80	.....	.....	.....	.....	3.80	3.03	4.70	5.05	4.77	5.07
21	3.86	3.80	3.80	.....	.....	.....	3.92	3.90	5.08	5.09	4.75	5.05
22	3.84	.....	3.80	.....	.....	.....	3.92	3.89	5.14	5.00	.....	5.02
23	3.84	3.78	3.85	.....	.....	.....	3.90	3.89	5.16	5.07	5.22	5.00
24	3.82	3.78	3.84	.....	.....	.....	3.90	3.98	5.15	5.04	5.22	5.00
25	.....	3.76	.....	.....	.....	.....	3.92	3.94	5.18	5.02	5.35	4.97
26	3.78	.....	.....	.....	.....	.....	3.94	3.94	5.18	5.02	.....	.....
27	3.78	3.76	.....	.....	.....	.....	3.96	3.97	5.19	5.01	.....	4.94
28	3.78	3.70	3.84	.....	.....	.....	3.96	4.01	5.21	5.02	.....	4.96
29	3.77	.....	3.84	.....	.....	.....	3.98	3.99	5.20	5.01	.....	4.97
30	3.77	3.76	3.82	.....	.....	.....	4.00	3.97	5.19	5.00	.....	4.98
31	.....	.....	3.82	.....	.....	3.90	.....	3.95	.....	4.99	.....	.....
1954-55												
1	4.98	4.08	.....	.....	.....	.....	.....	.....	4.76	4.55	4.63	4.04
2	4.98	4.98	.....	.....	.....	.....	.....	.....	4.79	4.62	4.62	4.03
3	.....	4.98	.....	.....	.....	.....	.....	.....	.....	.....	4.60	4.00
4	4.98	4.96	.....	.....	.....	.....	.....	3.25	4.81	.....	4.57	.....
5	4.99	4.96	.....	.....	.....	.....	3.38	.....	.....	.....	4.55	.....
6	4.99	4.94	.....	.....	.....	.....	.....	.....	.....	4.88	4.53	3.94
7	5.00	.....	.....	.....	.....	.....	.....	.....	.....	4.88	.....	3.91
8	5.00	4.94	.....	.....	.....	.....	.....	.....	4.76	4.87	4.46	3.90
9	5.00	4.92	.....	.....	.....	.....	.....	.....	4.75	4.85	4.43	3.88
10	.....	4.92	.....	.....	.....	.....	.....	.....	4.71	.....	4.40	3.85
11	5.05	4.92	.....	.....	.....	.....	.....	.....	4.69	4.85	4.38	.....
12	5.05	4.90	.....	.....	.....	.....	.....	.....	.....	4.83	4.36	3.80
13	5.05	4.90	.....	.....	.....	.....	.....	.....	4.63	4.82	4.34	3.89
14	5.05	.....	.....	.....	.....	.....	.....	.....	4.65	4.80	.....	3.84
15	.....	4.86	.....	.....	.....	.....	.....	.....	4.64	4.78	4.31	.....
16	.....	4.84	.....	.....	.....	.....	.....	.....	4.63	4.76	4.28	.....
17	.....	4.84	.....	.....	.....	.....	.....	.....	4.63	.....	4.28	3.84
18	.....	4.82	.....	.....	.....	.....	.....	.....	4.62	4.77	4.26	.....
19	.....	4.82	.....	.....	.....	.....	.....	.....	.....	4.77	4.26	.....
20	.....	4.82	.....	.....	.....	.....	.....	.....	.....	4.75	4.25	3.79
21	.....	.....	.....	.....	.....	.....	.....	.....	4.58	4.77	.....	.....
22	.....	4.81	.....	.....	.....	.....	.....	.....	4.57	.....	4.18	3.81
23	.....	4.81	.....	.....	.....	.....	.....	.....	4.55	.....	4.15	3.80
24	.....	4.81	.....	.....	.....	.....	.....	.....	4.53	.....	4.16	3.78
25	.....	.....	.....	.....	.....	.....	.....	.....	4.50	4.70	4.16	.....
26	.....	4.80	.....	.....	.....	.....	.....	.....	.....	.....	4.16	3.77
27	.....	.....	.....	.....	.....	.....	.....	.....	4.46	.....	4.16	3.82
28	.....	.....	.....	.....	.....	.....	.....	.....	4.44	4.71	.....	3.79
29	.....	4.79	.....	.....	.....	.....	.....	.....	4.51	4.68	4.12	3.81
30	.....	4.79	.....	.....	.....	.....	.....	.....	4.53	4.67	4.11	3.77
31	.....	.....	.....	.....	.....	.....	.....	4.79	.....	.....	4.06	.....

Shell Rock River at Marble Rock, Iowa

LOCATION.—Lat 42° 58', long 92° 52', in SE¼ sec. 8, T. 94 N., R. 17 W., on left wingwall of dam at Marble Rock, 0.5 mile upstream from unnamed creek entering from right, and 10 miles downstream from Lime Creek.

DRAINAGE AREA.—1,330 square miles, approximately.

RECORDS AVAILABLE.—July 1933 to September 1953 (discontinued). Published as "at Greene" July 1933 to September 1942.

GAGE.—Staff gage read once daily, more often at high stages. Datum of gage is 961.17 feet above mean sea level, datum of 1929. Prior to Oct. 1, 1942, staff gage at Greene, 6 miles downstream at different datum. Oct. 1, 1942, to Mar. 12, 1945, water-stage recorder, Mar. 13, 1945, to June 5, 1946, staff gage, and June 6, 1946, to June 19, 1950, water-stage recorder at same site and datum.

AVERAGE DISCHARGE.—20 years, 611 cfs.

EXTREMES.—1933-53: Maximum discharge, 22,700 cfs Apr. 7, 1951 (gage height, 9.35 feet); minimum daily discharge, 6 cfs Jan. 20, 23, 30, 31, 1935.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	153	96	57	76	50	1,590	3,960	4,570	2,830	2,770	360	632
2	174	91	61	80	45	a1,450	4,440	8,980	6,250	2,360	355	560
3	208	91	a70	80	46	684	4,060	4,970	2,510	2,160	350	532
4	214	91	a59	83	52	664	7,610	4,050	1,760	2,160	340	500
5	208	96	a55	83	a56	627	12,600	3,320	1,440	1,860	430	475
6	208	96	a53	87	56	563	14,300	2,880	1,240	1,670	435	455
7	220	*96	a53	91	56	528	*19,300	2,660	1,040	1,540	a800	445
8	238	91	a58	87	*48	a510	*12,600	2,610	1,000	2,720	*1,280	425
9	202	91	a64	a85	45	478	*9,720	2,560	860	2,660	740	400
10	*185	87	64	83	45	453	*7,490	2,510	782	2,160	554	538
11	174	87	61	83	50	437	*6,800	2,160	710	2,060	495	680
12	158	83	*72	80	53	a410	6,970	1,960	*644	*1,910	440	644
13	148	83	a72	76	57	a380	5,700	1,580	596	1,860	490	1,670
14	142	87	68	80	a60	a350	5,700	a1,400	a550	1,490	1,490	1,440
15	137	91	76	a84	61	332	5,700	a*1,270	544	1,400	1,200	1,120
16	132	96	80	*83	a57	310	4,830	a1,150	516	1,240	1,040	1,040
17	128	114	83	80	53	317	a4,100	a1,100	544	1,120	916	930
18	123	109	80	83	57	317	4,440	a1,000	500	a1,000	752	*812
19	128	96	80	82	53	a300	3,440	a950	510	874	680	728
20	123	88	76	81	53	a280	a3,400	a900	a550	806	1,540	662
21	119	80	76	79	57	a250	4,180	a870	a620	1,080	1,670	584
22	114	74	80	77	a59	*220	a4,500	a840	572	644	1,320	572
23	109	a80	80	76	61	a215	a3,900	a830	578	752	895	549
24	109	a72	72	78	72	215	a3,500	a810	549	692	752	a520
25	105	a62	76	79	96	214	*3,920	*800	638	a640	668	516
26	105	58	80	70	7,150	220	3,920	a770	*5,120	660	1,060	505
27	100	58	80	78	6,300	232	3,560	764	6,160	610	1,160	470
28	96	61	83	71	3,230	590	*3,210	722	8,220	455	1,050	455
29	96	61	80	a64	.....	4,340	10,700	662	5,250	415	930	435
30	96	57	80	58	.....	4,930	5,400	590	3,440	a360	830	420
31	91	.....	76	54	.....	4,340	.....	614	.....	375	722	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 20-22, 26, 27, 1950; Jan. 19-28, Jan. 30 to Feb. 4, Feb. 6-10, Mar. 22, 24, 1951.

Shell Rock River at Marble Rock, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	410	430	415	264	a225	1,100	5,750	742	494	627	209	367
2.....	a390	365	405	260	a230	a950	4,930	703	430	645	202	352
3.....	395	a320	455	256	a235	844	4,440	684	*398	627	202	329
4.....	445	292	572	238	a240	466	3,770	609	367	572	196	285
5.....	500	335	560	238	a250	437	3,320	563	478	554	189	264
6.....	572	325	544	233	a260	494	3,060	537	453	520	183	235
7.....	560	330	532	228	a270	414	2,800	512	406	1,040	176	202
8.....	578	375	516	238	a280	406	2,560	939	a360	*1,750	183	196
9.....	549	385	490	233	a290	390	2,480	1,160	337	1,290	196	183
10.....	532	440	410	233	a300	430	2,320	1,120	300	994	256	*183
11.....	500	420	350	228	a320	908	2,320	1,060	278	773	242	176
12.....	480	490	261	a225	a150	1,350	2,320	1,030	256	645	*235	160
13.....	a460	527	224	228	a850	1,290	a2,330	950	285	590	216	161
14.....	425	614	a216	238	a1,300	972	2,400	876	897	627	229	a155
15.....	415	*626	a230	246	a1,300	939	3,410	762	1,680	609	202	150
16.....	400	644	245	*246	a1,200	939	2,480	723	1,450	590	202	a145
17.....	395	566	245	274	a920	972	2,320	655	1,000	528	176	140
18.....	390	425	a238	238	a700	*2,720	2,100	581	723	469	161	145
19.....	400	415	238	340	a500	4,150	a1,800	554	554	437	156	171
20.....	420	435	233	264	a400	3,590	1,680	520	478	664	150	140
21.....	480	465	238	a240	330	2,720	1,600	494	486	486	171	a142
22.....	a1,500	480	238	a230	330	1,650	1,640	461	478	398	171	145
23.....	*1,240	a420	242	228	330	1,080	1,560	609	469	352	166	135
24.....	874	385	238	233	340	1,020	1,420	a795	445	300	145	a133
25.....	782	425	a225	238	350	1,290	1,290	694	406	278	140	130
26.....	716	445	224	233	360	1,550	1,140	512	461	249	156	130
27.....	620	415	228	233	414	1,450	1,020	581	520	235	161	125
28.....	596	435	233	228	1,080	1,360	961	572	a800	229	145	125
29.....	572	455	233	220	1,350	2,720	*886	609	703	222	183	122
30.....	544	435	a245	a218	.....	7,270	813	563	645	216	256	122
31.....	495	.....	269	a218	.....	6,830	.....	528	.....	216	375	.....
1952-53												
1.....	125	118	a48	a90	a85	a185	645	1,720	546	337	723	202
2.....	118	118	a57	a93	a82	a190	645	1,650	503	285	1,400	189
3.....	108	114	a65	94	a88	166	604	1,550	486	264	3,680	176
4.....	111	114	a77	a90	a93	a165	855	1,410	469	242	4,340	171
5.....	111	111	a88	a89	a97	160	886	1,280	445	229	3,500	166
6.....	111	114	97	a86	a98	a150	803	1,130	414	285	3,060	161
7.....	114	111	a95	a88	97	115	723	1,040	390	250	2,400	156
8.....	114	111	a110	a88	a96	150	684	939	600	242	1,960	150
9.....	118	111	a130	a93	a96	166	713	813	1,070	216	1,670	150
10.....	118	111	a120	97	a110	329	824	732	918	202	1,480	145
11.....	122	114	a115	a95	a110	1,040	793	645	762	183	1,320	135
12.....	122	111	a105	a95	a105	1,300	803	713	645	171	1,230	130
13.....	118	111	97	a105	a100	1,320	645	703	590	196	1,080	135
14.....	*118	114	a110	a100	97	1,140	590	664	512	344	901	130
15.....	114	114	a105	a105	*93	1,340	636	618	461	655	805	135
16.....	111	114	a100	a95	a90	930	674	581	437	618	703	130
17.....	114	114	*94	90	a87	1,080	793	537	406	486	723	125
18.....	111	*111	a92	a89	a85	1,380	732	512	a365	406	*645	130
19.....	a112	114	a92	a88	a110	1,550	655	494	337	352	590	125
20.....	114	111	97	*90	130	1,290	590	469	292	300	528	122
21.....	114	111	a98	a89	110	1,110	554	528	271	*437	486	125
22.....	118	114	a105	a91	a90	1,100	503	609	264	1,110	453	*130
23.....	118	a110	a105	a95	104	1,060	461	645	*242	908	a410	125
24.....	114	a110	a105	100	*118	1,000	437	655	229	a700	375	a120
25.....	114	a100	a95	a105	a145	961	684	684	398	590	344	a125
26.....	114	a85	a90	a100	160	844	1,280	*732	344	537	322	125
27.....	118	a65	90	a105	170	803	1,230	783	337	572	300	122
28.....	118	a54	a84	a98	180	752	*1,100	762	422	512	264	122
29.....	114	a45	a87	a94	.....	684	1,040	723	406	664	229	118
30.....	118	a40	a93	a92	.....	664	1,120	674	382	994	235	118
31.....	122	.....	a96	87	.....	*655	.....	590	.....	752	222	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 16, 17, 1951; Feb. 21-25, 1952; Jan. 31, Feb. 20, 21, 26-28, 1953.

Shell Rock River at Marble Rock, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	147	84.1	71.1	78.7	649	863	6,465	1,963	1,884	1,375	859	657
1951-52.....	569	437	322	241	531	1,698	2,364	700	568	572	195	182
1952-53.....	116	103	94.9	94.1	108	768	759	825	465	453	1,180	140

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.111	0.063	0.053	0.059	0.488	0.649	4.86	1.48	1.42	1.03	0.646	0.494
1951-52.....	.428	.329	.242	.181	.399	1.28	1.78	.526	.427	.430	.147	.137
1952-53.....	.087	.077	.071	.071	.081	.577	.571	.620	.350	.341	.887	.105

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-52.....	0.13	0.07	0.06	0.07	0.51	0.75	5.42	1.70	1.58	1.19	0.75	0.55
1951-52.....	.49	.37	.28	.21	.43	1.47	1.98	.61	.48	.50	.17	.15
1952-53.....	.10	.09	.08	.08	.08	.67	.64	.72	.39	.39	1.02	.12

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	305	4.05
1951....	Apr. 7, 1951..	9.35	22,700	45	1,252	0.941	12.78	1,338	13.60
1952....	Mar. 30, 1952.	5.51	8,190	122	697	.524	7.14	612	6.27
1953....	Aug. 4, 1953..	3.83	4,630	40	429	.323	4.38	.....	.....

Peak Discharge (base, 3,000 cfs)

1951: Feb. 26 (9 a.m.) 9,410 cfs (6.05 ft.); Mar. 30 (1:30 p.m.) 5,130 cfs (4.12 ft.); Apr. 7 (12 M) 22,700 cfs (9.35 ft.); Apr. 29 (7 a.m.) 11,900 cfs (4.04 ft.); June 2 (2 a.m.) 11,500 cfs (3.47 ft.); June 28 (11 a.m.) 8,980 cfs (2.21 ft.); July 8 (time unknown) 3,680 cfs (—1.23 ft.).

1952: Mar. 19 (3 a.m.) 5,330 cfs (4.18 ft.); Mar. 30 (10 a.m.) 8,190 cfs (5.51 ft.); Apr. 15 (10 a.m.) 3,410 cfs (3.19 ft.).

1953: Aug. 4 (4 a.m.) 4,630 cfs (3.83 ft.).

Shell Rock River at Shell Rock, Iowa

LOCATION.—Lat. 42°42'35", long. 92°35'05", in NW¼NE¼ sec. 11, T. 91 N., R. 15 W., on right bank 400 feet upstream from bridge on State Highway 3 in Shell Rock and 11 miles upstream from mouth.

DRAINAGE AREA.—1,770 square miles, approximately.

RECORDS AVAILABLE.—June 1953 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 885.34 feet above mean sea level, datum of 1929.

EXTREMES.—1953-55: Maximum discharge, 21,300 cfs June 22, 1954 (gage height, 14.00 feet); minimum daily, 85 cfs Sept. 12, 19, 1955.

Flood of 1856 reached a stage of 17.7 feet at bridge 400 feet downstream, from information furnished by Corps of Engineers (discharge not determined).

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation at low stages from powerplant at Greene. Records of water temperatures are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet Per Second, for Period June to September 1953

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1953									
1	.....	465	850	272	16	630	645	958	191
2	.....	425	775	288	17	358	635	902	199
3	.....	385	*2,120	284	18	490	555	*800	187
4	.....	320	*4,270	284	19	465	460	750	191
5	.....	336	4,360	268	20	390	430	675	199
6	.....	358	3,600	199	21	362	*371	625	173
7	.....	354	2,960	139	22	358	620	570	*191
8	.....	341	2,410	252	23	*420	1,040	515	203
9	.....	320	2,060	252	24	308	930	500	184
10	.....	332	1,800	173	25	340	775	455	206
11	875	292	1,560	206	26	455	655	300	203
12	850	276	1,410	203	27	390	595	358	184
13	750	264	1,290	210	28	415	630	362	218
14	660	332	1,180	110	29	505	675	328	210
15	635	475	1,070	210	30	495	958	316	195
					31	.....	985	210	.....

* Discharge measurement made on this day.

Shell Rock River at Shell Rock, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	184	199	*214	184	a108	169	191	725	1,020	2,340	825	1,070
2.....	169	126	222	123	a*108	*170	187	1,350	*908	2,130	640	930
3.....	191	*206	233	105	a109	160	203	1,870	881	2,000	*545	825
4.....	191	218	225	110	a115	140	195	1,870	886	2,270	485	750
5.....	120	159	288	*176	a120	172	184	1,620	919	2,130	430	675
6.....	206	173	316	136	a128	156	203	1,380	850	1,870	385	660
7.....	*184	173	312	159	a138	195	200	1,180	760	*1,680	362	600
8.....	180	199	252	159	a150	176	229	1,040	670	1,440	349	*550
9.....	180	126	203	150	a150	195	252	930	605	1,290	341	535
10.....	176	187	250	135	a146	195	237	825	510	1,200	349	530
11.....	195	191	215	120	a142	184	260	750	510	1,100	320	500
12.....	132	132	160	140	a136	187	237	675	460	1,010	308	480
13.....	233	214	200	125	a155	132	176	640	700	902	308	475
14.....	199	187	220	116	a180	117	206	590	535	825	241	480
15.....	187	206	170	116	a200	103	225	420	470	750	316	480
16.....	187	126	155	130	a205	206	248	510	720	675	304	470
17.....	187	214	140	110	a215	166	233	375	1,100	635	218	485
18.....	203	195	123	95	a220	187	280	371	3,680	620	336	525
19.....	145	206	184	101	a225	304	300	380	*9,830	585	380	545
20.....	222	210	187	110	a250	490	260	358	10,200	565	570	520
21.....	195	199	184	108	a290	324	298	349	*11,400	425	425	470
22.....	210	284	170	a106	244	312	475	341	*19,100	565	362	465
23.....	195	237	160	a100	304	206	385	341	12,100	550	1,390	332
24.....	199	252	180	a100	260	244	415	280	7,120	530	5,320	332
25.....	187	244	180	a103	272	252	515	324	5,300	495	3,440	415
26.....	132	222	126	a110	237	244	465	358	4,500	460	2,720	375
27.....	214	159	206	a108	233	214	560	460	3,810	425	2,720	349
28.....	195	191	129	a106	268	252	515	625	3,300	425	2,130	362
29.....	191	210	155	a105	.....	237	465	958	2,900	405	1,740	371
30.....	187	126	170	a105	.....	*252	560	1,120	2,630	500	1,440	510
31.....	191	.....	156	a110	.....	241	.....	1,120	.....	775	1,230	.....
1954-55												
1.....	856	670	291	353	*199	303	892	750	301	319	181	156
2.....	743	630	349	319	195	405	826	675	322	567	*266	154
3.....	760	*560	377	330	190	540	764	*630	1,000	1,160	231	146
4.....	920	550	383	*323	188	780	771	600	2,220	1,260	225	141
5.....	*1,000	595	340	329	190	980	*810	535	2,560	1,440	213	94
6.....	850	575	305	285	196	720	857	485	2,200	1,870	220	90
7.....	706	550	290	292	196	560	824	450	2,000	*2,000	178	157
8.....	729	545	338	312	195	*481	777	440	*1,800	1,740	126	138
9.....	754	530	378	310	194	576	741	420	1,560	1,560	287	133
10.....	708	520	338	293	199	664	692	435	1,380	1,440	184	117
11.....	1,010	510	342	299	190	1,230	690	445	1,260	1,260	102	124
12.....	1,230	505	335	287	186	1,470	656	425	1,120	1,100	187	85
13.....	1,180	500	325	257	184	1,500	670	403	1,010	956	169	115
14.....	1,150	479	352	245	184	1,020	702	385	902	825	174	121
15.....	1,230	477	386	240	176	1,560	761	358	800	725	111	106
16.....	1,290	467	360	238	184	1,500	728	345	700	650	177	106
17.....	1,180	503	384	234	187	1,280	652	257	620	585	173	107
18.....	1,070	473	352	230	203	1,110	617	259	550	545	167	118
19.....	958	465	336	224	600	1,020	571	322	500	500	171	85
20.....	875	446	345	212	1,250	967	538	294	465	465	163	109
21.....	825	428	389	210	1,480	918	517	266	445	430	188	122
22.....	775	440	379	210	880	590	491	300	425	358	112	119
23.....	750	434	357	208	630	460	468	242	380	336	150	126
24.....	700	417	350	204	460	300	517	317	354	349	163	130
25.....	675	400	350	202	390	400	902	344	211	358	152	129
26.....	675	407	335	200	365	450	1,500	196	345	375	145	91
27.....	675	430	315	195	321	514	1,350	268	288	366	142	159
28.....	725	417	295	185	304	589	1,150	206	318	349	149	134
29.....	750	534	265	178	.....	632	958	239	264	324	115	135
30.....	725	*305	250	188	.....	774	850	317	248	275	*186	129
31.....	700	.....	300	195	.....	889	.....	270	.....	261	164	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 10, 11, 13-17, 22, 23, 29, 30, 1953; Jan. 9-13, 16, 17, 20, 21, Mar. 3-5, 14, 15, Dec. 5-7, 12, 13, 24-31, 1954; Jan. 14-31, Feb. 3-7, 9-13, 20-22, 24, 25, Mar. 3-6, 22-26, 1955.

Shell Rock River at Shell Rock, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	524	1,299	209
1953-54.....	186	192	197	124	190	215	307	779	3,612	1,018	998	536
1954-55.....	880	492	339	251	360	830	775	386	915	799	173	123

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.290	0.734	0.116
1953-54.....	0.105	0.108	0.111	0.070	0.107	0.121	0.173	0.440	2.04	.575	.564	.303
1954-55.....	.497	.278	.192	.142	.203	.469	.438	.218	.517	.451	.098	.069

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.34	0.85	0.13
1953-54.....	0.12	0.12	0.13	0.08	0.11	0.14	0.19	0.51	2.28	.66	.65	.34
1954-55.....	.57	.32	.22	.16	.21	.54	.49	.25	.58	.52	.11	.08

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1953 (1).	Aug. 4, 1953..	8.79	4,720	.....	.....	.....	.....	.....	.....
1954....	June 22, 1954.	14.00	21,300	95	695	0.393	5.33	791	6.06
1955....	June 5, 1955..	6.27	2,640	85	528	.298	4.04	.....	.....

(1) Period June 11 to Sept. 30, 1953.

Peak Discharge (base, 3,000 cfs)

June to Dec. 1953: Aug. 4 (10 p.m.) 4,720 cfs (8.79 ft.).

1954: June 22 (9:30 a.m.) 21,300 cfs (14.00 ft.); Aug. 24 (12:30 p.m.) 5,840 cfs (9.56 ft.).

1955: No peak above base.

West Fork Shell Rock River at Finchford, Iowa

LOCATION.—Lat. 42°37'40", long. 92°32'45", in SE¼ sec. 6, T. 90 N., R. 14 W., on left bank 15 feet downstream from highway bridge in Finchford and 3.2 (revised) miles upstream from mouth.

DRAINAGE AREA.—860 square miles, approximately.

RECORDS AVAILABLE.—October 1945 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 867.06 feet above mean sea level, datum of 1929. Prior to June 10, 1955, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—10 years, 423 cfs.

EXTREMES.—1945-55: Maximum discharge observed, 31,900 cfs June 27, 1951 (gage height, 17.28 feet); minimum daily, 15 cfs Sept. 9-12, 1955. Flood of March 1929 reached a stage of about 14 feet from information by local resident.

REMARKS.—Records good except those for periods of ice effect or doubtful gage-height record, which are poor.

COOPERATION.—Several discharge measurements furnished by the Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Dept.
1950-51												
1	146	100	58	35	30	5,700	5,700	5,000	462	3,540	702	950
2	162	100	57	35	29	3,410	4,250	4,410	1,210	2,730	628	800
3	159	96	55	35	28	2,000	3,410	4,750	2,290	2,290	590	728
4	164	94	54	35	27	1,050	3,670	4,100	2,450	2,540	552	665
5	177	90	52	35	26	882	4,570	3,060	2,370	2,290	515	590
6	179	87	51	35	25	1,290	*7,050	2,210	1,930	2,210	528	565
7	179	*85	49	35	24	1,100	6,800	1,750	1,410	1,810	602	528
8	167	85	48	35	23	900	8,200	1,450	1,210	1,810	*800	502
9	234	86	47	35	*23	700	6,300	1,330	1,130	3,200	800	478
10	*238	86	45	35	22	550	4,250	1,210	1,090	3,170	740	628
11	234	86	44	35	22	450	3,290	1,130	918	3,950	678	715
12	215	86	43	35	22	370	2,950	1,010	*778	3,540	602	728
13	201	86	*43	36	21	310	2,730	990	672	*2,630	578	715
14	189	85	42	36	21	270	3,060	830	580	2,000	565	800
15	179	84	41	36	21	250	2,950	*760	522	1,580	860	800
16	170	80	41	*37	21	230	2,450	690	498	1,290	1,100	715
17	166	84	39	38	21	250	1,930	690	485	1,140	1,490	*628
18	158	86	39	39	21	270	1,630	935	462	1,010	1,290	565
19	154	81	39	40	21	290	1,410	812	462	890	950	528
20	146	77	38	40	21	250	1,250	1,250	450	1,010	800	490
21	142	75	38	41	21	*230	1,170	760	*428	1,170	740	452
22	136	73	38	42	22	200	1,330	708	406	1,290	728	440
23	134	71	37	*42	25	185	1,580	625	384	1,690	715	428
24	125	69	37	41	30	170	*2,000	565	373	1,810	652	415
25	123	67	37	41	80	190	2,000	510	352	1,210	678	405
26	119	65	36	40	1,150	225	2,370	498	*8,970	*950	1,210	395
27	111	64	36	38	*5,620	275	2,730	485	*25,100	830	1,810	385
28	107	62	36	37	*9,100	1,390	2,370	485	*11,700	770	1,930	375
29	107	61	35	35	.....	6,620	3,590	450	6,800	740	1,410	355
30	103	60	35	33	.....	*12,100	9,100	417	4,930	678	1,370	345
31	103	.....	35	31	.....	7,900	.....	417	.....	728	1,170	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 11, 12, Nov. 20 to Dec. 31, 1950; Jan. 1 to Feb. 25, Mar. 7-25, 1951.

West Fork Shell Rock River at Finchford, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	335	415	295	170	270	625	5,200	474	610	417	208	108
2	335	385	305	165	290	640	4,220	450	*580	384	198	104
3	355	365	325	160	320	500	2,910	439	485	362	189	103
4	405	350	345	160	360	440	2,110	428	428	352	192	99
5	405	360	365	155	400	352	1,620	428	406	332	192	94
6	428	430	375	155	410	332	1,410	400	395	313	187	92
7	452	502	355	150	380	352	1,130	395	373	302	158	90
8	415	405	345	150	330	342	1,050	550	362	*417	162	87
9	385	385	365	145	315	342	918	580	342	640	159	*86
10	375	335	515	145	360	332	882	690	332	805	164	85
11	355	325	295	145	410	485	882	672	313	865	158	82
12	345	405	225	145	520	690	882	640	304	882	*154	80
13	335	452	200	145	800	708	990	580	294	485	148	75
14	325	478	170	140	950	990	1,090	522	322	402	142	84
15	305	478	175	140	1,200	1,170	1,490	485	462	595	146	80
16	325	*428	180	*140	1,500	918	1,490	450	970	970	142	76
17	305	385	190	140	1,400	*830	1,660	439	1,250	1,250	171	75
18	305	335	200	150	*1,150	812	1,580	417	1,410	952	213	73
19	305	305	205	175	935	1,050	970	406	1,330	672	174	70
20	305	325	210	190	690	1,410	865	384	812	565	158	70
21	345	335	210	350	595	1,710	812	373	640	498	147	73
22	*502	345	210	365	565	2,040	812	428	565	510	142	72
23	578	305	210	375	462	2,250	778	625	510	498	138	70
24	715	290	205	360	465	1,760	708	690	485	406	138	73
25	652	300	200	350	498	1,130	610	742	439	342	116	68
26	578	310	195	330	417	1,090	565	655	395	313	111	68
27	540	320	190	315	439	1,010	550	550	406	294	108	62
28	515	340	185	305	535	990	550	522	450	275	107	62
29	490	320	180	290	550	1,250	*550	485	522	256	112	61
30	465	305	180	280	.....	1,530	498	450	498	*247	109	61
31	440	.....	175	275	.....	2,470	.....	428	.....	233	106	.....
1952-53												
1	58	63	54	57	58	400	415	730	262	302	475	112
2	58	63	54	57	59	360	415	950	240	252	400	112
3	54	63	52	57	61	310	430	1,290	228	220	460	112
4	54	62	52	56	64	290	460	1,240	230	200	992	109
5	54	62	53	54	64	280	520	992	244	174	1,490	108
6	54	63	56	52	62	260	475	850	230	220	1,990	102
7	54	62	56	50	61	244	415	730	222	272	2,250	100
8	55	61	56	50	60	234	388	642	202	350	1,990	98
9	60	62	56	51	60	230	400	572	312	270	1,150	96
10	63	62	58	51	60	270	538	505	350	220	750	92
11	62	60	58	51	61	430	660	460	338	196	572	84
12	63	60	54	52	62	572	660	445	338	170	475	84
13	*62	60	50	52	64	1,060	538	400	312	160	415	82
14	64	61	52	53	66	1,540	475	375	255	190	362	80
15	63	62	54	56	69	1,490	445	350	230	216	325	79
16	63	61	*57	60	72	1,130	572	338	216	161	302	69
17	61	73	58	58	76	910	830	325	206	150	*278	69
18	62	72	58	56	86	750	850	315	194	130	258	69
19	62	74	58	54	140	642	660	315	180	129	242	69
20	63	74	58	*53	250	590	538	*300	170	*120	228	69
21	64	69	58	52	350	505	475	295	162	116	216	*69
22	64	*63	59	52	250	475	430	315	*154	113	194	69
23	61	63	59	54	*180	505	400	338	155	216	180	69
24	61	64	60	54	220	490	362	362	140	475	176	64
25	62	67	62	54	210	430	400	*375	190	350	164	64
26	62	73	61	53	200	388	555	388	174	262	150	61
27	64	66	60	53	240	350	770	388	182	220	146	60
28	64	60	59	54	300	325	*850	362	214	246	142	60
29	64	56	58	56	.....	315	730	315	228	238	139	60
30	64	55	58	56	.....	*310	660	298	325	250	127	58
31	64	.....	57	56	.....	350	.....	280	.....	460	125	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-6, 24-30, Dec. 12-31, 1951; Jan. 1 to Feb. 18, Mar. 3, 4, Nov. 27 to Dec. 31, 1952; Jan. 1 to Mar. 6, 1953.

West Fork Shell Rock River at Finchford, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	60	61	*26	47	*19	*77	86	352	694	1,420	153	618
2	60	*61	60	43	20	81	76	565	*532	1,180	*280	520
3	58	62	66	45	21	54	79	*810	517	1,050	207	430
4	58	64	70	*45	22	35	79	950	526	970	223	390
5	59	62	74	43	24	50	69	1,050	572	930	207	352
6	*59	62	78	46	33	70	83	1,010	547	*990	177	315
7	57	62	80	44	46	66	93	740	466	890	153	285
8	57	63	72	42	42	72	112	565	390	722	143	*260
9	57	63	66	41	39	69	114	475	338	652	137	251
10	57	62	60	40	39	74	116	402	313	582	118	230
11	56	62	54	39	39	70	108	340	292	520	106	225
12	52	63	69	38	41	79	105	315	269	460	103	212
13	62	64	65	36	45	20	93	315	287	415	103	207
14	60	64	61	35	50	40	86	304	523	378	103	200
15	58	65	19	33	56	84	92	280	747	328	93	188
16	58	66	33	30	60	74	95	264	775	304	92	177
17	58	68	54	28	62	65	93	248	910	292	88	182
18	58	69	57	26	70	86	93	239	1,160	271	126	173
19	56	70	56	23	80	149	83	221	2,260	253	127	170
20	60	72	47	19	85	207	86	207	*9,610	244	124	168
21	60	80	50	18	95	141	88	193	7,880	234	122	145
22	60	98	51	17	83	122	97	191	8,830	232	114	145
23	60	96	52	17	110	112	182	186	11,200	212	112	133
24	60	92	54	17	112	105	315	175	6,780	221	122	124
25	60	87	52	18	108	97	274	168	4,720	205	328	116
26	58	60	48	18	105	93	246	168	3,440	193	775	112
27	56	44	47	18	99	101	285	175	2,790	175	1,050	103
28	60	45	46	18	97	99	292	237	2,300	173	1,180	101
29	60	57	45	18	.....	97	258	264	2,030	157	1,180	114
30	60	44	49	18	.....	*90	253	535	1,760	149	1,090	110
31	61	.....	48	18	.....	83	.....	792	.....	151	792	.....
1954–55												
1	110	*292	156	122	*46	240	338	272	118	54	*54	22
2	251	288	166	133	48	280	310	246	113	63	55	21
3	505	258	176	131	49	320	292	*242	109	74	51	20
4	*460	252	190	*129	49	350	*302	228	107	68	49	18
5	712	265	135	124	48	430	320	218	104	82	47	18
6	695	248	98	120	47	360	338	210	*103	*112	46	18
7	505	248	150	118	46	*290	350	192	103	156	44	17
8	445	242	160	113	45	270	350	190	103	338	43	16
9	362	238	157	108	45	250	320	176	99	300	42	15
10	415	234	153	104	44	230	285	180	92	338	41	15
11	430	228	146	103	42	350	288	188	94	325	38	15
12	445	220	140	101	41	475	290	182	94	400	37	15
13	555	220	142	100	40	505	305	168	91	285	36	24
14	625	218	146	98	40	460	315	166	87	204	34	21
15	625	208	148	93	40	460	325	155	84	162	33	21
16	850	204	149	90	40	475	338	154	80	143	33	22
17	830	204	148	84	40	490	325	148	78	129	31	20
18	660	202	145	79	40	362	295	130	76	119	30	18
19	555	194	143	78	130	318	260	133	75	111	29	17
20	460	188	140	77	390	290	244	127	74	104	29	18
21	430	184	138	76	460	288	236	120	72	99	28	24
22	415	182	141	74	540	230	226	118	69	91	28	23
23	388	180	144	69	660	210	206	116	67	87	28	24
24	362	178	148	64	540	190	214	125	64	84	27	24
25	338	178	150	60	450	175	255	119	62	80	28	25
26	338	178	147	53	380	162	318	119	61	75	28	20
27	325	168	140	47	320	155	400	119	59	72	25	31
28	338	172	130	38	280	190	430	125	58	67	24	29
29	338	*170	120	35	.....	200	350	140	58	63	24	29
30	318	156	112	37	.....	238	308	139	55	60	*23	29
31	305	.....	106	42	.....	208	.....	130	.....	56	23	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1953; Jan. 1 to Feb. 22, Mar. 8-9, 14, 15, Dec. 4, 5, 7-31, 1954; Jan. 1 to Mar. 11, Mar. 22-28, 1955. Doubtful gage height record Oct. 1 to Nov. 25, 1953; discharge estimated on basis of weather records and records for nearby stations.

West Fork Shell Rock River at Finchford, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	160	80.4	42.7	36.9	597	1,613	3,536	1,458	2,694	1,825	896	570
1951-52.....	419	369	251	215	605	985	1,326	509	556	517	153	79.4
1952-53.....	60.7	63.0	56.6	54.0	125	531	544	511	232	228	554	81.0
1953-54.....	58.5	66.3	55.1	30.3	60.8	86.2	138	411	2,449	482	316	225
1954-55.....	404	213	144	87.0	176	309	304	164	83.6	142	35.1	21.3

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.186	0.093	0.050	0.043	0.694	1.88	4.11	1.70	3.13	2.12	1.04	0.663
1951-52.....	.487	.429	.292	.250	.703	1.15	1.54	.592	.647	.601	.178	.092
1952-53.....	.071	.074	.066	.063	.145	.617	.633	.594	.270	.265	.644	.094
1953-54.....	.068	.077	.064	.035	.071	.100	.160	.478	2.85	.560	.367	.262
1954-55.....	.540	.248	.167	.101	.205	.359	.353	.191	.097	.165	.041	.025

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.21	0.10	0.06	0.05	0.72	2.16	4.59	1.95	3.50	2.45	1.20	0.74
1951-52.....	.56	.48	.34	.29	.76	1.32	1.72	.68	.72	.69	.21	.10
1952-53.....	.08	.08	.08	.07	.15	.71	.71	.68	.30	.31	.74	.11
1953-54.....	.08	.09	.07	.04	.07	.12	.18	.55	3.18	.65	.42	.29
1954-55.....	.62	.28	.19	.12	.21	.41	.39	.22	.11	.19	.05	.03

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	338	5.33
1951....	June 27, 1951.	17.28	31,900	21	1,124	1.31	17.73	1,187	18.74
1952....	Apr. 1, 1952..	11.91	5,800	61	497	.578	7.87	425	6.73
1953....	Aug. 7, 1953..	8.97	2,250	50	255	.297	4.02	255	4.02
1954....	June 23, 1954.	14.9	14,200	17	363	.422	5.74	417	6.59
1955....	Oct. 16, 1954..	(1)6.32	850	15	179	.208	2.82	.....	.....

(1) Maximum gage height observed, 7.11 ft. Feb. 23, 1955 (ice jam).

Peak Discharge (2,300 cfs)

1951: Feb. 28 (1 a.m.) 10,500 cfs (13.5 ft.); Mar. 30 (8 a.m.) 14,500 cfs (14.5 ft.); Apr. 8 (12M) 8,800 cfs (13.0 ft.); Apr. 30 (7 a.m.) 10,100 cfs (13.42 ft.); June 4 (6 p.m.) 2,540 cfs (9.6 ft.); June 27 (2 a.m.) 31,900 cfs (17.28 ft.); July 11 (5:30 p.m.) 4,100 cfs (10.89 ft.).

1952: Mar. 23 (8 a.m.) 2,320 cfs (9.48 ft.); Apr. 1 (4:30 p.m.) 5,800 cfs (11.91 ft.).

1953: No peak above base.

1954: June 20 (11 a.m.) 11,400 cfs (14.18 ft.); June 23 (1 a.m.) 14,200 cfs (14.9 ft.).

1955: No peak above base.

Beaver Creek at New Hartford, Iowa

LOCATION.—Lat. 42°35', long. 92°37', in SE¼ sec. 28, T. 90 N., R. 15 W., on downstream side of highway bridge, a quarter of a mile north of New Hartford, and 8 miles upstream from mouth.

DRAINAGE AREA.—350 square miles, approximately.

RECORDS AVAILABLE.—April 1948 to September 1955.

GAGE.—Wire-weight gage read once daily; more often at high stages.

AVERAGE DISCHARGE.—7 years, 157 cfs.

EXTREMES.—1948-55: Maximum discharge, 11,600 cfs Mar. 29, 1951 (gage height, 11.7 feet, from graph based on gage readings); minimum daily, 5.8 cfs Jan. 27, 28, 1954.

REMARKS.—Records good except those for period of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	65	29	21	13	9.4	388	920	1,320	503	290	185	398
2	65	29	21	13	9.1	290	755	1,850	2,500	250	144	332
3	62	28	21	13	8.7	258	620	1,360	4,050	470	131	298
4	59	27	20	13	8.4	306	1,320	920	1,590	1,120	117	290
5	55	27	20	13	7.9	517	1,700	620	644	656	106	266
6	54	27	19	13	7.5	1,560	900	503	560	368	125	234
7	57	*27	19	13	7.2	2,170	2,060	428	428	408	108	220
8	62	27	19	13	6.9	576	2,340	341	632	2,020	*105	192
9	75	28	18	13	*6.6	332	785	298	584	2,160	98	178
10	*70	28	18	13	6.4	260	620	350	481	755	94	644
11	64	27	18	13	6.2	210	548	314	*368	536	88	514
12	57	27	17	12	6.2	160	880	266	298	408	85	359
13	54	27	*17	12	6.1	130	1,100	242	274	*408	85	350
14	52	27	17	12	6.0	110	755	220	250	620	101	308
15	47	28	17	12	6.0	94	514	*190	220	408	266	282
16	46	27	16	*12	5.9	85	408	192	220	332	250	234
17	43	27	16	12	6.0	76	378	185	206	208	164	*199
18	41	27	16	12	8.7	68	332	274	199	250	127	199
19	40	26	15	12	15	62	306	242	250	234	115	178
20	39	26	15	12	27	50	298	438	282	220	100	171
21	39	25	15	12	36	57	274	290	*234	282	206	164
22	39	25	15	12	60	*55	620	227	213	428	144	150
23	35	24	15	*12	150	54	470	206	206	306	119	144
24	34	24	15	12	300	54	*398	178	206	227	104	144
25	34	23	14	12	1,500	54	860	157	178	199	312	138
26	33	23	14	11	*7,110	60	1,950	171	591	178	3,700	138
27	33	23	14	11	4,180	150	1,120	164	2,080	157	7,050	135
28	33	22	14	11	1,160	5,080	840	157	920	150	2,660	127
29	32	22	14	10	.....	9,050	1,290	138	428	150	880	117
30	31	21	14	10	.....	*3,720	3,320	127	323	131	572	117
31	30	.....	13	9.8	.....	1,920	.....	150	.....	378	448	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1950; Jan. 1 to Feb. 25, Mar. 10-27, 1951.

Beaver Creek at New Hartford, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	116	192	150	94	180	157	1,400	166	142	115	54	31
2	115	178	157	92	300	164	820	160	*142	115	52	31
3	144	164	178	90	400	157	558	154	172	107	51	31
4	388	160	206	88	600	150	510	148	142	99	57	28
5	492	155	192	86	450	170	400	136	129	87	54	26
6	266	155	178	85	360	178	340	134	125	85	51	25
7	220	157	178	84	330	178	331	148	119	*103	51	25
8	192	192	164	82	320	144	322	233	111	240	52	25
9	178	171	150	81	320	129	296	233	97	331	52	*23
10	164	150	144	80	370	266	304	248	97	205	52	21
11	164	150	138	78	420	800	322	226	93	154	*53	20
12	150	157	119	77	490	695	331	212	91	129	46	20
13	144	418	90	77	440	572	370	178	89	119	42	20
14	136	341	70	80	360	1,320	466	172	136	130	41	23
15	129	274	76	90	320	644	715	160	264	240	42	20
16	134	*250	84	*102	300	398	640	148	198	191	49	20
17	134	206	92	130	280	*332	466	142	148	134	44	20
18	131	171	100	170	260	320	370	136	123	115	39	20
19	150	165	103	250	240	740	331	129	119	115	38	20
20	171	160	105	520	225	800	304	125	107	107	36	20
21	323	155	105	450	220	632	288	123	109	101	35	20
22	*800	150	108	400	220	398	272	172	115	89	33	20
23	644	145	108	350	242	314	272	288	107	85	32	20
24	418	145	108	290	266	274	256	296	105	79	32	20
25	341	140	108	250	298	350	248	219	99	75	31	20
26	306	170	106	220	178	350	226	191	95	75	31	19
27	258	160	105	200	227	350	219	184	114	69	35	18
28	250	155	103	190	178	398	*212	178	178	63	32	18
29	242	150	100	180	192	668	191	160	172	58	39	17
30	227	150	98	175	.....	970	178	148	132	*57	34	17
31	213	.....	96	170	.....	1,230	.....	142	.....	54	31	.....
1952-53												
1	17	23	19	17	22	280	245	400	87	237	63	25
2	17	21	18	18	22	250	207	510	81	152	57	24
3	17	21	18	18	23	240	214	362	73	130	198	24
4	17	21	18	17	23	225	222	302	69	118	870	28
5	17	23	19	16	23	215	177	261	98	136	1,210	29
6	18	22	20	15	23	205	152	237	77	655	420	26
7	18	23	20	15	23	190	149	214	72	990	269	24
8	20	23	20	15	23	180	148	192	109	362	214	24
9	20	23	19	15	23	170	170	177	116	214	156	23
10	20	21	19	16	23	250	222	160	111	168	128	22
11	20	23	18	16	23	700	285	152	145	131	115	22
12	21	25	18	16	24	900	237	146	490	120	103	22
13	*23	25	17	17	24	685	192	128	277	105	103	22
14	21	25	17	17	25	410	174	126	152	149	87	22
15	21	24	17	27	25	480	150	120	123	110	83	21
16	21	24	*16	25	26	380	207	113	105	94	77	20
17	21	31	17	24	29	253	222	108	98	87	*83	20
18	*21	35	17	23	31	222	183	100	87	83	69	19
19	21	32	17	*22	35	192	169	100	81	77	63	20
20	21	28	18	22	98	174	152	96	75	*73	53	20
21	23	26	19	21	500	166	144	*104	71	69	50	*19
22	23	*25	20	21	410	177	134	144	*65	68	48	19
23	22	25	19	21	350	245	123	115	61	100	47	18
24	21	25	19	21	320	207	142	118	62	75	46	19
25	23	27	19	21	350	163	192	*145	230	67	45	19
26	23	29	18	21	290	146	269	126	535	57	43	19
27	23	26	17	21	260	136	*253	103	245	57	34	18
28	21	23	17	21	270	128	207	98	585	53	33	17
29	21	21	17	21	.....	122	184	94	560	61	31	17
30	23	19	17	21	.....	*142	207	91	410	67	30	17
31	23	.....	17	21	.....	245	.....	89	.....	75	29	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-6, Nov. 19 to Dec. 1, Dec. 13-31, 1951; Jan. 1 to Feb. 22, Mar. 4-6, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 12, 1953.

Beaver Creek at New Hartford, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	17	19	*13	15	*6.4	27	26	115	198	115	28	83
2	17	*19	20	15	7.0	*28	23	207	*309	103	*26	67
3	17	18	29	15	7.4	22	22	*420	269	96	22	63
4	17	18	31	*15	8.4	17	21	328	302	87	22	57
5	17	18	26	15	9.6	21	22	207	234	85	26	55
6	*17	18	32	15	13	24	23	140	167	*81	27	48
7	17	19	26	15	16	28	28	111	140	83	24	*43
8	17	20	28	15	15	26	31	91	132	71	24	40
9	17	20	29	15	14	28	29	79	123	67	24	40
10	17	19	30	14	14	28	26	75	170	65	23	42
11	17	20	26	13	14	29	23	71	1,070	59	23	40
12	17	20	24	13	14	22	23	67	927	61	22	38
13	17	20	22	12	15	10	22	63	232	57	19	37
14	17	20	18	12	17	17	23	57	170	53	20	37
15	17	20	10	11	19	25	26	53	155	50	21	35
16	17	20	16	10	20	26	43	48	274	45	20	35
17	17	20	20	9.6	23	34	48	45	*1,480	43	17	35
18	17	20	20	8.6	25	47	45	43	580	43	35	34
19	20	20	18	7.9	27	44	35	42	386	42	50	32
20	19	25	17	7.4	32	39	31	46	301	40	40	29
21	19	29	17	7.2	38	36	32	38	327	40	29	28
22	18	27	18	6.8	27	31	43	38	1,190	38	29	26
23	18	24	18	6.5	42	28	42	37	589	38	43	26
24	18	23	18	6.2	38	29	40	35	302	37	63	26
25	18	21	18	6.0	35	32	38	38	250	35	69	24
26	18	20	17	5.9	34	32	42	32	226	32	83	24
27	19	17	16	5.8	32	31	53	34	212	29	460	28
28	19	19	16	5.8	27	30	50	59	155	29	430	24
29	18	23	16	5.9	.....	28	42	120	139	28	200	31
30	19	17	16	5.9	.....	*24	63	128	124	28	149	35
31	19	.....	16	6.0	.....	28	.....	95	.....	28	111	.....
1954-55												
1	37	*72	39	26	15	88	75	83	55	15	*23	7.8
2	38	63	38	28	15	120	73	*75	52	15	22	7.8
3	105	61	38	*27	15	160	71	69	51	15	21	7.5
4	*178	59	37	27	15	230	*76	69	40	15	20	7.5
5	128	61	35	27	15	160	148	67	40	16	20	7.1
6	105	61	31	26	15	120	145	67	*37	*74	19	7.1
7	63	61	35	25	14	*101	126	65	37	260	19	6.7
8	63	57	35	24	14	94	104	63	37	285	19	6.7
9	63	53	33	23	14	86	96	69	35	160	18	6.7
10	61	53	31	22	14	77	94	87	32	285	16	6.7
11	63	52	30	22	14	85	87	85	40	400	16	6.4
12	63	52	29	21	13	100	94	75	35	230	15	6.7
13	65	50	28	21	13	120	119	65	32	157	15	7.8
14	222	50	28	20	13	146	153	59	31	100	14	10
15	420	48	27	20	13	160	176	57	29	83	12	9.8
16	285	48	27	20	12	146	149	55	29	71	12	9.3
17	192	46	26	19	12	126	116	53	28	67	12	8.9
18	155	46	26	19	14	115	105	50	26	57	12	8.4
19	123	45	26	19	200	100	98	48	26	53	10	7.6
20	113	45	26	18	280	91	87	43	28	48	10	7.3
21	103	45	26	17	350	87	79	40	45	45	9.5	9.3
22	100	43	26	16	430	91	71	38	38	40	9.5	8.9
23	89	42	27	16	360	89	77	37	35	40	8.7	9.3
24	83	42	28	15	280	77	89	35	24	37	8.7	9.3
25	83	40	28	15	220	67	149	40	22	32	9.5	9.3
26	79	38	28	14	170	62	155	45	22	31	9.1	9.3
27	83	34	28	13	140	56	131	57	21	28	8.7	9.8
28	81	31	27	12	110	67	98	79	18	26	8.7	9.3
29	77	*38	27	11	.....	89	87	152	17	27	*8.7	10
30	75	39	26	13	.....	85	84	163	15	24	8.7	9.8
31	71	.....	25	*14	.....	83	.....	90	.....	23	7.8	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27, Nov. 30 to Dec. 2, Dec. 8-31, 1953; Jan. 1 to Feb. 21, Mar. 3-5, 12-15, Nov. 27 to Dec. 31, 1954; Jan. 1 to Mar. 18, Mar. 24-28, 1955.

Beaver Creek at New Hartford, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	47.7	25.9	16.7	12.1	524	921	956	404	684	477	606	243
1951-52.....	250	183	123	171	310	460	399	177	129	120	42.6	21.9
1952-53.....	20.6	24.6	18.1	19.4	118	274	191	169	178	159	157	21.3
1953-54.....	17.7	20.4	20.7	10.4	21.1	28.1	33.8	95.5	371	55.2	70.6	38.7
1954-55.....	112	49.2	29.7	19.7	99.6	106	107	67.1	32.0	89.3	13.6	8.27

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.136	0.074	0.048	0.035	1.50	2.63	2.73	1.15	1.95	1.36	1.73	0.694
1951-52.....	.714	.523	.351	.489	.886	1.31	1.14	.506	.369	.343	.122	.063
1952-53.....	.059	.070	.052	.055	.337	.783	.546	.483	.509	.454	.449	.061
1953-54.....	.051	.058	.059	.030	.060	.080	.097	.273	1.06	.158	.202	.111
1954-55.....	.320	.141	.085	.056	.285	.303	.306	.192	.093	.255	.039	.024

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.16	0.08	0.05	0.04	1.56	3.04	3.05	1.33	2.18	1.57	2.00	0.77
1951-52.....	.82	.58	.41	.56	.95	1.51	1.27	.58	.41	.40	.14	.07
1952-53.....	.07	.08	.06	.06	.35	.90	.61	.56	.57	.52	.52	.07
1953-54.....	.06	.07	.07	.03	.06	.09	.11	.31	1.18	.18	.23	.12
1954-55.....	.37	.16	.10	.06	.30	.35	.34	.22	.10	.29	.04	.03

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	176	0.83
1951....	Mar. 29, 1951.	11.7	11,600	5.9	403	1.17	15.83	447	17.35
1952....	Apr. 1, 1952..	7.30	1,510	17	198	.566	7.70	157	6.10
1953....	Aug. 5, 1953..	(1)7.60	1,720	15	113	.323	4.37	112	4.36
1954....	June 17, 1954.	8.55	1,990	5.8	65.1	.186	2.51	76.2	2.94
1955....	July 11, 1955..	(2)5.02	510	6.4	61.0	.174	2.36	.....	.....

(1) Maximum gage height, 8.44 ft. Feb. 21, 1953 (ice jam).
(2) Maximum gage height, 7.70 ft. Feb. 20, 1955 (backwater from ice).

Peak discharge (base, 500 cfs)

1951: Feb. 26 (1 p.m.) 8,300 cfs (10.8 ft.); Mar. 7 (7 a.m.) 2,760 cfs (8.4 ft.); Mar. 29 (3 a.m.) 11,600 cfs (11.7 ft.); Apr. 8 (8 a.m.) 2,610 cfs (8.3 ft.); Apr. 30 (12 M) 3,600 cfs (8.9 ft.); June 3 (8 a.m.) 5,050 cfs (9.5 ft.(; June 27 (12 M) 3,230 cfs (8.7 ft.); July 4 (8 a.m.) 1,120 cfs (6.72 ft.); July 9 (3 a.m.) 2,910 cfs (8:5 ft.); Aug. 27 (5 a.m.) 8,550 cfs (10.9 ft.); Sept. 10 (6:30 p.m.) 770 cfs 5.9 ft.); Oct. 5 (8 a.m.) 620 cfs (5.36 ft.); Oct. 22 (8 p.m.) 840 cfs (6.10 ft.); Nov. 13 (1 a.m.) 560 cfs (5.10 ft.).

1952: Jan. 20 (12 M) about 500 cfs (6.55 ft.); Feb. 4 (8 a.m.) about 600 cfs (6.58 ft.); Feb. 11 (5:30 p.m.) about 580 cfs (5.96 ft.); Mar. 14 (1 p.m.) 1,430 cfs (7.20 ft.); Mar. 19 (9 p.m.) 920 cfs (6.30 ft.); Apr. 1 (6 a.m.) 1,510 cfs (7.30 ft.); April 15 (8 p.m.) 780 cfs (5.95 ft.).

1953: Feb. 21 (8 a.m.) about 600 cfs (8.44 ft.); Mar. 12 (2 a.m.) about 1,000 cfs (6.80 ft.); May 2 (4 a.m.) 572 cfs (5.24 ft.); June 12 (8 p.m.) 625 cfs (5.45 ft.); June 26 (1 p.m.) 625 cfs (5.43 ft.); June 28 (4 p.m.) 730 cfs (5.82 ft.); July 7 (6 a.m.) 1,210 cfs (6.90 ft.); Aug. 5 (4 a.m.) 1,720 cfs (7.60 ft.).

1954: June 11 (4 p.m.) 1,410 cfs (7.64 ft.); June 17 (2 p.m.) 1,990 cfs (8.55 ft.); June 22 (10 a.m.) 1,530 cfs (7.86 ft.); Aug. 27 (8 p.m.) 585 cfs (5.30 ft.).

1955: July 11 (1 a.m.) 510 cfs (5.02 ft.).

Blackhawk Creek at Hudson, Iowa

LOCATION.—Lat. 42°24'20", long. 92°27'45", in NE ¼ sec. 27, T. 88 N., R. 14 W., on left bank 35 feet downstream from bridge on State Highway 58 and 0.2 mile northwest of Chicago Great Western Railway tracks in the west edge of Hudson.

DRAINAGE AREA.—295 square miles.

RECORDS AVAILABLE.—April 1952 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 865.03 feet above mean sea level, datum of 1929.

EXTREMES.—1952-55: Maximum discharge, 2,100 cfs July 7, 1953 (gage-height 13.71 feet); maximum gage hieght, 15.46 feet Feb. 21, 1953 (ice jam); minimum daily discharge, 3.2 cfs Sept. 12, 1955.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Period April to September 1952

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1952													
1.....	850	155	153	81	30	17	16.....	460	130	230	63	27	14
2.....	620	147	*148	81	29	16	17.....	343	130	190	54	26	14
3.....	451	146	296	76	30	16	18.....	299	129	160	49	25	14
4.....	370	151	228	66	34	16	19.....	266	126	130	48	24	14
5.....	325	146	180	61	30	16	20.....	242	126	120	46	23	14
6.....	282	133	155	57	30	15	21.....	220	128	150	44	22	13
7.....	258	134	140	*59	28	16	22.....	220	140	155	42	22	13
8.....	235	157	150	81	29	*15	23.....	212	586	110	40	21	13
9.....	228	176	230	91	32	14	24.....	205	442	82	38	21	13
10.....	235	187	440	70	29	14	25.....	198	290	66	36	20	12
11.....	242	205	250	60	*28	14	26.....	190	235	63	34	20	11
12.....	228	198	180	54	28	14	27.....	182	220	76	33	19	11
13.....	282	165	170	50	26	13	28.....	*175	205	122	32	19	10
14.....	388	150	220	50	26	15	29.....	168	190	114	31	19	11
15.....	540	142	390	60	26	15	30.....	161	180	92	31	18	11
							31.....	.....	167	.....	30	18	.....

* Discharge measurement made on this day.

Note—No gage-height record June 5-24, Aug. 19-24, 1952; discharge estimated on basis of weather records and records for nearby stations. Discharge computed from gage readings or graph based on gage readings Aug. 25 to Sept. 30, 1952.

Blackhawk Creek at Hudson, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	11	14	12	13	32	240	262	373	65	205	55	20
2	11	14	12	13	21	190	226	437	62	165	66	20
3	12	14	12	12	30	160	212	309	60	134	254	20
4	12	14	13	12	20	140	226	254	60	113	203	21
5	12	13	14	11	28	120	184	219	69	188	270	20
6	12	13	15	11	27	100	155	205	73	1,160	129	18
7	13	13	15	11	32	86	136	184	61	1,800	102	18
8	13	13	15	11	42	76	127	165	130	414	83	18
9	12	13	14	11	54	84	132	149	300	270	74	18
10	12	13	14	11	81	400	191	136	130	212	68	17
11	13	13	12	12	155	500	226	134	218	172	62	17
12	13	14	11	13	130	309	184	123	930	143	61	16
13	*14	14	11	15	120	205	158	112	1,020	126	56	16
14	14	14	12	23	110	205	140	112	309	166	51	16
15	14	14	*12	31	105	373	152	108	219	428	47	16
16	13	14	12	41	100	233	205	108	172	212	45	16
17	13	14	12	52	98	172	198	105	142	149	*43	16
18	13	20	13	44	96	144	165	100	120	127	40	16
19	13	17	13	*40	120	125	146	94	106	111	39	16
20	13	14	14	37	200	109	132	89	106	*111	36	14
21	13	14	14	36	1,000	117	123	97	103	109	35	*14
22	13	*14	15	36	450	191	117	103	*87	93	33	14
23	13	14	16	36	*490	325	109	103	78	82	32	14
24	13	14	15	37	540	325	109	103	72	75	30	13
25	13	14	14	36	600	205	178	*140	100	68	29	13
26	13	15	13	36	480	158	233	125	582	64	28	13
27	14	16	13	36	430	136	*219	99	496	62	26	12
28	13	13	13	35	300	118	191	89	980	58	25	12
29	13	12	13	34	.....	108	165	84	607	57	23	13
30	13	12	13	34	.....	*143	178	80	288	60	23	12
31	13	.....	13	34	.....	247	.....	71	.....	62	22	.....
1953-54												
1	14	14	0.0	17	*4.7	*15	14	333	*517	94	21	157
2	14	*14	18	17	4.7	16	14	384	*1,310	97	*21	129
3	13	14	19	16	5.0	14	12	*711	786	89	20	112
4	13	13	18	*16	5.8	10	13	*437	696	81	20	101
5	13	12	19	16	6.8	16	14	262	454	76	20	91
6	*13	13	14	16	8.4	18	156	198	349	*73	20	81
7	14	13	15	16	14	17	128	160	285	70	19	*71
8	14	13	16	16	13	16	54	132	233	65	20	63
9	14	12	17	15	13	14	41	111	240	62	19	62
10	14	12	14	14	12	13	36	97	469	55	18	62
11	14	12	18	13	12	12	31	89	1,640	51	18	57
12	13	12	20	12	12	10	27	82	744	49	17	53
13	13	12	16	11	13	12	25	75	325	46	17	52
14	13	13	13	10	14	17	25	70	277	43	18	52
15	13	13	10	9.2	15	16	36	66	219	39	19	49
16	13	13	18	8.0	17	15	69	62	258	37	20	47
17	13	13	22	7.0	19	20	49	56	421	34	21	47
18	13	14	22	6.2	22	21	38	53	233	34	30	47
19	14	15	22	5.4	24	21	32	48	191	33	63	43
20	13	19	18	4.8	28	22	30	45	165	32	39	40
21	14	18	18	4.6	32	19	36	43	184	30	28	39
22	14	17	19	4.3	28	16	36	40	405	30	26	36
23	14	16	20	4.3	26	16	31	40	277	28	25	36
24	14	16	20	4.4	25	16	28	37	198	26	100	34
25	13	16	19	4.5	25	18	32	34	161	25	127	33
26	13	15	19	4.6	21	20	49	33	149	25	224	32
27	13	14	18	4.6	18	18	116	43	139	24	696	31
28	13	14	17	4.7	15	16	103	338	123	24	1,120	32
29	13	16	18	4.7	.....	*13	73	505	113	23	700	53
30	14	*18	18	4.7	.....	12	84	262	103	23	277	69
31	14	.....	18	4.7	.....	15	.....	184	.....	22	205	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 11, Nov. 26-29, Dec. 1, 13-31, 1953; Jan. 1 to Feb. 21, Feb. 26-28, Mar. 3-6, 10-13, 1954. Discharge computed from gage readings or graph based on gage readings Oct. 1-17, Oct. 19 to Nov. 25, 1952; Sept. 12 to Nov. 25, Nov. 30, Dec. 2-4, 6-12, 1953; Feb. 22-25, Mar. 1, 2, 7-9, Mar. 14 to Apr. 5, Aug. 2-18, 21-28, 1954.

Blackhawk Creek at Hudson, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954–55												
1.....	53	*97	45	41	23	210	67	89	81	20	*17	5.7
2.....	62	81	48	39	23	400	67	*83	70	18	16	5.2
3.....	132	95	45	*38	23	800	66	75	62	18	16	4.3
4.....	*121	90	43	37	23	600	*71	72	55	17	15	4.1
5.....	94	82	42	37	23	220	97	66	51	30	14	3.9
6.....	95	81	39	37	22	110	134	59	*47	*68	16	4.1
7.....	89	79	41	37	22	*67	111	56	46	212	12	4.1
8.....	84	73	41	36	21	50	95	51	43	107	12	4.1
9.....	89	69	40	35	21	52	83	64	40	52	10	3.7
10.....	109	67	40	34	20	56	75	117	37	184	9.0	3.7
11.....	233	66	40	33	20	66	71	112	47	576	8.1	3.5
12.....	184	64	39	33	20	76	70	94	47	218	7.8	3.2
13.....	143	64	39	32	20	86	84	80	43	117	7.4	9.0
14.....	366	63	38	32	20	109	172	68	39	80	8.1	14
15.....	576	61	38	31	20	130	212	60	34	61	9.6	14
16.....	333	61	37	31	21	134	165	54	30	50	8.8	13
17.....	247	60	37	30	23	107	132	48	28	44	8.5	13
18.....	205	58	36	30	30	101	111	44	27	40	8.5	5.2
19.....	172	55	36	29	250	97	100	42	28	34	8.8	5.0
20.....	156	55	36	28	700	91	89	39	54	32	8.8	6.2
21.....	147	55	37	28	550	82	76	35	59	29	8.1	6.4
22.....	134	54	38	27	430	76	67	33	34	26	8.8	7.4
23.....	122	55	38	27	350	66	65	33	28	25	8.5	9.6
24.....	113	56	39	27	270	61	106	34	26	23	8.1	9.2
25.....	109	48	39	26	230	55	278	33	24	22	8.1	8.1
26.....	111	43	39	25	200	51	254	37	22	21	7.4	6.7
27.....	120	38	38	23	170	48	184	99	20	19	7.2	8.8
28.....	117	34	33	21	150	60	152	61	20	18	6.7	9.0
29.....	113	*31	36	22	.....	67	122	146	20	18	*6.4	10
30.....	105	38	38	23	.....	73	102	172	20	18	6.4	10
31.....	100	.....	42	*23	.....	69	.....	107	.....	18	6.0	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1954; Jan. 1 to Mar. 18, Mar. 21-29, 1955. Discharge computed from gage readings or graph based on gage readings July 2-8, July 26 to Sept. 30, 1955.

Blackhawk Creek at Hudson, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	302	188	173	53.2	25.1	13.8
1952-53	12.8	14.0	13.2	26.3	211	195	173	149	261	232	70.3	16.0
1953-54	13.5	14.2	17.5	9.54	16.2	15.9	47.7	162	389	46.5	129	60.4
1954-55	150	62.4	39.3	30.7	132	138	110	69.8	39.4	71.5	9.80	7.20

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	1.02	0.637	0.586	0.180	0.085	0.047
1952-53	0.043	0.047	0.045	0.089	0.715	0.661	.586	.505	.885	.786	.238	.054
1953-54	.046	.048	.059	.032	.055	.054	.162	.549	1.32	.158	.437	.205
1954-55	.529	.212	.133	.104	.447	.468	.393	.237	.134	.242	.033	.024

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	1.14	0.73	0.65	0.21	0.10	0.05
1952-53	0.05	0.05	0.05	0.10	0.75	0.76	.65	.58	.99	.91	.27	.06
1953-54	.05	.05	.07	.04	.06	.06	.18	.63	1.47	.18	.50	.23
1954-55	.61	.24	.15	.12	.47	.54	.44	.27	.15	.28	.04	.03

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1952(1)	Apr. 1, 1952	10.63	900	.....	.....	.....	.....	.....	.....
1953	July 7, 1953	(2)13.71	2,100	11	114	0.386	5.22	114	5.24
1954	June 11, 1954	13.58	2,040	4.3	76.7	.260	3.52	94.6	4.35
1955	Mar. 3, 1955	(3)11.86	830	3.2	72.3	.245	3.34	.....	.....

(1) Period Apr. 1 to Sept. 30, 1952.
(2) Maximum gage height, 15.46 ft. Feb. 21, 1953 (backwater from ice).
(3) Maximum gage height, 13.60 ft. Feb. 20, 1955 (backwater from ice).

Peak discharge (base, 800 cfs)

1952: Apr. 1 (9 a.m.) 900 cfs (10.63 ft.); May 23 (7 a.m.) 800 cfs (10.20 ft.).

1953: Feb. 21 (2 a.m.) about 1,300 cfs (15.46 ft.); June 13 (5:30 a.m.) 1,550 cfs (12.57 ft.); June 28 (10:30 p.m.) 1,090 cfs (11.32 ft.); July 7 (7:30 a.m.) 2,100 cfs (13.71 ft.).

1954: June 2 (4 p.m.) 1,590 cfs (12.73 ft.); June 11 (4 p.m.) 2,040 cfs (13.58 ft.); Aug. 28 (11 p.m.) 1,310 cfs (11.98 ft.).

1955: Mar. 3, about 830 cfs.

Cedar River at Waterloo, Iowa

LOCATION.—Lat. 42°30'00", long. 92°19'40", in NW¼ sec. 25, T. 89 N., R. 13 W., on left bank at foot of East Seventh Street, 0.3 mile upstream from Eleventh Avenue Bridge in Waterloo, and 1 mile downstream from Blackhawk Creek.

DRAINAGE AREA.—5,190 square miles, approximately.

RECORDS AVAILABLE.—February 1941 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 824.09 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—14 years, 2,802 cfs.

EXTREMES.—1941-55: Maximum discharge, 56,400 cfs April 9, 1951 (gage height, 18.83 feet); minimum, 165 cfs Dec. 11, 1948; minimum daily, 230 cfs Feb. 2, 1950.

Flood of March 1929 reached a stage of about 20 feet, determined by Corps of Engineers, from information by city of Waterloo.

REMARKS.—Records good except those for period of ice effect, which are poor. Diurnal fluctuation at low flow caused by powerplants above station.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	739	600	392	386	340	17,800	18,600	32,600	3,240	13,400	2,910	4,180
2.....	835	570	430	408	335	11,200	14,100	18,800	6,920	9,310	2,340	3,740
3.....	778	604	442	368	298	7,240	12,700	17,800	11,700	7,860	2,300	3,270
4.....	729	550	416	374	316	5,380	13,700	19,200	14,800	8,650	2,160	2,940
5.....	759	550	400	397	334	5,360	17,500	14,400	12,400	8,330	2,100	2,780
6.....	810	*609	386	389	326	7,080	25,400	11,000	9,650	6,920	*2,080	2,730
7.....	852	516	364	367	348	7,390	37,400	8,650	6,770	6,150	2,260	2,560
8.....	804	630	360	370	310	6,150	*49,400	7,860	6,150	7,390	2,660	2,430
9.....	*927	574	370	364	*309	4,480	54,800	7,080	5,840	13,000	4,040	2,500
10.....	920	542	398	381	300	3,900	42,200	6,460	5,230	14,100	3,310	3,110
11.....	946	504	395	380	314	3,060	29,500	6,620	*4,330	11,400	3,060	3,760
12.....	870	530	394	404	323	1,670	23,300	6,150	4,040	8,980	2,690	*3,560
13.....	859	544	*388	378	315	1,530	22,200	5,530	3,640	*7,860	2,510	3,620
14.....	814	562	438	402	306	2,060	22,600	*4,780	3,310	7,240	*2,620	3,900
15.....	800	592	423	*401	312	1,950	23,000	4,480	3,060	6,620	4,480	4,180
16.....	704	611	391	410	321	1,670	19,800	4,180	3,030	5,080	5,230	4,780
17.....	655	644	418	394	326	1,810	15,400	3,900	2,880	5,530	4,780	4,480
18.....	742	584	410	417	355	1,750	11,700	4,330	2,720	4,780	4,480	3,690
19.....	670	562	367	445	364	1,280	9,980	4,480	2,730	4,330	3,750	3,160
20.....	674	556	405	404	380	*1,070	8,650	4,630	2,960	3,900	3,580	2,920
21.....	672	448	386	464	512	1,060	8,330	4,330	*2,980	4,330	4,330	2,700
22.....	620	562	416	*408	610	1,280	8,650	4,040	2,870	5,230	4,480	2,510
23.....	653	516	408	426	657	1,340	*11,000	3,820	2,740	4,780	4,040	2,440
24.....	585	368	458	424	759	1,230	12,400	3,600	2,580	4,480	3,580	2,290
25.....	624	380	414	407	3,090	1,250	12,400	3,360	2,410	4,480	3,750	2,170
26.....	647	422	396	369	12,300	1,230	13,400	3,150	5,080	3,900	7,540	2,230
27.....	635	422	378	360	17,100	2,210	14,400	3,040	32,800	3,320	13,700	2,170
28.....	584	398	394	408	20,200	12,400	13,000	2,800	35,200	3,030	13,700	2,090
29.....	549	416	408	382	.....	30,800	15,100	2,730	21,600	2,690	7,700	1,960
30.....	644	436	376	353	.....	33,400	41,100	2,580	17,500	2,640	5,530	1,810
31.....	555	.....	404	332	.....	27,200	.....	2,490	.....	2,940	4,760	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8, 9, 1950.

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	1,740	2,430	1,850	1,550	1,520	4,040	20,900	3,260	3,430	3,490	1,150	1,020
2	1,670	2,280	1,900	1,590	1,950	4,040	27,200	2,730	*2,900	2,960	1,260	1,070
3	1,650	1,900	1,850	1,240	2,180	3,750	26,500	2,790	2,760	2,650	1,260	952
4	2,510	1,420	2,080	1,220	2,300	2,930	20,000	2,680	2,760	2,350	1,150	1,220
5	3,240	1,440	2,180	1,140	2,120	2,100	16,000	2,480	2,510	2,100	1,100	1,100
6	3,100	1,700	2,430	1,140	1,920	2,510	10,700	2,400	2,480	2,000	1,150	1,040
7	2,540	1,900	2,480	1,280	1,720	2,730	8,980	2,510	2,540	*2,020	1,100	1,010
8	2,400	2,050	2,430	1,040	1,810	2,350	7,860	3,180	2,250	2,540	1,150	*938
9	2,380	2,020	2,250	1,080	1,880	2,200	7,080	3,900	2,050	4,040	1,120	858
10	2,380	1,950	2,000	1,050	2,200	3,040	7,080	4,180	1,950	3,900	1,070	897
11	2,280	1,900	1,950	1,040	3,210	5,080	6,920	4,480	1,900	3,460	*1,070	858
12	2,200	2,180	1,320	1,040	4,330	6,300	6,770	4,330	1,810	2,980	1,040	780
13	2,080	2,840	924	1,070	4,630	5,840	6,920	4,040	1,760	2,590	1,140	561
14	2,000	3,180	845	1,080	5,380	7,080	7,240	3,690	1,900	2,320	1,120	708
15	1,850	2,900	793	*1,120	5,680	6,770	8,330	3,380	2,080	2,700	1,150	985
16	1,780	2,870	884	1,340	5,530	5,230	9,650	3,070	3,900	3,400	1,150	720
17	1,880	*3,260	1,220	1,480	5,230	*1,330	9,310	2,870	4,040	3,380	1,500	780
18	1,810	3,040	1,140	1,740	*4,930	4,480	8,980	2,700	3,750	3,180	1,340	732
19	1,850	2,430	1,480	2,260	4,040	6,770	8,010	2,460	3,460	2,590	1,100	744
20	1,900	2,350	1,220	3,120	3,460	10,700	6,920	2,400	2,900	2,280	1,150	720
21	2,150	2,430	1,240	3,430	3,040	13,000	6,000	2,460	2,540	2,180	1,220	720
22	*3,430	2,350	1,340	3,120	2,510	13,400	5,840	2,820	2,300	2,480	1,050	732
23	4,480	1,900	1,520	2,430	2,590	11,700	5,530	3,900	2,150	2,280	1,340	649
24	4,780	1,520	1,850	1,980	2,460	8,010	5,380	4,040	1,880	2,000	1,380	744
25	4,630	1,380	1,720	1,850	2,320	6,150	5,080	3,690	2,050	1,760	1,400	696
26	3,750	1,630	1,810	1,810	2,350	5,530	4,780	3,430	1,980	1,650	1,380	660
27	3,520	1,570	1,420	1,780	2,400	5,380	4,330	3,320	2,820	1,480	1,260	684
28	3,240	1,920	1,400	1,720	3,040	5,230	*3,900	3,210	4,330	1,320	1,140	660
29	2,930	2,050	*1,240	1,630	3,600	5,530	3,750	2,980	4,330	1,280	1,120	696
30	2,760	2,050	1,220	1,520	.....	7,540	3,490	2,870	3,490	1,300	1,070	627
31	2,570	.....	1,220	1,300	.....	12,400	.....	2,840	.....	1,190	1,070	.....
1952-53												
1	808	650	390	580	536	1,900	2,830	3,990	2,220	3,440	2,800	1,000
2	876	650	440	630	501	1,800	2,750	5,100	2,120	2,740	2,870	1,170
3	734	709	500	519	508	1,600	2,700	5,080	1,900	2,240	3,480	1,160
4	646	540	552	590	542	1,400	2,770	5,840	1,850	1,980	8,010	1,220
5	601	711	556	578	549	1,280	2,930	5,380	1,820	1,750	13,700	1,140
6	564	626	550	410	534	1,100	2,780	4,560	1,840	2,590	18,200	1,110
7	434	653	590	451	534	965	2,590	4,150	1,710	3,740	18,500	1,040
8	587	628	636	522	538	1,220	2,570	3,750	2,110	3,420	11,700	932
9	574	612	604	554	590	1,180	2,620	3,390	2,470	2,150	7,700	1,110
10	579	606	696	554	571	1,820	2,980	3,110	2,520	1,800	5,680	1,180
11	634	556	620	552	782	3,670	3,670	2,750	2,750	1,560	4,970	1,170
12	588	723	598	534	808	4,140	3,460	2,630	3,230	1,510	4,430	994
13	695	524	430	500	666	4,860	3,010	2,620	3,040	1,400	3,940	948
14	*566	702	390	520	706	5,380	2,760	2,510	2,700	1,780	3,300	957
15	716	626	*524	602	606	5,080	2,760	2,350	2,550	2,260	3,180	876
16	604	598	582	501	540	5,530	3,120	2,280	5,380	2,590	2,920	1,070
17	642	832	710	532	474	4,860	3,910	2,200	7,700	2,700	*2,630	918
18	648	608	607	560	520	4,400	3,700	2,090	4,330	2,480	2,550	894
19	677	751	554	*600	668	4,260	3,260	1,940	2,950	2,150	2,430	952
20	687	646	516	531	2,980	4,270	2,870	1,960	2,480	*1,780	2,220	818
21	572	626	618	559	6,000	4,270	2,700	*1,960	2,090	1,640	2,100	*800
22	755	*634	694	618	4,780	4,230	2,520	1,960	*1,760	1,540	1,930	727
23	650	585	583	624	*3,250	4,190	2,310	2,170	1,500	2,640	1,710	914
24	675	636	706	518	3,080	4,310	2,210	2,390	1,600	3,890	1,580	738
25	628	574	535	591	3,630	3,740	2,340	2,370	1,800	4,130	1,360	868
26	646	660	516	600	2,700	3,390	2,830	*2,590	2,360	3,330	1,490	794
27	681	540	476	532	2,400	3,050	*3,540	2,570	2,540	2,740	1,250	774
28	598	440	450	540	2,200	2,750	3,780	3,750	3,510	2,400	1,200	778
29	756	350	520	484	.....	2,510	3,660	3,970	3,850	2,510	1,300	721
30	670	370	568	464	.....	*2,400	3,740	2,990	3,340	3,130	1,280	838
31	608	.....	608	528	.....	2,650	.....	2,690	.....	3,400	1,220	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26, 27, Nov. 29 to Dec. 3, Dec. 13, 14, 28, 29, 1952; Jan. 14, 26, Feb. 16, 18 Feb. 26 to Mar. 1, Mar. 3, 4, 6, 1953.

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	760	642	562	552	326	*878	798	2,720	*3,380	5,570	1,730	2,850
2.....	751	*520	741	594	*342	716	768	3,860	3,710	4,890	*1,650	2,480
3.....	718	590	724	496	360	540	700	5,400	3,920	4,250	1,400	2,170
4.....	846	678	824	*566	384	400	730	*7,370	3,650	4,570	1,490	2,010
5.....	852	666	800	479	411	470	762	6,760	3,300	4,410	1,380	1,850
6.....	*619	608	896	512	413	560	786	6,250	3,000	3,950	1,220	1,670
7.....	815	657	934	490	433	660	*994	4,570	2,610	*3,680	1,130	*1,400
8.....	828	626	820	526	473	704	907	3,800	2,370	3,380	1,180	1,480
9.....	714	675	872	450	472	644	894	3,100	2,210	3,050	1,080	1,590
10.....	738	588	734	400	530	750	867	2,740	2,120	2,780	985	1,400
11.....	666	701	760	420	483	710	876	2,520	2,650	2,590	1,130	1,380
12.....	702	652	660	412	442	670	880	2,410	3,380	2,230	955	1,340
13.....	619	610	690	388	460	630	718	2,170	2,150	2,210	1,030	1,340
14.....	750	671	630	370	581	560	837	1,950	1,990	2,040	955	1,220
15.....	690	661	450	340	648	612	972	1,830	1,910	1,810	925	1,290
16.....	678	706	370	320	567	570	1,030	1,590	2,060	1,650	1,050	1,200
17.....	726	575	350	300	646	684	928	1,380	3,050	1,570	895	1,270
18.....	678	750	440	336	660	731	871	1,310	4,730	1,610	1,170	1,310
19.....	690	702	531	348	698	870	986	1,340	8,060	1,570	1,080	1,200
20.....	608	750	618	348	764	966	901	1,220	15,000	1,460	1,240	1,310
21.....	738	771	652	336	840	1,090	1,060	1,220	*24,700	1,480	1,180	1,180
22.....	630	763	500	334	895	1,040	1,110	1,200	31,800	1,380	1,170	1,330
23.....	690	872	460	332	776	1,020	1,540	1,130	*47,300	1,530	1,030	1,250
24.....	678	720	532	332	966	1,070	1,520	1,220	39,400	1,510	3,500	1,180
25.....	726	869	576	336	915	979	1,470	925	25,800	1,510	7,440	1,060
26.....	654	716	600	329	940	922	1,620	1,150	15,900	1,420	6,030	1,120
27.....	586	810	532	316	839	990	1,630	1,250	11,300	1,240	5,910	1,170
28.....	726	596	682	315	799	798	1,830	1,890	8,760	1,400	6,420	1,100
29.....	642	651	538	310	.....	*792	1,680	2,460	7,470	1,270	5,570	1,200
30.....	630	*678	538	322	.....	747	1,880	2,720	6,520	1,240	4,250	1,240
31.....	642	.....	513	332	.....	878	.....	3,020	.....	1,510	3,470	.....
1954-55												
1.....	1,420	1,000	1,050	670	600	1,330	2,090	2,280	896	744	585	436
2.....	1,740	*1,740	1,040	800	600	1,880	2,040	*2,060	1,060	900	*502	440
3.....	2,070	1,770	1,120	*900	600	2,040	1,960	1,820	1,650	1,290	632	412
4.....	2,290	1,700	1,080	986	590	3,520	1,980	1,820	3,510	1,880	598	404
5.....	*2,590	1,690	1,020	1,060	590	3,430	1,980	1,620	3,700	1,840	505	399
6.....	2,570	1,590	859	942	610	2,000	2,340	1,460	3,350	3,050	572	406
7.....	2,330	1,500	856	913	590	1,700	2,630	1,380	*2,070	*3,490	532	371
8.....	2,210	1,620	1,050	1,030	580	*1,900	*2,550	1,200	2,830	3,130	571	392
9.....	2,110	1,440	1,130	998	652	2,200	2,410	1,410	2,670	2,780	552	410
10.....	2,160	1,460	1,020	985	645	2,300	2,200	1,290	2,440	2,880	619	384
11.....	2,290	1,570	1,010	896	582	2,610	2,080	1,440	2,270	2,990	448	368
12.....	2,500	1,500	1,090	950	580	3,760	1,920	1,400	1,930	2,560	437	380
13.....	2,800	1,500	1,000	716	550	5,400	2,000	1,290	1,890	2,130	497	383
14.....	3,170	1,320	900	600	530	6,250	2,110	1,280	1,540	1,800	466	386
15.....	3,870	1,380	990	640	510	5,400	2,280	1,210	1,520	1,580	460	386
16.....	4,010	1,370	1,070	700	550	4,150	2,370	1,310	1,340	1,330	435	382
17.....	3,630	1,430	1,080	700	606	3,670	2,220	1,190	1,210	1,230	486	342
18.....	3,130	1,350	1,050	690	624	3,090	2,040	1,140	1,180	1,200	552	347
19.....	2,890	1,340	911	700	1,150	2,810	1,880	987	1,030	1,060	428	368
20.....	2,670	1,290	780	700	2,940	2,400	1,860	1,010	1,120	1,010	456	342
21.....	2,430	1,270	820	680	3,200	2,260	1,770	941	986	975	440	380
22.....	2,280	1,320	950	660	3,700	2,000	1,640	872	984	926	478	300
23.....	2,180	1,190	1,020	640	3,360	1,840	1,610	922	979	852	414	416
24.....	2,060	1,270	1,020	650	2,590	1,730	1,660	827	1,030	782	448	352
25.....	2,040	1,370	1,040	660	1,850	1,610	2,000	966	873	845	458	357
26.....	1,950	1,280	1,120	630	1,500	1,260	2,950	924	733	780	458	410
27.....	2,000	1,170	1,070	620	1,350	1,320	3,270	900	784	712	448	384
28.....	2,030	1,230	944	590	1,320	1,450	3,280	1,020	746	762	436	384
29.....	2,050	1,230	760	570	.....	1,530	2,990	1,100	852	782	*463	394
30.....	2,020	*1,090	650	610	.....	1,680	2,620	1,250	705	708	416	396
31.....	1,940	.....	560	*600	.....	1,950	.....	1,020	.....	542	444	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11-18, 22, 23, 1953; Jan. 6, 7, 9-11, 14-17, 28, 29, Feb. 21, Mar. 3-7, 12, 13, Dec. 13-15, 20-22, 30, 31, 1954; Jan. 1-3, Jan. 14 to Feb. 8, Feb. 13-16, 21, 22, 26-28, Mar. 6-10, 27, 1955.

Cedar River at Waterloo, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	733	527	401	303	2,206	6,086	20,720	7,386	8,039	6,556	4,402	3,022
1951-52	2,635	2,161	1,588	1,620	3,115	6,005	9,344	3,196	2,720	2,447	1,206	819
1952-53	648	613	559	545	1,507	3,187	2,989	3,151	2,754	2,500	4,575	957
1953-54	703	682	630	395	609	760	1,085	2,660	9,810	2,412	2,276	1,462
1954-55	2,434	1,429	970	758	1,198	2,615	2,224	1,269	1,626	1,534	491	387

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.141	0.102	0.077	0.070	0.425	1.20	3.99	1.42	1.55	1.26	0.848	0.582
1951-52	.508	.416	.306	.312	.600	1.16	1.80	.616	.524	.471	.232	.158
1952-53	.125	.118	.108	.105	.290	.614	.576	.607	.531	.482	.882	.184
1953-54	.135	.131	.121	.076	.117	.146	.209	.513	1.89	.465	.439	.282
1954-55	.469	.275	.187	.146	.231	.504	.429	.245	.313	.296	.095	.075

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.16	0.11	0.09	0.09	0.44	1.49	4.46	1.64	1.73	1.46	0.98	0.65
1951-52	.59	.46	.35	.36	.65	1.33	2.01	.71	.58	.54	.27	.18
1952-53	.14	.13	.12	.12	.30	.71	.64	.70	.59	.56	1.02	.21
1953-54	.16	.15	.14	.09	.12	.17	.23	.59	2.11	.54	.51	.31
1954-55	.54	.31	.22	.17	.24	.58	.48	.28	.35	.34	.11	.08

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								1,970	5.15
1951	Apr. 9, 1951	18.83	56,400	298	5,081	0.979	13.30	5,477	14.34
1952	Apr. 2, 1952	13.57	28,000	561	3,064	.590	8.03	2,681	7.02
1953	Aug. 7, 1953	11.29	19,800	350	2,005	.386	5.24	2,021	5.30
1954	June 23, 1954	18.40	49,400	300	1,934	.376	5.12	2,191	5.74
1955	Mar. 14, 1955	7.40	6,590	342	1,413	.272	3.70		

Peak discharge (base, 13,000 cfs)

1951: Feb. 28 (10 p.m.) 21,600 cfs (11.83 ft.); Mar. 30 (5 p.m.) 33,900 cfs (15.05 ft.); Apr. 9 (5:30 a.m.) 56,400 cfs (18.83 ft.); Apr. 30 (3 p.m.) 44,400 cfs (16.97 ft.); June 4 (5:30 a.m.) 15,400 cfs (9.95 ft.); June 27 (9 p.m.) 44,400 cfs (17.01 ft.); July 10 (3 a.m.) 14,400 cfs (9.73 ft.); Aug. 27 (8:30 p.m.) 17,100 cfs (10.50 ft.).

1952: Mar. 22 (1:30 p.m.) 14,100 cfs (9.62 ft.); Apr. 2 (12 p.m.) 28,000 cfs (13.57 ft.).

1953: Aug. 7 (3:30 a.m.) 19,800 cfs (11.29 ft.).

1954: June 23 (3 p.m.) 49,400 cfs (18.40 ft.).

1955: No peak above base.

Cedar River at Cedar Rapids, Iowa

LOCATION.—Lat. 41°58'15", long. 91°40'05", in sec. 28, T. 83 N., R. 7 W., on right bank 500 feet upstream from Eighth Avenue Bridge in Cedar Rapids, 2.7 miles upstream from Prairie Creek, and at mile 80.5.

DRAINAGE AREA.—6,640 square miles, approximately.

RECORDS AVAILABLE.—February 1903 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 700.33 feet above mean sea level, datum of 1929. Prior to Aug. 20, 1920, staff gage at same site and datum.

AVERAGE DISCHARGE.—52 years, 3,120 cfs.

EXTREMES.—1903-55: Maximum discharge, 72,000 cfs Mar. 19, 1929 (gage height, 20.1 feet); minimum, 53 cfs Jan. 6, 1950, caused by construction operations upstream; minimum daily, 212 cfs Dec. 10, 1949.

Flood of June 1951 reached a stage of about 20 feet.

REMARKS.—Records good except those for periods of ice effect, which are poor. Diurnal fluctuation at low stages caused by powerplant half a mile above station.

Records of water temperatures, chemical analysis, and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	1,200	802	530	550	430	22,000	37,700	17,100	4,060	27,000	3,880	7,390
2	1,090	730	570	540	430	20,500	31,700	34,100	7,580	20,500	*3,850	6,120
3	*1,110	778	622	530	420	20,500	23,500	*34,500	15,900	17,100	3,480	5,400
4	1,140	*706	560	*520	420	16,700	18,600	23,200	17,100	13,300	2,950	4,860
5	1,120	778	540	530	410	11,000	16,300	19,000	15,900	*10,200	2,860	4,340
6	1,050	730	530	510	410	9,100	16,300	19,700	*16,700	10,200	2,750	3,880
7	1,050	694	510	490	410	9,860	20,900	16,700	15,600	9,480	2,670	*3,710
8	1,120	778	400	470	*410	9,480	27,700	13,300	13,300	9,100	2,860	3,510
9	1,140	706	420	470	400	8,530	37,700	11,000	10,200	13,300	3,130	3,380
10	1,080	766	480	470	400	7,020	*48,100	10,200	8,910	10,700	3,610	3,640
11	1,200	658	*520	490	400	5,040	*53,700	9,480	7,770	17,800	4,060	4,160
12	1,120	718	470	490	450	3,340	46,500	8,910	6,840	15,900	3,610	4,690
13	1,120	694	460	490	440	2,860	35,700	8,340	5,760	14,400	3,220	4,860
14	1,120	682	440	490	420	2,720	27,700	7,390	5,400	11,800	3,160	4,520
15	1,050	718	470	470	370	2,850	24,700	6,660	5,040	10,200	3,130	4,340
16	1,020	778	600	480	350	3,000	23,900	6,120	5,040	9,480	3,060	4,090
17	980	706	670	470	400	3,000	23,900	5,760	5,040	8,910	5,400	4,860
18	941	730	620	470	420	2,850	22,000	5,400	4,690	7,960	5,400	5,220
19	870	778	540	460	540	2,600	17,800	5,220	4,300	6,840	5,040	*4,690
20	915	706	560	450	900	2,400	14,400	5,940	4,340	6,120	4,860	4,050
21	880	640	530	460	800	2,200	12,100	6,120	4,520	5,580	4,520	3,680
22	880	660	500	470	750	2,100	11,000	5,760	4,860	5,940	4,860	3,480
23	863	600	510	460	800	2,100	10,200	5,400	4,520	6,660	5,040	3,220
24	850	370	540	450	900	2,200	10,600	5,040	4,240	6,300	4,860	3,040
25	850	300	640	500	4,300	2,300	12,100	4,690	3,850	5,580	5,400	2,890
26	790	320	660	470	8,000	2,390	14,800	6,120	3,640	5,400	6,300	2,720
27	814	401	620	460	18,000	4,160	15,900	5,760	3,960	5,220	8,910	2,640
28	814	540	600	450	*25,400	11,800	16,300	4,690	7,580	4,520	10,200	2,640
29	814	530	580	450	.....	19,700	16,700	4,340	14,800	4,060	12,500	2,540
30	778	530	570	440	.....	26,600	16,300	3,880	30,000	3,680	15,900	2,460
31	754	.....	560	440	.....	38,100	.....	3,780	.....	3,610	12,500	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22-25, Dec. 6-31, 1950; Jan. 1 to Feb. 27, Mar. 15-25, 1951.

Cedar River at Cedar Rapids, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	2,320	3,710	3,160	1,900	*2,500	3,710	9,860	4,690	3,710	4,270	1,520	1,260
2.....	2,270	3,680	2,720	1,800	2,900	4,300	12,100	4,340	3,850	*3,850	1,520	1,270
3.....	*2,200	2,890	2,670	1,700	3,700	4,520	16,300	4,160	3,880	3,710	1,520	*1,220
4.....	2,320	2,810	2,720	1,700	4,520	4,160	23,500	3,820	3,540	3,280	1,740	1,220
5.....	2,980	*2,270	2,840	1,600	4,340	3,190	26,600	3,640	*3,570	2,980	1,050	1,120
6.....	3,780	2,180	*2,920	1,600	4,100	3,280	23,900	3,480	3,340	2,670	1,480	1,330
7.....	4,100	2,200	3,040	1,500	3,570	3,680	18,600	3,440	3,160	2,460	1,410	1,300
8.....	3,640	2,720	3,160	*1,500	3,100	3,310	14,000	*3,710	3,540	2,460	1,390	1,160
9.....	3,220	3,030	3,190	1,500	3,010	3,190	11,000	3,880	4,000	2,460	1,480	1,200
10.....	3,010	3,040	3,070	1,400	3,070	5,220	9,480	4,520	3,380	3,190	1,030	1,140
11.....	2,890	2,640	2,890	1,400	3,340	10,600	*8,720	4,860	2,840	4,020	1,410	1,050
12.....	2,840	3,070	2,290	1,400	3,820	*11,400	8,530	5,220	2,690	3,820	1,410	1,040
13.....	2,720	3,780	2,110	1,400	4,520	11,000	8,720	5,220	2,520	3,540	1,270	1,010
14.....	2,620	4,270	1,380	1,500	5,220	11,400	9,100	4,860	3,040	3,190	*1,350	1,050
15.....	2,490	4,340	1,060	1,700	5,580	10,600	9,480	4,520	3,130	3,010	1,360	850
16.....	2,510	4,160	850	2,200	5,760	9,860	9,860	4,270	2,980	2,720	1,430	967
17.....	2,590	3,820	928	3,000	6,120	8,630	10,200	4,020	3,710	3,280	1,470	1,110
18.....	2,750	3,820	1,200	3,960	6,120	7,020	11,000	3,660	4,270	3,540	1,350	954
19.....	2,860	3,850	1,500	4,860	6,120	7,960	11,000	3,510	4,090	3,570	1,030	907
20.....	2,860	3,440	1,900	6,840	5,760	8,530	10,200	3,340	4,130	3,250	1,520	902
21.....	3,440	3,220	2,100	7,390	4,860	9,480	9,290	3,100	3,920	2,810	1,380	902
22.....	4,520	3,220	2,200	6,300	4,340	11,800	8,530	3,610	3,510	2,540	1,360	850
23.....	5,220	3,010	2,200	5,760	3,880	13,300	7,580	5,760	3,220	2,540	1,420	889
24.....	6,120	2,560	2,300	5,940	3,570	14,000	7,380	6,300	2,980	2,670	1,740	863
25.....	6,480	2,560	2,300	5,220	3,820	13,700	6,840	5,940	2,720	2,390	1,450	766
26.....	6,300	2,090	2,200	3,990	3,440	10,600	6,660	5,580	2,640	2,220	1,590	889
27.....	5,760	2,130	2,100	3,600	3,380	8,340	6,300	4,860	2,560	2,040	1,520	799
28.....	5,220	2,340	2,000	3,200	3,740	7,440	5,760	4,520	2,750	1,900	1,540	814
29.....	4,690	2,560	1,900	2,900	3,510	7,390	5,220	4,340	3,880	1,760	1,450	802
30.....	4,340	2,950	1,800	2,700	.....	7,390	4,860	4,160	4,690	1,610	1,330	799
31.....	3,990	.....	1,800	2,500	.....	8,150	.....	3,880	.....	1,540	1,200	.....
1952-53												
1.....	778	799	520	706	670	3,200	4,020	4,860	3,250	*4,270	3,250	1,350
2.....	766	766	540	730	670	2,780	4,130	5,040	2,840	3,920	3,220	1,240
3.....	915	754	*600	730	*580	2,460	*3,920	5,580	*2,560	3,540	2,890	1,140
4.....	980	766	706	730	622	2,290	3,710	6,300	2,460	2,980	*3,280	*1,210
5.....	838	*790	730	670	790	2,000	3,510	6,660	2,040	2,780	5,040	1,200
6.....	742	670	802	*560	1,500	1,800	3,540	6,660	2,460	5,220	7,300	1,210
7.....	*718	778	814	470	1,560	1,700	3,510	6,120	2,220	4,520	9,480	1,150
8.....	706	754	826	490	1,520	1,800	3,250	5,220	3,380	4,520	11,800	1,110
9.....	690	766	876	530	1,210	*2,020	3,250	4,860	3,220	4,800	14,000	1,040
10.....	670	754	876	580	1,060	2,810	3,280	4,300	2,950	3,570	14,400	967
11.....	718	730	850	660	1,700	3,710	3,480	3,960	3,220	2,670	9,860	1,040
12.....	622	730	838	650	1,920	3,920	3,920	3,640	3,280	2,290	6,840	1,080
13.....	814	682	730	646	1,670	4,520	4,160	3,250	4,060	2,070	5,580	1,040
14.....	754	802	510	670	1,420	5,220	3,820	3,190	4,520	1,940	4,860	954
15.....	802	694	470	950	1,200	7,020	3,480	3,100	4,060	1,800	4,240	902
16.....	730	838	470	1,300	1,000	7,390	3,480	2,890	3,160	2,200	3,710	902
17.....	790	1,140	540	1,010	800	6,840	3,480	2,780	3,710	2,460	3,440	778
18.....	754	1,040	660	790	700	6,300	3,990	2,640	6,300	2,750	3,130	967
19.....	778	1,050	780	850	800	5,400	4,340	2,510	6,660	2,670	2,810	863
20.....	766	876	850	863	4,500	4,860	3,940	2,320	4,240	2,670	2,720	863
21.....	778	915	814	876	6,070	4,860	3,520	3,220	3,190	2,290	2,540	902
22.....	802	850	790	863	7,960	4,860	3,220	4,060	2,750	1,940	2,340	802
23.....	754	826	814	838	7,600	5,580	3,100	3,640	2,340	1,840	2,200	850
24.....	814	802	850	850	6,800	6,120	2,890	3,380	2,040	1,860	2,090	790
25.....	790	820	802	876	5,800	5,760	2,920	3,710	2,110	2,840	1,860	889
26.....	790	860	778	780	5,000	5,040	3,070	3,380	2,270	3,740	1,700	790
27.....	790	706	580	700	4,500	4,340	3,310	3,130	2,540	3,740	1,610	838
28.....	730	570	530	670	3,800	3,920	*3,780	3,130	3,340	3,250	1,540	802
29.....	778	490	560	640	.....	3,480	4,270	3,250	3,920	2,750	1,400	766
30.....	730	450	560	610	.....	3,480	4,520	4,200	4,090	2,590	1,400	754
31.....	850	.....	658	570	.....	3,880	.....	3,780	.....	2,950	1,380	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 18-31, 1951; Jan. 1-17, Jan. 27 to Feb. 3, Nov. 25, 26, 1952; Jan. 10-12, 15-17, 26-29, Feb. 14-20, Feb. 23 to Mar. 1, Mar. 5-8, 1953.

Cedar River at Cedar Rapids, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1.....	718	694	580	602	400	952	*806	5,220	5,290	8,530	1,440	5,400
2.....	*802	706	924	614	g402	938	910	5,040	5,040	7,390	1,010	4,340
3.....	730	694	*768	648	g411	*897	819	5,760	5,760	6,480	1,760	3,510
4.....	706	580	845	*606	g445	428	806	6,120	6,440	5,760	1,740	3,100
5.....	706	670	871	618	g475	465	793	*6,660	5,580	5,400	*1,720	2,690
6.....	754	718	938	591	g495	515	980	7,390	4,830	5,400	1,680	2,520
7.....	838	730	938	626	g535	650	1,020	6,840	*4,340	*5,040	1,520	2,320
8.....	670	658	950	602	g*545	910	952	6,120	3,850	4,690	1,470	2,090
9.....	766	706	1,020	620	g*525	858	1,090	4,860	3,250	4,240	1,400	2,010
10.....	790	682	952	560	g602	793	1,040	4,060	3,340	3,920	1,370	1,990
11.....	730	718	994	500	g620	756	980	3,870	3,380	3,540	1,260	1,970
12.....	706	694	832	530	640	810	952	3,070	3,190	3,250	1,190	1,760
13.....	658	730	900	480	550	832	952	2,960	3,060	2,960	1,280	1,740
14.....	670	718	800	445	500	780	884	2,720	4,100	2,640	1,220	1,700
15.....	646	694	480	450	g744	768	1,040	2,480	2,960	2,570	1,250	1,640
16.....	718	720	390	480	g924	696	1,190	2,300	2,690	2,370	1,310	1,610
17.....	694	720	330	500	g871	684	1,310	2,110	2,600	2,110	1,300	1,630
18.....	670	756	320	440	g1,120	637	1,260	1,950	2,640	2,010	3,040	1,590
19.....	694	684	455	411	g1,060	756	1,130	1,720	3,960	1,950	2,410	1,550
20.....	682	832	648	420	910	703	1,180	1,660	5,400	1,870	1,720	1,500
21.....	706	832	756	430	980	884	1,450	1,610	7,690	1,910	1,500	1,520
22.....	670	845	696	*390	952	980	1,360	1,500	10,300	1,830	1,550	1,480
23.....	706	845	696	368	1,020	1,080	1,260	1,520	14,000	1,760	1,500	1,400
24.....	670	845	525	400	1,050	1,000	1,450	1,470	21,400	1,720	1,500	1,470
25.....	718	910	515	420	966	1,200	2,410	1,420	*34,900	1,740	1,680	1,420
26.....	754	845	637	390	1,080	1,240	2,130	1,400	40,000	1,740	6,120	1,340
27.....	754	924	672	g377	1,020	1,080	2,070	1,360	31,900	1,660	*7,960	1,260
28.....	694	819	672	410	1,080	1,040	2,110	2,050	22,100	1,570	7,060	1,300
29.....	610	910	660	400	.....	994	2,130	2,220	15,100	1,470	7,390	1,590
30.....	*742	708	660	g402	.....	871	2,300	2,500	11,000	1,570	7,300	1,630
31.....	706	.....	672	410	.....	897	.....	2,880	.....	1,420	6,660	.....
1954–55												
1.....	1,630	2,370	*1,470	720	*810	2,400	*2,300	3,540	1,500	1,070	954	439
2.....	1,780	2,320	1,400	1,040	820	2,200	2,480	3,070	1,420	882	780	410
3.....	2,460	*2,200	1,340	1,220	800	2,300	2,550	2,880	1,310	883	*727	446
4.....	2,370	2,130	1,320	1,480	780	3,300	2,520	*2,620	1,400	1,010	692	427
5.....	2,770	2,150	1,370	1,610	840	4,900	2,550	2,430	2,090	1,430	796	406
6.....	3,190	2,090	1,190	1,630	860	4,000	2,520	2,350	*3,480	*2,880	785	*394
7.....	3,220	2,030	1,060	*1,400	810	2,200	2,600	2,150	3,710	3,100	744	400
8.....	*3,010	1,950	1,080	1,310	770	1,900	2,850	2,010	3,380	3,530	750	396
9.....	2,880	1,890	1,200	1,450	730	2,700	3,010	2,030	3,190	3,940	668	390
10.....	3,920	1,970	1,220	1,500	820	3,650	2,930	2,460	2,980	3,320	676	397
11.....	4,690	1,830	1,300	1,320	800	*3,340	2,790	2,460	2,900	3,240	674	384
12.....	3,610	1,810	1,400	1,280	760	3,010	2,640	2,240	2,720	3,460	690	378
13.....	3,380	1,870	1,200	1,010	710	3,480	*2,600	2,180	2,500	3,270	606	674
14.....	3,480	1,830	1,120	700	670	4,090	2,900	2,050	2,240	2,740	538	578
15.....	3,760	1,760	1,340	730	640	6,300	3,100	1,870	2,090	2,380	540	501
16.....	4,160	1,700	1,360	780	620	6,660	3,100	1,740	1,870	2,100	568	488
17.....	4,690	1,680	1,440	820	670	5,760	3,070	1,680	1,780	1,850	550	435
18.....	4,690	1,700	1,420	780	690	4,690	3,040	1,660	1,680	1,630	522	418
19.....	4,200	1,700	1,080	760	1,100	4,240	2,850	1,550	1,520	1,530	530	374
20.....	3,740	1,630	960	810	3,000	3,710	2,640	1,480	1,440	1,460	598	476
21.....	3,510	1,630	1,050	870	3,500	3,540	2,520	1,370	1,370	1,300	556	424
22.....	3,160	1,590	1,250	900	3,850	3,160	2,320	1,370	1,380	1,290	472	460
23.....	3,010	1,570	1,360	970	4,090	2,850	2,350	1,300	1,250	1,210	476	966
24.....	2,820	1,570	1,480	820	5,220	2,740	3,190	1,280	1,270	1,160	534	1,160
25.....	2,690	1,480	1,420	740	3,900	2,550	3,510	1,300	1,240	1,080	444	657
26.....	2,620	1,520	1,480	750	3,350	2,000	3,220	1,240	1,230	1,010	475	596
27.....	2,500	1,590	1,680	740	3,050	1,800	3,410	1,340	1,050	1,000	478	673
28.....	2,480	1,540	1,300	710	2,800	1,700	4,100	1,360	978	1,000	433	646
29.....	2,480	1,450	1,000	700	.....	1,850	4,160	1,370	1,030	890	398	752
30.....	2,410	1,450	910	810	.....	2,070	3,960	1,390	942	958	455	662
31.....	2,390	.....	800	900	.....	2,200	.....	1,470	.....	984	434	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 13-17, 1953; Jan. 9-13, 15-18, 20-22, 24-26, 28, 29, 31, Feb. 1, 12-14, Mar. 7, 8, Dec. 19-21, 28-31, 1954; Jan. 1, Jan. 14 to Feb. 21, Feb. 25 to Mar. 10, Mar. 26-29, 1955.

Cedar River at Cedar Rapids, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	985	648	543	480	2,421	9,000	23,490	10,440	8,745	10,090	5,318	4,054
1951-52.....	3,647	3,079	2,210	3,031	4,197	7,973	11,020	4,362	3,451	2,880	1,472	1,016
1952-53.....	760	782	701	737	2,622	4,173	3,627	4,025	3,346	3,016	4,581	973
1953-54.....	714	753	714	492	747	848	1,202	3,308	9,700	3,242	2,003	2,037
1954-55.....	3,152	1,800	1,258	1,008	1,710	3,287	2,926	1,911	1,898	1,858	598	527

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.148	0.098	0.082	0.072	0.365	1.36	3.54	1.57	1.32	1.52	0.801	0.611
1951-52.....	.549	.464	.333	.456	.632	1.20	1.66	.657	.520	.434	.222	.153
1952-53.....	.116	.118	.106	.111	.395	.628	.546	.606	.504	.454	.690	.147
1953-54.....	.108	.113	.108	.074	.112	.128	.195	.498	1.46	.488	.405	.307
1954-55.....	.475	.271	.189	.152	.258	.495	.441	.288	.286	.280	.090	.079

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.17	0.11	0.09	0.08	0.38	1.56	3.95	1.81	1.47	1.75	0.92	0.68
1951-52.....	.63	.52	.38	.53	.68	1.38	1.85	.76	.58	.50	.26	.17
1952-53.....	.13	.13	.12	.13	.41	.72	.61	.70	.56	.52	.80	.16
1953-54.....	.12	.13	.12	.09	.12	.15	.22	.57	1.63	.56	.47	.34
1954-55.....	.55	.30	.22	.18	.27	.57	.49	.33	.32	.32	.10	.09

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	2,704	5.52
1951....	Apr. 11, 1951.	17.22	54,100	300	6,352	0.957	12.97	6,920	14.13
1952....	Apr. 5, 1952..	10.40	27,000	766	4,020	.605	8.24	3,461	7.09
1953....	Aug. 10, 1953.	7.29	15,200	450	2,447	.369	4.99	2,441	4.98
1954....	June 26, 1954.	14.02	41,400	320	2,210	.333	4.52	2,550	5.22
1955....	Mar. 5, 1955..	5.67	8,100	374	1,830	.276	3.74	.....	.....

Peak discharge (base, 12,000 cfs)

1951: Feb. 27 (6 p.m.) about 30,000 cfs (12:51 ft.); Mar. 31 (10 p.m.) 39,300 cfs (13.54 ft.); Apr. 11 (10 a.m.) 54,100 cfs (17.22 ft.); May 2 (10 p.m.) 38,900 cfs (13.45 ft.); June 3 (10 p.m.) 19,400 cfs (8.42 ft.); June 30 (3 p.m.) 33,300 cfs (12.00 ft.); July 10 (11 p.m.) 19,400 cfs (8.35 ft.); Aug. 30 (4 p.m.) 16,300 cfs (7.56 ft.).

1952: March 24 (10 p.m.) 14,400 cfs (7.07 ft.); Apr. 5 (11 a.m.) 27,000 cfs (10.40 ft.).

1953: Aug. 10 (5 a.m.) 15,200 cfs (7.29 ft.).

1954: June 26 (8:30 a.m.) 41,400 cfs (14.02 ft.).

1955: No peak above base.

Cedar River near Conesville, Iowa

LOCATION.—Lat. 41°24'30", long. 91°17'25", in SW¼ sec. 2, T. 76 N., R. 4 W., on left bank 150 feet downstream from highway bridge, 3½ miles northeast of Conesville, 5 miles downstream from Wapsinonoc Creek, and at mile 9.5.

DRAINAGE AREA.—7,840 square miles, approximately.

RECORDS AVAILABLE.—September 1939 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 581.85 feet above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Feb. 2, 1940, and April 11, 1952, to July 1, 1954, wire-weight gage, and Feb. 2, 1940, to April 10, 1952, water-stage recorder, at same site and datum.

AVERAGE DISCHARGE.—16 years, 4,195 cfs.

EXTREMES.—1939-55: Maximum discharge, 60,000 cfs June 18, 1947 (gage height, 15.35 feet); minimum daily, 323 cfs Feb. 2, 1940.

Maximum stage known, 16 feet in March 1929, from information by local residents to Corps of Engineers.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	1,770	940	*700	550	560	*18,900	28,700	17,700	5,260	13,500	4,360	12,000
2.....	1,680	*912	680	550	550	24,000	30,300	17,100	5,580	21,000	4,510	9,700
3.....	1,540	940	680	550	540	23,200	*35,700	17,700	6,970	25,700	4,510	6,970
4.....	1,420	912	660	540	540	21,700	29,900	27,000	*11,100	22,400	4,210	5,910
5.....	*1,380	912	650	540	*530	21,000	24,800	29,900	14,500	18,300	3,790	5,420
6.....	1,380	885	630	540	520	17,700	20,300	24,000	16,000	13,800	3,660	4,960
7.....	1,380	912	600	540	510	11,600	18,900	20,300	16,100	11,100	3,530	4,510
8.....	1,300	885	550	540	500	10,400	18,300	*19,600	17,700	11,100	3,530	3,930
9.....	1,300	940	*560	550	500	10,400	20,300	17,700	17,100	*14,100	3,660	4,070
10.....	1,380	1,000	600	570	500	9,500	24,000	15,700	13,800	16,100	*3,530	4,070
11.....	1,340	912	650	*600	510	8,100	32,600	15,300	10,800	17,100	3,790	4,070
12.....	1,300	940	640	600	800	6,790	45,400	14,500	9,300	18,300	4,210	*4,210
13.....	1,340	858	630	600	1,500	5,420	*54,100	12,400	8,500	18,900	4,070	4,660
14.....	1,300	885	620	590	1,300	4,360	47,500	10,600	7,340	17,700	3,790	4,960
15.....	1,300	885	610	590	900	4,070	34,100	9,500	6,610	15,300	4,070	4,810
16.....	1,270	940	600	580	800	4,070	26,600	8,500	6,250	12,600	4,070	4,510
17.....	1,270	970	580	580	800	4,210	24,000	7,720	6,250	11,100	3,930	4,510
18.....	1,240	940	560	650	1,000	4,510	23,200	7,150	6,080	10,400	4,810	4,660
19.....	1,240	885	550	900	7,000	4,070	22,400	7,910	5,740	9,500	5,260	4,960
20.....	1,240	885	580	1,100	10,000	3,660	21,000	6,430	5,420	8,100	5,110	4,810
21.....	1,240	885	580	1,000	7,000	3,400	18,300	6,610	5,420	7,340	5,110	4,360
22.....	1,130	912	580	750	5,000	2,910	15,300	6,970	6,250	6,790	4,810	3,930
23.....	1,130	830	580	650	4,500	2,910	13,200	6,790	6,430	6,430	4,810	3,790
24.....	1,060	800	570	680	4,300	3,530	11,800	6,610	6,250	*7,150	4,960	3,530
25.....	1,060	400	560	660	4,500	3,400	11,400	6,250	5,910	6,970	5,110	3,400
26.....	1,030	500	550	640	10,000	3,400	12,100	6,790	5,910	6,250	4,960	3,270
27.....	1,000	650	500	620	*14,000	4,070	13,200	8,700	5,260	6,250	5,740	3,150
28.....	1,000	700	510	600	15,300	7,150	14,500	8,300	5,110	6,080	7,720	3,030
29.....	970	700	520	590	.....	12,100	15,700	6,790	6,430	5,580	9,100	2,910
30.....	970	700	*530	580	.....	16,600	16,600	5,910	9,500	4,960	10,100	2,800
31.....	970	.....	540	570	.....	22,400	.....	5,580	.....	4,660	11,000	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 31, 1950; Jan. 1 to Feb. 27, 1951. Discharge computed from gage readings or graph based on gage readings Oct. 1 to Nov. 23, 1950; Feb. 28 to Mar. 1, 1951.

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	2,880	4,480	*3,300	2,000	3,400	4,620	9,750	6,140	5,080	4,920	2,060	1,650
2.....	2,760	4,200	3,500	2,000	3,400	4,340	10,800	5,780	*4,760	4,920	1,960	1,610
3.....	2,700	4,060	3,500	2,000	3,500	4,620	12,000	5,600	4,620	4,480	1,960	1,570
4.....	2,640	3,780	3,300	1,900	*3,700	4,920	13,800	5,240	4,760	4,340	2,160	*1,530
5.....	*2,530	3,360	3,300	1,900	4,000	4,620	15,900	5,080	4,480	4,060	2,530	1,490
6.....	2,760	3,120	3,360	1,900	4,100	4,060	20,000	4,760	4,480	3,780	2,940	1,490
7.....	3,640	*2,760	3,360	1,800	4,000	3,640	23,000	4,620	4,340	3,500	2,060	1,410
8.....	4,060	2,640	3,360	1,800	3,900	3,920	23,000	4,760	4,060	*3,240	1,880	1,570
9.....	3,920	2,880	3,430	1,880	3,800	4,200	20,000	4,920	5,420	2,820	1,880	1,530
10.....	3,500	3,240	3,500	1,700	3,800	4,480	*16,300	5,080	5,960	2,480	1,880	1,410
11.....	3,300	3,500	3,500	1,700	3,900	9,790	12,600	5,420	4,920	3,240	1,880	1,410
12.....	3,180	3,240	3,500	1,700	4,100	16,300	11,000	5,600	4,200	3,920	1,960	1,330
13.....	3,120	5,130	3,120	1,700	4,300	10,500	10,500	*5,960	3,920	4,200	*1,780	1,290
14.....	3,060	10,000	2,000	1,800	4,620	19,000	10,800	5,960	4,340	4,200	1,780	1,330
15.....	2,940	7,500	1,300	2,200	5,960	*15,500	11,000	5,780	5,780	4,340	1,740	1,290
16.....	2,820	5,780	1,200	3,200	6,500	14,100	11,200	5,600	5,080	3,920	1,780	1,250
17.....	2,820	5,420	1,300	4,200	6,900	12,600	11,500	5,240	4,480	3,500	1,780	1,090
18.....	3,360	4,920	1,500	5,240	7,100	11,800	11,800	5,080	4,480	3,780	1,830	1,170
19.....	3,500	4,620	1,700	6,140	7,100	11,800	12,000	4,760	4,760	4,020	1,830	1,250
20.....	3,500	4,620	2,000	9,750	6,900	11,200	12,300	4,480	5,240	4,340	1,830	1,090
21.....	3,500	4,340	2,100	9,750	6,700	11,200	12,000	4,480	5,780	4,060	2,700	1,130
22.....	4,340	4,200	2,200	8,400	5,960	11,500	11,500	4,340	5,780	3,430	2,160	1,060
23.....	5,240	4,060	2,300	7,000	5,420	12,000	10,500	5,240	4,760	3,240	1,830	1,090
24.....	5,780	3,920	2,300	6,000	5,080	14,100	9,500	8,300	4,480	*3,060	1,740	1,060
25.....	6,500	3,430	2,300	5,200	4,020	*15,100	9,000	8,100	4,200	3,060	1,830	1,060
26.....	6,900	3,120	2,200	4,800	4,480	15,000	8,500	7,500	3,920	2,940	1,960	1,020
27.....	6,900	2,880	2,200	4,300	4,480	15,500	8,100	6,900	3,920	2,580	1,880	1,020
28.....	6,500	2,820	2,100	3,900	5,780	12,600	7,700	6,140	3,920	2,480	1,960	985
29.....	5,780	2,820	2,000	3,600	5,600	10,500	7,100	5,780	3,640	2,360	1,830	920
30.....	5,240	3,120	2,000	3,500	.....	9,750	6,500	5,420	4,060	2,310	1,830	985
31.....	4,920	.....	2,000	3,400	.....	9,500	.....	5,240	.....	2,210	1,740	.....
1952-53												
1.....	985	920	760	950	1,200	5,000	6,500	5,930	4,740	4,570	3,280	1,850
2.....	920	950	780	1,000	1,200	4,500	*6,900	6,100	4,120	4,910	3,560	1,800
3.....	*890	985	850	1,000	1,100	4,000	6,100	6,100	3,840	4,570	3,840	*1,750
4.....	890	950	*900	970	1,000	3,600	5,760	*6,100	3,500	4,120	3,420	1,650
5.....	985	920	1,000	910	*1,100	*3,140	5,250	6,500	*3,350	4,400	*3,350	1,500
6.....	1,070	*920	1,050	860	4,340	3,280	5,250	7,100	3,350	*6,500	3,980	1,550
7.....	985	950	1,080	800	8,100	3,210	4,740	7,360	3,700	6,100	5,760	1,500
8.....	890	890	1,100	760	5,600	2,880	4,740	7,100	3,420	5,250	7,700	1,550
9.....	865	950	1,090	780	4,340	2,460	4,570	6,500	3,980	5,080	9,000	1,320
10.....	840	985	1,060	830	3,430	2,580	4,260	5,760	4,910	4,910	11,400	1,360
11.....	815	950	1,030	990	2,880	4,710	4,260	5,250	4,000	4,910	13,200	1,360
12.....	815	950	970	940	3,060	5,930	4,260	5,080	4,600	3,840	*13,200	1,280
13.....	865	950	900	1,020	3,430	4,740	4,400	4,570	4,260	3,280	8,600	1,320
14.....	815	920	800	1,120	3,000	5,080	*4,740	4,260	4,570	3,070	6,500	1,320
15.....	920	950	700	*1,230	2,500	6,700	4,740	4,100	4,910	2,940	5,930	1,320
16.....	920	1,020	650	1,400	2,000	7,700	4,570	3,980	4,910	2,640	5,080	1,230
17.....	950	1,580	690	1,560	1,500	8,350	4,260	3,840	4,400	2,460	4,570	1,180
18.....	950	3,920	740	1,700	1,300	7,700	4,260	3,700	3,300	2,820	4,260	1,100
19.....	950	2,580	840	2,000	1,400	7,300	4,400	3,560	4,910	3,140	3,840	1,150
20.....	920	1,740	1,170	1,800	7,700	6,300	4,740	3,420	6,700	3,210	3,560	1,100
21.....	920	1,530	2,820	1,680	20,600	5,760	4,740	3,280	5,760	3,420	3,350	1,150
22.....	920	1,330	2,110	1,580	15,100	5,760	4,400	3,700	4,400	4,120	3,210	1,050
23.....	920	1,250	1,700	*1,500	9,600	5,760	4,120	5,930	3,700	3,140	2,940	1,080
24.....	920	1,250	1,650	1,400	8,600	5,930	3,840	5,760	3,280	2,580	2,880	978
25.....	920	1,250	1,210	1,350	7,600	6,900	3,840	7,500	3,000	2,400	2,700	1,030
26.....	920	1,450	980	1,300	6,800	6,700	3,840	5,760	2,760	2,400	2,580	930
27.....	985	1,610	800	1,250	6,000	6,100	3,840	4,910	2,820	3,560	2,350	940
28.....	985	1,290	720	1,200	5,500	5,420	3,980	4,400	3,070	3,980	2,200	944
29.....	950	815	800	1,150	.....	5,080	4,120	4,260	3,980	3,840	2,100	920
30.....	890	740	880	1,100	.....	4,740	4,740	3,980	4,260	3,420	1,950	952
31.....	950	.....	910	1,050	.....	5,420	.....	4,570	.....	3,140	1,850	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1-17, Jan. 22 to Feb. 13, Nov. 30 to Dec. 18, Dec. 26-31, 1952; Jan. 1 to Feb. 5, Feb. 15-19, Feb. 24 to Mar. 4, 1953.

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	896	920	*978	770	530	1,230	1,070	3,280	4,910	20,000	2,000	7,380
2	*861	*872	856	760	540	1,230	1,030	6,100	8,350	12,000	2,060	*6,360
3	880	792	930	740	570	1,100	978	7,500	8,600	9,200	2,060	5,220
4	920	800	1,020	720	600	864	960	7,300	*8,350	8,020	*2,110	4,520
5	818	800	960	*700	*610	620	*960	7,300	8,600	7,170	2,350	3,960
6	816	808	1,080	730	660	660	1,090	*7,300	7,900	6,560	2,410	3,560
7	816	732	1,070	740	680	720	1,230	7,700	6,700	6,160	2,110	3,270
8	816	785	*1,090	740	670	702	1,320	7,700	5,930	*5,960	2,060	2,990
9	976	848	1,140	760	680	840	*1,280	7,100	5,420	5,580	1,940	2,800
10	824	778	1,140	780	700	1,230	1,180	6,100	4,910	5,220	1,840	2,540
11	896	824	1,280	690	740	*1,100	1,180	5,250	4,740	4,860	1,780	2,410
12	896	872	1,230	620	770	1,020	1,230	4,570	4,740	4,520	1,680	2,350
13	832	840	1,230	590	800	1,010	1,120	4,120	4,260	4,200	1,630	2,230
14	800	856	1,020	560	770	1,000	1,040	3,840	4,260	3,880	1,580	2,110
15	762	872	800	550	830	1,030	1,140	3,700	4,910	3,560	1,580	2,060
16	762	848	600	540	900	1,230	1,180	3,490	4,570	3,410	1,580	2,000
17	725	848	500	560	1,030	920	1,320	3,280	4,120	3,200	1,580	1,940
18	725	808	450	580	1,030	824	1,360	3,070	3,840	2,990	1,680	1,890
19	740	824	520	560	1,000	896	1,500	2,880	3,840	2,800	4,140	1,890
20	740	848	620	550	1,280	880	1,550	2,700	4,570	2,660	4,090	1,840
21	732	864	740	530	1,280	896	1,550	2,580	6,500	2,600	2,860	1,730
22	732	896	820	510	1,180	912	1,700	2,520	7,900	2,540	2,230	1,680
23	725	888	830	500	1,180	978	2,000	2,460	10,100	2,410	2,000	1,680
24	725	904	670	500	1,180	1,300	1,950	2,460	11,700	2,410	2,060	1,630
25	725	904	660	500	1,230	1,360	2,400	2,400	13,500	2,290	2,000	1,580
26	762	936	750	500	1,230	1,500	3,210	2,400	17,100	2,290	2,060	1,580
27	792	978	800	500	1,230	1,460	3,350	2,520	26,100	2,230	5,220	1,540
28	824	912	820	500	1,320	1,460	3,490	2,820	*35,700	2,230	8,240	*1,490
29	872	996	820	510	.....	1,280	3,070	3,490	35,700	2,170	8,950	1,540
30	816	920	810	520	.....	1,230	2,880	3,560	27,000	2,060	8,700	1,840
31	824	.....	790	520	.....	1,180	.....	3,560	.....	2,000	7,800	.....
1954-55												
1	1,910	2,990	1,780	1,020	1,140	6,160	2,760	5,040	1,840	1,410	1,170	579
2	1,940	*2,090	1,840	1,210	*1,170	4,690	2,840	4,690	1,960	1,310	1,210	562
3	1,880	2,860	1,780	1,410	1,130	3,800	2,920	4,360	*1,960	1,310	1,160	546
4	2,350	2,860	1,730	*1,740	1,120	3,400	3,000	*4,040	1,840	1,230	*1,040	537
5	*3,060	2,730	1,650	2,100	1,100	4,200	3,080	*3,880	1,790	1,190	1,080	537
6	3,200	2,660	1,600	3,100	1,100	5,040	*3,080	3,560	2,020	1,310	1,040	546
7	3,480	2,660	1,380	2,600	1,100	6,160	3,000	3,320	3,000	*1,790	1,000	496
8	3,720	2,600	1,450	2,300	1,060	4,690	2,920	3,160	3,880	3,160	1,070	472
9	3,640	2,540	1,540	2,100	1,040	*3,080	3,080	3,000	3,880	3,560	*985	464
10	5,220	2,410	1,490	1,900	1,040	*3,400	3,320	3,560	3,720	4,360	944	456
11	9,700	2,410	1,540	1,700	1,030	4,520	3,400	3,800	3,640	4,200	902	448
12	9,200	2,410	1,540	1,550	970	4,360	3,320	3,880	3,560	3,720	886	432
13	6,560	2,350	1,580	1,420	930	3,800	3,400	3,560	3,400	3,720	869	464
14	5,400	2,350	1,480	1,300	940	3,720	3,400	3,320	3,240	3,720	861	637
15	5,220	2,290	1,370	1,200	920	5,040	*3,400	3,160	2,920	3,400	819	894
16	5,040	2,200	1,490	1,200	900	6,360	3,640	2,920	2,680	3,080	770	770
17	5,040	2,230	1,630	1,180	900	6,960	3,720	2,680	2,520	2,680	728	653
18	5,220	2,170	1,080	1,130	920	6,360	3,640	2,520	2,290	2,440	728	579
19	5,400	2,110	1,680	1,120	1,800	5,400	4,550	2,440	2,150	2,150	720	554
20	5,040	2,110	1,420	1,120	3,800	5,040	7,590	2,360	2,090	1,960	678	554
21	4,690	2,110	1,270	1,120	9,000	4,520	4,800	2,220	*2,020	1,840	670	521
22	4,360	2,060	1,330	1,200	8,000	4,360	3,880	2,150	1,840	1,740	711	562
23	4,200	2,000	1,440	1,200	7,000	4,010	3,720	2,020	1,790	1,680	703	546
24	3,880	2,000	1,540	1,100	6,100	3,800	8,120	2,020	1,740	1,790	620	537
25	3,720	2,000	1,630	1,030	5,800	3,720	9,450	1,960	1,620	1,570	612	828
26	3,560	1,890	1,730	970	7,400	3,480	6,960	1,960	1,620	1,410	637	1,030
27	3,410	1,890	1,840	950	9,700	3,080	5,760	*1,960	1,570	*1,360	628	844
28	3,340	1,890	2,060	930	8,020	2,920	5,040	1,960	1,520	1,260	595	761
29	3,200	1,940	1,650	930	.....	3,080	5,040	1,960	1,460	1,260	*662	803
30	3,130	*1,840	1,350	1,050	.....	2,920	5,040	1,960	1,410	1,220	637	985
31	3,060	.....	1,150	1,110	.....	2,810	.....	1,840	.....	1,150	579	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1953; Jan. 1 to Feb. 16, Mar. 5-7, Dec. 6-8, 14, 15, 20-22, 29-31, 1954; Jan. 1 to Feb. 26, 1955. Discharge computed from gage readings or graph based on gage readings Oct. 22, 23, 1954; Feb. 27 to Mar. 10, 1955.

Cedar River near Conesville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	1,250	837	593	632	3,377	9,662	24,440	12,340	8,649	12,080	5,046	4,761
1951-52.....	4,019	4,132	2,540	3,761	4,934	10,440	12,310	5,599	4,654	3,559	1,966	1,270
1952-53.....	920	1,250	1,056	1,196	4,999	5,249	4,672	5,171	4,083	3,830	4,027	1,272
1953-54.....	800	859	872	607	902	1,056	1,644	4,356	10,100	4,748	3,083	2,054
1954-55.....	4,284	2,321	1,570	1,419	3,040	4,353	4,264	2,036	2,365	2,103	832	620

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.160	0.107	0.076	0.081	0.431	1.23	3.12	1.57	1.10	1.54	0.644	0.607
1951-52.....	.513	.527	.324	.478	.629	1.33	1.57	.713	.594	.454	.251	.162
1952-53.....	.117	.159	.135	.153	.638	.670	.596	.660	.521	.489	.628	.162
1953-54.....	.103	.110	.111	.077	.115	.135	.210	.556	1.30	.606	.303	.339
1954-55.....	.546	.296	.200	.181	.388	.555	.544	.374	.302	.280	.106	.079

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.18	0.12	0.09	0.09	0.45	1.42	3.48	1.81	1.23	1.78	0.74	0.68
1951-52.....	.59	.59	.37	.55	.68	1.53	1.75	.82	.66	.52	.29	.18
1952-53.....	.14	.18	.16	.18	.66	.77	.66	.76	.58	.56	.72	.18
1953-54.....	.12	.12	.13	.09	.12	.16	.23	.64	1.46	.70	.45	.38
1954-55.....	.63	.33	.23	.21	.40	.64	.61	.43	.34	.32	.12	.09

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....								3,430	5.94
1951.....	Apr. 13, 1951..	15.10	54,100	400	6,073	0.889	12.07	7,644	13.23
1952.....	Apr. 7, 1952..	13.14	23,700	920	4,923	.628	8.53	4,299	7.46
1953.....	Feb. 21, 1953.	12.87	22,400	650	3,209	.409	5.55	3,151	5.44
1954.....	June 28, 1954.	14.80	36,600	450	2,647	.338	4.60	3,122	5.42
1955.....	Oct. 11, 1954..	(1)10.26	10,700	432	2,514	.321	4.35	.....	.....

(1) Maximum gage height, 13.61 ft. Feb. 21, 1955 (ice jam).

Peak discharge (base, 11,000 cfs)

1951: Mar. 2 (7 p.m.) 25,700 cfs (13.35 ft.); Apr. 3 (4:30 a.m.) 41,300 cfs (14.27 ft.); Apr. 13 (9 a.m.) 54,100 cfs (15.10 ft.); May 5 (4 a.m.) 32,600 cfs (13.86 ft.); June 9 (4 a.m.) 18,300 cfs (12.27 ft.); July 3 (6:30 a.m.) 26,600 cfs (13.50 ft.); July 13 (10 a.m.) 27,600 cfs (13.58 ft.); Sept. 1 (4 p.m.) 13,200 cfs (11.20 ft.).

1952: Mar. 13 (12:30 a.m.) 20,000 cfs (12.54 ft.); Mar. 26 (8 p.m.) 15,900 cfs (11.64 ft.); Apr. 7 (11 p.m.) 23,700 cfs (13.14 ft.).

1953: Feb. 21 (5 p.m.) 22,400 cfs (12.87 ft.); Aug. 12 (6 a.m.) 14,300 cfs (11.20 ft.).

1954: June 28 (6 p.m.) 36,600 cfs (19.80 ft.); Oct. 11 (11:30 p.m.) 11,000 cfs (10.26 ft.).

Iowa River at Wapello, Iowa

LOCATION.—Lat. 41°10'45", long. 91°11'00", in SE¼ sec. 27, T. 74 N., R. 3 W., on right bank 30 feet downstream from bridge on State Highway 99 at east edge of Wapello, 13 miles downstream from Cedar River, and at mile 16.0.

DRAINAGE AREA.—12,480 square miles, approximately.

RECORDS AVAILABLE.—February 1915 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 548.98 feet above mean sea level, adjustment of 1912. Prior to April 17, 1934, chain gage at same site and datum.

AVERAGE DISCHARGE.—40 years, 6,171 cfs.

EXTREMES.—1915-55: Maximum discharge, 94,000 cfs June 18, 1947 (gage height, 16.14 feet); maximum gage height, 16.85 feet June 17, 1947, before levees broke in vicinity of gage; minimum daily discharge, about 400 cfs Dec. 15-17, 1916.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	2,230	1,170	914	660	760	22,600	34,300	25,000	10,400	16,200	7,600	17,700
2	2,100	1,100	1,010	670	740	26,200	39,800	25,400	10,400	19,800	6,760	17,400
3	1,960	1,050	994	670	730	31,300	47,300	24,600	11,200	29,000	6,340	12,400
4	1,900	1,110	1,070	670	720	29,800	*49,700	27,000	*14,100	35,800	6,080	10,400
5	1,780	1,030	1,010	670	*710	*28,600	47,300	*37,300	15,600	31,800	5,700	9,000
6	1,780	1,010	935	660	700	27,800	42,800	38,300	22,200	*26,600	*5,220	8,160
7	1,840	*1,060	886	650	700	24,200	37,800	*30,800	24,200	20,600	4,990	7,320
8	1,780	1,160	844	650	700	17,100	34,800	27,400	27,400	18,300	4,760	6,760
9	*1,720	1,100	754	*660	700	15,900	35,800	26,600	28,600	21,000	4,880	6,340
10	1,780	1,080	780	670	700	15,300	37,800	29,800	29,400	25,800	4,650	6,210
11	1,780	1,170	810	680	800	14,100	42,300	30,800	27,000	28,200	4,540	6,080
12	1,720	1,010	*820	690	2,000	11,800	52,100	29,000	22,200	29,000	4,880	6,340
13	1,660	1,100	810	700	2,500	9,560	*63,200	27,400	18,600	29,400	4,990	*6,620
14	1,720	1,020	790	700	2,700	7,880	*67,000	21,800	16,800	29,800	4,760	7,600
15	1,720	1,070	770	710	2,000	6,620	58,200	18,300	13,500	28,200	5,220	7,600
16	1,660	1,070	760	720	1,700	6,480	47,900	15,900	12,600	24,600	5,700	6,760
17	1,660	1,320	740	760	2,500	6,620	41,300	14,400	13,200	20,200	4,880	6,620
18	1,600	1,170	710	900	7,000	7,040	37,300	13,500	13,500	22,200	5,460	7,040
19	1,550	1,030	680	1,000	11,000	6,760	35,300	12,600	12,600	16,500	6,480	7,040
20	1,440	1,070	690	1,400	17,000	6,080	33,800	12,100	11,500	14,700	6,620	7,320
21	1,440	1,020	700	1,700	22,600	5,700	31,800	12,100	11,800	12,900	6,480	6,760
22	1,390	1,080	700	1,300	14,400	4,990	28,200	13,200	14,100	12,600	6,340	6,080
23	1,340	921	680	1,100	9,280	4,760	23,400	12,600	15,600	11,000	6,340	5,820
24	1,330	646	660	1,050	7,320	5,220	19,800	12,100	15,300	11,000	6,480	5,340
25	1,300	695	640	970	8,440	5,580	18,300	11,200	15,300	*10,700	8,720	5,100
26	1,200	760	620	930	10,800	5,580	18,300	12,600	15,600	10,100	10,800	4,880
27	1,250	810	600	890	24,200	6,080	19,800	17,700	14,400	9,560	17,100	4,760
28	1,200	935	580	860	22,600	10,100	21,800	19,400	11,800	10,100	16,800	4,440
29	1,170	851	*600	830	.....	19,000	24,200	17,400	11,500	9,000	15,600	4,230
30	1,150	851	630	800	.....	24,600	24,600	12,900	13,200	8,160	15,600	4,130
31	1,160	.....	650	780	.....	29,400	.....	11,200	.....	7,600	16,500	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 10-31, 1950; Jan. 1 to Feb. 20, 1951.

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4,030	7,600	5,340	3,500	6,400	10,400	16,500	9,840	8,160	6,760	3,030	2,030
2	3,930	7,040	5,580	3,600	6,600	8,720	16,800	9,280	7,600	7,320	2,800	1,960
3	3,730	6,480	5,820	3,500	7,000	8,440	17,700	9,000	*7,040	7,040	2,800	1,960
4	3,730	6,080	*5,580	3,400	7,500	8,440	18,600	8,440	7,040	6,760	2,960	1,900
5	3,540	5,460	5,580	3,400	8,000	8,160	20,600	8,160	7,040	6,620	3,450	*1,840
6	3,540	4,990	5,460	3,300	8,200	7,040	23,400	7,600	6,760	6,210	3,110	1,840
7	4,130	4,540	5,460	*3,200	8,000	6,480	27,800	7,600	6,760	*5,820	*2,800	1,840
8	*5,340	*4,230	5,460	3,200	7,400	6,620	32,300	7,880	6,340	5,340	2,730	1,840
9	6,480	4,230	5,340	3,100	7,000	7,040	31,800	7,880	7,170	4,880	2,580	1,840
10	5,700	4,540	5,340	3,100	6,900	7,880	27,000	8,160	8,720	4,050	2,580	1,840
11	5,100	4,990	5,220	3,100	6,800	15,900	20,600	8,440	7,600	4,650	2,960	1,720
12	4,650	5,100	5,100	3,000	7,000	25,400	16,800	*8,720	6,760	5,580	2,730	1,780
13	4,440	8,530	4,500	3,000	7,200	34,300	15,900	8,720	5,950	6,620	2,580	1,660
14	4,330	19,000	3,500	3,000	7,400	40,800	15,900	8,720	7,250	6,020	2,510	1,720
15	4,130	18,000	2,000	3,500	7,800	*38,800	*16,200	8,440	9,260	6,760	2,440	1,600
16	3,930	14,400	1,900	5,000	8,300	32,300	16,500	8,440	8,480	6,760	2,510	1,720
17	3,930	11,800	2,200	6,500	8,800	27,800	16,800	8,160	7,880	6,210	2,580	1,550
18	4,540	10,100	2,400	9,000	9,200	26,200	16,500	7,880	7,600	6,620	2,660	1,550
19	7,320	9,000	2,700	12,000	9,600	26,600	16,800	7,320	7,600	7,320	2,440	1,600
20	7,040	8,440	3,000	17,000	9,900	25,800	16,800	7,040	8,160	7,040	2,300	1,550
21	6,210	7,880	3,400	19,000	9,800	25,400	16,800	7,040	11,500	6,760	2,730	1,550
22	6,620	7,600	3,700	15,000	9,300	23,400	16,500	6,760	13,200	6,210	2,800	1,550
23	10,400	7,320	3,900	13,000	8,800	23,000	17,100	7,120	11,500	5,580	2,370	1,500
24	11,000	6,760	4,000	11,000	8,300	23,800	16,200	15,600	9,840	4,990	2,160	1,440
25	11,500	6,210	3,900	9,500	8,000	23,800	15,300	16,800	8,160	*4,650	2,160	1,440
26	11,800	5,340	3,700	8,500	8,100	24,200	14,100	15,300	7,320	4,540	2,370	1,500
27	11,200	5,100	3,600	7,800	8,100	24,200	13,200	13,500	7,040	4,230	2,230	1,340
28	10,400	4,880	3,500	7,300	9,000	21,800	12,400	12,400	8,230	3,930	2,230	1,440
29	9,560	4,880	3,400	6,800	9,800	18,000	11,500	10,100	7,880	3,640	2,230	1,390
30	8,720	5,100	3,400	6,500	.....	16,500	10,700	9,560	6,760	3,280	2,100	1,390
31	8,160	.....	3,400	6,400	.....	16,500	.....	8,720	.....	3,190	2,100	.....
1952-53												
1	1,310	1,290	1,200	1,350	1,750	11,500	*14,200	10,400	7,210	9,820	3,810	2,100
2	1,360	1,280	1,300	1,380	1,650	9,550	14,500	11,300	7,000	9,020	4,170	*2,040
3	1,310	1,290	1,380	1,400	1,600	7,850	12,700	11,000	6,400	7,850	4,740	1,970
4	1,250	1,290	1,450	1,400	1,550	7,000	11,500	11,000	6,000	7,420	4,360	1,970
5	1,400	1,290	1,510	1,350	1,700	5,800	10,400	11,000	5,800	7,850	3,990	1,780
6	*1,370	*1,250	1,550	1,300	6,000	5,400	9,280	11,300	5,400	9,550	4,170	1,780
7	1,390	1,270	1,660	1,250	14,000	5,400	8,530	*11,300	6,400	*11,000	5,400	1,780
8	1,370	1,300	*1,690	1,280	14,500	5,020	8,300	11,000	6,600	8,530	7,210	1,780
9	1,250	1,220	1,710	1,330	*9,820	4,540	7,850	10,400	*7,030	7,630	9,020	1,780
10	1,310	1,250	1,650	1,400	7,850	*4,540	7,630	9,280	8,770	7,000	*11,000	1,690
11	1,230	1,330	1,710	1,550	6,400	6,070	7,420	8,770	8,300	7,000	12,100	1,660
12	1,220	1,280	1,710	1,650	*6,000	11,300	7,420	8,300	7,630	6,200	*13,300	1,510
13	1,250	1,290	1,550	1,780	6,000	9,550	7,210	7,630	8,770	5,400	11,600	1,490
14	1,250	1,280	1,350	1,950	5,400	9,020	7,420	7,210	8,770	4,830	8,300	1,590
15	1,280	1,280	1,130	2,100	4,600	11,500	7,630	6,800	9,020	4,740	7,000	1,450
16	1,300	1,300	1,050	2,300	3,000	13,600	7,420	6,600	9,020	4,260	6,200	1,460
17	1,250	1,540	1,100	2,500	2,500	13,600	7,210	6,400	8,530	3,900	5,800	1,370
18	1,350	5,020	1,200	2,800	2,200	12,700	7,000	6,200	7,210	3,900	5,210	1,290
19	1,250	6,720	1,300	3,000	2,600	11,500	7,000	6,000	6,600	4,080	4,740	1,340
20	1,340	3,720	1,450	3,200	10,100	10,700	7,000	5,800	7,630	4,260	4,450	1,280
21	1,250	2,550	3,000	3,000	23,900	9,820	7,210	5,400	7,850	5,600	4,080	1,330
22	1,340	2,100	4,100	2,850	30,300	9,280	7,000	5,600	6,400	5,400	3,990	1,190
23	1,270	1,840	2,900	2,700	28,700	9,020	6,600	7,850	5,600	4,830	3,720	1,300
24	1,310	1,780	2,300	2,600	19,300	9,820	6,400	9,820	5,020	3,720	3,540	1,190
25	1,350	1,780	1,900	2,400	16,400	11,800	6,600	12,700	4,640	3,370	3,370	1,160
26	1,280	1,900	1,650	*2,300	15,400	11,500	6,800	14,200	4,360	3,200	3,200	1,150
27	1,310	2,320	1,300	2,200	14,500	10,400	6,800	11,800	4,260	3,810	2,790	1,150
28	1,330	2,300	1,150	2,100	13,300	9,280	7,000	9,280	5,020	4,640	2,710	1,130
29	1,300	1,550	1,200	2,000	.....	10,100	7,210	7,850	9,020	4,830	2,470	1,090
30	1,270	1,150	1,250	1,900	.....	8,070	7,850	7,210	10,400	4,450	2,390	1,150
31	1,270	.....	1,300	1,800	.....	8,930	.....	7,000	.....	3,990	2,240	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 13-31, 1951; Jan. 1 to Feb. 29, Nov. 30 to Dec. 4, Dec. 13-31, 1952; Jan. 1 to Feb. 7, Feb. 14-19, 1953.

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	1,060	980	1,160	950	660	1,470	1,610	4,360	5,400	31,700	*2,550	*12,300
2	*1,010	1,060	*1,220	940	*690	1,470	1,580	6,800	8,370	24,000	2,420	11,700
3	1,030	990	1,130	940	710	1,370	1,430	10,400	12,400	17,800	2,360	10,800
4	1,060	1,010	1,150	940	730	1,130	1,450	10,400	12,100	16,000	2,420	9,920
5	1,030	*970	1,280	*940	750	*785	1,400	9,820	12,700	14,300	2,660	9,640
6	*990	980	1,280	940	770	780	1,710	9,280	12,400	11,400	*2,900	9,360
7	1,000	930	*1,280	940	820	820	1,660	9,550	11,500	9,900	2,680	6,790
8	990	920	1,280	920	840	900	1,970	9,550	*10,400	*9,000	2,680	5,660
9	1,060	1,030	1,330	920	850	980	2,320	9,020	9,020	8,100	2,550	5,050
10	1,090	970	1,350	960	880	1,230	2,100	8,070	7,850	7,580	2,690	4,560
11	980	960	1,270	870	930	1,330	1,900	7,210	7,000	6,860	2,360	4,290
12	1,080	1,060	1,370	800	1,000	1,240	1,780	6,400	6,800	6,360	2,230	4,040
13	1,020	980	1,430	750	1,100	1,170	1,600	5,800	6,600	5,940	*2,110	3,860
14	1,000	980	1,290	710	1,200	1,160	*1,570	5,400	7,210	*5,510	1,990	3,620
15	960	1,000	1,180	690	*1,340	1,180	1,710	5,020	8,300	5,100	1,990	3,470
16	950	1,020	800	680	1,520	1,130	1,700	4,830	9,020	4,800	1,930	3,330
17	970	1,060	700	680	1,330	1,110	1,650	4,450	8,530	4,520	2,110	3,190
18	930	1,020	630	690	1,270	1,100	1,710	4,170	8,070	4,330	2,050	3,050
19	1,010	1,010	580	690	1,270	1,110	1,970	3,900	7,420	4,060	2,480	3,050
20	960	1,060	700	680	1,400	1,080	2,240	3,630	7,420	3,880	5,100	2,910
21	990	1,100	830	670	1,550	1,070	2,470	3,370	8,770	3,790	3,790	2,840
22	950	1,090	900	650	1,470	1,090	2,170	3,120	13,000	3,540	2,900	2,770
23	1,000	1,150	1,000	630	1,420	1,180	2,320	3,030	14,800	3,420	2,620	2,640
24	960	1,130	1,050	620	1,360	1,530	2,470	2,790	15,400	3,290	2,420	2,580
25	950	1,110	950	620	1,390	2,100	2,300	2,710	17,100	3,210	2,420	2,440
26	1,100	1,150	820	620	1,460	*2,100	2,630	2,710	18,500	3,060	3,300	2,380
27	1,000	1,170	930	620	1,490	2,100	4,080	2,630	21,300	2,980	5,970	2,380
28	1,000	1,190	970	620	1,470	1,970	4,640	2,870	28,600	2,900	11,300	2,320
29	1,080	1,180	*960	620	.....	1,900	4,640	3,720	30,300	2,830	13,000	2,380
30	1,030	1,170	960	630	.....	1,840	*3,990	4,360	38,300	2,600	13,000	2,510
31	1,010	.....	950	640	.....	*1,710	.....	4,170	.....	2,480	12,700	.....
1954-55												
1	2,730	4,800	2,590	1,600	1,680	10,000	4,600	8,560	2,880	1,950	1,430	844
2	3,440	4,600	2,590	1,900	*1,720	8,000	4,500	8,080	2,880	1,790	1,430	838
3	3,440	4,500	2,590	2,150	1,700	6,600	4,500	7,360	*2,960	1,740	1,480	790
4	*3,280	4,320	2,500	2,500	1,700	5,900	4,500	6,680	2,800	1,580	1,330	760
5	4,800	*4,240	2,520	3,500	1,680	6,900	4,600	6,880	2,730	1,530	1,380	760
6	5,200	4,160	2,440	4,500	1,670	7,800	4,600	*6,400	2,880	1,480	1,530	772
7	5,200	4,160	2,300	3,900	*1,650	8,800	*4,600	5,800	2,960	1,740	1,530	754
8	5,600	4,000	2,200	3,600	1,600	7,120	4,400	5,400	3,920	*2,520	*1,630	724
9	5,600	3,920	2,260	3,300	1,580	*5,600	4,400	5,200	4,700	3,600	1,480	718
10	8,000	3,840	2,260	3,000	1,500	5,800	4,660	5,400	4,600	4,600	1,330	712
11	*16,500	3,680	2,260	2,700	1,460	6,200	4,800	6,400	4,600	6,000	1,250	706
12	16,900	3,680	2,200	2,500	1,430	6,880	4,900	6,200	4,500	5,000	1,130	700
13	12,400	3,600	2,260	2,200	1,400	6,200	5,000	6,000	4,400	4,700	1,120	700
14	10,200	3,520	2,320	2,000	1,370	*5,800	*5,200	5,600	4,240	5,600	1,020	736
15	9,340	3,520	2,260	1,900	1,340	6,400	5,200	5,200	3,920	5,400	1,090	885
16	8,320	3,440	2,140	1,800	1,300	8,320	5,600	4,800	3,680	4,800	968	*1,020
17	7,840	3,360	2,260	*1,780	1,300	9,070	5,600	4,500	3,440	4,240	899	864
18	8,560	3,280	2,440	1,750	1,300	9,070	5,600	4,160	3,200	3,840	936	802
19	8,800	3,200	2,380	1,700	2,300	8,080	5,800	3,920	2,960	3,440	885	772
20	8,560	3,200	2,380	1,700	6,700	7,360	12,700	3,760	2,960	3,040	871	760
21	7,840	3,200	2,200	1,700	10,000	6,880	11,000	3,600	3,120	2,730	857	778
22	7,360	3,120	2,080	1,720	15,000	6,400	7,600	3,520	2,800	2,520	*857	778
23	6,880	3,040	2,080	1,710	13,000	6,000	6,400	*3,280	2,440	2,320	864	790
24	6,400	*2,960	2,200	1,650	10,500	5,800	18,000	3,280	2,380	2,320	850	760
25	6,000	2,960	2,260	1,550	9,500	5,800	22,500	3,200	2,260	*2,320	808	814
26	5,800	2,880	2,440	1,500	11,000	5,400	19,400	3,280	2,140	2,020	808	1,050
27	5,400	2,800	2,660	1,450	14,500	5,200	14,200	3,200	*2,080	1,760	814	1,170
28	5,200	2,730	2,800	1,400	13,000	4,700	10,400	3,120	2,020	1,680	790	976
29	5,200	2,730	2,880	1,450	.....	4,700	9,340	3,040	2,080	1,630	*802	1,020
30	5,000	*2,730	2,100	1,500	.....	4,700	8,800	2,960	1,960	1,580	871	1,040
31	4,900	.....	1,800	1,600	.....	4,700	.....	2,880	.....	1,480	857	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 16-31, 1953; Jan. 1 to Feb. 14, Mar. 5-8, Dec. 7, 8, 30, 31, 1954; Jan. 1 to Mar. 6, 1955.

Iowa River at Wapello, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	1,594	1,016	769	842	6,607	14,280	37,200	20,660	16,450	19,370	7,847	7,408
1951-52.....	6,424	7,521	4,109	6,748	8,086	19,800	18,170	9,310	8,020	5,096	2,582	1,663
1952-53.....	1,301	1,915	1,636	2,004	9,679	9,166	8,236	8,916	7,072	5,874	5,515	1,498
1953-54.....	1,008	1,018	1,050	760	1,131	1,327	2,231	5,598	13,120	7,580	4,011	4,861
1954-55.....	7,119	3,539	2,346	2,168	4,746	6,651	7,778	4,899	3,150	2,035	1,094	826

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.128	0.081	0.062	0.067	0.529	1.14	2.98	1.66	1.32	1.55	0.629	0.594
1951-52.....	.515	.603	.329	.541	.648	1.59	1.46	.746	.643	.456	.207	.133
1952-53.....	.104	.153	.131	.161	.776	.734	.660	.714	.567	.471	.442	.120
1953-54.....	.081	.084	.085	.061	.091	.106	.179	.449	1.05	.608	.321	.390
1954-55.....	.570	.284	.188	.174	.380	.533	.623	.393	.252	.235	.088	.066

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.15	0.09	0.07	0.08	0.55	1.32	3.33	1.91	1.47	1.79	0.72	0.66
1951-52.....	.59	.67	.38	.62	.70	1.83	1.62	.86	.72	.53	.24	.15
1952-53.....	.12	.17	.15	.19	.81	.85	.74	.82	.63	.54	.51	.13
1953-54.....	.09	.09	.10	.07	.09	.12	.20	.52	1.17	.70	.37	.43
1954-55.....	.66	.32	.22	.20	.40	.61	.70	.45	.28	.27	.10	.07

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	5,562	6.04
1951....	Apr. 14, 1951.	16.14	67,000	580	11,160	0.894	12.14	12,390	13.47
1952....	Mar. 14, 1952.	12.10	41,300	1,340	8,170	.655	8.91	7,008	7.71
1953....	Feb. 23, 1953..	10.42	32,800	1,080	5,204	.417	5.66	5,059	5.50
1954....	June 29, 1954.	11.98	40,800	580	3,647	.292	3.95	4,481	4.87
1955....	Feb. 21, 1955..	10.07	24,000	700	3,932	.315	4.28	.....	.....

Peak discharge (base, 14,000 cfs)

1951: Feb. 20 (8:30 p.m.) about 27,000 cfs (10.12 ft., ice jam); Feb. 27 (4:30 p.m.) 24,600 cfs (8.46 ft.); Mar. 3 (7 p.m.) 32,300 cfs (10.30 ft.); Apr. 4 (4 a.m.) 50,300 cfs (13.75 ft.); Apr. 14 (4 a.m.) 67,000 cfs (16.14 ft.); May 5 (11:30 p.m.) 40,800 cfs (11.95 ft.); May 11 (3 a.m.) 32,300 cfs (10.28 ft.); May 28 (12 p.m.) 19,800 cfs (7.26 ft.); June 10 (12 p.m.) 29,800 cfs (9.77 ft.); July 4 (10 a.m.) 36,300 cfs (11.06 ft.); July 14 (8 a.m.) 30,300 cfs (9.86 ft.); Aug. 26 (5 p.m.) 18,600 cfs (7.11 ft.); Nov. 14 (9:30 p.m.) 20,200 cfs (7.43 ft.).

1952: Jan. 20 (12 p.m.) about 21,000 cfs (11.76 ft.); Mar. 14 (5 p.m.) 41,300 cfs (12.10 ft.); Apr. 8 (9 p.m.) 33,300 cfs (10.46 ft.); May 25 (2:30 p.m.) 16,800 cfs (6.44 ft.).

1953: Feb. 8 (4 a.m.) 16,800 cfs (6.47 ft.); Feb. 23 (1 a.m.) 32,800 cfs (10.42 ft.); Apr. 2 (2:30 a.m.) 15,100 cfs (5.96 ft.); May 25 (12 p.m.) 15,100 cfs (6.00 ft.).

1954: June 29 (11 p.m.) 40,800 cfs (11.98 ft.); Oct. 12 (2 a.m.) 17,900 cfs (7.04 ft.).

1955: Feb. 21 about 24,000 cfs; Feb. 27 about 15,000 cfs; Apr. 20 (7:30 p.m.) 14,500 cfs (5.97 ft.); Apr. 25 (12 m.) 23,000 cfs (8.26 ft.).

Skunk River near Ames, Iowa

LOCATION.—Lat. 42°04'06", long. 93°37'02", in SW¼ sec. 23, T. 84 N., R. 24 W., on left bank 2½ miles north of Ames, 3½ miles downstream from Keigley Branch, and 5 miles upstream from Squaw Creek.

DRAINAGE AREA.—322 square miles.

RECORDS AVAILABLE.—July 1920 to August 1927, March 1933 to September 1955.

GAGE.—Water-stage recorder. Concrete control since July 21, 1934. Datum of gage is 893.6 feet above mean sea level, datum of 1929 (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, staff gage at same site and datum.

AVERAGE DISCHARGE.—28 years (1920-26, 1933-55), 133 cfs.

EXTREMES.—1920-27, 1933-55: Maximum discharge, 8,630 cfs June 10, 1954; maximum gage height, 13.90 feet May 20, 1944; no flow at times in 1934, 1937, 1953-55.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	16	13	5.4	1.7	0.8	332	1,120	1,450	2,180	206	54	184
2.....	22	13	5.8	1.7	.8	258	940	2,170	4,360	178	48	151
3.....	*68	13	5.2	1.7	.7	200	880	1,630	*2,530	1,030	50	127
4.....	72	12	*4.0	1.7	.7	220	910	1,060	1,460	2,290	46	106
5.....	50	12	3.8	1.7	.7	323	760	634	970	1,390	40	93
6.....	58	12	3.7	1.7	.7	718	688	480	706	790	38	81
7.....	64	12	3.6	1.7	.7	390	1,210	395	574	540	35	72
8.....	61	12	3.5	1.6	.7	254	820	332	694	420	32	66
9.....	58	11	3.4	1.6	.7	150	525	289	604	395	27	75
10.....	70	9.0	3.3	1.6	.7	70	435	350	495	332	25	148
11.....	57	10	3.2	1.6	.7	39	440	450	400	*281	24	178
12.....	46	8.5	3.1	1.6	1.3	29	754	375	332	258	28	210
13.....	39	9.0	3.0	1.6	*2.1	42	760	305	*281	293	28	323
14.....	34	9.0	2.9	1.6	2.0	50	525	254	234	375	34	240
15.....	30	11	2.8	*1.6	1.7	48	400	223	209	305	98	174
16.....	27	12	2.7	1.6	1.4	43	*332	202	598	240	136	139
17.....	26	12	2.7	1.8	1.2	45	305	192	604	206	98	*122
18.....	24	11	2.7	1.9	1.3	43	290	178	390	192	70	111
19.....	21	9.0	2.7	2.1	20	41	275	164	918	174	52	93
20.....	20	8.4	2.6	2.2	250	38	260	154	1,240	188	66	84
21.....	19	9.3	2.5	2.1	160	35	330	142	646	206	122	72
22.....	19	9.9	2.4	1.9	120	34	400	133	485	310	114	66
23.....	18	6.5	2.3	1.7	170	*32	375	*122	390	234	*89	64
24.....	17	6.8	2.2	1.5	160	31	350	116	328	184	72	55
25.....	17	5.2	2.1	1.3	500	40	1,000	111	273	139	68	54
26.....	16	5.2	2.0	1.2	1,510	86	1,420	106	420	125	70	52
27.....	16	4.8	1.9	1.0	880	1,520	880	96	850	108	114	50
28.....	15	4.4	1.9	.9	445	3,710	586	81	470	90	202	43
29.....	15	4.4	1.8	*.8	.....	4,600	490	79	305	81	652	39
30.....	*14	4.8	1.8	.8	.....	2,170	712	75	248	68	395	39
31.....	13	.....	1.8	.8	.....	1,480	.....	158	.....	64	258	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 7-10, 1950; Jan. 18 to Feb. 9, Feb. 19-25, Mar. 3, 4, 9, 10, 16-23, 1951. No gage-height record Oct. 6-9, Nov. 7-9, 11, 12, Dec. 11-31, 1950; Jan. 1-14, Apr. 15-23, 1951; discharge estimated on basis of weather records and records for nearby stations.

Skunk River near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	38	101	68	30	120	59	970	145	84	100	27	14
2.....	38	84	70	20	160	50	658	136	*77	350	28	12
3.....	106	70	80	27	190	55	510	133	70	280	33	9.0
4.....	188	60	89	27	160	54	415	130	68	210	33	7.8
5.....	209	50	86	26	150	54	355	130	61	170	26	5.8
6.....	142	52	89	26	133	56	318	125	55	210	26	*5.2
7.....	119	54	86	26	130	61	289	116	50	520	24	5.0
8.....	101	58	72	26	125	57	269	116	46	1,300	27	5.1
9.....	93	61	68	25	127	59	251	122	46	1,240	28	5.1
10.....	86	65	*46	23	151	340	248	127	43	652	24	5.0
11.....	79	70	40	26	*184	646	293	122	38	430	21	4.4
12.....	70	106	32	22	209	450	305	122	35	297	*18	4.1
13.....	64	142	29	22	195	1,330	336	111	32	234	*17	4.0
14.....	57	*139	33	35	174	880	425	106	42	*198	17	3.9
15.....	*55	122	36	*133	139	465	515	101	142	598	17	3.8
16.....	54	108	42	101	119	301	435	93	119	395	17	3.8
17.....	50	89	46	167	119	*254	365	91	84	269	18	3.7
18.....	50	64	46	157	108	289	318	81	61	212	16	3.6
19.....	50	81	52	400	103	586	289	77	48	178	15	3.6
20.....	50	91	48	500	103	1,060	258	75	47	154	14	3.5
21.....	139	103	42	350	86	718	237	79	81	133	14	3.5
22.....	405	79	39	200	89	510	226	118	101	108	13	3.4
23.....	301	35	35	150	84	346	230	244	98	86	12	3.4
24.....	237	36	35	130	76	277	244	202	84	72	11	3.3
25.....	202	42	30	110	70	297	230	174	75	59	9.6	3.3
26.....	174	50 •	26	98	64	285	212	145	65	52	9.6	3.2
27.....	154	59	26	90	57	285	195	133	58	43	8.4	3.2
28.....	148	64	26	84	62	425	*174	127	57	39	8.7	3.0
29.....	136	64	28	80	61	970	164	114	57	35	24	3.0
30.....	125	64	28	79	.....	1,000	154	108	56	32	22	3.0
31.....	108	.....	28	91	.....	1,030	.....	98	.....	30	16	.....
1952-53												
1.....	2.0	2.0	1.9	2.9	4.8	150	310	834	*75	181	18	2.0
2.....	1.0	2.0	2.0	3.1	*4.7	*130	269	808	66	160	15	2.2
3.....	1.0	*2.0	2.2	3.3	4.7	110	277	545	64	148	48	1.7
4.....	1.0	2.2	2.6	3.5	4.7	94	301	440	64	127	154	1.7
5.....	1.0	2.4	3.0	*3.6	4.9	85	237	375	59	103	84	.9
6.....	*1.2	2.3	3.4	3.7	5.0	74	198	328	54	*79	54	.4
7.....	1.2	2.2	3.9	3.8	5.3	67	170	*285	52	68	37	.2
8.....	1.2	2.2	4.0	3.8	5.8	62	151	254	142	57	27	1.2
9.....	1.6	2.2	*5.4	3.8	6.6	76	148	230	188	50	22	1.8
10.....	1.7	2.2	5.9	3.8	17	200	174	212	167	43	*18	1.4
11.....	1.7	2.3	5.4	3.8	35	260	188	188	142	37	16	1.0
12.....	1.6	2.3	4.8	3.8	39	210	174	164	116	35	14	.4
13.....	1.7	2.3	4.4	3.8	45	190	151	145	103	32	11	.2
14.....	1.7	2.6	3.9	4.5	33	230	122	139	98	31	9.0	1.0
15.....	1.7	2.9	3.6	5.6	25	250	142	136	81	30	7.0	.6
16.....	1.7	3.2	3.3	7.0	22	230	151	127	75	26	6.4	.2
17.....	1.7	8.0	3.2	5.4	17	206	151	122	64	22	5.4	.1
18.....	1.7	11	3.0	4.9	19	184	136	119	55	21	4.8	.1
19.....	1.7	9.0	2.9	4.3	23	160	125	106	54	18	4.6	.2
20.....	1.8	6.4	2.9	3.9	200	136	114	106	86	16	4.0	.2
21.....	2.3	4.8	3.1	3.6	400	125	108	127	48	22	2.9	.1
22.....	2.2	4.6	3.3	3.5	200	111	106	167	40	84	2.4	0
23.....	2.2	4.3	3.5	3.5	270	103	96	174	34	40	2.2	0
24.....	2.0	4.0	3.2	3.7	230	93	114	164	30	25	1.8	.1
25.....	2.2	3.4	3.0	4.0	250	81	293	192	251	19	1.7	.3
26.....	2.3	1.7	2.7	4.0	200	72	346	164	616	16	2.2	.2
27.....	2.0	3.0	2.5	4.0	190	72	301	133	540	25	1.8	0
28.....	1.8	2.4	3.0	4.2	180	66	262	119	646	17	1.6	0
29.....	1.8	2.1	3.0	4.5	.....	61	234	114	385	22	1.4	0
30.....	2.0	1.0	2.5	4.7	.....	*108	262	103	230	30	.7	0
31.....	2.2	.....	2.7	4.8	.....	223	.....	89	.....	27	*.8	.....

• Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-10, 24-26, Dec. 11-15, 1951; Jan. 19-29, Feb. 1-6, Nov. 25 to Dec. 7, Dec. 13-31, 1952; Jan. 1 to Mar. 15, 1953. Discharge computed from gage readings or graph based on gage readings June 16 to July 6, 1953. No gage-height record Feb. 24-29, Mar. 2-6, June 25 to July 1, July 3-6, Sept. 13-26, 1952; discharge estimated on basis of weather records and records for nearby stations.

Skunk River near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	0	0.2	0.8	0.5	0	*10	13	130	*2,380	148	7.3	365
2	0	.2	.8	.6	0	3.0	12	284	1,210	130	*6.7	271
3	0	.2	1.4	.8	0	3.0	11	464	960	112	5.7	207
4	0	*.4	2.2	*.8	0	3.0	9.0	298	694	101	4.7	167
5	0	.6	2.4	.6	.2	3.0	9.0	195	502	90	5.7	133
6	.1	.7	2.9	.6	.2	2.0	21	*142	360	80	5.4	105
7	.1	.6	2.3	.6	.2	2.0	31	118	267	73	4.5	90
8	.1	.4	1.9	.6	.2	2.0	20	99	207	*63	5.0	78
9	.1	.5	1.5	.5	.2	2.0	15	86	170	58	5.7	*73
10	.1	.6	1.2	.2	.2	2.0	13	76	*2,500	51	5.0	71
11	.1	.6	.9	.1	.2	1.0	11	69	*5,760	44	4.7	63
12	.1	.5	.7	0	.2	1.0	9.9	63	2,820	40	4.5	56
13	.1	*.5	.6	0	.2	1.0	9.0	58	2,100	33	4.5	56
14	.1	.5	.5	0	.2	1.0	8.5	53	1,650	28	6.7	56
15	.1	.5	.4	0	.2	1.0	18	50	1,410	25	5.4	51
16	.1	.6	.3	0	2.0	10	23	48	1,060	21	4.2	48
17	.1	.6	.3	0	2.0	10	16	45	1,610	19	17	50
18	.1	.8	.2	0	2.0	10	12	44	1,100	20	26	48
19	.1	.8	.2	0	2.0	10	10	42	900	23	31	42
20	.1	1.6	.3	0	2.0	10	10	38	697	21	28	38
21	.2	1.1	.3	0	2.0	15	13	34	1,130	33	77	33
22	.2	.8	.2	0	2.0	15	18	33	1,540	20	605	29
23	.2	.7	.2	0	2.0	15	23	31	1,050	18	291	27
24	.2	.6	.2	0	2.0	15	19	28	720	16	524	26
25	.2	.6	.3	0	2.0	15	38	26	535	14	227	25
26	.2	.6	.5	0	5.0	15	69	22	403	12	983	23
27	.2	.6	.6	0	5.0	15	44	33	316	10	2,120	22
28	.2	.7	.5	0	5.0	14	28	969	255	9.4	1,920	28
29	.2	.8	.5	0	.....	*9.4	22	628	211	8.0	1,100	42
30	.2	1.0	.5	0	.....	11	62	311	174	7.3	755	46
31	.2	.....	.5	0	.....	12	.....	362	.....	7.7	524	.....
1954-55												
1	69	*148	62	42	17	d62	78	118	76	38	*5.7	1.2
2	231	125	60	40	17	d175	*78	115	71	26	5.4	.8
3	316	133	51	*40	17	d235	80	108	65	17	4.5	.4
4	*255	130	56	42	16	211	88	105	88	15	4.0	.2
5	219	122	62	45	16	164	145	99	86	27	4.2	.2
6	203	120	32	36	16	90	192	*94	*74	58	3.3	.2
7	167	115	56	36	15	*84	139	90	69	127	2.3	.1
8	207	110	58	39	15	94	115	78	62	148	1.9	0
9	235	101	56	39	15	103	99	133	55	154	1.7	0
10	231	101	36	36	14	120	88	145	51	*649	1.4	0
11	247	101	62	33	14	133	82	133	51	728	1.2	0
12	243	99	42	29	14	120	80	120	46	355	.9	0
13	229	99	50	23	13	90	105	110	44	203	.7	0
14	1,060	97	53	27	12	82	128	94	39	136	.6	0
15	1,120	90	56	26	13	164	120	84	34	90	.5	0
16	689	94	45	26	14	133	108	76	31	76	.4	0
17	508	90	56	22	20	94	92	71	28	65	.4	0
18	386	86	40	20	90	82	84	67	28	53	.2	0
19	325	80	38	20	900	78	78	63	101	44	.2	0
20	284	80	51	21	700	74	74	60	78	34	.1	0
21	263	80	50	21	227	67	67	55	55	28	0	1.0
22	243	76	48	23	128	40	60	50	42	19	.1	1.0
23	219	76	48	23	139	70	76	50	34	14	.2	.6
24	203	71	40	23	d106	51	250	88	29	13	1.1	.4
25	192	63	46	22	d91	38	458	80	27	10	6.4	.3
26	192	60	58	21	d82	38	370	78	23	8.0	11	.3
27	203	69	48	20	d72	57	280	230	19	7.0	4.5	1.3
28	203	69	20	18	d64	51	203	403	17	5.7	3.3	1.2
29	192	*55	33	17	.....	76	154	247	36	4.7	*3.8	.9
30	174	55	41	17	.....	97	120	142	44	4.2	2.0	.9
31	160	.....	40	*18	.....	84	.....	105	.....	4.7	1.6	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 8-31, 1953; Dec. 29, 30, 1954; Jan. 25 to Feb. 12, Feb. 18-20, Mar. 22-28, 1955. No gage-height record Oct. 4-29, 1953; Jan. 1-3, Feb. 4-27, June 2-10, 1954; discharge estimated on basis of weather records and records for nearby stations.

Skunk River near Ames, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	33.6	9.34	2.99	1.56	151	551	639	403	808	377	103	110
1951-52.....	123	75.4	48.9	106	122	428	330	123	66.0	282	19.2	4.85
1952-53.....	1.71	3.46	3.38	4.09	87.2	136	194	233	154	52.0	18.7	.61
1953-54.....	.12	.63	.84	.19	1.33	7.69	20.6	158	1,189	43.1	300	79.0
1954-55.....	305	93.2	48.2	27.9	102	98.6	137	113	50.1	102	2.40	.37

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.105	0.029	0.0093	0.0049	0.472	1.72	2.00	1.26	2.52	1.18	0.322	0.344
1951-52.....	.382	.234	.152	.329	.379	1.33	1.02	.382	.205	.870	.060	.015
1952-53.....	.0053	.011	.010	.013	.271	.422	.602	.724	.478	.161	.058	.0019
1953-54.....	.00037	.0020	.0026	.00059	.0041	.024	.064	.491	3.69	.134	.932	.245
1954-55.....	.947	.289	.150	.087	.317	.306	.425	.351	.156	.317	.0075	.0011

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.12	0.03	0.01	0.006	0.49	1.98	2.23	1.45	2.82	1.36	0.37	0.38
1951-52.....	.44	.26	.18	.38	.41	1.53	1.14	.44	.23	1.01	.07	.02
1952-53.....	.006	.01	.01	.01	.28	.49	.67	.83	.53	.19	.07	.002
1953-54.....	.0004	.002	.003	.0007	.004	.03	.07	.56	4.12	.15	1.08	.27
1954-55.....	1.09	.32	.17	.10	.33	.35	.47	.40	.17	.37	.009	.001

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	113	4.77
1951....	Mar. 29, 1951.	10.90	5,320	0.7	265	0.828	11.25	282	11.97
1952....	July 9, 1952.	5.73	1,630	3.0	144	.447	6.11	124	5.20
1953....	May 1, 1953.	(1)4.71	980	0	73.7	.229	3.10	73.1	3.08
1954....	June 10, 1954.	13.66	8,630	0	149	.463	6.29	187	7.86
1955....	Oct. 15, 1954.	5.22	1,340	0	90.1	.280	3.78	.....	.....

(1) Maximum gage height, 6.46 ft. Feb. 20, 1953 (ice jam).

Peak discharge (base, 1,500 cfs)

1951: Feb. 26 (7:30 a.m.) 1,690 cfs (5.75 ft.); Mar. 29 (7 a.m.) 5,320 cfs (10.90 ft.); May 2 (10:30 a.m.) 2,290 cfs (6.75 ft.); June 2 (6 a.m.) 4,920 cfs (10.35 ft.); June 20 (1 a.m.) 1,930 cfs (6.25 ft.); July 4 (11 a.m.) 2,470 cfs (7.07 ft.).

1952: July 9 (2 a.m.) 1,630 cfs (5.73 feet).

1953: No peak above base.

1954: June 1 (8 a.m.) 3,180 cfs (7.84 ft.); June 10 (11 p.m.) 8,630 cfs (13.66 ft.); June 16 (8:30 p.m.) 2,110 cfs (6.37 ft.); June 22 (2:30 a.m.) 1,770 cfs (5.88 ft.); Aug. 27 (6:30 p.m.) 3,520 cfs (8.27 ft.); Oct. 15 (3 a.m.) 1,340 cfs (5.22 ft.).

1955: No peak above base.

Skunk River below Squaw Creek, near Ames, Iowa

LOCATION.—Lat. 42°00'30", long. 93°35'40", in NE¼NW¼ sec. 13, T. 83 N., R. 24 W., on right bank 15 feet downstream from highway bridge a quarter of a mile downstream from Squaw Creek, 1 mile downstream from bridge on U. S. Highway 30, and 2 miles southeast of Ames.

DRAINAGE AREA.—565 square miles.

RECORDS AVAILABLE.—October 1952 to September 1955.

GAGE.—Water-stage recorder and concrete control.

EXTREMES.—1952-55: Maximum discharge, 8,700 cfs Aug. 28, 1954 (gage height, 12.36 feet); no flow Dec. 17-19, 24-29, 1953, Jan. 11 to Feb. 4, 1954.

Flood of May 19, 1944, reached a stage of 13 feet, from floodmarks, (discharge about 10,000 cfs).

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1.....	2.5	2.1	2.2	2.2	4.0	250	660	*1,360	*146	308	43	3.0
2.....	1.4	2.1	2.7	2.4	*4.0	*200	555	1,250	136	258	34	3.0
3.....	1.3	*2.1	3.2	2.5	4.0	180	540	842	130	203	120	3.3
4.....	1.3	2.6	4.0	2.7	4.0	160	555	675	133	170	206	3.6
5.....	1.3	2.6	4.8	*2.8	4.1	140	435	585	128	156	133	3.0
6.....	*1.8	2.3	5.2	3.0	4.3	130	357	525	126	*128	106	2.6
7.....	1.8	2.1	5.2	3.0	4.4	115	318	*405	123	108	88	1.8
8.....	1.8	2.3	0.6	3.0	4.4	115	290	405	585	93	62	1.8
9.....	2.2	2.1	*0.6	3.0	4.5	125	288	372	450	81	47	2.3
10.....	2.3	2.1	5.6	3.0	30	250	313	344	384	72	*39	2.6
11.....	2.3	2.6	5.0	3.0	56	350	323	310	320	62	34	2.1
12.....	2.2	3.0	4.6	3.0	77	420	303	268	268	60	29	2.1
13.....	2.2	2.6	4.5	3.0	68	330	273	246	238	56	25	1.5
14.....	2.1	2.6	4.6	3.6	52	357	258	238	216	56	18	1.5
15.....	2.1	3.0	4.1	4.5	43	420	266	236	188	62	14	2.1
16.....	1.8	3.0	3.7	6.0	35	390	270	220	166	108	12	1.5
17.....	2.1	14	3.3	4.5	30	326	268	213	143	72	11	1.1
18.....	1.8	11	3.1	3.8	35	208	246	208	130	54	9.5	1.3
19.....	1.8	9.5	3.3	3.4	40	263	226	188	118	45	8.8	1.1
20.....	1.8	7.1	3.6	3.1	300	230	213	190	118	39	7.6	1.1
21.....	2.1	6.6	3.6	3.0	700	210	206	290	118	123	7.1	1.1
22.....	2.1	5.6	3.3	3.0	350	183	198	357	103	326	6.6	1.3
23.....	2.1	5.6	3.1	3.0	380	178	178	387	90	196	5.6	1.3
24.....	2.1	5.6	3.0	3.0	450	158	218	336	79	110	4.8	1.1
25.....	2.3	4.8	2.8	3.3	420	143	450	346	643	72	4.4	.9
26.....	2.1	1.8	2.3	3.3	350	128	570	303	1,100	54	4.0	.8
27.....	2.1	4.0	2.0	3.3	360	123	510	258	755	56	4.0	.8
28.....	2.1	3.1	2.7	3.6	350	116	435	230	1,060	45	3.6	.6
29.....	2.3	2.5	2.9	3.9	.....	106	390	226	630	70	3.3	.6
30.....	2.1	2.0	1.9	4.0	.....	*196	490	206	420	64	3.0	.6
31.....	2.1	.....	2.0	4.0	.....	381	.....	170	.....	56	*2.6	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 3, Dec. 11-18, 23-31, 1952; Jan. 1-8, 15-30, Feb. 1 to Mar. 13, 1953. No gage-height record Oct. 1-5, 7-14, 1952; discharge estimated on basis of weather records and records for nearby stations.

Skunk River below Squaw Creek, near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	0.7	0.6	0.1	0.4	0	*3.5	15	231	*4,790	260	16	820
2	.7	.6	.1	.3	0	3.0	14	435	*2,360	229	*13	620
3	.7	.4	.2	.3	0	2.5	12	708	1,970	205	12	480
4	.7	*.4	.2	.2	0	2.2	11	498	1,320	181	12	378
5	*.6	.6	.2	.2	.3	1.5	10	318	876	160	10	303
6	.7	.6	.4	.2	.3	1.2	15	*243	627	142	10	243
7	.7	.6	.4	.2	.3	2.0	29	193	465	123	9.3	205
8	.7	.6	.4	.1	.3	2.9	32	162	348	*107	11	178
9	.7	.6	.2	.1	.3	4.0	25	142	286	96	10	*169
10	.7	.6	.1	.1	.3	6.4	22	121	2,050	89	8.0	162
11	.6	.6	.3	0	.3	6.9	18	105	*7,020	77	8.0	146
12	.7	.6	.2	0	.3	5.8	16	93	3,860	71	8.0	135
13	1.0	.6	.3	0	.3	2.0	13	84	2,650	64	8.6	135
14	.8	.6	.1	0	.3	2.2	12	77	2,080	56	12	130
15	.8	.6	.1	0	.3	4.9	12	69	1,830	51	9.3	121
16	.7	.4	.1	0	2.5	6.9	18	60	2,080	45	8.6	114
17	.7	.4	0	0	2.5	12	21	54	2,200	43	100	114
18	.7	.4	0	0	2.5	18	17	49	1,610	39	56	109
19	.6	.4	0	0	2.5	52	15	47	1,210	45	36	98
20	.6	.4	.1	0	2.5	52	13	43	994	43	39	91
21	.6	.4	.1	0	2.5	36	15	39	2,430	71	114	82
22	.6	.3	.2	0	2.5	27	16	38	3,440	71	2,000	80
23	.6	.3	.1	0	2.5	21	18	39	1,920	49	980	75
24	.6	.3	0	0	2.5	22	21	43	1,200	41	1,150	73
25	.6	.3	0	0	2.5	21	22	39	864	34	620	71
26	.6	.3	0	0	7.0	20	47	39	672	30	3,640	64
27	.6	.3	0	0	7.0	16	71	58	543	25	4,940	64
28	.6	.3	0	0	7.0	15	58	1,480	444	24	6,380	86
29	.7	.3	0	0	.....	*6.4	41	1,040	369	21	2,890	112
30	.7	*.1	.2	0	.....	12	109	532	306	18	1,700	121
31	.6	.....	.3	0	.....	15	.....	450	.....	17	1,110	.....
1954-55												
1	146	*283	116	73	32	108	137	207	219	82	*12	2.2
2	511	250	112	73	31	202	*137	253	193	51	12	2.0
3	800	258	96	*71	30	380	139	234	169	36	9.3	1.8
4	*532	253	100	77	30	350	153	231	181	29	8.6	1.5
5	480	236	108	80	30	300	382	205	193	41	8.0	1.3
6	450	231	64	69	29	186	342	193	*174	102	10	1.2
7	375	224	93	64	28	146	258	*198	148	125	5.8	1.2
8	465	212	98	71	28	*183	214	158	130	181	4.9	1.2
9	515	200	85	71	28	198	186	366	112	178	5.4	1.0
10	480	193	73	66	26	210	162	366	105	*1,860	4.4	.8
11	465	190	114	58	27	226	153	309	116	1,540	3.6	1.2
12	450	183	75	52	26	195	151	272	93	690	3.6	.8
13	470	186	80	43	22	153	178	248	89	420	2.9	1.2
14	2,330	176	89	47	21	142	236	217	75	275	2.6	.8
15	1,990	167	94	46	23	270	236	193	69	202	2.6	.7
16	1,180	171	78	45	25	241	214	176	62	151	2.9	.8
17	860	162	102	40	47	176	186	160	56	123	2.6	.7
18	672	153	80	35	200	155	169	148	60	100	2.6	.7
19	568	146	71	36	1,000	144	162	142	207	84	2.6	1.2
20	515	146	93	37	780	137	148	135	171	71	1.8	1.3
21	465	144	91	37	300	130	132	123	109	62	1.8	2.2
22	435	139	89	39	230	71	118	114	84	54	2.0	2.2
23	405	130	87	39	240	146	130	112	66	47	1.5	1.3
24	369	135	70	39	180	100	333	205	58	41	8.0	1.0
25	348	121	80	38	165	66	860	186	54	38	4.4	.8
26	372	118	100	34	150	73	690	195	49	34	8.6	1.0
27	405	130	86	36	130	114	532	377	43	29	5.8	1.0
28	390	130	38	30	118	100	420	672	36	22	3.6	.8
29	357	*112	54	31	.....	135	342	550	75	20	*5.4	.8
30	318	109	78	32	.....	151	289	363	60	16	4.4	.8
31	294	.....	75	*33	.....	148	.....	207	.....	13	3.2	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 22, 30, 31, 1953; Jan. 1, Mar. 4-18, Dec. 3-9, 12-16, 23-25, 28-30, 1954; Jan. 12-21, Jan. 29 to Mar. 4, Mar. 24, 25, 1955. No gage-height record Jan. 2 to Mar. 3, 1954; discharge estimated on basis of weather records and records for nearby stations.

Skunk River below Squaw Creek, near Ames, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53.....	1.98	4.08	3.73	3.32	149	225	353	396	308	108	35.4	1.72
1953-54.....	.67	.45	.14	.07	1.76	13.0	25.3	243	1,793	81.5	836	186
1954-55.....	594	177	86.1	49.7	142	172	270	246	109	217	5.06	1.18

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53.....	0.0035	0.0072	0.0066	0.0059	0.264	0.398	0.625	0.701	0.545	0.191	0.063	0.0030
1953-54.....	.0012	.00080	.00025	.00012	.0031	.023	.045	.430	3.17	.144	1.48	.329
1954-55.....	1.05	.313	.152	.088	.251	.304	.478	.435	.193	.384	.0090	.0021

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53.....	0.004	0.008	0.008	0.007	0.27	0.46	0.70	0.81	0.61	0.22	0.07	0.003
1953-54.....	.001	.0009	.0003	.0001	.003	.03	.05	.50	3.54	.17	1.71	.37
1954-55.....	1.21	.35	.18	.10	.26	.35	.53	.50	.21	.44	.01	.002

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1953....	May 1, 1953.	5.47	1,620	0.6	132	0.234	3.17	131	3.15
1954....	Aug. 28, 1954.	12.36	8,700	0	265	.469	6.38	337	8.11
1955....	Oct. 14, 1954.	6.81	2,680	.7	173	.306	4.14	.....	.....

Peak discharge (base, 1,500 cfs)

1953: May 1 (6:30 p.m.) 1,620 cfs. (5.47 ft.).

1954: May 28 (1:30 p.m.) 2,330 cfs (6.36 ft.); June 1 (11 a.m.) 6,500 cfs (10.92 ft.); June 11 (8 a.m.) 7,980 cfs (11.92 ft.); June 16 (10 a.m.) 3,200 cfs (7.63 ft.); June 22 (11 a.m.) 3,820 cfs (8.36 ft.); Aug. 22 (5:30 a.m.) 3,950 cfs (8.53 ft.); Aug. 26 (7 a.m.) 4,700 cfs (9.26 ft.); Aug. 28 (2:30 a.m.) 8,700 cfs (12.36 ft.); Oct. 14 (9 p.m.) 2,680 cfs (6.81 ft.).

1955: July 10 (11 a.m.) 2,540 cfs (6.73 ft.).

Skunk River near Oskaloosa, Iowa

LOCATION.—Lat. 41°21'10", long. 92°39'20", in SW¼ sec. 25, T. 76 N., R. 16 W., on right bank 300 feet upstream from bridge on U. S. Highway 63 and 4 miles north of Oskaloosa.

DRAINAGE AREA.—1,640 square miles, approximately.

RECORDS AVAILABLE.—October 1948 to September 1955.

GAGE.—Water-stage recorder.

AVERAGE DISCHARGE.—7 years, 681 cfs.

EXTREMES.—1948-55: Maximum discharge, 10,800 cfs Mar. 9, 1949; maximum gage height, 18.46 feet Feb. 22, 1953; minimum daily discharge, 7.5 cfs Jan. 13, 1951.

Flood of May 1944 reached a stage of 25.8 feet, from floodmarks. Flood of June 15, 1947, reached a stage of 21.26 feet (discharge, 20,000 cfs).

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	57	46	22	8.6	11	1,070	5,060	1,870	890	1,140	512	674
2	53	46	24	8.5	11	872	*3,060	3,600	2,840	1,030	476	548
3	49	45	27	8.4	10	872	2,520	4,440	5,000	4,340	512	454
4	48	45	*29	8.3	10	728	2,370	4,620	5,540	4,190	494	402
5	48	45	26	8.2	10	656	2,320	3,360	6,160	4,620	440	364
6	54	45	23	8.0	10	674	2,320	2,370	7,000	4,900	402	336
7	74	45	21	7.9	10	660	2,700	1,870	7,640	3,540	374	309
8	77	48	19	7.8	10	600	3,000	1,570	7,000	2,700	350	281
9	70	*49	18	7.7	10	520	2,580	1,450	5,420	3,050	322	275
10	68	47	17	7.6	10	600	1,920	1,920	3,970	4,150	303	650
11	94	44	16	*7.6	100	560	1,690	2,700	2,880	2,520	284	1,110
12	*92	37	15	7.6	500	500	1,970	2,370	2,420	2,640	272	*800
13	84	41	14	7.5	350	450	2,420	1,920	2,120	2,070	263	674
14	77	45	14	7.0	250	400	2,580	1,610	1,650	1,690	*303	782
15	71	47	13	7.0	210	350	2,070	1,450	2,580	1,530	434	746
16	66	46	13	9.0	400	310	1,650	1,330	2,760	1,450	962	602
17	62	44	12	10	600	280	1,410	*1,330	2,580	1,410	728	512
18	59	41	12	9.0	1,500	260	1,250	1,780	*2,220	1,290	602	454
19	57	43	12	13	3,800	240	*1,140	1,290	1,770	*1,250	494	412
20	54	40	11	20	3,000	230	1,070	1,330	1,920	1,250	434	370
21	53	42	11	18	2,500	220	998	1,180	3,600	1,220	530	339
22	53	45	11	16	2,000	210	1,070	1,110	2,940	1,110	638	316
23	52	39	10	15	1,600	200	1,250	1,030	2,170	1,110	584	297
24	50	34	10	14	1,300	230	1,410	962	2,120	1,070	512	281
25	49	30	9.8	14	2,500	200	1,450	1,140	1,690	962	584	272
26	48	26	9.6	13	3,500	*234	2,020	4,200	1,050	872	728	263
27	49	23	9.5	13	2,700	420	3,120	1,820	1,530	800	584	248
28	48	21	9.4	12	1,610	2,760	2,520	1,140	1,690	728	494	231
29	48	*20	9.2	12	.....	5,420	2,020	998	1,570	656	530	218
30	48	20	9.0	11	.....	6,200	1,730	908	1,290	602	647	210
31	47	.....	8.8	11	.....	6,550	.....	908	.....	548	854	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 31, 1950; Jan. 1 to Feb. 27, Mar. 7-25, 1951.

Skunk River near Oskaloosa, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951–52												
1	207	566	512	210	1,410	700	3,200	998	1,030	1,250	200	182
2	205	530	512	210	1,570	660	3,000	962	962	1,140	257	172
3	197	494	*530	200	2,020	580	2,700	962	1,070	1,030	257	170
4	194	458	530	190	2,220	520	2,270	962	926	998	*322	163
5	715	*412	530	180	1,920	470	1,970	926	854	926	548	154
6	1,290	380	512	180	1,690	520	1,770	854	800	872	402	144
7	926	340	512	*180	1,530	674	1,610	836	746	728	313	134
8	*728	310	476	180	1,450	674	1,530	800	710	1,680	287	*125
9	584	360	458	180	1,200	692	1,450	854	782	2,320	293	121
10	530	400	423	170	1,000	3,730	1,410	908	728	2,470	260	116
11	476	440	423	170	900	5,900	1,370	872	638	1,730	475	113
12	430	814	412	170	820	6,550	1,370	800	584	1,370	523	108
13	395	1,200	381	170	780	6,420	1,490	764	548	1,140	257	104
14	364	1,110	320	180	760	5,900	1,050	728	530	1,030	223	130
15	339	926	240	210	720	5,540	1,690	710	530	1,150	737	114
16	434	836	260	300	700	3,350	1,820	*728	512	1,270	477	99
17	692	746	300	600	700	2,420	1,770	782	494	1,250	360	96
18	566	656	320	1,490	700	2,420	1,610	728	530	1,030	275	93
19	454	620	330	2,020	720	3,540	1,530	674	476	908	245	88
20	409	638	330	2,470	720	3,810	1,450	638	512	800	251	85
21	842	656	320	2,820	720	3,810	1,370	620	1,180	710	306	83
22	1,450	656	300	2,700	720	3,600	1,450	782	890	656	240	82
23	1,180	584	280	2,400	720	3,120	1,490	3,590	800	584	207	80
24	1,140	512	270	2,200	700	2,640	1,530	4,110	*764	530	192	77
25	962	476	250	2,000	700	2,300	1,450	2,580	800	476	182	76
26	854	494	240	1,800	*690	2,200	1,370	1,920	638	434	172	73
27	800	512	220	1,600	680	2,100	1,290	1,570	1,420	392	170	70
28	728	530	210	1,500	690	2,050	1,220	1,450	2,040	356	163	68
29	692	512	210	1,400	700	2,000	1,140	1,290	1,070	322	146	66
30	656	512	200	1,350	.....	2,500	1,070	1,180	1,490	303	175	65
31	620	.....	210	1,300	.....	*3,000	.....	1,110	.....	281	177	.....
1952–53												
1	62	57	*120	110	128	1,000	1,450	1,220	656	998	192	46
2	61	59	112	108	*118	920	1,530	1,730	602	800	175	44
3	59	59	116	97	115	854	1,530	2,270	566	746	161	45
4	59	*57	128	86	115	818	1,410	1,730	530	602	154	52
5	59	57	132	77	1,100	*764	1,370	1,490	602	584	166	50
6	*59	57	123	71	1,500	710	1,290	1,370	620	620	228	50
7	57	59	119	72	2,000	656	1,140	1,290	566	454	231	45
8	59	57	130	74	2,140	602	1,070	1,180	1,350	398	200	42
9	60	57	155	*75	2,000	656	998	1,110	1,400	356	172	40
10	61	57	148	76	2,100	746	962	1,030	1,100	333	152	40
11	61	57	132	78	3,000	704	962	998	930	303	136	39
12	61	57	120	80	2,700	998	926	926	840	290	130	37
13	61	59	113	103	1,900	998	908	872	730	336	120	34
14	60	60	130	200	1,400	1,070	854	800	660	287	111	34
15	60	60	150	500	1,100	1,140	854	764	580	955	104	34
16	59	61	140	900	840	1,030	854	728	550	476	97	33
17	59	1,350	130	700	660	1,030	818	*710	510	454	*93	32
18	59	676	120	540	600	962	782	674	490	406	89	31
19	59	242	117	450	1,200	890	764	638	460	333	88	30
20	59	168	220	370	4,000	818	728	602	430	*284	83	30
21	57	142	170	320	6,000	800	692	602	410	266	79	*30
22	57	130	150	280	9,540	800	674	728	390	281	72	29
23	59	123	130	250	7,640	1,140	656	962	360	298	68	29
24	59	118	120	230	4,600	*962	620	1,590	340	423	64	29
25	60	146	110	210	3,100	818	908	2,350	*329	336	60	28
26	60	370	94	190	2,300	746	1,070	1,330	412	272	57	28
27	59	200	96	170	1,300	710	1,110	1,110	1,380	231	57	28
28	59	215	100	160	1,100	674	1,110	962	1,940	384	55	28
29	59	170	103	150	.....	638	1,070	854	1,370	254	54	26
30	58	140	108	145	.....	1,130	1,030	800	1,180	218	52	24
31	56	.....	110	137	.....	1,450	.....	728	.....	207	48	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 6-10, Dec. 14-31, 1951; Jan. 1-17, Feb. 9 to Mar. 6, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 21, Feb. 24 to Mar. 2, 1953. No gage-height record Jan. 28-31, Mar. 26 to Apr. 2, 1952, June 9-24, 1953; discharge estimated on basis of weather records and records for nearby stations.

Skunk River near Oskaloosa, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	24	31	36	18	14	30	72	346	2,360	962	120	3,080
2	24	30	38	18	14	27	70	476	3,540	872	120	2,120
3	24	30	41	17	15	24	68	1,110	3,950	800	113	1,610
4	24	30	41	17	16	23	62	1,140	3,360	746	111	1,200
5	26	29	44	17	18	23	62	920	2,470	692	440	1,140
6	25	30	46	16	19	23	83	692	1,690	638	358	998
7	25	30	*45	16	20	25	82	548	1,410	584	159	872
8	25	30	44	16	21	28	75	476	1,220	530	140	782
9	26	32	42	15	22	29	72	409	1,070	476	146	710
10	26	32	40	15	23	29	70	364	926	437	130	674
11	27	32	37	15	24	29	69	326	1,260	402	118	602
12	27	32	36	15	27	31	62	293	3,540	367	113	548
13	27	34	34	15	32	33	56	266	4,030	333	111	512
14	26	33	33	14	40	36	55	242	4,190	303	108	476
15	26	34	32	14	*57	*40	*62	223	3,420	275	113	448
16	27	*34	31	14	67	38	88	207	3,810	251	109	420
17	27	34	30	14	76	36	88	*194	4,350	231	218	395
18	27	34	29	*14	90	36	68	180	*4,190	218	512	360
19	*27	35	28	14	87	40	65	170	2,820	*215	*381	333
20	27	46	27	14	83	45	75	161	2,220	212	251	*313
21	26	52	26	14	78	52	85	150	4,270	207	182	290
22	27	50	25	14	69	60	76	144	5,000	234	166	266
23	28	44	25	14	62	69	69	138	5,200	207	1,410	254
24	28	39	24	14	56	68	65	138	5,420	210	1,490	240
25	29	37	23	14	50	77	174	144	4,320	190	1,530	228
26	30	36	22	14	45	91	602	138	2,320	170	3,540	218
27	30	35	22	14	40	89	*512	144	1,730	103	4,350	207
28	30	33	21	14	35	76	402	194	1,450	154	4,500	205
29	30	33	20	14	.....	75	284	1,230	1,220	148	5,000	529
30	31	34	20	14	.....	69	228	1,530	1,070	140	5,200	1,150
31	31	.....	19	14	.....	73	.....	998	.....	132	5,100	.....
1954-55												
1	656	836	367	330	138	1,700	458	872	584	132	80	23
2	836	800	367	370	132	1,800	440	818	512	166	80	22
3	818	764	370	350	128	2,160	423	782	458	161	76	21
4	1,330	746	356	330	120	1,500	420	746	430	130	73	20
5	1,480	746	356	310	115	1,220	458	728	412	121	70	19
6	1,570	692	320	300	112	1,030	476	692	398	138	69	15
7	1,410	674	300	280	109	746	584	656	412	319	82	13
8	1,220	656	310	270	108	620	530	620	370	220	64	13
9	1,140	638	310	260	102	854	494	638	343	200	57	13
10	1,330	602	310	250	98	782	458	1,090	316	494	50	13
11	2,420	584	290	240	96	746	440	1,370	300	831	55	13
12	1,650	566	300	230	95	728	451	1,110	293	1,650	53	*14
13	1,410	548	300	228	93	674	458	998	290	1,070	49	14
14	1,330	548	280	226	*90	638	530	872	275	764	47	13
15	2,800	*548	280	223	88	638	656	602	251	566	*46	12
16	3,120	530	*295	220	88	638	674	710	234	448	45	11
17	2,220	530	290	218	88	674	638	638	215	374	43	10
18	1,650	512	290	215	100	620	*584	602	205	322	42	9.6
19	1,490	494	270	203	1,000	*584	584	*548	197	275	40	11
20	1,370	476	260	203	3,500	548	1,040	530	*190	240	38	14
21	*1,200	476	260	200	3,200	584	890	494	223	*281	37	31
22	1,220	454	260	195	2,800	566	692	458	265	254	35	30
23	1,140	451	258	190	2,500	530	674	434	210	180	33	27
24	1,070	448	257	*183	2,200	548	1,060	412	182	161	30	20
25	1,030	423	258	178	1,900	460	1,570	398	175	148	30	17
26	998	406	263	170	2,200	410	1,530	444	163	134	29	16
27	998	395	268	165	2,100	380	1,450	458	152	114	28	20
28	998	416	270	160	1,900	476	1,290	476	130	104	28	27
29	962	406	210	152	.....	494	1,110	692	129	97	24	970
30	908	381	240	148	.....	458	962	818	132	91	24	232
31	872	.....	280	142	.....	458	.....	710	.....	85	25	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 1, Dec. 9-31, 1953; Jan. 1-18, Dec. 6-31, 1954; Jan. 1 to Mar. 4, Mar. 25-27, 1955. No gage-height record Jan. 19 to Mar. 22, 1954; discharge estimated on basis of weather records and records for nearby stations.

Skunk River near Oskaloosa, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	60.0	39.6	15.0	10.6	1,019	1,083	2,090	1,922	3,154	1,979	505	448
1951-52.....	647	592	356	991	1,029	2,722	1,668	1,183	885	972	295	108
1952-53.....	59.1	171	127	226	2,296	880	1,005	1,102	743	426	114	35.6
1953-54.....	27.0	34.8	31.6	14.9	42.9	45.9	130	442	2,928	371	1,182	709
1954-55.....	1,379	558	292	230	900	781	734	691	282	334	48.0	56.4

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.037	0.024	0.0091	0.0065	0.621	0.660	1.27	1.17	1.92	1.21	0.308	0.273
1951-52.....	.395	.361	.217	.604	.627	1.66	1.02	.721	.540	.593	.180	.066
1952-53.....	.036	.104	.077	.138	1.40	.537	.613	.672	.453	.260	.070	.022
1953-54.....	.016	.021	.019	.0091	.026	.028	.079	.270	1.79	.226	.721	.432
1954-55.....	.841	.340	.178	.140	.549	.476	.448	.421	.172	.204	.029	.034

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.04	0.03	0.01	0.007	0.65	0.76	1.42	1.35	2.15	1.39	0.35	0.30
1951-52.....	.45	.40	.25	.70	.68	1.91	1.13	.83	.60	.68	.21	.07
1952-53.....	.04	.12	.09	.16	1.46	.62	.68	.77	.51	.30	.08	.02
1953-54.....	.02	.02	.02	.01	.03	.03	.09	.31	1.99	.26	.83	.48
1954-55.....	.97	.38	.21	.16	.57	.55	.50	.49	.19	.23	.03	.04

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	598	4.95
1951....	June 7, 1951.	17.26	7,810	7.5	1,023	0.624	8.46	1,147	9.48
1952....	Mar. 12, 1952.	16.58	6,700	65	955	.582	7.91	852	7.06
1953....	Feb. 22, 1953.	18.46	9,980	24	586	.357	4.85	564	4.66
1954....	June 24, 1954.	15.89	5,420	14	495	.302	4.09	675	5.59
1955....	Feb. 20, 1955.	(1)15.55	3,700	9.6	522	.318	4.32	.....	.....

(1) Maximum gage height, 15.81 ft. Feb. 19, 1955 (backwater from ice).

Peak Discharge (base, 4,000 cfs)

1951: Feb. 18 (10 p.m.) about 4,200 cfs (16.15 ft., ice jam); Mar. 31 (4 p.m.) 6,700 cfs (16.61 ft.); May 4 (7 a.m.) 4,710 cfs. (14.88 ft.) May 26 (5 a.m. 4,900 cfs (15.09 ft.); June 7 (9:30 p.m. 7,810 cfs (17.26 ft.); June 21 (3 p.m.) 4,110 cfs (14.17 ft.); July 3 (2 a.m.) 6,290 cfs (16.30 ft.).

1952: Mar. 12 (10 p.m.) 6,700 cfs (16.58 ft.); May 24 (11 a.m.) 4,620 cfs (14.75 ft.).

1953: Feb. 22 (2 a.m.) 9,980 cfs (18.46 ft.).

1954: June 3 (4 a.m.) 4,030 cfs (14.24 ft.); June 14 (8:30 p.m.) 4,270 cfs (14.75 ft.); June 18 (2 a.m.) 4,530 cfs (15.00 ft.); June 24 (3 p.m.) 5,420 cfs (15.89 ft.); Aug. 31 (8 a.m.) 5,300 cfs (15.83 ft.).)

1955: No peak above base.

Lake Keomah near Oskaloosa, Iowa

LOCATION.—Lat. 41°17'20", long. 92°32'20" in sec. 24, T. 75 N., R. 15 W., on left abutment of bridge over inlet to lake at Lake Keomah State Park, 6 miles east of Oskaloosa.

RECORDS AVAILABLE.—June 1936 to September 1955.

GAGE.—Staff gage read once daily. Datum of gage is 6.12 ft. below spillway of dam forming lake. Prior to Aug. 30, 1943, staff gage at various locations in the immediate vicinity at same datum.

EXTREMES.—1936-55: Maximum gage height observed, 7.80 ft. July 3, 1951; minimum observed, 3.50 ft. Nov. 24 to Dec. 3, 1936.

Daily Gage Heights, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	5.30	5.02	.....	4.90	.....	6.32	6.44	6.42	6.36	6.32	6.20	6.28
2	5.34	5.01	.....	.....	.....	6.38	6.46	6.40	6.48	6.30	6.20	6.26
3	5.32	5.00	.....	.....	.....	6.36	6.44	6.38	6.44	7.32	6.20	6.24
4	5.30	4.98	4.89	.....	.....	6.32	6.42	6.36	6.38	6.48	6.18	6.22
5	5.28	4.96	.....	.....	.....	6.30	6.42	6.34	6.37	6.40	6.16	6.21
6	5.27	4.95	.....	.....	.....	6.28	6.76	6.32	6.36	6.38	6.14	6.21
7	5.26	4.94	.....	.....	.....	6.28	6.63	6.30	6.42	6.36	6.12	6.20
8	5.28	5.00	.....	.....	.....	6.28	6.48	6.30	6.56	6.36	6.11	6.20
9	5.26	5.00	.....	.....	.....	.....	6.46	6.38	6.40	6.36	6.10	6.22
10	5.25	4.98	.....	.....	.....	.....	6.46	6.72	6.38	6.36	6.08	6.22
11	5.24	4.98	.....	.....	5.56	.....	6.48	6.48	6.36	6.34	6.06	6.22
12	5.23	4.96	.....	.....	.....	.....	6.50	6.42	6.32	6.32	6.05	6.20
13	5.20	4.96	.....	.....	.....	.....	6.44	6.38	6.38	6.36	6.04	6.20
14	5.19	4.94	.....	.....	.....	.....	6.40	6.36	6.36	6.34	6.06	6.18
15	5.18	4.94	.....	.....	.....	.....	6.38	6.34	6.34	6.32	6.12	6.18
16	5.18	4.92	.....	.....	5.92	.....	6.38	6.36	6.38	6.60	6.12	6.16
17	5.17	4.92	.....	.....	6.26	.....	6.36	6.36	6.36	6.42	6.12	6.14
18	5.17	4.91	.....	.....	6.50	.....	6.34	6.34	6.34	6.38	6.12	6.14
19	5.16	4.90	.....	.....	6.46	.....	6.32	6.66	6.32	6.35	6.10	6.12
20	5.15	4.90	.....	.....	6.38	.....	6.32	6.50	6.32	6.40	6.10	6.12
21	5.14	4.90	.....	.....	6.36	.....	6.38	6.46	6.70	6.38	6.10	6.10
22	5.12	4.90	.....	.....	6.30	6.24	6.36	6.47	6.46	6.36	6.10	6.12
23	5.12	.....	.....	.....	.....	.....	6.36	6.42	6.40	6.34	6.12	6.12
24	5.10	.....	.....	.....	6.28	.....	6.38	6.38	6.42	6.32	6.02	6.14
25	5.08	.....	.....	.....	6.36	.....	6.42	6.38	6.40	6.32	6.58	6.14
26	5.06	.....	.....	.....	6.34	.....	6.38	6.84	6.40	6.30	6.42	6.16
27	5.06	.....	.....	.....	6.30	6.40	6.42	6.46	6.42	6.28	6.41	6.14
28	5.05	.....	.....	.....	6.36	6.58	6.42	6.40	6.38	6.26	6.40	6.12
29	5.04	.....	.....	.....	.....	6.56	6.40	6.38	6.36	6.24	6.39	6.10
30	5.04	.....	.....	.....	.....	6.48	6.40	6.34	6.34	6.22	6.38	6.10
31	5.02	.....	.....	.....	.....	6.42	.....	6.38	.....	6.22	6.40	.....

Lake Keomah near Oskaloosa, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	6.10	6.30	6.32	.....	.....	.....	6.36	6.32	6.30	6.42	5.88	5.90
2	6.10	6.30	6.32	.....	.....	.....	6.36	6.32	6.30	6.36	5.86	5.84
3	6.10	6.30	6.30	.....	6.56	.....	6.34	6.32	6.28	6.32	5.88	5.82
4	6.10	.....	6.30	.....	6.50	.....	6.34	6.32	6.26	6.28	5.86	5.79
5	6.10	.....	6.30	.....	6.40	.....	6.32	6.32	6.24	6.26	5.84	5.76
6	6.12	.....	6.30	.....	.....	.....	6.32	6.32	6.22	6.24	5.82	5.74
7	6.22	.....	6.30	.....	.....	.....	6.32	6.34	6.20	6.22	5.80	5.72
8	6.22	.....	6.28	.....	.....	.....	6.32	6.34	6.18	6.20	5.80	5.70
9	6.22	.....	6.28	.....	.....	.....	6.32	6.44	6.18	6.18	5.80	5.69
10	6.22	.....	6.28	.....	.....	6.42	6.32	6.42	6.16	6.16	5.78	5.68
11	6.21	.....	6.28	.....	.....	6.50	6.32	6.40	6.16	6.14	5.80	5.66
12	6.21	6.42	.....	.....	.....	6.52	6.34	6.38	6.14	6.12	5.88	5.64
13	6.20	6.48	.....	.....	.....	6.62	6.40	6.34	6.20	6.10	5.86	5.62
14	6.20	6.38	.....	6.44	.....	6.48	6.40	6.38	6.18	6.16	5.84	5.62
15	6.20	6.36	.....	6.44	.....	6.42	6.36	6.36	6.16	6.14	6.06	5.60
16	6.28	6.34	.....	6.42	.....	6.40	6.34	6.44	6.14	6.14	6.04	5.58
17	6.44	6.34	.....	6.40	.....	6.38	6.34	6.40	6.12	6.18	6.04	5.57
18	6.40	6.32	.....	6.40	.....	6.42	6.34	6.40	6.12	6.20	6.02	5.54
19	6.38	.....	.....	6.50	.....	6.46	6.32	6.38	6.10	6.22	6.01	5.52
20	6.36	.....	.....	.....	.....	6.46	6.32	6.38	6.32	6.20	5.98	5.50
21	6.42	.....	.....	.....	.....	6.42	6.32	6.36	6.70	6.18	6.04	5.48
22	6.42	.....	.....	.....	.....	6.48	6.34	6.40	6.40	6.16	6.02	5.46
23	6.40	.....	.....	.....	.....	6.44	6.42	6.44	6.36	6.14	6.00	5.44
24	6.38	.....	.....	.....	.....	6.40	6.38	6.42	6.34	6.10	5.98	5.42
25	6.36	.....	.....	.....	.....	6.40	6.36	6.40	6.32	6.06	5.96	5.40
26	6.36	.....	.....	.....	.....	6.40	6.34	6.38	6.30	6.04	5.94	5.38
27	6.36	.....	.....	.....	.....	6.38	6.32	6.38	6.40	6.02	5.94	5.36
28	6.34	.....	.....	.....	.....	6.38	6.32	6.36	6.34	6.00	5.92	5.35
29	6.34	.....	.....	.....	.....	6.38	6.32	6.34	6.32	5.96	5.92	5.34
30	6.32	6.32	.....	.....	.....	6.38	6.32	6.32	6.30	5.94	5.90	5.32
31	6.32	.....	.....	.....	.....	6.38	.....	6.32	.....	5.90	5.86	.....
1952-53												
1	5.34	4.94	6.20	.....	6.27	.....	6.50	6.38	6.26	6.14	5.68	5.00
2	5.30	4.94	.....	.....	.....	.....	6.44	6.36	6.26	6.14	5.66	4.98
3	5.28	4.93	.....	.....	.....	.....	6.40	6.32	6.24	6.12	5.66	5.00
4	5.26	4.92	.....	.....	.....	.....	6.38	6.32	6.24	6.12	5.64	5.00
5	5.23	4.90	.....	.....	6.46	.....	6.36	6.32	6.30	6.10	5.62	4.98
6	5.21	4.90	.....	.....	6.60	.....	6.38	6.32	6.30	6.18	5.58	4.96
7	5.20	4.88	.....	.....	6.52	.....	6.38	6.32	6.30	6.16	5.56	4.94
8	5.18	4.88	.....	.....	6.48	.....	6.38	6.30	6.44	6.14	5.52	4.92
9	5.17	4.87	6.28	6.28	6.46	.....	6.38	6.30	6.38	6.10	5.50	4.90
10	5.16	4.86	6.28	.....	6.44	.....	6.38	6.28	6.36	6.08	5.48	4.90
11	5.15	4.86	.....	.....	.....	6.40	6.36	6.28	6.32	6.06	5.46	4.86
12	5.14	4.84	.....	.....	.....	6.40	6.34	6.28	6.32	6.02	5.44	4.84
13	5.14	4.84	.....	.....	.....	6.40	6.34	6.28	6.30	6.00	5.42	4.82
14	5.13	4.84	.....	.....	.....	6.43	6.34	6.28	6.28	6.00	5.40	4.82
15	5.12	4.83	.....	6.39	.....	6.40	6.34	6.26	6.26	5.98	5.38	4.80
16	5.11	4.82	.....	.....	.....	6.38	6.34	6.26	6.26	5.97	5.36	4.78
17	5.10	5.72	.....	.....	.....	6.36	6.32	6.30	6.24	5.96	5.33	4.76
18	5.08	5.90	.....	.....	.....	6.36	6.32	6.30	6.22	5.94	5.30	4.74
19	5.08	5.90	6.44	.....	.....	6.35	6.32	6.28	6.20	5.92	5.28	4.72
20	5.00	5.90	6.42	.....	6.52	6.34	6.32	6.28	6.18	5.92	5.26	4.70
21	5.05	5.90	.....	.....	.....	6.34	6.32	6.32	6.16	5.90	5.24	4.68
22	5.04	5.90	.....	.....	.....	6.34	6.32	6.34	6.14	5.88	5.22	4.65
23	5.03	5.90	.....	.....	.....	6.52	6.32	6.32	6.12	5.86	5.20	4.62
24	5.02	5.92	.....	.....	.....	6.46	6.40	6.34	6.14	5.84	5.18	4.62
25	5.02	5.96	.....	.....	.....	6.40	6.36	6.34	6.14	5.82	5.16	4.60
26	5.01	6.16	.....	.....	.....	6.38	6.36	6.32	6.12	5.80	5.12	4.60
27	5.00	.....	.....	.....	.....	6.38	6.34	6.32	6.10	5.78	5.10	4.58
28	5.00	.....	.....	.....	.....	6.36	6.32	6.30	6.20	5.76	5.08	4.56
29	4.98	.....	.....	.....	.....	6.36	6.32	6.30	6.18	5.74	5.06	4.54
30	4.98	.....	.....	.....	.....	6.66	6.36	6.28	6.16	5.72	5.04	4.52
31	4.96	.....	.....	.....	.....	6.56	.....	6.28	.....	5.70	5.02	.....

Lake Keomah near Oskaloosa, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	4.52	4.18	.....	.....	.....	.....	4.20	5.14	5.22	5.28	4.54	5.62
2	4.52	4.18	4.04	.....	.....	.....	4.20	5.29	5.30	5.26	4.52	5.60
3	4.50	4.16	4.04	.....	.....	.....	4.20	5.30	5.44	5.24	4.48	5.60
4	4.48	4.16	4.04	.....	.....	.....	4.18	5.30	5.44	5.20	4.44	5.58
5	4.46	4.14	4.04	.....	.....	.....	4.18	5.28	5.50	5.20	4.80	5.56
6	4.44	4.14	4.06	.....	.....	.....	4.30	5.26	5.56	5.16	4.78	5.54
7	4.42	4.12	4.06	.....	.....	.....	4.30	5.22	5.56	5.14	4.76	5.52
8	4.42	4.12	4.06	.....	.....	.....	4.30	5.20	5.54	5.10	4.76	5.50
9	4.40	4.10	4.12	.....	.....	.....	4.30	5.18	5.54	5.06	4.74	5.50
10	4.40	4.10	4.12	.....	.....	.....	4.32	5.18	5.52	5.02	4.72	5.48
11	4.38	4.08	4.12	.....	.....	.....	4.32	5.16	5.50	5.00	4.72	5.48
12	4.38	4.08	4.10	.....	.....	.....	4.32	5.14	5.52	4.98	4.70	5.46
13	4.36	4.08	4.10	.....	.....	.....	4.30	5.14	5.50	4.94	4.70	5.44
14	4.36	4.06	4.10	.....	.....	.....	4.28	5.12	5.48	4.90	4.70	5.44
15	4.34	4.06	.....	.....	4.02	.....	4.30	5.12	5.46	4.88	4.68	5.42
16	4.34	4.06	.....	.....	4.02	.....	4.34	5.10	5.48	4.84	4.76	5.40
17	4.32	4.06	.....	.....	4.02	.....	4.32	5.10	5.46	4.82	4.78	5.40
18	4.32	4.04	.....	.....	4.02	4.00	4.30	5.08	5.44	4.78	4.78	5.38
19	4.32	4.08	.....	.....	4.02	4.04	4.32	5.06	5.50	4.82	4.76	5.38
20	4.30	4.12	.....	.....	4.04	4.04	4.38	5.04	5.50	4.80	4.76	5.36
21	4.30	4.10	.....	.....	4.06	.....	4.36	5.02	5.48	4.80	4.76	5.34
22	4.28	4.08	.....	.....	4.06	4.04	4.34	5.00	5.50	4.76	4.82	5.32
23	4.28	4.08	.....	.....	4.06	4.04	4.32	5.00	5.50	4.74	4.82	5.30
24	4.26	4.08	.....	.....	4.06	4.04	4.40	4.98	5.48	4.72	4.90	5.28
25	4.26	4.08	.....	.....	4.10	4.20	4.46	4.96	5.46	4.70	4.90	5.26
26	4.24	4.06	.....	.....	4.10	4.20	4.96	4.96	5.44	4.66	5.05	5.26
27	4.24	4.06	.....	.....	4.10	4.20	5.15	5.02	5.42	4.64	5.08	5.28
28	4.22	4.06	.....	.....	.....	4.20	5.14	5.10	5.38	4.62	5.08	5.28
29	4.22	.....	.....	.....	.....	4.20	5.14	5.08	5.34	4.60	5.08	5.28
30	4.20	.....	.....	.....	.....	4.20	5.14	5.06	5.32	4.58	5.06	5.28
31	4.20	.....	.....	.....	.....	4.20	.....	5.08	.....	4.56	5.04	.....
1954-55												
1	5.26	5.54	5.42	.....	.....	.....	6.28	6.28	6.26	6.22	5.90	5.34
2	5.26	5.52	5.42	.....	.....	.....	6.26	6.26	6.26	6.22	5.86	5.32
3	5.26	5.52	5.42	.....	.....	6.32	6.28	6.26	6.24	6.20	5.84	5.30
4	5.26	5.50	5.42	.....	.....	6.30	6.28	6.47	6.24	6.18	5.82	5.28
5	5.41	5.50	5.40	5.64	.....	6.30	6.28	6.34	6.24	6.32	5.82	5.26
6	5.42	5.50	5.40	5.66	.....	.....	6.26	6.34	6.26	6.30	5.80	5.24
7	5.40	5.50	5.40	5.68	.....	.....	6.26	6.32	6.26	6.28	5.78	5.22
8	5.40	5.48	.....	5.68	.....	6.28	6.26	6.30	6.24	6.26	5.76	5.20
9	.....	5.48	.....	5.68	.....	6.28	6.24	6.36	6.22	6.41	5.74	5.16
10	5.56	5.48	.....	5.68	.....	6.28	6.24	6.42	6.22	6.54	5.72	5.14
11	5.62	5.48	.....	5.68	.....	6.28	6.28	6.38	6.20	6.38	5.70	5.12
12	5.62	5.48	.....	.....	.....	6.28	6.38	6.40	6.18	6.32	5.68	5.10
13	5.60	5.48	.....	.....	.....	6.26	6.40	6.48	6.16	6.28	5.64	5.10
14	5.60	5.48	.....	.....	5.78	6.26	6.40	6.40	6.14	6.24	5.62	5.08
15	5.64	5.48	.....	.....	.....	6.41	6.38	6.36	6.12	6.22	5.60	5.06
16	5.64	5.48	5.39	.....	.....	6.30	6.34	6.34	6.12	6.20	5.57	5.06
17	5.62	5.48	.....	.....	.....	6.32	6.32	6.32	6.10	6.20	5.54	5.04
18	5.60	5.48	.....	.....	.....	6.30	6.30	6.30	6.10	6.18	5.52	5.04
19	5.60	5.47	.....	.....	6.19	6.28	6.44	6.30	6.30	6.16	5.50	5.02
20	5.60	5.47	.....	.....	6.51	6.30	6.36	6.32	6.30	6.16	5.48	5.02
21	5.58	5.47	.....	.....	.....	6.34	6.34	6.34	6.28	6.14	5.56	5.08
22	5.58	5.46	.....	.....	.....	6.32	6.28	6.32	6.26	6.12	5.56	5.08
23	5.56	5.46	.....	.....	.....	6.30	6.66	6.30	6.26	6.10	5.54	5.06
24	5.50	5.46	.....	5.74	.....	6.28	6.48	6.30	6.24	6.08	5.52	5.04
25	5.56	5.44	.....	.....	.....	6.36	6.44	6.28	6.22	6.06	5.48	5.02
26	5.56	5.44	.....	.....	.....	6.32	6.36	6.30	6.20	6.04	5.46	5.02
27	5.56	5.44	.....	.....	.....	.....	6.34	6.30	6.20	6.02	5.44	5.02
28	5.56	5.44	.....	.....	.....	6.30	6.32	6.30	6.18	6.00	5.42	5.00
29	5.56	5.42	.....	.....	.....	6.30	6.30	6.30	6.26	5.98	5.42	5.50
30	5.56	5.42	.....	.....	.....	6.28	6.30	6.30	6.24	5.96	5.40	5.48
31	5.54	.....	.....	.....	.....	6.28	.....	6.28	.....	5.94	5.38	.....

North Skunk River near Sigourney, Iowa

LOCATION.—Lat. 41°18', long. 92°12', in sec. 14, T. 75 N., R. 12 W., at bridge on State Highway 149, 2½ miles south of Sigourney, and 11 miles upstream from mouth.

DRAINAGE AREA.—750 sq. mi. approximately.

RECORDS AVAILABLE.—October 1945 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 651.53 ft. above mean sea level, datum of 1929. Prior to June 10, 1953, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—10 years, 404 cfs.

EXTREMES.—1945-55: Maximum discharge observed, 13,900 cfs Jan. 7, 1946 (gage height, 22.57 ft.); minimum daily, 0.6 cfs Sept. 10, 11, 1955.

Flood of May 1944 reached a stage of 22.8 ft. from floodmark.

REMARKS.—Records fair except those for periods of ice effect, indefinite stage-discharge relation, and no gage-height record, which are poor.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	6.0	6.0	5.0	3.6	7.4	384	1,890	666	850	484	171	118
2	5.1	6.0	5.6	3.6	7.1	374	1,020	689	1,140	414	309	110
3	5.4	5.7	6.5	3.6	6.8	364	990	942	1,590	4,980	153	99
4	5.1	5.7	*7.0	3.5	6.7	324	1,060	712	1,950	5,700	158	94
5	4.8	5.7	6.9	3.5	6.5	286	1,040	536	2,130	3,490	103	93
6	6.6	5.7	6.4	3.5	6.4	286	2,070	474	1,250	1,170	132	89
7	7.3	6.0	5.9	3.5	6.3	277	3,000	424	1,020	735	121	84
8	8.0	6.5	5.4	3.4	6.2	258	1,800	364	1,740	620	118	82
9	7.7	6.9	5.1	3.4	6.1	230	990	258	2,010	2,140	107	85
10	9.2	*7.2	5.0	3.4	30	210	990	1,740	1,500	2,330	100	153
11	11	7.2	4.8	3.4	100	190	1,300	2,650	942	2,330	93	300
12	4.4	7.0	4.6	3.3	430	170	1,450	1,890	850	3,290	87	*240
13	*4.0	6.9	4.5	*3.3	350	150	1,740	1,220	804	2,100	*80	280
14	5.1	6.3	4.4	3.3	260	140	1,140	758	578	1,060	84	250
15	5.0	6.3	4.3	3.3	220	120	1,090	599	1,770	712	134	220
16	4.8	6.3	4.2	5.6	300	110	800	536	1,860	1,530	139	200
17	5.1	6.3	4.2	19	650	100	648	599	2,010	919	258	180
18	5.7	6.0	4.1	33	1,300	90	536	*536	*2,070	689	142	160
19	6.3	5.4	4.1	28	2,400	83	*504	1,270	850	*526	120	150
20	6.0	5.4	4.0	23	1,700	77	444	900	689	1,470	108	135
21	6.0	5.4	4.0	19	1,300	73	414	1,120	2,570	1,350	89	125
22	5.7	5.7	3.9	17	1,000	*71	450	1,060	2,010	620	97	115
23	6.0	5.4	3.9	15	920	70	494	735	1,170	500	142	110
24	6.0	5.1	3.8	13	900	75	424	578	1,410	394	99	100
25	6.0	4.8	3.8	12	1,300	90	557	277	1,300	344	1,180	95
26	6.0	4.6	3.8	10	1,350	114	620	2,080	1,440	206	1,410	89
27	6.0	4.5	3.7	9.6	1,300	344	1,090	*2,910	1,220	424	781	85
28	6.0	4.5	3.7	9.1	620	1,190	666	3,590	965	324	344	81
29	6.0	4.4	3.7	8.5	.....	2,650	827	3,090	643	220	217	76
30	6.0	*4.5	3.7	8.1	.....	2,490	689	1,120	557	205	167	74
31	6.0	.....	3.6	7.7	.....	2,650	.....	804	.....	188	139	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 25-30, Dec. 12-31, 1950; Jan. 1 to Feb. 24, 1951.

North Skunk River near Sigourney, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	48	239	360	150	520	334	1,060	404	414	424	60	179
2.....	49	205	354	150	560	300	1,040	364	374	315	58	161
3.....	49	160	*344	140	700	270	804	374	354	394	60	196
4.....	48	120	315	135	1,000	240	689	380	334	364	*63	191
5.....	47	*105	286	130	850	250	666	364	296	296	62	191
6.....	53	100	268	130	700	296	600	350	286	228	88	198
7.....	122	130	248	*125	600	315	536	330	277	203	70	191
8.....	*169	150	228	120	530	324	504	350	268	186	61	*194
9.....	116	170	214	120	480	364	484	370	374	286	62	198
10.....	84	178	200	120	450	1,030	464	400	286	212	67	172
11.....	68	186	180	115	400	2,010	474	500	277	174	69	158
12.....	62	420	160	115	370	3,700	942	*374	216	158	73	84
13.....	55	2,070	140	115	350	6,460	557	364	198	143	140	84
14.....	52	2,730	120	120	340	5,180	850	334	394	184	101	85
15.....	52	2,370	100	130	330	3,590	850	306	414	156	344	87
16.....	83	1,060	120	250	320	1,860	712	827	414	200	250	101
17.....	904	735	150	600	320	1,170	620	530	234	234	158	78
18.....	850	557	160	1,380	320	1,320	557	414	194	214	94	46
19.....	526	464	170	1,800	350	2,130	557	344	174	163	75	30
20.....	781	434	180	2,160	300	2,220	484	306	370	150	67	36
21.....	1,410	464	180	2,130	370	1,770	454	296	2,460	128	184	32
22.....	1,500	474	180	2,010	360	1,650	599	334	2,220	115	394	29
23.....	1,300	424	170	1,530	360	1,710	1,060	1,270	*1,120	101	124	28
24.....	1,020	344	165	1,170	370	1,380	1,040	2,040	557	93	83	26
25.....	620	208	160	1,000	400	1,090	896	2,130	424	88	68	20
26.....	474	296	150	880	420	1,120	689	2,490	536	82	62	25
27.....	394	354	145	800	444	1,140	599	1,320	827	76	78	25
28.....	364	354	140	700	454	1,060	536	712	1,020	73	155	25
29.....	334	344	135	600	*414	1,020	474	620	850	67	159	22
30.....	306	354	140	560	.....	942	434	515	620	64	158	20
31.....	268	.....	145	520	.....	*896	.....	464	.....	62	140	.....
1952-53												
1.....	20	15	*100	82	86	414	2,190	873	230	186	43	8.3
2.....	17	a16	91	70	*81	306	1,190	758	216	140	38	8.2
3.....	17	*16	86	76	76	286	1,020	689	201	126	33	8.3
4.....	17	16	81	74	73	277	850	526	184	258	30	8.6
5.....	a16	16	77	71	250	248	689	526	268	130	28	9.0
6.....	15	17	81	68	1,200	*208	620	504	515	101	26	9.4
7.....	15	17	86	66	1,600	268	557	484	277	108	26	9.8
8.....	15	17	91	65	1,700	221	504	424	462	156	25	10
9.....	12	17	100	65	1,400	179	474	404	1,510	93	25	9.4
10.....	*12	17	110	64	1,200	334	464	354	689	78	24	8.7
11.....	13	17	120	64	1,000	919	a450	315	354	70	23	8.0
12.....	13	17	110	68	810	712	434	306	296	66	23	7.4
13.....	15	17	95	72	670	578	394	286	258	63	19	6.8
14.....	15	18	87	78	540	669	364	258	230	63	18	6.4
15.....	15	18	81	200	460	1,270	414	258	216	69	18	6.0
16.....	15	964	77	500	380	873	444	a255	203	64	16	5.6
17.....	13	2,300	73	570	330	643	444	a240	194	78	15	5.3
18.....	13	1,340	70	450	300	578	374	234	171	72	12	5.1
19.....	12	578	67	350	350	536	334	223	155	69	12	4.8
20.....	12	201	66	270	1,300	414	315	a210	139	82	*11	4.6
21.....	12	119	400	230	2,200	374	306	205	121	64	11	5.1
22.....	13	97	300	200	2,000	354	286	*212	112	56	11	5.6
23.....	15	87	200	170	2,200	918	277	198	105	52	11	6.0
24.....	19	79	160	150	3,590	1,560	324	277	105	*60	11	*6.2
25.....	12	87	135	140	1,710	919	a540	988	*101	78	10	6.1
26.....	a12	324	120	*130	712	578	a680	1,970	108	55	10	5.8
27.....	12	230	110	120	578	*494	620	896	178	49	10	5.3
28.....	10	160	105	110	494	536	504	515	259	46	9.6	4.7
29.....	18	140	96	105	.....	599	454	384	1,040	70	9.3	4.4
30.....	15	115	90	96	.....	1,620	578	a330	374	84	8.9	4.1
31.....	12	.....	86	91	.....	2,370	.....	286	.....	51	8.5	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 3-9, Dec. 10-31, 1951; Jan. 1-17, Jan. 25 to Feb. 26, Mar. 2-5, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 23, 1953. Stage-discharge relation indefinite Aug. 20 to Sept. 30, 1953.

North Skunk River near Sigourney, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	4.2	2.0	3.3	2.6	2.4	5.0	24	409	434	98	15	143
2.....	4.0	2.7	4.4	2.6	2.6	4.0	20	326	810	85	14	111
3.....	3.2	2.2	4.8	2.5	2.7	3.3	19	302	819	77	12	91
4.....	3.2	2.5	4.4	2.4	3.2	3.0	20	476	814	70	13	75
5.....	3.3	2.7	5.4	2.4	3.8	3.3	23	310	792	65	25	63
6.....	3.9	3.3	9.5	2.3	3.8	3.6	62	176	445	60	17	54
7.....	3.4	3.4	9.5	2.3	3.4	4.4	34	130	252	58	89	49
8.....	3.2	3.8	11	2.3	3.6	4.5	33	105	198	52	50	42
9.....	3.3	4.2	11	2.2	4.2	4.0	63	85	163	47	27	40
10.....	3.3	3.8	*14	2.2	4.5	3.6	46	74	134	42	18	41
11.....	2.9	3.4	15	2.2	4.1	4.0	33	65	116	39	16	39
12.....	2.4	3.2	7.5	2.1	3.9	6.0	25	59	614	37	16	44
13.....	1.9	6.3	6.3	2.1	4.0	9.0	19	54	478	33	14	40
14.....	1.7	6.9	5.3	2.1	6.6	13	18	46	189	31	13	35
15.....	1.6	6.0	4.5	2.1	*15	19	19	43	214	28	12	31
16.....	1.6	4.5	3.9	2.1	21	18	*20	38	340	26	*11	29
17.....	1.6	4.8	3.5	2.1	15	16	20	36	770	25	19	29
18.....	1.6	5.4	3.4	2.1	19	*12	50	32	1,060	23	27	28
19.....	1.5	*5.4	3.5	2.1	23	15	48	31	*414	22	110	28
20.....	1.4	8.0	3.9	2.3	38	15	44	28	320	21	83	28
21.....	1.4	8.5	4.3	2.2	36	20	69	*25	261	22	47	28
22.....	*1.5	7.5	3.7	*2.1	28	28	44	26	946	*23	149	25
23.....	1.7	7.5	3.3	2.1	32	33	51	24	1,210	23	324	*23
24.....	1.4	6.6	3.1	2.3	29	35	41	22	817	28	304	21
25.....	1.2	5.4	3.1	2.3	19	41	36	20	330	25	206	20
26.....	1.6	4.8	3.0	2.3	12	35	82	20	234	21	1,390	19
27.....	1.5	4.5	3.0	2.3	12	27	702	62	183	19	1,650	18
28.....	1.5	3.8	2.9	2.3	7.5	33	300	238	150	18	1,300	21
29.....	1.5	3.0	2.8	2.4	.....	45	190	82	130	18	647	29
30.....	1.6	2.4	2.7	2.4	.....	36	490	127	115	16	320	304
31.....	1.7	.....	2.7	2.4	.....	29	.....	140	.....	15	194	.....
1954-55												
1.....	803	130	71	72	49	1,000	178	310	107	31	14	2.6
2.....	326	125	60	64	48	740	163	280	94	24	13	2.6
3.....	342	125	60	59	47	682	152	260	87	24	12	2.5
4.....	320	118	110	58	45	814	142	504	83	23	11	2.2
5.....	372	112	80	135	44	660	136	280	77	26	11	1.7
6.....	506	115	61	195	43	546	131	217	74	54	16	1.4
7.....	649	109	55	175	43	330	128	212	79	20	15	1.2
8.....	382	108	51	155	42	221	124	203	78	32	12	1.3
9.....	260	108	66	138	41	201	115	199	94	313	9.8	1.0
10.....	634	102	140	120	40	280	108	594	78	658	8.8	.6
11.....	1,060	98	165	107	40	223	97	550	66	774	8.4	.6
12.....	1,320	94	180	96	39	207	125	466	62	508	9.1	*.7
13.....	693	94	165	82	38	183	246	572	59	194	8.4	1.6
14.....	476	91	170	72	*37	180	340	392	57	83	7.7	1.4
15.....	403	*89	178	70	36	260	310	300	53	70	*7.7	.7
16.....	403	89	*182	66	36	280	260	246	50	70	6.8	.9
17.....	320	86	178	64	36	260	207	212	46	54	6.8	1.3
18.....	260	86	172	62	39	196	171	189	41	44	6.0	1.3
19.....	229	86	162	61	250	*175	553	171	41	38	5.4	1.4
20.....	203	83	150	*61	1,700	173	1,080	*167	40	33	5.4	1.9
21.....	*187	82	135	60	1,300	190	382	143	35	31	5.6	2.3
22.....	176	78	120	60	980	194	280	138	33	*29	5.6	2.3
23.....	170	78	100	60	720	200	983	140	30	28	6.2	5.4
24.....	160	77	77	59	520	190	4,590	183	*28	25	5.2	5.0
25.....	149	74	60	58	380	160	*2,530	125	26	24	4.8	6.8
26.....	143	77	64	58	420	145	940	132	25	21	4.6	5.0
27.....	140	77	67	58	820	135	660	132	25	18	4.0	4.6
28.....	157	68	75	57	1,400	130	508	122	24	17	4.0	4.6
29.....	173	65	89	55	.....	152	424	131	27	17	4.2	967
30.....	144	74	100	53	.....	178	350	122	35	16	3.7	458
31.....	136	.....	85	49	.....	190	.....	131	.....	15	2.8	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 13-31, 1953; Jan. 1-17, Mar. 1-5, Dec. 4-31, 1954; Jan. 1 to Mar. 2, Mar. 23-28, 1955. Stage-discharge relation indefinite Oct. 1 to Nov. 7, 1953.

North Skunk River near Sigourney, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	6.07	5.78	4.63	0.33	580	453	1,027	1,136	1,303	1,341	240	136
1951-52.....	396	542	194	645	465	1,550	674	651	559	182	120	97.6
1952-53.....	14.3	236	115	157	975	655	570	464	309	88.3	18.6	6.77
1953-54.....	2.25	4.62	5.44	2.26	12.8	17.0	91.2	121	458	37.6	232	51.6
1954-55.....	380	93.3	111	81.9	330	303	537	252	55.1	107	7.90	49.7

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.0081	0.0077	0.0062	0.012	0.785	0.604	1.37	1.51	1.82	1.79	0.320	0.180
1951-52.....	.528	.723	.259	.860	.620	2.07	.899	.868	.745	.243	.160	.130
1952-53.....	.019	.315	.153	.209	1.30	.873	.760	.619	.412	.118	.025	.0090
1953-54.....	.0030	.0062	.0073	.0030	.017	.023	.122	.161	.611	.050	.309	.069
1954-55.....	.507	.124	.148	.109	.440	.404	.716	.336	.073	.143	.011	.066

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.009	0.009	0.007	0.01	0.82	0.70	1.53	1.75	2.03	2.00	0.37	0.20
1951-52.....	.61	.81	.30	.99	.67	2.38	1.00	1.00	.83	.28	.18	.15
1952-53.....	.02	.35	.18	.24	1.35	1.01	.85	.71	.46	.14	.03	.01
1953-54.....	.003	.007	.008	.003	.02	.03	.14	.19	.68	.06	.36	.08
1954-55.....	.58	.14	.17	.13	.46	.47	.80	.39	.08	.16	.01	.07

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	261	4.70
1951....	July 3, 1951.	19.92	7,460	3.3	524	0.699	9.50	617	11.19
1952....	Mar. 13, 1952.	20.16	7,660	20	507	.676	9.20	443	8.03
1953....	Feb. 24, 1953.	16.43	3,820	4.1	295	.393	5.35	266	4.82
1954....	Apr. 30, 1954.	11.05	1,830	1.2	86.2	.115	1.58	135	2.45
1955....	Apr. 24, 1955.	18.18	5,180	.6	191	.255	3.46	.....	.....

Peak Discharge (base 2000 cfs)

1951: Feb. 19 (8 a.m.) about 2,500 cfs (16.00 ft.); Mar. 31 (5 p.m.) 2,780 cfs (14.34 ft.); Apr. 7 (3:30 p.m.) 3,000 cfs (14.76 ft.); May 11 (7 a.m.) 3,000 cfs (14.83 ft.); May 26 (10 p.m.) 3,700 cfs (16.2 ft.); May 29 (9 p.m.) 3,820 cfs (16.4 ft.); June 5 (12 m.) 2,190 cfs (12.8 ft.); June 21 (5 p.m.) 2,570 cfs (13.79 ft.); July 3 (5 p.m.) 7,460 cfs (19.92 ft.); July 9 (7 p.m.) 2,860 cfs (14.6 ft.); July 12 (5 p.m.) 3,490 cfs (15.88 ft.); Nov. 14 (1 p.m.) 2,780 cfs (14.30 ft.).

1952: Jan. 20 (8 p.m.) 2,190 cfs (12.80 ft.); Mar. 13 (6 p.m.) 7,660 cfs (20.16 ft.); Mar. 19 (12 p.m.) 2,410 cfs (13.62 ft.); May 26 (11 a.m.) 2,570 cfs (13.82 ft.); June 21 (2 p.m.) 2,780 cfs (14.35 ft.); Nov. 17 (3 a.m.) 2,650 cfs (14.00 ft.).

1953: Feb. 24 (7 p.m.) 3,820 cfs (16.43 ft.); Mar. 31 (11 p.m.) 2,490 cfs (13.63 ft.); May 26 (4 a.m.) 2,330 cfs (13.20 ft.).

1954: No peak above base.

1955: Apr. 24 (11 a.m.) 5,180 cfs (18.18 ft.).

Skunk River at Augusta, Iowa

LOCATION.—Lat. 40°46', long. 91°17', in NE¼ sec. 26, T. 69 N., R. 4 W., on left bank 300 ft. upstream from bridge on State Highway 16 at Augusta, 2 miles upstream from Long Creek, and at mile 12.2.

DRAINAGE AREA.—4,290 sq. mi., approximately.

RECORDS AVAILABLE.—September to November 1913, May 1915 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 521.69 ft. above mean sea level, adjustment of 1912. Sept. 30 to Nov. 15, 1913, staff gage 400 ft. upstream at datum about 0.7 ft. higher. May 27, 1915, to Jan. 14, 1935, chain gage 400 ft. upstream at present data.

AVERAGE DISCHARGE.— 40 years (1915-55), 2,177 cfs.

EXTREMES.—1913, 1915-55: Maximum discharge recorded, 44,800 cfs May 26, 1944 (gage height, 23.04 ft.); minimum daily, 7 cfs Aug. 27 to Sept. 1, 1934.

Flood of June 1, 1903, reached a stage of about 21 ft.; discharge about 45,000 cfs.

REMARKS.—Records good except those for periods of ice effect, which are poor. Diurnal fluctuation at low flow caused by power plant 25 miles above station.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	162	85	80	36	52	g3,390	g10,100	5,500	3,390	3,940	1,680	1,960
2	93	85	80	45	54	g2,840	g9,500	5,000	3,060	3,390	1,520	1,740
3	137	85	69	60	54	g2,840	*g9,780	4,800	2,780	3,500	1,280	1,680
4	93	85	62	70	54	g2,730	g9,920	5,000	3,720	7,450	1,180	1,460
5	103	83	78	55	54	*g2,120	9,500	5,300	*5,000	9,920	1,070	1,280
6	103	83	34	45	*54	g1,800	7,710	5,400	5,600	*11,000	*1,070	1,150
7	109	*83	48	42	56	g1,580	10,200	*5,200	6,320	11,700	1,040	1,070
8	106	88	*88	40	56	g1,410	11,700	5,000	11,500	11,200	970	1,010
9	93	93	88	*38	56	g1,410	11,500	5,200	11,000	7,840	900	910
10	*93	85	73	38	60	g1,580	9,080	13,000	11,000	7,060	840	920
11	88	93	71	38	200	g1,580	7,060	22,800	10,800	7,450	900	930
12	88	96	71	38	2,500	g1,520	9,080	21,600	10,800	7,320	752	1,110
13	85	106	76	38	7,000	a1,300	10,900	10,100	9,640	7,450	688	1,240
14	88	109	71	44	6,000	a1,100	10,300	11,000	7,320	7,320	697	*1,460
15	88	101	67	55	5,000	a950	8,100	6,930	5,360	5,960	2,160	1,250
16	90	101	58	70	6,000	a880	6,800	5,240	4,640	4,280	2,950	1,100
17	145	96	54	120	8,000	a800	5,840	4,280	5,960	6,200	1,680	1,110
18	90	134	46	200	11,000	a720	4,880	3,940	6,080	7,840	1,100	1,000
19	93	188	48	260	15,000	a670	4,280	3,610	5,060	5,600	1,190	950
20	96	134	54	300	12,000	a920	3,940	3,720	5,480	4,050	1,160	850
21	93	145	48	220	10,000	a580	3,600	4,280	5,940	7,190	2,020	772
22	93	112	54	170	8,000	g573	3,300	3,940	12,200	10,800	3,170	705
23	90	88	50	150	6,000	g791	3,100	3,610	11,900	11,500	1,580	654
24	88	48	48	120	5,000	g840	3,100	3,610	12,800	5,960	1,020	662
25	88	73	48	100	4,000	g870	3,200	3,060	10,800	4,050	2,240	605
26	88	88	40	85	g3,500	g970	3,500	3,330	11,200	3,060	14,400	605
27	88	80	36	75	g2,730	g1,800	4,000	6,930	11,700	2,080	17,900	586
28	88	76	36	70	g3,940	g4,840	6,000	7,580	8,380	4,280	18,900	522
29	85	73	*36	65	.....	g14,100	7,000	7,320	6,200	3,060	13,000	515
30	85	78	36	60	.....	g13,800	6,000	7,190	4,760	2,120	4,760	487
31	85	.....	36	56	.....	a11,500	.....	5,360	.....	1,680	2,620	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
g Computed from gage readings or graph based on gage readings.
Note—Stage-discharge relation affected by ice Jan. 2 to Feb. 25, 1951.

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	474	1,360	1,460	820	3,300	2,120	5,360	*2,730	2,400	3,720	612	566
2	467	1,260	1,410	850	3,400	1,900	5,360	2,620	2,120	3,060	573	612
3	429	1,150	1,460	860	3,700	1,850	5,360	2,400	*1,900	2,510	515	566
4	435	1,040	*1,410	840	4,000	1,680	5,360	2,290	1,740	2,240	550	508
5	403	1,010	1,410	800	4,400	1,410	5,240	2,120	1,630	2,120	558	*501
6	435	920	1,410	770	4,000	1,360	4,880	1,960	1,680	1,850	515	416
7	501	900	1,360	*750	*3,500	1,310	4,160	1,850	1,460	*1,800	536	461
8	*860	781	1,300	730	3,200	1,360	3,720	1,960	1,410	1,580	*637	480
9	1,520	*830	1,220	720	2,900	1,580	3,390	2,070	1,520	1,360	680	487
10	1,310	900	1,190	710	2,600	3,510	3,280	2,120	1,270	1,580	581	467
11	1,050	930	1,120	710	2,400	10,900	3,170	3,280	1,240	2,290	670	359
12	870	1,080	1,060	700	2,100	16,700	3,060	*2,950	1,290	2,840	1,800	359
13	772	1,540	990	700	1,960	18,700	3,280	2,400	1,220	2,620	1,680	353
14	662	10,900	800	700	2,070	17,700	3,720	2,240	2,070	2,160	970	359
15	645	12,800	700	1,500	2,120	*16,700	*3,940	2,020	1,800	1,800	3,370	391
16	597	8,850	600	3,500	2,120	16,100	4,050	2,510	1,850	1,630	4,850	448
17	558	5,270	650	6,000	1,900	16,700	3,940	4,520	1,410	1,580	3,280	341
18	550	3,390	800	8,000	1,850	15,800	3,830	4,040	1,270	1,900	1,850	324
19	1,250	2,080	900	7,000	1,960	17,200	3,720	3,170	1,100	2,560	1,250	324
20	1,960	2,240	940	5,500	2,780	15,400	3,500	2,510	1,460	2,400	1,050	318
21	1,740	2,020	940	4,800	2,730	11,900	3,390	2,180	10,900	1,740	2,560	188
22	1,360	1,960	920	4,500	2,290	12,000	3,390	1,960	14,600	1,410	3,500	271
23	1,800	1,960	900	4,500	2,020	13,200	10,700	1,960	11,700	1,230	1,030	226
24	3,720	1,900	860	5,800	1,900	11,200	12,000	2,020	8,510	1,110	910	188
25	4,040	1,680	810	5,500	1,800	9,500	7,830	4,160	4,050	1,010	850	183
26	3,500	1,520	760	5,100	1,740	8,100	5,720	5,360	2,730	920	628	178
27	2,560	1,360	740	4,800	1,960	6,560	4,640	5,600	2,400	870	522	183
28	2,020	1,360	720	4,300	2,120	5,840	3,830	5,480	3,060	820	467	137
29	1,850	1,410	710	3,800	2,240	5,360	3,390	3,610	3,720	733	442	205
30	1,630	1,520	700	3,500	.....	5,000	3,060	2,840	4,050	697	429	277
31	1,520	.....	760	3,200	.....	4,880	.....	2,880	.....	637	442	.....
1952-53												
1	226	114	400	390	320	4,530	*15,200	3,010	1,580	2,900	453	139
2	167	65	370	380	310	3,340	12,000	4,050	1,440	2,020	421	66
3	112	98	370	340	300	2,680	8,010	3,930	1,280	1,530	362	109
4	130	145	450	280	300	2,180	6,090	3,930	1,180	1,200	321	109
5	71	127	520	240	320	1,910	5,250	4,050	1,100	1,100	282	74
6	*123	109	470	210	2,000	1,800	4,410	3,810	1,080	2,350	234	76
7	205	106	454	190	6,200	1,700	3,930	*3,450	1,280	*2,350	269	84
8	131	103	454	180	7,060	1,600	3,570	3,120	*1,860	1,860	257	*70
9	137	60	474	190	*5,840	1,530	3,230	2,790	2,460	1,200	252	115
10	137	101	*467	200	4,160	*1,580	2,900	2,570	3,010	900	*295	71
11	123	167	461	210	4,160	2,240	2,740	2,350	4,530	749	321	87
12	73	*109	440	210	4,280	3,450	2,570	2,130	7,290	641	289	66
13	106	112	400	*220	*3,610	3,810	2,460	1,960	4,410	578	282	64
14	188	109	180	230	3,500	4,580	2,350	1,860	2,900	560	*229	68
15	130	109	200	250	2,950	7,770	2,350	1,740	2,080	476	194	100
16	127	90	320	300	1,700	6,930	2,520	1,640	1,800	535	135	58
17	123	117	270	450	1,500	4,890	2,680	1,690	1,530	632	148	56
18	123	366	330	840	1,300	3,810	2,460	1,640	1,320	840	181	61
19	78	4,780	400	2,070	1,100	3,340	2,240	1,530	1,200	740	148	64
20	114	3,520	500	1,850	6,540	3,010	2,080	1,460	1,060	686	177	58
21	178	1,630	760	1,180	11,600	2,620	1,910	1,380	960	641	120	56
22	123	930	1,150	850	9,370	3,450	1,800	1,390	880	560	139	58
23	123	645	1,000	637	6,210	3,120	1,740	1,450	803	468	92	58
24	117	550	700	515	5,850	4,530	1,960	1,470	731	406	129	56
25	117	536	520	480	6,450	5,370	2,570	1,910	731	362	165	56
26	71	508	410	470	7,050	4,200	2,400	2,240	686	414	123	56
27	96	522	360	460	7,200	3,230	2,400	3,810	614	510	109	54
28	162	580	320	430	5,250	2,620	2,400	3,930	677	493	109	51
29	120	500	330	400	.....	2,300	2,740	2,680	850	414	105	49
30	114	480	360	370	.....	5,430	2,620	2,020	2,350	355	71	44
31	109	.....	380	350	.....	13,000	.....	1,800	.....	355	90	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Feb. 12, Nov. 28 to Dec. 6, Dec. 12-31, 1952; Jan. 1-18, Jan. 25 to Feb. 7, Feb. 16-19, Mar. 7, 8, 1953.

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	48	40	53	37	25	126	160	2,180	6,330	4,170	g265	*4,770
2	49	40	67	40	*30	174	165	4,030	4,770	2,400	g259	5,010
3	60	40	*76	38	32	53	126	5,370	4,650	1,040	g371	5,250
4	64	40	76	37	37	82	74	3,570	5,250	1,380	g403	5,370
5	49	40	119	44	37	85	*107	2,080	4,410	1,240	g576	4,410
6	*37	39	82	*40	35	64	5,180	2,080	3,930	1,130	g*1,440	2,520
7	35	39	*82	42	26	82	3,330	1,740	3,810	1,010	g721	1,860
8	35	39	85	53	34	*64	1,400	1,300	*3,340	910	g730	1,530
9	35	39	95	46	44	71	685	1,010	2,400	*830	g1,140	1,300
10	35	39	104	26	46	142	506	840	1,910	748	g624	1,150
11	35	42	98	25	30	62	416	685	1,580	712	g540	1,030
12	35	44	88	23	26	60	353	600	1,380	658	g448	942
13	35	46	98	22	49	71	305	553	1,260	608	288	870
14	35	48	74	21	69	76	*220	526	2,520	568	242	811
15	35	48	39	20	67	76	347	520	3,010	526	204	757
16	35	48	35	19	104	111	423	513	3,090	493	204	703
17	37	48	31	19	138	64	320	487	3,690	461	267	667
18	40	48	30	18	174	101	220	*305	3,810	442	1,010	624
19	39	49	30	18	74	76	329	311	4,650	423	685	600
20	37	60	30	17	160	119	1,870	294	4,770	391	403	·568
21	37	55	31	17	85	69	2,740	294	4,650	391	384	540
22	37	55	31	17	165	76	1,460	276	4,650	384	526	513
23	49	55	32	17	215	134	975	254	g5,370	347	616	487
24	42	58	35	17	151	134	649	288	g5,130	g353	1,740	467
25	39	58	38	16	146	*1,530	467	259	g5,010	g435	2,020	448
26	44	55	36	16	146	1,420	384	265	5,130	g341	6,520	435
27	46	58	36	16	155	703	757	265	5,130	g448	g9,370	403
28	37	51	35	16	98	493	757	242	5,130	g467	8,610	403
29	*37	74	35	16	.....	311	1,580	282	4,410	g442	6,210	442
30	37	53	35	17	.....	226	*1,230	397	2,900	g448	5,130	435
31	39	.....	36	19	.....	188	.....	2,320	.....	g259	g4,650	.....
1954-55												
1	448	1,280	560	420	420	8,010	1,530	2,900	997	793	215	62
2	658	1,220	560	420	*410	4,410	1,340	2,400	1,140	649	204	60
3	1,640	1,150	553	460	400	3,340	1,210	1,910	*1,050	560	179	58
4	*1,420	1,120	540	550	390	2,900	1,120	1,800	900	429	160	55
5	2,310	*1,070	520	3,000	370	3,010	1,110	1,640	820	397	151	53
6	4,050	1,040	500	*11,100	350	3,010	1,030	*1,800	802	506	193	51
7	3,880	1,010	480	6,360	340	2,520	997	1,470	739	568	429	49
8	2,790	997	470	3,010	*330	2,350	*953	1,370	694	*506	*423	48
9	2,520	964	460	2,180	325	*2,130	942	1,270	667	442	329	48
10	3,560	942	490	1,740	320	1,740	986	1,380	640	410	242	46
11	8,010	920	460	1,200	315	1,690	1,070	1,530	840	1,010	184	44
12	7,410	880	470	950	305	1,690	1,250	2,020	920	2,570	146	42
13	5,130	850	500	760	295	1,530	1,500	3,560	811	1,960	123	40
14	4,650	830	480	670	290	*1,430	*2,900	4,410	712	1,580	111	42
15	4,170	784	450	620	290	1,400	2,790	3,450	649	1,740	104	*40
16	3,340	784	520	580	290	1,420	2,180	2,520	592	1,280	101	35
17	3,120	766	520	550	290	1,530	1,800	2,020	547	1,050	95	35
18	3,570	766	520	*520	330	1,470	1,640	1,740	506	820	92	35
19	3,570	739	540	500	2,500	1,380	1,640	1,530	649	624	88	35
20	3,010	721	480	480	9,900	1,300	1,640	1,380	775	540	85	37
21	2,460	721	490	460	11,000	1,260	3,980	1,270	600	480	82	39
22	2,130	712	520	450	10,200	1,270	3,040	1,250	*721	442	98	42
23	1,910	*685	500	430	9,300	1,290	2,520	1,690	533	403	*111	*39
24	1,800	676	490	420	8,500	1,530	10,600	*1,360	416	487	82	37
25	1,690	649	480	410	8,200	1,620	17,700	1,100	442	667	95	49
26	1,580	608	480	400	10,500	1,500	15,600	1,040	429	*730	101	71
27	1,470	600	480	390	11,800	1,370	11,000	1,030	378	442	82	82
28	1,370	600	520	380	10,500	1,320	6,390	1,270	347	317	74	71
29	1,330	584	500	380	.....	1,290	4,530	1,110	429	271	88	499
30	1,320	*553	380	380	.....	1,350	3,570	1,030	953	254	*95	1,790
31	1,290	.....	440	390	.....	1,530	.....	942	.....	226	69	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 16-31, 1953; Jan. 1-3, 11-31, Dec. 6-31, 1954; Jan. 1-5, Jan. 11 to Feb. 28, Mar. 25-28, 1955.

Skunk River at Augusta, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	97.2	95.8	57.5	90.4	4,158	2,662	7,099	7,062	7,710	6,350	3,433	1,012
1951-52.....	1,358	2,551	1,000	2,966	2,588	8,823	4,676	2,916	3,252	1,768	1,262	356
1952-53.....	128	579	459	406	4,161	3,763	3,719	2,477	1,789	930	210	71.4
1953-54.....	40.2	48.3	57.2	25.5	85.0	227	918	1,101	3,956	808	1,826	1,510
1954-55.....	2,845	841	495	1,308	3,510	2,051	3,669	1,780	690	747	149	121

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.023	0.022	0.013	0.021	0.969	0.621	1.65	1.65	1.80	1.48	0.800	0.236
1951-52.....	.317	.595	.233	.691	.603	2.06	1.09	.680	.758	.412	.294	.083
1952-53.....	.030	.135	.107	.116	.970	.877	.867	.577	.417	.217	.049	.017
1953-54.....	.0094	.011	.013	.0059	.020	.053	.214	.257	.922	.188	.426	.352
1954-55.....	.663	.196	.115	.305	.820	.478	.855	.415	.161	.174	.035	.028

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.03	0.02	0.02	0.02	1.01	0.72	1.85	1.90	2.01	1.71	0.92	0.26
1951-52.....	.36	.66	.27	.80	.65	2.37	1.22	.78	.85	.48	.34	.09
1952-53.....	.03	.15	.12	.13	1.01	1.01	.97	.67	.47	.25	.06	.02
1953-54.....	.01	.01	.02	.007	.02	.06	.24	.30	1.03	.22	.49	.39
1954-55.....	.76	.22	.13	.35	.85	.55	.95	.48	.18	.20	.04	.03

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	1,809	5.73
1951....	May 11, 1951.	(1)18.00	23,700	34	3,305	0.770	10.47	3,694	11.69
1952....	Mar. 13, 1952.	15.92	18,900	137	2,795	.652	8.87	2,483	7.88
1953....	Apr. 1, 1953.	14.39	16,100	44	1,544	.360	4.89	1,459	4.63
1954....	Aug. 27, 1954.	10.2	9,780	16	882	.206	2.80	1,223	3.87
1955....	Apr. 25, 1955.	(2)15.62	18,300	35	1,503	.350	4.74	.....	.....

(1) Maximum gage height, 22.2 ft. Feb. 19, 1951 (ice jam).
(2) Maximum gage height, 17.48 ft. Feb. 20, 1955 (ice jam).

Peak Discharge (base, 11,000 cfs)

1951: Feb. 19 (12:30 p.m.) about 18,000 cfs (22.2 ft. ice jam); Mar. 29 (7 p.m.) 15,400 cfs (13.95 ft.); Apr. 8 (1-5 a.m.) 12,000 cfs (11.80 ft.); Apr. 14 (1 a.m.) 11,300 cfs (11.27 ft.); Apr. 28 (2 p.m.) 10,900 cfs (10.99 ft.); May 11 (4 p.m.) 23,700 cfs (18.00 ft.); June 8 (1 p.m.) 13,200 cfs (12.57 ft.); June 24 (3 p.m.) 13,800 cfs (13.00 ft.); July 7 (9 p.m.) 11,900 cfs (11.68 ft.); July 22 (11 a.m.) 14,900 cfs (13.71 ft.); Aug. 28 (9 a.m. 19,100 cfs (16.02 ft.); Nov. 15 (12:30 a.m.) 13,500 cfs (12.82 ft.).

1952: Mar. 13 (1 p.m.) 18,900 cfs (15.92 ft.); Apr. 23 (8 p.m.) 14,300 cfs (13.39 ft.); June 21 (9 p.m.) 16,500 cfs (14.60 ft.).

1953: Feb. 21 (12 m.) 11,900 cfs (11.72 ft.); Apr. 1 (2:30 a.m.) 16,100 cfs (14.39 ft.).

1954: No peak above base.

1955: Jan. 6. (8 a.m.) 12,000 cfs (11.78 ft.); Feb. 20, about 13,000 cfs; Feb. 27, about 15,000 cfs; Apr. 25 (9 a.m.) 18,300 cfs (15.62 ft.).

Mississippi River at Keokuk, Iowa

LOCATION.—Lat. 40°23'35", long. 91°22'25", near right bank 100 ft. downstream from dry dock in tailwater at dam and power plant of Union Electric Power Co. at Keokuk, 2.8 miles upstream from Des Moines River, and at mile 364.2 above Ohio River.

DRAINAGE AREA.—119,000 sq. mi., approximately.

RECORDS AVAILABLE.—October 1932 to September 1955 in reports of Geological Survey. January 1878 to December 1932 in report of Iowa State Planning Board. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, these after September 1937 unadjusted.

GAGE.—Water-stage recorder. Datum of gage is 477.41 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers); 477.83 ft. above mean sea level, adjustment of 1912; 477.34 ft. above mean gulf level; and 484.65 ft. above Memphis datum. Jan. 1, 1878, to May 1913, staff gage at Galland (formerly Nashville), 8 miles upstream; zero of gage was set to low-water mark of 1864.

AVERAGE DISCHARGE.—77 years (1878-1955), 61,680 cfs.

EXTREMES.—1878-1955: Maximum discharge, 314,000 cfs May 16, 1888 (gage height, 19.6 ft. present site and datum); minimum daily, 5,000 cfs Dec. 27, 1933.

Flood of June 6, 1851, reached a stage of 21.0 ft. present site and datum; 13.5 ft. estimated at Galland (discharge, 360,000 cfs.).

REMARKS.—Records good. Discharge computed from records of operation of turbines in power plant and spillway gates in dam. Flow regulated by reservoirs and navigation dams.

COOPERATION.—Records furnished by Union Electric Power Co., and discharge measurements made periodically by the Geological Survey and by the Corps of Engineers to check plant ratings.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	26,700	22,400	17,700	23,600	23,700	142,200	152,400	258,600	102,500	93,500	101,500	69,800
2.....	26,900	20,800	16,500	25,600	20,800	140,800	157,700	258,600	97,800	93,700	91,400	65,500
3.....	29,000	20,300	17,100	25,300	19,200	129,200	154,800	257,500	94,500	100,700	76,500	66,100
4.....	31,500	20,800	21,300	26,400	18,900	120,400	155,600	257,300	97,000	112,200	63,900	61,300
5.....	28,500	20,600	25,900	27,500	23,200	111,700	154,700	252,800	107,500	123,600	54,500	64,500
6.....	29,600	22,100	26,100	22,400	22,800	110,500	*148,500	253,800	116,000	126,800	55,400	61,100
7.....	27,400	21,200	28,400	19,600	22,200	111,100	142,100	252,000	118,300	125,800	53,700	59,600
8.....	26,700	22,100	28,900	24,800	22,100	108,900	145,100	247,300	125,800	122,600	56,500	58,200
9.....	28,200	22,400	28,800	24,700	22,300	90,200	145,400	238,200	131,600	121,000	68,000	57,600
10	29,400	21,900	28,800	24,400	21,600	85,500	150,800	238,100	130,200	134,600	63,600	58,600
11.....	32,300	20,100	31,800	24,400	19,900	77,300	159,400	240,800	128,000	154,900	59,900	57,600
12.....	30,300	22,000	31,700	24,800	33,600	78,000	174,600	243,400	127,700	171,400	59,800	58,700
13.....	30,800	22,900	33,100	24,100	39,100	63,700	184,100	237,700	122,600	184,500	60,400	64,100
14.....	27,500	20,400	32,900	19,000	35,000	58,900	197,900	222,100	116,100	189,500	61,400	67,100
15.....	24,600	19,000	32,300	24,700	32,400	58,700	208,100	201,900	109,100	185,200	64,600	67,600
16.....	24,700	19,200	28,500	25,400	36,100	60,500	214,100	184,300	101,700	177,000	71,400	67,400
17.....	25,500	22,200	27,000	25,500	39,100	70,300	214,100	169,600	95,000	168,800	73,200	68,600
18.....	24,100	22,100	27,600	25,900	43,400	53,800	215,300	155,600	89,100	163,100	68,600	68,800
19.....	23,300	24,000	26,700	26,200	62,900	54,900	216,200	144,400	84,800	158,000	64,200	68,800
20.....	24,100	25,200	26,200	26,200	78,800	57,800	222,100	136,100	76,300	152,300	70,200	71,100
21.....	20,100	26,100	27,600	25,000	80,000	51,300	229,100	128,400	78,400	148,500	69,900	74,100
22.....	22,000	27,900	25,900	31,900	87,200	50,800	232,400	124,400	100,200	150,600	70,900	78,500
23.....	23,200	25,700	25,700	31,100	87,000	56,300	228,800	117,900	95,700	151,300	70,100	82,900
24.....	23,000	23,000	24,200	31,000	73,800	60,800	239,700	113,200	88,500	139,600	63,400	86,100
25.....	23,500	20,000	23,400	29,100	68,900	55,400	245,700	106,600	87,300	129,500	60,900	85,700
26.....	23,000	15,700	25,900	29,200	76,000	50,900	249,300	107,700	86,800	120,800	77,100	*84,200
27.....	22,200	18,200	26,300	26,300	89,800	52,700	*250,900	111,000	85,800	119,800	83,300	86,400
28.....	21,300	18,500	27,300	23,200	130,800	64,200	258,500	118,900	85,900	118,600	87,400	89,800
29.....	20,200	17,100	26,300	26,900	.....	110,900	265,100	121,500	90,200	120,000	89,200	90,100
30.....	22,000	17,300	26,500	28,000	.....	126,100	260,300	120,400	93,500	116,600	84,900	84,400
31.....	22,700	.....	24,500	25,400	.....	141,300	.....	110,900	.....	110,100	78,300	.....

* Discharge measurement made on this day.

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	76,700	80,200	65,400	51,400	62,600	56,100	112,000	*248,500	68,100	77,000	92,400	51,900
2.....	75,400	78,200	69,200	54,000	62,900	56,500	110,000	244,300	66,400	73,600	95,900	49,400
3.....	72,700	74,600	76,500	55,300	62,800	65,600	124,600	238,900	71,600	75,700	99,600	52,800
4.....	68,300	75,800	82,200	56,600	62,500	62,100	131,600	230,800	67,200	74,500	102,100	53,300
5.....	67,600	77,400	77,600	56,300	63,800	51,000	131,700	223,900	66,000	73,800	105,900	51,900
6.....	73,400	76,100	77,300	54,900	64,800	50,100	138,300	215,400	63,800	72,100	108,500	51,700
7.....	76,500	63,400	73,400	54,400	67,400	55,200	144,300	208,100	61,700	74,000	109,500	49,300
8.....	75,800	61,800	73,700	54,500	68,200	55,700	153,200	200,300	63,800	73,500	107,800	49,800
9.....	76,900	59,100	74,200	53,900	67,600	55,800	165,500	194,700	77,900	70,500	106,100	50,500
10.....	75,400	59,100	71,100	53,800	69,900	60,900	172,800	183,500	75,500	70,600	103,500	48,100
11.....	69,600	66,900	72,900	52,300	69,000	84,000	177,500	173,600	71,800	76,300	103,200	47,700
12.....	71,200	65,900	73,400	52,500	70,300	118,700	179,200	165,100	52,000	75,900	99,100	52,400
13.....	68,900	64,100	75,900	53,600	71,600	143,800	179,300	156,700	49,800	80,500	92,400	49,700
14.....	69,900	90,000	71,600	52,500	68,800	156,200	177,300	145,900	65,000	81,700	85,900	46,300
15.....	70,000	112,900	35,900	55,400	59,900	161,700	176,500	138,700	75,700	82,200	96,800	46,200
16.....	67,700	117,500	25,400	56,400	59,800	162,000	177,800	130,800	80,000	80,800	91,300	43,400
17.....	67,700	108,500	26,000	62,900	67,900	153,600	180,200	120,800	84,500	78,600	84,800	41,600
18.....	68,900	100,300	33,500	69,400	70,200	146,500	185,500	121,100	78,000	83,400	82,500	38,700
19.....	66,300	95,900	37,300	80,400	71,700	140,700	193,100	111,600	72,600	91,600	80,400	34,600
20.....	73,100	91,400	39,600	80,300	61,500	138,300	202,300	102,600	71,200	92,900	76,600	32,800
21.....	74,000	92,800	40,900	80,500	66,500	142,700	210,800	98,900	89,800	90,100	84,600	31,400
22.....	69,500	93,800	42,100	79,100	61,900	144,800	220,900	95,900	100,400	91,000	87,100	33,400
23.....	78,700	93,300	42,100	71,000	63,800	148,000	240,200	91,000	85,600	90,600	87,600	34,000
24.....	84,000	96,700	45,500	73,800	61,500	150,400	252,200	92,600	80,500	92,700	76,700	34,200
25.....	91,400	98,500	45,500	75,400	59,100	141,100	253,200	101,100	73,300	93,900	69,400	32,900
26.....	95,000	93,800	46,200	76,800	53,500	140,500	252,700	108,600	71,800	93,500	67,200	32,700
27.....	95,200	89,800	47,000	79,800	50,700	133,700	253,800	106,400	74,700	89,500	63,500	30,400
28.....	90,300	83,200	46,900	78,100	53,600	127,400	253,100	100,800	82,300	86,900	66,800	28,600
29.....	88,300	69,000	47,600	68,600	56,400	119,200	252,800	90,000	82,800	84,900	59,300	33,000
30.....	87,100	70,100	47,000	61,900	.....	109,600	251,500	80,800	79,800	86,600	61,500	33,400
31.....	85,400	.....	47,400	60,400	.....	103,800	.....	73,600	.....	87,600	58,400	.....
1952-53												
1.....	31,300	25,500	31,200	34,100	27,500	64,900	137,200	85,700	85,500	92,300	77,400	67,900
2.....	29,900	25,900	28,100	35,000	29,400	56,800	137,200	86,900	90,400	92,400	79,600	61,900
3.....	27,000	27,000	27,600	35,100	31,300	57,800	136,100	95,500	91,600	*98,500	79,800	60,100
4.....	25,100	27,400	32,600	34,200	31,500	53,200	134,300	93,500	90,800	97,700	81,200	60,000
5.....	23,300	27,200	30,500	34,100	28,900	48,600	133,200	93,800	90,800	101,000	79,800	56,800
6.....	25,900	26,600	31,100	33,800	35,500	47,900	133,300	91,700	93,900	108,600	88,700	53,400
7.....	25,800	25,300	33,200	31,900	42,000	49,000	130,000	94,300	92,900	115,600	93,900	48,600
8.....	25,000	25,400	35,100	27,800	63,300	43,800	129,600	94,200	100,700	116,100	100,400	42,400
9.....	24,800	25,000	35,600	31,700	71,300	43,200	126,200	93,800	99,900	114,000	105,500	40,600
10.....	24,600	26,500	32,300	31,400	65,300	41,600	121,800	92,500	98,500	112,000	110,000	39,900
11.....	23,600	24,700	30,900	31,400	59,800	*45,900	120,300	92,000	105,000	109,400	111,000	38,800
12.....	22,800	25,100	31,700	33,700	55,400	53,400	119,400	91,600	105,600	104,500	112,100	37,200
13.....	25,300	26,200	31,700	34,700	52,000	67,800	116,400	90,700	96,500	99,900	111,100	36,100
14.....	27,100	25,200	30,000	31,800	53,000	72,700	114,000	90,700	94,400	95,500	108,500	37,800
15.....	27,600	25,800	32,100	36,400	52,900	79,600	111,800	90,600	93,500	92,000	103,700	37,500
16.....	28,000	25,300	32,500	28,000	52,000	94,300	112,300	89,900	94,900	90,000	97,400	35,000
17.....	27,900	30,900	35,700	28,700	34,500	101,100	112,100	87,400	89,400	87,400	93,600	32,500
18.....	28,000	38,200	36,600	30,800	37,000	95,201	114,000	80,800	82,400	82,500	91,500	29,800
19.....	26,800	49,500	34,100	33,800	41,400	87,300	110,500	80,400	77,700	85,000	90,500	30,200
20.....	29,500	52,200	36,200	39,600	42,800	88,700	110,400	78,200	72,700	83,800	89,100	30,000
21.....	28,800	41,800	38,400	39,700	68,800	85,600	113,000	76,700	73,600	80,400	91,400	32,300
22.....	27,500	32,800	46,000	36,200	107,000	83,300	113,000	72,700	73,700	81,400	92,700	34,000
23.....	26,400	28,600	46,000	38,000	125,100	78,100	114,000	78,700	68,700	79,300	91,200	32,700
24.....	27,100	*29,700	41,900	35,900	110,500	88,100	113,000	82,900	64,700	74,100	90,900	32,400
25.....	26,800	34,100	37,000	31,700	92,100	97,800	108,600	80,200	64,000	70,700	89,700	33,400
26.....	27,000	32,900	34,700	34,500	80,300	100,600	108,900	92,900	69,800	64,400	88,100	28,900
27.....	28,900	28,300	34,800	34,400	77,700	102,400	102,200	93,100	72,800	68,100	86,500	25,000
28.....	27,900	31,000	34,300	33,300	73,200	102,700	102,100	91,600	82,300	73,900	83,100	26,100
29.....	27,300	30,600	36,200	31,800	.....	104,200	93,800	85,100	75,500	83,100	79,400	25,500
30.....	26,200	32,000	36,500	30,200	.....	116,400	89,500	83,400	86,900	84,000	76,100	25,100
31.....	26,200	.....	33,600	27,600	.....	132,200	.....	81,000	.....	80,300	71,200	.....

* Discharge measurement made on this day.

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	25,100	25,700	32,100	26,600	25,800	36,800	56,100	93,800	103,900	144,600	31,700	50,500
2.....	26,600	25,500	32,000	29,000	26,200	37,000	56,400	86,600	98,200	144,900	34,300	44,800
3.....	26,400	24,500	33,500	29,100	27,100	39,000	58,600	91,400	103,300	141,500	36,700	45,100
4.....	27,900	24,400	32,500	29,500	26,900	36,200	55,100	100,900	106,300	135,000	38,500	41,800
5.....	28,900	24,700	33,900	29,700	27,300	34,500	52,600	108,900	104,100	127,600	41,400	42,700
6.....	28,900	24,700	37,000	28,600	28,100	26,500	63,500	113,400	105,700	121,600	42,100	37,100
7.....	28,500	26,400	38,200	29,000	25,600	26,200	60,500	118,000	106,300	118,700	38,600	38,600
8.....	27,100	26,300	38,400	29,300	28,200	33,200	56,000	121,400	100,700	113,400	38,500	36,800
9.....	28,100	26,500	40,500	28,100	31,200	34,600	52,900	127,500	91,800	109,000	38,700	29,600
10.....	25,000	26,100	40,000	25,000	35,500	35,500	56,900	135,700	90,600	108,900	34,600	26,500
11.....	24,000	24,800	36,900	23,000	32,800	34,000	54,100	142,300	85,500	108,900	33,100	27,100
12.....	26,500	25,900	31,700	22,600	28,000	33,000	55,300	151,200	84,000	105,600	32,300	29,000
13.....	25,500	26,000	30,100	22,300	26,900	30,300	55,300	159,600	80,600	106,600	29,300	31,500
12.....	24,000	26,500	32,300	23,300	32,600	28,000	52,000	168,500	79,700	102,700	26,800	34,200
15.....	24,200	27,500	32,100	28,500	40,400	31,100	55,900	176,000	80,300	100,400	26,400	38,300
16.....	24,800	27,300	26,400	28,300	37,500	33,100	61,500	180,100	84,600	97,200	28,500	39,300
17.....	23,900	28,200	29,700	25,700	30,000	32,900	60,700	181,400	79,600	96,800	29,000	41,400
18.....	22,400	29,700	33,400	29,300	32,100	33,000	60,300	*180,900	74,200	93,600	30,900	41,000
19.....	25,500	29,400	32,600	28,900	32,600	34,400	67,500	176,000	73,100	91,000	33,500	44,200
20.....	26,400	30,100	33,600	30,600	31,600	32,500	76,100	166,700	70,700	89,500	49,500	49,400
21.....	26,500	29,800	40,600	27,500	31,900	33,400	81,000	157,800	69,300	87,900	54,000	49,800
22.....	25,800	30,000	40,500	26,100	33,600	41,000	80,000	146,700	78,000	83,900	49,000	51,700
23.....	27,100	29,900	30,600	21,800	35,900	43,500	75,700	135,700	89,600	77,200	35,600	55,200
24.....	26,400	29,800	27,500	21,900	33,400	51,800	77,000	123,000	102,700	68,300	35,700	52,600
25.....	25,200	32,600	32,300	25,100	35,000	65,500	77,000	109,200	112,100	60,100	*38,300	52,000
26.....	27,100	31,000	36,000	25,200	35,700	67,500	78,600	99,200	118,200	48,600	46,800	49,200
27.....	27,500	32,900	35,100	25,700	36,200	65,200	90,600	84,300	119,500	48,500	60,400	50,100
28.....	26,200	31,000	34,900	26,700	35,000	65,900	91,700	77,000	119,500	42,700	60,800	50,200
29.....	*24,700	31,100	33,200	26,200	.....	62,500	92,100	74,800	127,000	35,000	60,800	53,000
30.....	23,500	32,700	30,800	23,600	.....	57,900	94,100	74,100	136,800	35,200	58,800	54,000
31.....	22,100	.....	28,800	23,300	.....	57,600	.....	79,000	.....	32,200	53,400	.....
1954-55												
1.....	47,400	58,800	42,100	42,000	33,700	103,900	60,300	104,900	49,400	29,800	31,700	39,200
2.....	42,800	56,300	42,600	45,500	30,400	113,300	63,000	97,800	53,400	29,800	34,200	35,900
3.....	40,000	57,100	41,700	46,300	29,400	79,800	63,200	90,000	57,200	31,300	37,900	31,900
4.....	49,200	58,100	41,000	47,400	30,700	62,500	66,300	80,700	61,100	33,000	44,800	26,000
5.....	65,000	52,600	41,900	65,400	28,300	60,900	66,500	72,000	76,000	36,100	46,200	25,000
6.....	77,500	46,800	42,500	78,400	28,000	59,200	69,800	61,900	83,000	38,000	46,400	25,600
7.....	72,500	50,300	42,300	72,300	32,100	64,400	74,200	65,600	82,200	40,400	47,200	26,400
8.....	66,900	48,800	39,900	66,800	32,500	58,800	81,100	59,400	83,100	43,100	50,000	26,400
9.....	66,900	*50,000	34,200	61,600	32,500	57,700	82,600	53,000	83,900	47,500	45,200	24,100
10.....	77,000	50,400	30,800	58,400	32,900	57,600	83,800	55,400	78,300	50,700	46,400	20,100
11.....	124,500	50,000	27,000	52,000	32,100	60,600	89,200	57,900	75,600	56,800	49,700	19,900
12.....	122,900	49,600	32,400	51,200	28,100	62,200	92,000	56,200	78,000	61,900	50,400	20,700
13.....	117,500	47,100	35,000	43,000	28,400	60,500	95,200	62,800	78,200	62,400	49,100	21,200
14.....	112,000	43,000	34,100	43,800	31,200	67,100	102,300	62,800	70,500	60,000	48,700	20,100
15.....	109,200	43,800	33,600	36,700	32,700	81,800	104,900	62,100	79,500	63,600	48,800	20,800
16.....	95,300	43,400	35,000	39,000	32,500	83,100	111,500	58,900	77,200	62,800	46,800	21,600
17.....	92,100	43,100	34,000	40,000	32,400	*88,200	110,200	52,100	76,900	59,400	43,600	19,800
18.....	93,200	43,600	33,800	35,500	32,100	85,300	109,700	45,800	74,700	53,000	38,500	19,700
19.....	90,100	44,100	33,600	32,000	38,900	78,900	112,800	40,300	77,000	48,900	35,500	22,800
20.....	89,700	42,400	34,900	32,600	51,200	74,700	118,200	41,000	76,600	46,500	34,000	22,200
21.....	93,200	42,800	34,600	33,500	55,800	72,400	126,500	39,900	67,700	40,300	31,300	20,200
22.....	91,800	45,800	35,200	32,500	69,000	72,200	127,200	36,300	60,100	34,500	34,100	19,700
23.....	91,200	44,000	36,800	26,000	77,200	78,000	120,900	38,900	47,500	33,000	31,600	20,400
24.....	90,100	44,000	39,900	25,700	82,800	78,600	136,100	38,100	42,900	34,000	27,800	20,300
25.....	90,100	39,600	40,100	29,000	79,800	73,100	156,600	36,300	38,600	36,800	21,800	22,800
26.....	89,500	41,700	38,900	28,800	82,000	65,900	155,400	36,000	36,000	35,900	20,100	25,400
27.....	86,500	39,200	46,700	28,900	83,300	61,500	152,200	33,400	34,700	33,900	19,700	*25,400
28.....	76,000	39,000	50,400	30,200	87,800	59,100	144,600	35,300	32,900	34,000	22,700	26,100
29.....	67,200	40,700	48,200	29,600	.....	58,900	129,100	40,400	31,200	34,100	33,500	27,000
30.....	62,600	42,000	46,600	28,500	.....	59,000	115,900	47,800	31,800	30,700	40,400	30,200
31.....	60,000	.....	39,600	31,500	.....	63,000	.....	50,600	.....	26,400	37,900	.....

* Discharge measurement made on this day.

Mississippi River at Keokuk, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	25,620	21,370	26,480	25,730	47,520	84,040	199,100	184,900	102,100	138,200	70,130	70,810
1951–52	76,480	83,340	55,820	63,430	63,800	110,800	189,000	148,500	73,480	82,150	87,300	42,200
1952–53	26,770	30,230	34,480	33,280	58,620	76,010	117,400	87,700	86,000	90,840	91,780	39,060
1953–54	25,860	28,030	33,780	26,430	31,540	41,080	66,840	127,200	95,860	92,910	39,980	42,890
1954–55	81,070	46,600	38,370	42,360	45,280	71,040	104,000	55,310	63,470	42,890	38,580	24,230

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	0.215	0.180	0.223	0.216	0.399	0.706	1.67	1.55	0.858	1.16	0.589	0.595
1951–52	.643	.700	.469	.533	.536	.931	1.59	1.25	.617	.690	.734	.355
1952–53	.225	.254	.290	.280	.493	.646	.987	.737	.723	.763	.771	.328
1953–54	.217	.236	.284	.222	.265	.345	.562	1.07	.806	.781	.336	.360
1954–55	.689	.392	.322	.356	.381	.597	.874	.465	.533	.360	.324	.204

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51	0.25	0.20	0.26	0.25	0.42	0.81	1.87	1.79	0.96	1.34	0.68	0.66
1951–52	.74	.78	.54	.61	.58	1.07	1.77	1.44	.69	.80	.85	.40
1952–53	.26	.28	.33	.32	.51	.75	1.10	.85	.81	.88	.89	.37
1953–54	.25	.26	.33	.26	.28	.40	.63	1.23	.90	.90	.39	.40
1954–55	.79	.44	.37	.41	.40	.69	.98	.54	.60	.42	.37	.23

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Maximum day		Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Discharge						
1950							62,160	7.11
1951	Apr. 29, 1951	265,100	15,700	83,120	0.698	9.49	95,030	10.84
1952	Apr. 27, 1952	253,800	25,400	89,750	.754	10.27	79,380	9.08
1953	Apr. 1, 2, 1953	137,200	22,800	64,430	.541	7.35	64,110	7.32
1954	May 17, 1954	181,400	21,800	54,510	.458	6.23	61,190	6.99
1955	Apr. 25, 1955	156,600	19,700	54,540	.458	6.24		

West Fork Des Moines River at Estherville, Iowa

LOCATION.—Lat. 43°24'00", long. 94°50'45", in SE¼ SW¼ sec. 10, T. 99 N., R. 34 W., on right bank in city park, 1,200 ft. downstream from bridge on State Highway 9 at Estherville and 2.5 miles upstream from Brown Creek.

DRAINAGE AREA.—1,408 sq. mi.

RECORDS AVAILABLE.—November 1951 to September 1955.

GAGE.—Water-stage recorder.

EXTREMES.—1951-55: Maximum discharge, 10,800 cfs June 8, 1953 (gage height, 15.53 ft.); minimum daily, 0.6 cfs Sept. 18, 1955.

REMARKS.—Records good except those for period of indefinite stage-discharge relation, which are poor.

Daily Discharge, in Cubic Feet per Second, for Period Nov. 1951 to Sept. 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	.....	.....	122	65	38	154	3,090	*1,180	249	668	127	149
2	.....	.....	142	65	38	152	3,760	1,070	233	618	116	127
3	.....	.....	176	62	38	144	3,350	998	221	585	111	105
4	.....	.....	187	58	38	130	3,820	920	*221	519	125	87
5	.....	.....	187	53	38	127	4,680	837	218	470	120	72
6	.....	.....	176	53	38	116	4,880	769	221	436	102	62
7	.....	.....	170	53	38	107	4,680	735	218	855	96	58
8	.....	.....	173	54	35	102	4,500	735	212	837	111	53
9	.....	.....	144	53	38	102	4,340	735	201	602	111	47
10	.....	.....	70	54	70	134	4,010	701	181	*486	102	46
11	.....	.....	111	58	132	207	3,760	651	165	420	137	43
12	.....	.....	105	60	246	252	3,550	602	154	384	127	*40
13	.....	.....	*107	59	420	192	3,480	552	149	351	96	56
14	.....	.....	105	59	*486	173	3,350	519	274	335	*83	44
15	.....	.....	100	58	397	165	3,220	502	1,130	309	77	37
16	.....	.....	98	59	341	152	2,980	470	1,110	300	70	37
17	.....	.....	92	*58	203	170	2,750	436	998	328	74	35
18	.....	.....	83	51	218	436	2,490	420	890	325	67	32
19	.....	.....	79	54	176	*786	2,270	397	837	264	65	32
20	.....	.....	77	53	132	1,070	2,190	377	855	227	65	34
21	.....	.....	70	50	137	1,070	2,150	361	890	198	64	30
22	.....	.....	77	48	130	718	2,110	354	890	192	60	28
23	.....	.....	74	47	127	387	2,070	351	926	190	58	25
24	.....	.....	70	46	125	420	1,950	341	902	178	52	23
25	.....	.....	67	43	116	370	1,830	335	1,070	167	48	22
26	.....	.....	65	41	113	335	1,710	316	998	162	50	20
27	.....	.....	64	30	139	338	1,590	306	890	157	56	19
28	.....	.....	62	38	173	307	1,480	303	820	149	70	19
29	.....	111	64	38	160	997	1,360	284	752	142	161	18
30	.....	116	64	37	.....	2,890	1,250	264	701	134	290	18
31	.....	.....	65	37	.....	3,820	.....	258	.....	127	178	.....

* Discharge measurement made on this day.

West Fork Des Moines River at Estherville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1.....	15	34	6.8	12	12	13	*552	849	2,600	981	231	153
2.....	12	18	8.4	12	12	13	519	948	2,500	948	334	146
3.....	11	12	11	12	12	14	536	1,010	2,260	915	568	138
4.....	11	10	12	12	12	14	536	1,010	2,020	882	486	135
5.....	11	8.4	12	11	12	15	502	1,010	1,820	882	420	129
6.....	12	5.6	13	10	12	16	453	1,010	1,660	882	391	121
7.....	13	8.4	14	10	12	17	436	981	1,660	816	398	115
8.....	13	10	17	10	12	16	436	981	*7,560	750	417	107
9.....	15	17	17	11	12	17	436	915	6,420	700	420	102
10.....	20	17	18	12	12	25	420	915	4,060	651	436	95
11.....	28	13	19	13	12	59	414	882	3,120	602	502	98
12.....	26	11	19	13	12	250	401	882	2,650	568	536	93
13.....	19	10	18	13	12	400	388	832	2,500	536	536	87
14.....	10	12	14	12	12	350	382	734	2,500	519	502	82
15.....	6.8	13	12	11	12	430	420	684	2,400	470	470	79
16.....	*4.6	11	12	11	12	350	486	668	2,260	436	453	76
17.....	12	9.2	12	11	12	300	436	651	2,100	436	436	71
18.....	16	9.2	11	12	12	450	401	602	1,940	436	420	66
19.....	21	9.2	*10	12	12	500	378	568	1,780	391	404	60
20.....	23	*9.2	9.2	12	12	580	353	568	1,660	369	*382	60
21.....	17	12	9.2	12	11	700	334	634	1,500	360	350	55
22.....	16	19	10	*12	11	1,050	321	602	1,400	*350	266	53
23.....	12	17	11	12	11	1,120	305	552	1,290	321	231	*45
24.....	12	14	11	12	11	1,050	305	502	1,180	295	231	44
25.....	12	13	12	12	*12	981	391	708	*1,150	273	234	43
26.....	14	4.1	12	12	12	849	552	1,510	1,050	203	228	43
27.....	12	2.0	11	12	13	816	536	2,420	1,080	247	216	39
28.....	12	1.5	10	12	14	800	486	*2,600	1,220	247	198	35
29.....	12	2.3	10	12	.....	717	519	2,020	1,180	289	179	33
30.....	17	5.6	10	12	.....	651	*668	2,140	1,050	276	169	28
31.....	34	.....	11	12	.....	602	.....	2,450	.....	244	160	.....
1953-54												
1.....	26	11	14	14	3.0	131	*920	388	182	322	97	86
2.....	27	11	24	15	4.1	85	860	452	230	312	96	77
3.....	18	17	*32	14	*5.4	44	780	500	260	408	84	71
4.....	17	*17	34	13	7.0	*100	660	488	*274	348	*76	70
5.....	17	12	24	14	9.4	94	640	464	270	319	69	62
6.....	20	12	46	*15	12	94	740	464	256	291	65	54
7.....	18	12	55	15	13	108	640	*440	250	270	64	50
8.....	18	13	52	14	16	106	620	416	230	246	63	47
9.....	*20	14	33	13	22	114	600	380	223	*230	61	52
10.....	14	17	38	11	22	114	600	360	192	223	57	*55
11.....	12	16	53	9.5	23	103	640	336	164	204	55	54
12.....	10	16	37	6.6	24	25	580	330	143	185	52	50
13.....	11	36	33	6.4	22	16	540	308	137	170	50	46
14.....	11	28	25	6.2	20	44	520	288	128	159	52	45
15.....	11	23	22	6.3	27	64	500	274	120	152	52	44
16.....	11	20	20	5.8	26	92	492	260	114	148	51	52
17.....	11	19	17	4.8	29	256	468	236	106	143	50	69
18.....	11	20	19	4.2	27	880	444	217	836	141	65	74
19.....	12	39	19	4.0	37	1,220	416	204	962	138	67	70
20.....	12	86	19	4.1	100	900	381	192	846	134	60	64
21.....	12	92	18	3.9	330	800	368	179	1,110	158	57	58
22.....	12	92	14	3.0	294	740	356	170	1,030	119	62	53
23.....	12	72	13	3.4	280	660	330	152	888	112	77	53
24.....	11	55	15	3.4	223	760	308	164	784	103	77	48
25.....	11	30	15	3.4	201	920	305	158	656	90	199	44
26.....	10	18	15	3.4	170	1,100	291	117	580	80	258	42
27.....	9.6	14	16	3.2	105	1,100	294	120	512	80	318	41
28.....	9.4	15	16	3.2	107	1,060	277	123	460	121	286	41
29.....	8.7	15	17	3.3	.....	1,020	256	140	428	108	182	42
30.....	7.9	15	14	3.4	.....	960	312	120	392	108	132	49
31.....	9.2	.....	13	3.2	.....	940	.....	126	.....	111	101	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 22-31, 1952; Jan. 1-17, Mar. 6-9, 12-20, Nov. 24 to Dec. 1, Dec. 15-17, 22, 23, 30, 31, 1953; Jan. 10-12, 15-19, Feb. 12-14, 20, 21, Mar. 2, 3, 1954. Stage-discharge indefinite July 14 to Sept. 30, 1954.

West Fork Des Moines River, Estherville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	54	72	64	49	16	14	396	250	60	18	3.0	*1.6
2	54	85	72	49	16	15	356	306	52	14	3.0	1.4
3	56	95	*75	49	16	16	396	303	54	10	*2.8	1.4
4	55	*115	73	49	16	16	291	283	73	8.6	2.6	1.2
5	52	120	80	49	*15	16	356	*269	91	9.4	2.2	.9
6	52	120	80	*49	15	16	*356	222	134	9.9	2.2	1.0
7	53	120	78	44	15	16	330	161	145	11	1.6	.9
8	*61	120	80	42	14	71	300	159	98	13	1.6	1.1
9	67	120	86	42	15	274	286	150	75	11	2.2	1.1
10	72	112	78	46	15	540	272	154	*73	11	2.0	1.1
11	86	108	73	44	14	*685	258	145	63	*10	2.0	1.0
12	94	105	64	45	13	708	250	139	61	9.9	1.8	1.4
13	93	103	64	42	12	600	241	130	57	9.0	1.6	1.4
14	190	101	64	38	12	440	230	121	49	9.4	1.1	1.6
15	197	97	61	38	12	309	216	106	42	8.6	1.8	2.0
16	172	95	64	33	13	275	206	117	38	8.2	5.1	2.8
17	148	92	64	28	14	250	200	117	32	7.7	4.8	.9
18	122	90	60	24	17	300	193	102	41	7.3	4.8	.6
19	82	87	58	22	18	360	193	96	48	6.9	4.1	.7
20	70	83	60	19	16	310	193	89	41	6.1	3.5	1.0
21	64	82	57	18	14	260	203	84	35	5.8	2.4	1.6
22	61	81	57	18	15	208	188	73	30	5.4	2.4	1.0
23	71	79	61	18	15	230	195	60	26	5.8	2.8	1.6
24	94	76	57	18	14	205	400	44	21	6.5	26	.0
25	*126	75	57	18	14	180	400	32	20	5.4	9.9	1.0
26	130	70	53	18	14	220	330	34	16	4.4	5.1	2.0
27	123	62	46	18	13	260	297	50	14	4.1	3.2	2.0
28	115	53	43	18	13	300	275	46	12	3.8	2.6	1.8
29	112	45	36	17	.....	359	266	50	12	4.4	2.6	1.8
30	109	54	40	17	.....	400	258	50	12	3.8	2.4	1.2
31	92	.....	44	17	.....	400	.....	44	.....	3.2	2.0	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 26-30, 1954; Mar. 16-20, 1955. Stage-discharge relation indefinite Nov. 2 to Dec. 2, 1954.

West Fork Des Moines River at Estherville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	105	51.8	154	536	2,976	551	588	359	99.2	47.3
1952-53	15.1	11.3	12.3	11.7	12.0	427	443	1,059	2,252	527	361	81.1
1953-54	13.5	28.6	25.2	7.53	82.5	473	505	276	426	185	97.9	55.4
1954-55	94.4	90.6	62.9	32.1	14.5	260	275	120	50.8	8.12	3.72	1.35

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	0.075	0.037	0.109	0.381	2.11	0.391	0.418	0.235	0.070	0.034
1952-53	0.011	0.0080	.0087	.0083	.0085	.303	.315	.752	1.60	.374	.256	.058
1953-54	.0096	.020	.018	.0053	.059	.336	.359	.196	.303	.131	.070	.039
1954-55	.067	.064	.045	.023	.010	.180	.195	.092	.036	.0058	.0026	.00096

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	0.09	0.04	0.12	0.44	2.36	0.45	0.47	0.29	0.08	0.04
1952-53	0.01	0.009	.01	.01	.009	.35	.35	.87	1.78	.43	.30	.06
1953-54	.01	.02	.02	.006	.06	.39	.40	.23	.34	.15	.08	.04
1954-55	.08	.07	.05	.03	.01	.22	.22	.11	.04	.007	003	.001

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1952.(1)	Apr. 6, 1952.	11.82	4,880	.....	.....	.....	.....	447	4.32
1953....	June 8, 1953.	15.53	10,800	1.5	435	0.309	4.19	437	4.21
1954....	Mar. 19, 1954.	5.67	1,360	3.2	181	.129	1.75	196	1.90
1955....	Mar. 12, 1955.	4.37	752	0.6	86.1	.061	.84	.....	.....

(1) Period Nov. 29, 1951 to Sept. 30, 1952.

Peak Discharge (base, 2,000 cfs)

1952: Mar. 31 (9:30 a.m.) 3,900 cfs (10.63 ft.); Apr. 6 (1 a.m.) 4,880 cfs (11.82 ft.).

1953: May 28 (1 a.m.) 2,860 cfs (9.12 ft); June 8 (2:30 p.m.) 10,800 cfs (15.53 ft.).

1954: No peak above base.

1955: No peak above base.

East Fork Des Moines River near Burt, Iowa

LOCATION.—Lat. 43°12'30", long. 94°10'30", in NW¼NE¼ sec. 20, T. 97 N., R. 28 W., on right bank, 30 ft. downstream from highway bridge, 0.8 mile upstream from Buffalo Creek, 2.5 miles northeast of Burt, and 4 miles downstream from Mud Creek.

DRAINAGE AREA.—466 sq. mi.

RECORDS AVAILABLE.—October 1951 to September 1955.

GAGE.—Water-stage recorder.

EXTREMES.—1951-55: Maximum discharge, 3,870 cfs June 21, 1954 (gage height 12.67 ft.); minimum daily 0.1 cfs Sept. 11, 12, 17, 18, 1955.

REMARKS.—Records good except those for periods of ice effect, doubtful or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	a160	138	98	38	28	119	1,590	*286	81	257	70	274
2.....	a155	122	100	36	28	102	1,380	268	80	210	65	215
3.....	a150	122	104	35	28	92	1,200	257	69	220	63	170
4.....	a170	126	110	35	27	84	1,160	240	*65	310	63	138
5.....	a190	147	106	34	27	77	1,100	215	67	262	62	118
6.....	a230	142	103	34	27	75	1,040	195	63	185	63	103
7.....	a240	134	110	34	27	75	970	205	60	409	62	91
8.....	a240	130	103	33	27	74	948	252	57	650	62	86
9.....	a230	126	94	33	26	73	925	286	53	750	68	75
10.....	a220	126	78	33	35	72	925	298	40	*765	68	66
11.....	a215	126	70	32	70	88	902	298	49	720	100	*61
12.....	210	126	*80	32	140	105	880	286	46	600	114	53
13.....	205	*126	85	32	200	122	860	262	43	494	*92	48
14.....	195	122	85	32	230	130	840	225	139	401	75	45
15.....	180	118	80	31	250	120	800	205	373	357	67	35
16.....	175	118	72	31	230	115	765	185	562	330	63	38
17.....	170	98	68	31	200	110	720	170	650	292	57	36
18.....	160	94	64	*31	160	300	690	160	600	240	54	38
19.....	165	96	62	31	120	500	650	152	433	210	51	34
20.....	165	122	58	30	90	*800	625	142	298	200	46	33
21.....	165	118	55	30	83	925	588	134	246	185	40	32
22.....	165	103	52	30	80	1,130	562	126	235	170	35	28
23.....	170	98	50	30	80	995	538	122	200	147	31	25
24.....	*175	92	48	30	70	1,130	504	126	175	130	29	21
25.....	170	86	46	30	76	1,040	476	126	225	122	26	19
26.....	165	85	45	29	76	800	433	118	292	104	28	16
27.....	156	86	43	29	90	800	401	114	336	93	40	15
28.....	160	88	42	29	104	860	371	106	386	88	52	14
29.....	156	92	40	29	106	970	336	104	386	80	91	14
30.....	152	98	39	28	.....	1,300	310	102	343	76	228	14
31.....	142	.....	38	28	.....	1,680	.....	80	.....	72	310	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 25-28, Dec. 8-31, 1951; Jan. 1 to Mar. 19, 1952. Discharge computed from gage readings or graph based on gage readings, Mar. 23-29, Aug. 17-28, Sept. 12-30, 1952.

East Fork Des Moines River near Burt, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	13	3.7	3.3	6.3	4.4	5.4	*350	286	120	301	50	10
2	12	4.3	3.5	6.3	4.3	6.0	330	364	120	256	112	8.3
3	11	3.7	3.8	6.4	4.3	5.6	336	425	128	226	208	7.8
4	8.4	4.3	4.1	6.4	4.4	5.4	343	450	128	208	350	6.8
5	7.7	4.0	4.4	6.3	4.4	5.4	343	450	124	185	343	6.3
6	7.0	4.6	4.7	6.2	4.4	5.4	324	444	120	190	294	5.3
7	5.9	4.0	5.1	6.1	4.4	5.6	292	436	128	196	190	3.9
8	6.5	3.7	5.4	5.9	4.4	5.9	208	413	406	190	124	3.6
9	7.5	3.4	5.6	5.7	4.3	6.2	246	385	696	168	99	3.0
10	8.0	3.4	5.8	5.6	4.3	7.0	235	343	819	153	85	2.8
11	4.9	3.7	5.9	5.3	4.3	22	230	378	900	138	78	2.8
12	4.0	4.9	5.9	5.2	4.3	150	220	357	1,020	128	73	2.8
13	3.2	5.2	5.9	5.1	4.3	330	200	315	1,060	115	75	2.8
14	2.7	4.9	5.3	4.9	4.3	450	185	287	1,020	113	73	2.5
15	2.2	4.9	4.6	4.8	4.3	550	185	280	965	109	64	2.3
16	*4.9	4.9	4.2	4.8	4.3	620	185	250	920	97	59	2.1
17	2.6	7.0	3.8	4.8	4.2	690	215	232	860	85	54	1.9
18	2.4	8.4	*3.4	4.7	4.2	675	195	220	805	76	50	2.1
19	2.4	7.0	3.2	4.7	4.2	675	180	208	745	74	*45	1.8
20	2.4	*4.6	3.0	4.7	4.1	675	170	196	688	71	42	2.8
21	3.7	4.6	3.1	*4.7	4.1	662	165	190	625	68	39	2.3
22	4.3	4.6	3.3	4.7	4.1	650	152	185	550	71	36	2.1
23	3.4	4.6	3.6	4.7	4.0	600	138	190	477	*81	34	*1.9
24	4.0	4.4	3.9	4.7	4.0	538	138	190	*428	64	31	1.9
25	5.6	4.0	4.3	4.7	*4.0	494	170	196	392	56	28	2.5
26	4.3	3.3	4.6	4.7	4.2	450	252	180	364	48	25	2.1
27	3.4	2.5	5.1	4.7	4.6	401	286	168	357	42	21	1.9
28	2.8	2.6	5.5	4.7	5.0	371	262	*163	392	42	18	1.6
29	2.8	2.8	5.8	4.6	.....	350	*262	153	392	50	16	1.4
30	3.7	3.0	6.2	4.6	.....	350	252	138	371	52	15	1.2
31	3.4	.....	6.2	4.5	.....	350	.....	124	.....	55	15	.....
1953-54												
1	1.1	5.0	3.6	3.3	0.4	9.6	*d43	153	121	840	174	120
2	1.6	4.6	4.8	3.3	.4	7.4	d41	244	88	782	158	100
3	1.9	3.3	*6.4	3.1	*.4	5.0	d41	315	94	720	128	93
4	.9	2.8	8.4	3.0	.5	*5.9	d40	343	*103	720	*110	89
5	1.1	*2.3	11	3.0	.5	5.8	d39	315	104	705	96	81
6	1.0	2.3	10	*3.1	.6	5.7	d38	232	85	690	85	77
7	1.2	2.3	9.6	3.1	.7	5.7	d37	*185	66	690	80	76
8	*1.6	2.3	9.0	2.8	.8	6.0	39	153	49	600	79	69
9	2.3	2.5	5.1	2.4	1.0	6.6	47	133	40	*514	69	68
10	2.3	2.5	8.0	2.1	1.2	7.0	46	120	36	504	64	*63
11	1.8	3.0	7.8	1.8	1.4	7.1	35	110	32	450	57	63
12	1.9	3.6	7.4	1.5	1.7	5.2	30	100	28	378	53	64
13	2.5	4.2	6.7	1.3	2.0	2.0	32	93	24	322	48	59
14	2.5	11	4.5	1.1	2.4	5.0	32	85	21	280	45	53
15	2.3	5.8	5.8	1.0	3.0	7.4	31	77	20	244	41	50
16	2.1	4.6	5.4	.9	3.5	11	34	66	20	226	38	53
17	2.8	4.6	5.2	.7	4.0	16	36	60	18	208	35	59
18	3.3	5.3	5.1	.6	4.6	40	44	60	491	202	42	66
19	4.2	8.3	4.8	.5	6.0	287	39	57	2,710	185	45	85
20	2.8	17	4.5	.5	14	308	34	52	2,950	163	47	77
21	2.3	17	4.0	.4	25	190	36	40	3,500	168	43	69
22	2.3	15	3.6	.4	22	113	35	44	2,950	163	39	65
23	2.5	12	3.2	.4	20	81	31	43	2,340	148	38	66
24	2.8	9.8	3.3	.4	18	d66	30	46	2,010	133	35	57
25	3.0	6.8	3.4	.4	16	d59	32	61	1,660	124	54	49
26	3.3	4.5	3.5	.4	14	d54	31	79	1,440	109	70	42
27	2.8	3.6	3.6	.4	12	d52	53	69	1,240	98	76	43
28	2.5	3.0	3.7	.4	11	d49	64	128	1,100	120	103	42
29	2.3	3.0	3.8	.4	.....	d47	66	202	1,000	190	180	44
30	2.3	3.0	3.5	.4	.....	d45	71	250	914	196	174	45
31	2.8	.....	3.3	.4	.....	d44	.....	210	.....	180	138	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 31, 1952; Jan. 1 to Mar. 16, Nov. 26 to Dec 31, 1953; Jan. 1 to Mar. 18, 1954, (no gage-height record Jan. 1-5, Jan. 17 to Mar. 17, 1954).

East Fork Des Moines River near Burt, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	46	102	38	26	6.7	6.0	268	262	84	6.8	1.8	*0.6
2	52	87	*36	26	6.5	7.4	174	226	434	5.0	1.6	.6
3	56	66	36	25	6.3	8.8	148	196	708	9.8	1.4	.5
4	53	*50	38	25	*6.2	11	143	174	730	30	*1.8	.5
5	56	60	38	*24	6.1	8.2	143	*153	675	62	1.6	.4
6	57	73	36	24	6.0	7.1	*143	148	590	168	1.6	.4
7	*56	89	36	24	6.0	6.4	143	138	468	336	1.6	.2
8	50	77	36	24	6.0	20	138	114	322	268	1.6	.2
9	64	69	35	23	5.9	56	128	120	196	133	1.6	.2
10	91	60	34	22	5.9	160	120	120	*124	41	1.6	.2
11	148	65	34	22	5.8	365	113	100	81	*14	1.6	.1
12	190	61	33	21	5.6	400	111	101	59	8.3	1.6	.1
13	180	61	33	19	5.4	300	109	93	50	4.2	1.2	.5
14	226	61	32	16	5.3	250	109	85	45	3.0	1.1	.3
15	238	54	32	14	5.3	205	110	81	39	2.8	1.1	.3
16	250	61	31	13	5.6	175	104	79	38	2.5	1.1	.2
17	220	57	31	11	6.2	145	90	77	a35	2.8	1.0	.1
18	185	50	30	10	6.8	120	88	74	a31	2.1	.7	.1
19	158	50	30	9.1	7.4	105	83	72	a28	2.3	.7	.5
20	143	50	29	7.5	8.2	92	79	69	a25	2.1	.6	.6
21	133	52	29	7.5	8.0	81	79	66	a22	1.9	.5	.9
22	120	51	29	7.4	7.3	70	77	62	a19	1.8	.4	.7
23	113	46	26	7.3	6.7	62	82	59	a16	2.1	.4	.7
24	109	45	27	7.2	6.3	54	393	57	a13	1.9	4.2	.6
25	103	41	27	7.2	5.9	51	675	54	a11	1.6	3.6	.6
26	101	40	26	7.2	5.8	69	760	52	a9.3	1.8	2.1	.8
27	103	35	26	7.2	5.8	92	700	51	a7.8	1.8	1.6	1.4
28	109	31	18	7.1	6.1	130	531	50	6.3	1.8	1.1	1.1
29	115	26	24	7.1	.....	180	378	50	6.8	1.9	.9	.9
30	105	32	20	7.0	.....	250	308	47	6.8	1.6	.7	.8
31	109	.....	26	6.9	.....	357	.....	46	.....	1.8	.6	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
Note—Stage-discharge relation affected by ice Nov. 2-4, 26-30, Dec. 4-31 1954; Jan. 1 to Mar. 30, 1955.

East Fork Des Moines River near Burt, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52.....	181	114	71.9	31.6	94.6	479	785	189	222	294	73.4	65.2
1952-53.....	5.58	4.37	4.60	5.21	4.29	326	238	278	537	120	90.5	3.35
1953-54.....	2.26	5.83	5.55	1.40	6.68	50.1	40.2	133	846	357	78.8	66.4
1954-55.....	121	57.3	31.0	15.0	6.25	124	218	90.4	163	36.2	1.39	.50

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52.....	0.388	0.245	0.154	0.068	0.203	1.03	1.68	0.406	0.476	0.631	0.158	0.140
1952-53.....	.012	.0094	.0099	.011	.0092	.700	.511	.597	1.15	.258	.194	.0072
1953-54.....	.0048	.013	.012	.0030	.014	.108	.086	.285	1.82	.766	.169	.142
1954-55.....	.260	.123	.067	.032	.013	.206	.468	.213	.350	.078	.0030	.0011

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52.....	0.45	0.27	0.18	0.08	0.22	1.19	1.88	0.47	0.53	0.73	0.18	0.16
1952-53.....	.01	.01	.01	.01	.01	.81	.57	.69	1.29	.30	.22	.008
1953-54.....	.006	.01	.01	.003	.01	.12	.10	.33	2.03	.88	.20	.16
1954-55.....	.30	.14	.08	.04	.01	.31	.52	.25	.39	.09	.003	.001

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1952....	Mar. 31, 1952.	11.42	1,680	14	217	0.466	6.34	187	5.47
1953....	June 13, 1953.	10.36	1,060	1.2	135	.290	3.94	135	3.93
1954....	June 21, 1954.	12.67	3,870	.4	133	.285	3.86	149	4.35
1955....	Apr. 20, 1955. June 3, 1955.	9.58	760	.1	72.8	.156	2.13	.....	.....

Peak Discharge (base, 800 cfs)

1952: Mar. 22 (11 a.m.) 1,260 cfs (10.88 ft.); Mar. 31 (2 p.m.) 1,680 cfs (11.42 ft.).

1953: June 13 (5 a.m.) 1,060 cfs (10.36 ft.).

1954: June 21 (6 a.m.) 3,870 cfs (12.67 ft.).

1955: No peak above base.

East Fork Des Moines River at Dakota City, Iowa

LOCATION.—Lat. 42°43'25", long. 49°11'25", in SE¼ sec. 6, T. 91 N., R. 28 W., on right bank 50 ft. upstream from old mill dam, in city park at east edge of Dakota City, 500 ft. upstream from bridge on State Highway 3, and 3.2 miles upstream from confluence with West Fork Des Moines River.

DRAINAGE AREA.—1,262 sq. mi.

RECORDS AVAILABLE.—March 1940 to September 1955 (published as "near Hardy", prior to October 1954).

GAGE.—Water-stage recorder. Datum of gage is 1,038.71 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1954, wire-weight gage at site 8 miles upstream at different datum.

AVERAGE DISCHARGE.—15 years, 534 cfs.

EXTREMES.—1940-55: Maximum discharge, 18,800 cfs June 21, 1954 (gage height, 16.95 ft., from floodmark, site and datum then in use); minimum daily, 5.0 cfs Sept. 23, 1948.

Flood of June 21, 1954 reached a stage of 24.02 ft. (discharge 17,400 cfs) at present site.

REMARKS.—Records good except those for periods of ice effect or doubtful gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	112	21	24	23	18	940	3,610	3,800	705	5,300	504	492
2.....	152	25	24	23	18	975	3,610	4,220	1,220	4,570	481	470
3.....	170	40	23	24	17	975	4,570	4,220	1,430	4,110	459	426
4.....	*145	32	22	24	17	940	*6,950	4,220	1,360	3,610	437	404
5.....	136	33	22	24	17	850	7,550	3,700	1,220	3,340	404	382
6.....	145	33	*22	24	17	760	8,600	3,520	1,320	2,950	680	339
7.....	156	33	22	24	17	680	9,250	2,810	1,320	2,600	607	318
8.....	149	33	21	24	17	584	10,400	2,480	1,220	2,740	538	297
9.....	145	32	21	24	16	492	9,600	2,200	1,040	2,950	526	404
10.....	96	31	21	24	16	430	7,150	2,100	880	3,260	459	470
11.....	93	31	21	24	16	390	5,600	1,950	790	3,430	459	492
12.....	84	31	21	24	16	340	5,450	1,820	730	3,260	448	730
13.....	76	31	21	24	16	290	5,150	1,700	655	3,100	526	1,220
14.....	68	30	21	23	16	250	4,850	1,580	*655	*2,670	760	1,180
15.....	53	29	21	23	*16	220	4,570	1,460	607	2,810	1,120	1,120
16.....	40	27	21	*23	16	200	4,220	1,460	584	2,480	1,180	1,180
17.....	32	25	21	23	16	180	*3,800	1,320	1,150	2,200	1,180	1,150
18.....	40	20	21	22	20	100	3,430	1,290	1,580	2,150	1,150	*1,150
19.....	53	27	21	22	28	150	3,020	1,120	1,000	2,300	1,120	1,150
20.....	66	29	21	21	26	140	2,810	820	1,580	2,480	1,080	1,120
21.....	76	29	21	21	25	130	2,740	705	1,120	2,540	940	1,040
22.....	53	29	21	21	110	120	2,600	730	1,010	2,200	880	940
23.....	31	29	21	20	200	125	2,670	730	880	1,740	820	880
24.....	32	29	21	20	250	*130	2,810	*760	790	1,400	760	790
25.....	25	29	21	19	600	220	2,860	705	680	1,220	705	730
26.....	21	28	22	19	1,300	1,200	2,860	705	1,540	1,120	655	655
27.....	31	27	22	19	1,600	3,610	2,670	655	2,050	1,010	850	655
28.....	31	26	22	19	1,150	4,220	2,670	584	2,540	880	820	630
29.....	53	26	22	18	.....	4,450	2,810	584	3,100	630	655	607
30.....	40	25	22	18	.....	3,520	2,950	607	5,300	607	607	584
31.....	*40	.....	23	18	.....	3,900	.....	655	.....	550	538	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 7-10, 12-16, Nov. 19 to Dec. 31, 1950; Jan. 1 to Feb. 27, Mar. 10-26, 1951.

East Fork Des Moines River at Dakota City, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	550	328	210	102	75	330	5,300	760	426	820	186	426
2	526	328	210	100	74	300	5,450	730	360	850	244	470
3	470	328	220	98	74	270	4,330	630	*308	760	286	437
4	655	318	228	96	74	250	3,900	538	308	705	339	360
5	760	318	230	94	73	230	3,430	481	328	655	339	276
6	880	318	248	93	72	220	2,000	459	339	655	328	240
7	700	308	256	92	72	210	1,860	504	330	1,600	308	*205
8	760	308	236	92	71	205	2,000	538	276	2,540	286	180
9	705	308	216	91	150	200	1,950	561	256	2,250	266	159
10	*760	297	182	90	300	200	1,900	607	220	1,950	246	149
11	760	286	*197	90	450	200	1,900	607	182	1,860	228	150
12	655	280	216	89	600	200	1,900	584	240	1,860	208	150
13	607	297	220	88	650	240	1,950	607	504	1,820	189	111
14	504	318	220	88	700	300	1,950	607	680	1,820	*159	96
15	437	*207	220	87	700	370	1,900	584	880	*1,620	142	83
16	*437	276	210	*86	650	480	1,820	504	1,360	1,500	126	77
17	426	266	200	85	570	730	1,740	459	1,320	1,180	201	72
18	415	256	190	84	510	*1,040	1,660	448	1,320	940	152	68
19	415	252	180	84	450	1,580	1,540	426	1,360	790	117	65
20	404	248	170	83	410	2,100	1,500	382	1,400	705	105	61
21	404	244	160	82	370	2,000	1,460	382	1,400	655	94	55
22	404	240	150	82	350	1,740	1,360	404	1,080	584	87	43
23	393	230	145	81	320	1,580	1,290	448	1,010	470	89	55
24	382	225	135	80	300	1,400	1,010	426	1,040	426	51	51
25	426	215	130	79	280	1,460	850	382	850	393	84	53
26	404	210	125	78	270	1,500	760	404	705	350	89	43
27	404	210	120	78	270	1,580	705	448	561	308	120	40
28	393	210	115	77	300	2,000	880	492	584	266	174	39
29	382	210	110	76	350	2,480	*850	470	655	256	228	39
30	371	210	108	76	.....	3,260	820	437	760	216	266	37
31	350	.....	105	76	.....	4,220	.....	415	.....	205	328	.....
1952-53												
1	37	27	22	23	19	47	700	760	318	655	160	59
2	30	28	23	24	19	43	760	790	*266	584	270	52
3	35	28	24	24	19	*41	760	820	276	481	900	55
4	35	*28	25	25	19	39	790	*850	276	415	1,580	49
5	36	29	*20	25	*19	38	760	975	270	420	2,000	46
6	37	31	27	*25	19	37	730	975	286	420	1,900	44
7	*38	30	28	25	19	37	705	880	288	*420	1,540	40
8	41	27	29	25	19	40	655	820	017	437	1,180	36
9	44	25	30	25	19	50	607	760	1,290	382	850	33
10	46	24	31	25	19	70	561	705	1,300	286	584	33
11	42	26	31	25	20	130	538	680	1,320	248	*448	30
12	38	32	31	24	21	230	526	680	1,320	260	308	27
13	34	40	30	24	21	500	515	655	1,320	280	339	26
14	31	38	27	23	22	900	504	655	1,320	339	318	25
15	28	35	25	23	23	1,150	492	630	1,320	330	266	23
16	33	39	25	23	22	1,120	481	584	1,290	318	228	25
17	31	41	25	22	22	1,120	470	538	1,220	297	208	25
18	28	46	25	22	22	1,430	459	470	1,040	244	170	24
19	27	50	26	22	24	1,580	448	448	1,120	224	159	22
20	26	50	26	21	26	1,540	437	448	1,040	208	149	22
21	28	50	25	21	29	1,500	426	437	940	170	142	23
22	30	45	25	21	31	1,430	426	426	880	150	129	21
23	32	40	25	21	35	1,320	404	426	820	142	120	19
24	36	37	24	21	38	1,220	448	459	760	126	107	18
25	33	37	24	21	41	1,120	481	470	820	159	94	19
26	31	37	23	21	44	975	515	470	820	120	88	19
27	28	17	23	20	47	910	584	437	730	98	79	20
28	26	18	22	20	49	820	705	426	760	96	74	17
29	24	20	22	20	.....	760	730	360	790	125	79	16
30	25	21	23	20	.....	705	730	330	705	150	72	15
31	26	.....	23	19	.....	*730	.....	318	.....	180	*68	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 1, Dec. 13-31, 1951; Jan. 1 to Mar. 16, Nov. 27 to Dec. 31, 1952; Jan. 1 to Mar. 14, 1953. Doubtful gage height record Oct. 1-14, Oct. 25 to Nov. 5, Nov. 14-25, 1952; July 26 to Aug. 2, 1953; discharge computed on basis of weather records and records for nearby stations.

East Fork Des Moines River at Dakota City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	15	20	*36	22	25	74	117	360	1,140	2,540	404	515
2	14	20	40	22	33	*44	105	481	996	2,420	404	426
3	14	21	43	21	*40	38	92	680	1,040	2,150	339	339
4	14	21	50	21	44	44	132	790	940	2,000	328	318
5	14	*22	43	21	48	46	117	790	850	1,820	*276	297
6	*15	23	35	21	52	47	114	760	790	1,740	248	276
7	15	23	32	20	54	46	111	*680	*680	1,660	228	240
8	16	22	37	*20	56	46	114	607	630	1,580	224	180
9	16	20	42	20	58	47	111	526	561	1,500	216	201
10	17	19	35	20	60	46	114	459	533	*1,430	205	*182
11	17	18	32	19	60	51	105	371	492	1,360	186	170
12	18	20	30	19	58	53	94	360	426	1,260	167	156
13	18	21	28	18	56	55	89	326	404	1,120	152	142
14	18	22	27	18	60	51	87	286	352	850	126	139
15	19	20	25	18	60	57	103	276	331	790	117	136
16	18	20	24	18	45	63	89	266	297	730	114	132
17	18	17	23	17	30	142	82	256	268	584	111	129
18	17	18	23	16	35	492	87	212	726	492	84	136
19	17	20	25	16	43	584	92	205	2,900	448	126	139
20	17	22	27	16	52	730	94	197	8,050	382	256	142
21	19	30	28	15	60	680	159	189	17,800	382	180	139
22	18	51	26	15	70	415	156	167	14,100	371	218	136
23	19	61	24	15	79	350	152	159	9,920	371	248	132
24	20	51	20	15	82	270	156	297	7,750	350	308	129
25	55	39	22	15	84	216	159	360	6,490	328	360	126
26	40	28	23	15	80	197	163	382	5,660	318	492	120
27	38	22	23	15	94	170	156	426	4,470	318	538	111
28	27	20	23	15	100	180	167	515	3,780	297	584	108
29	22	24	22	15	.....	126	170	820	3,440	276	584	103
30	20	30	22	16	.....	*132	256	850	3,060	339	584	100
31	19	.....	21	20	.....	123	.....	940	.....	382	607	.....
1954-55												
1	120	396	178	126	*44	82	708	1,420	173	128	53	19
2	155	360	176	119	43	105	735	1,090	630	155	44	18
3	242	352	155	119	43	140	607	820	910	196	41	17
4	262	312	148	111	43	220	474	708	1,060	160	40	17
5	*254	*321	135	111	43	200	423	607	1,300	207	*38	16
6	274	334	130	102	43	180	405	*556	1,480	487	36	16
7	291	316	133	*100	42	165	*391	510	*1,580	579	32	15
8	291	304	145	102	42	140	378	460	1,040	680	30	15
9	316	299	140	102	42	*142	360	441	1,040	*735	29	15
10	347	295	135	102	42	340	347	423	1,510	762	30	15
11	630	283	140	98	37	500	334	400	1,270	630	29	14
12	790	262	130	90	35	800	321	387	880	451	27	14
13	790	254	137	80	34	740	304	360	630	321	25	15
14	850	258	140	82	34	1,000	299	338	543	262	24	15
15	910	250	140	84	34	900	287	308	469	222	22	16
16	910	254	130	76	34	760	278	287	423	192	22	15
17	880	254	130	71	35	556	262	266	369	166	21	13
18	820	246	128	64	38	391	254	250	330	152	20	13
19	735	242	128	60	42	347	242	238	321	133	20	14
20	680	234	125	55	46	310	222	226	201	123	19	14
21	607	230	123	53	54	260	211	211	202	111	18	15
22	575	226	122	51	52	220	196	200	234	94	18	15
23	533	210	122	48	51	190	203	189	215	89	18	16
24	501	215	122	47	50	160	475	182	196	87	24	14
25	474	200	120	46	50	130	1,240	173	176	81	30	14
26	460	196	120	46	52	155	1,560	176	163	70	36	15
27	446	192	120	46	56	200	1,040	173	149	68	36	16
28	432	192	68	46	68	250	1,610	173	138	62	29	17
29	423	189	120	46	.....	299	1,610	182	131	58	25	18
30	414	*179	141	46	.....	464	1,580	189	131	51	*23	19
31	409	.....	133	45	.....	630	.....	179	.....	51	21	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1953; Jan. 1 to Feb. 22, Mar. 2, 3, Dec. 4-29, 1954; Jan. 12 to Mar. 16, Mar. 20-28, 1955. Doubtful gage-height record Oct. 5-13, 1953; Mar. 22, 28, 31, 1954; discharge computed on basis of weather records and records for nearby stations.

East Fork Des Moines River at Dakota City—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	78.8	29.2	21.6	21.9	207	1,018	4,729	1,781	1,365	2,458	721	734
1951-52	524	272	183	86.4	329	1,060	1,990	507	702	1,000	196	144
1952-53	33.0	33.5	25.6	22.6	26.0	608	581	603	852	284	471	29.4
1953-54	20.1	25.5	29.4	17.9	58.1	181	125	451	3,326	987	291	187
1954-55	511	262	133	76.6	43.9	354	599	391	641	244	28.4	15.5

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.004	0.024	0.018	0.018	0.168	0.828	3.84	1.45	1.11	2.00	0.586	0.597
1951-52	.426	.221	.149	.070	.267	.862	1.03	.412	.571	.813	.159	.117
1952-53	.027	.027	.021	.018	.021	.567	.472	.490	.693	.231	.383	.024
1953-54	.016	.021	.024	.015	.047	.147	.102	.367	2.70	.802	.237	.152
1954-55	.405	.208	.105	.061	.035	.281	.475	.310	.508	.193	.023	.012

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.07	0.03	0.02	0.02	0.18	0.95	4.29	1.67	1.24	2.30	0.68	0.67
1951-52	.49	.25	.17	.08	.29	.99	1.81	.48	.64	.94	.18	.13
1952-53	.03	.03	.02	.02	.02	.65	.53	.57	.77	.27	.44	.03
1953-54	.02	.02	.03	.02	.05	.17	.11	.42	3.02	.92	.27	.17
1954-55	.47	.23	.12	.07	.04	.32	.53	.36	.57	.22	.03	.01

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								224	2.47
1951	Apr. 9, 1951.	14.95	10,800	16	1,098	0.893	12.12	1,169	12.91
1952	Apr. 2, 1952.	13.00	5,600	37	583	.474	6.45	508	5.62
1953	Aug. 5, 1953.	8.96	2,000	15	306	.249	3.38	305	3.37
1954	June 21, 1954.	16.95	18,800	14	473	.385	5.22	543	5.97
1955	June 9, 1955.	(1)11.23	1,640	13	276	.219	2.97		

(1) Maximum gage height, 11.76 ft. Mar. 12, 1955 (backwater from ice.).

Peak Discharge (base, 2,200 cfs)

1951: Mar. 29 (8 a.m.) 4,700 cfs (12.36 ft.); Apr. 9 (1 a.m.) 10,800 cfs (14.95 ft.); July 1 (6:30 a.m.) 5,600 cfs (12.96 ft.).

1952: Apr. 2 (4 a.m.) 5,600 cfs (13.00 ft.); July 8 (11 a.m.) 2,540 cfs (10.04 ft.).

1953: No peak above base.

1954: June 21 (3 p.m.) 18,800 cfs (16.95 ft.).

1955: No peak above base.

North Lizard Creek near Clare, Iowa

LOCATION.—Lat. 42°32'30", long. 94°20'40", in NE¼ sec. 11, T. 89 N., R. 30 W., 26 ft. downstream from highway bridge, 3 miles south of Clare, 8 miles upstream from confluence with South Lizard Creek, and 8 miles northwest of Fort Dodge.

DRAINAGE AREA.—257 sq. mi.

RECORDS AVAILABLE.—March 1940 to September 1955.

GAGE.—Water-stage recorder. Prior to May 6, 1953, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 108 cfs.

EXTREMES.—1940-55: Maximum discharge observed, 10,000 cfs June 23, 1947 (gage height, 16.0 ft. from floodmark), from rating curve extended above 4,500 cfs by logarithmetic plotting; no flow Sept. 30, 1943.

REMARKS.—Records good except those for periods of ice effect, no gage-height record, and those prior to May 6, 1953, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	50	16	5.9	4.8	1.9	240	1,070	1,420	140	290	156	153
2.....	120	16	5.8	4.7	1.8	160	790	2,390	750	264	153	140
3.....	100	15	5.7	4.7	1.7	140	630	1,520	830	237	158	126
4.....	*109	14	5.6	4.6	1.7	120	850	1,110	810	277	168	113
5.....	80	13	*5.6	4.5	1.6	170	730	990	930	200	130	112
6.....	65	12	5.5	4.4	1.5	250	710	830	950	270	113	90
7.....	55	11	5.5	4.3	1.5	200	730	417	950	260	122	88
8.....	49	10	5.4	4.2	1.4	150	630	351	890	240	117	72
9.....	47	9.5	5.4	4.2	1.4	70	630	344	810	230	112	321
10.....	45	9.2	5.4	4.1	1.4	40	630	334	850	230	110	287
11.....	41	8.8	5.4	4.0	1.3	43	610	327	690	240	105	246
12.....	35	8.6	5.4	3.9	1.3	45	610	324	530	240	95	307
13.....	31	8.3	5.3	3.9	1.3	40	570	314	405	230	98	376
14.....	30	8.1	5.3	3.8	*1.3	30	417	307	*280	*205	470	550
15.....	28	7.9	5.3	3.7	1.3	26	321	293	376	190	810	428
16.....	28	7.8	5.3	*3.6	1.3	22	321	280	490	180	850	360
17.....	27	7.7	5.3	3.5	1.3	19	*321	258	590	160	430	290
18.....	26	7.5	5.3	3.4	1.3	17	290	268	830	190	360	230
19.....	26	7.4	5.3	3.3	1.3	16	297	190	1,310	198	340	*180
20.....	26	7.3	5.3	3.2	1.3	15	338	225	1,030	280	*310	140
21.....	25	7.1	5.2	3.0	58	14	380	210	790	530	270	126
22.....	23	7.0	5.2	2.9	55	13	398	190	570	630	249	115
23.....	22	6.8	5.2	2.8	54	13	428	158	440	690	213	106
24.....	22	6.7	5.2	2.7	55	*13	490	*144	387	490	173	103
25.....	22	6.5	5.1	2.6	60	20	502	140	440	181	156	102
26.....	22	6.4	5.1	2.5	200	110	570	138	810	176	130	98
27.....	21	6.3	5.1	2.4	450	1,470	610	130	770	165	128	94
28.....	19	6.2	5.0	2.3	350	2,080	670	121	570	160	394	83
29.....	19	6.1	5.0	2.2	.....	2,980	810	108	436	156	351	80
30.....	18	6.0	4.9	2.1	.....	1,990	950	103	324	156	290	78
31.....	*18	.....	4.9	2.0	.....	1,470	.....	103	.....	163	160	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Feb. 20 to Mar. 25, 1951.

North Lizard Creek near Clare, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	82	83	47	32	60	153	1,010	128	92	133	24	48
2	78	67	54	30	72	150	810	126	84	140	26	37
3	76	59	58	28	72	120	402	130	*64	142	41	33
4	73	50	60	26	68	108	417	132	68	138	119	30
5	65	46	62	25	64	92	424	142	70	128	83	22
6	210	46	63	25	61	86	372	140	73	200	63	20
7	178	48	62	24	61	84	274	144	76	670	54	*21
8	168	52	60	24	63	82	201	151	73	1,310	46	20
9	140	58	58	23	80	80	255	160	69	1,190	43	21
10	*134	65	56	23	150	81	249	163	64	930	41	15
11	97	73	*54	23	290	82	243	151	62	650	38	14
12	100	77	51	23	320	86	246	136	64	570	35	14
13	94	80	43	23	327	98	255	121	68	498	31	12
14	86	79	31	25	320	135	261	110	90	348	*28	11
15	78	*75	27	26	300	180	268	105	150	*274	33	10
16	*72	70	28	*29	270	245	255	121	230	258	39	10
17	68	62	33	50	240	330	231	119	240	228	35	10
18	64	55	39	90	210	450	225	117	230	213	30	9.2
19	63	62	46	120	190	*610	192	117	200	198	27	8.6
20	60	65	49	150	170	670	184	112	185	178	25	8.2
21	67	65	52	128	150	690	178	110	175	151	22	8.2
22	103	60	54	104	135	610	176	106	160	128	20	7.8
23	113	52	54	90	127	300	170	100	145	77	18	7.0
24	103	42	54	75	120	207	170	95	130	69	17	7.0
25	97	34	52	65	118	225	168	90	120	62	16	6.5
26	94	28	50	56	118	261	158	86	112	53	14	6.2
27	82	28	47	50	119	424	142	88	118	46	14	6.0
28	78	33	43	47	130	590	132	90	127	41	16	5.8
29	76	37	40	45	140	710	128	94	133	33	20	5.5
30	78	42	37	44	.....	1,230	*122	100	132	28	72	5.2
31	82	.....	35	45	.....	1,190	.....	95	.....	27	61	.....
1952-53												
1	5.0	4.6	3.1	5.5	5.2	33	*187	170	56	365	124	*7.5
2	4.6	4.8	3.4	5.6	5.1	54	165	225	*52	261	115	7.2
3	4.2	4.8	3.6	5.7	5.1	*51	158	243	51	190	522	7.0
4	4.2	*4.4	*3.9	5.8	5.1	46	142	*234	51	156	870	6.8
5	3.6	4.6	4.1	6.0	5.0	42	136	210	49	144	610	6.5
6	3.2	4.6	4.3	*6.1	5.0	37	132	201	48	128	338	6.2
7	*4.6	4.7	4.5	6.1	5.0	34	124	176	46	*110	207	5.5
8	4.4	4.8	4.7	6.2	5.1	31	121	160	276	100	146	5.0
9	4.1	4.8	4.9	6.2	5.2	30	119	148	610	89	115	4.8
10	3.6	4.9	5.1	6.1	5.3	66	113	140	570	76	94	4.4
11	4.0	5.8	5.2	6.0	5.5	150	108	136	355	68	*82	4.4
12	4.2	5.8	5.3	6.0	5.7	240	102	122	203	64	77	4.0
13	4.2	5.8	5.3	6.0	5.8	300	105	110	268	67	78	3.8
14	4.2	5.8	5.2	5.9	5.9	350	97	102	240	100	65	3.8
15	4.5	5.8	5.0	5.8	5.8	375	122	97	195	76	56	3.6
16	4.5	6.7	5.1	5.7	5.6	348	181	95	165	65	50	3.2
17	4.5	7.7	5.2	5.7	5.4	314	173	92	134	56	~44	2.8
18	4.6	9.4	5.4	5.6	5.3	300	140	84	119	68	39	2.8
19	4.6	9.4	5.4	5.5	6.0	280	142	82	106	78	34	2.4
20	4.6	9.4	5.4	5.5	9.0	274	134	82	106	60	30	2.7
21	4.6	10	5.4	5.4	15	268	124	97	105	55	27	3.0
22	4.6	9.5	5.4	5.4	10	261	117	97	90	58	23	3.4
23	4.6	9.2	5.3	5.4	11	195	106	97	82	48	21	2.7
24	4.6	8.6	5.3	5.4	13	163	119	122	86	43	20	2.5
25	4.6	7.4	5.2	5.4	16	156	142	115	414	40	17	2.8
26	4.8	5.6	5.2	5.3	19	151	210	102	710	37	15	3.0
27	5.0	4.2	5.2	5.3	22	106	190	92	690	36	14	3.6
28	4.8	3.1	5.2	5.3	27	84	176	83	1,070	34	13	2.8
29	5.0	2.6	5.2	5.3	.....	102	160	76	990	45	11	2.8
30	4.8	2.9	5.3	5.2	.....	108	151	72	610	116	9.6	2.5
31	4.8	.....	5.4	5.2	.....	213	.....	65	.....	231	9.2	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 2 to Dec. 31, 1951; Jan. 1 to Mar 18, Nov. 30 to Dec. 31, 1952; Jan. 1 to Mar. 15, 1953.

North Lizard Creek near Clare, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	2.5	3.8	*3.8	1.7	1.0	23	36	178	424	348	26	201
2	2.2	3.8	5.1	1.7	1.0	*20	31	282	344	309	23	230
3	2.2	3.8	8.6	1.7	1.1	15	26	421	390	288	21	183
4	1.7	3.5	12	1.7	*1.2	11	20	376	477	252	20	142
5	1.5	*3.3	12	1.6	1.3	12	25	282	*324	222	20	117
6	*1.5	3.3	7.6	1.6	1.7	12	42	230	240	193	*18	106
7	2.0	3.3	5.4	*1.5	2.4	13	78	*191	193	167	17	91
8	2.8	3.5	4.6	1.5	3.3	13	76	165	154	154	18	79
9	2.8	3.5	3.7	1.5	4.5	13	58	142	129	*133	17	75
10	2.5	3.3	4.1	1.5	6.0	14	54	127	1,190	117	17	*75
11	2.8	3.3	4.1	1.5	8.0	14	45	117	3,220	102	15	68
12	3.3	3.8	3.5	1.5	12	15	37	108	1,800	91	14	62
13	3.3	4.6	3.1	1.4	10	16	32	98	1,140	81	14	56
14	3.5	8.6	2.6	1.4	9.0	15	32	91	900	73	14	52
15	3.3	5.9	2.3	1.3	7.5	19	34	84	736	64	14	47
16	3.5	3.5	2.2	1.3	5.6	30	39	81	580	57	17	45
17	3.5	3.0	2.1	1.2	6.4	68	40	81	438	54	23	43
18	4.2	3.0	2.1	1.2	7.5	120	42	79	348	57	43	45
19	4.0	5.0	2.2	1.1	8.5	150	37	78	1,200	51	75	46
20	5.1	10	2.5	1.1	9.8	185	34	75	4,900	49	45	48
21	6.7	12	2.4	1.0	11	150	135	71	*4,550	48	39	43
22	5.9	11	2.3	1.0	13	120	191	68	3,380	43	37	38
23	5.1	8.6	2.2	1.0	15	100	135	67	1,980	39	49	36
24	4.6	6.3	2.1	1.0	17	82	115	65	1,360	34	73	34
25	4.6	5.1	2.0	1.0	19	61	103	65	1,070	31	106	32
26	5.1	4.6	2.0	1.0	22	52	165	65	892	28	603	32
27	5.1	4.0	1.9	1.0	24	46	129	75	748	25	1,230	30
28	4.6	3.6	1.9	1.0	26	41	100	178	616	25	1,100	30
29	5.1	4.2	1.8	1.0	.....	37	91	121	505	25	860	37
30	5.1	4.2	1.8	1.0	.....	*36	104	98	421	29	540	38
31	4.6	.....	1.8	1.0	.....	42	.....	96	.....	30	382	.....
1954-55												
1	37	121	53	35	*5.5	45	162	191	40	14	3.3	0.2
2	65	85	51	30	5.5	75	127	172	38	13	2.0	.1
3	214	100	50	34	5.5	140	117	152	40	12	1.1	.1
4	178	117	61	32	5.5	190	127	135	48	10	.9	.1
5	*142	104	45	31	6.0	130	142	*121	68	12	*2.0	.1
6	123	*102	36	*30	6.0	85	*133	109	108	11	4.6	.1
7	113	100	44	29	6.0	82	115	102	*75	*12	2.0	.1
8	133	95	43	28	6.0	110	102	90	62	10	1.1	.1
9	198	90	40	27	6.0	*160	93	88	54	9.1	1.1	.1
10	258	88	37	25	6.0	310	84	91	49	9.1	1.5	.1
11	400	88	35	23	5.5	240	78	81	46	8.0	1.5	.1
12	337	84	35	22	5.5	230	75	76	42	8.6	1.5	.1
13	270	84	30	21	5.5	190	71	73	38	7.2	2.8	.2
14	410	80	37	20	5.5	140	70	67	36	5.9	2.8	.2
15	452	78	37	18	7.0	110	68	62	32	5.5	1.5	.2
16	382	81	35	17	14	82	64	58	29	5.5	1.5	.1
17	303	79	34	16	25	65	61	57	26	5.9	1.1	.1
18	249	76	34	14	45	50	53	54	30	5.5	.8	.1
19	219	71	33	13	90	40	51	53	42	5.1	.8	.2
20	204	70	32	12	72	31	51	51	38	4.6	.7	.2
21	193	70	33	12	63	24	49	48	33	3.5	.6	.5
22	188	68	34	11	53	28	46	44	27	3.3	1.0	.4
23	180	67	34	10	45	22	49	44	24	3.3	.8	.3
24	167	67	35	9.0	42	24	319	43	22	3.0	.8	.2
25	157	61	35	7.5	37	27	620	40	20	3.0	.6	.2
26	160	60	35	7.0	34	30	522	54	18	2.8	.4	.3
27	154	60	32	6.5	32	38	414	68	17	2.0	.4	1.1
28	150	59	20	6.0	31	52	334	64	15	1.5	.3	1.7
29	150	42	34	5.5	.....	85	261	57	16	1.7	.2	1.2
30	133	*40	34	5.5	.....	252	210	50	15	1.1	*.2	1.1
31	125	.....	33	5.5	.....	258	.....	45	.....	.9	.2	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27, 28, Dec. 7-15, 1953; Nov. 1, 2, Nov. 27 to Dec. 31, 1954; Jan. 1 to Mar. 29, 1955. No gage-height record Dec. 16-31, 1953; Jan. 1 to Mar. 29, 1954, discharge estimated on basis of weather records and records for nearby stations.

North Lizard Creek near Clare, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	40.3	9.01	5.32	3.49	40.8	416	577	453	666	265	250	187
1951-52.....	95.6	56.4	48.4	50.6	157	334	279	119	120	294	37.1	14.6
1952-53.....	4.44	6.06	4.91	5.66	8.72	167	140	127	288	98.8	125	4.12
1953-54.....	3.72	5.01	3.74	1.29	9.10	40.8	72.5	137	1,158	104	184	75.0
1954-55.....	208	80.1	37.6	18.3	23.9	108	150	78.7	38.3	6.45	1.29	.32

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.157	0.035	0.021	0.014	0.182	1.62	2.25	1.76	2.59	1.03	0.973	0.728
1951-52.....	.372	.219	.188	.197	.611	1.30	1.09	.463	.467	1.14	.144	.057
1952-53.....	.017	.024	.019	.022	.034	.650	.545	.494	1.12	.384	.486	.016
1953-54.....	.014	.019	.015	.0050	.035	.194	.282	.533	4.51	.405	.716	.292
1954-55.....	.809	.312	.146	.071	.093	.420	.607	.306	.149	.025	.0050	.0012

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.18	0.04	0.02	0.02	0.19	1.86	2.50	2.03	2.89	1.19	1.12	0.81
1951-52.....	.43	.24	.22	.23	.66	1.50	1.21	.53	.52	1.32	.17	.06
1952-53.....	.02	.03	.02	.03	.04	.75	.61	.57	1.25	.44	.56	.02
1953-54.....	.02	.02	.02	.006	.04	.22	.31	.62	5.03	.47	.82	.33
1954-55.....	.93	.35	.17	.08	.10	.48	.68	.35	.17	.03	.006	.001

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....								50.0	3.12
1951....	Mar. 28, 1951.	10.42	3,620	1.3	244	0.949	12.85	250	13.50
1952....	Mar. 30, 1952.	7.15	1,470	5.2	134	.521	7.09	118	6.27
1953....	June 28, 1953.	6.54	1,190	2.4	81.9	.319	4.34	118	6.26
1954....	June 20, 1954.	13.21	6,210	1.0	149	.580	7.91	176	9.30
1955....	Apr. 25, 1955.	(1)5.29	660	.1	63.3	.246	3.35		

(1) Maximum gage height, 5.60 ft. Mar. 10, 1955 ((backwater from ice).

Peak Discharge (base, 500 cfs)

1951: Mar. 28 (5 p.m.) 3,620 cfs (10.42 ft.); May 2 (4 a.m.) 2,390 cfs (8.79 ft.); June 6 (4 p.m.) 990 cfs (6.0 ft.); June 18 (9 p.m.) 1,430 cfs (7.1 ft.); June 26 (11 a.m.) 910 cfs (5.8 ft.); July 23 (12 m.) 790 cfs (5.5 ft.); Aug. 15 (6 p.m.) 950 cfs (5.9 ft.); Sept. 13 (10 p.m.) 590 cfs (5.0 ft.).

1952: Mar. 21 (4 p.m.) 690 cfs (5.23 ft.); Mar. 30 (4 p.m.) 1,470 cfs (7.15 ft.); July 8 (4 p.m.) 1,430 cfs (7.11 ft.).

1953: June 9 (2:30 p.m.) 630 cfs (5.08 ft.); June 28 (6 p.m.) 1,190 cfs (6.54 ft.); Aug. 4 (10 a.m.) 930 cfs (5.83 ft.).

1954: June 4 (4:30 a.m.) 516 cfs (4.93 ft.); June 11 (11 a.m.) 4,150 cfs (11.06 ft.); June 20 (4 a.m.) 6,210 cfs (13.21 ft.); Aug. 27 (6 a.m.) 1,530 cfs (7.29 ft.).

1955: Apr. 25 (12 m.) 660 cfs (5.29 ft.).

Des Moines River at Fort Dodge, Iowa

LOCATION.—Lat. 42°30'30", long. 94°12'00", in SW¼ sec. 19, T. 89 N., R. 28 W., on right bank 400 ft. upstream from Soldier Creek, 1,800 ft. downstream from Illinois Central Railroad bridge, and 2,000 ft. downstream from Lizard Creek.

DRAINAGE AREA.—4,207 sq. mi.

RECORDS AVAILABLE.—April 1905 to July 1906 (no winter records), October 1913 to September 1927 (no winter records 1914-19, 1925-27, published as "at Kalo"), and December 1949 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 969.38 ft. above mean sea level, datum of 1929. Apr. 23, 1905 to July 19, 1906, chain gage at "Swede Town" bridge 3,000 ft. downstream, at different datum. Oct. 18, 1913, to Oct. 20, 1921, June 20 to Sept. 30, 1927, chain gage, and Oct. 21, 1921, to June 19, 1927, water-stage recorded, at site 7 miles downstream at Kalo, at different datum.

AVERAGE DISCHARGE.—18 years (1914-27, 1950-55), 1,548 cfs.

EXTREMES.—1905-6, 1913-27, 1949-55: Maximum discharge, 35,400 cfs June 21, 1954 (gage height 19.28 ft.); minimum daily, 26 cfs Dec. 24, 1923.

Maximum stage known, 19.7 ft. June 23, 1947, from ooflidmark (discharge, 34,000 cfs).

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation at low flow caused by powerplant above station.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	618	261	170	92	74	3,060	10,200	13,100	2,980	10,600	1,610	1,910
2	667	*326	168	91	72	2,540	10,200	16,100	5,980	10,100	1,640	1,710
3	704	264	142	90	71	2,110	11,800	16,100	6,850	9,600	1,810	1,510
4	987	220	148	90	70	1,840	15,700	14,800	6,600	8,850	1,840	1,500
5	*990	260	140	90	70	2,320	*18,100	13,400	5,850	8,350	1,540	1,390
6	836	263	130	90	69	3,090	19,000	11,600	5,100	7,600	1,670	1,300
7	822	269	*130	88	68	2,240	20,800	9,850	4,720	6,850	2,290	1,220
8	725	270	125	87	67	1,710	*22,300	8,350	5,220	6,350	2,100	1,150
9	642	302	120	86	67	1,190	20,500	7,100	5,480	6,350	1,790	1,400
10	588	210	120	86	67	800	17,500	6,600	4,850	7,100	1,560	2,030
11	574	130	120	87	68	880	15,800	6,350	3,980	7,600	1,430	2,290
12	522	152	120	88	68	980	14,800	5,720	3,350	7,850	1,440	2,900
13	494	244	115	90	68	840	14,400	4,980	2,980	*7,070	1,790	4,000
14	490	268	115	91	*69	700	14,100	4,480	2,720	7,350	4,070	5,320
15	478	244	115	92	70	620	13,800	4,100	*4,120	6,600	5,440	5,480
16	448	321	115	*92	72	550	13,100	3,980	5,160	5,910	5,120	4,720
17	444	226	115	92	74	490	12,400	3,720	5,040	5,100	4,420	3,850
18	399	229	115	93	90	440	*11,100	3,480	6,270	4,980	3,860	3,350
19	416	246	115	93	110	410	10,100	3,350	7,350	4,850	3,270	*2,980
20	394	192	115	92	115	380	9,350	3,480	6,850	5,100	*3,100	2,720
21	378	179	110	90	125	370	9,600	3,100	5,350	6,100	3,100	2,600
22	357	225	110	89	140	370	10,100	2,980	4,350	7,100	2,850	2,350
23	364	272	105	88	250	390	9,850	2,720	3,720	6,350	2,600	2,250
24	339	114	105	87	350	460	9,100	2,600	3,220	4,720	2,310	2,110
25	314	144	105	86	1,500	618	9,350	*2,600	3,350	3,720	2,170	1,950
26	310	200	100	85	3,000	1,340	*9,350	2,480	7,000	3,150	2,030	1,850
27	314	202	98	83	5,000	8,280	9,100	2,350	7,600	2,660	2,270	1,750
28	412	188	90	81	3,900	14,300	8,600	2,230	8,100	2,380	3,220	1,580
29	238	144	95	80	.....	*15,200	8,600	2,130	8,100	2,110	3,100	1,510
30	260	170	94	78	.....	*12,500	9,850	2,010	9,600	1,910	2,720	1,460
31	302	.....	92	76	.....	11,000	.....	2,050	.....	1,790	2,230	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1950; Jan. 1 to Feb. 28, Mar. 10-23, 1951.

Des Moines River at Fort Dodge, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951–52												
1	1,370	1,100	710	440	620	2,330	12,400	2,850	1,200	2,680	682	777
2	1,350	1,030	756	410	700	2,130	12,800	2,690	1,130	2,900	635	957
3	1,320	894	840	390	1,150	1,920	11,800	2,560	*1,050	2,830	971	848
4	1,810	932	950	380	1,180	1,540	11,000	2,410	1,020	2,520	782	837
5	1,960	684	892	370	1,150	1,710	10,100	2,230	1,030	2,190	732	707
6	2,150	843	922	360	1,000	1,730	9,350	2,030	1,090	1,990	647	*578
7	2,250	942	987	355	900	1,510	8,600	1,970	1,130	5,720	546	496
8	2,250	959	952	350	1,100	1,020	8,100	2,140	1,090	8,600	562	480
9	2,150	887	890	340	1,500	918	8,100	2,310	1,040	8,850	529	477
10	1,950	858	809	335	1,900	879	8,600	2,380	1,010	8,100	528	404
11	*1,740	914	*668	335	2,500	824	8,850	2,410	890	6,350	524	385
12	1,580	974	500	335	3,500	1,190	9,100	2,350	827	4,970	498	328
13	1,420	944	360	340	4,600	2,390	9,100	2,220	790	4,200	*546	324
14	1,320	984	250	350	4,650	2,430	8,850	2,100	1,030	4,120	566	343
15	1,230	*970	260	370	4,500	2,360	8,350	1,940	1,780	*4,000	559	245
16	*1,240	912	450	390	4,300	2,220	7,850	1,800	2,680	3,600	600	275
17	1,090	794	740	*430	4,000	2,360	7,350	1,680	3,820	2,870	704	271
18	1,060	680	810	650	3,500	2,650	6,850	1,540	3,790	2,470	539	250
19	1,060	620	850	1,100	3,000	*4,850	6,600	1,410	3,290	2,180	457	250
20	1,030	700	870	1,780	2,600	6,600	6,100	1,390	3,050	2,010	410	257
21	1,200	760	880	1,410	2,400	7,350	5,620	1,350	2,950	1,720	420	246
22	1,420	836	870	1,000	2,200	6,600	5,440	1,350	2,850	1,520	370	241
23	1,340	680	860	810	2,100	4,500	5,170	1,460	2,610	1,330	368	224
24	1,330	410	830	740	1,900	3,210	4,940	1,490	2,270	1,210	362	218
25	1,390	330	800	670	1,700	3,380	4,660	1,460	2,160	1,060	329	214
26	1,370	315	750	630	1,660	3,720	4,380	1,400	2,130	1,000	339	210
27	1,330	380	700	590	1,470	3,860	4,050	1,390	2,420	882	346	200
28	1,300	475	630	560	1,880	4,720	3,680	1,410	2,490	828	361	210
29	1,220	600	570	540	2,470	7,600	3,380	1,480	2,600	760	560	158
30	1,250	680	520	550	.....	10,600	*3,100	1,420	2,430	702	554	189
31	1,080	.....	470	580	.....	11,600	.....	1,310	.....	631	543	.....
1952–53												
1	170	148	110	100	91	430	*2,600	2,600	2,720	3,600	1,060	*467
2	146	146	120	110	86	375	2,480	2,850	*2,600	2,980	1,020	394
3	139	125	125	110	92	*350	2,600	3,220	2,720	2,480	5,290	418
4	142	122	*130	110	*100	320	2,600	3,350	2,850	2,190	6,850	438
5	136	*122	115	100	110	310	2,600	*3,450	2,850	2,070	6,100	391
6	137	42	110	93	115	290	2,350	3,470	2,850	2,050	4,350	348
7	*181	97	105	96	125	290	2,270	3,140	2,600	2,290	3,350	351
8	200	108	120	105	140	290	2,110	3,050	3,850	*1,990	2,720	278
9	122	157	135	105	150	320	2,030	2,850	5,600	1,790	2,230	348
10	114	140	120	110	165	400	1,990	2,740	6,850	1,650	1,930	303
11	138	119	120	110	170	700	1,870	2,640	7,100	1,510	*1,550	311
12	156	140	125	110	170	1,100	1,790	2,440	7,850	1,380	1,520	306
13	229	150	80	110	170	2,100	1,750	2,310	8,600	1,400	1,510	290
14	120	127	68	110	170	2,720	1,670	2,310	8,600	1,320	1,390	284
15	140	150	120	110	165	3,480	1,870	2,230	7,100	1,430	1,250	273
16	139	148	150	120	160	3,720	1,970	2,060	5,980	1,300	1,160	286
17	140	198	135	150	150	3,600	1,930	1,990	5,220	1,140	1,080	241
18	134	177	125	140	140	3,720	1,870	1,820	4,720	1,070	1,000	217
19	144	177	115	130	130	3,720	1,710	1,770	4,480	1,020	944	251
20	160	148	120	120	250	3,850	1,650	1,720	4,100	960	880	244
21	141	152	120	115	200	3,600	1,590	1,810	3,600	894	844	274
22	221	140	120	105	225	3,350	1,460	1,860	3,350	887	774	246
23	a150	133	120	105	250	3,220	1,440	1,930	2,850	798	751	233
24	a170	151	115	105	275	3,100	1,480	2,000	2,720	764	658	225
25	a140	168	115	100	300	2,980	1,850	2,020	3,600	701	622	229
26	a150	90	115	100	350	2,850	2,090	1,860	4,220	664	549	226
27	a150	70	110	96	430	2,600	2,210	1,950	5,100	636	571	222
28	a145	90	110	94	500	2,350	2,350	2,100	5,980	572	468	224
29	a150	96	110	95	.....	2,210	2,310	2,480	5,980	786	492	224
30	a140	83	105	98	.....	2,250	2,350	2,720	4,850	1,230	513	192
31	130	.....	100	100	.....	2,480	.....	2,850	.....	1,310	488	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 18-20, 23-30, Dec. 12-31, 1951; Jan. 1-19, Jan. 22 to Feb. 24, Nov. 26 to Dec. 12, Dec. 15-31, 1952; Jan. 1 to Mar. 13, 1953.

Des Moines River at Fort Dodge, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	187	166	*214	121	62	345	1,390	1,630	2,720	6,360	817	2,390
2.....	209	146	176	118	69	*393	1,350	2,500	2,810	5,720	804	1,780
3.....	201	152	232	110	73	266	1,260	3,150	2,860	4,980	758	1,440
4.....	158	114	242	120	*80	173	1,150	3,500	3,210	4,480	725	1,240
5.....	*145	*132	261	112	95	162	1,130	3,140	*2,810	4,100	691	1,080
6.....	176	132	182	115	90	294	1,110	2,790	2,310	3,470	*599	978
7.....	178	162	164	*117	104	288	1,160	*2,470	2,000	3,310	533	831
8.....	165	126	244	114	100	301	1,190	2,230	1,660	2,910	538	734
9.....	148	145	188	100	120	299	1,130	1,900	1,440	*2,740	506	690
10.....	121	138	35	86	118	373	1,060	1,770	5,150	2,430	483	*688
11.....	132	148	170	92	120	421	1,010	1,580	8,190	2,330	456	652
12.....	155	159	136	66	106	329	983	1,470	6,470	1,980	423	610
13.....	151	148	119	85	120	324	990	1,380	4,320	1,940	410	593
14.....	155	152	140	74	140	102	927	1,260	3,140	1,640	343	540
15.....	150	167	118	72	150	197	923	1,230	2,400	1,550	435	541
16.....	144	138	28	70	160	292	948	1,120	2,020	1,320	388	529
17.....	108	160	115	66	133	570	902	1,080	1,720	1,240	392	519
18.....	180	164	105	64	181	1,300	888	1,010	1,770	1,160	549	574
19.....	174	189	122	64	202	1,090	838	956	7,260	1,100	712	540
20.....	185	280	110	65	284	2,620	790	884	20,700	1,030	648	575
21.....	161	220	98	64	350	2,730	2,450	850	34,000	977	578	559
22.....	196	240	91	63	320	2,150	1,780	804	*32,000	934	528	499
23.....	165	208	97	61	480	1,750	1,380	874	*25,700	889	619	488
24.....	149	203	120	59	600	1,500	1,450	1,240	*20,000	874	741	475
25.....	155	218	114	58	520	1,330	1,440	1,210	16,200	822	1,100	422
26.....	153	192	100	58	436	1,280	1,320	1,160	13,700	732	4,720	430
27.....	178	186	110	57	528	1,360	1,180	1,280	11,800	693	6,900	401
28.....	177	168	100	57	376	1,590	1,100	2,060	10,200	666	7,160	404
29.....	65	202	110	58	.....	1,520	1,060	2,020	8,560	640	5,980	481
30.....	168	208	64	58	.....	1,440	1,220	1,950	7,220	730	4,350	495
31.....	175	.....	130	58	.....	*1,450	.....	1,910	.....	812	3,180	.....
1954-55												
1.....	490	1,070	550	370	205	320	2,050	3,410	602	375	140	67
2.....	711	898	568	410	*200	500	1,940	2,700	985	323	148	66
3.....	1,040	984	538	305	175	1,100	1,660	2,230	1,600	444	78	41
4.....	1,160	924	538	350	160	1,300	1,530	1,990	1,600	434	117	64
5.....	1,030	*898	540	365	190	980	1,500	*1,710	1,870	362	*114	61
6.....	*956	926	450	*380	210	740	*1,410	1,510	2,440	618	92	50
7.....	926	920	512	310	215	520	1,410	1,420	*2,590	*896	96	64
8.....	1,030	874	500	270	205	620	1,310	1,270	2,520	936	94	51
9.....	1,200	848	464	300	190	*840	1,180	1,190	2,440	924	78	57
10.....	1,510	852	440	270	210	1,300	1,150	1,150	2,140	943	96	60
11.....	2,200	850	430	280	160	2,000	1,130	1,100	1,860	861	96	41
12.....	2,420	807	470	295	130	2,400	1,070	1,040	1,330	729	82	44
13.....	2,040	758	500	260	150	2,650	1,060	1,000	1,100	535	62	58
14.....	2,420	780	450	270	210	2,700	1,020	971	947	440	94	66
15.....	2,950	774	420	250	190	2,400	972	875	854	452	64	48
16.....	2,780	794	496	250	155	2,100	915	872	760	408	104	42
17.....	2,370	776	414	230	115	1,440	884	880	715	328	111	44
18.....	2,100	758	523	210	180	1,090	852	745	688	397	98	33
19.....	1,900	772	456	220	240	1,110	840	780	734	204	90	42
20.....	1,690	692	418	220	310	1,210	766	762	661	255	79	49
21.....	1,590	702	466	210	290	955	779	733	606	242	86	56
22.....	1,560	717	424	200	250	970	724	684	582	241	88	64
23.....	1,390	685	500	215	220	688	809	693	537	162	84	86
24.....	1,310	682	502	205	190	683	1,000	662	530	174	88	49
25.....	1,220	667	479	190	220	560	5,510	630	462	200	110	42
26.....	1,220	663	503	210	245	430	6,560	660	447	166	74	49
27.....	1,220	584	400	200	265	580	5,860	703	381	160	86	60
28.....	1,210	618	270	190	290	900	4,920	765	309	112	100	65
29.....	1,190	616	210	205	.....	987	4,150	723	358	157	90	62
30.....	1,130	*555	250	220	.....	1,880	3,780	704	350	150	*80	45
31.....	1,090	.....	290	200	.....	2,140	.....	638	.....	91	76	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11, 14-20, 24-29, 1953; Jan. 3-5, Jan. 8 to Feb. 11, Feb. 13-16, 21-25 (no gage-height record Jan. 21 to Feb. 13), Dec. 4, 5, 10-15, 27-31, 1954; Jan. 1 to Mar. 15, Mar. 25-27, 1955.

Des Moines River at Fort Dodge, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	509	225	118	87.8	563	2,968	12,950	6,061	5,308	6,024	2,593	2,405
1951-52.....	1,471	770	721	577	2,280	3,571	7,476	1,869	1,923	3,061	535	387
1952-53.....	152	130	116	103	192	2,035	2,028	2,441	4,716	1,447	1,740	291
1953-54.....	160	172	137	80.1	218	941	1,184	1,691	8,812	2,083	1,518	739
1954-55.....	1,516	781	451	261	206	1,229	1,988	1,133	1,106	410	93.4	54.2

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.121	0.053	0.028	0.021	0.134	0.705	3.08	1.44	1.28	1.43	0.616	0.571
1951-52.....	.350	.183	.171	.137	.542	.849	1.78	.444	.457	.728	.127	.092
1952-53.....	.036	.031	.028	.026	.046	.484	.482	.580	1.12	.344	.414	.069
1953-54.....	.038	.041	.033	.019	.052	.224	.281	.402	2.09	.495	.361	.176
1954-55.....	.360	.186	.107	.062	.049	.292	.473	.269	.263	.097	.022	.013

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.14	0.06	0.03	0.02	0.14	0.81	3.43	1.66	1.43	1.65	0.71	0.64
1951-52.....	.40	.20	.20	.16	.58	.98	1.98	.51	.51	.84	.15	.10
1952-53.....	.04	.03	.03	.03	.05	.56	.54	.67	1.25	.40	.48	.08
1953-54.....	.04	.05	.04	.02	.05	.26	.31	.46	2.34	.57	.42	.20
1954-55.....	.42	.21	.12	.07	.05	.34	.53	.31	.29	.11	.03	.01

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....								800	2.60
1951....	Apr. 8, 1951.	12.13	22,300	67	3,327	0.790	10.72	3,505	11.29
1952....	Apr. 2, 1952.	8.75	13,100	158	2,046	.486	6.61	1,830	5.91
1953....	June 13, 1953.	7.14	8,850	42	1,280	.306	4.16	1,292	4.19
1954....	June 21, 1954.	19.28	35,400	28	1,475	.351	4.76	1,660	5.38
1955....	Apr. 26, 1955.	6.30	6,840	33	771	.183	2.49	.....	.....

Peak Discharges (base 4,500 cfs)

1951: Feb. 26 (7 a.m.) about 5,500 cfs (7.10 ft.); Mar. 28 (11 p.m.) 17,200 cfs (10.42 ft.); Apr. 8 (11 a.m.) 22,300 cfs (12.13 ft.); May 2 (8 p.m.) 19,900 cfs (11.28 ft.); June 3 (6 p.m.) 7,100 cfs (6.44 ft); June 19 (8 a.m.) 7,600 cfs (6.57 ft.); July 1 (9 a.m.) 10,800 cfs (7.88 ft.); July 22 (5 a.m.) 7,350 cfs (6.52 ft.); Aug. 15 (7 p.m.) 5,720 cfs (5.86 ft.); Sept. 15 (2 a.m.) 5,850 cfs (5.92 ft.).

1952: Feb. 12 (9:30 a.m.) about 5,600 cfs (7.03 ft.); Mar. 21 (6 a.m.) 7,600 cfs (6.65 ft.); Apr. 2 (7 a.m.) 13,100 cfs (8.75 ft.); July 8 (10:30 p.m.) 9,100 cfs (7.15 ft.).

1953: June 13 (2 p.m.) 8,850 cfs (7.14 ft.); June 29 (9 a.m.) 6,350 cfs (6.13 ft.); Aug. 4 (3 p.m.) 7,100 cfs (6.36 ft.).

1954: June 11 (3 p.m.) 9,150 cfs (7.15 ft.); June 21 (11 a.m.) 35,400 cfs (19.28 ft.); Aug. 28 (6 a.m.) 7,690 cfs (6.72 ft.).

1955: Mar. 13 (11 p.m.) about 5,000 cfs (5.80 ft.); Apr. 26 (10 a.m.) 6,840 cfs (6.30 ft.).

Boone River near Webster City, Iowa

LOCATION.—Lat. 42°25'50", long. 93°48'10", in SE¼ sec. 18, T. 88 N., R. 25 W., on right bank 10 ft. upstream from bridge on State Highway 60, 2 miles south of Webster City, and 4.5 miles downstream from White Fox Creek.

DRAINAGE AREA.—842 sq. mi.

RECORDS AVAILABLE.—March 1940 to September 1955.

GAGE.—Water-stage recorder. Prior to June 26, 1940, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 392 cfs.

EXTREMES.—1940-55: Maximum discharge, 20,300 cfs June 22, 1954 (gage height, 18.55 ft.); minimum daily 2.4 cfs July 25, 1940.

Maximum stage known since 1896, 19.1 ft. about June 10, 1918, from floodmarks.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	115	52	17	a13	10	1,680	g5,190	4,300	1,100	3,330	249	g328
2	333	47	17	a13	9.8	626	g3,930	5,520	2,370	2,510	224	g309
3	*276	45	17	a13	9.6	540	g4,130	4,750	2,930	2,750	210	g291
4	225	45	*16	a13	a9.3	500	g4,250	3,930	2,350	2,270	186	g267
5	228	45	16	a13	a9.1	1,140	g5,300	2,670	1,760	1,830	168	g249
6	202	44	16	a13	8.9	2,260	g6,110	1,990	1,320	1,520	158	g227
7	242	42	16	a14	a8.8	1,500	g6,950	1,520	1,110	1,290	191	a215
8	258	46	16	a14	a8.7	985	g6,350	1,230	1,110	1,110	282	a210
9	255	46	15	a14	8.5	500	5,520	1,080	1,080	1,520	230	a265
10	235	33	15	a14	a8.4	378	3,330	1,080	890	1,900	202	a330
11	208	43	15	a13	a8.2	210	2,430	940	765	1,900	178	440
12	182	39	15	a13	a8.1	92	2,590	815	668	*1,900	152	454
13	160	32	15	a13	8.0	115	2,590	690	*578	1,690	168	990
14	147	35	15	a12	*8.0	140	2,270	600	502	1,690	494	1,520
15	131	38	15	*12	8.0	150	1,970	556	1,360	1,360	1,290	1,290
16	117	39	15	a12	8.0	125	*1,620	506	2,420	1,080	1,410	965
17	111	37	15	a13	8.1	106	1,290	487	1,550	890	990	690
18	106	42	15	a13	8.2	113	1,080	483	1,170	765	740	*556
19	96	40	15	a14	11	104	940	468	1,080	690	578	458
20	88	30	15	a14	17	96	840	440	1,020	645	514	397
21	86	38	15	a14	26	85	1,130	407	840	740	514	346
22	79	33	15	a14	50	77	1,970	390	740	1,620	535	315
23	74	29	15	a14	140	*81	1,900	*355	645	1,070	g*468	288
24	74	25	15	a13	320	115	1,760	340	578	1,230	g458	270
25	68	23	15	a13	800	113	2,270	321	494	865	g433	249
26	63	21	15	a13	a3,000	282	2,190	328	2,570	645	g407	235
27	62	20	14	a12	a4,700	g2,180	1,900	312	6,340	514	a390	224
28	59	19	a14	a12	a3,500	g7,570	1,690	291	*9,740	427	a650	207
29	57	19	a14	a11	.....	g*8,540	1,690	267	7,310	358	a480	180
30	*56	18	a13	a11	.....	g6,830	2,510	252	4,070	312	g377	173
31	54	.....	a13	a10	.....	g6,710	.....	331	.....	282	g346	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
g Computed from gage readings or graph based on gage readings.
Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 27, 1950; Jan. 15, Feb. 1-3, 6, 9, 13-25, Mar. 3, 4, 13-16, 1951.

Boone River near Webster City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	170	235	127	115	140	645	3,330	404	321	680	138	97
2.....	168	207	145	100	175	535	2,750	381	*306	740	127	95
3.....	168	160	183	92	200	450	2,040	381	282	690	121	79
4.....	186	135	175	86	230	355	1,550	377	264	660	117	70
5.....	241	115	175	80	245	269	1,260	358	252	645	113	60
6.....	249	115	170	76	215	273	1,050	343	244	550	107	*54
7.....	249	120	175	74	185	267	915	374	241	1,430	99	50
8.....	235	135	170	72	180	216	840	514	230	3,030	94	46
9.....	218	162	150	71	205	204	790	668	216	3,630	86	41
10.....	207	165	*115	70	300	227	740	715	207	3,730	81	38
11.....	*191	170	121	70	600	240	705	690	191	3,130	76	36
12.....	180	180	82	70	1,000	261	915	622	173	2,270	73	33
13.....	165	196	66	70	1,300	860	1,050	556	160	1,550	*70	31
14.....	158	207	50	70	1,500	890	1,200	494	563	*1,620	70	28
15.....	*148	*204	56	*71	1,500	890	1,060	447	1,320	2,510	68	27
16.....	143	191	75	75	*1,300	765	1,020	407	1,090	1,760	65	26
17.....	138	158	105	82	900	622	1,380	362	1,090	1,380	79	25
18.....	136	113	140	90	765	*600	1,170	337	1,550	1,110	107	23
19.....	130	101	150	200	578	1,050	1,020	331	1,140	890	71	21
20.....	127	183	105	400	424	1,830	890	309	790	790	60	21
21.....	173	188	175	300	303	2,040	790	294	622	790	54	20
22.....	207	168	180	220	315	1,760	740	312	535	622	48	21
23.....	468	121	180	190	340	965	790	362	483	502	43	20
24.....	454	82	180	170	310	668	790	430	475	417	41	19
25.....	417	68	180	150	310	790	715	430	468	352	38	20
26.....	381	66	175	140	309	765	622	400	390	303	41	20
27.....	349	72	170	125	334	715	578	371	447	261	46	19
28.....	318	85	160	115	475	940	510	340	535	230	43	18
29.....	309	100	150	110	645	2,040	*461	324	535	196	62	18
30.....	291	115	140	110	.....	3,130	430	328	487	175	76	17
31.....	267	.....	130	115	.....	3,330	.....	337	.....	152	86	.....
1952-53												
1.....	16	22	18	16	14	110	420	1,690	*258	444	158	28
2.....	14	21	15	16	14	*120	450	1,660	235	368	155	25
3.....	15	21	16	16	14	100	578	1,410	230	309	1,050	25
4.....	15	*19	16	17	14	93	690	1,200	227	264	1,440	23
5.....	13	19	*17	*17	14	89	645	1,080	216	235	1,320	23
6.....	*15	19	17	18	14	85	578	940	196	*270	1,170	20
7.....	16	20	18	18	14	82	494	*840	178	*207	940	20
8.....	17	21	18	18	14	79	447	740	343	207	556	17
9.....	15	21	18	18	14	78	424	645	765	213	397	17
10.....	15	21	19	18	15	110	440	600	965	173	*306	16
11.....	17	26	19	18	15	200	450	600	965	148	258	16
12.....	17	26	20	18	16	450	430	600	690	143	213	14
13.....	17	26	19	17	16	700	400	494	502	150	178	14
14.....	17	26	17	17	17	940	374	447	430	162	148	13
15.....	18	26	16	17	17	840	404	427	368	417	125	13
16.....	18	26	16	16	17	990	740	494	321	514	113	13
17.....	17	39	16	16	16	990	668	390	282	*340	101	12
18.....	17	39	17	16	15	965	556	368	249	230	92	13
19.....	18	39	17	16	15	765	483	349	218	170	82	14
20.....	17	39	17	16	40	668	433	340	202	136	74	12
21.....	17	40	17	15	40	556	400	352	170	117	67	11
22.....	18	40	16	15	54	483	381	365	150	107	62	10
23.....	18	39	16	15	59	437	355	407	130	95	58	9.8
24.....	18	33	15	15	66	371	384	472	110	88	53	9.8
25.....	19	28	15	15	74	318	915	535	318	76	49	11
26.....	23	20	15	15	*82	279	1,350	502	450	64	46	11
27.....	19	11	15	14	92	264	1,200	440	890	61	40	10
28.....	19	12	15	14	110	246	990	390	1,050	61	37	12
29.....	20	13	15	14	.....	230	865	355	840	88	35	12
30.....	21	14	15	14	.....	276	918	318	578	97	32	8.2
31.....	21	.....	16	14	.....	*352	.....	288	.....	183	*31	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-8, 24-30, Dec. 13-31, 1951; Jan. 1 to Feb. 17, 22-25, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 13, 1953.

Boone River near Webster City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	133	337	139	91	25	110	390	414	133	57	34	15
2	285	294	151	89	25	145	309	381	126	54	28	14
3	174	282	118	87	25	205	254	343	108	52	26	13
4	*578	282	110	84	25	300	243	306	700	51	*27	13
5	514	303	102	82	25	285	243	*271	965	70	25	12
6	410	*279	95	*88	25	255	*243	240	840	*2,730	30	11
7	355	265	100	80	25	230	232	221	*715	*1,690	26	10
8	400	254	110	73	25	*210	216	198	578	1,350	21	9.6
9	454	243	104	68	24	165	203	205	440	1,050	18	10
10	645	232	102	67	23	185	193	203	352	865	19	10
11	700	229	105	66	22	220	188	190	297	622	17	10
12	740	221	97	62	21	370	186	186	254	444	17	9.6
13	764	223	100	52	20	395	181	174	226	334	15	11
14	1,380	221	104	58	20	365	186	163	198	257	14	11
15	1,080	213	104	50	21	350	176	151	176	203	13	10
16	990	216	100	44	23	260	169	130	157	169	13	9.0
17	865	208	104	39	25	200	155	129	139	143	12	11
18	740	200	95	36	70	150	145	122	147	124	11	11
19	622	193	97	34	100	125	143	118	145	114	11	9.6
20	556	188	94	32	120	98	133	109	122	135	10	10
21	535	181	94	30	110	76	124	102	113	93	11	14
22	502	176	94	29	105	70	113	96	99	78	10	11
23	468	174	95	28	98	84	140	90	87	69	10	12
24	433	167	93	28	94	76	343	98	80	59	21	14
25	414	155	97	27	91	68	668	96	73	54	21	13
26	410	151	100	27	86	80	865	141	67	49	22	14
27	407	155	88	27	84	94	800	303	62	43	20	16
28	407	155	54	27	82	116	705	200	56	37	25	14
29	394	*137	88	26	.....	181	600	174	55	32	*25	15
30	374	120	98	26	.....	291	483	159	54	30	20	14
31	352	.....	94	*25	.....	337	.....	145	.....	34	17	.....
1954-55												
1	6.4	14	*15	12	9.3	*39	52	578	681	1,020	87	600
2	6.1	14	18	12	11	31	57	940	604	865	81	468
3	5.8	14	24	12	*14	23	61	1,350	750	765	74	384
4	5.5	14	25	11	16	21	49	1,140	805	668	81	321
5	*5.8	*14	27	11	18	19	55	890	805	600	78	271
6	5.2	13	27	11	20	23	113	*690	735	535	*71	229
7	7.4	12	22	*11	23	26	86	556	604	464	66	195
8	8.2	14	18	11	25	28	76	472	487	414	64	167
9	8.6	12	15	11	26	31	74	414	414	*384	*59	*159
10	8.2	14	25	11	27	34	71	368	*2,200	349	55	153
11	7.8	15	19	11	30	37	68	334	1,240	321	50	141
12	7.8	14	18	11	30	39	62	306	925	291	46	133
13	8.2	15	17	10	29	25	60	279	965	257	44	126
14	8.2	15	16	10	27	37	58	258	715	223	46	120
15	8.2	21	16	9.6	26	45	57	238	627	195	46	116
16	8.2	21	15	9.2	26	37	55	218	600	172	78	113
17	12	17	14	8.5	27	76	55	199	531	159	67	111
18	12	16	15	8.3	29	170	55	186	470	155	137	108
19	12	22	15	8.1	32	207	55	173	1,960	155	99	106
20	14	37	15	8.0	37	273	42	160	10,700	143	101	99
21	14	37	16	8.0	46	202	230	150	19,100	133	190	88
22	14	38	14	8.0	58	145	765	145	*18,500	129	188	84
23	13	35	13	8.0	56	113	502	143	14,900	126	304	78
24	13	29	12	8.0	54	97	384	145	8,580	118	447	73
25	14	26	13	8.0	51	95	600	152	5,050	108	650	71
26	14	18	13	8.0	47	88	427	227	3,340	99	2,200	69
27	14	14	13	8.0	44	86	340	238	2,430	92	2,670	66
28	14	12	13	8.0	42	79	282	844	1,920	87	2,110	69
29	15	12	13	8.0	.....	68	255	865	1,550	81	1,410	122
30	14	14	13	8.0	.....	*74	288	622	1,250	83	1,020	135
31	14	.....	12	8.2	.....	65	.....	556	.....	93	790	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26-30, Dec. 7-31, 1953; Jan. 1 to Mar. 16, Dec. 4-31, 1954; Jan. 1 to Mar. 27, 1955.

Boone River near Webster City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	143	35.5	15.1	12.9	454	1,418	2,022	1,212	2,045	1,343	441	431
1951-52.....	236	144	142	122	528	924	1,115	419	560	1,188	77.4	36.4
1952-53.....	17.3	25.5	16.5	16.1	32.5	396	595	634	418	203	303	15.1
1953-54.....	10.3	18.8	16.8	9.61	31.4	78.2	178	446	3,485	290	433	166
1954-55.....	554	215	101	51.0	51.4	197	306	199	258	358	19.0	11.9

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.170	0.042	0.018	0.015	0.539	1.68	3.47	1.44	2.43	1.60	0.524	0.512
1951-52.....	.280	.171	.169	.145	.627	1.10	1.32	.498	.665	1.41	.092	.043
1952-53.....	.021	.030	.020	.019	.039	.470	.707	.753	.496	.241	.360	.018
1953-54.....	.012	.022	.020	.011	.037	.093	.211	.530	4.14	.355	.514	.197
1954-55.....	.658	.255	.120	.061	.061	.234	.363	.226	.306	.425	.023	.014

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.20	0.05	0.02	0.02	0.56	1.94	3.87	1.66	2.71	1.84	0.60	0.57
1951-52.....	.32	.19	.20	.17	.68	1.26	1.48	.57	.74	1.63	.11	.05
1952-53.....	.02	.03	.02	.02	.04	.54	.79	.87	.55	.28	.41	.02
1953-54.....	.01	.02	.02	.01	.04	.11	.24	.61	4.62	.41	.59	.22
1954-55.....	.76	.29	.14	.07	.06	.27	.41	.26	.34	.40	.03	.02

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	231	3.71
1951....	June 28, 1951.	13.37	10,400	8.0	871	1.03	14.04	898	14.48
1952....	July 9, 1952.	8.10	3,830	17	457	.543	7.40	418	6.76
1953....	May 1, 1953.	5.72	1,760	8.2	224	.266	3.59	223	3.57
1954....	June 22, 1954.	18.55	20,300	5.2	426	.508	6.90	498	8.04
1955....	July 6, 1955.	11.14	7,190	9.0	194	.230	3.14	.....	.....

Peak Discharge (1,800 cfs)

1951: Feb. 27 (time unknown) about 4,950 cfs (9.2 ft.); Mar. 6 (2:30 a.m.) 2,580 cfs (6.60 ft.); Mar. 29 (1 a.m.) 9,800 cfs (13.00 ft.); Apr. 7 (10 a.m.) 7,070 cfs (11.00 ft.); Apr. 25 (2 p.m.) 2,510 cfs (6.70 ft.); May 2 (5 a.m.) 5,630 cfs (9.85 ft.); June 3 (10 a.m.) 3,030 cfs (7.30 ft.); June 15 (12 p.m.) 3,830 cfs (8.08 ft); June 28 (12 M.) 10,400 cfs (13.37 ft.); July 23 (3 a.m.) 2,110 cfs (6.20 ft.).

1952: Mar. 21 (8:30 p.m.) 2,110 cfs (6.17 ft.); Apr. 1 (10:30 a.m.) 3,330 cfs (7.65 ft.); July 9 (10 p.m.) 3,830 cfs (8.10 ft.); July 15 5 a.m.) 2,840 cfs (7.10 ft.).

1953: No peak above base.

1954: June 10 (6 a.m.) 3,450 cfs (7.72 ft.); June 22 (2 p.m.) 20,300 cfs (18.55 ft.); Aug. 27 (1:30 p.m.) 2,790 cfs (7.04 ft.).

1955: July 6 (5:30 p.m.) 7,190 cfs (11.14 ft.).

Des Moines River near Boone, Iowa

LOCATION.—Lat. 42°04'40", long. 93°55'55", in NE¼ sec. 24, T. 84 N., R. 27 W., on left bank 30 ft. upstream from Boone Water Department dam, 2 miles northwest of Boone, and 2.2 miles upstream from Bluff Creek.

DRAINAGE AREA.—5,490 sq. mi., approximately.

RECORDS AVAILABLE.—April 1920 to September 1927 and October 1933 to September 1955 in reports of Geological Survey. December 1904 to April 1920 (spring and early summer months, gage heights only) in reports of U. S. Weather Bureau.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 871.52 ft. above mean sea level, adjustment of 1912. Prior to May 1, 1920, chain gage 2.5 miles downstream at datum 7.87 ft. lower. April 9, 1920, to Sept 13, 1924, chain gage 1.3 miles upstream at datum 1.65 ft. lower. Oct. 9, 1924, to Sept. 30, 1927, chain gage 0.3 mile upstream at datum 6.69 ft. lower. Jan. 11, 1933, to Sept. 30, 1934, staff gage at present site at datum 0.41 ft. lower. Oct. 1, 1934, to Feb. 6, 1935, staff gage at present site and datum.

AVERAGE DISCHARGE.—29 years (1920-27, 1933-55), 1,740 cfs.

EXTREMES.—1920-27, 1933-55: Maximum discharge, 57,400 cfs June 22, 1954 (gage height 25.35 ft. from graph based on hourly gage readings); no flow for a short time on Jan. 9, 25, 1938, caused by manipulation of gates in control dam; minimum daily, 17 cfs Jan. 28, 1940 (unaffected by gate operation).

REMARKS.—Records good except those for periods of ice effect, which are poor. Slight diurnal fluctuation caused by power plants above station.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	1,000	357	185	95	77	5,900	18,700	14,700	4,860	14,300	2,280	2,800
2.....	1,060	344	185	96	72	3,800	15,600	19,000	7,260	14,000	2,210	2,470
3.....	1,200	*331	170	98	67	2,800	15,600	21,600	10,800	14,700	g2,110	2,180
4.....	1,120	370	155	98	63	2,680	17,100	20,700	11,300	14,500	g1,960	1,900
5.....	*1,310	282	145	100	60	2,680	20,100	18,500	10,200	12,400	2,040	1,800
6.....	1,200	282	135	100	63	5,250	23,400	16,300	8,520	11,000	1,900	1,730
7.....	1,200	300	125	100	61	4,990	25,200	14,000	7,120	9,780	g1,900	1,040
8.....	1,250	318	*125	100	58	3,460	26,700	11,900	6,980	8,800	g2,530	1,550
9.....	1,160	300	125	100	57	2,380	27,200	10,100	7,400	7,960	g2,440	1,480
10.....	1,060	294	135	99	61	1,590	25,000	8,940	7,260	8,520	g2,040	1,730
11.....	980	260	135	98	71	1,250	21,100	8,380	6,160	9,360	g1,900	2,530
12.....	900	208	135	97	82	860	18,800	7,820	5,250	9,640	g1,700	2,870
13.....	840	238	135	96	77	612	17,900	6,980	4,600	9,920	g1,770	3,940
14.....	760	240	135	95	85	984	16,900	6,160	4,070	9,640	g2,210	5,640
15.....	684	318	140	95	93	1,000	16,100	5,640	*3,940	*8,800	5,510	6,560
16.....	648	344	140	g94	100	1,050	15,600	5,250	7,540	8,240	6,840	6,290
17.....	612	318	140	*g108	*110	980	14,500	4,990	8,100	7,120	6,290	5,250
18.....	558	344	135	g108	120	630	*13,400	4,730	7,120	6,290	5,380	4,470
19.....	558	306	130	g124	130	446	12,100	4,470	7,960	6,030	4,600	3,940
20.....	509	240	125	120	200	415	11,100	4,200	8,660	6,030	4,200	*3,410
21.....	403	218	120	115	360	415	10,700	4,200	7,680	6,290	*3,940	3,100
22.....	403	318	120	110	380	g462	11,600	3,660	6,290	7,400	3,800	2,960
23.....	478	178	120	110	460	*g630	12,700	3,600	5,250	8,940	3,540	2,780
24.....	462	108	120	105	560	540	12,300	3,340	4,600	8,100	3,100	2,620
25.....	431	130	115	105	1,500	666	12,400	*3,220	4,200	6,030	2,850	2,500
26.....	400	150	115	100	4,500	880	13,400	3,160	5,250	4,990	2,680	2,350
27.....	384	160	105	97	6,840	4,560	12,700	3,010	10,200	4,200	2,530	2,180
28.....	384	165	105	94	8,100	14,500	11,800	2,820	13,200	3,460	3,800	1,990
29.....	384	170	97	89	.....	25,000	11,100	2,700	g16,400	2,960	4,730	1,850
30.....	431	175	94	85	.....	26,500	11,600	2,590	g15,800	2,680	4,200	1,770
31.....	271	.....	94	81	.....	22,600	.....	2,770	.....	2,380	3,390	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1950; Jan. 1-15, Jan. 20 to Feb. 26, 1951.

Des Moines River Near Boone, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	1,680	1,440	1,040	540	760	3,200	16,400	3,940	1,750	3,050	960	648
2.....	1,620	1,400	1,100	510	880	3,100	16,400	3,640	1,640	3,800	920	800
3.....	1,570	1,290	1,100	490	1,100	2,870	16,100	3,440	1,530	4,070	980	1,040
4.....	1,620	940	1,080	470	1,400	2,140	14,700	3,220	*1,440	3,800	1,270	960
5.....	2,070	720	1,140	460	1,550	1,640	13,200	2,990	g1,350	3,410	1,120	920
6.....	2,210	702	1,100	450	1,510	1,770	11,900	2,800	g1,370	2,920	1,020	780
7.....	2,380	920	1,140	440	1,270	1,820	11,000	2,590	g1,480	3,790	940	*648
8.....	2,280	1,060	1,160	430	1,120	1,700	9,920	2,620	g1,460	9,080	840	576
9.....	2,180	1,290	1,140	430	1,160	1,620	9,500	3,010	g1,400	12,100	780	493
10.....	2,070	1,310	1,080	420	1,480	1,640	9,500	3,300	g1,330	13,100	702	478
11.....	1,960	1,140	980	420	*2,200	1,640	9,780	3,410	g1,290	12,600	720	431
12.....	1,800	1,220	*660	420	3,600	1,640	10,200	3,370	g1,250	10,100	*666	370
13.....	1,700	1,270	431	420	4,600	3,010	10,500	3,140	g1,180	7,540	684	415
14.....	1,570	*1,270	260	430	5,380	3,800	10,800	2,920	g1,510	6,160	684	396
15.....	*1,510	1,270	282	450	5,900	3,800	10,800	2,750	g1,770	7,260	720	396
16.....	1,400	1,270	760	480	5,770	3,540	10,800	2,560	3,260	*7,120	760	282
17.....	1,400	1,200	920	510	5,510	*3,300	10,100	2,350	4,470	5,770	720	271
18.....	1,290	1,020	1,060	*558	5,120	3,300	9,220	2,180	5,380	4,850	880	260
19.....	1,270	820	1,140	800	4,330	4,070	8,060	1,990	5,120	4,070	740	249
20.....	1,220	820	1,140	1,400	g3,660	6,700	8,100	1,880	4,330	3,370	630	249
21.....	1,460	1,040	1,140	1,960	g2,990	8,660	7,540	1,880	3,940	3,010	576	260
22.....	1,020	1,080	1,140	1,480	3,030	9,500	6,980	1,880	3,660	2,650	524	260
23.....	1,820	840	1,140	1,060	2,730	8,380	6,700	1,960	3,510	2,280	446	238
24.....	1,030	540	1,220	930	2,730	5,510	6,560	2,070	3,180	g1,990	370	238
25.....	1,000	415	1,220	850	2,310	4,600	6,290	2,140	2,820	g1,000	357	238
26.....	1,850	415	1,100	780	1,990	4,360	5,770	2,040	2,080	g1,850	357	218
27.....	1,800	558	1,040	740	1,990	4,990	5,510	1,990	2,990	g1,700	370	208
28.....	1,730	740	910	710	2,140	5,250	5,120	1,990	3,340	g1,310	431	228
29.....	1,680	960	780	700	2,620	7,400	*4,000	1,850	3,280	g1,160	493	208
30.....	1,590	1,040	660	680	.....	11,500	4,330	1,880	3,260	g1,140	594	198
31.....	1,020	.....	590	700	.....	15,300	.....	1,850	.....	1,020	630	.....
1952-53												
1.....	178	151	115	130	100	670	3,050	5,120	3,140	5,510	1,620	*558
2.....	198	160	115	145	100	480	3,140	5,640	2,990	4,470	1,530	524
3.....	178	160	115	145	*110	430	3,340	5,250	*2,960	3,640	1,810	493
4.....	151	160	135	145	120	*460	3,640	5,120	3,070	3,070	6,380	462
5.....	124	*160	145	135	140	420	3,540	5,120	3,160	2,780	7,820	462
6.....	133	151	145	125	151	400	3,320	4,860	3,140	2,620	7,120	446
7.....	133	151	145	*120	160	380	3,030	4,730	3,100	2,680	5,510	415
8.....	*151	124	145	130	178	365	2,820	*4,330	3,030	2,780	4,330	370
9.....	198	94	*150	140	188	350	2,680	4,070	4,730	*2,470	3,420	478
10.....	228	116	160	150	205	462	2,620	3,800	6,700	2,210	2,850	294
11.....	169	151	170	150	220	720	2,530	3,600	7,820	1,990	2,380	331
12.....	151	151	160	150	228	1,370	2,440	3,410	8,100	1,820	*2,110	344
13.....	178	142	150	145	218	2,650	2,310	3,140	8,380	1,770	1,990	331
14.....	188	151	140	150	215	3,340	2,180	2,940	8,940	1,800	1,900	331
15.....	238	151	120	140	210	4,200	2,140	2,850	8,800	1,770	1,750	306
16.....	178	142	100	180	210	4,860	2,580	2,730	7,540	2,240	1,620	306
17.....	188	198	120	230	210	4,990	2,900	2,560	6,290	2,070	1,530	306
18.....	178	188	180	200	185	4,600	2,700	2,410	5,510	1,700	1,420	294
19.....	169	218	170	180	160	4,860	2,500	2,210	5,120	1,510	1,310	260
20.....	151	188	165	165	350	4,730	2,310	2,110	4,730	1,420	1,200	260
21.....	151	188	150	155	280	4,600	2,180	2,110	4,470	1,440	1,140	271
22.....	160	169	160	140	320	4,200	2,070	2,310	4,070	1,370	1,080	271
23.....	169	169	170	140	300	3,040	2,010	2,280	3,660	1,250	1,020	294
24.....	198	160	160	130	282	3,660	1,990	2,410	3,320	1,100	980	271
25.....	142	169	151	140	384	3,570	2,470	2,680	4,070	1,040	920	271
26.....	178	101	142	130	460	3,340	3,540	2,680	5,120	1,020	740	260
27.....	178	87	155	135	450	3,120	3,800	2,470	5,770	900	702	249
28.....	169	142	155	130	500	2,870	3,660	2,380	7,960	860	666	238
29.....	188	160	135	130	.....	2,650	3,570	2,700	7,960	960	612	238
30.....	169	115	130	130	.....	2,560	3,510	2,920	7,120	1,200	576	238
31.....	160	.....	130	130	.....	*2,750	.....	3,100	.....	1,440	594	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 28-31, 1951; Jan. 1-17, Jan. 24 to Feb. 4, Feb. 11, 12, Nov. 30 to Dec. 24, Dec. 27-31, 1952; Jan. 1 to Feb. 5, Feb. 10, 11, 14-18, 20-22, Feb. 26 to Mar. 9, 1953.

Des Moines River Near Boone, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	217	118	206	107	74	510	1,480	1,720	3,330	7,550	1,010	4,290
2.....	185	140	*218	96	g85	494	1,440	2,460	3,760	6,530	1,030	3,290
3.....	185	140	252	112	g85	328	1,370	3,780	4,060	5,830	*1,030	2,640
4.....	206	*132	240	112	*g96	218	1,320	4,710	*4,210	5,270	990	2,230
5.....	196	132	288	112	g101	218	1,220	*4,570	4,290	4,850	950	g1,930
6.....	*158	125	276	101	g112	252	1,240	3,850	3,680	4,430	930	g1,750
7.....	158	118	301	g*125	g112	301	1,260	3,290	3,010	4,000	800	g1,530
8.....	166	125	218	g132	g118	328	1,240	2,920	2,740	*3,620	764	g1,300
9.....	176	140	196	g101	g140	328	1,260	2,740	2,400	3,200	693	*1,260
10.....	158	132	176	112	g149	356	1,240	2,420	7,660	3,020	650	1,200
11.....	132	132	218	105	g140	446	1,110	2,250	14,500	2,830	642	1,130
12.....	125	132	140	99	g149	478	1,110	2,120	11,000	2,640	625	1,050
13.....	118	140	185	g91	g132	415	1,050	1,980	8,240	2,480	608	1,030
14.....	132	149	149	g85	149	342	1,070	1,860	5,930	2,340	592	1,010
15.....	132	149	96	83	140	356	1,030	1,720	4,680	2,160	560	950
16.....	132	149	73	80	176	240	990	1,650	3,960	g1,980	560	872
17.....	125	149	87	76	196	314	970	1,550	3,160	1,930	746	872
18.....	125	149	110	76	218	527	950	1,460	2,680	1,860	625	818
19.....	125	176	101	g80	218	1,390	930	1,390	2,640	1,770	764	818
20.....	132	217	140	g80	342	2,250	890	1,260	9,330	1,750	872	854
21.....	158	264	149	74	370	2,600	930	1,170	*31,700	1,670	990	836
22.....	166	276	132	71	415	2,600	2,560	1,130	g*55,000	1,550	1,220	818
23.....	140	240	196	70	494	2,210	2,460	1,070	g*55,000	1,510	1,240	728
24.....	166	252	96	66	510	1,860	1,950	1,070	g44,200	1,420	1,360	710
25.....	149	217	80	66	800	1,070	1,880	1,440	g30,800	1,370	1,480	693
26.....	140	196	85	66	650	1,480	2,120	1,440	g21,700	1,320	5,270	650
27.....	132	206	112	66	625	1,420	1,860	1,530	g16,700	1,240	12,000	608
28.....	132	206	125	67	560	1,510	1,630	2,540	g13,300	1,170	12,000	608
29.....	149	206	118	68	.....	1,650	1,480	3,380	10,900	1,110	10,400	642
30.....	166	196	112	68	.....	1,600	1,510	2,830	9,000	1,070	7,850	782
31.....	125	.....	107	68	.....	*1,530	.....	2,640	.....	1,010	5,090	.....
1954-55												
1.....	872	a1,770	*800	560	260	g415	2,460	3,780	1,260	576	166	101
2.....	1,150	a1,700	782	592	*252	g312	2,480	3,550	1,150	510	149	91
3.....	1,390	a1,630	764	592	g196	g710	2,400	3,020	1,420	416	149	85
4.....	1,980	*1,580	800	592	235	g1,530	2,230	*2,830	2,310	462	*149	85
5.....	2,090	1,480	746	*544	270	g1,650	*2,120	2,620	2,740	510	132	85
6.....	*1,880	1,480	710	544	260	g1,420	2,050	2,460	*2,920	693	132	80
7.....	1,700	1,480	642	462	280	g1,050	2,000	2,310	3,110	3,090	149	80
8.....	1,670	1,440	693	431	295	*728	1,930	2,180	3,110	2,920	132	80
9.....	1,880	1,370	676	430	240	818	1,880	2,120	3,020	2,740	125	75
10.....	2,090	1,320	659	410	g166	1,010	1,790	2,070	2,920	*3,920	125	80
11.....	2,580	1,300	576	400	185	1,860	1,750	1,950	2,640	2,500	112	75
12.....	3,110	1,280	800	375	210	2,830	1,700	1,930	2,480	2,050	112	70
13.....	3,290	1,260	659	350	235	2,830	1,650	1,820	2,160	g1,670	112	70
14.....	5,130	1,220	642	328	255	3,380	1,630	1,750	1,860	g1,240	112	70
15.....	4,990	1,170	764	328	g301	3,200	1,550	1,670	1,650	g1,010	96	60
16.....	4,570	1,150	764	314	g196	2,740	1,530	1,580	1,440	g890	101	60
17.....	4,150	1,150	693	356	g149	2,360	1,420	1,510	1,300	g800	96	65
18.....	3,550	1,130	676	314	g240	1,910	1,370	1,480	1,220	693	107	65
19.....	3,110	1,110	642	276	300	1,510	1,320	1,370	1,320	576	112	70
20.....	2,740	1,090	625	280	350	1,510	1,360	1,350	1,300	592	101	65
21.....	2,560	1,070	764	270	g415	1,530	1,240	1,300	1,070	415	96	80
22.....	2,440	1,030	676	270	g314	1,170	1,150	1,260	1,030	415	96	80
23.....	2,310	1,010	676	280	g314	890	1,130	1,170	930	356	85	91
24.....	2,210	970	693	270	g240	930	1,770	1,240	854	314	96	112
25.....	2,120	970	625	260	g301	818	3,200	1,170	818	276	107	75
26.....	a2,050	970	676	255	g314	g570	5,690	1,150	676	264	96	85
27.....	a2,020	950	642	250	g301	g836	6,250	g1,420	659	240	101	85
28.....	a1,980	872	510	250	g370	g1,240	5,690	1,630	608	218	101	80
29.....	a1,930	854	301	255	.....	g1,240	4,850	1,460	560	206	107	80
30.....	g1,880	818	342	260	.....	g1,480	4,290	1,370	576	166	112	80
31.....	a1,820	.....	385	260	.....	2,290	.....	1,350	.....	166	*107	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relations affected by ice Dec. 16-18, 1953; Jan. 10-12, 15-18, 21-31, Feb. 1, 1954; Jan. 9-13, Jun. 20 to Feb. 1, Feb. 4-9, 11-14, 19, 20, 1955.

Des Moines River Near Boone, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	755	260	130	100	870	4,523	16,410	8,046	7,799	8,208	3,238	2,943
1951-52.....	1,735	1,000	957	681	2,787	4,589	9,566	2,566	2,569	4,774	706	426
1952-53.....	172	152	145	147	237	2,516	2,819	3,359	5,379	2,029	2,214	339
1953-54.....	152	170	161	87.6	263	975	1,385	2,256	13,150	2,725	2,417	1,264
1954-55.....	2,492	1,221	658	366	266	1,510	2,394	1,868	1,637	1,017	115	78.7

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.138	0.047	0.024	0.018	0.158	0.824	2.99	1.47	1.42	1.50	0.590	0.536
1951-52.....	.316	.182	.174	.124	.508	.836	1.74	.467	.467	.870	.129	.078
1952-53.....	.031	.028	.026	.027	.043	.458	.513	.611	.980	.370	.403	.062
1953-54.....	.028	.031	.029	.016	.048	.178	.252	.411	2.40	.496	.440	.230
1954-55.....	.454	.222	.120	.067	.048	.275	.436	.340	.298	.185	.021	.014

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.16	0.05	0.03	0.02	0.16	0.95	3.34	1.69	1.58	1.72	0.68	0.60
1951-52.....	.36	.20	.20	.14	.55	.96	1.94	.54	.52	1.00	.15	.09
1952-53.....	.04	.03	.03	.03	.04	.53	.57	.70	1.09	.43	.46	.07
1953-54.....	.03	.03	.03	.02	.05	.20	.28	.47	2.67	.57	.51	.26
1954-55.....	.52	.25	.14	.08	.05	.32	.49	.39	.33	.21	.02	.02

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....	.....	.....	.....	.....	.....	.....	.....	1,141	2.83
1951.....	Mar. 30, 1951.	16.82	28,200	57	4,443	0.809	10.98	4,658	11.50
1952.....	Apr. 2, 1952.	10.78	16,600	198	2,688	.490	6.65	2,417	5.99
1953.....	June 15, 1953.	6.03	9,080	87	1,631	.297	4.02	1,632	4.01
1954.....	June 22, 1954.	25.35	57,400	66	2,078	.379	5.12	2,405	5.94
1955.....	July 10, 1955.	4.10	6,390	60	1,140	.208	2.82	.....	.....

Peak Discharge (base 6,300 cfs)

1951: Feb. 26 (7 p.m.) about 8,800 cfs; Mar. 30 (12:30 a.m.) 28,200 cfs (16.82 ft.); Apr. 9 (9 a.m.) 27,200 cfs (16.44 ft.); May 3 (3:30 p.m.) 21,800 cfs (13.82 ft.); June 4 (6 a.m.) 11,300 cfs (7.52 ft.); June 29 (9 p.m.) 16,900 cfs (11.00 ft.); July 23 (4 p.m.) 9,220 cfs (6.07 ft.); Aug. 16 (4 p.m.) 7,120 cfs (4.57 ft.); Sept. 15 (11:30 a.m.) 6,700 cfs (4.27 ft.).

1952: Mar. 22 (3 p.m.) 9,640 cfs (6.43 ft.); Apr. 2 (11 p.m.) 16,600 cfs (10.78 ft.); Apr. 15 (5 p.m.) 11,100 cfs (7.44 ft.); July 10 (2 p.m.) 13,200 cfs (8.68 ft.); July 15 (10 p.m.) 7,960 cfs (5.19 ft.).

1953: June 15 (1 a.m.) 9,080 cfs (6.03 ft.); June 29 (5 p.m.) 8,240 cfs (5.44 ft.); Aug. 5 (1 p.m.) 7,960 cfs (5.23 ft.).

1954: June 11 (5 a.m.) 16,200 cfs (10.50 ft.); June 22 (4 p.m.) 57,400 cfs (25.35 ft.); Aug. 27 (8 a.m.) 13,800 cfs (8.97 ft.).

1955: July 10 (4:30 a.m.) 6,390 cfs (4.10 ft.).

Des Moines River at Des Moines, Iowa

LOCATION.—Lat. 41°36'45", long. 93°37'05", in NE¼ sec. 34, T. 79 N., R. 24 W., on right bank 5 ft. upstream from Second Avenue Bridge in Des Moines, 1.8 miles upstream from Iowa Power and Light Co. dam, 2.8 miles upstream from Raccoon River, and 4.5 miles downstream from Beaver Creek.

DRAINAGE AREA.—6,180 sq. mi., approximately.

RECORDS AVAILABLE.—October 1902 to August 1903, May 1905 to July 1906 and October 1914 to February 1915 (gage heights only), March 1915 to September 1927, and October 1932 to September 1955 in reports of Geological Survey. 1893-94, 1897-1927 in report of Iowa State Planning Board.

GAGE.—Water-stage recorder and concrete multiple-arch control dam. Datum of gage is 773.84 ft. above mean sea level, datum of 1929, and at city datum. Prior to Aug. 21, 1941, staff, chain, or recording gages at several sites within 3 miles of present site at various datums.

AVERAGE DISCHARGE.—35 years (1915-27, 1932-55), 2,167 cfs.

EXTREMES.—1915-27, 1932-55: Maximum discharge, 60,200 cfs June 24, 1954 (gage height, 30.16 ft.); minimum unregulated discharge, 24 cfs Jan. 29, 30, 1940; operation of sluice gates in control dam at times has cauesd brief periods of no flow.

Flood of May 31, 1903, reached a stage of about 27.3 ft. present site and datum, from flood profile by office of City Engineer (probably backwater from Raccoon River).

REMARKS.—Records good except those periods of ice effect, doubtful or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	1,070	308	190	105	80	10,000	29,600	13,100	3,580	15,900	2,670	3,690
2.....	990	308	208	113	71	6,610	24,900	g16,800	8,480	14,700	2,570	3,170
3.....	930	327	190	113	63	4,680	20,200	g21,300	11,600	15,900	2,670	2,870
4.....	1,040	*308	190	105	63	3,580	18,100	g25,800	13,600	18,500	2,570	2,570
5.....	1,020	337	182	105	63	3,370	18,500	g25,300	13,900	17,800	2,470	2,310
6.....	1,150	308	164	110	71	3,690	20,600	g22,900	12,400	15,200	2,410	2,170
7.....	*1,210	280	130	110	63	6,150	25,800	g19,200	10,400	12,600	2,170	2,030
8.....	1,170	260	130	110	63	5,460	28,800	15,900	10,400	11,100	2,250	1,910
9.....	1,150	280	140	110	56	3,800	30,600	13,400	10,200	10,400	2,070	1,950
10.....	1,090	280	*139	105	56	2,800	31,400	11,800	9,680	8,960	2,570	2,310
11.....	960	262	130	105	80	2,100	31,000	10,400	8,720	9,440	2,250	2,570
12.....	900	260	147	105	88	1,400	27,000	9,680	7,300	10,200	2,050	3,070
13.....	840	262	150	105	88	1,100	*22,900	8,720	6,150	10,400	1,970	4,020
14.....	765	253	156	105	97	850	20,600	7,760	5,340	10,600	1,950	4,570
15.....	720	253	156	113	105	1,000	19,200	6,840	4,900	10,400	2,970	5,920
16.....	662	262	156	113	105	1,200	17,800	6,380	5,120	9,920	5,800	6,840
17.....	648	308	164	113	122	1,350	16,500	5,920	*8,000	8,720	7,300	6,610
18.....	648	299	156	122	150	1,100	15,600	5,580	8,240	7,760	6,840	5,580
19.....	592	299	130	*130	190	700	14,100	5,230	7,530	*6,840	5,800	4,790
20.....	578	280	130	130	240	*540	*13,100	4,900	8,240	6,610	5,120	4,240
21.....	550	262	122	135	410	550	12,100	4,680	8,960	6,380	5,120	*3,800
22.....	502	271	122	140	380	590	11,400	4,570	8,000	6,840	4,790	3,580
23.....	502	173	130	120	500	720	11,800	4,130	6,610	7,760	*4,460	3,370
24.....	478	88	130	115	700	700	12,800	3,910	5,460	8,960	4,020	3,170
25.....	454	139	130	115	900	850	13,400	3,690	4,790	8,240	3,690	2,970
26.....	442	164	122	110	1,200	1,000	13,600	3,580	4,350	6,150	3,370	2,870
27.....	409	164	122	105	2,500	1,400	14,400	*3,470	5,920	5,010	3,170	2,570
28.....	380	182	113	105	7,000	6,540	14,400	3,370	9,200	4,240	3,170	2,470
29.....	399	182	113	97	.....	g12,400	13,100	3,170	11,100	3,580	4,350	2,350
30.....	389	182	105	92	.....	*g21,700	12,400	2,970	13,900	3,270	5,230	2,170
31.....	409	.....	105	88	.....	31,400	.....	2,570	.....	2,970	4,570	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 9, 1950; Jan. 6-9, 21-30, Feb. 18-28, Mar. 1, 9-27, 1951.

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	2,070	1,930	1,420	662	800	2,600	14,100	4,790	2,410	5,010	1,290	810
2	1,970	1,690	1,290	634	900	2,950	16,800	4,460	2,330	4,780	1,210	795
3	1,970	1,600	1,380	606	1,100	3,000	17,800	4,130	2,130	5,010	1,250	870
4	2,670	1,500	1,360	550	1,500	2,600	*17,800	3,910	2,030	5,120	1,310	1,090
5	2,670	1,200	1,310	530	1,800	2,470	16,800	3,690	1,930	4,570	1,380	1,090
6	2,570	820	1,440	538	1,950	2,300	15,000	3,470	*1,810	4,020	1,350	1,020
7	2,670	1,000	1,380	550	1,900	2,130	13,600	3,270	1,710	6,120	1,210	960
8	2,770	1,200	1,350	526	1,700	2,000	12,600	3,070	1,770	7,530	1,130	855
9	2,670	1,400	1,360	514	1,500	1,885	11,400	3,270	1,750	10,400	1,070	*750
10	2,570	1,530	1,350	514	1,400	1,830	10,600	3,580	1,650	11,800	945	662
11	2,470	1,530	1,280	538	1,600	1,820	10,600	3,800	1,580	13,400	885	620
12	2,390	1,540	1,130	490	*2,100	2,000	10,800	3,910	1,510	13,600	*840	606
13	2,230	1,630	705	490	2,800	2,560	11,100	3,910	1,400	12,600	780	550
14	2,090	1,630	466	490	4,000	4,000	11,600	3,690	1,290	9,200	810	550
15	1,910	1,580	389	520	5,200	4,500	12,100	3,470	1,360	7,300	945	478
16	1,810	1,530	660	560	6,000	4,200	12,400	3,370	1,970	8,000	960	430
17	1,710	*1,490	870	700	6,700	3,900	12,100	3,170	3,170	*7,760	900	442
18	*1,690	1,400	915	820	6,400	3,900	11,600	2,870	4,350	6,380	840	390
19	1,600	1,260	1,130	880	6,500	4,000	10,600	2,770	5,230	5,340	915	378
20	1,560	1,120	1,230	940	5,000	6,150	9,680	2,570	5,580	4,460	855	368
21	1,650	1,180	1,280	1,400	4,400	*8,480	8,960	2,450	4,900	3,800	765	348
22	1,990	1,230	1,360	2,100	3,600	9,680	8,480	2,700	4,460	3,470	690	337
23	2,210	1,000	1,360	2,000	3,300	10,200	8,000	3,740	4,130	3,170	606	327
24	2,350	820	1,360	1,500	3,000	9,200	7,760	3,370	4,020	2,770	564	318
25	2,430	540	1,350	1,250	2,800	6,380	7,530	3,170	3,580	2,470	526	290
26	2,350	700	1,310	1,050	2,600	5,600	7,070	3,070	3,320	2,210	514	290
27	2,290	900	1,290	920	2,540	5,920	6,610	2,870	6,840	1,970	502	290
28	2,250	1,070	1,280	840	2,500	5,920	6,150	2,770	6,610	1,810	538	271
29	2,190	1,280	1,200	800	2,500	6,610	5,690	2,570	6,380	1,620	810	262
30	2,110	1,450	1,020	780	.....	8,480	5,120	2,570	5,580	1,490	795	271
31	1,970	.....	750	780	.....	11,100	.....	2,470	.....	1,360	720	.....
1952-53												
1	253	190	150	170	150	780	3,470	4,350	3,270	7,760	1,350	564
2	234	173	160	170	140	676	3,800	5,580	3,370	6,150	1,600	*564
3	234	173	160	170	135	825	*4,020	6,150	3,370	4,790	1,580	550
4	225	173	160	160	145	885	4,130	5,920	3,270	4,020	2,000	526
5	208	173	165	150	160	885	4,240	5,800	*3,370	3,470	5,920	466
6	199	173	175	140	180	960	4,130	*5,690	3,370	3,070	7,300	454
7	190	*182	225	135	240	735	3,910	5,340	3,470	2,870	7,070	454
8	190	164	234	*173	350	735	3,580	5,120	4,020	2,870	5,580	442
9	182	156	234	173	502	690	3,370	4,790	4,350	2,970	4,460	399
10	*182	147	243	165	840	750	3,170	4,570	6,380	2,670	3,470	409
11	208	139	225	160	1,280	825	3,070	4,240	9,680	*2,390	2,970	378
12	217	147	243	165	1,070	930	2,970	4,020	11,100	2,290	2,450	327
13	182	182	120	170	720	1,350	2,870	3,910	10,200	2,090	2,190	337
14	173	182	140	180	600	2,410	2,770	3,580	9,680	1,990	*2,030	337
15	182	164	175	235	500	3,370	2,670	3,370	9,020	1,990	1,950	327
16	199	199	225	220	430	4,130	2,670	3,270	9,680	1,970	1,770	318
17	217	308	243	190	385	4,080	2,970	3,170	8,240	2,270	1,620	318
18	208	299	199	170	440	4,790	3,270	2,970	7,070	2,190	1,490	308
19	182	262	190	180	540	4,570	3,070	2,870	6,150	1,810	1,360	318
20	182	253	234	175	1,910	4,080	2,870	2,670	5,690	1,600	1,290	271
21	199	253	243	170	2,190	4,080	2,070	2,670	5,230	1,580	1,210	253
22	182	243	220	165	1,620	4,460	2,470	2,670	4,790	1,530	1,130	262
23	182	234	200	165	1,450	4,240	2,390	2,870	4,350	1,440	1,050	271
24	199	234	180	160	1,330	4,020	2,390	4,230	3,910	1,260	990	280
25	208	253	170	165	1,180	3,800	2,470	3,090	3,800	1,180	930	271
26	217	173	160	165	1,010	3,690	2,870	3,370	5,230	1,130	870	271
27	164	80	130	165	1,150	3,470	3,010	3,270	5,920	1,130	750	253
28	173	100	130	165	1,170	3,270	4,020	3,070	7,070	945	735	253
29	190	120	150	160	.....	3,070	4,130	2,870	8,720	885	676	253
30	190	130	160	155	.....	3,170	4,130	3,070	8,720	1,040	648	225
31	199	.....	170	155	.....	3,170	.....	3,170	.....	1,170	592	.....

* Discharge measurement made on this day.

Note—State-discharge relation affected by ice Nov. 3-8, 23-27, 1951; Jan. 14 to Mar. 10, Nov. 28 to Dec. 6, Dec. 13-15, 22-31, 1952; Jan. 1-7, Jan. 10 to Feb. 8, Feb. 14-19, 1953.

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	225	208	199	130	74	578	*1,660	2,030	4,400	8,960	885	7,530
2	225	*182	199	140	76	592	1,610	2,430	*4,970	7,530	990	5,580
3	225	164	*225	130	82	358	1,570	*2,900	5,140	6,610	*1,010	4,130
4	182	199	234	122	99	*240	1,520	4,090	5,240	5,920	1,010	3,800
5	182	208	243	*139	100	280	1,490	4,820	5,200	5,340	1,230	3,170
6	190	199	234	140	*105	350	1,410	4,720	5,040	*4,990	1,020	2,670
7	*199	199	271	145	115	430	1,360	4,200	4,430	4,790	990	*2,370
8	164	173	262	140	122	399	1,370	3,690	3,950	4,680	915	2,090
9	164	173	271	135	139	380	1,370	3,290	3,490	4,240	840	1,850
10	173	182	217	120	147	378	1,390	3,000	3,050	3,800	765	1,650
11	182	190	217	113	130	399	1,360	2,620	6,820	3,470	735	1,510
12	182	190	199	105	139	430	1,250	2,430	12,200	3,170	690	1,420
13	182	190	271	96	182	478	1,250	2,250	14,000	2,870	662	1,310
14	164	190	182	92	208	442	1,210	2,070	10,300	2,670	662	1,260
15	156	199	113	90	243	399	1,210	1,950	6,800	2,430	620	1,200
16	173	199	80	82	225	442	1,180	1,790	7,260	2,210	631	1,130
17	173	208	110	74	208	368	1,130	1,690	5,680	1,970	648	1,070
18	173	208	122	74	262	337	1,100	1,610	4,680	1,770	1,130	1,040
19	173	234	147	78	280	430	1,090	1,490	3,600	1,670	825	975
20	173	253	173	80	348	1,040	1,070	1,440	4,980	1,600	810	930
21	164	262	173	76	378	2,090	1,070	1,360	11,500	1,600	1,020	930
22	173	262	140	74	399	2,520	1,040	1,280	20,800	1,470	6,970	885
23	190	308	145	74	466	2,620	2,430	1,230	*48,100	1,330	5,230	870
24	199	299	150	72	490	2,300	2,620	1,150	*59,100	1,260	5,230	810
25	190	262	160	72	526	2,000	2,090	1,090	*51,600	1,200	4,350	765
26	190	253	147	72	735	1,780	2,030	1,340	*39,600	1,170	10,200	720
27	190	234	122	72	705	1,590	2,250	1,470	27,900	1,090	11,800	690
28	182	225	122	72	662	1,520	2,030	2,270	*19,900	1,020	14,400	765
29	182	234	147	72	.....	1,570	1,810	3,000	14,800	960	16,500	990
30	190	208	147	72	.....	1,720	1,780	3,490	11,400	900	15,200	1,100
31	190	.....	135	73	.....	1,710	.....	3,890	.....	870	11,400	.....
1954-55												
1	1,350	2,480	1,050	598	355	658	2,360	4,710	1,300	610	*270	*91
2	1,470	*2,320	*1,020	722	345	748	2,600	*4,270	1,180	634	240	101
3	2,250	2,220	960	856	*330	945	2,600	3,950	1,050	528	240	101
4	2,570	2,060	975	870	320	1,160	*2,500	3,640	1,160	506	220	91
5	3,370	2,000	990	900	300	1,800	2,600	3,110	2,200	*495	210	83
6	3,370	1,950	885	735	290	1,760	2,340	2,800	2,700	709	220	83
7	*2,970	1,910	814	670	290	1,320	2,140	2,600	3,000	900	190	79
8	2,770	1,870	842	709	285	920	2,040	2,360	3,220	3,330	190	76
9	2,770	1,820	870	698	280	1,100	1,970	2,500	*3,320	3,320	190	74
10	3,070	1,700	670	658	280	1,300	1,870	2,700	3,110	4,440	171	68
11	3,170	1,680	960	610	280	*1,570	1,780	2,420	3,000	5,700	161	64
12	3,580	1,660	828	634	280	2,080	1,760	2,160	2,800	4,060	161	64
13	4,020	1,600	856	410	285	3,420	1,760	2,020	2,480	3,610	141	66
14	5,340	1,590	670	440	290	3,320	1,820	1,870	2,080	2,700	131	64
15	6,840	1,550	960	517	295	3,740	1,800	1,760	1,760	1,950	131	63
16	6,610	1,530	828	528	300	3,740	1,660	1,620	1,530	1,530	121	62
17	5,020	1,490	1,000	484	320	3,320	1,590	1,490	1,390	1,320	111	58
18	5,260	1,460	774	420	574	2,800	1,440	1,400	1,260	1,130	91	57
19	4,710	1,420	774	405	2,240	2,220	1,570	1,370	1,130	990	91	69
20	4,160	1,390	856	390	2,400	1,800	1,660	1,280	1,160	870	91	68
21	3,840	1,350	885	375	1,910	1,800	1,400	1,200	1,180	814	111	111
22	3,530	1,330	960	375	1,390	1,850	1,300	1,160	1,050	683	111	91
23	3,320	1,300	900	370	1,200	1,480	1,320	1,080	945	562	91	79
24	3,110	1,230	870	360	990	1,150	2,800	1,670	885	517	87	69
25	3,000	1,200	856	355	828	1,050	3,640	1,400	814	484	83	69
26	2,900	1,180	814	345	828	980	4,600	1,180	748	430	83	91
27	2,900	1,200	870	340	828	920	6,150	1,250	670	380	83	151
28	2,800	1,200	640	335	670	1,070	6,610	1,570	634	360	83	91
29	2,800	1,120	410	350	.....	1,230	5,920	2,000	658	330	87	200
30	2,700	1,080	390	355	.....	1,390	5,260	1,640	586	310	91	83
31	2,600	.....	451	360	.....	1,570	.....	1,400	.....	280	87	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 17, 22-25, 31, 1953, Jan. 1-3, 6-10, Mar. 4-6, 1954; Jan. 19 to Feb. 4, Mar. 8-10, 25-27, 1955. Doubtful or no gage-height record Jan. 13 to Feb. 7, Apr. 25, 26, Apr. 30 to May 2, May 28 to June 1, 1954; Jan. 28 to Feb. 2, Feb. 5-16, 1955; discharge computed on basis of weather records and records for nearby stations. Discharge computed from gage readings or graph based on gage readings, Oct. 30 to Nov. 1, 1954; Feb. 17 to Mar. 1, Mar. 4, 1955.

Des Moines River at Des Moines, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	744	255	144	111	554	4,495	19,190	9,590	8,402	9,527	3,645	3,417
1951-52.....	2,189	1,292	1,160	822	3,038	4,789	11,020	3,320	3,226	5,760	900	558
1952-53.....	198	189	188	169	779	2,603	3,282	3,946	6,113	2,404	2,227	355
1953-54.....	181	216	179	97.6	273	974	1,525	2,454	14,200	3,018	3,851	1,840
1954-55.....	3,518	1,600	827	522	678	1,740	2,629	2,112	1,633	1,436	141	83.9

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.120	0.041	0.023	0.018	0.090	0.727	3.11	1.55	1.36	1.54	0.590	0.553
1951-52.....	.354	.209	.188	.133	.492	.775	1.78	.537	.522	.932	.146	.090
1952-53.....	.032	.031	.030	.027	.126	.421	.531	.639	.989	.389	.360	.057
1953-54.....	.030	.035	.029	.016	.044	.158	.247	.397	2.30	.488	.623	.298
1954-55.....	.569	.259	.134	.084	.110	.283	.425	.342	.264	.232	.023	.014

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.14	0.05	0.03	0.02	0.09	0.84	3.46	1.79	1.52	1.78	0.68	0.62
1951-52.....	.41	.23	.22	.15	.53	.89	1.99	.62	.58	1.07	.17	.10
1952-53.....	.04	.03	.03	.03	.13	.49	.59	.74	1.10	.45	.42	.06
1953-54.....	.03	.04	.03	.02	.05	.18	.28	.46	2.56	.56	.72	.33
1954-55.....	.66	.29	.15	.10	.11	.33	.47	.39	.29	.27	.03	.02

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	1,385	3.04
1951....	Mar. 31, 1951.	23.80	32,400	56	5,012	0.811	11.02	5,306	11.66
1952....	Apr. 3, 1952.	20.20	17,800	202	3,104	.512	6.96	2,823	6.20
1953....	June 12, 1953.	17.90	11,400	60	1,873	.303	4.11	1,874	4.11
1954....	June 24, 1954.	30.16	60,200	72	2,396	.388	5.26	2,848	6.26
1955....	Oct. 15, 1954.	16.02	6,840	57	1,416	.229	3.11	.....	.....

Peak Discharge (base, 8,000 cfs)

1951: Mar. 1 (4 a.m.) about 12,000 cfs (19.0 ft.); Mar. 31 (7 p.m.) 32,400 cfs (23.80 ft.); Apr. 10 (2 p.m.) 31,900 cfs (23.68 ft.); Apr. 27 (10 p.m.) 14,700 cfs (19.25 ft.); May 4 (12 p.m.) 26,600 cfs (22.54 ft.); June 5 (2 a.m.) 14,100 cfs (19.02 ft.); June 21 (11 a.m.) 8,960 cfs (16.89 ft.); July 4 (5 a.m.) 18,500 cfs (20.40 ft.); July 14 (8 p.m.) 10,600 cfs (17.59 ft.); July 24 (8 p.m.) 8,960 cfs (16.90 ft.).

1952: Mar. 23 (1 p.m.) 10,400 cfs (17.47 ft.); Apr. 3 (9:30 p.m.) 17,800 cfs (20.20 ft.); Apr. 17 (1 a.m.) 12,400 cfs (18.30 ft); July 12 (1 p.m.) 13,900 cfs (18.87 ft.).

1953: June 12 (5 a.m.) 11,400 cfs (17.90 ft.); June 29 (5 p.m.) 8,960 cfs (16.89 ft.).

1954: June 13 (11 a.m.) 14,300 cfs (19.06 ft.); June 24 (9 a.m.) 60,200 cfs (30.16 ft.); Aug. 22 (3 p.m.) 8,480 cfs (16.72 ft.); Aug. 29 (6 a.m.) 16,800 cfs (19.92 ft.).

1955: No peak above base.

Raccoon River near Jefferson, Iowa

LOCATION.—Lat. 41°59'20", long. 94°22'30", in NW¼ sec. 20, T. 83 N., R. 30 W., on right bank 50 ft. downstream from bridge on State Highway 17, 2 miles south of Jefferson and 3½ miles upstream from Hardin Creek.

DRAINAGE AREA.—1,630 sq. mi. approximately.

RECORDS AVAILABLE.—March 1940 to September 1955.

GAGE.—Water-stage recorder. Prior to Apr. 22, 1946, wire-weight gage at site 4 miles upstream at different datum. Apr. 22 to June 25, 1946, wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—15 years, 745 cfs.

EXTREMES.—1940-55: Maximum discharge, 29,100 cfs June 23, 1947 (gage height, 22.3 ft.); minimum observed, 12 cfs Sept. 28, 1948, Jan. 30 to Feb. 5, 1950, Sept. 7, 10, 16, 17, 1955.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet Per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	148	63	33	24	20	1,210	10,800	6,850	4,450	1,660	472	3,830
2.....	143	61	32	24	19	885	9,480	11,500	7,000	1,420	910	2,770
3.....	143	*61	31	24	19	780	8,050	12,700	7,450	3,710	3,930	2,180
4.....	290	61	30	25	19	700	7,300	11,500	6,420	6,700	3,130	1,960
5.....	200	61	29	25	18	750	7,000	10,100	6,000	5,730	2,180	1,750
6.....	*226	60	28	26	18	880	6,850	8,520	4,840	3,630	1,610	1,580
7.....	240	60	28	26	18	700	6,420	6,700	3,730	2,770	1,270	1,300
8.....	260	60	*27	26	18	500	5,860	4,600	4,370	2,260	1,010	1,240
9.....	200	59	26	26	18	350	5,340	3,530	4,840	1,820	960	1,150
10.....	170	59	26	27	18	240	4,260	3,230	5,340	1,480	815	3,130
11.....	143	53	26	26	18	190	3,530	3,630	4,480	1,330	725	3,530
12.....	119	54	25	27	19	160	2,950	3,630	3,130	1,180	645	3,040
13.....	101	60	25	27	19	140	2,770	2,950	2,500	1,180	685	2,080
14.....	97	60	25	27	19	130	2,500	2,260	2,050	1,330	1,270	3,630
15.....	94	60	25	27	20	160	2,500	2,030	*1,720	1,330	4,020	4,150
16.....	90	60	25	28	21	180	2,260	2,100	2,420	*1,180	5,000	4,040
17.....	88	63	25	*28	*22	170	1,820	2,100	2,950	1,040	6,280	3,530
18.....	84	63	25	29	23	150	*1,510	1,820	3,130	960	7,000	2,420
19.....	79	64	25	29	25	160	1,330	1,720	3,930	910	5,470	1,610
20.....	76	63	25	29	28	160	1,150	1,540	5,340	910	4,150	*1,610
21.....	74	60	25	28	31	150	1,270	1,450	6,560	1,510	*5,340	1,360
22.....	73	63	25	28	38	150	2,100	1,330	6,560	1,390	5,730	1,240
23.....	71	40	25	27	45	150	2,950	1,180	4,840	1,150	4,480	1,120
24.....	70	45	25	26	60	160	2,500	1,060	3,430	1,300	3,040	1,060
25.....	68	43	25	25	85	220	2,950	1,010	2,860	1,040	2,420	985
26.....	68	41	25	24	400	700	3,730	*985	2,860	860	2,100	960
27.....	67	39	25	23	800	5,000	3,830	860	2,680	770	1,890	910
28.....	67	37	24	23	1,090	9,040	3,430	702	3,040	685	3,330	838
29.....	66	35	24	22	.....	14,900	3,040	725	2,860	645	6,280	792
30.....	64	34	24	21	.....	15,300	3,630	665	2,100	585	7,750	748
31.....	64	.....	24	21	.....	12,700	.....	708	.....	525	6,850	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 31, 1950; Jan. 1 to Feb. 27, Mar. 8-27, 1951. Discharge computed from gage readings or graph based on gage readings Oct. 1 to Nov. 23, 1950; Feb. 28 to Mar. 2, Sept. 21-30, 1951.

Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	730	730	483	320	800	940	6,450	985	960	1,260	380	196
2	708	685	483	300	1,000	1,080	*6,190	935	856	2,080	367	180
3	708	645	500	290	1,300	935	4,660	888	775	3,110	364	164
4	935	570	500	285	1,400	775	3,270	842	*708	2,870	347	150
5	1,830	518	500	270	1,400	588	2,640	708	665	1,950	433	134
6	1,830	552	500	260	1,300	518	2,220	752	605	1,440	420	129
7	1,530	605	500	250	1,200	625	1,890	708	588	1,710	360	123
8	1,280	605	483	240	1,100	665	1,710	685	570	2,710	347	*114
9	1,160	605	466	240	1,000	625	1,590	820	552	4,060	318	112
10	1,060	588	423	230	1,050	625	1,590	960	552	5,100	291	105
11	1,040	570	380	230	1,100	685	1,710	1,060	535	6,060	270	100
12	960	570	*340	230	1,400	625	2,080	1,040	518	5,320	254	97
13	935	570	310	230	1,700	1,420	2,290	960	483	2,790	234	91
14	910	570	370	230	2,100	2,430	2,430	888	518	2,360	224	92
15	*842	552	420	230	3,000	2,010	2,360	842	625	3,030	*220	90
16	708	*535	450	230	3,500	1,470	2,150	820	645	*2,710	211	90
17	*752	500	460	240	2,800	1,310	1,830	775	625	2,360	200	88
18	708	433	470	*250	2,200	1,380	1,650	730	552	1,830	190	86
19	685	450	470	310	1,800	*1,650	1,530	685	518	1,470	190	82
20	665	450	460	450	1,400	3,430	1,410	645	466	1,310	186	81
21	1,240	500	440	1,000	1,100	3,070	1,360	645	500	1,210	*182	77
22	1,260	500	420	1,000	850	3,270	1,340	730	605	1,040	176	78
23	1,240	433	410	900	900	1,830	1,530	1,010	685	888	168	78
24	1,160	387	390	850	900	1,160	1,830	1,210	625	775	160	77
25	1,060	344	375	800	850	1,210	1,710	1,360	552	685	150	77
26	985	334	360	770	820	1,650	1,530	1,340	518	625	144	76
27	935	407	350	750	820	1,710	1,360	1,210	1,210	552	136	73
28	888	466	340	720	860	2,010	1,260	1,080	2,220	518	154	72
29	842	483	340	710	900	3,270	1,140	1,060	2,080	466	211	70
30	820	483	330	700	.....	4,880	*1,060	1,080	1,470	430	207	68
31	775	.....	330	710	.....	5,930	.....	1,040	.....	393	190	.....
1952-53												
1	66	62	44	82	60	650	888	1,060	552	3,310	148	*72
2	64	63	46	80	60	730	*985	1,340	518	2,220	334	67
3	62	60	48	80	60	600	1,280	1,770	*466	1,490	260	71
4	60	62	*52	80	60	*490	1,360	1,710	450	1,180	268	62
5	57	*61	56	80	*62	440	1,340	*1,650	483	958	1,490	62
6	58	60	62	78	68	405	1,210	*1,560	430	822	1,430	60
7	60	62	66	78	73	385	1,010	1,410	410	710	935	55
8	*58	60	69	78	82	360	910	1,260	625	610	710	57
9	62	63	72	74	100	350	842	1,140	819	531	550	54
10	60	62	75	70	140	393	820	1,040	*2,900	*474	456	54
11	61	60	70	70	190	466	789	960	2,800	428	388	47
12	62	63	66	70	230	685	775	910	2,360	421	*340	45
13	63	61	62	70	260	1,210	730	842	1,730	382	307	47
14	62	64	60	68	245	1,530	685	775	1,330	394	283	44
15	63	62	65	66	220	1,710	665	708	1,100	385	266	45
16	62	70	70	72	205	1,770	752	685	958	346	235	43
17	60	91	76	70	190	1,710	1,280	685	822	325	208	44
18	62	87	81	70	180	1,360	1,240	665	531	295	187	43
19	61	85	86	68	170	1,180	1,040	625	650	260	176	41
20	60	87	90	68	250	1,080	910	588	570	246	161	40
21	60	84	93	66	400	960	820	605	512	238	150	38
22	61	81	94	66	380	842	775	685	460	227	142	36
23	60	77	95	65	330	775	730	752	414	216	138	35
24	61	75	95	64	390	685	708	708	375	197	122	34
25	60	76	94	63	460	625	752	842	424	179	113	34
26	63	65	92	62	540	570	865	910	1,090	163	106	31
27	61	35	90	62	510	535	1,010	888	2,150	150	97	28
28	63	36	87	60	580	500	1,010	775	2,570	138	95	30
29	62	38	84	60	.....	466	960	608	2,640	153	84	30
30	62	41	82	60	.....	483	960	645	3,220	148	78	25
31	61	.....	80	60	.....	552	.....	605	.....	142	76	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1951; Jan. 1 to Mar. 1, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 9, 1953. Discharge computed from gage readings or graph based on gage readings Oct. 1, 2, 1951; Mar. 26 to Apr. 1, Sept. 4 to Oct. 19, Oct. 21 to Nov. 25, 1952; Mar. 10-19, July 21-27, 31, Aug. 1, Aug. 23 to Sept. 19, Sept. 21-30, 1953.

Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	25	32	34	20	10	125	*158	372	1,120	2,030	187	3,250
2.....	17	35	*45	30	17	92	155	474	2,600	1,070	181	2,430
3.....	25	*34	57	30	18	*64	150	845	3,550	1,490	174	1,910
4.....	20	30	50	20	19	50	140	1,300	*3,080	1,330	*166	1,490
5.....	22	31	50	27	*22	76	138	*1,300	2,700	1,160	155	1,230
6.....	20	31	52	*27	24	91	213	1,030	2,010	980	142	1,000
7.....	*21	30	53	27	30	57	158	868	1,490	845	138	822
8.....	22	30	50	27	38	84	179	755	1,210	*755	135	*710
9.....	24	30	43	27	33	86	189	650	1,000	670	120	630
10.....	21	28	50	25	30	82	184	590	886	590	111	550
11.....	22	30	43	24	29	86	171	531	1,650	531	108	512
12.....	25	27	37	23	29	a88	158	493	4,140	497	a111	467
13.....	24	27	42	22	30	72	150	456	4,590	418	a111	428
14.....	25	30	38	21	33	58	132	421	4,420	375	a111	398
15.....	25	31	32	20	36	50	122	391	2,920	346	a108	362
16.....	22	24	24	20	40	76	125	369	2,070	331	a106	353
17.....	25	a28	27	19	44	102	122	343	1,700	319	a145	334
18.....	26	32	30	19	47	142	130	319	1,440	310	a176	331
19.....	27	60	34	19	54	122	135	298	1,100	304	189	319
20.....	26	52	38	19	82	328	138	280	1,860	301	246	301
21.....	26	54	37	19	86	280	163	268	5,780	289	801	271
22.....	25	60	30	18	76	266	*1,090	254	*13,700	271	1,200	248
23.....	34	57	31	17	310	200	1,430	251	19,100	254	980	229
24.....	35	55	32	16	280	192	935	243	14,100	240	822	216
25.....	43	52	32	16	189	184	732	240	11,200	216	732	202
26.....	34	51	31	16	171	174	610	235	9,300	197	1,980	192
27.....	35	48	30	16	158	171	570	240	7,360	179	6,150	184
28.....	34	35	30	16	140	189	512	353	5,370	179	8,480	a179
29.....	34	28	29	16	.....	210	456	1,300	3,420	166	9,360	184
30.....	34	31	29	16	.....	197	418	1,200	2,540	158	8,680	353
31.....	34	.....	29	16	.....	176	.....	845	.....	153	5,960	.....
1954-55												
1.....	505	830	*350	270	103	230	1,400	1,220	242	140	64	18
2.....	1,060	785	358	265	*98	510	1,100	1,100	231	129	54	17
3.....	2,120	740	344	260	96	1,200	930	1,000	228	115	46	18
4.....	1,910	*695	335	245	93	1,800	980	*930	290	103	*42	17
5.....	1,610	718	340	*245	93	1,900	*1,080	830	347	195	38	14
6.....	*1,250	672	325	235	92	1,400	1,080	785	449	*140	34	13
7.....	1,060	672	310	230	92	1,000	1,000	718	545	144	34	12
8.....	1,060	628	290	225	92	720	880	672	*501	200	33	15
9.....	1,250	605	285	220	92	860	785	650	428	260	30	16
10.....	1,430	585	280	220	92	*920	718	605	375	2,170	38	12
11.....	1,730	565	290	215	92	1,600	650	585	350	2,100	37	14
12.....	2,120	565	290	195	91	1,300	605	565	296	1,190	36	16
13.....	2,120	545	295	170	90	1,100	585	525	284	718	37	15
14.....	2,400	545	300	165	90	960	545	501	263	505	36	13
15.....	2,120	525	295	175	92	960	505	465	248	382	33	14
16.....	2,330	517	310	185	95	880	465	442	234	308	34	12
17.....	1,910	509	308	185	130	800	431	420	209	266	33	12
18.....	1,610	493	290	165	270	740	410	403	201	245	30	15
19.....	1,400	473	270	155	400	650	390	382	204	212	29	19
20.....	1,250	457	250	135	370	628	375	375	206	190	25	18
21.....	1,220	442	265	130	355	545	354	358	190	165	26	24
22.....	1,280	438	280	128	330	344	333	340	182	151	26	23
23.....	1,220	410	275	123	310	386	1,030	333	168	140	18	23
24.....	1,100	414	260	120	290	360	*1,080	326	158	123	25	20
25.....	1,030	406	275	115	280	310	*2,540	305	154	113	23	21
26.....	1,060	400	280	112	265	275	3,480	299	144	101	19	18
27.....	1,060	389	240	110	250	320	2,770	290	132	86	16	19
28.....	1,060	380	170	110	235	360	2,120	290	120	77	16	13
29.....	1,000	382	140	110	.....	470	1,730	278	99	71	20	18
30.....	955	358	160	110	.....	718	1,430	272	117	60	15	20
31.....	905	.....	190	108	.....	1,160	.....	260	.....	68	*16	.....

* Discharge measurement made on this day. a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage discharge relation affected by ice Nov. 29, 30, Dec. 5-31, 1953; Jan. 1 to Feb. 17, Mar. 2-5, 13-16, Dec. 4-31, 1954; Jan. 1 to Mar. 17, Mar. 24-29, 1955. Discharge computed from gage readings or graph based on gage readings Oct. 1 to Nov. 16, Nov. 18-28, Dec. 1-4, 1953; Feb. 18 to Mar. 1, Mar. 6-11, Mar. 17 to Apr. 21, Apr. 23-25, Apr. 30 to May 5, Aug. 5-11, Sept. 17-27, 29, 30, Oct. 5-11, Oct. 17 to Dec. 3, 1954; June 8 to July 6, Aug. 4 to Sept. 30, 1955.

Raccoon River near Jefferson, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	121	54.7	26.2	25.7	105	2,183	4,104	3,670	4,129	1,710	3,269	2,041
1951-52.....	1,009	521	421	462	1,398	1,760	2,192	922	760	2,036	248	102
1952-53.....	61.2	65.1	74.3	69.7	232	700	938	950	1,145	573	333	45.8
1953-54.....	27.0	37.4	37.7	21.5	74.3	135	332	565	4,584	565	1,550	070
1954-55.....	1,424	536	270	175	178	820	1,080	533	253	354	31.1	16.6

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.074	0.034	0.016	0.016	0.064	1.34	2.52	2.25	2.53	1.05	2.01	1.25
1951-52.....	.610	.320	.258	.283	.858	1.08	1.84	.560	.466	1.25	.152	.063
1952-53.....	.038	.040	.046	.013	.142	.485	.575	.587	.702	.352	.204	.028
1953-54.....	.017	.023	.023	.013	.046	.083	.204	.347	2.81	.347	.051	.411
1954-55.....	.874	.330	.171	.107	.109	.503	.663	.327	.155	.217	.019	.010

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.09	0.04	0.02	0.02	0.07	1.54	2.81	2.60	2.83	1.21	2.31	1.40
1951-52.....	.71	.36	.30	.33	.93	1.24	1.50	.65	.52	1.44	.18	.07
1952-53.....	.04	.04	.05	.05	.15	.56	.64	.68	.78	.40	.24	.03
1953-54.....	.02	.03	.03	.02	.05	.10	.23	.40	3.14	.40	1.10	.46
1954-55.....	1.01	.37	.20	.12	.11	.58	.74	.38	.17	.25	.02	.01

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	36.6	3.04
1951....	Mar. 29, 1951.	17.39	16,500	18	1,792	1.10	14.94	1,930	16.16
1952....	Apr. 1, 1952.	12.80	6,580	68	985	.604	8.23	838	6.99
1953....	July 1, 1953.	10.10	3,490	25	441	.271	3.66	432	3.61
1954....	June 22, 1954.	19.52	21,300	16	714	.438	5.98	895	7.48
1955....	Apr. 26, 1955.	9.78	3,580	12	476	.292	3.96	.....	.....

Peak Discharge (base, 2,700 cfs)

1951: Mar. 29 (7 p.m.) 16,500 cfs (17.39 ft.); May 3 (4 a.m.) 13,100 cfs (15.62 ft.); June 3 (6 a.m.) 7,750 cfs (12.88 ft.); June 21 (8 p.m.) 6,850 cfs (12.25 ft.); July 4 (8:30 p.m.) 7,300 cfs (12.58 ft.); Aug. 3 (12.30 p.m.) 4,260 cfs (10.23 ft.); Aug. 18 (1 p.m.) 7,150 cfs (12.41 ft.); Aug. 30 (12.30 p.m.) 7,900 cfs (12.97 ft.); Sept. 15 (9:30 p.m.) 4,260 cfs (10.23 ft.).

1952: Feb. 16 (6 a.m.) about 3,600 cfs (12.00 ft.); Mar. 21 (11 a.m.) 3,870 cfs (10.45 ft.);Apr. 1 (7 p.m.) 6,580 cfs (12.80 ft.); July 3 (9 p.m.) 3,190 cfs (9.64 ft.); July 11 (6:30 p.m.) 6,190 cfs (12.51 ft.); July 15 (11 a.m.) 3,190 cfs (9.63 ft.).

1953: June 10 (5 p.m.) 3,220 cfs (9.80 ft.); July 1 (4 a.m.) 3,490 cfs (10.10 ft.).

1954: June 3 (7 p.m.) 3,760 cfs (10.28 ft.); June 13 (5 a.m.) 4,670 cfs (11.09 ft.); June 22 (11:30 p.m.) 21,300 cfs (19.52 ft.); Aug. 29 (11 a.m.) 9,360 cfs (14.19 ft.).

1955: Apr. 26 (12 M.) 3,580 cfs (9.78 ft.); July 10 (5:30 p.m.) 3,380 cfs 9.63 ft.).

East Fork Hardin Creek near Churdan, Iowa

LOCATION.—Lat. 42°06'25", long. 94°22'00", in SE¼SW¼ sec. 5 T. 84 N., R. 30 W., on left bank 35 ft. upstream from highway bridge 4.4 miles upstream from mouth, and 6.5 miles southeast of Churdan.

DRAINAGE AREA.—22.7 sq. mi.

RECORDS AVAILABLE.—July 1952 to September 1955.

GAGE.—Water-stage recorder and concrete control.

EXTREMES.—1952-55: Maximum discharge, 423 cfs Aug. 26, 1954 (gage height, 7.73 ft.); no flow at times each year.

REMARKS.—Records good except those for periods of ice effect or backwater from debris, which are fair. Records of water temperatures and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet per Second, for Period July to Sept., 1952

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1952				1952			
1	*44	2.9	0.57	16	18	1.2	0.16
2	*37	2.5	.50	17	14	1.1	.24
3	23	2.5	.43	18	12	.98	.20
4	18	2.3	.30	19	11	.98	.20
5	15	*2.2	*.20	20	10	.98	.16
6	13	1.9	.36	21	8.8	.84	.16
7	36	1.8	.36	22	7.9	.77	.24
8	46	2.9	.36	23	*6.5	.70	.24
9	28	2.2	.29	24	6.0	.77	.19
10	19	1.8	.26	25	5.7	.70	.16
11	15	1.7	.24	26	4.7	.70	.19
12	13	1.6	.24	27	4.5	1.2	.14
13	11	1.4	.22	28	3.8	.84	.12
14	43	1.6	.24	29	3.6	1.3	.06
15	31	1.3	.19	30	3.3	.77	.04
				31	2.7	.57	

* Discharge measurement made on this day.

East Fork Hardin Creek near Churdan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	0	0.14	0.11	0.33	0.19	5.2	25	23	7.4	7.1	0.63	0
2	0	.14	.14	.29	.23	4.0	20	22	7.4	6.0	.56	0
3	0	.14	.14	.23	.19	3.5	33	22	7.1	5.0	1.2	0
4	0	.14	.14	.20	.16	3.1	25	22	9.3	4.7	.70	0
5	.01	.14	.14	.20	.22	2.8	21	20	13	4.2	.63	0
6	.14	.14	.14	.21	.22	2.6	18	19	8.0	3.8	.70	0
7	.16	.14	.14	.23	.33	2.3	16	17	11	3.4	.63	0
8	.19	*.14	.14	.26	.38	2.3	15	*15	47	2.8	.56	0
9	.20	.11	.16	.26	.50	4.7	14	15	23	2.6	.50	0
10	.19	.11	.16	.22	10	8.0	16	14	90	2.4	.44	0
11	.16	.11	.19	.21	15	8.0	16	11	43	2.3	.44	0
12	.14	.11	.19	.20	2.6	7.1	15	8.7	26	2.6	.38	0
13	.14	.11	.19	.19	13	6.0	12	8.0	*22	2.3	.33	0
14	.14	.11	.20	.19	25	13	11	8.3	19	2.2	.29	0
15	.14	.11	.22	.23	20	18	11	7.7	16	2.0	.29	0
16	.14	.11	.22	.27	14	14	11	7.4	14	1.8	.29	0
17	.14	.44	.22	.26	4.2	10	11	7.4	11	1.7	.33	0
18	.14	.33	.22	.24	1.7	8.0	9.2	7.1	9.2	1.7	.33	0
19	.14	.19	.26	.22	3.4	6.8	8.7	7.1	8.0	1.6	.33	0
20	.14	.14	.26	.19	50	6.5	8.0	7.4	7.4	1.6	.29	0
21	.14	.14	.29	.16	35	6.2	8.7	11	6.5	*1.4	.38	0
22	.14	.16	.29	.16	24	5.2	7.7	23	6.0	1.2	.26	0
23	.14	.14	.29	.16	29	5.2	6.8	18	5.7	1.1	.14	0
24	.16	.16	.29	.14	35	5.0	12	29	5.4	.97	.08	0
25	.14	.26	.29	.16	29	4.4	21	23	13	.88	.05	0
26	.14	.50	.27	.16	24	4.2	19	19	12	.88	*.02	0
27	.14	.30	.24	.14	16	4.0	18	17	16	.88	0	0
28	.14	.14	.22	.16	*12	*3.8	17	15	12	.79	0	0
29	.14	.08	.24	.16	.....	3.6	16	12	8.7	1.2	0	0
30	.14	.05	.27	.16	.....	7.1	16	10	7.7	.97	0	0
31	.14	.....	.33	.16	.....	13	.....	8.0	.....	.71	0	.....
1953-54												
1	0	0	0	0	0	0.1	0.1	4.0	121	*1.4	0.2	64
2	0	0	0	0	0	0	.1	9.7	*78	3.6	.2	44
3	0	0	0	0	0	0	.1	9.6	57	3.4	.2	26
4	0	0	0	0	0	0	.1	*5.7	32	3.0	.2	20
5	0	0	0	0	0	0	.1	4.2	24	2.6	.2	14
6	0	0	0	0	0	0	1.3	3.8	18	2.3	.1	9.6
7	0	0	0	0	0	0	.3	2.8	14	2.2	.1	7.7
8	0	0	*0	0	0	.1	.2	2.4	9.6	1.8	.2	6.5
9	0	0	0	0	0	.2	.1	2.0	8.3	1.6	.2	*6.5
10	0	*0	0	0	0	.1	.1	1.8	7.4	1.4	.1	6.0
11	0	0	0	*0	0	.1	.1	1.7	6.5	1.3	.1	5.2
12	0	0	0	0	0	.1	0	1.6	6.0	1.1	.1	4.7
13	0	0	0	0	0	0	0	1.4	5.7	.9	.1	4.4
14	*0	0	0	0	0	0	0	1.3	5.2	.8	.1	4.0
15	0	0	0	0	*0	0	0	1.2	5.2	.7	.1	4.0
16	0	0	0	0	0	.1	.1	1.0	5.7	.6	0	4.2
17	0	0	0	0	0	*.3	0	.9	5.7	.6	1.7	4.2
18	0	0	0	0	0	.3	0	.9	5.0	.6	1.2	4.0
19	0	0	0	0	0	.6	.1	.8	4.7	.6	.4	3.4
20	0	0	0	0	0	.3	0	.7	8.4	.6	.2	3.4
21	0	0	0	0	.1	.2	5.6	.7	*111	.6	23	2.8
22	0	0	0	0	0	.2	1.4	.6	44	.5	67	2.8
23	0	0	0	0	0	.2	.8	.7	24	.4	83	2.8
24	0	0	0	0	0	.2	.6	.7	18	.4	31	2.8
25	0	0	0	0	.1	.3	.9	.6	14	.3	18	2.6
26	0	0	0	0	.1	.2	.6	.6	9.6	.2	306	2.4
27	0	0	0	0	.1	.1	.5	1.0	8.0	.2	269	2.4
28	0	0	0	0	.1	.1	.3	4.9	7.1	.2	224	2.6
29	0	0	0	0	.....	.1	.3	2.8	6.0	.2	175	3.0
30	0	0	0	0	.....	.1	2.9	1.0	5.2	.2	123	6.0
31	0	.....	0	0	.....	.1	.....	31	.....	.2	82	.....

* Discharge measurement or observation of no flow, made on this day.

Note—Stage-discharge relation affected by ice Nov. 25-28, Dec. 14, 25-30, 1952; Jan. 3-7, 11, 12, 15-18, 26, 28, Feb. 1-3, 10, 11, 13-15, Feb. 19 to Mar. 28, 1953. Backwater from debris Oct. 7-9, 18, 23, 28-31, Nov. 4-7, 1952.

East Fork Hardin Creek near Churdan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1.....	6.8	21	6.5	4.0	2.0	12	8.7	21	3.8	2.2	1.7	0
2.....	121	20	6.8	3.4	1.8	20	8.3	19	4.0	1.7	1.0	0
3.....	108	*20	7.4	3.6	*1.7	20	8.0	17	4.4	1.6	.9	0
4.....	52	18	6.8	3.4	1.7	*16	17	15	*15	1.4	*.7	0
5.....	40	18	5.9	3.6	1.9	12	14	14	10	2.8	.6	0
6.....	32	17	5.7	3.0	1.8	7.4	10	*14	8.0	2.0	.6	0
7.....	*29	16	6.2	3.2	1.6	6.0	*8.3	10	6.8	5.2	.4	0
8.....	40	16	6.8	*3.6	1.6	7.1	7.4	9.6	6.0	3.0	.4	0
9.....	35	16	*5.4	3.0	1.6	14	6.5	11	5.4	*4.4	.4	0
10.....	31	16	5.2	2.8	1.5	13	6.0	9.2	5.2	211	1.1	0
11.....	32	15	5.4	2.7	1.5	7.4	5.7	8.7	6.0	139	.5	0
12.....	29	14	4.9	2.6	1.5	5.7	5.4	8.3	5.2	74	.3	0
13.....	72	15	5.4	2.5	1.6	5.0	5.2	7.7	4.7	38	.3	0
14.....	*182	13	5.9	2.4	1.7	7.1	5.0	7.4	4.4	24	.3	0
15.....	*109	13	5.2	2.2	2.0	8.7	4.7	7.1	4.0	17	.2	0
16.....	64	13	5.2	2.2	2.5	6.8	4.7	6.8	3.8	12	.2	0
17.....	42	11	5.2	2.2	3.0	6.2	4.2	6.5	3.6	8.0	.2	0
18.....	32	10	4.7	2.1	15	5.7	5.0	6.2	3.6	6.8	.1	0
19.....	28	10	4.7	2.0	12	5.7	4.7	6.0	3.4	5.7	.1	0
20.....	27	9.6	4.9	2.1	9.0	5.0	4.2	6.0	3.0	5.0	.1	0
21.....	44	9.2	4.4	2.0	6.0	4.7	4.0	5.7	2.8	4.2	0	0
22.....	48	8.7	4.9	1.8	5.0	4.5	4.0	5.4	2.8	4.0	.1	0
23.....	36	8.7	4.7	1.8	4.6	5.4	57	5.2	2.4	3.2	0	0
24.....	31	7.7	4.4	1.8	4.1	4.8	141	5.0	2.4	2.6	0	0
25.....	28	8.0	4.9	1.7	3.8	4.1	96	4.7	2.2	2.3	0	0
26.....	31	8.0	4.4	1.6	4.6	4.0	65	5.0	2.0	2.0	0	0
27.....	31	8.3	3.9	1.5	5.0	4.7	42	5.0	1.9	1.7	0	0
28.....	29	7.4	3.4	1.5	3.6	6.2	31	4.4	1.9	1.6	0	0
29.....	26	6.2	2.9	1.6	.....	9.2	26	4.2	1.9	1.3	0	0
30.....	24	6.5	3.2	1.7	.....	13	23	4.0	1.8	1.1	0	0
31.....	23	.....	3.6	1.8	.....	12	.....	4.0	.....	1.7	0	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 28-31, 1954; Jan. 11-14, 16-31, Feb. 5-8, 10-26, Mar. 6, 7, 21, 22, 24-26, 1955.

East Fork Hardin Creek near Churdan, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.6	1.45	0.253
1952-53.....	0.125	0.168	0.213	0.205	13.0	6.37	15.3	14.6	16.4	2.35	.354	0
1953-54.....	0	0	0	0	.02	.13	.56	3.32	22.5	1.21	45.4	9.20
1954-55.....	47.3	12.7	5.13	2.43	3.70	8.50	21.1	8.49	4.41	19.0	.33	0

Monthly Discharge in Cubic Feet Per Second Per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.731	0.064	0.011
1952-53.....	0.0055	0.0074	0.0094	0.0090	0.573	0.281	0.674	0.643	0.722	.104	.016	0
1953-54.....	0	0	0	0	.00088	.0057	.025	.146	.991	.053	2.00	.405
1954-55.....	2.08	.559	.226	.107	.163	.374	.930	.374	.194	.837	.015	0

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.81	0.07	0.01
1952-53.....	0.006	0.008	0.01	0.01	0.60	0.32	0.75	0.74	0.81	.12	.02	0
1953-54.....	0	0	0	0	.0008	.007	.03	.17	1.10	.06	2.30	.45
1954-55.....	2.40	.62	.26	.12	.17	.43	1.04	.43	.22	.07	.02	0

Yearly Discharge in Cubic Feet Per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1952 (1).	July 14, 1952.	4.33	79	.....	.....	.....	.....	.....	.....
1953.....	June 10, 1953.	5.17	105	0	5.68	0.250	3.39	5.64	3.37
1954.....	July 10, 1954.	7.73	423	0	6.90	.304	4.12	12.4	7.40
1955.....	July 10, 1955.	6.60	295	0	11.2	.493	6.68	.....	.....

(1) Period July 1 to Sept. 30, 1952.

Peak Discharge (base, 100 cfs)

1952: No peak above base.

1953: June 10 (12:30 a.m.) 105 cfs (5.17 ft.).

1954: May 31 (12 p.m.) 156 cfs (5.94 ft.); June 21 (5 a.m.) 139 cfs (5.59 ft.); Aug. 22 (12:30 a.m.) 128 cfs (4.66 ft); Aug. 26 (4:30 a.m.) 423 cfs (7.73 ft.); Oct. 2 (12 M.) 188 cfs (5.47 ft.); Oct. 13 (10:30 p.m.) 250 cfs (6.15 ft.).

1955: Apr. 23 (9 p.m.) 180 cfs (5.36 ft.); July 10 (5:30 a.m.) 295 cfs (6.60 ft.).

Springbrook Lake near Guthrie Center, Iowa

LOCATION.—Lat. 41°46'30", long. 94°28'05" in NW¼ sec. 4, T. 80 N., R. 31 W., on piling for boat dock in Springbrook State Park, 7 miles northeast of Guthrie Center.

RECORDS AVAILABLE.—June 1936 to September 1955.

GAGE.—Staff gage read once daily. Datum of gage is 3.94 ft. below crest of spillway of dam forming lake.

EXTREMES.—1936-55: Maximum gage height observed, 7.00 ft. July 25, 1942, June 1, 1947; minimum observed, 2.38 ft. Aug. 31, 1936.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	4.16	4.14	.....	4.14	4.16	4.16	4.09	4.19	4.11	4.07	4.06	4.06
2	4.22	4.14	.....	4.14	4.16	4.14	4.09	4.51	4.41	4.07	4.24	4.06
3	4.20	4.16	4.12	4.14	4.16	4.14	4.09	4.21	4.15	5.27	4.18	4.06
4	4.16	4.16	4.12	4.14	4.16	4.14	4.09	4.11	4.11	4.19	4.08	4.06
5	4.13	4.14	4.14	4.14	4.16	4.14	4.09	4.11	4.09	4.11	4.08	4.06
6	4.12	4.14	4.14	4.14	4.16	4.14	4.11	4.09	4.09	4.11	4.08	4.06
7	4.12	4.12	4.14	4.14	4.16	4.14	4.15	4.09	4.41	4.09	4.08	4.06
8	4.12	4.12	4.14	4.14	4.16	4.14	4.11	4.09	4.25	4.09	4.08	4.08
9	4.12	4.12	4.14	4.14	4.18	4.14	4.11	4.09	4.11	4.09	4.08	4.30
10	4.12	4.12	4.14	4.14	4.18	4.14	4.11	4.31	4.11	4.11	4.08	4.12
11	4.12	4.12	4.14	4.14	4.14	.....	4.11	4.15	4.11	4.11	4.08	4.08
12	4.12	4.12	4.14	4.14	4.14	.....	4.11	4.11	4.09	4.11	4.08	4.44
13	4.12	4.14	4.14	4.14	4.14	.....	4.11	4.09	4.09	4.11	4.16	4.12
14	4.12	4.14	4.14	4.14	4.14	.....	4.11	4.09	4.09	4.09	4.32	4.08
15	4.12	4.14	4.14	4.14	4.16	.....	4.09	4.09	4.09	4.07	4.40	4.08
16	4.12	4.14	4.14	4.14	4.16	.....	4.09	4.09	4.09	4.08	4.28	4.06
17	4.12	4.14	4.14	4.14	4.16	.....	4.09	4.09	4.09	4.08	4.28	4.06
18	4.12	4.14	4.14	4.14	4.16	.....	4.09	4.09	4.09	4.10	4.20	4.06
19	4.12	.....	4.14	4.16	4.16	.....	4.09	4.09	4.09	4.10	4.18	4.06
20	4.12	.....	4.14	4.14	4.16	.....	4.11	4.09	4.09	4.08	4.46	4.06
21	4.12	.....	4.14	4.16	4.16	.....	4.11	4.09	4.09	4.08	4.24	4.06
22	4.12	.....	4.14	4.16	4.16	.....	4.15	4.09	4.09	4.08	4.18	4.08
23	4.12	.....	4.14	4.16	4.16	.....	4.13	4.09	4.09	4.08	4.18	4.06
24	4.14	.....	4.14	4.16	4.16	.....	4.15	4.09	4.07	4.08	4.16	4.06
25	4.14	.....	4.14	4.16	4.16	4.14	4.13	4.09	4.07	4.08	4.10	4.08
26	4.14	.....	4.14	4.16	4.16	4.14	4.11	4.09	4.11	4.08	4.08	4.08
27	4.14	.....	4.14	4.16	4.18	4.18	4.11	4.09	4.07	4.08	4.08	4.06
28	4.14	.....	4.14	4.16	4.18	5.23	4.11	4.07	4.07	4.08	4.08	4.06
29	4.14	.....	4.14	4.16	.....	4.29	4.17	4.07	4.07	4.06	4.08	4.06
30	4.14	.....	4.14	4.16	.....	4.23	4.21	4.07	4.07	4.06	4.08	4.08
31	4.14	.....	4.14	4.16	.....	4.21	.....	4.09	.....	4.06	4.08	.....

Springbrook Lake near Guthrie Center, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4.08	4.08	4.08	4.08	4.10	4.08	4.24	4.12	4.12	.....	.....	.....
2	4.08	4.08	4.10	4.08	4.10	4.08	4.20	4.12	4.12	.....	.....	.....
3	4.08	4.08	4.10	4.08	4.10	4.08	4.18	4.12	.....	.....	.....	.....
4	4.08	4.08	4.08	.....	4.12	4.08	4.18	4.10	4.18	.....	.....	.....
5	4.08	4.08	4.08	.....	4.12	4.08	4.18	4.10	.....	.....	.....	.....
6	4.08	4.08	4.08	4.08	4.12	4.08	4.26	4.10	4.18	.....	.....	.....
7	4.08	4.08	4.08	4.08	4.12	4.08	4.18	4.10	.....	.....	.....	.....
8	4.08	4.08	4.08	4.08	4.12	4.08	4.18	4.10	.....	.....	.....	.....
9	4.08	4.08	4.08	4.08	4.12	4.20	.....	4.12	.....	.....	.....	.....
10	4.08	4.08	4.08	4.08	4.12	4.56	.....	4.14	.....	.....	.....	.....
11	4.08	4.08	4.08	4.08	4.14	4.24	4.20	4.12	.....	.....	.....	.....
12	4.08	4.08	4.08	4.08	4.14	4.24	4.20	4.12	.....	.....	.....	.....
13	4.08	4.08	4.08	4.08	4.16	4.57	4.18	4.12	.....	.....	.....	.....
14	4.08	4.08	.....	4.10	4.12	4.18	4.18	4.12	.....	.....	.....	.....
15	4.08	4.08	.....	4.10	4.10	4.16	4.20	4.12	.....	.....	4.22	.....
16	4.08	4.08	.....	4.10	4.10	4.16	4.20	4.20	.....	4.18	.....	.....
17	4.08	4.08	.....	4.10	4.10	4.16	4.20	4.16	.....	.....	.....	.....
18	4.08	4.08	.....	4.08	4.10	4.20	4.20	4.14	.....	.....	.....	.....
19	4.08	4.08	.....	4.08	4.12	4.38	4.18	4.12	.....	.....	.....	.....
20	4.08	4.08	.....	4.08	4.10	4.26	4.18	4.12	.....	.....	.....	.....
21	4.08	4.08	.....	4.08	4.10	4.18	4.18	4.12	.....	.....	.....	.....
22	4.10	4.08	.....	4.08	4.08	4.18	4.20	4.16	.....	.....	.....	.....
23	4.10	4.08	.....	4.08	4.08	.....	4.20	4.18	.....	.....	.....	.....
24	4.10	4.08	.....	4.08	4.08	.....	4.18	4.16	.....	.....	.....	.....
25	4.10	4.08	.....	4.10	4.08	.....	4.18	4.14	.....	.....	.....	.....
26	4.10	4.08	.....	4.10	4.08	4.18	4.18	4.14	.....	.....	.....	.....
27	4.10	4.08	.....	4.10	4.10	4.20	4.18	4.16	.....	.....	.....	.....
28	4.08	4.08	4.08	4.08	4.08	4.26	4.18	4.14	.....	.....	.....	.....
29	4.08	4.08	4.08	4.08	4.08	4.22	4.18	4.12	.....	.....	.....	.....
30	4.08	4.08	4.08	4.10	.....	4.20	4.20	4.12	.....	.....	.....	.....
31	4.08	.....	4.08	4.10	.....	4.28	.....	4.12	.....	.....	.....	.....
1952-53												
1	.....	.....	.....	.....	.....	.....	4.20	4.18	4.14	4.14	4.12	4.12
2	.....	4.08	.....	4.10	4.06	4.14	4.20	4.18	4.12	4.48	.....	4.12
3	.....	4.08	4.10	4.10	4.06	4.16	4.20	.....	4.12	4.20	4.14	4.12
4	.....	4.08	4.10	.....	4.06	4.14	4.20	4.16	4.16	4.14	4.14	4.12
5	.....	4.08	4.10	4.08	4.06	4.14	.....	4.16	4.20	.....	4.14	4.12
6	.....	4.08	4.10	4.08	4.08	4.14	4.16	4.14	4.14	4.14	4.14	.....
7	.....	4.08	.....	4.08	4.08	4.14	4.16	4.14	.....	4.14	4.12	4.12
8	.....	4.08	4.10	4.08	.....	.....	4.14	4.14	4.28	4.14	4.12	4.12
9	4.10	4.08	4.10	4.08	4.08	4.16	4.16	4.14	4.16	4.14	.....	.....
10	4.10	4.08	4.08	4.08	4.18	4.16	4.16	.....	4.60	4.14	4.12	.....
11	4.10	4.08	4.08	.....	4.12	4.16	4.16	4.14	4.46	4.14	4.12	.....
12	4.10	4.08	4.08	4.08	4.10	4.16	.....	4.14	4.58	.....	4.12	.....
13	4.10	4.08	4.08	4.08	4.10	4.16	4.14	4.12	4.46	4.14	4.12	.....
14	4.10	4.08	.....	4.08	4.10	4.18	4.14	4.12	.....	4.20	4.12	.....
15	4.10	4.08	4.08	4.08	.....	.....	4.14	4.12	4.46	4.16	4.12	.....
16	4.10	4.08	4.08	4.08	4.10	4.14	4.14	4.12	4.28	4.14	.....	.....
17	4.10	4.18	4.08	4.08	4.10	4.14	4.14	.....	4.20	4.14	4.12	.....
18	4.10	4.10	4.08	.....	4.10	4.14	4.14	4.14	4.18	4.14	4.12	.....
19	.....	4.10	4.08	4.08	4.12	4.14	.....	4.14	4.16	.....	4.12	.....
20	.....	4.08	4.10	4.06	4.18	4.14	4.14	4.14	4.16	4.12	4.12	.....
21	.....	4.08	.....	4.06	4.12	4.14	4.14	4.14	.....	4.14	4.12	.....
22	.....	4.08	4.10	4.06	.....	.....	4.14	4.14	4.14	4.14	4.12	.....
23	.....	4.08	4.10	4.06	4.16	4.14	4.14	4.14	4.14	4.12	.....	.....
24	.....	4.08	4.10	4.06	4.16	4.14	4.20	.....	4.14	4.12	4.12	.....
25	.....	.....	.....	.....	4.16	4.14	4.18	4.18	4.14	4.12	4.12	.....
26	.....	.....	4.10	4.06	4.16	4.14	.....	4.16	4.16	.....	4.12	.....
27	.....	.....	4.10	4.06	4.16	4.14	4.16	4.14	4.16	4.12	4.12	.....
28	.....	.....	.....	4.06	4.16	4.14	4.14	4.14	.....	4.12	4.12	.....
29	.....	.....	4.10	4.06	.....	.....	4.16	4.14	4.14	4.30	4.12	.....
30	.....	.....	4.10	4.06	.....	4.22	4.18	.....	4.14	4.14	.....	.....
31	.....	.....	4.10	4.06	.....	4.22	.....	.....	.....	4.12	4.12	.....

Springbrook Lake near Guthrie Center, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	.....	4.14	4.14	4.14	4.14	4.14	4.14	4.16	4.16	4.14	4.10	4.12
2	.....	4.14	4.16	4.14	4.14	4.14	4.14	4.20	4.18	4.14	4.10	4.12
3	.....	4.14	4.18	4.14	4.14	4.14	4.12	4.18	4.16	4.14	4.10	4.12
4	.....	4.14	4.16	4.14	4.14	4.14	4.12	4.14	4.16	4.12	4.09	4.12
5	.....	4.14	4.14	4.14	4.14	4.14	4.12	4.11	4.14	4.12	4.10	4.12
6	.....	4.14	4.14	4.14	4.14	4.14	4.12	4.12	4.12	4.12	4.10	4.12
7	4.12	4.14	4.14	4.14	4.14	4.14	4.12	4.12	4.12	4.12	4.10	4.12
8	.....	4.14	4.14	4.14	4.14	4.14	4.12	4.12	4.12	4.12	4.10	4.12
9	.....	4.14	4.14	4.14	4.14	4.14	4.12	4.10	4.12	4.12	4.12	4.12
10	.....	4.14	4.14	4.14	4.14	4.14	4.12	4.10	4.12	4.12	4.12	4.12
11	4.12	4.14	4.14	4.14	4.14	4.14	4.12	4.10	4.12	4.12	4.12	4.12
12	4.12	4.14	4.14	4.14	4.14	4.15	4.12	4.10	4.12	4.10	4.12	4.12
13	4.12	4.14	4.14	4.14	4.14	4.15	4.12	4.10	4.14	4.10	4.12	4.12
14	4.12	4.14	4.14	4.14	4.14	4.14	4.12	4.10	4.14	4.10	4.14	4.12
15	4.12	4.14	4.14	4.14	4.14	4.14	4.12	4.10	4.14	4.10	4.14	4.12
16	4.14	4.14	4.14	4.14	4.14	4.13	4.12	4.10	4.14	4.10	4.14	4.12
17	4.18	4.14	4.14	4.14	4.14	4.13	4.12	4.10	4.14	4.10	4.16	4.12
18	4.18	4.14	4.14	4.14	4.14	4.12	4.12	4.10	4.14	4.10	4.16	4.12
19	4.16	4.20	4.14	4.14	4.18	4.14	4.12	4.10	4.14	4.10	4.14	4.12
20	4.16	4.24	4.14	4.14	4.20	4.13	4.12	4.10	4.14	4.10	4.12	4.12
21	4.14	4.18	4.14	4.14	4.16	4.12	4.12	4.10	4.90	4.10	4.12	4.12
22	4.14	4.16	4.14	4.14	4.16	4.12	4.12	4.10	4.30	4.10	4.36	4.12
23	4.14	4.14	4.14	4.14	4.14	4.14	4.12	4.10	4.14	4.10	5.22	4.12
24	4.14	4.14	4.14	4.14	4.14	4.14	4.12	4.12	4.14	4.10	4.30	4.12
25	4.14	4.14	4.14	4.14	4.14	4.14	4.12	4.14	4.14	4.14	4.14	4.12
26	4.14	4.14	4.14	4.14	4.14	4.16	4.12	4.16	4.14	4.10	4.32	4.12
27	4.14	4.14	4.14	4.14	4.14	4.16	4.12	4.16	4.14	4.10	4.22	4.12
28	4.14	4.14	4.14	4.14	4.14	4.16	4.12	4.14	4.14	4.10	4.18	4.14
29	4.14	4.14	4.14	4.14	.....	4.16	4.12	4.14	4.14	4.10	4.16	4.12
30	4.14	4.14	4.14	4.14	.....	4.18	4.12	4.14	4.14	4.10	4.14	4.12
31	4.14	.....	4.14	4.14	.....	4.16	.....	4.14	.....	4.10	4.12	.....
1954-55												
1	4.16	4.16	4.16	4.14	4.14	4.18	4.08	4.08	4.08	4.08	4.08	4.06
2	4.16	4.16	4.16	4.14	4.14	4.20	4.08	4.08	4.08	4.08	4.08	4.06
3	4.16	4.16	4.16	4.14	4.14	4.24	4.08	4.08	4.08	4.08	4.08	4.06
4	4.16	4.16	4.16	4.14	4.14	4.20	4.08	4.30	4.14	4.08	4.08	4.06
5	4.14	4.16	4.16	4.14	4.14	4.14	4.08	4.14	4.10	4.12	4.08	4.06
6	4.14	4.16	4.16	4.14	4.14	4.14	4.08	4.10	4.10	4.12	4.08	4.06
7	4.14	4.16	4.16	4.14	4.14	4.14	4.08	4.08	4.10	4.14	4.08	4.06
8	4.14	4.16	4.16	4.14	4.14	4.14	4.08	4.08	4.08	4.12	4.08	4.06
9	4.14	4.16	4.16	4.14	4.14	4.12	4.08	4.24	4.08	4.12	4.08	4.06
10	4.14	4.16	4.16	4.14	4.14	4.10	4.08	4.16	4.08	4.70	4.08	4.06
11	4.14	4.16	4.16	4.14	4.14	4.10	4.08	4.10	4.08	4.20	4.08	4.06
12	4.14	4.16	4.16	4.14	4.14	4.10	4.08	4.10	4.08	4.10	4.08	4.06
13	4.14	4.16	4.16	4.14	4.14	4.10	4.08	4.08	4.08	4.10	4.08	4.06
14	4.28	4.16	4.16	4.14	4.14	4.10	4.08	4.08	4.08	4.08	4.08	4.06
15	4.20	4.16	4.16	4.14	4.14	4.10	4.08	4.08	4.08	4.08	4.08	4.06
16	4.16	4.16	4.16	4.14	4.14	4.10	4.08	4.08	4.08	4.08	4.08	4.06
17	4.14	4.16	4.16	4.14	4.14	4.10	4.08	4.08	4.08	4.08	4.08	4.06
18	4.14	4.16	4.16	4.14	4.50	4.08	4.08	4.08	4.08	4.08	4.08	4.06
19	4.14	4.16	4.16	4.14	4.38	4.08	4.24	4.08	4.08	4.08	4.08	4.10
20	4.14	4.16	4.16	4.14	4.24	4.08	4.12	4.08	4.08	4.08	4.08	4.10
21	4.16	4.16	4.16	4.14	4.20	4.08	4.10	4.08	4.08	4.08	4.08	4.16
22	4.28	4.16	4.16	4.14	4.20	4.08	4.08	4.08	4.08	4.08	4.12	4.12
23	4.20	4.16	4.14	4.14	4.20	4.08	4.08	4.08	4.08	4.08	4.10	4.10
24	4.14	4.16	4.14	4.14	4.24	4.08	4.84	4.08	4.09	4.08	4.08	4.08
25	4.14	4.16	4.14	4.14	4.20	4.08	4.44	4.08	4.08	4.08	4.08	4.08
26	4.20	4.16	4.14	4.14	4.18	4.08	4.16	4.08	4.08	4.08	4.08	4.08
27	4.16	4.16	4.14	4.14	4.18	4.08	4.13	4.14	4.08	4.08	4.09	4.12
28	4.16	4.16	4.14	4.14	4.18	4.08	4.10	4.12	4.08	4.08	4.08	4.10
29	4.16	4.16	4.14	4.14	.....	4.08	4.10	4.10	4.08	4.08	4.08	4.10
30	4.16	4.16	4.14	4.14	.....	4.08	4.08	4.08	4.08	4.08	4.06	4.10
31	4.16	.....	4.14	4.14	.....	4.08	.....	4.08	.....	4.08	4.06	.....

South Raccoon River at Redfield, Iowa

LOCATION.—Lat. 41°34'30", long. 94°10'40", in SW¼ sec. 3 T. 78 N., R. 29 W., on left bank 10 ft. upstream from highway bridge at Redfield, 0.8 mile downstream from bridge on U. S. Highway 6, 1 mile downstream from Middle Raccoon River, and 14.5 miles upstream from mouth.

DRAINAGE AREA.—995 sq. mi.

RECORDS AVAILABLE.—March 1940 to September 1955.

GAGE.—Water-stage recorder. Prior to June 12, 1946, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 440 cfs.

EXTREMES.—1940-55: Maximum discharge, 23,800 cfs June 12, 1947 (gage height, 24.3 ft.); minimum daily, 19 cfs July 27, 1940.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor. Some diurnal fluctuation during low flow caused by power plant at Panora.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	54	57	58	40	38	600	1,600	8,040	1,920	485	258	454
2	57	55	50	40	38	420	1,220	9,500	10,200	525	348	418
3	55	*55	52	40	37	550	1,200	5,200	7,950	7,400	758	401
4	172	57	47	40	37	620	1,240	2,600	3,810	4,370	1,540	384
5	114	61	37	40	36	500	1,140	1,940	2,180	2,000	895	366
6	*85	63	40	40	36	400	1,220	a1,800	1,660	1,440	668	359
7	83	59	44	40	36	330	1,440	a1,600	2,980	1,120	505	338
8	102	63	50	40	36	270	1,200	a1,500	5,320	920	429	317
9	90	59	*55	41	40	260	995	a1,400	3,320	825	380	545
10	75	41	53	42	50	150	870	a1,300	2,060	758	359	1,320
11	69	41	50	43	58	110	825	a1,200	1,600	660	320	995
12	63	54	53	44	64	90	a900	a1,100	1,320	645	289	1,660
13	63	61	54	45	68	80	a1,100	a1,100	1,120	605	324	1,070
14	63	63	55	47	72	90	1,170	a1,000	970	565	581	780
15	63	63	56	48	76	100	1,100	a960	1,100	545	1,760	585
16	63	67	50	49	84	120	848	a920	*1,600	525	2,240	485
17	61	54	48	50	100	100	712	a880	1,380	*478	1,490	443
18	59	63	47	*52	150	90	668	a860	970	558	2,000	412
19	57	63	46	51	180	80	*625	a820	1,040	605	1,660	380
20	61	35	45	50	220	75	565	a860	1,270	545	2,040	359
21	54	45	44	49	200	75	958	a820	1,600	645	*2,600	*338
22	57	52	44	48	180	*78	1,540	a780	1,020	565	2,000	324
23	57	43	44	47	170	82	1,220	a700	895	450	1,170	314
24	54	36	43	46	300	100	1,020	a620	802	408	945	306
25	57	42	43	45	500	140	2,340	a660	712	370	870	303
26	55	45	42	43	900	1,160	2,760	690	668	396	895	296
27	59	48	41	42	1,580	2,720	1,880	545	603	356	645	282
28	59	51	40	41	990	2,500	1,660	a*400	565	358	690	265
29	55	53	40	40	.....	*13,100	1,600	a370	525	310	690	248
30	55	55	40	39	.....	6,600	3,920	a500	505	298	605	251
31	57	.....	40	39	.....	2,660	.....	a1,000	.....	282	525	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 20 to Dec. 31, 1950; Jan. 1 to Feb. 26, Mar. 1-25, 1951. Computed from gage readings or graph based on gage readings Feb. 28, Mar. 26, June 26 to July 2, July 10-16, Aug. 15-18, 1951.

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	265	310	280	170	410	359	3,110	*625	457	1,440	275	625
2	251	286	286	170	500	345	2,000	585	432	1,270	300	505
3	265	210	292	165	800	356	1,490	565	422	1,420	314	408
4	1,250	170	282	160	700	231	1,220	545	408	1,780	420	356
5	646	199	268	155	600	275	1,070	505	*394	a2,100	384	320
6	545	210	258	150	560	345	945	482	384	a2,600	310	289
7	440	240	251	150	520	376	870	468	362	3,310	296	268
8	376	260	241	145	500	338	802	468	348	3,530	317	*261
9	348	280	224	145	480	408	848	825	342	2,240	545	244
10	331	290	180	145	470	1,880	895	758	324	1,490	366	224
11	317	278	160	140	470	2,540	995	605	310	1,100	331	205
12	300	345	*150	140	470	1,940	1,070	545	292	895	272	196
13	286	362	140	140	800	4,690	1,320	505	278	780	251	189
14	265	320	160	200	1,500	2,980	1,540	482	278	735	1,220	192
15	258	282	190	230	*1,060	1,380	1,380	602	310	802	870	205
16	255	*261	230	220	895	995	1,170	945	370	780	*802	192
17	*251	200	250	230	608	870	1,040	1,020	292	*625	478	183
18	248	170	250	220	585	1,070	995	668	265	565	345	174
19	251	180	250	230	605	2,000	945	585	244	525	280	165
20	251	210	250	240	545	*2,420	848	545	1,880	485	258	162
21	289	250	240	700	408	1,710	848	505	4,160	505	*265	160
22	1,360	230	230	600	422	1,270	1,070	1,420	1,840	505	238	160
23	780	180	220	540	505	825	1,490	1,790	970	446	211	154
24	565	150	215	470	485	712	1,270	1,120	1,710	415	189	148
25	478	170	210	440	464	870	1,040	825	690	387	180	143
26	440	190	200	420	446	995	920	690	859	359	177	135
27	412	220	195	400	443	995	825	690	7,440	334	171	132
28	394	240	190	390	426	1,220	758	668	4,760	317	174	127
29	380	260	185	390	398	1,660	690	565	3,110	300	2,100	122
30	359	280	180	390	.....	2,660	645	525	1,710	292	1,810	117
31	334	.....	175	390	.....	6,530	.....	485	.....	275	970	.....
1952-53												
1	118	113	87	100	84	600	734	897	274	329	124	56
2	113	116	94	100	82	380	*803	780	262	349	124	*52
3	110	113	*105	100	80	420	897	711	*258	519	118	56
4	110	107	110	100	105	*460	1,010	666	376	317	118	68
5	110	110	120	98	*130	400	850	620	598	278	110	62
6	113	*110	120	96	190	380	711	*598	476	254	206	58
7	110	104	120	94	260	330	620	554	329	239	199	56
8	116	110	125	*93	360	320	576	510	812	224	139	54
9	*118	113	130	92	500	370	554	467	643	213	118	52
10	124	107	140	90	700	500	554	433	14,100	*195	104	52
11	116	110	125	96	1,000	620	536	437	10,000	188	104	52
12	121	113	100	92	1,000	576	488	395	2,600	270	*99	50
13	121	116	90	92	850	514	454	362	1,710	313	94	49
14	121	116	92	98	700	407	437	345	1,210	557	91	40
15	118	113	98	108	580	711	446	345	944	643	86	52
16	116	116	108	100	520	780	446	337	780	366	82	49
17	116	185	115	92	500	643	428	329	757	266	82	47
18	113	297	110	88	700	576	399	321	643	224	79	49
19	118	247	105	86	1,000	528	370	317	554	199	77	49
20	116	164	100	82	1,900	463	357	301	523	188	74	49
21	113	142	96	84	1,700	433	349	333	458	195	72	47
22	113	130	94	86	800	416	345	362	433	199	72	47
23	110	127	100	88	660	437	337	399	403	164	70	45
24	118	127	110	90	760	395	353	2,680	390	145	68	45
25	118	125	115	90	930	349	532	1,200	433	130	66	47
26	118	92	120	90	800	321	501	688	545	202	64	47
27	116	60	120	90	740	321	441	541	934	154	60	47
28	110	67	120	90	800	300	416	458	976	127	56	47
29	107	74	118	90	.....	285	420	395	446	127	56	45
30	107	80	110	88	.....	598	734	302	366	192	56	45
31	113	.....	105	86	.....	711	.....	313	.....	148	56	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 3-10, Nov. 17 to Dec. 1, Dec. 11-31, 1951; Jan. 1 to Feb. 14, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 10, 1953. Discharge computed from gage readings or graph based on gage readings May 27 to June 2, June 13-26, June 29 to July 10, 1953.

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	42	60	58	48	20	91	*82	289	501	113	38	545
2	42	58	62	56	25	76	82	353	501	99	35	390
3	42	*58	*72	56	32	64	79	510	*506	94	35	301
4	40	56	86	55	42	52	77	416	493	91	*34	243
5	38	54	81	53	*54	60	82	*274	305	89	37	202
6	38	53	70	*50	60	75	228	210	232	82	42	174
7	*40	52	72	49	68	91	202	174	195	*74	38	151
8	42	52	68	49	82	89	181	154	164	70	47	*133
9	45	54	50	49	76	82	102	136	181	66	45	130
10	49	56	35	35	72	79	84	118	161	58	40	121
11	49	60	50	40	69	77	74	110	142	56	44	113
12	49	64	64	43	78	77	66	110	395	52	47	110
13	47	68	54	41	86	60	62	102	181	50	45	104
14	47	62	47	39	94	50	62	96	139	47	49	102
15	47	62	38	36	100	60	62	91	524	44	52	99
16	45	68	45	33	110	74	70	89	1,170	42	45	94
17	49	66	53	31	125	79	58	84	341	42	44	94
18	54	62	47	29	140	84	58	82	232	44	49	94
19	58	77	49	27	154	94	60	82	171	44	68	86
20	38	130	54	25	195	91	62	77	151	49	99	82
21	34	99	51	23	202	82	70	74	923	58	242	74
22	52	86	47	22	188	77	196	70	1,500	54	5,300	68
23	54	77	30	21	124	72	297	70	967	49	3,120	66
24	54	70	38	20	104	72	145	68	532	49	1,940	66
25	56	66	53	20	107	82	142	72	333	42	1,200	64
26	58	60	56	20	99	79	121	79	243	38	1,240	66
27	66	52	58	20	102	74	136	91	192	37	876	64
28	56	41	55	20	91	89	107	819	157	37	2,140	82
29	56	48	54	20	.....	91	96	780	136	37	1,230	91
30	54	53	48	20	.....	79	239	463	121	34	873	822
31	60	.....	45	20	.....	86	.....	278	.....	38	711	.....
1954-55												
1	294	250	126	105	58	350	360	384	163	78	53	30
2	298	227	*129	120	*56	650	288	340	148	165	54	25
3	337	*224	113	127	56	1,300	254	*312	151	163	*53	26
4	876	215	112	*125	55	1,500	*319	575	1,630	92	50	25
5	998	224	110	123	54	950	416	333	685	337	45	25
6	605	215	100	120	53	500	305	270	556	*319	46	22
7	*412	208	108	115	52	300	244	288	438	688	45	22
8	412	199	110	108	52	430	218	247	*267	660	42	21
9	402	190	110	107	52	700	199	474	218	645	40	22
10	434	181	100	105	52	*960	184	580	211	1,450	42	25
11	376	181	120	102	52	810	184	336	187	1,870	46	22
12	360	175	119	95	52	570	190	277	175	1,510	40	25
13	326	175	119	85	52	412	215	254	163	835	40	25
14	835	169	120	75	52	326	277	227	145	556	37	25
15	810	166	122	80	52	316	218	205	134	326	34	24
16	524	163	120	92	52	360	184	190	121	237	32	22
17	394	160	115	86	58	280	166	181	113	199	32	24
18	330	163	112	82	900	250	154	169	108	169	31	25
19	294	154	108	76	1,500	240	629	166	111	148	28	31
20	270	148	107	70	800	240	682	160	108	129	30	80
21	368	151	111	69	480	190	277	148	104	113	31	80
22	540	148	110	67	400	145	205	140	94	101	37	80
23	368	151	108	66	350	135	587	366	88	94	43	58
24	310	140	106	65	300	125	4,810	529	90	82	32	50
25	288	137	110	63	260	115	2,470	154	104	76	37	34
26	320	129	110	61	230	108	1,380	172	90	72	30	28
27	336	137	108	59	220	135	960	1,340	82	65	28	42
28	336	142	92	57	200	185	710	372	90	61	25	32
29	302	137	90	60	.....	247	538	312	121	58	22	67
30	277	132	88	62	.....	274	443	227	86	54	37	63
31	257	.....	95	61	.....	368	.....	187	.....	51	*31	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 6-10, 27-30, Dec. 9-31, 1953; Jan. 1 to Feb. 18, Mar. 2-7, 13-16, Dec. 4-31, 1954; Jan. 1 to Mar. 9, Mar. 21-28, 1955. Discharge computed from gage readings or graph based on gage readings Apr. 28, 29, May 1-3, 25, 26, Aug. 1 to Sept. 30, 1955.

South Raccoon River at Redfield, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	68.6	53.5	46.8	43.9	224	1,330	1,319	1,696	2,056	966	1,003	500
1951–52.....	425	241	220	280	612	1,460	1,137	697	1,188	1,052	488	225
1952–53.....	115	123	110	92.5	658	472	537	563	1,441	255	94.5	50.8
1953–54.....	48.4	64.1	54.9	34.5	96.4	77.0	113	207	390	57.4	639	161
1954–55.....	429	173	110	86.9	234	435	602	320	226	368	37.8	36.0

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.069	0.054	0.047	0.044	0.225	1.34	1.33	1.70	2.07	0.971	1.01	0.503
1951–52.....	.427	.242	.221	.281	.615	1.47	1.14	.701	1.19	1.06	.490	.226
1952–53.....	.116	.124	.111	.093	.661	.474	.540	.566	1.45	.256	.095	.051
1953–54.....	.049	.064	.055	.035	.097	.077	.114	.208	.392	.058	.642	162
1954–55.....	.431	.174	.111	.087	.235	.437	.605	.322	.227	.370	.038	.036

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.08	0.06	0.05	0.05	0.23	1.54	1.48	1.96	2.30	1.12	1.16	0.56
1951–52.....	.49	.27	.26	.32	.66	1.69	1.28	.81	1.33	1.22	.57	.25
1952–53.....	.13	.14	.13	.11	.69	.55	.60	.65	1.62	.30	.11	.06
1953–54.....	.06	.07	.06	.04	.10	.09	.13	.24	.44	.07	.74	.18
1954–55.....	.50	.19	.13	.10	.24	.50	.68	.37	.25	.43	.04	.04

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	382	5.21
1951....	Mar. 29, 1951.	20.10	15,400	35	778	0.782	10.59	838	11.42
1952....	June 27, 1952.	16.06	9,740	117	669	.672	9.15	624	8.53
1953....	June 10, 1953.	23.08	21,300	45	372	.374	5.09	357	4.88
1954....	Aug. 22, 1954.	13.84	7,200	20	162	.163	2.22	208	2.85
1955....	Apr. 24, 1955.	12.86	6,310	21	255	.256	3.47	.....	.....

Peak Discharge (base, 4,200 cfs)

1951: Mar. 29 (7 a.m.) 15,400 cfs (20.10 ft.); May 2 (8 a.m.) 11,700 cfs (17.70 ft.); June 2 (11 a.m.) 12,200 cfs (18.14 ft.); June 7 (10 p.m.) 5,680 cfs (12.19 ft.); July 3 (1:30 p.m.) 10,100 cfs (16.26 ft.).

1952: Mar. 13 (8:30 a.m.) 5,160 cfs (11.53 ft.); March 31 (8:30 p.m.) 7,840 cfs (14.39 ft.); May 22 (8 p.m.) 4,300 cfs (10.41 ft.); June 20 (9:30 a.m.) 4,600 cfs (10.78 ft.); June 21 (6:30 a.m.) 5,680 cfs (12.12 ft.); June 27 (11:30 a.m.) 9,740 cfs (16.06 ft.); July 8 (2 a.m.) 4,520 cfs (10.73 ft.).

1953: May 24 (2:30 p.m.) 5,680 cfs (12.23 ft.); June 10 (4 p.m.) 21,300 cfs (23.08 ft.).

1954: Aug. 22 (2 p.m.) 7,200 cfs (13.84 ft.); Aug. 23 (2 p.m.) 4,680 cfs (10.98 ft.).

1955: Apr. 24 (9:30 a.m.) 6,310 cfs (12.86 ft.).

Raccoon River at Van Meter, Iowa

LOCATION.—Lat. 41°32'00", long. 93°56'50", in SW¼ sec. 22, T. 78 N., R. 27 W., on right bank 10 ft. upstream from highway bridge, 0.3 mile northeast of Van Meter, 1 mile downstream from South Raccoon River, and 30 miles upstream from mouth.

DRAINAGE AREA.—3,410 sq. mi. approximately.

RECORDS AVAILABLE.—April 1915 to November 1927 and October 1932 to September 1955 in reports of Geological Survey. April 1915 to December 1932 in report of Iowa State Planning Board.

GAGE.—Water-stage recorder. Datum of gage in 841.16 ft. above mean sea level, datum of 1929. Prior to May 31, 1923, chain gage, May 31, 1923, to Nov. 4, 1927, water-stage recorder, and Oct. 1, 1932, to Aug. 8, 1934, chain gage, all at same site and datum.

AVERAGE DISCHARGE.—39 years (1915-32, 1933-55), 1,224 cfs.

EXTREMES.—1915-55: Maximum discharge observed, 46,800 cfs June 13, 1947 (gage height, 21.4 ft. in gage well, 21.6 ft. from outside floodmark); minimum, 10 cfs Jan. 22-31, 1940.

REMARKS.—Records good except those for period of ice effect, which are poor. Diurnal fluctuation during low flow caused by powerplant at Adel, 10 miles above station.

COOPERATION.—Gage-height record collected in cooperation with the U. S. Weather Bureau.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	280	148	84	66	58	2,300	19,600	15,400	3,100	2,800	950	8,180
2.....	341	144	96	68	56	1,700	15,800	19,200	16,200	2,450	995	6,240
3.....	480	144	105	68	54	1,300	13,100	18,200	19,900	10,100	1,600	3,760
4.....	420	144	105	66	54	1,100	11,600	18,600	16,800	13,000	5,160	3,210
5.....	325	*148	96	66	54	1,100	9,580	17,000	13,400	9,580	4,200	2,900
6.....	*305	188	105	70	56	1,350	8,880	14,200	11,000	9,860	3,100	2,600
7.....	260	151	78	76	54	1,600	9,160	11,600	10,800	8,600	2,400	2,350
8.....	360	148	86	74	52	1,300	8,600	9,160	14,200	5,520	1,920	2,060
9.....	385	144	*90	72	52	800	7,640	6,990	11,000	4,680	1,650	2,100
10.....	320	123	96	70	52	600	6,730	6,990	9,580	3,760	1,470	3,540
11.....	280	91	92	70	60	380	5,880	6,730	8,740	3,210	1,270	4,920
12.....	258	107	94	70	68	280	5,400	6,240	7,640	3,100	1,150	6,120
13.....	219	154	94	70	76	250	5,260	5,640	5,520	2,900	1,110	5,640
14.....	184	144	84	70	80	290	5,160	4,800	4,200	2,800	1,270	4,560
15.....	231	165	88	74	92	350	4,680	4,090	3,760	2,800	3,100	4,680
16.....	231	154	100	74	88	410	4,200	3,960	*3,870	2,700	6,000	4,800
17.....	203	158	90	78	94	370	3,650	3,980	3,980	2,350	6,600	4,680
18.....	188	101	96	*82	100	320	3,100	3,760	4,090	*2,100	7,770	4,090
19.....	176	140	82	84	300	330	*2,800	3,320	3,980	2,200	8,460	3,210
20.....	165	184	82	86	370	310	2,600	3,210	4,320	1,920	8,180	2,600
21.....	123	107	78	88	330	310	2,700	3,100	6,240	1,920	8,320	*2,200
22.....	165	130	78	88	280	*315	3,870	3,210	6,120	2,400	*8,180	1,960
23.....	207	104	80	80	200	300	4,440	2,600	6,480	2,150	7,380	1,830
24.....	165	115	80	78	240	330	4,680	2,350	6,000	1,780	6,600	1,700
25.....	158	105	80	78	500	315	5,880	2,150	4,200	1,780	4,800	1,600
26.....	154	115	76	76	1,100	552	8,040	2,250	3,760	1,650	4,440	1,520
27.....	151	105	74	74	2,000	3,540	7,380	2,250	3,760	1,390	3,540	1,430
28.....	120	105	72	72	3,000	11,900	6,990	*1,920	3,430	1,310	3,430	1,350
29.....	151	100	68	68	.....	*22,000	6,240	1,700	3,540	1,190	4,800	1,270
30.....	151	98	66	62	.....	26,100	8,460	1,520	3,320	1,070	6,360	1,230
31.....	151	.....	66	60	.....	24,900	.....	1,740	.....	1,030	7,380	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 31, 1950; Jan. 1 to Feb. 27, Mar. 8-25, 1951.

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	1,190	1,470	960	550	960	1,400	11,800	*2,450	1,920	4,680	601	1,150
2	1,150	1,350	980	530	1,120	1,330	10,100	2,350	1,780	3,980	766	864
3	1,190	1,230	995	520	1,400	1,230	*9,860	2,200	1,650	4,680	731	724
4	2,580	1,080	995	510	1,650	1,140	8,740	2,060	1,520	5,640	942	506
5	1,980	920	995	500	1,900	1,000	6,600	1,920	*1,430	5,280	965	513
6	2,800	820	988	490	1,900	880	5,160	1,780	1,350	3,870	808	502
7	2,700	900	965	480	1,780	850	4,440	1,650	1,270	7,200	829	465
8	2,350	960	950	475	1,680	840	3,980	1,600	1,190	9,020	801	*450
9	2,010	1,030	906	470	1,580	1,000	3,760	1,740	1,150	7,510	980	435
10	1,830	1,100	843	460	1,500	4,540	3,760	2,200	1,110	7,380	928	410
11	1,700	1,150	794	450	1,600	5,520	3,650	1,960	1,030	7,250	752	385
12	1,600	1,230	640	440	1,540	4,200	3,870	1,960	1,030	7,380	620	380
13	1,520	1,270	500	440	2,200	7,120	4,320	1,960	980	7,510	596	390
14	1,430	1,230	380	660	*2,900	7,120	5,160	1,880	958	5,520	1,590	330
15	1,390	1,190	540	860	3,700	5,400	5,280	1,780	1,030	4,440	1,660	330
16	1,350	*1,110	720	760	4,320	4,200	5,160	2,010	1,190	5,160	*1,700	350
17	*1,310	1,030	770	840	4,440	3,320	4,680	2,400	1,230	*4,680	1,030	280
18	1,270	878	820	810	4,320	3,320	4,200	1,960	1,150	4,320	731	305
19	1,230	750	820	900	3,050	4,080	3,870	1,740	1,070	3,540	614	335
20	1,190	820	800	1,100	3,210	*6,000	3,540	1,600	4,630	2,900	557	295
21	1,230	900	780	1,450	2,100	6,460	3,320	1,470	6,250	2,600	552	285
22	2,770	900	750	2,000	1,700	6,360	3,430	2,310	3,760	2,450	524	271
23	3,540	760	720	2,600	1,650	5,520	3,650	5,140	2,900	2,100	480	262
24	2,800	660	700	2,950	1,470	3,430	3,980	3,430	3,770	1,830	445	248
25	2,400	600	670	3,000	1,520	2,900	3,980	3,100	2,100	1,600	420	258
26	2,100	600	640	2,150	1,600	3,320	3,870	3,000	1,740	1,390	405	280
27	1,960	680	620	1,620	1,520	3,650	3,540	2,600	11,800	1,230	395	258
28	1,830	820	620	1,220	1,560	3,960	3,000	2,600	11,000	1,110	390	244
29	1,740	900	600	910	1,560	5,040	2,800	2,300	8,160	1,030	1,130	240
30	1,650	920	580	960	.....	7,120	2,600	2,150	6,120	928	3,760	231
31	1,560	.....	570	1,000	.....	12,400	.....	2,100	.....	836	1,920	.....
1952-53												
1	196	196	135	195	150	1,650	1,760	2,460	1,240	4,050	411	176
2	207	222	145	200	145	1,310	*2,220	2,480	1,120	3,950	405	*151
3	233	190	*150	205	140	1,200	2,850	2,760	1,020	3,120	470	155
4	186	200	160	200	180	1,280	3,120	3,030	*980	2,360	573	193
5	230	172	170	195	270	*1,200	3,120	3,030	1,390	1,920	504	168
6	180	*182	180	190	*400	1,120	2,760	*2,940	1,380	1,650	1,120	168
7	200	207	190	175	560	1,050	2,490	2,850	1,080	1,460	1,720	141
8	179	200	200	*195	750	945	2,180	2,480	1,460	1,280	1,240	151
9	*196	193	210	200	1,000	945	1,960	2,310	1,720	1,120	945	145
10	222	193	220	205	1,300	1,160	1,920	2,080	14,100	*1,020	809	128
11	207	190	230	200	1,700	1,280	1,840	1,960	*22,400	945	687	145
12	215	172	210	180	1,700	1,390	1,800	1,840	*9,700	896	573	148
13	207	193	180	170	1,400	1,500	1,720	1,720	5,850	1,890	538	124
14	218	222	170	180	1,100	1,760	1,610	1,610	4,550	1,500	*487	121
15	193	215	170	210	920	2,360	1,580	1,500	3,600	1,840	448	134
16	182	207	190	255	800	2,850	1,500	1,420	3,030	1,500	421	124
17	218	317	210	230	740	2,760	1,460	1,390	2,670	1,090	400	108
18	204	364	200	200	850	2,670	1,840	1,310	2,400	910	369	111
19	207	364	200	180	1,550	2,310	1,920	1,280	2,040	796	345	111
20	207	317	220	160	2,700	2,000	1,720	1,240	1,840	700	326	108
21	190	257	240	160	1,900	1,840	1,580	1,200	1,610	644	308	105
22	176	253	235	165	1,600	1,720	1,840	1,280	1,420	656	290	101
23	190	241	230	165	1,250	1,090	1,390	1,350	1,310	602	277	101
24	200	241	230	165	1,500	1,540	1,350	3,950	1,160	532	261	98
25	200	245	225	165	1,700	1,350	1,840	3,340	1,120	515	245	98
26	204	220	220	170	1,600	1,240	1,650	2,260	1,200	470	233	95
27	200	170	210	170	1,500	1,160	1,760	1,960	2,850	532	222	95
28	196	110	205	165	1,840	1,090	1,880	1,800	4,750	426	207	92
29	193	115	200	160	.....	1,020	1,840	1,650	3,950	395	196	88
30	190	125	200	155	.....	1,460	2,040	1,500	3,750	487	190	85
31	222	.....	190	155	.....	1,760	.....	1,350	.....	498	207	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3-10, Nov. 19 to Dec. 2, Dec. 12-31, 1951; Jan. 1 to Feb. 15, Mar. 1-9, Nov. 26 to Dec. 31, 1952; Jan. 1 to Feb 27, 1953. Discharge computed from gage readings or graph based on gage readings Feb. 20-29, June 10-15, July 28 to Aug. 13, 1952; June 1, 2, 13, 24-26, July 9-12, 1953.

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	85	105	128	81	49	269	*308	869	1,850	3,210	273	11,200
2.....	82	108	138	83	58	261	312	945	2,260	2,700	269	7,480
3.....	82	*105	*124	90	71	165	277	1,200	*3,740	2,360	273	4,550
4.....	82	105	158	79	90	*120	253	*1,420	4,240	2,080	*265	3,480
5.....	76	101	168	*68	*105	170	253	1,720	4,130	1,810	280	2,850
6.....	76	105	170	75	120	205	321	1,720	3,620	1,610	277	2,310
7.....	*82	108	148	80	130	175	345	1,460	2,940	*1,390	249	1,880
8.....	85	105	148	80	130	220	411	1,200	2,320	1,200	253	*1,580
9.....	85	105	140	74	115	205	350	1,050	1,910	1,050	245	1,390
10.....	88	111	125	68	110	180	312	945	1,650	903	237	1,200
11.....	88	114	118	65	110	190	303	829	1,430	802	222	1,060
12.....	88	114	110	59	120	190	286	763	2,400	700	233	945
13.....	88	114	130	56	130	165	265	675	4,330	614	233	869
14.....	88	114	100	54	140	150	233	644	4,960	555	222	802
15.....	88	114	82	52	170	175	261	590	5,440	504	218	738
16.....	88	114	75	52	160	218	281	573	7,420	487	230	675
17.....	92	124	88	51	150	200	233	555	3,640	438	241	632
18.....	95	118	100	50	180	226	218	538	2,880	421	265	614
19.....	101	134	110	50	241	277	218	493	2,440	400	335	573
20.....	101	200	120	50	290	253	257	460	2,000	395	350	549
21.....	79	277	110	49	312	355	222	438	3,520	411	654	515
22.....	82	211	100	47	281	400	281	411	7,340	385	8,410	482
23.....	95	186	90	45	290	369	700	385	8,130	374	6,490	460
24.....	95	155	77	45	281	295	1,310	379	*13,600	359	5,590	426
25.....	98	138	85	45	416	317	1,020	379	*19,900	345	3,580	400
26.....	101	142	81	45	359	321	822	379	15,800	326	4,830	379
27.....	105	128	85	45	326	290	738	369	11,800	308	4,820	364
28.....	108	118	81	45	281	290	638	1,200	8,960	295	8,180	395
29.....	105	114	86	45	.....	299	608	1,160	6,670	288	10,700	416
30.....	105	121	91	46	.....	295	681	2,040	4,360	281	13,000	1,15
31.....	105	.....	91	47	.....	286	.....	2,080	.....	273	13,300	.....
1954-55												
1.....	910	1,720	718	420	215	900	1,690	2,400	662	385	218	*69
2.....	1,120	1,610	*703	500	205	1,610	1,840	2,080	614	454	*237	03
3.....	1,790	*1,540	669	555	*200	2,670	1,650	*1,880	561	561	230	60
4.....	3,850	1,400	640	*561	195	3,660	*1,500	2,040	1,970	675	182	60
5.....	4,050	1,420	610	567	190	3,210	1,760	1,760	1,540	1,020	165	54
6.....	3,300	1,390	580	510	190	2,670	1,760	1,500	1,280	*822	165	51
7.....	*2,670	1,350	560	480	190	1,880	1,610	1,390	1,280	1,400	145	51
8.....	2,400	1,310	580	460	190	1,650	1,500	1,280	*1,120	1,420	145	51
9.....	2,400	1,240	530	450	190	1,960	1,350	1,240	1,020	1,500	138	48
10.....	2,760	1,200	500	450	190	*2,360	1,240	1,840	910	2,750	134	48
11.....	2,760	1,160	560	430	190	2,670	1,160	1,350	856	4,970	138	45
12.....	2,850	1,120	600	400	190	3,210	1,120	1,200	770	5,740	145	45
13.....	3,030	1,120	600	350	190	2,850	1,120	1,050	731	3,750	134	45
14.....	3,570	1,090	550	320	190	2,400	1,240	945	687	2,400	131	45
15.....	4,550	1,050	600	360	190	1,880	1,120	869	644	1,690	124	45
16.....	4,550	1,050	620	380	200	1,920	980	816	608	1,280	121	45
17.....	3,950	1,020	626	396	240	1,840	910	757	573	1,020	114	76
18.....	3,300	1,020	584	330	500	1,500	856	706	544	816	111	63
19.....	2,850	980	532	300	3,500	1,310	903	669	521	718	105	63
20.....	2,490	945	515	270	3,000	1,200	1,740	644	515	626	98	60
21.....	2,260	910	560	260	2,400	1,200	980	620	526	538	98	124
22.....	2,670	890	580	250	1,800	910	789	584	504	470	114	134
23.....	2,580	870	600	245	1,400	810	945	561	470	416	134	121
24.....	2,360	842	580	240	1,400	730	6,560	1,380	454	359	108	98
25.....	2,180	809	570	235	1,200	630	6,310	763	454	335	98	88
26.....	2,080	783	580	230	1,150	570	5,190	669	426	317	88	85
27.....	2,130	783	590	225	1,080	670	4,970	1,090	405	281	79	108
28.....	2,160	783	476	220	1,000	800	4,150	1,120	390	257	69	101
29.....	2,080	757	359	225	.....	900	3,300	1,120	432	261	69	235
30.....	1,920	738	280	230	.....	1,090	2,760	883	395	233	79	134
31.....	1,800	.....	310	225	.....	1,310	.....	757	.....	226	76	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26, 27, Dec. 9-31, 1953; Jan. 1 to Feb. 18, Mar. 4-15, Dec. 4-15, 21-26, 30, 31, 1954; Jan. 1, 2, Jan. 6 to Mar. 1, Mar. 23-29, 1955. Discharge computed from gage readings or graph based on gage readings July 8-14, 1954; Mar. 2-7, May 27 to June 4, July 29 to Aug. 1, Sept. 15, 1955.

Raccoon River at Van Meter, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	236	132	85.8	73.5	342	3,452	7,051	6,706	7,461	3,681	4,309	3,278
1951-52	1,650	975	762	1,036	2,139	4,042	4,870	2,245	2,876	4,163	930	402
1952-53	202	216	198	185	1,112	1,568	1,941	2,045	3,559	1,282	498	126
1953-54	90.9	130	112	88.7	186	243	424	899	5,523	883	2,733	1,680
1954-55	2,690	1,099	560	357	778	1,709	2,100	1,189	729	1,216	129	77.2

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.069	0.039	0.025	0.022	0.100	1.01	2.07	1.97	2.19	1.08	1.26	0.961
1951-52	.543	.286	.223	.304	.627	1.19	1.43	.658	.843	1.22	.273	.118
1952-53	.059	.063	.058	.054	.326	.460	.569	.600	1.04	.376	.146	.037
1953-54	.027	.038	.033	.017	.055	.071	.124	.264	1.62	.259	.801	.493
1954-55	.789	.322	.164	.105	.228	.501	.616	.349	.214	.357	.038	.023

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.08	0.04	0.03	0.02	0.10	1.17	2.31	2.27	2.44	1.24	1.46	1.07
1951-52	.63	.32	.26	.35	.68	1.37	1.59	.76	.94	1.41	.31	.13
1952-53	.07	.07	.07	.06	.34	.53	.64	.69	1.16	.43	.17	.04
1953-54	.03	.04	.04	.02	.06	.03	.14	.30	1.81	.30	.92	.55
1954-55	.91	.36	.19	.12	.24	.58	.69	.40	.24	.41	.04	.03

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								1,098	4.36
1951	Mar. 31, 1951.	19.15	27,700	52	3,074	0.901	12.23	3,338	13.29
1952	Apr. 1, 1952.	14.81	15,100	231	2,190	.642	8.75	1,940	7.75
1953	June 11, 1953.	19.42	26,000	85	1,073	.315	4.27	1,049	4.17
1954	June 25, 1954.	17.40	20,800	45	1,078	.316	4.29	1,417	5.64
1955	Apr. 24, 1955.	(1)11.43	8,620	45	1,056	.310	4.21		

(1) Maximum gage height, 12.10 ft Feb. 18, 1955 (backwater from ice).

Peak Discharge (base 5,500 cfs)

1951: Mar. 31 (1 a.m.) 27,700 cfs (19.15 ft.); Apr. 26 (7:30 a.m.) 8,180 cfs (10.23 ft.); May 2 (6 p.m.) 19,900 cfs (17.00 ft.); June 3 (3 p.m.) 20,200 cfs (17.13 ft.); June 8 (3 a.m.) 14,400 cfs (14.47 ft.); June 23 (6 p.m.) 6,480 cfs (9.44 ft.); July 4 (2 a.m.) 15,800 cfs (15.18 ft.); July 6 (11 p.m.) 10,100 cfs (11.55 ft.); Aug. 4 (5 p.m.) 5,640 cfs (8.16 ft.); Aug. 21 (3 a.m.) 9,580 cfs (11.17 ft.); Sept. 1 (1 p.m.) 8,320 cfs (10.27 ft.); Sept. 12 (6 p.m.) 8,880 cfs (10.67 ft.).

1952: Mar. 13 (2-5 p.m.) 7,640 cfs (9.79 ft.); Mar. 21 (7 a.m.) 6,730 cfs (9.07 ft.); Apr. 1 (1:30 a.m.) 15,100 cfs (14.81 ft.); May 23 (1 a.m.) 8,180 cfs (10.23 ft.); June 20 (9:30 a.m.) 8,320 cfs (10.34 ft.); June 21 (10-11 a.m.) 7,770 cfs (9.90 ft.); June 24 (10-11 a.m.) 5,520 cfs (8.13 ft.); June 27 (10 p.m.) 14,900 cfs (14.67 ft.); July 4 (3-8 p.m.) 5,760 cfs (8.28 ft.); July 8 (8 a.m.) 9,720 cfs (11.28 ft.).

1953: May 24 (6:30 p.m.) 6,770 cfs (9.85 ft.); June 11 (3 a.m.) 26,000 cfs (19.42 ft.); June 27 (9 p.m.) 5,850 cfs (9.02 ft.).

1954: June 16 (4:30 a.m.) 11,000 cfs (12.46 ft.); June 25 (6 a.m.) 20,800 cfs (17.40 ft.); Aug. 22 (7 p.m.) 10,200 cfs (12.07 ft.); Aug. 26 (6 a.m.) 7,840 cfs (10.39 ft.); Aug. 31 (2 a.m.) 13,800 cfs (14.14 ft.).

1955: Apr. 24 (3:30 p.m.) 8,620 cfs (11.43 ft.); July 12 (7:30 a.m.) 6,080 cfs (9.22 ft.).

Des Moines River Below Raccoon River at Des Moines, Iowa

LOCATION.—Lat. 41°34'53", long. 93°36'46" in NW¼ sec. 10, T. 78 N., R. 24 W., in upstream end of first pier from left bank of Scott Street Bridge in Des Moines, 5 ft. upstream from Scott Street Dam, 100 ft. downstream from Raccoon River, 1 mile downstream from dam of Iowa Power & Light Co., and at mile 200.1.

DRAINAGE AREA.—9,770 sq. mi. approximately.

RECORDS AVAILABLE.—April 1940 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 773.84 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1951, water-stage recorder at present site and datum. Oct. 1, 1951, to Sept. 30, 1953, wire-weight gage at site 1 mile downstream at datum 11.21 ft. lower.

AVERAGE DISCHARGE.—15 years, 4,312 cfs.

EXTREMES.—1940-55: Maximum discharge, 77,000 cfs June 26, 1947 (gage height, 20.8 ft. in gage well, 21.6 ft. from outside floodmark); minimum daily, 80 cfs July 27, 1940, Feb. 2-5, 1950.

Maximum stage known since at least 1893, that of June 26, 1947. Flood of May 31, 1903 reached a stage of 20.9 ft. (referred to site and datum of 1947 flood by flood profile) by office of Des Moines City Engineer.

REMARKS.—Records good except those for periods of ice effect, which are poor. Water for municipal supply of Des Moines is taken from infiltration galleries on Raccoon River, about 2.5 miles above station. At times water is pumped directly from Raccoon River into recharge basins above these galleries. Low flow can be regulated by pumpage into or release from reservoir of Des Moines Water Works (capacity, 4,800 acre-ft.) on Raccoon River.

COOPERATION.—Gage readings and average monthly pumpage from galleries furnished by Des Moines Water Works. Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	1,390	530	266	185	130	13,200	*51,200	24,500	5,760	19,600	4,450	10,700
2	1,390	455	314	190	120	7,590	43,900	31,800	16,800	18,300	4,350	9,800
3	1,450	500	282	185	120	5,650	36,500	38,500	26,300	21,900	4,800	7,090
4	1,640	*485	274	185	120	4,300	31,000	41,000	32,200	30,400	7,340	6,000
5	1,540	515	266	190	120	3,820	30,000	41,500	29,200	29,300	8,300	5,300
6	1,540	485	200	195	120	4,180	30,800	38,000	24,500	25,600	6,950	4,950
7	*1,680	485	175	190	120	6,570	33,400	32,200	21,000	22,800	5,760	4,600
8	1,640	485	140	185	120	6,250	37,000	26,400	22,500	18,300	5,150	4,250
9	1,680	455	190	180	120	4,300	38,000	21,800	23,300	15,700	5,350	4,200
10	1,610	440	*250	180	120	3,340	38,500	19,700	20,500	13,500	4,950	5,300
11	1,420	410	226	180	120	2,740	37,000	18,000	18,000	13,000	4,450	6,950
12	1,270	410	234	180	150	1,100	33,400	17,200	17,200	13,500	3,950	8,000
13	1,180	386	250	180	150	1,100	29,700	15,700	13,600	13,700	3,850	10,100
14	1,080	440	234	180	160	960	27,400	13,400	10,700	13,700	3,900	9,200
15	950	410	266	185	170	1,100	26,000	10,400	9,800	13,500	6,540	10,100
16	908	425	258	190	190	1,300	23,700	9,800	10,100	12,800	11,500	11,000
17	866	470	242	195	210	1,200	22,200	9,500	*12,000	11,500	13,800	10,700
18	824	470	258	202	250	1,100	20,800	8,900	14,200	10,200	13,800	9,800
19	782	455	225	*202	330	1,150	18,800	8,600	12,500	*9,200	13,800	8,600
20	740	455	215	218	450	1,100	*16,700	8,300	13,000	9,200	12,200	7,300
21	704	410	205	189	800	970	15,700	8,000	15,700	8,900	13,400	6,460
22	650	410	200	195	700	970	15,500	8,300	16,300	9,500	*11,200	*6,000
23	668	282	210	183	830	1,260	17,000	7,160	14,600	10,400	10,700	5,520
24	686	134	210	183	990	1,060	18,800	6,670	13,400	11,000	10,100	5,250
25	614	172	202	180	1,260	1,300	19,900	6,240	11,200	10,400	8,600	5,050
26	578	210	210	175	2,200	1,420	21,800	6,240	9,800	8,600	7,860	4,800
27	578	218	195	170	4,180	3,460	22,500	*6,120	9,800	7,370	6,950	4,450
28	560	250	200	165	7,590	13,600	22,000	5,640	12,200	6,540	6,420	4,200
29	515	250	190	160	.....	22,800	20,500	5,250	15,700	5,820	8,300	3,950
30	530	258	195	150	.....	*38,000	20,100	4,900	18,100	5,300	10,100	3,760
31	560	.....	190	140	.....	52,400	.....	4,900	.....	4,900	10,700	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 6-9, 19-23, 28-31, 1950; Jan. 1-17, Jan. 25 to Feb. 22, Mar. 15-20, 1951. Discharge computed from gage readings or graph based on gage readings at recording gage site Dec. 10-18, 24-27, 1950; Jan. 18-24, 1951; and at E. 14th St. site 1 mile downstream, Feb. 23 to Mar. 14, Mar. 21-27, Apr. 1-24, July 1-18, 1951.

Des Moines River Below Raccoon River at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	3,580	3,460	2,500	1,480	1,700	4,060	26,700	7,080	4,540	9,030	2,560	2,800
2	2,980	3,220	2,440	1,380	1,900	4,780	28,100	*6,740	4,300	8,760	2,440	2,200
3	3,340	2,980	2,500	1,280	2,600	4,900	28,500	6,400	4,180	9,120	2,320	1,900
4	4,260	2,020	2,560	1,200	3,300	3,460	*27,400	6,100	3,940	9,800	2,740	2,020
5	4,900	2,500	2,500	1,120	3,700	3,460	25,000	5,800	*3,700	9,460	2,800	1,960
6	4,780	1,480	2,500	1,070	4,200	3,340	20,500	5,350	3,460	8,270	2,620	1,780
7	5,200	1,720	2,440	1,020	4,000	3,220	18,000	5,050	3,340	12,700	2,380	1,720
8	5,200	2,440	2,440	990	3,700	3,220	16,200	4,780	3,340	16,500	2,380	1,520
9	4,780	2,560	2,440	980	3,550	3,460	14,600	4,900	3,220	16,500	2,200	*1,360
10	4,540	2,800	2,320	970	3,400	6,370	13,900	5,800	3,100	19,000	2,440	1,220
11	4,300	2,800	2,260	960	3,500	10,800	13,500	5,500	2,980	21,000	2,080	1,110
12	4,060	2,920	2,260	960	4,500	9,120	13,900	5,800	2,920	21,600	1,960	998
13	3,820	2,980	1,600	960	*5,350	10,400	14,800	5,800	2,740	20,200	1,720	932
14	3,700	2,920	660	1,050	7,250	12,600	16,000	5,650	2,620	15,700	1,660	862
15	3,460	2,920	950	1,360	9,800	11,100	17,000	5,200	2,680	11,300	3,460	802
16	3,460	2,500	1,150	1,700	10,200	9,120	17,000	5,200	3,220	12,000	2,680	1,070
17	3,220	*2,740	1,300	1,600	9,800	7,590	16,500	5,650	5,350	11,900	*2,860	765
18	*3,100	2,320	1,500	1,950	9,460	7,080	15,500	5,200	5,800	*10,400	2,080	615
19	2,980	2,200	1,700	1,850	9,460	9,120	14,100	4,660	6,250	8,760	1,960	674
20	2,740	2,140	1,950	2,350	7,930	10,800	13,000	4,420	7,250	7,590	1,780	1,070
21	2,980	2,320	2,150	*3,100	5,950	*14,100	11,900	4,060	8,950	6,570	1,660	615
22	4,900	2,500	2,260	3,700	5,650	15,700	11,300	4,420	9,460	6,100	1,460	588
23	5,050	1,440	2,260	4,400	4,780	15,700	11,300	9,800	6,910	5,650	1,370	604
24	4,900	1,230	2,200	5,200	4,780	12,600	11,300	7,080	6,740	4,900	1,240	553
25	4,660	1,090	2,080	2,800	4,420	9,120	10,900	6,250	6,100	4,420	1,080	529
26	4,420	1,300	2,080	2,450	4,180	8,270	10,600	5,950	5,200	4,060	1,060	534
27	4,180	1,580	1,900	2,600	4,180	8,780	9,800	5,500	14,400	3,700	1,010	539
28	3,940	1,840	1,840	2,300	3,940	8,950	8,950	5,500	19,000	3,460	948	507
29	3,940	2,080	1,860	2,000	4,060	10,200	8,440	4,900	15,500	3,100	1,960	477
30	3,700	2,380	1,750	1,820	.....	13,700	7,590	4,660	11,700	2,920	3,700	477
31	3,580	.....	1,580	1,730	.....	19,900	.....	4,540	.....	2,080	3,340	.....
1952-53												
1	445	381	290	407	330	3,220	5,500	6,740	4,060	11,100	1,900	1,060
2	423	365	*314	401	320	2,800	5,950	8,100	4,540	9,990	2,020	820
3	428	381	332	360	315	2,460	*6,740	8,440	4,300	8,270	1,900	*780
4	473	360	332	360	345	2,460	7,930	8,440	*4,180	6,740	2,160	748
5	401	351	332	327	375	*2,510	7,930	8,440	4,420	5,500	5,950	726
6	467	*337	337	346	*428	2,290	7,250	8,440	4,900	4,900	7,420	726
7	365	360	417	305	900	2,290	6,740	*8,100	4,780	4,540	8,270	705
8	375	360	445	351	1,430	2,180	6,100	7,760	5,350	4,420	6,740	642
9	365	337	451	*370	1,630	2,070	5,500	7,080	6,100	4,300	5,350	515
10	*396	323	587	380	1,960	2,240	5,350	6,570	11,900	3,940	4,420	566
11	445	314	381	380	2,740	2,400	5,050	6,100	*23,800	*3,580	3,700	521
12	375	310	614	360	2,740	2,560	4,900	5,500	30,400	3,580	3,220	479
13	381	351	262	370	2,510	3,040	4,780	5,500	17,800	3,340	2,800	423
14	360	381	305	370	2,000	4,180	4,540	5,050	14,600	3,820	*2,560	445
15	381	356	318	450	1,650	5,800	4,420	4,780	13,200	3,820	2,510	486
16	381	350	439	560	1,450	6,910	4,300	4,660	12,400	3,820	2,340	462
17	417	812	509	480	1,200	7,760	4,420	4,540	10,600	3,700	2,180	428
18	401	840	417	430	1,300	6,910	4,900	4,300	9,290	3,460	2,020	386
19	375	764	386	400	1,400	6,700	5,050	4,060	8,100	2,920	1,900	434
20	401	635	521	355	3,000	6,570	4,780	3,940	7,420	2,560	1,740	396
21	380	649	407	350	5,650	6,740	4,420	3,820	6,740	2,400	1,580	370
22	356	566	407	350	4,060	6,400	4,300	3,820	6,100	2,240	1,530	386
23	346	497	456	350	3,580	6,100	4,060	3,820	5,650	2,240	1,480	370
24	375	473	417	350	3,220	5,800	3,940	5,950	5,200	1,900	1,380	365
25	396	527	396	350	3,040	5,500	4,180	9,630	5,050	1,680	1,240	351
26	439	310	401	340	2,980	5,200	4,540	6,100	6,100	1,460	1,200	381
27	375	187	265	340	3,220	4,780	5,800	5,350	7,590	1,580	1,060	346
28	386	219	262	340	3,400	4,660	5,200	4,900	11,700	1,430	988	332
29	360	240	370	340	.....	4,420	6,100	3,820	12,600	1,380	972	314
30	381	270	365	340	.....	4,660	6,250	4,660	11,900	1,380	924	310
31	391	.....	401	330	.....	5,200	.....	4,660	.....	1,630	852	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24-27, Dec. 14-21, 1951; Jan. 1 to Feb. 12, Nov. 29 to Dec. 1, 1952; Jan. 10 to Feb. 5, Feb. 14-20, 1953.

Des Moines River Below Raccoon River at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	294	287	312	231	110	866	1,950	2,590	7,170	13,800	1,210	19,800
2	294	*265	318	231	115	908	*1,950	3,160	*7,230	10,000	1,320	16,200
3	281	235	*302	205	120	560	1,890	4,060	7,950	8,250	*1,300	9,450
4	265	265	302	210	136	*360	1,830	*5,430	8,550	7,580	1,320	7,290
5	275	270	400	*215	157	400	1,770	6,310	8,610	6,930	1,520	6,200
6	250	255	410	200	*169	515	1,690	6,480	8,070	*6,480	1,350	5,320
7	225	260	443	210	172	668	1,770	5,870	7,530	5,920	1,280	*4,700
8	*221	275	443	205	200	632	1,750	5,160	6,640	5,480	1,230	4,010
9	225	270	456	184	231	668	1,770	4,550	5,760	5,000	1,090	3,600
10	240	270	350	175	240	545	1,720	4,010	4,850	4,600	1,030	3,200
11	250	281	350	170	220	560	1,690	3,560	6,580	4,350	986	2,880
12	255	275	306	160	210	614	1,610	3,200	11,800	4,010	944	2,660
13	245	275	300	150	234	722	1,580	2,880	14,000	3,740	902	2,450
14	245	275	306	146	314	650	1,500	2,660	13,200	3,380	902	2,330
15	245	287	170	144	398	560	1,480	2,520	10,700	3,080	860	2,140
16	260	300	160	130	410	650	1,420	2,360	14,700	2,730	902	2,020
17	260	291	190	120	*374	590	1,400	2,230	9,510	2,560	902	1,890
18	250	281	220	115	425	545	1,320	2,140	7,230	2,360	1,280	1,800
19	260	312	249	120	455	722	1,300	2,020	6,200	2,200	1,070	1,720
20	255	378	269	125	578	1,330	1,300	1,920	6,540	2,080	1,090	1,610
21	250	420	283	120	632	2,420	1,320	1,800	13,300	2,080	1,330	1,520
22	255	512	210	120	668	3,000	1,280	1,680	24,000	1,950	12,300	1,450
23	260	480	220	115	686	3,080	2,590	1,690	53,600	1,830	12,000	1,350
24	281	432	231	110	722	2,700	3,600	1,610	*65,800	1,720	12,100	1,250
25	275	387	249	110	787	2,390	3,290	1,520	63,000	1,580	7,950	1,210
26	270	403	220	110	1,080	2,110	2,960	1,770	*56,400	1,520	17,400	1,140
27	260	395	190	110	1,030	1,950	3,000	1,890	43,800	1,450	17,800	1,090
28	255	345	210	110	950	1,890	2,730	2,760	*31,300	1,400	21,600	1,180
29	260	345	225	110	.....	1,920	2,420	4,750	23,100	1,320	26,000	1,480
30	255	331	200	110	.....	2,080	2,390	5,100	*18,000	1,230	26,000	1,610
31	265	.....	215	110	.....	2,050	.....	5,650	.....	1,180	23,000	.....
1954-55												
1	2,960	4,150	1,950	1,050	620	1,750	4,010	7,530	2,020	1,010	440	*155
2	2,730	*3,920	1,890	1,300	600	1,950	4,750	*6,640	1,830	1,030	*398	151
3	3,780	3,780	*1,830	1,450	570	3,080	4,700	6,040	1,630	1,010	410	151
4	5,820	3,600	1,830	*1,520	550	4,050	*4,400	5,700	1,870	1,050	386	148
5	7,710	3,470	1,860	1,450	540	4,950	4,600	5,430	4,300	*1,950	350	145
6	7,410	3,380	1,770	1,350	520	4,750	4,550	4,950	4,060	1,770	386	137
7	*6,090	3,290	1,660	1,300	510	3,600	4,150	4,250	4,300	1,690	350	127
8	5,320	3,200	1,550	1,280	500	3,200	3,920	3,880	4,500	5,090	290	123
9	5,320	3,120	1,500	1,280	500	3,560	3,700	3,960	*4,350	5,050	290	117
10	5,870	3,000	1,300	1,240	500	4,000	3,420	4,800	4,100	8,290	274	117
11	6,140	2,920	1,350	1,150	510	*4,550	3,200	4,400	3,880	11,600	274	123
12	6,360	2,840	1,400	1,140	510	5,320	3,080	3,780	3,600	11,100	282	121
13	7,050	2,840	1,320	920	510	6,810	3,120	3,420	3,240	9,450	274	117
14	8,550	2,760	1,280	880	520	6,360	3,380	3,160	2,840	6,260	258	117
15	10,300	2,700	1,450	920	530	6,310	3,240	2,880	2,480	4,010	250	111
16	10,600	2,660	1,600	920	520	5,870	2,960	2,700	2,200	3,080	226	111
17	9,450	2,620	1,640	920	540	5,650	2,700	2,450	1,950	2,520	202	109
18	8,250	2,500	1,500	860	1,200	4,700	2,520	2,300	1,830	2,200	195	117
19	7,110	2,520	1,440	770	3,500	3,830	2,520	2,200	1,690	1,830	183	145
20	6,360	2,480	1,450	720	6,000	3,240	3,200	2,080	1,610	1,660	177	134
21	5,870	2,420	1,500	680	4,200	3,240	2,920	1,950	1,660	1,550	210	210
22	5,650	2,360	1,580	670	2,920	2,960	2,420	1,890	1,580	1,270	226	172
23	5,600	2,330	1,550	660	2,560	2,620	2,300	1,800	1,450	1,050	189	189
24	5,320	2,230	1,500	640	2,730	2,230	7,140	2,570	1,350	929	202	159
25	4,950	2,170	1,460	630	2,140	2,170	10,600	2,660	1,280	845	177	145
26	4,800	2,140	1,480	610	2,230	1,950	10,000	1,980	1,180	740	163	163
27	4,850	2,140	1,500	590	2,170	1,750	11,400	2,410	1,090	686	167	258
28	4,800	2,110	1,080	600	1,600	1,920	11,100	3,520	1,010	596	159	177
29	4,750	2,050	800	610	.....	2,520	9,750	3,290	1,120	560	155	440
30	4,550	1,950	720	620	.....	2,560	8,550	2,800	1,070	500	159	290
31	4,350	.....	840	620	.....	2,760	.....	2,300	.....	455	155	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 15-17, 27, 1953; Jan. 10-12, 20, 21, Mar. 4, 5, Dec. 8-31, 1954; Jan. 1 to Feb. 20, Mar. 10, 1955.

Des Moines River Below Raccoon River at Des Moines, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	1,039	392	225	183	784	6,751	27,350	16,310	16,360	13,690	8,049	6,780
1951-52	4,011	2,333	1,996	1,882	5,215	8,872	15,740	5,614	6,126	9,948	2,129	1,093
1952-53	395	420	396	373	2,042	4,413	5,364	5,015	9,379	3,795	2,720	508
1953-54	257	322	288	151	423	1,247	1,024	3,334	18,890	3,929	6,457	3,818
1954-55	6,086	2,791	1,470	947	1,446	3,704	4,943	3,530	2,369	2,930	253	159

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.106	0.040	0.023	0.019	0.080	0.691	2.80	1.67	1.67	1.40	0.824	0.694
1951-52	.411	.239	.204	.193	.534	.908	1.61	.575	.627	1.02	.218	.112
1952-53	.040	.043	.041	.038	.209	.452	.549	.605	.960	.388	.278	.052
1953-54	.026	.033	.029	.015	.043	.128	.199	.341	1.93	.402	.661	.391
1954-55	.623	.286	.150	.097	.148	.379	.506	.361	.242	.300	.026	.016

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.12	0.04	0.03	0.02	0.08	0.80	3.12	1.92	1.87	1.62	0.95	0.77
1951-52	.47	.27	.24	.22	.58	1.05	1.80	.66	.70	1.17	.25	.12
1952-53	.05	.05	.05	.04	.22	.52	.61	.70	1.07	.45	.32	.06
1953-54	.03	.04	.03	.02	.05	.15	.22	.39	2.16	.46	.76	.44
1954-55	.72	.32	.17	.11	.15	.44	.56	.42	.27	.35	.03	.02

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								2,573	3.57
1951	Mar. 31, 1951.	17.75	54,800	120	8,170	0.836	11.34	8,732	12.13
1952	Apr. 1, 1952.	22.5	28,900	477	5,405	.553	7.53	4,806	6.70
1953	June 12, 1953.	24.50	34,200	187	2,974	.304	4.14	2,945	4.09
1954	June 24, 1954.	20.08	67,300	110	3,415	.350	4.75	4,213	5.86
1955	Apr. 27, 1955, July 11, 1955.	7.27	11,600	109	2,561	.262	3.56		

Peak Discharge (base, 12,000 cfs)

1951: Mar. 1 (7 a.m.) 15,000 cfs (unknown); Mar. 31 (6 p.m.) 54,800 cfs (17.75 ft.); Apr. 27 (8:30 p.m.) 22,500 cfs (10.82 ft.); May 5 (7 a.m.) 42,000 cfs (15.64 ft.); June 4 (7 p.m.) 33,100 cfs (13.80 ft.); June 21 (12 p.m.) 16,600 cfs (8.15 ft.); July 4 (6 p.m.) 33,400 cfs (unknown); Aug. 17 (3 p.m.) 14,600 cfs (7.57 ft.).

1952: Mar. 14 (3 p.m.) 12,800 cfs (16.5 ft.); Mar. 23 (5 a.m.) 16,700 cfs (18.4 ft.); Apr. 1 (7 p.m.) 28,900 cfs (22.5 ft.); June 27 (9 p.m.) 20,800 cfs (19.7 ft.); July 12 (7 a.m.) 21,600 cfs (20.0 ft.).

1953: June 12 (5 a.m.) 34,200 cfs (24.50 ft.); June 29 (5 p.m.) 13,000 cfs (16.56 ft.).

1954: June 13 (4 p.m.) 14,800 cfs (7.93 ft.); June 16 (4 p.m.) 16,900 cfs (8.64 ft.); June 24 (9 p.m.) 67,300 cfs (20.08 ft.); Aug. 22 (7 p.m.) 16,500 cfs (8.54 ft.); Aug. 24 (5 a.m.) 14,100 cfs (7.70 ft.); Aug. 26 (4:30 p.m.) 20,800 cfs (10.55 ft.); Aug. 29 (11:30 p.m.) 26,300 cfs (12.50 ft.).

1955: No peak above base.

North River near Norwalk, Iowa

LOCATION.—Lat. 41°27'25", long. 93°39'10", in SW¼ sec. 20, T. 77 N., R. 24 W., on right bank 10 ft. downstream from highway bridge, 1¾ miles southeast of Norwalk, 8 miles northwest of Indianola, 9 miles upstream from Middle Creek, and 10 miles south of Des Moines.

DRAINAGE AREA.—348 sq. mi.

RECORDS AVAILABLE.—February 1940 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 788.45 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to June 12, 1946, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 186 cfs.

EXTREMES.—1940-55: Maximum discharge, 32,000 cfs June 13, 1947 (gage height, 25.3 ft.), from rating curve extended above 9,100 cfs on basis of area-velocity studies; no flow July 20-22, July 25 to Aug. 13, 1954, Sept. 4-15, 1955.

REMARKS.—Records fair except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	0.4	0.8	1.8	1.1	1.1	80	290	1,750	385	110	23	46
2.....	.5	.8	1.8	1.1	1.1	60	230	3,560	476	113	23	37
3.....	.5	.8	1.7	1.1	1.1	66	190	2,490	1,350	1,620	31	24
4.....	.5	.8	1.6	1.1	1.1	72	190	836	1,450	2,310	45	22
5.....	*.5	*.8	1.5	1.1	1.2	60	212	464	798	718	31	21
6.....	1.3	.8	1.5	1.1	1.3	50	250	374	407	320	23	20
7.....	4.4	.9	1.5	1.1	1.3	40	574	310	784	245	18	20
8.....	*7.2	1.0	1.4	1.2	1.4	31	588	280	1,600	216	18	20
9.....	5.8	1.6	1.4	1.2	1.6	25	352	290	1,820	177	15	30
10.....	4.4	2.0	1.4	1.2	2.2	20	260	733	812	150	12	396
11.....	2.4	2.0	*1.4	1.2	3.5	15	385	1,390	440	158	10	300
12.....	2.3	2.1	1.3	1.3	5.2	12	524	766	363	161	9.6	110
13.....	2.2	2.0	1.3	1.3	5.0	10	885	418	*310	147	10	98
14.....	2.1	2.0	1.3	1.4	4.6	10	658	330	270	130	14	512
15.....	1.9	1.9	1.3	1.4	4.4	11	429	270	290	116	44	290
16.....	2.0	1.9	1.3	1.5	4.3	12	290	240	*374	104	89	194
17.....	1.7	2.0	1.2	1.5	6.0	11	212	330	407	89	95	130
18.....	1.7	2.2	1.2	*1.6	*11	10	185	407	260	86	61	92
19.....	1.7	2.4	1.2	1.6	35	10	*165	385	210	82	110	64
20.....	1.5	2.8	1.2	1.6	130	9.5	147	374	194	89	59	48
21.....	1.5	3.2	1.2	1.6	250	*8.6	181	363	208	*86	303	42
22.....	1.2	3.0	1.2	1.5	150	10	310	915	270	69	*330	*37
23.....	1.3	2.6	1.1	1.5	110	12	352	863	235	57	144	33
24.....	1.2	2.4	1.1	1.4	90	15	240	407	221	51	69	32
25.....	1.3	2.2	1.1	1.4	100	18	641	666	181	44	57	70
26.....	1.2	2.1	1.1	1.4	160	50	1,220	2,310	185	39	86	34
27.....	1.3	2.0	1.1	1.3	210	300	618	2,860	245	35	76	37
28.....	1.2	1.9	1.1	1.3	130	*1,070	452	871	190	31	66	37
29.....	1.1	1.8	1.1	1.3	.....	1,980	374	*341	136	29	60	32
30.....	1.0	1.8	1.1	1.2	.....	2,130	613	280	110	35	57	28
31.....	.8	.....	1.1	1.1	.....	620	.....	310	.....	28	53	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1950; Jan. 1 to Mar. 27, 1951.

North River near Norwalk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	25	40	57	29	58	94	826	201	166	280	24	59
2.....	26	40	63	28	70	84	512	*174	146	240	24	53
3.....	29	32	67	27	100	84	345	170	138	240	37	50
4.....	28	20	63	26	180	76	301	158	135	340	73	44
5.....	26	15	57	25	140	55	270	140	124	235	100	37
6.....	90	17	49	24	110	66	245	132	*114	210	59	32
7.....	74	19	46	23	100	62	230	121	100	255	38	29
8.....	61	21	43	23	90	69	215	121	87	798	34	28
9.....	57	22	42	22	80	94	215	146	87	476	36	27
10.....	41	27	35	22	85	692	290	235	94	250	38	*27
11.....	30	37	35	21	90	1,640	312	240	76	215	57	26
12.....	25	134	25	21	96	2,860	290	166	65	178	135	25
13.....	22	215	*35	21	105	2,760	345	142	55	150	80	23
14.....	20	170	29	25	115	2,520	500	124	51	135	120	21
15.....	18	104	22	150	125	1,450	476	118	53	135	914	19
16.....	18	67	18	500	140	500	380	135	52	135	1,480	19
17.....	24	*49	15	450	130	428	312	280	46	118	1,560	19
18.....	*35	30	14	350	124	488	323	345	40	*97	*356	17
19.....	38	27	16	300	150	932	323	196	32	90	*166	16
20.....	40	34	19	230	235	886	290	158	46	84	128	15
21.....	49	34	22	180	334	602	260	146	903	73	110	12
22.....	66	31	25	150	220	*512	368	261	*2,160	64	97	12
23.....	110	28	27	120	158	576	714	1,290	4,930	57	84	12
24.....	107	27	29	100	124	416	714	1,980	1,540	51	69	11
25.....	61	26	30	90	100	404	470	1,320	901	46	60	11
26.....	48	27	30	80	94	404	368	368	464	42	54	11
27.....	43	30	31	72	97	380	312	280	965	37	51	9.7
28.....	42	34	31	68	104	345	270	250	1,450	33	50	7.8
29.....	42	42	31	64	104	323	245	225	1,380	29	49	6.6
30.....	41	50	30	60	.....	301	220	201	368	26	51	6.0
31.....	41	.....	30	58	.....	524	.....	183	.....	25	55	.....
1952-53												
1.....	0.6	8.0	20	17	34	90	691	486	57	120	13	1.0
2.....	6.3	8.2	21	16	37	75	473	352	51	92	11	1.0
3.....	6.0	8.4	22	16	*40	70	386	256	49	79	11	1.7
4.....	5.7	8.6	25	15	44	65	410	218	48	67	10	2.2
5.....	5.4	8.9	28	14	50	60	297	200	65	59	9.3	1.6
6.....	5.1	9.2	32	14	60	58	232	200	70	63	11	1.3
7.....	4.8	*9.4	38	13	150	56	208	200	67	147	12	1.2
8.....	4.5	9.6	*45	13	500	62	186	178	191	61	14	1.3
9.....	4.2	10	55	*14	450	75	182	155	209	37	16	1.1
10.....	*4.0	10	80	15	400	120	209	148	1,370	33	13	.8
11.....	3.8	11	50	16	700	174	218	202	*1,870	30	11	.7
12.....	3.6	11	35	18	500	170	178	131	1,270	30	8.0	.5
13.....	3.4	11	30	20	300	158	151	110	276	34	6.4	.3
14.....	3.2	12	35	23	200	154	139	97	200	38	5.0	.3
15.....	3.0	13	43	90	190	166	182	94	164	31	3.9	.3
16.....	2.8	13	36	85	160	158	214	94	168	32	3.3	.3
17.....	2.8	114	33	80	120	135	164	94	143	29	2.8	.4
18.....	2.6	218	31	70	100	124	131	94	100	33	*2.6	.7
19.....	2.4	114	30	60	170	118	120	*92	84	26	2.6	1.0
20.....	2.4	65	28	50	600	104	114	84	74	22	1.6	.8
21.....	2.2	43	26	45	1,000	97	110	89	65	*20	1.8	.6
22.....	2.0	34	25	42	900	97	107	86	63	18	1.6	*.6
23.....	3.0	29	24	38	400	146	100	81	*59	17	1.3	.5
24.....	3.2	26	23	36	250	210	125	282	57	15	1.0	.4
25.....	3.9	31	22	35	200	*162	363	256	51	15	.8	.3
26.....	5.1	27	21	34	160	124	236	236	51	13	1.0	.3
27.....	5.3	24	20	33	130	110	184	114	151	12	1.3	.3
28.....	5.5	22	20	32	110	104	147	86	1,010	65	.8	.3
29.....	5.7	21	19	31	.....	100	139	76	999	61	.7	.2
30.....	7.0	20	18	30	.....	666	294	70	352	27	.6	.2
31.....	7.4	.....	18	31	.....	1,310	.....	63	.....	18	.7	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-7, Nov. 22-25, Dec. 15-31, 1951; Jan. 1 to Feb. 17, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 10, 1953. Discharge computed from gage readings or graph based on gage readings Sept. 12-18, 21-30, 1953.

North River near Norwalk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	0.2	0.2	0.8	0.5	0.7	4.0	3.9	182	*1,190	8.6	0	59
2.....	.2	.2	.7	.5	.8	3.6	3.7	394	546	6.8	0	49
3.....	.3	.2	.8	.5	.8	3.1	4.2	925	297	4.6	0	44
4.....	.3	.2	1.1	.5	.9	2.9	3.6	345	352	3.5	0	38
5.....	.2	.2	1.1	.4	1.0	2.6	5.4	104	151	2.8	0	33
6.....	.2	.2	1.0	.4	1.1	2.3	24	61	92	1.7	0	29
7.....	.2	.2	1.5	.4	1.2	2.1	33	48	72	1.3	0	25
8.....	.2	.2	*1.2	.4	1.3	2.5	26	38	59	1.3	0	21
9.....	.2	.2	1.3	.4	1.4	2.8	14	32	57	.6	0	19
10.....	.2	.3	1.3	.4	1.5	3.2	8.6	28	65	.3	0	18
11.....	.2	.4	1.2	.4	1.7	3.0	6.4	24	61	.3	0	17
12.....	.2	.6	1.1	.4	1.9	2.9	6.2	18	115	.3	0	15
13.....	.2	.8	1.0	.3	2.0	2.8	4.2	17	713	.3	0	13
14.....	.2	.8	.9	.3	2.1	2.6	*3.5	16	191	.3	0.1	12
15.....	.2	.8	.8	.3	2.3	2.6	6.4	14	484	.2	.1	12
16.....	.2	.8	.7	.3	2.5	*2.0	7.4	13	*1,150	.2	.1	11
17.....	.2	*.6	.6	.3	*2.9	2.2	3.5	12	1,150	.2	4.4	9.9
18.....	.2	.3	.5	.3	3.4	2.4	2.0	9.9	252	.1	*26	9.0
19.....	.2	.8	.6	.3	3.9	3.0	1.3	*8.8	94	.1	29	9.0
20.....	*.3	1.8	.7	*.3	5.0	3.6	2.0	8.2	63	0	21	7.8
21.....	.3	2.4	.9	.3	6.6	3.9	2.8	7.2	59	0	11	*6.2
22.....	.3	2.2	.8	.3	9.0	3.2	5.6	7.0	61	0	450	5.4
23.....	.3	2.1	.7	.3	8.0	3.3	4.8	8.0	59	2.5	1,240	5.2
24.....	.3	1.7	.6	.3	7.4	4.4	5.0	12	49	.6	1,200	4.0
25.....	.3	1.0	.5	.3	6.5	6.2	33	13	36	0	479	3.6
26.....	.3	.8	.4	.3	5.7	8.2	667	9.9	28	0	975	4.0
27.....	.3	.6	.4	.4	5.0	12	151	9.3	22	0	1,290	3.0
28.....	.2	.5	.5	.5	4.6	8.0	89	18	17	0	384	2.4
29.....	.2	.5	.5	.5	.....	6.2	40	18	14	0	153	3.7
30.....	.2	.8	.6	.5	.....	4.8	29	16	11	0	94	4.8
31.....	.2	.....	.6	.6	.....	4.4	.....	354	.....	0	72	.....
1954-55												
1.....	9.8	35	15	13	8.6	310	62	45	22	8.0	3.3	0.2
2.....	7.5	34	15	13	8.5	500	56	42	18	6.4	3.7	.2
3.....	4.8	34	14	13	8.3	680	52	39	15	4.5	3.1	.1
4.....	34	34	14	13	8.2	530	53	35	a14	4.1	3.0	0
5.....	74	29	13	13	8.1	370	60	34	13	. 275	3.0	0
6.....	184	29	13	13	8.0	240	52	35	85	481	3.1	0
7.....	223	27	13	13	8.0	160	46	37	42	46	3.0	0
8.....	98	29	13	12	8.0	100	44	32	24	28	51	0
9.....	65	30	13	12	8.0	135	40	41	18	133	18	0
10.....	60	25	13	12	8.0	186	38	60	14	a766	8.6	0
11.....	70	26	13	12	8.0	174	38	60	12	a1,190	4.6	0
12.....	130	24	13	12	8.0	142	42	44	11	597	2.5	0
13.....	92	22	13	11	8.0	111	48	38	10	89	1.8	*0
14.....	72	20	*12	11	8.0	92	101	33	11	52	1.4	0
15.....	65	19	12	11	8.0	83	158	30	12	36	1.1	0
16.....	65	20	12	11	8.8	*78	108	26	11	30	.9	a.2
17.....	50	*20	12	11	11	70	80	23	9.2	27	*.8	a.5
18.....	43	22	12	11	45	64	64	*21	a7.5	27	.7	a1.1
19.....	37	22	12	11	500	60	57	19	a6.1	22	.6	a2.5
20.....	*33	20	12	11	860	60	*53	17	a4.9	*18	.4	a5.0
21.....	30	19	12	10	*1,300	86	48	16	a4.2	15	a.6	9.7
22.....	33	18	12	10	370	95	43	15	*3.9	13	.7	4.5
23.....	34	18	12	10	240	78	44	14	3.3	11	.7	15
24.....	48	18	12	10	150	70	153	13	3.2	9.7	.7	6.1
25.....	52	18	12	*10	130	60	209	12	3.2	8.6	.6	3.2
26.....	42	17	12	10	115	49	122	24	3.1	7.5	.5	a2.3
27.....	44	16	11	9.6	100	39	80	33	3.0	6.2	.4	4.1
28.....	57	16	11	9.5	185	50	68	29	3.1	6.4	a.3	3.3
29.....	68	15	11	9.3	.....	68	58	134	7.1	4.9	.3	182
30.....	55	14	12	9.1	.....	65	51	52	12	3.8	.3	584
31.....	40	.....	13	8.9	.....	68	.....	30	.....	3.4	.2	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 27-29, Dec. 9-15, Dec. 17-31, 1953; Jan. 1 to Feb. 28, Mar. 2-9, Nov. 26 to Dec. 31, 1954; Jan. 1 to Mar. 9, Mar. 25-28, 1955. Discharge computed from gage readings or graph based on gage readings Oct. 1 to Nov. 12, 1953; Mar. 1, 10-19, June 19 to Aug. 14, 1954; Aug. 12-20, 22-27, Aug. 29 to Sept. 15, 1955.

North River near Norwalk, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	1.87	1.82	1.31	1.31	50.8	220	401	845	500	247	66.1	95.4
1951-52	44.4	48.3	34.4	108	126	665	365	323	559	163	200	22.9
1952-53	4.29	31.6	30.7	33.7	284	172	223	159	313	43.4	5.78	.74
1953-54	.23	.75	.82	.38	3.26	3.90	39.9	89.4	250	1.18	207	16.4
1954-55	61.9	23.0	12.5	11.1	148	157	70.9	34.9	13.5	127	3.87	27.5

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.0054	0.0052	0.0038	0.0038	0.146	0.632	1.15	2.43	1.44	0.710	0.190	0.274
1951-52	.128	.139	.099	.310	.362	1.91	1.05	.928	1.61	.468?	.575	.066
1952-53	.012	.091	.088	.097	.816	.494	.641	.457	.899	.125	.017	.0021
1953-54	.00066	.0022	.0024	.0011	.0094	.011	.115	.257	.718	.0034	.595	.04
1954-55	.178	.066	.036	.032	.425	.451	.204	.100	.039	.365	.011	.079

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.006	0.006	0.004	0.004	0.15	0.73	1.28	2.80	1.60	0.82	0.22	0.31
1951-52	.15	.15	.11	.36	.39	2.20	1.17	1.07	1.79	.54	.66	.07
1952-53	.01	.10	.10	.11	.85	.57	.72	.53	1.00	.14	.02	.002
1953-54	.0008	.002	.003	.001	.01	.01	.13	.30	.80	.004	.69	.05
1954-55	.21	.07	.04	.04	.44	.52	.23	.12	.04	.42	.01	.09

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								86.9	3.38
1951	May 2, 1951	20.52	3,970	0.4	203	0.583	7.93	214	8.32
1952	June 23, 1952	20.80	5,670	0.6	222	.638	8.66	217	8.46
1953	June 11, 1953	19.64	1,940	.2	107	.307	4.15	101	3.95
1954	May 31, 1954	(1)18.45	1,600	0	51.3	.147	2.00	59.3	2.32
1955	July 11, 1955	(2)	1,400	0	57.1	.164	2.23		

(1) Maximum gage height, 18.75 ft. Aug. 24, 1954.
(2) Maximum gage height, 19.83 ft. Feb. 21, 1955 (backwater from ice).

Peak Discharge (base, 1,100 cfs)

1951: Mar. 30 (10 a.m.) 2,380 cfs (19.77 ft.); Apr. 26 (11 a.m.) 1,310 cfs (17.85 ft.); May 2 (1 p.m.) 3,970 cfs (20.52 ft.); May 11 (5 p.m.) 1,560 cfs (18.70 ft.); May 23 (2 a.m.) 1,140 cfs (16.91 ft.); May 27 (6 a.m.) 3,300 cfs (20.25 ft.); June 4 (5 a.m.) 1,760 cfs (19.11 ft.); June 9 (8 a.m.) 1,980 cfs (19.40 ft.); July 4 (3 p.m.) 2,600 cfs (19.89 ft.).

1952: Mar. 12 (6 p.m.) 3,970 cfs 20.48 ft.); May 25 (1 a.m.) 2,440 cfs (19.79 ft.); June 23 (7 a.m.) 5,670 cfs (20.80 ft.); June 29 (9:30 a.m.) 1,820 cfs (18.96 ft.); Aug. 17 (3 p.m.) 1,820 cfs (19.22 ft.).

1953: Mar. 31 (8:30 a.m.) 1,520 cfs (18.60 ft.); June 11 (11 p.m.) 1,940 cfs (19.64 ft.); June 29 (1:30 a.m.) 1,160 cfs (17.44 ft.).

1954: May 31 (10 p.m.) 1,600 cfs (18.45 ft.); June 17 (8 a.m.) 1,380 cfs (18.38 ft.); Aug. 24 (4 a.m.) 1,520 cfs (18.75 ft.); Aug. 27 (4 p.m.) 1,420 cfs (18.53 ft.).

1955: Feb. 21, about 1,300 cfs; July 11, about 1,400 cfs.

Middle River near Indianola, Iowa

LOCATION.—Lat. 41°26'00", long. 93°33'25", in NW¼ sec. 31, T. 77 N., R. 23 W., on right bank 5 ft. downstream from bridge on U. S. Highways 65 and 69, 5 miles north of Indianola, 10 miles south of Des Moines, and 13 miles upstream from mouth.

DRAINAGE AREA.—502 sq. mi.

RECORDS AVAILABLE.—March 1940 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 773.34 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to June 11, 1946, June 9, 19467, to Nov. 23, 1948, and Sept. 8, 1951, to Oct. 30, 1952, wire-weight gage at same site and datum. June 11, 1946, to June 8, 1947, and Nov. 24, 1948, to Sept. 7, 1951, water-stage recorder at same site and datum.

AVERAGE DISCHARGE.—15 years, 269 cfs.

EXTREMES.—1940-55: Maximum discharge, 34,000 cfs June 13, 1947 (gage height, 26.40 ft.); minimum daily 1.4 cfs July 27, 1940.

REMARKS.—Records fair except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	8.0	6.0	6.8	3.6	3.5	155	432	6,440	482	183	48	62
2	9.2	5.4	6.8	3.5	3.5	86	351	6,290	996	215	47	58
3	9.2	5.7	6.7	3.5	3.5	351	307	2,450	3,600	2,090	59	54
4	10	5.4	6.5	3.4	3.5	180	296	1,040	1,270	790	49	51
5	*40	*5.7	6.3	3.4	3.5	120	307	790	700	565	42	51
6	30	5.4	6.0	3.4	3.5	75	420	640	550	307	41	50
7	22	6.0	5.8	3.4	3.5	54	910	550	1,660	254	40	46
8	*19	6.9	5.6	3.4	3.5	44	850	458	3,990	231	36	44
9	17	7.7	5.4	3.4	3.5	40	685	508	1,860	217	34	58
10	14	6.4	5.1	3.4	3.4	37	508	1,160	880	193	32	89
11	14	8.9	4.9	3.4	3.4	41	508	1,080	655	159	30	285
12	13	11	*4.7	3.4	10	45	1,270	820	580	147	30	203
13	13	8.0	4.6	3.4	11	47	1,060	550	*470	151	34	109
14	12	8.3	4.6	3.5	8.4	40	940	445	408	103	38	120
15	11	8.3	4.5	3.5	8.0	48	625	373	420	145	100	165
16	9.8	7.5	4.4	3.7	11	44	420	351	*640	151	77	111
17	9.5	8.0	4.3	4.0	30	40	329	351	432	147	88	89
18	9.2	7.7	4.3	*4.5	110	35	285	420	340	109	129	77
19	8.3	7.5	4.2	4.9	250	35	258	445	307	109	119	67
20	8.3	7.5	4.2	4.9	450	34	*243	408	274	218	145	60
21	8.0	*9.2	4.1	4.7	260	*33	296	470	329	*133	274	55
22	7.2	8.0	4.1	4.5	220	35	550	1,080	458	100	*458	*53
23	7.5	7.8	4.1	4.3	190	60	550	850	384	86	195	50
24	7.5	7.8	4.0	4.1	170	130	384	470	351	77	123	48
25	6.9	7.4	4.0	4.0	380	211	2,250	728	285	70	106	48
26	6.7	7.1	4.0	3.8	715	422	1,860	5,640	496	67	123	49
27	6.9	6.8	3.9	3.7	373	2,180	850	1,550	492	62	136	49
28	6.4	6.7	3.9	3.6	219	*4,160	730	655	307	59	193	49
29	6.2	6.7	3.8	3.6	.....	4,140	730	*482	237	55	104	44
30	6.4	6.8	3.7	3.5	.....	977	2,130	395	205	54	80	41
31	6.2	.....	3.6	3.5	.....	640	.....	470	.....	49	69	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1950; Jan. 1 to Feb. 25, Mar. 4-24, 1951.

Middle River near Indianola, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	39	39	a65	54	160	124	470	241	227	340	48	171
2.....	37	33	a72	52	180	136	384	*225	211	285	64	99
3.....	36	28	a70	50	210	143	351	207	243	258	48	78
4.....	36	23	a68	48	270	141	329	199	215	274	62	69
5.....	35	18	a64	46	350	179	290	193	201	320	100	62
6.....	207	22	a60	44	300	167	264	171	*185	209	62	58
7.....	123	27	a52	42	250	89	245	155	169	193	51	56
8.....	102	33	a45	39	210	102	237	138	149	601	40	50
9.....	92	40	a35	37	200	116	231	a140	211	1,140	51	49
10.....	78	46	a28	35	190	1,460	245	239	155	318	47	*46
11.....	63	67	a23	34	180	3,450	274	223	128	249	107	44
12.....	55	318	a18	33	180	2,950	264	199	107	211	233	40
13.....	50	307	*15	32	180	3,960	340	155	102	181	109	38
14.....	48	167	13	31	180	2,540	520	138	94	199	311	37
15.....	46	133	18	800	180	1,820	520	126	88	205	3,350	34
16.....	43	97	22	940	190	565	384	131	82	201	2,170	35
17.....	51	94	27	670	210	495	329	610	80	199	445	34
18.....	*55	88	32	580	230	508	318	565	88	*163	274	33
19.....	82	88	37	460	254	940	340	239	73	157	*185	31
20.....	70	84	42	380	432	1,350	329	187	1,450	143	167	29
21.....	70	83	46	300	340	1,680	285	207	*9,070	126	153	28
22.....	86	64	50	250	264	880	452	285	11,000	111	138	25
23.....	97	48	52	220	307	565	1,310	4,230	3,630	104	121	22
24.....	84	55	54	200	274	470	910	1,030	790	92	107	22
25.....	71	78	56	180	151	470	625	670	940	84	90	22
26.....	62	92	57	170	153	470	445	482	730	77	82	22
27.....	55	82	58	160	173	445	395	384	2,130	71	73	22
28.....	48	71	58	160	141	395	340	320	1,190	67	69	22
29.....	55	58	58	150	133	384	296	318	790	60	66	22
30.....	49	a54	57	150	.....	395	274	290	432	56	70	22
31.....	45	.....	56	150	.....	445	.....	251	.....	50	69	.....
1952-53												
1.....	22	20	30	29	45	170	1,700	850	104	200	24	8.6
2.....	20	18	*47	28	45	140	798	520	99	199	22	8.3
3.....	20	16	56	27	45	*124	670	395	100	141	22	12
4.....	19	16	60	27	45	117	625	329	160	126	26	9.8
5.....	18	20	66	26	44	108	445	307	348	118	26	9.2
6.....	18	20	72	26	130	100	373	*296	307	374	26	8.6
7.....	18	18	80	25	500	96	329	296	280	128	26	8.3
8.....	18	*17	120	26	660	118	296	264	966	90	27	7.7
9.....	18	15	200	*27	600	147	296	247	382	73	24	7.5
10.....	*18	15	110	30	1,430	237	329	225	*5,180	60	21	7.5
11.....	18	17	54	35	700	296	318	384	*2,020	58	20	7.7
12.....	19	18	26	42	408	296	274	245	626	55	19	8.0
13.....	20	17	28	52	285	274	243	209	351	54	18	6.7
14.....	22	16	35	77	247	239	227	187	285	1,180	16	6.7
15.....	22	16	52	130	205	243	254	173	264	502	16	6.4
16.....	20	15	48	215	515	237	274	165	395	116	16	6.4
17.....	20	362	45	170	470	223	233	163	239	94	15	6.4
18.....	20	880	43	150	565	197	205	151	183	71	*15	6.4
19.....	20	100	41	120	739	191	185	*141	145	60	14	6.7
20.....	20	59	40	107	3,120	175	173	134	116	47	14	6.4
21.....	20	38	39	93	1,140	157	169	342	106	*41	13	6.0
22.....	20	31	38	82	350	147	165	274	100	38	12	*6.0
23.....	20	23	38	75	270	252	163	207	*100	37	12	5.7
24.....	20	22	37	69	290	296	177	201	82	37	12	5.7
25.....	20	26	36	64	295	*209	432	190	77	34	11	6.0
26.....	20	33	35	59	285	177	351	408	67	31	11	6.0
27.....	20	30	34	55	264	165	285	300	235	30	9.8	5.7
28.....	20	28	33	52	220	153	245	230	1,460	29	9.8	5.4
29.....	20	29	32	49	.....	141	225	177	750	28	9.2	5.0
30.....	20	30	31	47	.....	2,030	880	126	307	29	9.8	5.7
31.....	20	.....	30	46	.....	1,720	.....	109	.....	27	8.6	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Oct. 31 to Nov. 9, Dec. 13-31, 1951; Jan. 1-15, Jan. 18 to Feb. 18, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 9, Feb. 21-24, Feb. 28 to Mar. 8, 1953. Discharge computed from gage readings or graph based on gage readings Oct. 1-28, 30, Nov. 8-26, 1952; Mar. 29, May 18-24, May 29 to June 3, June 5, 6, 8, 9, 11-13, June 17 to Sept. 2, 1953.

Middle River near Indianola, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	5.0	5.4	6.0	3.8	2.2	6.7	8.9	172	*4,210	39	11	88
2	5.4	5.4	6.4	3.7	2.5	6.5	8.6	1,050	675	36	11	77
3	6.0	5.2	6.9	3.6	2.7	6.2	8.0	1,150	1,060	33	11	65
4	5.2	5.4	7.2	3.4	2.8	6.0	7.7	330	492	30	11	50
5	5.0	5.0	6.9	3.2	3.0	5.8	8.3	193	283	27	11	42
6	5.2	5.2	7.5	3.0	3.3	5.4	64	121	185	25	11	37
7	4.8	5.0	7.2	2.9	3.8	5.0	43	85	126	23	11	34
8	5.2	5.2	*6.7	2.7	4.5	5.0	24	75	63	22	12	32
9	5.7	5.7	9.4	2.5	5.2	5.6	28	56	91	20	12	26
10	5.2	5.4	10	2.4	5.8	6.4	22	43	132	18	12	24
11	5.2	5.7	8.0	2.3	5.2	7.0	17	35	104	18	12	24
12	4.6	5.7	6.0	2.2	6.8	7.6	14	29	3,140	16	12	24
13	5.0	5.7	5.0	2.1	8.0	7.2	12	27	1,270	16	11	23
14	4.8	5.4	4.2	2.1	9.6	7.0	*11	24	414	14	11	22
15	4.6	6.0	3.7	2.0	12	6.4	14	20	1,800	12	11	21
16	4.4	6.4	3.2	1.9	*14	*5.8	17	21	*4,240	12	11	21
17	4.4	*5.7	2.8	1.8	15	5.8	13	20	1,110	12	58	20
18	4.6	5.7	3.4	1.7	15	6.4	9.8	19	486	12	*58	20
19	4.6	6.4	3.8	1.6	15	7.3	9.2	*18	306	11	44	20
20	*4.8	10	4.4	*1.7	15	7.8	12	16	239	*13	35	19
21	4.6	10	5.1	1.7	13	7.2	16	14	211	13	31	*18
22	4.6	7.2	4.5	1.8	12	7.0	14	14	164	13	118	17
23	4.6	6.7	3.9	1.8	11	8.0	12	14	162	13	1,480	17
24	4.6	6.2	3.4	1.9	10	10	9.8	30	174	13	1,500	18
25	4.8	6.0	3.0	1.9	9.0	11	717	21	120	13	785	16
26	6.0	5.7	3.3	2.0	8.4	10	318	12	91	12	1,310	17
27	6.4	5.2	3.6	2.0	7.8	9.5	318	23	74	12	524	16
28	5.4	4.5	3.9	2.0	7.2	8.9	118	69	61	12	294	16
29	5.2	5.0	4.0	2.0	.....	11	16	62	53	12	247	16
30	5.2	5.4	4.0	2.0	.....	9.5	59	65	44	12	170	16
31	5.2	.....	3.9	2.0	.....	8.9	.....	1,230	.....	12	115	.....
1954-55												
1	15	56	24	21	10	260	79	53	47	24	8.4	2.2
2	54	54	24	21	10	400	71	47	40	19	9.2	2.2
3	85	49	23	20	10	700	65	42	35	18	8.4	2.2
4	44	49	22	20	10	800	72	39	33	18	7.4	2.0
5	103	51	21	19	10	400	68	37	372	1,100	7.7	2.3
6	77	51	20	18	9.5	200	69	83	209	171	8.0	2.0
7	260	50	21	17	9.5	145	72	74	90	143	11	1.8
8	130	49	22	17	9.0	125	62	44	61	118	12	1.9
9	90	48	22	16	9.0	100	56	82	49	303	9.0	1.9
10	85	43	22	16	9.0	306	53	72	41	1,420	8.4	1.9
11	88	40	22	15	9.0	283	55	53	38	870	7.7	1.9
12	87	41	21	15	9.0	225	59	91	36	256	7.4	2.0
13	87	40	20	14	9.0	178	63	65	41	128	7.4	*1.9
14	125	41	*20	14	9.0	144	104	48	32	77	7.0	1.9
15	72	39	20	13	9.0	*126	139	41	30	54	6.3	2.0
16	101	39	20	13	9.0	111	116	39	27	44	5.3	2.0
17	83	*37	19	12	9.0	103	87	35	26	42	*5.0	2.3
18	59	36	19	12	95	93	68	*33	24	31	5.0	2.8
19	*56	37	21	12	700	83	58	30	23	26	4.8	5.6
20	53	36	20	11	900	83	*53	28	21	*24	4.5	5.0
21	47	35	20	11	330	95	48	27	*20	22	5.6	14
22	42	34	19	11	*210	86	56	27	19	22	13	32
23	113	34	19	11	185	74	71	26	19	20	8.8	13
24	128	29	18	11	165	61	166	24	20	18	4.8	9.2
25	85	30	20	*11	145	50	174	23	20	17	4.5	8.0
26	77	28	21	11	125	45	207	21	20	14	2.6	7.0
27	74	27	18	11	108	52	115	43	19	13	2.2	17
28	51	25	15	10	165	66	85	222	20	11	2.2	20
29	74	24	18	10	.....	80	68	214	36	10	2.5	314
30	66	23	20	10	.....	88	59	91	34	9.2	2.5	294
31	59	.....	21	10	.....	88	.....	58	.....	8.8	2.2	.....

* Discharge measurement made on this day.

Discharge computed from gage readings or graph based on gage readings Mar. 24, May 9-30, June 7-11, June 27 to July 19, Aug. 13-16, 19-21, Sept. 3 to Oct. 2, Oct. 4, 6, 18-23, 28, Oct. 30 to Nov. 27, 1954; May 31 to June 4, Aug. 15, 16, 1955.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 1, Dec. 9-31, 1953; Jan. 1 to Mar. 23, Nov. 28 to Dec. 31, 1954; Jan. 1 to Mar. 9, Mar. 21-27, 1955.

Middle River near Indianola, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	11.7	7.27	4.80	3.77	123	469	741	1,257	602	237	99.4	78.0
1951-52	66.8	81.2	45.4	210	223	898	400	438	1,165	218	289	44.1
1952-53	19.7	65.5	52.8	66.5	497	296	378	266	528	132	16.9	7.08
1953-54	5.04	5.92	5.20	2.31	8.21	7.35	65.0	163	719	17.0	224	28.5
1954-55	82.9	39.2	20.4	14.0	117	185	83.9	58.5	50.1	163	6.50	25.9

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.023	0.014	0.0090	0.0075	0.245	0.934	1.48	2.50	1.60	0.472	0.198	0.155
1951-52	.133	.162	.090	.418	.444	1.79	.797	.873	2.32	.434	.576	.088
1952-53	.039	.130	.105	.132	.990	.589	.753	.530	1.05	.263	.034	.014
1953-54	.010	.012	.010	.0046	.016	.015	.129	.325	1.43	.035	.446	.057
1954-55	.165	.078	.041	.028	.233	.369	.167	.117	.100	.325	.013	.052

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.03	0.02	0.01	0.009	0.26	1.08	1.65	2.89	1.78	0.54	0.23	0.17
1951-52	.15	.18	.10	.48	.48	2.06	.89	1.00	2.59	.50	.66	.10
1952-53	.05	.15	.12	.15	1.03	.68	.84	.61	1.17	.30	.04	.02
1953-54	.01	.01	.01	.005	.02	.02	.14	.37	1.60	.04	.51	.06
1954-55	.19	.09	.05	.03	.24	.43	.19	.13	.11	.37	.01	.06

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								129	3.48
1951	May 1, 1951	19.37	8,520	3.4	320	0.637	8.67	334	9.04
1952	June 22, 1952	22.20	14,400	13	340	.677	9.19	335	9.08
1953	June 10, 1953	17.53	6,450	5.0	191	.380	5.16	181	4.87
1954	June 1, 1954	17.55	6,540	1.6	104	.207	2.80	115	3.10
1955	July 10, 1955	(1)11.88	2,850	1.8	70.4	.140	1.90		

(1) Maximum gage height, 12.46 ft. Feb. 19, 1955 (backwater from ice).

Peak Discharge (base, 4,500 cfs)

1951: Mar. 28 (10 p.m.) 5,520 cfs (about 16.4 ft.); May 1 (11 p.m.) 8,520 cfs (19.37 ft.); May 26 (time unknown) 6,270 cfs (about (17.3 ft.); June 8 (4:30 a.m.) 4,920 cfs (15.65 ft.).

1952: Mar. 13 (11 a.m.) 4,920 cfs (15.65 ft.); May 28 (3:30 p.m.) 5,760 cfs (16.71 ft.); June 22 (5 a.m.) 14,400 cfs (22.20 ft.); Aug. 15 (12 p.m.) 5,440 cfs (16.26 ft.).

1953: June 10 (1 p.m.) 6,450 cfs (17.53 ft.).

1954: June 1 (4:30 a.m.) 6,540 cfs (17.55 ft.); June 12 (6:30 p.m.) 5,440 cfs (16.28 ft.); June 16 (6 a.m.) 5,840 cfs (16.80 ft.).

1955: No peak above base.

Lake Ahquabi near Indianola, Iowa

LOCATION.—Lat. 41°17'40", long. 93°35'35", in SW¼SW¼ sec. 14, T. 75 N., R. 24 W., at Lake Ahquabi State Park, 5 miles southwest of Indianola.

RECORDS AVAILABLE.—June 1936 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 862.77 ft. above mean sea level (Iowa State Highway Commission bench mark) and 6.50 ft. below crest of spillway of dam forming lake. Prior to June 26, 1952, staff gage 0.5 mile southeast at same datum.

EXTREMES.—1936-55: Maximum gage height observed, 9.95 ft. June 5, 1947; minimum observed 3.50 ft. Dec. 22-25, 1939.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	4.37	4.08	3.96	3.88	3.79	5.09	5.12	5.78	5.21	5.17	4.97	4.98
2.....	4.37	4.07	3.98	3.89	3.79	5.13	5.12	5.38	6.42	5.16	4.97	4.96
3.....	4.36	4.06	3.97	3.90	3.78	5.26	5.12	5.25	5.52	5.89	4.96	4.96
4.....	4.34	4.05	3.98	3.90	3.78	5.16	5.11	5.19	5.28	5.37	4.94	4.94
5.....	4.31	4.04	3.99	3.89	3.77	5.12	5.11	5.16	5.23	5.20	4.92	4.94
6.....	4.29	4.02	4.00	3.87	3.79	5.10	5.26	5.15	5.21	5.22	4.91	4.93
7.....	4.34	4.01	4.00	3.86	3.78	5.08	5.25	5.18	5.90	5.19	4.89	4.92
8.....	4.32	4.04	4.00	3.84	3.77	5.07	5.21	5.15	5.39	5.18	4.88	4.91
9.....	4.30	4.03	3.99	3.82	3.77	5.06	5.22	5.28	5.30	5.19	4.86	4.96
10.....	4.29	4.02	3.99	3.80	3.76	5.08	5.22	5.37	5.26	5.16	4.84	4.95
11.....	4.28	4.01	3.99	3.79	3.83	5.10	5.25	5.28	5.31	5.16	4.82	4.94
12.....	4.27	4.00	3.98	3.78	3.85	5.12	5.28	5.24	5.28	5.15	4.81	4.96
13.....	4.26	3.99	3.99	3.78	3.85	5.10	5.28	5.20	5.25	5.19	4.83	4.94
14.....	4.26	3.98	4.00	3.78	3.85	5.09	5.27	5.18	5.22	5.17	4.88	4.92
15.....	4.25	3.98	3.99	3.78	3.85	5.08	5.20	5.16	5.34	5.15	4.98	4.90
16.....	4.24	3.97	3.99	3.79	3.87	5.08	5.16	5.16	5.29	5.17	4.96	4.89
17.....	4.23	3.96	3.99	3.78	3.90	5.08	5.12	5.16	5.24	5.16	4.99	4.88
18.....	4.22	3.95	3.98	3.79	4.02	5.07	5.12	5.16	5.22	5.14	4.97	4.87
19.....	4.21	3.95	3.97	3.80	4.29	5.06	5.12	5.18	5.18	5.15	4.96	4.86
20.....	4.20	3.95	3.96	3.82	4.50	5.06	5.14	5.17	5.16	5.13	5.08	4.85
21.....	4.19	3.94	3.95	3.82	4.57	5.06	5.18	5.22	5.34	5.12	5.06	4.83
22.....	4.17	3.93	3.95	3.82	4.61	5.09	5.17	5.21	5.30	5.11	5.06	4.83
23.....	4.16	3.93	3.95	3.82	4.64	5.11	5.16	5.19	5.26	5.10	5.04	4.81
24.....	4.15	3.94	3.95	3.82	4.66	5.12	5.18	5.17	5.20	5.08	5.05	4.82
25.....	4.13	3.95	3.94	3.82	5.18	5.18	5.47	5.92	5.22	5.06	5.03	4.82
26.....	4.12	3.96	3.93	3.83	5.18	5.37	5.32	5.70	5.50	5.05	5.05	4.82
27.....	4.12	3.96	3.92	3.83	5.11	5.32	5.26	5.24	5.34	5.04	5.04	4.80
28.....	4.11	3.96	3.91	3.82	5.13	5.96	5.26	5.21	5.85	5.03	5.03	4.78
29.....	4.10	3.96	3.90	3.81	.....	5.32	5.28	5.19	5.21	5.01	5.02	4.76
30.....	4.10	3.95	3.89	3.81	.....	5.22	5.46	5.17	5.19	5.00	5.01	4.75
31.....	4.09	.....	3.88	3.80	.....	5.17	.....	5.22	.....	4.98	4.99	.....

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	4.75	5.10	5.14	5.19	5.09	5.24	5.28	5.24	6.14	6.67	6.31	6.59
2.....	4.75	5.09	5.14	5.18	5.09	5.25	5.25	5.21	6.19	6.65	6.31	6.58
3.....	4.75	5.09	5.14	5.18	5.11	5.29	5.22	5.17	6.18	6.66	6.32	6.55
4.....	4.75	5.08	5.14	4.19	5.12	5.30	5.20	5.15	6.19	6.64	6.31	6.54
5.....	4.74	5.07	5.14	5.20	5.12	5.30	5.18	5.13	6.18	6.62	6.29	6.52
6.....	4.79	5.06	5.13	5.20	5.11	5.30	5.17	5.12	6.18	6.60	6.28	6.51
7.....	4.80	5.05	5.13	5.20	5.11	5.31	5.16	5.10	6.18	6.61	6.26	6.50
8.....	4.79	5.05	5.12	5.20	5.10	5.32	5.15	5.09	6.22	6.63	6.28	6.49
9.....	4.79	5.05	5.12	5.20	5.09	5.33	5.19	5.28	6.19	6.61	6.30	6.48
10.....	4.78	5.05	5.12	5.19	5.08	5.79	5.17	5.21	6.14	6.59	6.29	6.47
11.....	4.78	5.05	5.12	5.19	5.10	6.18	5.16	5.19	6.20	6.57	6.46	6.45
12.....	4.77	5.78	5.12	5.19	5.10	6.30	5.18	5.21	6.18	6.54	6.47	6.44
13.....	4.76	5.36	5.12	5.20	5.14	6.36	5.22	5.17	6.04	6.56	6.47	6.43
14.....	4.74	5.20	5.16	5.27	5.17	5.82	5.31	5.16	6.04	6.58	6.64	6.42
15.....	4.73	5.17	5.16	5.26	5.16	5.77	5.31	5.16	6.01	6.58	7.36	6.40
16.....	4.74	5.15	5.16	5.22	5.15	5.57	5.30	5.40	6.01	6.56	6.93	6.38
17.....	4.82	5.14	5.17	5.21	5.15	5.47	5.28	5.50	5.97	6.55	6.79	6.38
18.....	4.90	5.14	5.17	5.21	5.16	5.84	5.25	5.54	5.95	6.56	6.74	6.36
19.....	4.90	5.13	5.17	5.20	5.24	6.07	5.23	5.55	5.92	6.55	6.71	6.34
20.....	4.92	5.13	5.19	5.20	5.22	5.80	5.22	5.55	6.09	6.53	6.71	6.33
21.....	5.04	5.13	5.20	5.19	5.21	5.73	5.21	5.57	7.06	6.52	6.70	6.32
22.....	5.18	5.14	5.20	5.16	5.19	5.68	5.60	5.79	6.54	6.48	6.69	6.30
23.....	5.18	5.14	5.20	5.13	5.21	5.60	5.72	6.38	6.40	6.48	6.66	6.28
24.....	5.16	5.14	5.19	5.11	5.21	5.53	5.68	6.36	6.30	6.46	6.65	6.27
25.....	5.14	5.15	5.19	5.11	5.21	5.47	5.67	6.29	6.30	6.44	6.63	6.26
26.....	5.13	5.14	5.19	5.12	5.21	5.44	5.50	6.31	6.52	6.43	6.62	6.24
27.....	5.14	5.14	5.18	5.12	5.22	5.38	5.41	6.30	6.80	6.41	6.61	6.23
28.....	5.13	5.14	5.18	5.11	5.22	5.36	5.36	6.24	6.76	6.39	6.60	6.22
29.....	5.12	5.14	5.19	5.11	5.24	5.32	5.32	6.10	6.71	6.36	6.59	6.20
30.....	5.12	5.14	5.19	5.10	.....	5.29	5.27	6.14	6.68	6.34	6.59	6.19
31.....	5.11	.....	5.20	5.10	.....	5.32	.....	6.14	.....	6.32	6.58	.....
1952-53												
1.....	6.11	5.75	6.66	6.62	6.62	6.67	6.93	6.97	6.50	.....	6.40	5.90
2.....	6.09	5.75	6.66	6.63	6.61	6.66	6.81	6.78	6.43	.....	6.39	5.88
3.....	6.07	5.74	6.65	6.63	6.61	6.66	6.79	6.74	6.39	6.67	6.37	5.86
4.....	6.06	5.72	6.65	6.62	6.61	6.66	6.75	6.71	6.38	6.65	6.35	5.87
5.....	6.04	5.72	6.65	6.62	6.66	6.65	6.71	6.70	6.40	6.69	6.33	5.85
6.....	6.02	5.70	6.66	6.62	6.72	6.65	6.70	6.70	6.41	6.81	6.33	5.83
7.....	6.01	5.69	6.67	6.62	6.77	6.65	6.68	6.70	6.42	6.71	6.31	5.81
8.....	6.00	5.68	6.70	6.62	6.78	6.65	6.68	6.68	6.55	6.66	6.30	5.80
9.....	5.98	5.67	6.72	6.61	6.75	6.68	6.70	6.65	6.67	6.64	6.27	5.77
10.....	5.97	5.67	6.70	6.61	6.82	6.73	6.73	6.60	7.36	6.62	6.25	5.75
11.....	5.97	5.66	6.68	6.61	6.79	6.75	6.71	6.58	6.86	6.59	6.23	5.74
12.....	5.96	5.66	6.66	6.61	6.72	6.75	6.70	6.58	6.74	6.58	6.20	5.71
13.....	5.95	5.65	6.65	6.62	6.68	6.74	6.68	6.57	6.70	6.57	6.18	5.69
14.....	5.94	5.65	6.64	6.64	6.69	6.73	6.66	6.57	6.67	6.59	6.17	5.68
15.....	5.92	5.64	6.63	6.71	6.68	6.71	6.68	6.58	6.75	6.59	6.17	5.66
16.....	5.91	5.67	6.63	6.68	6.68	6.70	6.68	6.59	6.80	6.58	6.15	5.65
17.....	5.89	6.39	6.63	6.66	6.66	6.68	6.67	6.60	.....	6.58	6.14	5.63
18.....	5.88	6.66	6.62	6.64	6.66	6.67	6.65	6.61	.....	6.57	6.13	5.63
19.....	5.87	6.65	6.64	6.63	6.83	6.66	6.64	6.61	6.61	6.56	6.13	5.63
20.....	5.86	6.64	6.66	6.64	7.07	6.65	6.64	6.59	6.59	6.55	6.11	5.64
21.....	5.84	6.62	6.64	6.63	6.79	6.61	6.64	.....	6.56	6.54	6.09	5.65
22.....	5.83	6.62	6.65	6.63	6.70	6.61	6.64	.....	.....	6.55	6.07	5.68
23.....	5.82	6.62	6.66	6.63	6.68	6.74	6.64	.....	.....	6.54	6.06	5.70
24.....	5.82	6.62	6.65	6.63	6.67	6.73	6.71	.....	.....	6.52	6.04	.....
25.....	5.82	6.69	6.64	6.62	6.67	6.69	6.82	.....	6.52	6.50	6.03	.....
26.....	5.82	6.82	6.63	6.62	6.68	6.67	6.76	.....	6.51	6.48	6.00	.....
27.....	5.81	6.73	6.63	6.61	6.67	6.66	6.71	.....	6.50	6.47	5.98	.....
28.....	5.78	6.70	6.63	6.61	6.67	6.65	6.69	6.60	.....	6.46	5.96	.....
29.....	5.77	6.67	6.63	6.61	.....	6.66	6.69	6.58	.....	6.44	5.94	.....
30.....	5.77	6.66	6.63	6.61	.....	7.12	6.80	6.56	.....	6.43	5.93	.....
31.....	5.76	.....	6.62	6.62	.....	6.92	.....	6.55	.....	6.42	5.92	.....

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	.....	5.07	4.95	4.96	4.85	4.91	4.91	5.53	6.83	6.44	5.80	6.20
2	.....	5.06	4.94	4.96	4.85	4.91	4.90	5.87	6.77	6.41	5.78	6.18
3	.....	5.05	4.97	4.95	4.84	4.90	4.90	6.07	6.87	6.39	5.75	6.17
4	.....	5.05	4.98	4.95	4.85	4.89	4.88	6.08	6.75	6.38	5.73	6.14
5	.....	5.04	4.98	4.94	4.85	4.89	4.90	6.09	6.70	6.30	5.70	6.12
6	.....	5.02	4.99	4.93	4.84	4.88	4.95	6.09	6.68	6.34	5.69	6.10
7	.....	5.01	4.98	4.93	4.83	4.88	4.95	6.09	6.63	6.32	5.68	6.09
8	.....	5.00	4.96	4.93	4.84	4.87	4.94	6.07	6.62	6.30	5.72	6.07
9	.....	4.98	4.98	4.93	4.84	4.87	4.93	6.06	6.63	6.26	5.71	6.08
10	.....	4.97	5.00	4.91	4.84	4.86	4.94	6.05	6.62	6.24	5.69	6.06
11	.....	4.97	5.00	4.91	4.83	4.86	4.93	6.05	6.62	6.20	5.69	6.06
12	.....	4.97	5.00	4.90	4.82	4.86	4.92	6.04	6.69	6.19	5.69	6.05
13	5.23	4.96	5.00	4.89	4.81	4.86	4.91	6.03	6.66	6.17	5.68	6.03
14	5.23	4.96	4.99	4.89	4.82	4.85	4.92	6.02	6.64	6.14	5.68	6.02
15	5.22	4.96	4.98	4.89	4.84	4.85	4.98	6.01	6.88	6.11	5.67	6.01
16	5.20	4.96	4.97	4.88	4.84	4.85	4.97	6.00	6.92	6.09	5.66	6.00
17	5.19	4.96	4.96	4.87	4.83	4.84	4.95	5.99	6.76	6.06	5.73	5.99
18	5.17	4.96	4.95	4.87	4.82	4.85	4.95	5.98	6.69	6.04	5.76	5.98
19	5.16	4.97	4.95	4.87	4.83	4.87	4.95	5.97	6.66	6.02	5.78	5.96
20	5.15	5.02	4.95	4.87	4.87	4.86	4.99	5.95	6.64	5.99	5.77	5.95
21	5.14	5.01	4.97	4.86	4.90	4.85	5.01	5.93	6.64	5.98	5.75	5.92
22	5.17	5.01	4.97	4.85	4.90	4.85	5.00	5.92	6.63	5.96	5.87	5.90
23	5.16	5.01	4.97	4.85	4.90	4.85	5.00	5.93	6.61	5.95	5.87	5.89
24	5.15	5.00	4.97	4.85	4.90	4.87	5.00	5.95	6.59	5.94	5.91	5.86
25	5.15	4.98	4.96	4.85	4.90	4.93	5.20	5.94	6.57	5.92	5.90	5.85
26	5.14	4.98	4.96	4.85	4.91	4.92	5.30	5.95	6.55	5.90	6.19	5.84
27	5.12	4.96	4.96	4.85	4.91	4.91	5.35	5.96	6.53	5.88	6.27	5.83
28	5.11	4.96	4.96	4.85	4.91	4.90	5.35	6.00	6.51	5.86	6.27	5.86
29	5.10	4.95	4.96	4.85	.....	4.92	5.35	6.00	6.48	5.85	6.20	5.87
30	5.09	4.94	4.96	4.85	.....	4.92	5.42	6.00	6.45	5.83	6.24	5.86
31	5.08	.....	4.96	4.84	.....	4.92	.....	6.18	.....	5.81	6.22	.....
1954-55												
1	5.85	5.87	5.71	5.75	5.91	6.68	6.57	5.45	5.28	5.06	5.01	4.51
2	5.85	5.85	5.70	5.74	5.91	6.70	6.57	5.44	5.27	5.03	4.99	4.49
3	5.85	5.85	5.70	5.75	5.91	6.71	6.57	5.43	5.27	5.01	4.97	4.47
4	5.86	5.85	5.70	5.75	5.92	6.71	6.58	5.43	5.30	5.00	4.93	4.45
5	5.99	5.84	5.69	5.84	5.93	6.69	6.58	5.42	5.29	5.13	4.92	4.43
6	6.00	5.84	5.68	5.89	5.93	6.66	6.57	5.41	5.29	5.13	4.93	4.41
7	5.99	5.84	5.67	5.89	5.93	6.64	6.55	5.40	5.29	5.12	4.95	4.39
8	6.00	5.84	5.68	5.89	5.93	6.64	6.49	5.38	5.26	5.10	4.92	4.37
9	6.01	5.83	5.67	5.89	5.93	6.64	6.40	5.42	5.24	5.12	4.90	4.34
10	6.04	5.83	5.67	5.88	5.93	6.65	6.24	5.45	5.22	5.36	4.88	4.32
11	6.05	5.83	5.67	5.88	5.93	6.64	6.12	5.44	5.21	5.46	4.85	4.30
12	6.04	5.82	5.66	5.88	5.92	6.64	5.95	5.44	5.20	5.43	4.83	4.28
13	6.02	5.81	5.66	5.87	5.92	6.63	5.85	5.45	5.17	5.42	4.81	4.26
14	6.03	5.81	5.67	5.87	5.92	6.62	5.81	5.43	5.16	5.40	4.79	4.25
15	6.00	5.80	5.67	5.87	5.92	6.61	5.73	5.42	5.15	5.38	4.77	4.24
16	5.99	5.80	5.67	5.86	5.92	6.60	5.66	5.41	5.14	5.37	4.75	4.22
17	5.97	5.80	5.69	5.86	5.92	6.58	5.61	5.40	5.13	5.36	4.74	4.20
18	5.96	5.79	5.69	5.89	5.96	6.58	5.56	5.39	5.11	5.34	4.72	4.19
19	5.95	5.78	5.69	5.90	6.16	6.57	5.53	5.38	5.10	5.32	4.70	4.22
20	5.93	5.77	5.69	5.89	6.29	6.58	5.49	5.36	5.10	5.28	4.68	4.23
21	5.92	5.77	5.69	5.90	6.33	6.61	5.45	5.35	5.08	5.26	4.67	4.33
22	5.92	5.77	5.69	5.90	6.34	6.60	5.43	5.35	5.06	5.24	4.69	4.33
23	5.91	5.77	5.70	5.90	6.36	6.60	5.45	5.34	5.04	5.22	4.68	4.31
24	5.90	5.77	5.69	5.91	6.43	6.59	5.52	5.31	5.04	5.18	4.65	4.29
25	5.89	5.75	5.69	5.91	6.46	6.60	5.51	5.30	5.06	5.17	4.62	4.26
26	5.91	5.75	5.71	5.91	6.61	6.60	5.50	5.32	5.04	5.15	4.59	4.27
27	5.92	5.75	5.73	5.91	6.69	6.59	5.49	5.32	5.02	5.12	4.57	4.33
28	5.91	5.75	5.75	5.91	6.69	6.59	5.48	5.34	5.00	5.10	4.55	4.32
29	5.89	5.73	5.76	5.91	.....	6.59	5.47	5.32	5.04	5.08	4.55	4.47
30	5.87	5.72	5.75	5.91	.....	6.58	5.46	5.31	5.06	5.06	4.55	4.48
31	5.87	.....	5.75	5.91	.....	6.58	.....	5.30	.....	5.04	4.53	.....

South River near Ackworth, Iowa

LOCATION.—Lat. 41°22'20", long. 93°25'40", in sec. 19, T. 76 N., R. 22 W., on right bank 30 ft. downstream from bridge on State Highway 92, 2 miles east of Ackworth, 4.5 miles downstream from Otter Creek, and 6 miles east of Indianola.

DRAINAGE AREA.—475 sq. mi.

RECORDS AVAILABLE.—February 1940 to September 1955.

GAGE.—Water-stage recorder and wire-weight gage read once daily. Datum of gage is 761.91 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to June 12, 1946, wire-weight gage only at same site and datum.

AVERAGE DISCHARGE.—15 years, 240 cfs.

EXTREMES.—1940-55: Maximum discharge, 34,000 cfs June 5, 1947 (gage height, 24.60 ft.); minimum daily 0.3 cfs July 21-25, 1940.

REMARKS.—Records fair except those for periods of ice effect or doubtful gage-height record, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	3.0	2.6	3.3	2.0	1.6	200	330	7,800	290	138	15	11
2	2.6	2.3	3.4	2.0	1.6	90	315	5,530	2,130	192	14	9.7
3	3.0	2.3	3.4	2.0	1.6	889	231	969	3,910	4,080	32	9.7
4	2.3	2.0	3.3	1.9	1.6	356	200	460	668	1,820	29	8.7
5	*2.0	*2.1	3.1	1.9	1.6	126	200	292	376	358	16	9.2
6	2.0	2.3	3.0	1.8	1.6	60	641	249	285	252	18	11
7	3.8	2.3	2.9	1.8	1.6	45	2,580	203	3,090	202	16	9.2
8	*3.3	2.8	2.8	1.8	1.6	36	801	176	5,910	160	14	*9.2
9	3.8	3.4	2.7	1.8	1.6	32	785	335	1,230	288	14	9.2
10	3.8	3.1	2.7	1.7	1.6	27	505	840	445	225	13	30
11	2.8	2.9	2.6	1.7	7.0	27	810	1,000	333	122	11	32
12	2.1	2.8	*2.6	1.7	6.0	29	3,090	363	331	117	9.2	22
13	1.6	3.2	2.5	1.7	5.0	30	4,440	243	*241	146	12	26
14	1.6	3.0	2.5	1.7	*5.3	31	1,370	183	200	156	21	18
15	1.6	3.3	2.4	1.6	5.0	30	535	151	856	106	157	16
16	2.0	3.3	2.4	1.6	8.6	27	304	*136	852	82	117	6.2
17	1.6	3.0	2.3	1.7	14	23	255	130	315	*282	*56	5.1
18	1.8	2.8	2.3	1.7	230	21	*213	129	188	226	35	5.4
19	1.6	2.6	2.3	*1.8	780	20	177	129	141	103	26	5.1
20	1.6	2.1	2.2	1.9	660	19	167	179	122	127	20	5.8
21	1.6	*2.3	2.2	2.0	363	*18	217	176	479	103	166	5.4
22	2.0	2.1	2.2	2.0	210	28	327	202	740	103	74	5.8
23	1.8	2.1	2.2	2.0	150	50	198	237	*385	49	42	5.4
24	2.0	2.4	2.2	1.9	205	120	177	183	415	39	24	5.1
25	2.0	2.6	2.2	1.8	1,090	281	2,440	2,230	305	35	22	5.4
26	1.8	1.8	2.2	1.8	880	1,160	1,740	11,100	1,970	30	19	5.8
27	2.3	2.3	2.2	1.7	229	2,900	535	2,360	1,130	30	19	5.1
28	2.3	2.8	2.2	1.7	141	4,150	535	462	585	26	20	4.8
29	3.0	2.8	2.1	1.7	.....	3,300	402	312	243	26	27	5.1
30	2.6	2.3	2.1	1.6	.....	778	1,480	245	175	24	22	4.8
31	2.3	.....	2.1	1.6	.....	475	.....	337	.....	21	12	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 9-13, 24, 25, 27-29, Dec. 1-31, 1950; Jan. 1 to Feb. 20, Feb. 22, 23, Mar. 6-24, 1951.

South River near Ackworth, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	5.1	29	100	37	80	97	*243	129	102	137	11	18
2.....	6.2	27	96	36	110	80	204	121	243	116	13	22
3.....	5.4	25	91	35	170	65	178	108	152	113	13	19
4.....	5.1	21	82	33	312	54	173	97	114	97	13	15
5.....	4.8	19	*73	31	337	65	167	88	102	70	9.7	14
6.....	5.4	*17	66	30	259	75	156	79	97	50	*9.2	12
7.....	24	16	62	28	204	86	145	74	70	56	10	11
8.....	22	18	56	*27	180	97	140	84	56	92	18	10
9.....	*18	19	51	26	137	190	145	346	129	59	33	10
10.....	17	21	45	25	130	1,980	165	1,160	76	44	30	*9.7
11.....	12	29	35	25	125	3,470	162	270	44	33	1,720	9.7
12.....	9.7	2,170	28	24	121	3,770	162	177	36	27	178	8.7
13.....	8.7	1,550	23	24	119	5,200	228	137	33	171	73	7.9
14.....	7.9	282	18	350	121	1,610	660	121	33	109	125	7.4
15.....	7.4	164	15	1,300	103	740	415	*111	37	72	4,620	7.4
16.....	17	138	18	880	109	480	234	370	37	45	454	7.4
17.....	51	130	20	532	113	480	198	1,360	28	37	122	7.4
18.....	66	76	23	302	108	1,840	215	385	23	38	74	7.4
19.....	105	72	26	480	202	3,910	206	220	23	34	*56	7.4
20.....	51	84	30	550	198	1,520	188	178	330	28	50	7.4
21.....	65	109	33	275	109	602	182	149	*13,500	22	43	7.0
22.....	350	102	36	167	116	990	880	912	8,870	19	39	7.0
23.....	186	47	38	135	111	1,330	1,240	3,510	1,280	18	35	7.0
24.....	88	51	39	115	98	585	740	908	568	14	30	7.0
25.....	55	84	40	105	74	720	361	373	334	12	30	7.0
26.....	50	91	41	96	80	498	278	257	331	12	25	7.0
27.....	45	94	41	90	*94	379	241	184	*2,490	11	25	6.2
28.....	42	102	41	85	109	322	200	158	938	11	21	6.2
29.....	35	100	40	80	100	305	171	137	252	11	23	5.8
30.....	33	97	39	77	.....	295	145	124	162	9.7	22	5.4
31.....	30	.....	38	76	.....	285	.....	108	.....	9.2	20	.....
952-53												
1.....	5.8	5.4	84	36	65	120	3,860	1,830	12	109	11	4.5
2.....	5.4	5.4	*80	35	60	76	1,240	620	11	130	11	4.2
3.....	5.4	5.4	78	35	*58	*110	990	412	9.5	113	9.5	4.8
4.....	5.4	6.2	76	34	60	110	742	345	16	56	9.5	8.5
5.....	5.1	*5.8	74	34	70	100	398	317	72	85	9.5	8.0
6.....	4.8	5.8	110	34	420	94	322	359	135	366	10	6.2
7.....	*4.8	6.2	150	*35	2,000	92	270	*456	126	90	11	4.5
8.....	4.5	5.8	230	37	1,080	130	237	284	610	36	10	4.5
9.....	4.2	5.8	280	41	725	253	274	216	370	28	9.0	4.5
10.....	4.8	5.4	140	46	1,030	708	426	185	13,500	28	8.5	4.5
11.....	5.4	6.2	70	52	870	778	295	152	*4,670	26	8.5	4.5
12.....	6.2	5.8	35	60	384	585	221	128	600	24	8.0	4.2
13.....	6.6	5.8	21	74	328	398	190	109	398	22	8.0	4.2
14.....	6.6	5.8	20	140	311	322	201	101	311	1,010	7.0	4.0
15.....	6.2	5.8	50	370	203	441	246	99	1,420	2,120	6.6	4.0
16.....	5.8	6.2	54	600	170	290	262	99	1,460	152	6.6	4.0
17.....	5.1	2,750	52	460	270	223	287	103	348	82	6.6	3.8
18.....	5.1	1,790	51	360	400	212	260	*139	209	70	*6.6	3.8
19.....	5.1	221	54	280	1,200	198	154	115	154	60	6.2	3.6
20.....	5.4	76	66	240	*5,300	157	137	90	111	55	5.4	3.6
21.....	5.4	46	58	210	1,490	139	137	170	84	50	5.4	3.4
22.....	5.4	43	54	180	284	128	126	168	76	*46	5.4	*3.4
23.....	5.8	24	52	160	257	552	115	143	*64	48	5.4	3.4
24.....	5.8	22	51	140	277	519	402	115	50	20	5.4	3.4
25.....	6.2	94	50	120	284	*244	2,090	101	52	20	5.1	3.4
26.....	5.8	831	49	110	257	183	672	70	48	16	5.1	3.4
27.....	5.8	160	46	100	282	181	370	52	43	13	4.5	3.2
28.....	6.6	120	43	90	212	159	274	43	1,410	12	4.8	3.6
29.....	5.8	100	41	80	.....	132	221	38	328	11	4.8	3.6
30.....	5.4	90	39	74	.....	4,590	1,750	30	128	11	4.5	3.8
31.....	5.1	.....	37	70	.....	3,650	.....	18	.....	10	4.8	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3-9, Dec. 11-31, 1951; Jan. 1-15, Jan. 24 to Feb. 3, Mar. 1-7, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 8, Feb. 16-18, Mar. 1-8, 1953.

South River near Ackworth, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	3.4	4.8	4.0	2.7	1.6	4.2	4.5	356	3,420	6.4	2.7	8.4
2.....	3.6	4.2	4.0	2.6	1.7	3.8	4.5	1,730	552	5.8	2.7	d7.5
3.....	3.6	3.6	4.5	2.5	1.8	3.5	4.2	1,010	1,370	5.8	2.5	d6.0
4.....	4.8	3.6	8.0	2.3	2.0	3.2	3.6	181	334	5.8	2.5	d5.4
5.....	6.6	3.6	4.8	2.2	2.3	2.8	15	87	125	5.8	2.5	d4.9
6.....	4.8	3.4	5.1	2.1	2.5	2.6	186	54	74	5.4	2.5	d4.6
7.....	3.8	3.6	5.1	1.9	2.8	3.3	14	38	48	4.7	2.3	d4.2
8.....	3.8	3.4	*4.5	1.8	3.2	4.2	7.0	34	33	4.7	6.8	d3.9
9.....	3.4	3.6	2.8	1.7	3.7	4.0	4.2	28	29	3.0	5.4	d3.7
10.....	3.8	3.8	3.1	1.6	4.0	4.0	4.0	24	35	4.0	3.6	d3.5
11.....	3.8	3.8	3.6	1.6	3.5	3.4	4.0	21	22	3.6	3.8	d3.3
12.....	3.2	4.0	4.0	1.5	4.0	3.2	3.6	20	1,540	3.0	4.0	d3.1
13.....	3.4	4.0	4.3	1.5	5.2	3.6	3.2	17	218	2.3	4.7	d2.9
14.....	3.4	4.0	3.8	1.4	6.4	3.4	*3.0	15	72	2.3	4.4	d2.8
15.....	3.6	3.8	3.3	1.4	8.0	3.3	4.2	12	2,220	2.1	4.0	d2.7
16.....	3.6	3.6	2.8	1.3	*9.5	*5.4	8.0	12	4,800	2.9	3.6	d2.6
17.....	3.8	*4.2	2.2	1.3	4.5	3.8	4.0	11	*792	2.7	10	d2.5
18.....	3.6	4.0	2.0	1.3	8.0	4.2	3.2	*10	212	2.9	*18	d2.5
19.....	3.4	4.8	2.3	1.3	6.2	5.8	3.4	*10	112	2.9	13	d2.4
20.....	*4.5	6.6	2.6	*1.4	9.0	4.8	4.8	9.8	72	*3.0	7.5	d2.3
21.....	3.2	7.5	2.9	1.5	11	4.5	11	8.8	61	3.0	6.1	d*2.2
22.....	3.6	4.8	2.7	1.5	7.0	4.2	11	8.0	59	5.0	66	d2.2
23.....	2.8	4.0	2.5	1.5	7.5	3.8	6.2	55	28	4.0	27	d2.2
24.....	2.8	3.6	2.3	1.5	5.1	4.0	4.0	54	23	3.6	102	d2.1
25.....	3.4	3.6	2.2	1.5	5.4	9.0	3,200	28	19	3.4	79	d2.1
26.....	3.4	3.4	2.5	1.5	5.4	9.0	592	13	15	3.0	848	d2.0
27.....	3.8	3.3	2.7	1.5	5.4	6.2	262	19	12	2.9	123	d2.0
28.....	3.8	3.2	2.9	1.5	4.5	6.2	93	49	10	2.7	68	d2.0
29.....	3.8	3.1	2.9	1.5	.....	6.2	66	66	8.8	2.7	27	6.8
30.....	3.6	3.8	2.9	1.5	.....	5.1	168	25	7.5	2.7	19	3.6
31.....	3.8	.....	2.8	1.5	.....	4.5	.....	540	.....	2.5	11	.....
1954-55												
1.....	2.9	3.4	3.2	3.0	3.0	209	42	11	4.4	5.8	3.8	1.2
2.....	3.2	3.6	3.0	3.0	3.0	622	31	13	3.8	5.4	3.8	1.0
3.....	3.4	3.6	3.1	3.0	3.0	930	27	9.8	4.0	12	3.6	.9
4.....	2.5	3.4	3.1	3.0	3.0	620	42	12	4.7	5.0	3.4	.9
5.....	103	3.2	3.1	3.0	3.0	287	64	9.3	4.4	1,150	3.2	.9
6.....	51	3.4	3.0	3.0	3.0	103	49	8.4	3.8	187	90	.9
7.....	27	2.9	3.0	3.0	3.0	60	32	16	3.4	44	42	.9
8.....	15	3.0	2.7	3.0	3.0	40	28	6.8	3.4	131	13	.8
9.....	15	3.2	2.8	3.0	3.0	55	24	8.0	2.0	698	6.4	.7
10.....	11	3.2	2.9	3.0	3.0	80	28	43	2.9	2,530	4.4	1.0
11.....	20	3.2	3.0	3.1	3.0	75	29	25	3.0	732	2.3	1.0
12.....	129	3.0	3.1	3.1	3.0	65	47	131	2.7	108	2.1	1.0
13.....	96	3.0	3.1	3.1	3.0	54	44	25	3.4	41	2.1	*1.0
14.....	17	2.9	3.1	3.1	3.0	47	129	24	3.0	23	1.5	.9
15.....	11	2.5	*3.2	3.1	3.0	*38	214	24	2.9	12	1.3	.8
16.....	37	2.5	3.2	3.1	3.0	30	96	14	2.7	9.8	*2.3	.7
17.....	15	*3.4	3.2	3.1	3.4	27	65	9.8	2.7	11	2.0	.8
18.....	8.8	d3.3	3.2	3.1	50	25	48	*7.2	2.7	9.3	1.5	.9
19.....	6.8	d3.3	3.2	3.1	1,000	23	38	5.8	2.7	8.4	1.4	1.3
20.....	*4.7	d3.3	3.2	3.1	600	22	*36	5.8	2.7	*7.5	1.0	1.7
21.....	3.8	d3.2	3.2	3.1	320	20	29	5.4	*2.5	6.8	.9	7.2
22.....	3.0	d3.2	3.2	3.1	*175	19	23	5.4	2.5	6.4	1.0	12
23.....	3.0	d3.2	3.1	3.1	150	18	28	5.8	3.0	6.4	1.3	3.6
24.....	3.0	d3.2	3.1	3.1	125	17	181	5.4	2.0	4.7	2.7	1.7
25.....	2.9	d3.2	3.0	*3.1	110	16	98	5.4	3.0	3.8	1.8	1.5
26.....	6.1	d3.2	3.0	3.1	95	15	52	9.3	2.9	4.0	1.4	1.4
27.....	4.7	d3.2	3.0	3.1	75	23	30	9.3	3.0	3.8	1.1	2.9
28.....	4.4	d3.2	3.0	3.1	130	33	22	5.0	2.3	3.8	1.0	11
29.....	3.4	3.2	3.0	3.1	.....	54	17	4.7	3.2	3.8	1.9	316
30.....	3.0	3.2	3.0	3.1	.....	55	15..	6.8	10	3.6	1.9	34
31.....	2.9	.....	3.0	3.0	.....	49	.....	5.8	.....	3.8	1.3	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 26-29, Dec. 10-31, 1953; Jan. 1 to Feb. 15, Mar. 1-7, 13-15, Dec. 8-31, 1954; Jan. 1 to Feb. 28, Mar. 7-14, 21-27, 1955.

South River near Ackworth, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	2.31	2.59	2.51	1.79	179	496	867	1,209	945	312	35.5	10.4
1951-52	46.1	193	44.6	196	143	1,036	294	401	1,017	50.9	256	9.48
1952-53	5.51	215	74.3	140	655	512	572	229	897	159	7.22	4.28
1953-54	3.74	4.02	3.42	1.67	5.04	4.49	157	147	544	3.70	47.9	3.55
1954-55	20	3.18	3.06	3.06	103	120	53.6	15.4	3.38	186	6.71	13.7

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1950-51	0.0019	0.0055	0.0053	0.0038	0.377	1.04	1.83	2.55	1.99	0.657	0.075	0.022
1951-52	.097	.406	.094	.413	.301	2.18	.619	.844	2.14	.107	.539	.020
1952-53	.012	.453	.156	.295	1.38	1.08	1.20	.482	1.89	.335	.015	.0090
1953-54	.0079	.0085	.0072	.0035	.011	.0095	.331	.309	1.15	.0078	.101	.0075
1954-55	.042	.0067	.0064	.0064	.217	.253	.113	.032	.0071	.392	.014	.029

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.006	0.006	0.006	0.004	0.39	1.20	2.04	2.94	2.22	0.76	0.09	0.02
1951-52	.11	.45	.11	.48	.32	2.51	.69	.97	2.39	.12	.62	.02
1952-53	.01	.51	.18	.34	1.44	1.24	1.34	.56	2.11	.39	.02	.01
1953-54	.009	.009	.008	.004	.01	.01	.37	.36	1.28	.009	.12	.008
1954-55	.05	.007	.007	.007	.23	.29	.13	.04	.008	.45	.02	.03

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								178	5.10
1951	May 26, 1951	18.84	13,100	1.6	339	0.714	9.68	362	10.33
1952	June 22, 1952	21.83	16,600	4.8	307	.646	8.79	308	8.82
1953	June 10, 1953	20.65	16,200	3.2	285	.600	8.16	261	7.48
1954	Apr. 25, 1954	13.70	7,100	1.3	76.6	.161	2.20	77.9	2.24
1955	July 10, 1955	12.02	5,500	.7	44.1	.093	1.27		

Peak Discharge (base, 3,000 cfs)

1951: Mar. 28 (2 p.m.) 5,450 cfs (12.02 ft.); Apr. 7 (7:30 a.m.) 3,220 cfs (9.28 ft.); Apr. 13 (7 a.m.) 5,360 cfs (11.90 ft.); Apr. 25 (10 p.m.) 3,750 cfs (10.03 ft.); May 1 (12 p.m.) 10,500 cfs (16.80 ft.); May 26 (2 a.m.) 13,100 cfs (18.84 ft.); June 2 (9 p.m.) 8,660 cfs (15.12 ft.); June 7 (9 p.m.) 7,960 cfs (14.43 ft.); June 26 (8:30 a.m.) 3,260 cfs (8.82 ft.); July 3 (10 a.m.) 5,980 cfs (12.17 ft.); Nov. 12 (11 p.m.) 3,190 cfs (8.67 ft.).

1952: Mar. 13 (1 a.m.) 5,980 cfs (12.23 ft.); Mar. 19 (2 a.m.) 4,990 cfs 11.10 ft.); May 23 (1 a.m.) 5,800 cfs (13.01 ft.); June 22 (2:30 a.m.) 16,600 cfs (21.83 ft.); June 27 (9 a.m.) 4,740 cfs (11.79 ft.); Aug. 11 (8:30 a.m.) 4,100 cfs (10.13 ft.); Aug. 15 (3 a.m.) 7,780 cfs (14.32 ft.); Nov. 17 (6 p.m.) 4,690 cfs (11.08 ft.).

1953: Feb. 20 (9 a.m.) 6,220 cfs (12.81 ft.); Mar. 30 (11:30 a.m.) 5,950 cfs (12.53 ft.); Apr. 30 (9 p.m.) 3,690 cfs (9.75 ft.); June 10 (9:30 p.m.) 16,200 cfs (20.65 ft.); June 15 (10 p.m.) 3,410 cfs (9.40 ft.); July 15 (6 a.m.) 4,870 cfs (11.32 ft.).

1954: Apr. 25 (10:30 a.m.) 7,100 cfs (13.70 ft.); May 2 (9 p.m.) 3,010 cfs (8.83 ft.); June 1 (4:30 a.m.) 5,860 cfs (12.37 ft.); June 16 (2 a.m.) 6,400 cfs (13.03 ft.).

1955: July 5 (11:30 a.m.) 3,270 cfs (9.25 ft.); July 10 (12 M.) 5,550 cfs (12.02 ft.).

Whitebreast Creek near Knoxville, Iowa

LOCATION.—Lat. 41°19'15", long. 93°08'40", in SE¼ sec. 3, T. 75 N., R. 20 W., on right bank 10 ft. downstream from bridge on State Highway 92, 2 miles west of Knoxville, 3 miles upstream from Butcher Creek, and 16 miles upstream from mouth.

DRAINAGE AREA.—380 sq. mi. approximately.

RECORDS AVAILABLE.—July 1945 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 734.73 ft. above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to Feb. 18, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—10 years, 181 cfs.

EXTREMES.—1945-55: Maximum discharge, 14,000 cfs June 6, 1947 (gage height, 19.6 ft.); minimum daily, 0.5 cfs Sept. 5, 11, 17, 18, 1955.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by the Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	3.2	2.2	2.9	1.8	1.4	121	445	1,670	240	148	21	5.8
2.....	3.2	2.2	3.3	1.7	1.4	244	376	2,230	376	129	20	6.3
3.....	3.0	2.3	2.9	1.7	1.3	775	277	2,150	1,420	3,060	20	6.6
4.....	3.2	2.3	*3.0	1.7	1.3	223	268	535	625	1,000	17	7.8
5.....	*2.9	2.2	2.6	1.7	1.3	119	192	271	280	490	16	8.1
6.....	2.9	2.2	2.5	1.6	1.3	58	471	197	192	250	15	8.1
7.....	2.7	2.1	2.4	1.6	1.3	38	1,460	152	477	180	14	*7.2
8.....	2.6	*2.6	2.3	1.6	1.3	29	1,040	131	1,700	135	13	7.2
9.....	2.4	2.6	2.3	1.6	1.3	24	550	126	1,670	194	11	9.6
10.....	2.2	2.4	2.2	*1.6	1.3	20	400	847	731	124	10	8.4
11.....	*2.1	2.5	2.2	1.6	1.4	24	460	1,080	248	99	8.7	13
12.....	2.1	2.4	2.2	1.6	8.0	30	1,280	550	482	88	8.4	9.6
13.....	2.1	2.6	2.1	1.6	15	24	2,270	274	*670	101	8.7	8.4
14.....	2.2	2.6	2.1	1.6	*20	20	1,040	178	230	95	13	7.2
15.....	2.1	2.6	2.1	1.6	25	17	625	140	449	78	*27	7.8
16.....	2.1	2.6	2.0	1.6	32	15	304	*120	565	136	37	7.5
17.....	2.3	2.5	2.0	1.6	150	17	232	112	490	282	19	7.2
18.....	2.3	2.5	2.0	1.6	500	19	*190	104	228	*460	17	7.8
19.....	2.3	2.5	1.9	1.6	1,230	18	146	91	148	109	9.6	8.1
20.....	2.3	2.4	1.9	1.7	950	17	133	101	109	98	9.0	7.8
21.....	2.3	2.7	1.9	1.7	620	*16	142	97	222	83	61	8.1
22.....	2.3	2.7	1.9	1.7	334	20	201	180	865	54	34	9.6
23.....	2.4	2.6	1.9	1.6	227	62	161	129	*685	43	18	9.0
24.....	2.4	2.2	1.9	1.6	294	130	152	122	460	38	11	9.6
25.....	2.2	2.5	1.9	1.6	845	242	772	362	222	35	10	11
26.....	2.2	2.7	1.9	1.6	346	750	1,140	4,300	812	34	18	14
27.....	2.3	2.7	1.9	1.6	208	1,670	595	2,470	1,530	32	33	13
28.....	2.3	2.6	1.9	1.5	121	2,290	400	1,640	1,180	29	21	13
29.....	2.2	2.7	1.9	1.5	.....	1,640	364	340	445	27	9.6	13
30.....	2.2	2.9	1.8	1.5	.....	1,000	385	197	208	23	7.2	13
31.....	2.2	.....	1.8	1.4	.....	550	.....	230	.....	23	6.3	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1950; Jan. 1 to Feb. 18, Mar. 9-22, 1951. Discharge computed from gage readings or graph based on gage readings Feb. 19 to Mar. 8, Mar. 30, Apr. 3-6, 11, 12, May 6-9, 14, 15, July 22-24, July 28 to Aug. 14, 1951.

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	12	21	77	26	80	86	*192	93	71	72	6.0	9.0
2	12	18	67	24	130	77	158	85	280	54	6.0	7.4
3	12	15	71	23	200	67	148	81	253	50	7.4	8.6
4	12	14	*59	22	490	60	140	71	183	70	*7.4	8.2
5	12	13	44	21	318	68	133	62	102	47	7.0	6.4
6	16	*12	38	20	243	72	122	57	135	39	6.7	5.7
7	17	12	41	19	160	80	117	58	67	30	6.7	5.4
8	29	14	33	*17	130	84	114	70	47	30	12	5.4
9	*18	20	28	16	120	124	116	654	58	28	11	*5.1
10	15	34	25	15	110	933	135	949	39	21	28	4.1
11	13	52	20	15	110	2,010	124	385	29	18	626	3.8
12	12	668	17	15	110	2,500	126	234	25	17	98	3.8
13	11	970	15	15	110	2,890	254	168	21	15	32	13
14	10	491	13	70	160	1,810	505	128	17	21	25	4.8
15	10	181	10	1,250	180	760	320	*105	43	36	1,550	3.8
16	16	111	13	1,150	146	415	210	283	30	22	142	6.4
17	50	80	15	970	131	364	164	970	16	17	50	5.7
18	70	50	18	640	137	1,040	154	610	12	16	*30	4.8
19	85	47	21	745	214	2,470	144	288	13	17	24	4.1
20	100	60	24	565	238	1,180	126	194	530	16	20	3.4
21	150	62	26	338	160	565	122	150	8,540	11	20	3.3
22	281	68	28	200	126	685	260	298	5,890	9.8	26	3.4
23	164	49	20	140	100	935	596	1,280	1,880	8.6	15	3.3
24	131	45	30	110	90	625	460	609	659	7.4	12	3.1
25	72	53	30	90	80	730	278	269	221	6.7	10	3.1
26	49	47	31	80	*75	595	201	181	*128	6.4	9.8	2.9
27	39	50	31	75	80	415	160	140	607	5.4	9.0	2.9
28	34	61	30	70	85	369	135	114	430	5.1	7.8	2.9
29	33	62	29	68	95	323	116	98	199	4.8	7.4	2.9
30	28	71	28	66	.....	273	102	91	98	4.4	7.4	2.9
31	24	.....	27	64	.....	232	.....	82	.....	4.4	6.4	.....
1952-53												
1	2.9	3.8	80	31	37	124	3,540	1,420	25	334	3.0	1.9
2	2.7	3.4	*73	34	36	*78	1,800	656	23	678	3.4	1.8
3	2.5	3.4	74	34	*35	80	813	300	22	176	3.4	2.2
4	2.4	3.6	74	30	37	82	598	252	22	58	3.4	3.1
5	2.4	*2.7	78	26	150	84	372	258	45	70	3.4	2.6
6	3.3	2.7	84	21	400	86	275	278	49	364	3.6	2.1
7	*2.9	2.9	122	*20	1,050	90	228	306	34	55	3.9	2.0
8	3.1	2.9	205	20	800	100	203	*250	185	36	3.6	1.9
9	3.1	3.1	258	22	500	150	191	176	249	27	3.4	1.9
10	3.4	3.1	153	24	550	504	223	141	*4,830	21	3.1	1.9
11	3.3	3.1	100	27	450	762	180	143	4,130	18	3.9	1.9
12	2.9	3.3	72	30	320	746	159	133	2,540	17	6.2	1.8
13	3.3	2.9	52	50	260	520	137	88	399	19	3.9	1.8
14	3.3	3.1	40	100	220	429	129	86	207	18	3.4	1.8
15	3.3	4.1	32	250	180	520	205	86	840	20	3.4	1.8
16	3.4	12	29	180	140	349	212	83	382	18	3.9	1.8
17	3.1	3,750	28	150	180	275	166	84	214	32	*3.6	1.9
18	3.3	2,410	28	120	250	245	127	*106	106	18	3.4	1.9
19	3.1	706	35	100	400	245	109	86	68	17	3.4	1.9
20	3.1	131	101	85	2,500	221	98	74	52	14	2.6	1.9
21	3.8	73	93	75	1,100	203	93	133	42	*14	2.6	*1.8
22	2.9	56	81	66	450	178	92	102	38	11	2.6	1.8
23	4.1	48	68	60	230	516	83	69	36	14	2.3	1.8
24	4.1	45	57	54	210	*550	278	68	*31	16	2.3	1.8
25	3.8	122	50	50	205	303	1,430	74	34	14	2.2	1.8
26	4.1	1,120	41	46	198	183	886	59	42	8.6	2.2	1.8
27	3.8	280	36	44	200	166	340	48	225	6.6	2.0	1.8
28	4.1	120	31	42	159	135	226	45	1,170	5.4	1.9	1.7
29	4.1	100	27	40	.....	124	203	39	141	4.7	1.8	1.7
30	4.1	88	28	39	.....	3,530	609	33	73	4.5	1.8	1.7
31	4.1	.....	29	38	.....	3,450	.....	30	.....	4.2	1.8	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Oct. 31 to Nov. 7, Dec. 10-31, 1951; Jan. 1-16, Jan. 22 to Feb. 3, Feb. 7-15, Feb. 24 to Mar. 7, Nov. 27 to Dec. 1, Dec. 11-19, 23-31, 1952; Jan. 1 to Feb. 25, Mar. 3-9, 1953. Discharge computed from gage readings or graph based on gage readings June 7-19, June 23 to Aug. 4, Aug. 22 to Sept. 9, 1952; Mar. 24-29, Apr. 27 to May 18, May 27 to June 7, June 11-24, 1953.

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	1.6	2.1	2.4	1.4	1.2	2.0	4.1	51	378	2.3	1.2	7.0
2	1.7	2.2	2.6	1.4	1.4	2.3	3.1	617	520	2.6	1.2	4.7
3	1.8	2.2	3.0	1.3	1.4	2.0	2.3	312	489	2.5	1.2	3.1
4	1.7	2.2	3.0	1.3	1.4	1.8	2.9	98	194	2.2	1.2	2.4
5	1.8	2.3	3.3	1.3	1.4	1.7	7.4	65	81	1.9	1.3	2.0
6	1.8	2.3	4.1	1.3	1.3	1.6	62	39	45	1.9	1.3	1.9
7	1.9	4.1	3.1	1.2	1.2	1.5	14	29	33	1.9	1.3	1.7
8	1.9	2.9	*2.9	1.1	1.4	1.5	5.4	22	24	1.8	1.6	1.7
9	1.9	2.4	2.5	1.1	1.5	1.8	5.4	18	20	1.6	1.2	1.9
10	1.9	2.5	3.5	1.0	1.7	2.0	5.0	15	18	1.7	1.2	1.8
11	1.8	2.5	2.9	.9	1.9	2.1	3.3	14	16	1.5	1.6	1.8
12	1.9	2.6	2.5	.8	1.8	2.2	2.9	12	32	1.5	1.7	1.7
13	1.9	2.6	2.1	.7	1.8	2.2	2.6	9.0	77	1.5	1.7	1.5
14	2.0	2.5	1.8	.6	2.1	2.1	*2.6	8.2	32	1.4	1.7	1.5
15	2.0	2.5	1.6	.9	2.5	1.9	3.6	7.8	19	1.4	1.7	1.4
16	1.9	2.5	1.4	1.0	*3.0	*1.7	2.9	6.6	133	1.4	1.7	1.4
17	1.9	*2.5	1.2	1.0	3.3	1.7	2.4	5.8	*250	1.3	13	1.3
18	2.0	2.5	1.4	.9	3.6	2.1	2.2	*5.4	99	1.3	5.4	1.3
19	1.9	3.1	1.5	*.9	4.4	2.6	2.5	5.0	37	1.3	*2.6	1.2
20	*1.9	4.7	1.6	1.1	7.4	2.3	4.4	4.7	22	*1.3	2.3	1.2
21	1.9	3.8	1.7	1.2	6.2	2.2	5.4	4.4	28	1.3	2.0	*1.1
22	2.1	3.3	1.5	1.2	5.0	2.2	5.0	4.1	32	1.6	3.3	1.1
23	2.2	2.9	1.3	1.2	3.8	2.1	3.8	19	14	1.8	3.3	1.1
24	2.1	2.6	1.0	1.1	3.1	2.9	3.8	50	7.8	1.5	324	1.1
25	2.1	2.5	1.1	1.0	3.6	4.4	2,020	31	5.4	1.4	32	1.1
26	2.2	2.4	1.2	1.0	3.6	19	799	32	3.6	1.4	1,000	1.1
27	2.2	2.1	1.3	1.0	3.1	16	420	24	3.3	1.3	109	1.1
28	2.2	2.0	1.4	1.0	2.6	11	70	28	2.9	1.3	49	1.5
29	2.3	1.8	1.5	1.0	.....	9.6	36	28	2.5	1.2	47	1.6
30	2.2	2.1	1.5	1.0	.....	6.6	35	21	2.4	1.2	22	1.6
31	2.2	.....	1.4	1.1	.....	5.8	.....	30	.....	1.2	12	.....
1954-55												
1	1.7	1.9	2.4	1.5	4.4	280	42	21	7.0	7.0	2.3	0.8
2	1.7	1.9	2.4	1.6	4.4	220	37	22	5.3	5.0	2.3	.7
3	1.5	1.9	2.3	1.8	4.4	160	32	23	5.3	18	3.3	.7
4	1.4	1.9	2.3	2.0	4.4	120	59	24	5.0	9.4	4.6	.6
5	26	1.7	2.2	9.0	4.5	94	95	26	5.3	178	4.2	.5
6	216	1.5	2.1	50	4.5	76	77	19	5.0	284	5.0	.6
7	189	1.5	2.2	80	4.5	58	48	18	4.2	104	30	.6
8	59	1.5	2.2	50	4.4	77	38	16	3.9	234	32	.7
9	26	1.5	2.2	33	4.3	98	32	16	4.2	926	16	.6
10	227	1.4	2.2	21	4.2	86	28	69	3.9	1,770	11	.6
11	406	1.4	2.2	16	4.1	78	30	46	3.9	1,730	5.7	.5
12	346	1.5	2.1	12	4.0	65	42	31	3.6	1,080	3.3	.6
13	71	1.9	2.1	9.4	3.9	51	48	284	3.3	126	2.3	*.8
14	123	1.9	2.1	7.4	3.9	45	327	208	3.0	63	1.7	.8
15	296	1.9	*2.0	6.3	*3.9	*61	330	85	2.8	46	1.2	.8
16	102	*2.1	1.9	5.9	3.9	57	142	46	2.6	35	*1.2	.7
17	49	2.6	1.9	5.6	4.3	41	84	31	2.3	25	1.0	.5
18	26	2.6	1.9	5.4	20	36	62	*22	2.3	20	1.1	.5
19	15	2.6	1.8	5.3	200	35	55	18	2.3	16	1.4	.8
20	*7.9	2.6	1.8	5.2	1,000	36	*49	14	*2.1	*14	1.1	1.2
21	5.7	2.6	1.8	5.1	600	60	40	10	2.1	12	1.4	0.5
22	4.6	2.6	1.7	5.1	430	72	32	7.9	1.9	8.9	1.7	4.6
23	3.3	2.6	1.6	5.1	310	81	44	7.0	1.9	7.4	1.7	2.6
24	3.0	2.6	1.6	5.1	230	67	151	6.1	1.9	6.6	2.1	1.9
25	2.6	2.6	1.5	*5.1	180	41	99	5.3	2.3	6.1	1.7	1.4
26	2.8	2.3	1.5	5.0	380	34	67	11	2.1	5.3	1.4	1.4
27	2.6	1.9	1.5	4.7	800	28	48	42	2.6	4.6	1.2	3.3
28	1.9	2.0	1.4	4.5	400	26	39	28	2.1	4.2	1.0	2.8
29	1.9	2.1	1.5	4.4	.....	50	32	24	3.3	4.6	1.2	88
30	1.9	2.3	1.6	4.3	.....	57	24	13	6.1	3.3	1.2	36
31	1.9	.....	1.6	4.3	.....	50	.....	9.4	.....	2.8	1.0	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 1, Dec. 9-31, 1953; Jan. 1 to Feb. 17, Mar. 2-10, 13-18, Nov. 27 to Dec. 31, 1954; Jan. 1 to Mar. 8, Mar. 21, 22, 25-29, 1955. Discharge computed from gage readings or graph based on gage readings Feb. 18-21, 1954; May 26 to June 2, 1955.

Whitebreast Creek near Knoxville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	2.43	2.49	2.18	1.61	212	330	569	681	599	246	17.5	9.09
1952-53	49.6	115	31.2	224	152	737	198	286	687	22.9	91.2	4.99
1952-53	3.35	304	72.9	61.5	402	485	467	184	542	68.2	3.10	1.92
1953-54	1.96	2.62	2.08	1.06	2.74	3.92	118	52.4	87.4	1.60	53.2	1.83
1954-55	71.7	2.05	1.92	12.3	165	75.5	74.4	38.8	3.45	218	4.72	5.40

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.0061	0.0066	0.0057	0.0042	0.558	0.868	1.50	1.79	1.58	0.647	0.046	0.024
1951-52	.131	.303	.082	.589	.400	1.94	.521	.753	1.81	.060	.240	.013
1952-53	.0088	.800	.192	.162	1.06	1.28	1.23	.484	1.43	.179	.0082	.0051
1953-54	.0052	.0069	.0055	.0028	.0072	.010	.311	.138	.230	.0042	.140	.0048
1954-55	.189	.0054	.0051	.032	.434	.199	.196	.102	.0091	.574	.012	.014

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.007	0.007	0.007	0.005	0.58	1.00	1.67	2.07	1.76	0.75	0.05	0.03
1951-52	.15	.34	.09	.68	.43	2.24	.58	.87	2.02	.07	.28	.01
1952-53	.01	.89	.22	.19	1.10	1.47	1.37	.56	1.59	.21	.009	.006
1953-54	.006	.008	.006	.003	.008	.01	.35	.16	.26	.005	.10	.005
1954-55	.22	.006	.006	.04	.45	.23	.22	.12	.01	.66	.01	.02

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950	.....	.....	.....	.....	.....	.....	.....	155	5.53
1951	July 3, 1951.	14.98	5,200	1.3	222	0.584	7.94	238	8.50
1952	June 21, 1952.	18.16	9,500	2.9	216	.568	7.76	232	8.30
1953	June 10, 1953.	15.90	6,540	1.7	213	.561	7.62	183	6.52
1954	Apr. 25, 1954.	12.01	3,850	.0	27.3	.072	.98	33.2	1.19
1955	July 10, 1955.	9.74	2,590	.5	55.6	.146	1.99	.....	.....

Peak Discharge (base, 2,500 cfs)

1951: Mar. 28 (3 p.m.) 3,290 cfs (11.17 ft.); May 3 (10 a.m.) 2,710 cfs (9.92 ft.); May 26 (6 a.m.) 5,020 cfs (14.70 ft.); July 3 (3 a.m.) 5,200 cfs (14.98 ft.).

1952: Mar. 13 (1:30 a.m.) 3,880 cfs (12.49 ft.); Mar. 19 (3:30 a.m.) 2,750 cfs (10.00 ft.); June 21 (9:30 a.m.) 9,500 cfs (18.16 ft.); Aug. 15 (9:30 a.m.) 3,380 cfs (11.44 ft.); Nov. 17 (4:30 p.m.) 6,000 cfs (15.89 ft.).

1953: Feb. 20 (10 a.m.) about 3,100 cfs (11.25 ft.); Mar. 30 (1 p.m.) 4,700 cfs (13.72 ft.); June 10 (9 p.m.) 6,540 cfs (15.90 ft.).

1954: Apr. 25 (6:45 p.m.) 3,850 cfs (12.01 ft.).

1955: July 10 (6.p.m.) 2,590 cfs (9.74 ft.).

Des Moines River near Tracy, Iowa

LOCATION.—Lat. 41°16'55", long. 92°51'30", in SE¼ sec. 19, T. 75 N., R. 17 W., near right bank on downstream side of Bellefountaine highway bridge, 1 mile east of Tracy, 3 miles upstream from Cedar Creek, and 6 miles downstream from English Creek.

DRAINAGE AREA.—12,400 sq. mi. approximately.

RECORDS AVAILABLE.—March 1920 to September 1927 (winter records fragmentary), March 1933 to December 1935, February 1940 to September 1955.

GAGE.—Wire-weight gage read once daily. Datum of gage is 671.78 ft. above mean sea level, adjustment of 1912. Mar. 1, 1920, to Sept. 30, 1927, chain gage, Mar. 1, 1933, to Dec. 31, 1935, wire-weight gage, and June 27, 1940, to June 29, 1952, water-stage recorder, at same site and datum.

AVERAGE DISCHARGE.—24 years (1920-27, 1933-35, 1940-55) 4,729 cfs.

EXTREMES.—1920-27, 1933-35, 1940-55: Maximum discharge, 155,000 cfs June 14, 1947 (gage height, 26.5 ft.); minimum, 95 cfs Feb. 28, 1940.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	1,260	592	400	220	180	7,000	*37,400	24,400	7,570	16,700	4,910	10,900
2.....	1,200	610	430	220	180	12,300	53,400	33,000	8,330	18,300	4,740	10,900
3.....	1,260	565	410	220	175	9,700	53,400	42,000	22,300	32,600	4,740	10,100
4.....	1,230	547	440	220	170	8,900	46,000	45,400	28,500	33,000	4,740	7,570
5.....	1,330	550	400	220	170	6,280	37,900	46,000	32,600	32,000	6,100	6,460
6.....	1,420	547	340	215	170	5,080	32,600	46,000	34,800	34,400	7,380	5,760
7.....	1,390	556	200	205	170	4,910	33,400	45,400	32,100	31,300	6,460	5,250
8.....	1,520	565	260	200	170	7,000	36,800	40,200	32,600	25,400	5,420	4,910
9.....	1,520	*565	320	195	170	7,190	39,000	34,400	34,400	21,000	4,910	4,570
10.....	1,520	538	*340	190	170	5,590	40,200	30,500	33,400	16,900	4,910	4,740
11.....	*1,520	520	350	190	170	4,060	40,800	28,900	27,300	14,200	4,740	5,760
12.....	1,390	520	350	*200	500	2,700	42,000	24,700	*21,600	13,800	4,300	*7,190
13.....	1,260	512	350	205	590	1,800	44,600	19,800	18,300	14,000	3,820	8,140
14.....	1,200	496	340	210	550	1,500	44,000	16,700	14,700	14,000	3,740	10,100
15.....	1,120	480	330	220	500	1,250	36,800	14,400	13,100	13,800	4,060	9,700
16.....	1,030	496	310	225	460	1,200	30,100	12,700	12,500	13,600	5,760	10,100
17.....	954	464	290	230	700	1,400	25,800	*11,900	13,100	13,600	10,100	10,900
18.....	910	496	280	235	2,000	1,500	*23,000	11,700	12,100	*12,900	12,700	10,700
19.....	880	504	290	240	5,000	1,400	20,700	11,100	11,900	11,300	13,100	9,700
20.....	840	472	310	240	6,000	1,300	18,600	10,700	12,700	10,300	12,900	8,520
21.....	800	440	310	240	4,800	*1,300	16,900	10,300	13,800	9,900	12,500	7,380
22.....	780	420	300	240	3,900	1,400	16,100	10,300	17,200	9,300	13,100	6,640
23.....	730	410	290	240	3,100	1,300	16,100	11,100	16,700	9,700	*12,500	6,100
24.....	710	250	280	235	2,500	1,500	16,900	10,100	15,100	10,500	11,700	5,590
25.....	710	350	270	230	3,500	1,900	19,500	9,500	*13,800	10,900	10,000	5,250
26.....	700	380	260	225	5,600	2,570	25,000	24,600	12,500	10,500	9,500	5,080
27.....	680	360	240	215	4,200	6,100	26,100	28,100	13,600	8,710	8,330	4,740
28.....	650	350	240	210	4,400	13,100	25,400	14,000	13,100	7,380	7,570	4,400
29.....	630	*360	230	200	.....	25,000	24,400	10,300	14,000	6,640	7,000	4,230
30.....	610	370	220	195	.....	26,500	22,000	8,140	14,900	5,930	8,330	3,980
31.....	592	.....	220	185	.....	28,500	.....	7,380	.....	5,420	10,300	.....

* Discharge Measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 21 to Dec. 31, 1950; Jan. 1 to Feb. 28, Mar. 1, 12-25, 1951.

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	3,740	3,820	2,710	1,750	2,950	5,250	20,100	9,100	5,930	13,000	3,020	4,120
2	3,580	3,900	2,860	1,650	3,200	5,250	24,000	8,520	5,930	11,100	2,760	3,180
3	3,420	3,420	2,940	1,580	3,600	5,030	27,700	8,140	9,100	10,100	2,710	2,570
4	3,340	3,260	*2,860	1,500	4,100	6,100	28,500	7,570	5,760	10,300	2,710	2,150
5	3,820	*3,020	2,860	1,400	4,600	5,080	28,100	7,380	5,080	10,000	*2,860	2,080
6	5,420	2,710	2,710	1,350	5,400	4,300	26,100	6,820	4,740	10,700	2,860	2,020
7	5,080	2,570	2,780	*1,300	5,100	3,900	21,600	6,460	4,570	9,300	3,020	1,880
8	*5,590	2,430	2,710	1,280	4,800	3,820	18,900	6,280	4,120	12,300	2,640	1,760
9	5,420	2,500	2,640	1,250	4,600	4,000	16,900	6,100	4,060	16,400	3,100	*1,640
10	5,080	2,710	2,040	1,230	4,500	5,830	15,600	8,140	4,000	18,600	2,500	1,520
11	4,740	2,860	2,570	1,230	4,500	19,000	14,000	8,330	3,740	18,600	2,860	1,460
12	4,400	3,980	2,500	1,230	4,400	24,700	14,700	7,570	3,580	19,200	4,740	1,350
13	4,230	7,570	2,500	1,230	4,800	26,500	15,400	7,190	3,420	19,800	2,640	1,300
14	3,900	6,100	1,660	1,750	5,760	25,400	17,200	7,000	3,260	20,400	2,290	1,320
15	3,660	4,230	900	2,400	7,190	20,700	18,300	6,640	3,100	16,700	5,170	1,220
16	3,660	3,740	960	3,400	9,900	16,400	18,300	*6,460	3,100	12,100	10,100	1,150
17	3,820	3,420	1,070	5,000	10,500	12,900	17,700	7,760	3,340	12,300	7,000	1,090
18	3,660	3,100	1,200	4,600	10,300	11,700	17,200	8,900	4,570	12,500	5,080	1,040
19	3,420	2,780	1,380	4,650	10,300	19,200	16,100	7,570	5,760	11,100	4,060	1,030
20	3,260	2,640	1,600	5,200	10,500	18,300	14,900	6,460	7,190	9,700	2,780	932
21	3,660	2,430	1,960	4,600	9,100	16,400	14,000	5,760	22,200	8,330	2,500	943
22	6,640	2,710	2,250	4,000	7,760	18,300	13,800	5,760	37,400	7,570	2,220	921
23	4,570	2,710	2,500	3,500	6,820	21,000	14,400	13,500	36,300	6,820	2,020	900
24	5,930	2,500	2,540	3,700	6,280	19,800	15,600	19,500	18,900	6,280	1,820	890
25	5,760	2,220	2,560	3,900	5,760	16,400	14,400	12,300	*11,900	5,590	1,700	870
26	5,250	2,020	2,500	4,050	*5,590	12,900	13,100	10,100	10,700	5,080	1,580	870
27	4,910	1,820	2,400	4,100	5,420	11,800	12,100	8,520	12,100	4,570	1,520	760
28	4,570	1,950	2,280	3,900	5,420	11,900	11,300	7,570	21,900	4,230	1,440	780
29	4,400	2,150	2,150	3,100	5,250	12,100	10,500	7,190	23,300	3,820	1,390	820
30	4,300	2,430	2,000	2,500	.....	12,900	9,900	6,640	18,300	3,500	2,080	770
31	4,060	.....	1,900	2,700	.....	*15,900	.....	6,280	.....	3,260	2,150	.....
1952-53												
1	780	512	870	860	760	4,400	18,000	11,100	5,250	12,300	1,820	1,030
2	720	520	*910	810	770	3,820	15,100	12,300	5,250	12,500	1,950	1,010
3	700	529	910	750	*780	3,260	10,900	11,100	5,250	11,500	2,080	998
4	690	*512	820	720	800	3,180	10,700	11,100	5,080	9,300	2,220	1,050
5	680	520	880	670	920	3,260	10,500	10,900	4,910	7,380	2,500	1,020
6	680	472	860	500	2,500	*2,940	10,300	10,900	5,250	6,640	4,910	976
7	*630	496	830	360	4,000	3,340	9,700	*10,700	5,590	6,460	6,820	921
8	670	472	1,270	*520	6,600	3,020	8,900	10,500	6,820	6,420	7,190	900
9	650	456	1,440	670	5,760	2,940	8,330	9,900	7,950	4,910	7,570	870
10	630	472	1,390	800	4,740	3,500	7,760	8,710	9,410	4,910	6,640	840
11	650	472	1,400	910	6,280	4,060	7,760	8,330	24,200	4,570	4,910	810
12	650	456	1,280	780	5,030	3,180	7,190	7,760	*26,500	4,060	4,570	780
13	660	464	1,060	920	4,570	3,020	6,820	7,380	26,100	3,900	3,980	750
14	650	450	700	1,300	4,060	3,180	6,640	6,820	25,000	3,820	3,180	700
15	620	488	520	1,700	3,560	5,760	6,460	6,460	16,100	5,250	2,940	680
16	601	529	800	2,100	2,900	7,190	6,280	5,930	15,900	5,250	2,780	670
17	601	4,850	1,050	1,750	2,100	8,140	6,280	*5,760	15,600	4,570	*2,570	640
18	601	10,700	1,100	1,600	2,050	9,100	6,100	5,590	11,500	4,060	2,570	620
19	592	4,400	980	1,450	3,650	8,900	6,280	5,420	10,100	3,740	2,290	601
20	592	1,820	1,050	1,300	11,300	8,520	6,100	5,080	8,900	*3,580	2,080	592
21	592	1,210	1,210	1,200	16,900	8,140	6,280	4,910	8,330	3,420	1,950	*504
22	592	965	1,100	1,120	9,300	8,140	5,930	5,250	7,570	4,060	1,880	547
23	574	900	1,080	1,070	6,460	8,520	5,760	5,250	7,000	3,020	1,760	538
24	565	870	1,020	1,000	4,400	*8,710	5,420	5,080	*6,460	2,780	1,700	529
25	538	1,020	921	950	4,740	8,140	7,380	9,700	5,930	2,570	1,700	520
26	504	2,570	720	920	4,400	7,190	8,900	10,500	5,590	2,290	1,520	512
27	520	2,360	640	870	4,230	8,520	7,570	7,950	7,000	2,150	1,240	512
28	547	987	620	830	4,740	6,280	7,760	6,820	11,300	2,290	1,160	504
29	547	690	600	800	.....	6,100	8,140	5,930	14,000	2,080	1,090	496
30	529	800	720	780	.....	8,820	8,710	5,420	13,100	1,950	1,050	480
31	520	.....	920	770	.....	19,800	.....	5,420	.....	1,820	1,030	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Feb. 18, Nov. 30 to Dec. 1, Dec. 14-19, 26-31, 1952; Jan. 1 to Feb. 8, Feb. 16-18, 1953. Discharge computed from gage readings or graph based on gage readings Nov. 6 to Dec. 13, 1951; Feb. 14-18, 21-25, Mar. 4-9, 1952.

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	469	335	451	300	140	1,010	1,910	3,090	12,000	*23,600	1,620	25,600
2	460	321	442	300	160	1,010	1,850	3,600	15,100	13,100	1,560	22,900
3	500	342	379	300	170	800	1,850	7,320	10,900	12,900	1,620	17,700
4	460	342	433	270	190	660	1,790	6,900	11,500	11,100	1,670	12,000
5	420	321	496	270	210	520	1,730	6,140	10,700	9,820	1,850	9,600
6	424	307	496	260	220	766	1,970	6,500	10,000	8,720	2,030	7,900
7	370	328	*496	270	240	649	2,150	6,500	9,380	8,100	1,790	6,700
8	408	328	514	260	260	523	1,730	6,140	8,300	7,300	1,730	5,780
9	416	307	514	250	290	667	1,730	5,280	6,900	6,700	1,670	5,120
10	416	307	450	230	320	631	1,730	4,800	5,960	6,140	1,560	4,640
11	370	307	450	180	270	667	1,730	4,480	5,440	5,600	1,450	4,160
12	379	307	410	220	340	370	1,670	4,000	7,650	4,960	1,380	3,840
13	370	321	379	190	400	604	1,620	3,680	15,800	4,640	1,330	3,600
14	379	321	379	190	560	631	1,500	3,380	16,100	4,480	1,270	3,380
15	370	321	330	180	*363	*676	1,500	3,090	19,600	4,320	1,240	3,230
16	363	*321	210	160	442	632	*1,560	2,880	18,500	3,920	1,220	3,020
17	363	335	250	160	424	577	1,500	*2,670	22,400	3,680	1,330	2,880
18	349	335	310	160	307	613	1,440	2,540	*13,600	3,400	1,620	2,740
19	*349	335	340	*160	307	640	1,420	2,480	9,380	*3,160	*1,620	2,600
20	342	397	360	160	487	577	1,410	2,340	7,300	2,950	1,670	*2,540
21	342	397	390	150	559	667	1,410	2,220	8,710	2,880	1,500	2,340
22	335	460	230	150	703	1,140	1,400	2,090	18,000	2,740	1,910	2,280
23	335	478	270	140	685	1,970	1,410	1,910	20,200	2,670	11,000	2,220
24	328	550	290	130	667	2,540	1,500	1,970	20,500	2,540	15,600	2,150
25	349	550	320	130	739	2,600	3,510	2,030	*35,900	2,340	15,300	2,030
26	363	541	310	130	784	2,340	9,110	1,850	*63,000	2,220	17,200	1,970
27	321	505	300	130	830	2,090	4,960	1,790	*69,000	2,150	23,500	1,850
28	363	480	310	130	1,070	1,850	4,800	2,090	*58,400	1,970	22,400	1,850
29	363	469	320	130	.....	1,910	3,300	2,740	47,100	1,910	21,800	1,910
30	321	469	280	130	.....	1,790	2,950	4,480	37,000	1,790	24,100	2,090
31	349	.....	280	130	.....	1,850	.....	5,120	.....	1,670	25,600	.....
1954-55												
1	2,220	5,120	2,250	1,040	700	4,640	3,140	9,160	3,060	1,330	790	250
2	2,480	4,060	2,250	940	700	3,680	3,080	8,100	2,010	1,240	720	240
3	2,950	4,640	2,250	1,250	700	4,320	4,800	7,500	2,390	1,200	692	250
4	3,530	4,480	2,180	1,500	700	6,500	5,120	6,900	2,250	1,180	638	235
5	5,440	4,320	2,120	1,670	690	7,400	4,960	6,320	2,840	1,330	638	220
6	8,100	4,000	2,120	1,980	680	6,700	4,640	5,440	4,320	3,760	638	230
7	8,300	3,920	2,120	1,920	670	5,800	4,960	5,280	4,480	3,600	665	230
8	7,300	3,840	1,980	1,860	660	4,800	4,480	5,120	4,640	3,060	683	225
9	6,140	3,760	1,860	1,730	650	4,480	4,320	4,800	4,800	5,120	611	218
10	5,960	3,680	1,740	1,610	640	4,640	4,080	4,800	4,800	7,500	548	245
11	7,100	3,600	1,720	1,500	620	4,960	3,920	5,440	4,640	12,900	539	220
12	7,500	3,520	1,700	1,370	610	5,280	3,760	5,440	4,320	13,900	474	*205
13	7,100	3,360	1,750	1,150	610	5,600	3,600	4,800	4,080	11,600	422	195
14	7,700	3,300	1,690	1,020	610	7,100	3,600	4,960	3,760	9,160	420	195
15	9,380	3,280	*1,010	900	600	6,900	4,320	4,160	3,440	6,700	422	195
16	11,600	*3,210	1,650	920	610	6,500	4,480	3,760	2,980	4,960	*401	195
17	11,600	3,140	1,680	940	620	6,500	4,080	3,520	2,680	3,920	387	195
18	10,900	3,060	1,750	780	760	*5,960	3,600	3,280	2,390	3,210	380	195
19	9,600	2,980	1,680	720	1,900	5,440	*3,280	*2,980	2,180	2,910	362	195
20	8,500	2,980	1,600	800	9,500	4,640	3,210	2,840	2,050	2,010	326	215
21	7,500	2,910	1,590	840	8,100	4,160	3,440	2,760	*1,920	*2,160	320	276
22	*6,900	2,840	1,690	880	6,300	4,000	3,760	2,540	1,920	1,920	302	326
23	6,500	2,760	1,720	910	5,440	3,760	3,210	2,460	1,860	1,790	482	362
24	6,500	2,610	1,720	900	5,120	3,520	3,440	2,320	1,730	1,550	368	292
25	6,320	2,610	1,720	880	4,960	3,360	7,070	2,250	1,610	1,380	326	265
26	5,960	2,540	1,750	860	4,640	2,600	12,000	2,250	1,550	1,260	314	250
27	5,600	2,460	1,780	*830	7,100	2,300	11,400	2,760	1,500	1,140	304	282
28	5,000	2,460	1,730	760	6,320	2,100	12,200	2,540	1,380	1,050	292	270
29	5,000	2,300	1,700	710	.....	2,320	12,000	4,160	1,320	960	287	1,780
30	5,440	2,300	1,390	620	.....	2,610	10,500	3,760	1,250	900	282	2,050
31	5,280	.....	1,200	700	.....	3,060	.....	3,760	.....	830	260	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 28, Dec. 10-12, 15-31, 1953; Jan. 1 to Feb. 14, Mar. 3-5, Dec. 10-31, 1954; Jan. 1-3, Jan. 11 to Feb. 22, Mar. 5-7, 26-28, 1955.

Des Moines River near Tracy, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	1,043	477	310	217	1,793	6,491	31,520	22,380	18,950	15,770	7,783	7,179
1951-52	4,429	3,123	2,227	2,743	6,152	13,350	17,380	8,113	10,250	10,800	3,075	1,445
1952-53	615	1,399	957	993	4,615	6,228	8,265	7,870	10,900	4,921	2,956	720
1953-54	379	381	367	192	440	1,095	2,271	3,745	20,710	5,598	6,811	5,687
1954-55	6,800	3,373	1,796	1,113	2,543	4,698	5,368	4,392	2,825	3,747	463	350

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.081	0.038	0.025	0.017	0.145	0.523	2.54	1.80	1.53	1.27	0.628	0.579
1951-52	.357	.252	.180	.221	.496	1.08	1.40	.654	.827	.871	.248	.117
1952-53	.050	.113	.077	.080	.372	.502	.667	.635	.879	.397	.238	.058
1953-54	.031	.031	.030	.015	.035	.088	.183	.302	1.67	.451	.549	.459
1954-55	.548	.272	.145	.090	.205	.379	.433	.354	.228	.302	.037	.028

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.10	0.04	0.03	0.02	0.15	0.60	2.84	2.08	1.71	1.47	0.72	0.65
1951-52	.41	.28	.21	.26	.54	1.24	1.56	.75	.92	1.00	.29	.13
1952-53	.06	.13	.09	.09	.39	.58	.74	.73	.98	.46	.27	.06
1953-54	.04	.03	.03	.02	.04	.10	.20	.35	1.86	.52	.63	.51
1954-55	.63	.30	.17	.10	.21	.44	.48	.41	.25	.35	.04	.03

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950								3,331	3.66
1951	Apr. 2, 1951	19.81	56,300	170	9,501	0.766	10.41	10,170	11.14
1952	June 22, 1952	17.40	38,400	760	6,915	.558	7.59	6,343	6.97
1953	June 14, 1953	16.19	27,700	360	4,188	.338	4.58	4,034	4.40
1954	June 27, 1954	22.14	69,900	130	3,966	.320	4.33	4,878	5.33
1955	July 12, 1955	(1)10.63	14,300	195	3,129	.252	3.41		

(1) Maximum gage height, 12.47 ft Feb. 20, 1955 (backwater from ice).

Peak Discharge (base, 15,000 cfs)

1951: Apr. 2 (9 p.m.) 56,300 cfs (19.81 ft.); Apr. 14 (6 a.m.) 45,400 cfs (18.50 ft.); May 5 (1 a.m.) 46,800 cfs (18.74 ft.); May 26 (12 p.m.) 31,300 cfs (15.89 ft.); June 9 (10 p.m.) 35,300 cfs (16.79 ft.); June 22 (5 p.m.) 18,000 cfs (12.10 ft.); July 3 (8 p.m.) 35,800 cfs (16.87 ft.).

1952: Mar. 13 (5 p.m.) 27,300 cfs (14.93 ft.); Mar. 23 (4 p.m.) 21,300 cfs (13.23 ft.); Apr. 4 (8 a.m.) 28,500 cfs (15.25 ft.); May 24 (8 a.m.) 20,700 cfs (13.04 ft.); June 22 (10 p.m.) 38,400 cfs (17.40 ft.); June 29 (8:30 a.m.) 23,300 cfs (13.84 ft.); July 14 (7:30 a.m.) 20,400 cfs (12.91 ft.).

1953: Feb. 21 (7:30 a.m.) 20,100 cfs (12.93 ft.); Mar. 31 (3:30 p.m.) 21,600 cfs (13.26 ft.); June 14 (10 a.m.) 27,700 cfs (16.19 ft.).

1954: June 1 (10 p.m.) 19,100 cfs (12.39 ft.); June 13 (5 p.m.) 17,200 cfs (11.73 ft.); June 17 (10 a.m.) 23,500 cfs (14.02 ft.); June 27 (3 a.m.) 69,900 cfs (22.14 ft.); Aug. 25 (1 a.m.) 16,900 cfs (11.6 ft.); Sept. 1 (4 a.m.) 25,900 cfs (14.8 ft.).

1955: No peak above base.

Cedar Creek near Bussey, Iowa

LOCATION.—Lat. 41°13'08", long. 92°54'24", at corner common to secs, 10, 11, 14, 15, T. 74 N., R. 18 W., on left bank at downstream side of bridge on State Highway 156, 1.6 miles northwest of Bussey and 8.5 miles upstream from mouth.

DRAINAGE AREA.—384 sq. mi.

RECORDS AVAILABLE.— October 1947 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 682.15 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Feb. 21, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—8 years, 171 cfs.

EXTREMES.—1947-55: Maximum discharge, 29,300 cfs May 9, 1950 (gage height, 27.50 ft.); no flow Sept. 6-20, 1955.

Flood of June 1946 reached a stage of 28.45 ft. on upstream side and 28.05 ft. on downstream side of bridge, from levels to floodmarks by Corps of Engineers.

REMARKS.—Records good except those for periods of ice effect, which are poor.

COOPERATION.—Several discharge measurements made by corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	2.3	0.7	3.2	1.9	2.1	110	550	1,120	198	192	17	8.2
2	2.1	.7	3.4	1.8	2.0	120	500	1,730	622	152	17	7.9
3	1.7	.7	3.4	1.7	2.0	775	425	600	1,840	3,140	17	7.4
4	1.4	.5	3.3	1.6	1.9	265	462	338	525	1,230	16	7.1
5	1.2	.6	3.1	1.5	1.9	116	300	235	275	325	14	6.8
6	1.0	.6	3.0	1.5	1.9	93	502	186	212	228	13	7.4
7	.8	.6	2.9	1.4	1.8	68	3,080	156	727	252	12	7.4
8	.7	*.8	2.8	1.4	1.8	46	1,300	140	2,380	166	11	7.4
9	.6	1.2	2.7	1.4	1.8	31	488	153	625	178	10	12
10	.6	.9	*2.7	*1.4	2.0	21	312	3,560	325	159	9.4	28
11	*.7	5.3	2.6	1.4	40	18	325	5,190	*228	113	9.0	*27
12	.5	4.6	2.5	1.4	1,000	25	1,340	1,040	700	100	8.6	18
13	.5	4.4	2.5	1.5	232	23	2,460	500	562	101	13	16
14	.6	4.4	2.5	1.6	150	19	1,170	338	285	101	15	9.8
15	.7	4.4	2.5	1.9	120	18	500	248	950	80	59	7.1
16	.6	4.4	2.5	2.2	130	22	325	*242	433	69	100	6.4
17	.6	4.4	2.5	6.0	547	27	245	265	205	355	35	5.7
18	.6	3.9	2.5	8.2	2,180	35	*212	200	156	*128	18	5.7
19	.6	4.2	2.5	10	2,360	43	160	154	130	73	14	5.5
20	.5	4.1	2.4	13	1,400	41	149	152	110	60	14	5.3
21	.5	4.2	2.3	7.0	450	*39	173	146	1,070	69	202	5.5
22	.5	3.9	2.2	5.0	270	38	122	288	2,730	52	65	5.7
23	.6	3.9	2.1	4.4	182	36	180	218	1,140	57	*23	5.7
24	.6	3.6	2.1	3.9	150	412	160	137	758	50	15	6.1
25	.6	10	2.1	3.5	495	450	1,100	520	*512	36	35	6.1
26	.6	3.9	2.1	3.2	412	700	886	5,570	1,710	32	48	5.9
27	.6	3.6	2.2	2.9	188	2,130	475	956	2,060	28	42	5.1
28	.6	3.5	2.3	2.7	126	2,280	800	338	1,160	25	25	4.9
29	.7	3.3	2.2	2.5	.....	1,780	425	225	400	23	16	4.6
30	.7	3.3	2.1	2.3	.....	750	725	171	270	21	12	4.6
31	.7	.....	2.0	2.2	.....	600	.....	176	.....	20	9.4	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1950; Jan. 1 to Feb. 11, Feb. 14-16, Mar. 10-23, 1951.

Cedar Creek near Bussey, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4.4	36	76	43	72	85	*222	119	71	94	9.0	23
2	4.4	28	69	41	90	70	175	107	88	97	9.0	29
3	4.4	22	68	39	130	60	150	107	3,880	100	11	33
4	4.4	19	*59	37	350	54	140	113	923	84	13	23
5	4.4	21	48	35	300	65	142	94	282	61	*12	17
6	7.1	*23	48	33	200	73	134	76	176	53	10	14
7	71	22	44	31	130	81	124	80	132	46	9.0	11
8	77	20	36	*29	110	94	119	110	106	44	18	9.4
9	*31	25	32	29	105	132	114	933	116	44	22	* 9.0
10	16	32	28	28	105	942	128	1,960	124	40	14	9.0
11	9.8	42	24	28	100	2,970	116	450	76	33	1,070	8.6
12	8.2	563	20	27	100	2,710	119	300	60	28	609	8.2
13	6.4	700	18	27	100	3,190	194	218	53	25	113	8.2
14	5.9	412	15	150	150	1,180	475	162	44	28	57	83
15	4.6	167	13	1,310	250	600	312	137	46	119	1,110	31
16	33	108	15	850	190	412	192	*575	44	71	531	11
17	78	76	17	675	159	362	159	1,080	32	42	118	7.4
18	228	48	21	512	171	655	151	700	26	52	*62	6.8
19	255	56	26	550	232	3,110	142	325	23	81	51	6.1
20	102	56	31	600	475	1,010	128	240	470	48	50	5.3
21	345	66	35	412	268	512	124	192	11,400	31	433	5.1
22	575	80	38	250	166	618	322	188	7,980	25	162	4.8
23	325	55	41	160	140	1,530	1,270	584	1,370	20	69	4.4
24	138	48	44	120	115	740	886	488	400	16	48	4.1
25	102	46	46	90	100	1,050	302	232	*222	14	38	3.9
26	80	44	47	80	90	800	252	156	149	16	32	3.5
27	68	48	48	74	*84	488	196	128	733	12	29	3.5
28	62	62	48	80	100	400	166	120	453	11	26	3.3
29	56	61	47	76	92	338	143	102	152	10	23	3.3
30	50	80	46	72	.....	280	128	90	108	9.8	21	3.0
31	42	.....	45	68	.....	250	.....	83	.....	9.0	20	.....
1952-53												
1	2.5	3.5	51	30	39	114	3,060	725	26	51	4.2	1.3
2	2.2	3.8	*50	34	39	*60	1,020	362	22	164	3.9	1.4
3	2.1	3.8	53	36	*39	79	697	228	21	42	4.1	1.9
4	1.9	*7.2	55	33	45	90	488	186	23	27	4.1	2.8
5	1.8	4.4	46	30	150	110	350	169	67	73	4.1	2.1
6	*1.7	4.1	62	27	800	94	292	190	60	306	4.2	1.4
7	1.8	3.9	81	23	1,200	82	255	218	30	40	5.1	1.0
8	2.1	4.1	118	*20	900	94	225	171	563	25	4.1	.7
9	2.4	4.2	167	21	560	110	215	144	169	16	3.3	.4
10	2.4	4.1	101	25	580	450	210	126	1,220	13	3.0	.4
11	2.5	4.2	60	28	420	1,320	178	198	466	11	2.8	.4
12	2.7	4.4	45	32	280	1,020	164	128	144	10	3.0	.2
13	2.8	4.4	33	50	200	575	154	95	95	11	2.8	.2
14	2.8	4.0	29	110	220	661	146	86	74	11	2.5	.2
15	2.8	4.6	26	300	150	1,460	202	91	62	10	2.1	.2
16	2.5	5.5	23	200	105	562	282	87	79	9.8	1.8	.2
17	2.7	2,990	23	150	105	338	190	90	48	9.4	*1.8	.2
18	2.8	2,700	25	120	110	427	151	*108	38	12	1.7	.2
19	2.7	220	30	100	250	610	136	91	30	19	1.8	.2
20	2.7	100	90	86	2,820	290	130	74	23	*12	1.7	.2
21	2.7	69	90	78	927	242	120	293	18	25	1.5	*.2
22	2.8	56	84	70	338	300	122	125	17	9.8	1.5	.2
23	3.0	48	72	63	248	1,840	114	90	15	6.6	1.5	.2
24	3.6	46	62	58	186	*953	110	87	*16	5.5	1.5	.3
25	3.5	125	52	52	176	400	220	87	23	4.9	1.5	.3
26	3.5	904	42	48	159	262	220	68	29	4.8	1.5	.2
27	3.5	171	36	45	166	230	156	51	102	4.8	1.4	.2
28	3.6	97	31	43	134	186	137	44	1,350	4.6	1.3	.3
29	3.5	76	26	42	.....	167	128	42	188	4.4	1.3	.3
30	3.5	59	26	41	.....	3,540	357	38	67	4.4	1.3	.3
31	3.5	.....	28	40	.....	5,440	.....	31	.....	4.2	1.3	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4, 7, 24, 25, Dec. 11-31, 1951; Jan. 1-14, Jan. 22 to Feb. 15, Feb. 23 to Mar. 5, Dec. 12-31, 1952; Jan. 1 to Feb. 19, Mar. 4-10, 1953.

Cedar Creek near Bussey, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	0.3	0.7	0.8	1.2	1.1	2.4	2.5	77	227	2.7	1.5	4.6
2	.3	.7	.8	1.2	1.3	2.3	2.4	330	154	2.8	1.4	3.8
3	.0	.7	.0	1.2	1.3	1.9	2.3	375	460	2.5	1.3	3.5
4	.6	.7	.0	1.2	1.3	1.0	2.2	127	220	2.5	1.1	2.8
5	.5	.6	.9	1.2	1.3	1.5	8.4	72	94	2.4	1.5	2.8
6	.5	.5	1.0	1.2	1.2	1.3	186	48	59	2.3	1.6	2.8
7	.5	.6	1.7	1.1	.9	1.3	41	38	36	2.3	1.7	2.4
8	.5	1.0	*1.1	1.0	1.0	1.4	14	28	23	2.2	1.9	2.3
9	.5	1.1	1.3	1.1	1.1	2.1	8.2	23	16	2.5	1.9	2.4
10	.5	.9	1.4	.9	1.2	2.1	7.6	20	14	2.5	2.1	2.3
11	.5	.9	1.3	.7	1.3	2.1	6.6	17	12	1.8	2.1	2.1
12	.5	.8	1.2	.6	1.0	2.1	5.7	15	9.4	1.8	2.2	1.8
13	.5	1.0	1.1	.5	1.2	2.1	4.9	13	20	1.7	2.3	1.5
14	.4	1.1	1.0	.6	1.5	1.9	4.8	12	9.0	1.7	2.4	1.5
15	.5	1.2	.9	.8	*1.8	*1.8	*18	9.8	9.7	1.7	2.4	1.3
16	.5	*1.3	.7	.9	2.5	1.7	23	9.0	58	1.6	2.4	1.3
17	.5	1.2	.6	.7	3.0	1.6	9.8	*9.8	39	1.7	243	1.1
18	.5	1.2	.5	*.8	3.2	1.5	6.8	8.6	*17	1.8	28	.9
19	*.5	1.7	.7	.9	3.6	2.8	5.9	7.1	8.2	1.9	*9.4	.8
20	.5	2.3	.9	1.0	5.1	2.7	12	6.1	6.1	2.3	4.6	.8
21	.5	1.8	1.1	.9	4.8	2.5	43	5.7	5.1	8.5	3.3	*.8
22	.5	.8	1.0	.7	3.9	2.8	40	5.5	31	3.2	30	.8
23	.5	.7	.9	.6	3.9	2.5	20	5.1	20	2.5	52	.7
24	.4	.7	.8	.7	4.2	3.9	12	5.1	6.6	2.3	41	.7
25	.4	.6	1.0	.7	3.3	11	238	5.5	4.6	2.1	26	.7
26	.5	.6	1.1	.8	2.9	20	530	6.6	163	1.8	2,350	.7
27	.5	.4	1.1	.9	2.7	16	1,650	8.2	462	1.6	409	.8
28	.5	.4	1.2	.9	2.5	7.4	278	23	261	1.7	54	.8
29	.5	.7	1.1	.8	.....	5.3	91	24	35	1.7	18	2.5
30	.6	1.1	1.1	.9	.....	4.1	61	18	2.9	1.6	8.6	2.4
31	.7	.....	1.0	.9	.....	3.2	.....	21	.....	1.6	6.4	.....
1954–55												
1	1.4	3.0	1.8	1.3	3.1	360	51	40	18	20	1.0	0.1
2	1.1	2.7	1.9	1.3	3.1	230	42	38	14	9.6	1.0	.2
3	.9	2.7	1.9	1.5	3.1	150	38	42	27	5.2	.9	.2
4	.9	2.5	2.1	1.6	3.1	115	36	72	90	4.6	.9	.2
5	207	2.5	1.9	1.8	3.1	85	44	50	25	57	1.9	.1
6	364	2.4	1.8	80	3.1	60	32	27	16	88	102	0
7	51	2.4	1.8	45	3.1	45	25	23	52	23	40	0
8	15	2.3	1.9	30	3.1	63	23	38	30	11	9.6	0
9	7.4	2.3	2.1	20	3.1	95	21	38	15	590	4.3	0
10	415	2.2	1.9	13	3.1	80	21	210	11	270	2.6	0
11	519	1.9	1.9	10	3.0	69	25	106	8.8	76	1.5	0
12	81	1.9	2.1	8.4	3.0	55	59	66	8.2	25	.9	*0
13	25	1.8	2.2	6.4	3.0	42	347	1,060	7.9	12	.7	0
14	40	1.8	2.2	5.3	3.0	36	992	488	7.6	9.2	.6	0
15	57	*1.8	*2.1	4.3	*3.0	145	255	180	6.7	7.0	*.4	0
16	24	1.9	1.9	4.0	3.0	110	144	110	6.1	7.3	.6	0
17	11	1.9	2.0	3.8	3.0	57	100	80	5.2	7.0	.6	0
18	6.8	2.1	2.0	3.7	9.0	*44	76	60	4.9	4.9	.4	0
19	5.3	2.1	2.0	3.6	60	42	*68	*48	5.2	3.8	.4	0
20	4.8	2.2	2.0	3.6	3,140	42	59	38	*4.6	*3.3	.7	0
21	*4.4	2.3	1.8	3.6	1,370	110	42	31	4.3	2.8	29	4.3
22	4.4	2.9	1.7	3.6	725	107	35	26	4.1	2.3	14	7.0
23	3.8	2.5	1.6	3.6	380	132	48	25	3.5	2.3	12	2.1
24	3.2	2.2	1.4	*3.7	310	110	501	24	3.8	20	0.1	.8
25	3.2	1.9	1.3	3.7	250	74	375	23	5.8	46	2.6	.4
26	3.3	1.8	1.4	3.6	500	45	160	27	5.5	9.0	1.2	.4
27	3.2	1.7	1.4	3.5	1,000	37	102	72	5.2	5.5	.7	.9
28	3.2	1.6	1.4	3.2	610	32	80	126	4.3	3.3	.4	.8
29	3.0	1.7	1.4	3.2	.....	70	65	108	4.9	2.1	.4	126
30	3.0	1.8	1.3	3.2	.....	84	48	40	9.2	1.3	.4	48
31	3.0	.....	1.3	3.2	.....	66	.....	24	.....	1.2	.2	.....

* Discharge measurement or observation of no flow made on this day.

Note—Stage-discharge relation affected by ice Nov. 26-30, Dec. 10-31, 1953; Jan. 1-3, 8-17, 20-25, Feb. 7-14, Mar. 2-8, Nov. 26 to Dec. 1, Dec. 17-31, 1954; Jan. 1 to Feb. 19, Feb. 23 to Mar. 7, Mar. 26-29, 1955.

Cedar Creek near Bussey, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.81	3.15	2.55	3.30	373	359	664	816	777	246	29.5	8.68
1951-52	90.3	102	38.5	211	161	802	243	350	991	44.0	155	13.1
1952-53	2.73	258	55.6	65.6	405	713	371	146	170	30.7	2.51	.60
1953-54	.49	.93	1.09	.89	2.29	3.78	111	44.3	82.1	2.30	107	1.79
1954-55	60.5	2.16	1.79	9.25	300	90.9	130	137	13.8	43.5	7.68	6.38

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.0021	0.0082	0.0066	0.0086	0.971	0.935	1.73	2.13	2.02	0.641	0.077	0.023
1951-52	.235	.266	.100	.549	.419	2.09	.633	.911	2.58	.115	.404	.034
1952-53	.0071	.672	.145	.171	1.05	1.86	.966	.380	.443	.080	.0065	.0016
1953-54	.0013	.0024	.0026	.0023	.0060	.0098	.289	.115	.214	.0060	.279	.0047
1954-55	.158	.0056	.0047	.024	.781	.237	.339	.357	.036	.113	.020	.017

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.002	0.009	0.008	0.01	1.01	1.08	1.93	2.45	2.26	0.74	0.09	0.03
1951-52	.27	.30	.12	.63	.45	2.41	.71	1.05	2.88	.13	.47	.04
1952-53	.008	.75	.17	.20	1.10	2.14	1.08	.44	.49	.09	.008	.002
1953-54	.001	.003	.003	.003	.006	.01	.32	.13	.24	.007	.32	.005
1954-55	.18	.006	.005	.03	.81	.27	.38	.41	.04	.13	.02	.02

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950	.....	.....	.....	.....	.....	.....	.....	184	6.51
1951	May 26, 1951	21.37	7,680	0.5	272	0.708	9.62	291	10.29
1952	June 21, 1952	25.72	20,100	3.0	267	.695	9.45	273	9.69
1953	Mar. 31, 1953	20.12	5,920	.2	183	.711	6.48	157	5.56
1954	Aug. 26, 1954	16.44	3,460	.3	29.9	.078	1.05	35.1	1.23
1955	Feb. 20, 1955	16.46	3,500	0	65.4	.170	2.30	.....	.....

Peak Discharge (base, 2,000 cfs)

1951: Feb. 18 (8 a.m.) 2,580 cfs (14.23 ft.); Mar. 28 (9 p.m.) 2,940 cfs (15.11 ft.); Apr. 7 (4 p.m.) 3,500 cfs (16.54 ft.); Apr. 13 (3 p.m.) 2,740 cfs (14.56 ft.); Apr. 25 (7 p.m.) 2,030 cfs (12.57 ft.); May 2 (8:30 a.m.) 2,220 cfs (13.25 ft.); May 11 (5 a.m.) 5,800 cfs (20.02 ft.); May 26 (10:30 a.m.) 7,680 cfs (21.37 ft.); June 3 (7:30 a.m.) 2,700 cfs (14.52 ft.); June 8 (5 a.m.) 3,420 cfs (16.29 ft.); June 22 (2:30 a.m.) 3,420 cfs (16.32 ft.); June 26 (9 p.m.) 2,780 cfs (14.70 ft.); July 3 (8 p.m.) 4,200 cfs (18.00 ft.).

1952: Mar. 13 (10:30 a.m.) 3,580 cfs (16.68 ft.); Mar. 19 (11 a.m.) 3,700 cfs (16.98 ft.); May 10 (3 a.m.) 3,540 cfs (16.58 ft.); May 17 (2:30 a.m.) 2,320 cfs (13.54 ft.); June 3 (1 p.m.) 5,620 cfs (19.83 ft.); June 21 (5:30 p.m.) 20,100 cfs (25.72 ft.); Nov. 18 (1:30 a.m.) 5,080 cfs (19.18 ft.).

1953: Feb. 20 (3 p.m.) 3,660 cfs (16.88 ft.); Mar. 23 (3 p.m.) 2,540 cfs (14.07 ft.); Mar. 31 (3 a.m.) 5,920 cfs (20.12 ft.); June 28 (11 a.m.) 2,090 cfs (12.82 ft.).

1954: Apr. 27 (9 a.m.) 2,580 cfs (14.16 ft.); Aug. 26 (5 p.m.) 3,460 cfs (16.44 ft.).

1955: Feb. 20 (11 a.m.) 3,500 cfs (16.46 ft.); May 13 (1 p.m.) 2,980 cfs (15.17 ft.).

Des Moines River at Ottumwa, Iowa

LOCATION.—Lat. 41°00'30", long. 92°24'40", in SW¼ sec. 30, T. 73 N., R. 13 W., on right bank 10 ft. downstream from Vine Street Bridge at Ottumwa, 5.5 miles upstream from Village Creek, 10 miles downstream from South Avery Creek, and at mile 93.9.

DRAINAGE AREA.—13,200 sq. mi. approximately.

RECORDS AVAILABLE.—March 1917 to September 1927 and January 1929 to September 1955 (published as "at Eldon" October 1930 to March 1935) in reports of Geological Survey. March 1917 to December 1932 (published as "at Eldon" October 1930 to December 1932) in report of Iowa State Planning Board.

GAGE.—Water-stage recorder. Datum of gage is 622.77 ft. above mean sea level, datum of 1929. Prior to Aug. 2, 1917, staff gage, and Aug. 2, 1917, to Sept. 30, 1930, chain gage, at Market Street Bridge half a mile upstream at datum 0.06 ft. higher. Oct. 1, 1930 to Mar. 19, 1935, chain gage at Eldon 15 miles downstream at different datum.

AVERAGE DISCHARGE.—38 years (1917-55), 4,743 cfs.

EXTREMES.—1917-55: Maximum discharge, 135,000 cfs June 7, 1947 (gage height, 20.2 ft.); minimum daily, 30 cfs Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.
Flood of May 31, 1903, has been estimated as at least at 100,000 cfs.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation at low flow caused by power plant above station.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	1,560	702	369	240	170	6,970	30,200	24,200	7,450	17,100	5,290	10,400
2.....	1,480	715	471	310	250	11,600	*37,300	28,200	8,200	18,800	4,810	10,700
3.....	1,220	702	358	220	170	11,300	*48,700	35,000	16,800	28,300	4,460	10,700
4.....	1,440	702	424	220	170	9,950	53,400	41,500	26,200	40,100	4,690	8,950
5.....	1,320	509	322	240	150	7,450	46,000	44,800	29,000	35,400	4,930	6,970
6.....	1,530	702	*377	260	240	5,170	39,200	46,000	32,300	33,200	7,210	6,090
7.....	1,580	690	314	220	170	4,460	38,700	46,000	35,900	34,600	6,970	5,290
8.....	1,520	650	230	140	170	4,930	36,800	44,800	35,900	31,000	6,010	5,050
9.....	1,580	686	184	*140	170	6,730	37,800	40,600	35,000	25,400	5,290	4,810
10.....	1,580	*566	300	140	170	6,010	38,700	41,000	35,000	19,900	4,890	4,690
11.....	1,560	690	431	230	450	4,340	39,600	38,700	33,200	16,400	4,570	*5,170
12.....	*1,560	520	406	240	1,600	2,760	41,500	33,200	28,200	14,300	4,460	6,490
13.....	1,500	623	316	250	*1,300	1,810	43,600	24,600	21,600	14,900	4,220	7,950
14.....	1,200	472	348	260	1,000	1,660	45,400	19,200	17,400	14,600	3,820	9,450
15.....	1,460	605	320	380	1,050	1,740	43,600	16,100	16,800	14,600	4,220	9,950
16.....	1,050	527	350	320	2,200	1,760	*36,800	14,000	15,200	14,900	4,700	9,950
17.....	1,120	510	376	340	3,500	1,730	29,400	12,800	13,700	15,800	7,950	11,000
18.....	1,050	504	362	400	7,000	1,930	25,400	*12,200	14,000	14,300	11,900	11,300
19.....	985	490	270	370	8,800	2,220	22,400	11,900	14,900	*12,500	13,100	10,400
20.....	985	593	202	380	7,000	1,760	20,200	11,300	*14,000	11,000	13,700	9,200
21.....	946	462	310	300	5,000	1,520	18,500	10,700	18,100	10,400	13,400	7,950
22.....	855	534	318	340	*3,800	*1,520	17,400	10,400	21,600	9,700	*13,400	6,970
23.....	842	494	273	270	3,000	1,830	16,400	11,000	21,000	9,450	13,400	6,490
24.....	920	156	268	220	2,370	1,390	17,100	11,000	18,500	10,200	12,500	6,010
25.....	752	273	281	360	2,560	2,460	19,200	9,450	16,800	11,000	11,900	5,770
26.....	842	382	342	310	5,050	2,970	23,800	21,900	16,400	11,000	11,300	5,410
27.....	740	240	314	210	6,010	6,490	26,200	32,300	17,100	9,700	8,950	4,960
28.....	728	408	220	320	5,170	14,600	26,600	24,200	16,100	8,200	8,200	4,690
29.....	740	397	140	300	.....	25,000	25,800	12,800	14,900	6,970	7,210	4,340
30.....	752	341	280	210	.....	27,400	24,600	9,450	15,500	6,250	7,210	4,220
31.....	702	.....	330	150	.....	28,200	.....	7,700	.....	5,770	9,200	.....

* Discharge measurement made on this day.

Note—No gage-height record Dec. 28-31, 1950; Jan. 1 to Feb. 23, 1951; discharge estimated on basis of weather records and records for nearby stations.

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	4,200	4,200	2,800	2,000	2,850	5,450	19,200	9,950	6,590	16,800	3,220	3,710
2.....	4,000	3,970	3,070	1,900	3,260	5,420	22,700	9,450	6,330	*13,100	2,940	3,350
3.....	3,880	3,800	3,130	1,800	3,280	5,820	*25,800	8,950	9,660	11,300	3,000	2,810
4.....	3,650	3,330	3,120	1,700	4,270	5,870	28,200	8,350	11,000	10,400	2,940	2,440
5.....	3,440	3,410	3,060	1,600	4,070	5,080	28,600	7,900	6,210	11,000	3,060	2,180
6.....	5,030	2,980	*2,060	1,500	5,290	5,500	28,200	7,460	5,610	11,600	2,890	2,180
7.....	5,300	*2,680	2,970	1,400	5,570	4,950	25,000	7,220	5,370	10,200	*3,020	2,150
8.....	5,700	2,460	2,970	1,350	5,380	4,500	20,600	6,640	5,020	10,700	2,970	1,970
9.....	5,770	2,560	2,950	*1,350	5,230	4,730	18,200	8,200	4,740	16,400	2,970	1,920
10.....	5,500	2,690	2,840	1,300	4,870	6,490	16,400	10,400	4,800	18,800	3,080	1,840
11.....	5,140	3,030	2,900	1,300	4,770	17,400	15,600	9,950	4,860	19,200	7,210	*1,640
12.....	*4,790	3,550	2,640	1,300	4,660	27,800	15,200	*8,700	4,150	19,900	6,020	1,550
13.....	4,590	6,730	2,410	1,300	5,100	32,300	15,500	8,070	4,180	20,200	4,350	1,190
14.....	4,280	8,700	d1,540	1,700	5,670	31,000	17,800	7,750	4,110	20,600	2,870	1,610
15.....	4,080	5,480	d1,390	2,500	6,840	26,200	19,200	7,480	3,790	19,600	4,140	1,400
16.....	3,950	4,370	d910	3,500	8,450	20,600	19,200	8,200	3,750	14,600	10,200	1,350
17.....	4,410	3,870	d1,040	5,230	9,700	16,100	18,500	9,700	3,820	12,200	8,700	1,180
18.....	4,760	3,520	d1,240	4,930	10,700	13,700	18,200	10,400	4,110	13,100	6,050	1,090
19.....	4,290	3,380	d1,200	4,710	13,100	20,200	17,100	9,450	5,630	12,200	4,870	1,040
20.....	4,000	3,110	d1,590	5,210	11,000	23,400	19,200	7,700	7,100	10,400	3,560	1,040
21.....	3,900	2,840	d1,740	5,870	10,400	18,500	14,600	6,850	22,200	8,950	2,810	985
22.....	5,630	2,860	d2,520	4,490	8,950	20,200	14,300	6,370	33,200	7,700	2,970	965
23.....	5,920	2,990	d2,680	4,000	7,700	23,000	16,800	9,280	41,500	7,060	2,280	946
24.....	5,540	2,880	d2,760	3,700	6,960	22,700	17,400	19,900	34,600	6,600	2,220	959
25.....	6,450	2,450	d2,870	3,900	6,250	20,600	15,800	15,800	15,200	5,630	1,850	946
26.....	5,280	2,010	d2,680	4,200	5,910	16,100	14,300	11,300	13,100	5,380	1,890	933
27.....	5,430	2,270	d2,800	4,350	5,540	13,400	13,100	9,700	11,600	4,910	1,710	933
28.....	5,110	2,230	2,610	4,300	5,820	12,500	12,200	8,700	18,200	4,410	1,610	545
29.....	4,840	2,170	2,450	3,900	*5,360	12,500	11,300	7,970	23,800	4,160	1,750	920
30.....	4,630	2,530	2,290	3,470	.....	12,800	10,400	7,440	22,000	3,620	1,770	907
31.....	4,390	.....	2,130	2,700	.....	14,600	.....	6,970	.....	3,240	2,230	.....
1.....	796	578	882	886	830	4,640	26,300	11,000	4,910	13,600	2,010	1,110
2.....	500	489	974	798	790	4,350	20,000	13,300	5,060	12,700	2,040	805
3.....	840	636	1,040	814	770	3,450	13,600	11,000	4,990	12,400	2,120	994
4.....	504	575	*1,050	726	760	3,500	11,600	11,000	4,990	9,920	2,350	1,140
5.....	835	543	1,230	773	1,800	*3,400	11,300	10,700	4,880	8,300	2,350	898
6.....	484	594	1,020	512	*3,450	3,300	10,700	10,700	5,020	7,800	3,010	967
7.....	842	*528	982	352	4,450	3,400	9,020	10,500	5,400	7,000	9,200	918
8.....	366	514	1,230	426	5,630	3,200	9,380	10,500	7,110	6,920	7,280	858
9.....	880	600	1,590	663	6,520	2,810	8,570	9,050	8,050	5,020	7,340	854
10.....	*450	536	1,900	755	7,840	4,130	7,940	8,840	8,460	4,600	6,080	802
11.....	865	516	1,850	886	7,210	6,280	7,710	8,300	24,000	4,560	5,290	844
12.....	407	548	1,330	686	7,390	6,650	7,320	8,050	27,800	4,230	4,480	745
13.....	791	*521	1,470	773	5,990	6,050	6,840	7,550	28,600	4,040	3,760	702
14.....	490	538	946	1,080	5,000	6,250	6,380	6,800	29,000	3,710	3,510	733
15.....	656	561	552	1,500	4,000	7,720	6,490	6,360	21,500	4,320	3,010	652
16.....	632	530	678	1,400	3,000	7,990	6,630	6,180	16,900	6,980	2,720	658
17.....	688	6,240	1,020	1,600	2,050	8,300	6,430	5,920	16,300	4,540	2,710	642
18.....	512	14,600	1,180	1,000	2,150	9,380	6,090	5,680	13,000	4,260	2,540	628
19.....	626	9,310	1,070	1,150	3,230	9,920	6,030	5,550	10,700	4,110	*2,200	629
20.....	590	3,470	1,600	1,100	12,300	9,380	6,260	5,300	9,380	3,810	2,360	626
21.....	631	1,660	1,550	1,330	22,200	8,570	6,210	5,300	8,300	3,480	2,080	594
22.....	681	1,530	1,450	1,230	14,400	8,300	5,890	*5,300	*7,800	4,070	1,970	470
23.....	512	1,050	1,300	1,290	8,430	11,600	5,610	5,180	7,190	*3,390	1,880	602
24.....	656	*1,080	1,250	1,180	6,690	11,300	5,340	5,050	6,610	2,970	1,650	*562
25.....	556	1,080	1,100	1,050	5,240	9,380	5,740	6,440	6,130	2,660	1,650	503
26.....	558	2,030	700	940	5,000	7,800	9,110	11,000	5,410	2,620	1,530	514
27.....	592	3,960	685	*940	4,890	*7,010	8,050	8,840	6,030	2,190	1,500	450
28.....	*583	1,950	646	1,000	4,760	6,550	7,300	7,050	10,400	2,160	1,200	561
29.....	603	906	666	900	.....	6,180	7,800	6,180	16,000	2,390	1,380	516
30.....	590	762	638	740	.....	14,800	8,300	5,550	14,800	2,120	1,170	345
31.....	562	.....	954	900	.....	23,800	.....	5,300	.....	1,970	1,100	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 31, 1951; Jan. 1-16, 23-29, Dec. 20-25, 1952; Jan. 24 to Feb. 4, Feb. 15-18, Mar. 4-8, 1953.

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	443	394	404	236	160	1,050	1,830	3,080	6,660	36,600	1,480	25,100
2	471	369	464	274	230	958	1,900	3,630	16,600	*20,600	1,770	24,400
3	526	361	466	272	250	744	1,950	5,270	11,700	14,100	1,260	20,100
4	454	366	407	324	260	515	1,930	8,060	11,400	11,700	1,650	14,400
5	437	344	493	274	260	350	1,760	6,060	10,800	10,300	1,690	10,300
6	432	326	482	269	270	1,150	2,310	6,100	9,720	9,160	2,070	8,330
7	438	318	414	232	270	668	2,260	6,320	9,160	8,330	2,060	6,980
8	436	342	524	210	300	373	2,060	6,060	8,060	7,520	1,770	5,930
9	436	291	506	230	370	468	1,730	5,430	6,980	6,710	1,760	4,970
10	446	314	*494	199	330	664	1,700	4,800	6,060	6,190	1,050	4,670
11	427	336	530	140	300	541	1,600	4,430	5,430	5,800	1,460	4,250
12	372	340	533	135	350	665	*1,080	4,160	4,030	5,070	1,390	3,810
13	370	354	442	200	390	404	1,530	3,450	11,200	4,790	1,220	3,520
14	390	328	438	250	450	654	1,650	3,280	*15,600	4,560	1,430	3,320
15	379	566	358	96	600	487	1,590	3,110	14,700	4,300	1,260	3,120
16	*380	281	138	250	430	665	1,560	2,890	14,600	3,740	* 1,230	2,920
17	397	320	236	220	470	654	1,300	2,840	21,700	3,520	2,140	2,650
18	377	348	260	190	*428	*448	1,330	2,550	17,400	3,430	1,820	2,690
19	290	*357	290	112	582	643	1,570	2,640	10,600	3,060	1,770	2,620
20	350	513	292	88	293	621	1,040	*2,240	7,790	2,840	1,080	2,360
21	348	334	466	*222	516	412	1,640	2,340	6,450	2,830	1,590	2,410
22	*470	316	190	100	582	665	1,290	2,040	14,400	*2,520	2,280	*2,080
23	208	609	220	186	572	832	1,540	2,250	18,100	2,630	4,700	2,170
24	450	467	211	98	572	2,470	1,250	1,930	22,700	2,480	14,400	2,080
25	217	560	266	206	591	2,910	2,040	2,040	26,900	2,320	16,000	2,010
26	306	394	300	130	934	2,530	*7,920	2,070	32,000	2,300	18,200	1,890
27	322	528	340	180	643	2,110	8,910	1,820	*46,100	1,960	23,100	1,770
28	322	418	316	120	768	2,210	6,190	2,200	*60,000	2,120	23,000	1,770
29	342	507	294	200	.....	1,740	4,270	2,530	*58,100	1,910	21,400	1,730
30	364	414	308	220	.....	1,970	2,990	2,450	48,000	1,790	22,700	1,740
31	383	.....	260	200	.....	1,710	.....	4,610	.....	1,620	24,400	.....
1954-55												
1	2,150	4,830	2,300	848	800	6,000	3,200	9,440	3,000	1,300	820	296
2	2,040	4,550	2,090	1,200	630	5,200	3,380	8,330	2,050	1,400	760	280
3	3,000	4,480	2,220	1,170	700	4,400	4,140	7,520	2,370	1,280	756	268
4	3,090	4,340	2,120	1,600	680	5,900	4,810	6,980	2,200	1,220	684	296
5	5,250	4,010	2,180	1,900	700	7,790	4,870	6,410	2,060	1,260	618	244
6	7,520	3,800	2,110	1,860	620	7,520	4,660	6,060	2,160	1,560	634	256
7	8,600	3,620	2,120	2,150	700	6,120	4,790	5,610	4,120	4,250	849	196
8	7,520	3,040	2,040	2,000	640	5,160	4,600	5,050	4,110	2,870	644	280
9	6,450	3,560	1,970	1,900	700	4,570	4,280	4,580	4,160	4,250	554	296
10	6,450	3,500	1,850	1,680	730	4,490	4,140	4,790	4,240	7,910	569	174
11	7,250	3,350	1,920	1,720	660	4,760	4,050	5,260	4,120	9,530	552	150
12	7,520	3,250	1,720	1,500	630	5,040	3,840	5,400	3,940	12,600	540	247
13	7,250	3,130	*1,950	1,150	610	5,050	5,160	6,980	3,830	12,000	292	253
14	7,250	3,150	1,890	920	700	5,920	5,240	6,320	3,460	10,000	490	246
15	8,060	3,040	1,790	1,080	720	6,080	4,750	4,080	3,330	6,190	418	*174
16	10,300	2,980	1,740	732	740	6,700	4,030	*4,240	2,730	5,530	428	170
17	11,400	2,870	1,880	1,290	730	6,400	4,200	3,440	2,460	4,340	416	261
18	*11,100	*2,860	1,880	920	790	*6,080	3,770	3,460	2,330	*3,400	428	174
19	9,720	2,900	1,760	600	2,300	5,600	3,430	3,020	2,350	2,720	*430	316
20	8,330	2,740	1,910	*750	4,700	4,980	3,480	2,780	2,080	2,610	338	284
21	7,520	2,790	1,650	806	9,900	4,320	2,950	2,840	1,910	2,380	1,110	172
22	6,780	2,770	1,740	890	9,000	4,100	3,560	2,520	1,860	2,000	1,060	216
23	6,240	2,560	1,980	960	7,500	4,140	*5,160	2,580	1,800	2,450	282	482
24	6,100	2,430	1,710	860	6,000	3,710	7,940	2,440	*1,590	1,750	424	299
25	6,010	2,500	1,970	780	5,500	3,500	5,040	2,200	1,630	1,460	402	359
26	5,700	2,410	1,880	810	5,200	3,010	10,700	2,850	1,470	1,360	292	236
27	5,370	2,260	1,960	830	6,400	2,740	11,400	2,990	1,470	1,350	298	256
28	4,990	2,410	1,820	770	7,600	2,550	11,100	2,860	1,330	1,170	295	240
29	5,230	2,240	1,600	710	.....	2,340	11,700	2,810	1,450	988	306	766
30	5,060	2,300	1,100	640	.....	2,670	10,800	3,790	1,440	876	306	2,540
31	5,010	.....	1,190	730	.....	3,070	.....	3,650	.....	894	290	.....

* Discharge Measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 22, 23, 27, 1953; Jan. 8-14, 16-18, Dec. 29-31, 1954; Jan. 1-8, 12-15, 18-20, Jan. 22 to Mar. 4, 1955. No gage height record Jan. 27 to Feb. 17, 1954; discharge estimated on basis of weather records and records for nearby stations.

Des Moines River at Ottumwa, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	1,164	531	316	267	2,453	6,763	32,340	24,100	20,890	16,960	7,866	7,377
1951-52.....	4,791	3,458	2,395	2,983	6,467	15,150	18,280	9,104	11,540	11,420	3,585	1,560
1952-53.....	625	1,978	1,113	948	5,699	7,400	8,828	7,873	11,400	5,221	2,921	713
1953-54.....	387	391	366	195	435	1,041	2,418	3,638	18,460	6,348	6,591	5,870
1954-55.....	6,589	3,182	1,872	1,153	2,735	4,868	5,526	4,877	2,590	3,045	525	348

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.088	0.040	0.024	0.020	0.186	0.512	2.45	1.83	1.58	1.28	0.596	0.559
1951-52.....	.363	.262	.181	.220	.490	1.15	1.38	.690	.874	.865	.272	.118
1952-53.....	.047	.150	.084	.072	.424	.561	.669	.596	.870	.396	.221	.054
1953-54.....	.029	.030	.028	.015	.033	.079	.183	.276	1.40	.481	.499	.445
1954-55.....	.499	.241	.142	.087	.207	.369	.419	.347	.196	.276	.040	.026

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.10	0.04	0.03	0.02	0.19	0.59	2.73	2.10	1.77	1.48	0.69	0.62
1951-52.....	.42	.29	.21	.26	.53	1.32	1.55	.80	.98	1.00	.31	.13
1952-53.....	.05	.17	.10	.08	.44	.65	.75	.69	.97	.46	.26	.06
1953-54.....	.03	.03	.03	.02	.03	.09	.20	.32	1.56	.55	.58	.50
1954-55.....	.58	.27	.16	.10	.22	.43	.47	.40	.22	.32	.05	.03

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....								3,619	3.72
1951.....	Apr. 4, 1951.	15.15	55,200	140	10,080	0.764	10.36	10,820	11.11
1952.....	June 23, 1952.	13.38	42,500	545	7,554	.572	7.80	6,972	7.20
1953.....	June 14, 1953.	10.51	29,400	345	4,537	.344	4.68	4,323	4.45
1954.....	June 28, 1954.	16.89	61,400	88	3,841	.291	3.94	4,725	4.86
1955.....	July 12, 1955.	5.79	13,800	150	3,140	.238	3.25	.....	.....

Peak Discharge (base, 16,000 cfs)

1951: Apr. 4 (5 a.m.) 55,200 cfs (15.15 ft.); Apr. 14 (9 p.m.) 45,400 cfs (13.93 ft.); Apr. 28 (6 a.m.) 27,000 cfs (9.92 ft.); May 6 (1 a.m.) 46,600 cfs (14.07 ft.); May 27 (7 p.m.) 34,600 cfs (11.68 ft.); June 7 (6:30 p.m.) 38,700 cfs (12.63 ft.); June 21 (10 p.m.) 24,200 cfs (9.16 ft.); July 4 (1 p.m.) 41,500 cfs (13.15 ft.); July 16 (11 p.m.) 17,800 cfs (7.37 ft.).

1952: Feb. 19 (6:30 a.m.) 22,700 cfs (8.85 ft.); Mar. 13 (3 a.m.) 32,800 cfs (11.28 ft.); Mar. 20 (5 a.m.) 24,600 cfs (9.30 ft.); Apr. 5 (2 a.m.) 28,600 cfs (10.28 ft.); Apr. 24 (1 p.m.) 17,800 cfs (7.40 ft.); May 24 (10 p.m.) 20,600 cfs (8.23 ft.); June 23 (3 p.m.) 42,500 cfs (13.28 ft.); June 29 (6 p.m.) 24,200 cfs (9.06 ft.); July 15 (2 a.m.) 21,100 cfs (8.19 ft.); Nov. 18 (4:30 p.m.) 16,000 cfs (6.70 ft.).

1953: Feb. 10 (1 p.m.) 16,900 cfs (6.99 ft.); Feb. 21 (7 a.m.) 23,300 cfs (8.90 ft.); Apr. 1 (7 a.m.) 27,400 cfs (10.04 ft.); June 14 (9 p.m.) 29,400 cfs (10.51 ft.); June 29 (6:30 a.m.) 16,600 cfs (6.87 ft.).

1954: June 2 (3:30 p.m.) 20,100 cfs (7.81 ft.); June 17 (10 a.m.) 22,700 cfs (8.65 ft.); June 28 (10 p.m.) 61,400 cfs (16.89 ft.); Sept. 1 8 p.m.) 25,100 cfs 9.32 ft.).

1955: No peak above base.

Lake Wapello near Drakesville, Iowa

LOCATION.—Lat. 40°49'15", long. 92°34'25", in SE¼NW¼ sec. 34, T. 70 N., R. 15 W., at Lake Wapello State Park, 5 miles northwest of Drakesville and 9½ miles northwest of Bloomfield.

DRAINAGE AREA.—7.6 sq. mi. above outlet, approximately.

RECORDS AVAILABLE.—June 1936 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 90.0 ft. above datum assumed for this lake and 10.0 ft. below crest of spillway of dam forming lake. Prior to Nov. 26, 1941, staff gage at site 0.5 mile southwest and at same datum.

EXTREMES.—1936-55: Maximum gage height observed, 12.70 ft. June 12, 1941; minimum observed, 7.81 ft. Sept. 9-11, 1936, Mar. 18, 1954.

REMARKS.—Water is diverted from lake for fish-rearing ponds below lake outlet.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	8.86	8.48	8.22	8.11	8.05	9.50	10.25	10.22	10.06	.....	10.15	10.11
2	8.86	8.46	8.24	8.13	8.04	9.54	10.23	10.25	10.07	.....	10.14	10.10
3	8.84	8.45	8.23	8.15	8.04	9.05	10.23	10.22	10.06	.....	10.11	10.08
4	8.83	8.43	8.23	8.15	8.04	9.63	10.23	10.18	10.04	.....	10.09	10.07
5	8.82	8.41	8.23	8.15	8.04	9.63	10.20	10.16	10.02	.....	10.07	10.06
6	8.80	8.39	8.24	8.14	8.04	9.63	10.43	10.14	10.01	.....	10.05	10.06
7	8.80	8.38	8.24	8.14	8.03	9.62	10.02	10.12	10.22	.....	10.03	10.04
8	8.76	8.41	8.24	8.13	8.03	9.61	10.49	10.11	10.54	.....	10.01	10.03
9	8.77	8.43	8.24	8.13	8.03	9.60	10.30	10.14	10.33	.....	10.00	10.03
10	8.76	8.41	8.23	8.12	8.02	9.62	10.22	10.99	10.22	10.21	9.97	10.04
11	8.75	8.39	8.23	8.12	8.02	9.68	10.19	10.63	10.18	10.18	9.96	10.02
12	8.73	8.37	8.23	8.12	8.01	9.73	10.34	10.36	10.23	10.15	9.95	10.01
13	8.72	8.37	8.22	8.12	.....	9.76	10.42	10.25	10.19	10.12	9.93	10.00
14	8.71	8.37	8.22	8.12	.....	9.77	10.32	10.20	10.16	10.12	9.94	9.97
15	8.70	8.38	8.21	8.11	.....	9.76	10.24	10.18	10.18	10.10	10.02	9.95
16	8.69	8.37	8.21	8.11	.....	9.75	10.19	10.17	10.16	10.07	10.02	9.94
17	8.67	8.35	8.20	8.10	.....	9.75	10.17	10.16	10.14	10.06	10.02	9.92
18	8.66	8.35	8.19	8.10	.....	9.76	10.15	10.15	10.12	10.05	10.00	9.90
19	8.65	8.34	8.18	8.10	.....	9.75	10.13	10.14	10.12	10.03	9.98	9.90
20	8.63	8.33	8.17	8.10	.....	9.73	10.12	10.15	10.10	10.01	10.23	9.88
21	8.62	8.33	8.17	8.10	9.43	9.72	10.13	10.14	10.48	10.00	10.30	9.85
22	8.60	8.32	8.17	8.10	9.43	9.73	10.13	10.15	10.70	10.48	10.25	9.89
23	8.59	8.31	8.17	8.10	9.43	9.77	10.11	10.15	10.46	10.38	10.17	9.87
24	8.57	8.27	8.16	8.09	9.43	9.80	10.12	10.12	10.54	10.25	10.16	9.85
25	8.56	8.27	8.15	8.08	9.44	9.82	10.15	10.10	.....	10.19	10.17	9.86
26	8.54	8.27	8.15	8.07	9.47	9.90	10.16	10.13	.....	10.16	10.44	9.86
27	8.53	8.26	8.14	8.07	9.47	10.05	10.17	10.09	.....	10.27	10.33	9.83
28	8.52	8.25	8.14	8.06	9.48	10.22	10.18	10.06	.....	10.51	10.23	9.80
29	8.51	8.24	8.13	8.06	.....	10.33	10.18	10.05	.....	10.33	10.19	9.78
30	8.50	8.23	8.13	8.05	.....	10.34	10.19	10.04	.....	10.24	10.15	9.78
31	8.50	.....	8.12	8.05	.....	10.27	.....	10.06	.....	10.19	10.12	.....

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage Heights, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	9.78	10.08	10.08	10.21	10.10	10.11	10.13	10.11	10.05	10.07	9.69	10.04
2.....	9.78	10.07	10.08	10.20	10.10	10.13	10.12	10.09	10.09	10.06	9.67	10.04
3.....	9.77	10.06	10.09	10.17	10.11	10.15	10.09	10.11	10.74	10.04	9.67	10.01
4.....	9.76	10.03	10.08	10.16	10.13	10.18	10.10	10.11	10.38	10.02	9.67	9.99
5.....	9.75	10.03	10.07	10.15	10.13	10.15	10.09	10.09	10.25	9.99	9.65	9.98
6.....	9.82	10.01	10.09	10.14	10.12	10.14	10.08	10.07	10.19	9.97	9.63	9.96
7.....	9.90	10.00	10.07	10.13	10.12	10.13	10.08	10.08	10.14	9.95	9.62	9.94
8.....	9.90	10.00	10.05	10.11	10.12	10.15	10.08	10.08	10.20	9.93	9.62	9.92
9.....	9.90	10.00	10.05	10.11	10.11	10.16	10.08	10.13	10.46	9.90	9.62	9.91
10.....	9.89	9.99	10.05	10.10	10.11	10.34	10.10	10.15	10.28	9.87	9.62	9.90
11.....	9.88	9.99	10.04	10.10	10.11	10.56	10.09	10.14	10.20	9.84	10.12	9.88
12.....	9.87	10.05	10.04	10.09	10.11	10.63	10.11	10.13	10.15	9.82	10.29	9.87
13.....	9.86	10.14	10.03	10.09	10.12	10.72	10.21	10.10	10.12	9.82	10.21	9.86
14.....	9.84	10.19	10.05	10.17	10.15	10.44	10.33	10.10	10.09	9.83	10.20	9.85
15.....	9.82	10.17	10.05	10.26	10.15	10.32	10.27	10.08	10.08	9.84	11.00	9.84
16.....	9.83	10.14	10.04	10.23	10.14	10.25	10.22	10.15	10.05	9.82	10.48	9.81
17.....	9.86	10.12	10.05	10.24	10.13	10.22	10.18	10.22	10.03	9.80	10.29	9.82
18.....	9.93	10.10	10.06	10.22	10.12	10.37	10.17	10.22	10.00	9.98	10.21	9.80
19.....	9.97	10.10	10.06	10.28	10.13	10.50	10.15	10.19	9.97	9.99	10.16	9.78
20.....	9.98	10.09	10.07	10.26	10.14	10.35	10.14	10.16	10.44	9.98	10.18	9.77
21.....	10.03	10.08	10.09	10.23	10.12	10.28	10.14	10.15	11.45	9.96	10.25	9.75
22.....	10.11	10.08	10.08	10.21	10.12	10.43	10.24	10.17	10.61	9.94	10.19	9.73
23.....	10.16	10.08	10.08	10.17	10.12	10.38	10.56	10.17	10.34	9.91	10.15	9.71
24.....	10.23	10.07	10.08	10.14	10.11	10.27	10.38	10.16	10.24	9.88	10.13	9.70
25.....	10.21	10.08	10.08	10.13	10.11	10.22	10.27	10.14	10.17	9.86	10.10	9.68
26.....	10.18	10.08	10.08	10.13	10.11	10.18	10.21	10.12	10.14	9.83	10.10	9.66
27.....	10.17	10.08	10.08	10.13	10.10	10.16	10.18	10.10	10.14	9.82	10.09	9.65
28.....	10.14	10.08	10.08	10.12	10.10	10.15	10.15	10.09	10.13	9.79	10.07	9.63
29.....	10.13	10.08	10.07	10.11	10.10	10.14	10.13	10.07	10.10	9.77	10.06	9.62
30.....	10.12	10.08	10.08	10.10	.....	10.14	10.12	10.05	10.08	9.73	10.05	9.61
31.....	10.10	.....	10.12	10.10	.....	10.13	.....	10.05	.....	9.71	10.03	.....
1952-53												
1.....	9.60	9.12	9.08	9.13	9.21	10.10	10.51	10.27	.....	9.82	9.57	.....
2.....	9.57	9.11	9.08	9.13	9.21	10.11	10.34	10.23	.....	9.82	9.54	.....
3.....	9.55	9.10	9.08	9.12	9.21	10.12	10.26	10.19	.....	9.80	9.53	8.95
4.....	9.53	9.08	9.08	9.12	9.20	10.14	10.20	10.16	.....	9.78	.....	8.99
5.....	9.50	9.06	9.08	9.12	9.27	10.12	10.18	10.14	.....	9.80	.....	8.98
6.....	9.48	9.05	9.07	9.12	9.46	10.11	10.15	10.14	.....	10.00	.....	8.96
7.....	9.46	9.04	9.07	9.12	9.55	10.10	10.15	10.14	.....	10.00	.....	8.96
8.....	9.44	9.02	9.06	9.13	9.58	10.10	10.14	10.13	.....	9.98	.....	8.93
9.....	9.43	9.01	9.06	9.13	9.60	10.11	10.14	10.12	.....	9.96	.....	8.91
10.....	9.42	9.00	9.07	9.14	9.67	10.19	10.14	10.11	.....	9.94	.....	8.88
11.....	9.40	9.00	9.06	9.15	9.82	10.31	10.12	10.09	.....	9.91	.....	8.87
12.....	9.39	8.99	9.03	9.15	9.89	10.31	10.13	10.07	.....	9.89	.....	8.85
13.....	9.38	8.98	9.02	9.16	9.92	10.25	10.12	10.05	.....	9.85	.....	8.82
14.....	9.37	8.98	9.02	9.16	9.94	10.31	10.12	10.04	.....	9.87	.....	.....
15.....	9.35	8.97	9.01	9.19	9.95	10.32	10.19	10.04	.....	9.85	.....	8.79
16.....	9.34	8.97	9.00	9.19	9.96	10.24	10.19	10.03	9.92	9.83	9.27	8.77
17.....	9.31	9.01	9.00	9.20	9.96	10.19	10.17	10.03	9.92	9.82	9.26	8.75
18.....	9.30	9.06	8.99	9.22	9.97	10.32	10.15	10.04	9.91	.....	9.23	8.73
19.....	9.29	9.04	9.01	9.22	9.98	10.26	10.14	10.04	9.89	.....	9.22	8.72
20.....	9.27	9.02	9.11	9.23	10.20	10.22	10.12	10.04	9.87	.....	9.20	8.69
21.....	9.25	9.01	9.11	9.24	10.22	10.20	10.12	10.04	9.82	.....	9.17	8.67
22.....	9.25	9.00	9.12	9.24	10.19	10.18	10.11	10.04	9.76	9.74	9.15	8.65
23.....	9.23	9.00	9.15	9.24	10.16	10.37	10.10	10.03	9.75	9.73	9.14	8.63
24.....	9.23	9.01	9.14	9.24	10.15	10.29	10.12	10.03	9.74	9.70	.....	.....
25.....	9.22	9.07	9.14	9.23	10.14	10.22	10.13	10.02	9.72	9.68	.....	.....
26.....	9.21	9.12	9.14	9.23	10.14	10.18	10.12	.....	9.71	9.67	.....	.....
27.....	9.20	9.09	9.13	9.23	10.11	10.16	10.10	.....	9.72	9.66	9.07	.....
28.....	9.17	9.08	9.13	9.23	10.10	10.14	10.09	.....	9.83	9.64	9.05	.....
29.....	9.16	9.07	9.13	9.22	.....	10.14	10.09	.....	9.82	9.62	9.03	.....
30.....	9.15	9.07	9.13	9.22	.....	10.70	10.10	.....	9.81	9.60	9.01	.....
31.....	9.13	.....	9.13	9.22	.....	10.62	.....	.....	.....	9.59	.....	.....

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	.....	.....	.....	7.96	.....	7.93	8.04	8.90	9.43	9.89	9.42	9.51
2	.....	.....	.....	7.96	.....	7.92	8.02	9.07	9.70	9.90	9.41	9.49
3	.....	.....	7.98	7.96	.....	7.92	8.00	9.37	10.12	9.90	9.39	9.48
4	.....	.....	7.99	7.95	.....	7.89	7.98	9.42	10.24	9.86	9.35	9.46
5	.....	.....	8.00	7.95	.....	7.88	7.97	9.43	10.22	9.85	9.33	9.44
6	.....	.....	8.00	7.95	.....	7.87	8.05	9.42	10.19	9.82	9.31	9.42
7	.....	.....	8.00	7.95	.....	7.87	8.12	9.41	10.17	9.80	9.31	9.41
8	.....	.....	8.00	7.95	.....	7.86	8.16	9.40	10.15	9.77	9.42	9.39
9	.....	.....	8.00	7.94	.....	7.86	8.17	9.38	10.14	9.74	9.43	9.38
10	.....	.....	8.00	7.94	.....	7.86	8.18	9.37	10.13	9.71	9.41	9.37
11	.....	.....	8.00	7.94	.....	7.85	8.18	9.36	10.12	9.68	9.41	9.35
12	.....	.....	8.00	7.93	.....	7.84	8.18	9.34	10.11	9.65	9.40	9.34
13	.....	.....	8.00	7.93	.....	7.84	8.17	9.33	10.10	9.62	9.39	9.31
14	.....	.....	8.00	7.92	7.98	7.84	8.18	9.32	10.09	9.60	9.38	9.30
15	.....	.....	7.99	7.92	7.95	7.83	8.19	9.31	10.08	9.56	9.38	9.29
16	.....	.....	7.99	7.92	7.92	7.82	8.18	9.30	10.15	9.54	9.38	9.29
17	.....	.....	7.98	7.91	7.91	7.82	8.17	9.29	10.12	9.51	9.42	9.26
18	.....	.....	7.98	7.90	7.90	7.84	8.15	9.28	10.10	9.49	9.43	9.24
19	.....	8.00	7.98	7.90	7.90	7.92	8.14	9.26	10.08	9.48	9.43	9.22
20	.....	.....	7.97	7.90	7.94	7.92	8.26	9.24	10.06	9.50	9.42	9.20
21	.....	.....	7.97	7.89	7.95	7.92	8.61	9.23	10.05	9.57	9.40	9.18
22	8.20	.....	7.97	.....	7.94	7.91	8.68	9.21	10.09	9.56	9.40	9.16
23	.....	.....	7.97	.....	7.94	7.91	8.70	9.20	10.06	9.54	9.40	9.14
24	.....	.....	7.97	.....	7.93	7.92	8.71	9.19	10.05	9.53	9.39	9.12
25	.....	.....	7.97	.....	7.93	7.99	8.71	9.17	10.02	9.52	9.38	9.11
26	.....	.....	7.97	.....	7.94	8.01	8.72	9.16	10.00	9.50	9.52	9.10
27	.....	7.98	7.97	.....	7.93	8.05	8.79	9.16	9.98	9.48	9.57	9.09
28	.....	7.98	7.97	.....	7.93	8.05	8.83	9.17	9.95	9.46	9.57	9.09
29	.....	7.98	7.97	.....	.....	8.05	8.84	9.18	9.93	9.45	9.57	9.13
30	.....	.....	7.96	.....	.....	8.05	8.84	9.17	9.91	9.45	9.55	9.13
31	.....	.....	7.96	.....	.....	8.04	.....	9.19	.....	9.44	9.53	.....
1954-55												
1	9.12	10.02	9.84	9.82	10.10	10.27	10.11	10.11	10.03	9.82	9.58	9.05
2	9.12	9.99	9.84	9.82	10.09	10.23	10.10	10.11	10.02	9.81	9.56	9.03
3	9.12	9.98	9.84	9.82	10.08	10.20	10.10	10.10	10.02	9.82	9.53	9.02
4	9.14	9.97	9.84	9.82	10.09	10.19	10.10	10.08	10.02	9.83	9.50	8.99
5	9.38	9.96	9.83	10.05	10.10	10.18	10.11	10.07	10.01	9.83	9.49	8.97
6	9.72	9.95	9.82	10.23	10.10	10.16	10.10	10.07	9.99	9.84	9.51	8.95
7	9.81	9.94	9.82	10.20	10.09	10.14	10.10	10.08	9.99	9.85	9.50	8.92
8	9.85	9.94	9.81	10.18	10.09	10.13	10.09	10.07	9.98	9.85	9.47	8.89
9	9.87	9.94	9.81	10.15	10.08	10.13	10.08	10.07	9.95	9.86	9.45	8.86
10	9.93	9.94	9.80	10.14	10.09	10.13	10.07	10.09	9.94	9.88	9.44	8.84
11	10.22	9.93	9.80	10.13	10.09	10.12	10.10	10.09	9.94	9.86	9.42	8.81
12	10.25	9.93	9.79	10.12	10.09	10.12	10.15	10.17	9.94	9.84	9.38	8.79
13	10.22	9.93	9.79	10.11	10.09	10.10	10.32	10.47	9.94	9.82	9.35	8.77
14	10.25	9.92	9.78	10.11	10.08	10.11	10.36	10.33	9.93	9.80	9.32	8.76
15	10.31	9.92	9.78	10.10	10.08	10.11	10.27	10.25	9.92	9.80	9.30	8.75
16	10.26	9.92	9.78	10.08	10.08	10.11	10.21	10.22	9.91	9.81	9.28	8.74
17	10.21	9.91	9.78	10.08	10.08	10.09	10.18	10.17	9.91	9.81	9.26	8.73
18	10.16	9.91	9.78	10.11	10.07	10.09	10.16	10.15	9.90	9.82	9.24	8.71
19	10.11	9.91	9.78	10.12	10.31	10.08	10.16	10.14	9.89	9.82	9.22	8.73
20	10.10	9.92	9.78	10.12	10.53	10.09	10.15	10.13	9.88	9.80	9.20	8.76
21	10.09	9.93	9.78	10.12	10.36	10.14	10.13	10.11	9.87	9.78	9.18	8.84
22	10.09	9.93	9.77	10.12	10.26	10.16	10.11	10.10	9.86	9.76	9.20	8.85
23	10.08	9.92	9.77	10.11	10.22	10.16	10.24	10.10	9.85	9.75	9.18	8.84
24	10.08	9.91	9.77	10.12	10.22	10.18	10.72	10.09	9.83	9.74	9.16	8.81
25	10.07	9.89	9.77	10.12	10.20	10.19	10.42	10.08	9.81	9.72	9.14	8.79
26	10.08	9.88	9.78	10.11	10.33	10.17	10.28	10.07	9.80	9.71	9.11	8.78
27	10.08	9.88	9.80	10.11	10.44	10.15	10.22	10.07	9.81	9.68	9.09	8.82
28	10.07	9.88	9.81	10.11	10.34	10.14	10.17	10.06	9.82	9.67	9.07	8.81
29	10.05	9.86	9.82	10.11	.....	10.13	10.14	10.06	9.83	9.64	9.06	8.84
30	10.04	9.85	9.82	10.10	.....	10.13	10.12	10.05	9.84	9.62	9.06	8.84
31	10.03	.....	9.82	10.10	.....	10.12	.....	10.04	.....	9.60	9.05	.....

Des Moines River at Keosauqua, Iowa

LOCATION.—Lat. 40°44', long. 91°57', in sec. 36, T. 69 N., R. 10 W., on right bank 10 ft. upstream from bridge on State Highway 1 at Keosauqua, 4 miles downstream from Chequest Creek, and at mile 50.6.

DRAINAGE AREA.—13,900 sq. mi. approximately.

RECORDS AVAILABLE.—May 1903 to July 1906, April 1910 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 558.10 ft. above mean sea level, datum of 1912 (levels by Corps of Engineers). Prior to Dec. 24, 1933, chain gage at same site and datum.

AVERAGE DISCHARGE.—46 years (1903-5, 1911-55), 5,284 cfs.

EXTREMES.—1903-6, 1910-55: Maximum discharge, about 135,000 cfs June 1, 1903 (gage height, 27.85 ft. from floodmark); minimum daily, 40 cfs Jan. 30, 1940. Flood of June 1, 1851, reached a stage of 24 ft. (discharge not determined).

REMARKS.—Records good except those for periods of ice effect, which are fair. Some diurnal fluctuation at medium and low stages caused by powerplant at Ottumwa.

COOPERATION.—Several discharge measurements furnished by Corps of Engineers.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	1,630	672	547	210	240	6,300	30,400	25,800	7,930	17,200	5,650	9,050
2	1,470	672	495	220	170	9,340	34,400	28,300	8,210	19,000	5,260	11,400
3	1,400	672	560	250	200	13,600	*44,400	33,500	11,200	22,600	4,880	11,400
4	1,180	644	495	265	240	11,100	*51,400	40,500	24,600	37,200	4,510	10,800
5	1,360	644	410	210	180	9,030	50,900	45,400	29,100	39,500	4,760	8,490
6	1,270	*588	377	210	190	6,840	44,400	46,800	41,400	34,400	5,780	6,570
7	1,460	495	200	195	210	5,260	47,800	47,800	35,300	34,900	7,650	6,170
8	1,550	644	*520	*210	240	4,760	42,400	47,400	40,000	34,000	6,700	5,390
9	*1,470	616	480	200	180	6,040	39,000	44,400	36,700	28,700	5,910	5,260
10	1,570	790	300	190	180	7,110	39,500	60,800	36,200	23,000	5,140	*5,140
11	1,550	443	250	*190	500	5,780	40,500	56,100	35,800	19,000	4,880	5,010
12	1,490	630	360	200	1,000	4,260	43,900	38,600	33,500	15,200	4,850	5,910
13	1,490	495	505	220	1,800	2,720	47,400	30,000	25,800	15,200	4,510	7,380
14	1,440	574	460	310	1,500	1,980	47,400	*22,600	20,400	15,600	4,380	8,490
15	1,200	398	370	370	1,100	1,810	46,800	18,600	18,300	15,200	4,640	10,500
16	1,360	630	370	350	2,400	1,750	*42,400	16,200	18,300	*15,200	4,640	10,200
17	1,030	469	285	385	4,100	1,810	34,000	14,600	15,600	16,600	5,650	10,800
18	1,080	469	305	360	6,900	1,880	28,300	13,300	15,600	15,600	10,200	11,400
19	1,030	508	340	400	10,900	2,020	25,000	13,000	*15,900	13,900	13,600	11,400
20	962	456	395	380	10,000	2,240	22,300	12,600	15,200	13,900	14,200	10,200
21	946	602	310	310	6,700	1,710	20,400	11,700	18,900	11,700	*16,200	8,770
22	946	416	240	260	5,390	1,590	19,000	11,100	29,600	18,100	13,900	7,650
23	835	547	300	305	4,260	1,810	17,900	11,400	25,000	12,000	14,200	6,840
24	835	315	300	335	3,540	2,150	17,900	12,000	23,400	10,500	13,600	6,300
25	806	443	270	260	3,180	2,020	19,000	10,800	21,500	11,100	16,600	6,040
26	715	335	230	220	3,780	*3,180	23,400	14,700	25,800	*11,700	18,300	5,650
27	775	350	220	330	7,380	5,910	27,400	30,400	22,300	11,100	11,700	5,390
28	760	495	230	290	5,910	13,900	30,800	30,800	19,700	9,630	9,340	4,760
29	686	356	245	200	.....	23,400	28,300	16,900	16,600	7,930	8,210	4,760
30	700	616	220	250	.....	29,600	26,600	11,700	16,600	7,110	7,380	4,510
31	715	.....	160	310	.....	29,600	.....	9,050	.....	6,300	8,210	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8-31, 1950; Jan. 1 to Feb. 20, 1951.

Des Moines River at Keosauqua, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4,380	4,040	2,720	2,200	2,840	5,910	17,900	10,800	6,700	*20,400	3,300	2,370
2	4,260	4,380	3,070	2,050	3,070	5,780	22,300	9,920	6,440	14,900	3,180	4,140
3	4,140	4,140	3,300	1,900	3,420	5,910	*25,800	9,340	6,580	12,300	2,960	3,420
4	3,960	4,020	3,420	1,800	3,900	6,440	28,700	8,770	14,300	11,100	2,960	2,750
5	3,540	3,660	3,180	1,700	5,010	5,780	30,000	8,210	8,520	10,800	2,960	2,410
6	3,780	3,660	3,300	1,650	5,140	5,010	30,000	7,650	5,780	11,700	2,960	2,190
7	5,910	3,300	*3,180	1,580	5,780	4,760	28,300	7,380	5,390	11,100	*3,070	2,190
8	5,520	*2,960	3,070	1,520	5,910	5,010	23,400	7,110	5,140	9,630	3,180	2,170
9	6,040	2,750	3,180	1,480	5,520	4,880	20,400	7,110	4,760	13,700	2,840	1,980
10	5,780	2,770	3,070	*1,450	5,390	7,500	18,600	10,800	4,510	18,300	3,070	1,860
11	*5,520	3,070	2,960	1,420	5,140	16,600	17,200	11,400	4,380	19,300	5,480	1,790
12	5,140	3,300	3,070	1,400	4,880	31,300	16,600	9,630	4,380	19,700	9,340	*1,590
13	4,880	7,040	2,820	1,400	5,010	38,100	16,600	*8,490	3,660	20,400	6,040	1,610
14	4,510	12,700	2,200	1,420	5,780	34,000	18,600	7,930	3,660	21,200	3,780	1,270
15	4,380	8,210	1,650	1,900	6,440	30,000	20,400	7,650	3,660	20,800	8,090	1,550
16	4,260	5,520	1,280	2,800	7,650	23,400	20,800	8,210	3,300	16,600	9,360	1,400
17	4,260	4,510	1,040	4,000	9,050	19,000	20,000	11,100	3,180	13,000	11,700	1,360
18	4,880	4,140	1,350	5,600	10,200	16,600	19,700	11,400	3,180	14,200	7,930	1,220
19	4,880	3,960	1,300	5,200	12,600	20,400	19,000	10,800	3,900	13,300	6,040	1,110
20	4,380	3,540	1,500	5,400	13,000	25,800	17,900	8,770	6,040	11,700	5,010	1,160
21	4,140	3,300	1,700	5,780	11,100	21,900	16,600	7,380	21,300	10,200	7,380	1,130
22	4,880	3,180	2,050	5,650	9,920	20,800	15,900	6,840	37,000	8,770	3,900	1,030
23	6,440	3,180	2,700	4,140	8,490	25,400	22,800	6,700	39,500	7,650	3,180	1,030
24	6,570	3,180	2,850	3,900	7,650	25,400	20,900	17,000	41,900	7,110	2,460	994
25	6,570	3,070	3,050	3,900	6,840	23,000	18,600	20,400	23,800	6,440	2,260	1,010
26	6,570	2,680	3,100	4,510	6,300	19,700	16,600	13,600	14,200	5,520	1,880	1,040
27	6,040	2,700	2,900	4,510	6,040	15,600	14,900	13,000	12,600	5,260	1,900	1,010
28	5,520	2,410	3,000	4,040	*5,780	13,600	13,600	9,340	13,900	4,760	1,670	1,010
29	5,260	2,390	2,700	4,380	6,040	13,600	12,600	8,490	23,400	4,380	1,570	686
30	5,010	2,350	2,550	3,660	.....	13,600	11,400	7,650	24,600	4,020	1,690	1,030
31	4,880	.....	2,300	3,300	.....	14,200	.....	7,380	.....	3,780	1,810	.....
1952-53												
1	968	583	800	980	1,200	5,170	31,200	9,810	5,820	15,200	1,920	1,180
2	936	618	940	880	1,070	5,040	25,100	13,200	5,430	13,900	1,980	1,150
3	883	539	*1,050	780	900	4,380	17,900	13,500	5,690	13,900	2,000	952
4	937	644	1,100	720	1,020	3,380	12,900	12,000	5,560	12,000	2,190	1,130
5	572	605	1,130	610	*1,200	*3,700	12,000	12,000	5,430	9,810	2,360	1,200
6	909	*572	1,260	500	3,000	3,500	11,600	11,600	5,430	9,810	2,360	951
7	550	618	1,100	450	4,000	3,600	11,300	11,000	5,690	8,090	4,260	1,030
8	922	572	1,100	380	5,000	3,400	10,400	11,000	6,730	6,990	7,120	984
9	*506	550	1,260	900	6,860	3,100	9,520	11,300	8,650	5,950	7,810	922
10	847	605	1,680	760	7,120	3,880	8,940	10,400	8,650	5,170	7,250	906
11	539	561	1,960	930	8,940	7,120	8,370	9,520	17,200	4,910	6,080	861
12	922	539	1,850	880	8,370	8,650	8,370	8,940	27,400	4,780	5,300	875
13	486	550	1,300	*990	7,120	7,810	7,810	8,650	29,500	4,520	*4,780	805
14	833	517	1,400	1,000	5,950	8,370	7,250	8,370	29,900	4,260	3,880	763
15	506	517	700	1,300	5,170	10,100	6,990	8,090	28,200	3,880	3,500	805
16	791	550	600	1,150	4,100	8,940	7,250	7,250	18,900	5,820	3,140	709
17	670	583	700	1,500	3,000	8,650	7,250	6,990	18,500	6,600	2,850	696
18	683	10,800	1,000	2,000	2,200	9,520	6,860	6,600	15,500	4,520	2,780	709
19	605	13,900	1,400	1,250	2,400	11,000	6,600	6,600	12,900	4,520	*2,590	709
20	644	6,730	1,580	1,100	6,600	10,400	6,600	*6,080	17,500	4,280	2,280	683
21	631	2,920	1,200	1,500	21,300	9,230	6,860	5,820	9,520	3,880	2,340	670
22	670	1,680	1,370	1,450	18,900	8,940	6,600	5,820	*8,650	3,760	2,150	657
23	709	1,500	1,730	1,380	12,900	11,600	6,340	5,820	8,090	*4,390	1,940	*561
24	583	1,150	1,480	1,300	8,370	13,900	6,080	5,690	7,530	3,380	1,900	605
25	709	1,220	1,470	1,400	6,600	11,300	5,950	5,560	6,990	3,040	1,710	631
26	594	1,410	1,300	1,100	5,430	*9,230	7,250	9,520	6,340	2,730	1,680	561
27	594	3,380	760	1,000	5,430	8,090	9,810	11,000	5,820	2,660	1,580	550
28	*631	3,630	660	1,100	5,300	7,250	8,090	8,370	8,090	2,190	1,520	528
29	605	1,920	780	1,040	.....	6,990	7,810	7,250	15,500	2,190	1,300	583
30	583	1,060	950	940	.....	16,100	8,370	6,470	16,200	2,360	1,430	594
31	618	.....	1,060	860	.....	28,700	.....	6,080	.....	2,100	1,240	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1-20, Nov. 30 to Dec. 3, Dec. 14-19, 26-31, 1952; Jan. 1 to Feb. 8, Feb. 16-20, Mar. 5-9, 1953.

Des Moines River at Keosauqua, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	560	410	508	340	190	806	1,700	5,560	6,990	*45,400	1,490	25,400
2	530	400	*504	310	160	1,000	1,840	5,300	13,500	27,900	1,410	25,400
3	566	403	554	300	220	850	1,980	6,730	16,200	15,800	1,560	23,500
4	594	384	550	350	250	670	1,900	7,810	12,300	12,900	1,200	17,500
5	522	394	518	330	260	700	1,870	7,810	12,300	11,000	1,520	11,300
6	564	376	508	310	280	570	5,220	6,600	11,000	9,520	1,580	9,810
7	496	369	590	300	310	1,050	3,040	6,730	10,400	8,650	1,820	7,810
8	500	370	527	260	350	796	2,340	6,730	9,520	7,810	2,000	6,600
9	520	366	608	230	400	568	2,020	6,730	8,370	7,120	1,540	6,080
10	503	388	*631	250	340	449	1,880	6,080	7,120	6,340	1,580	5,040
11	518	322	586	180	260	689	1,840	5,300	6,340	5,950	1,500	4,810
12	508	354	570	220	350	656	*1,710	5,040	5,690	5,560	1,310	4,390
13	439	378	596	170	400	708	1,670	4,650	6,990	4,910	1,260	3,880
14	476	357	551	150	450	573	1,540	3,760	*16,200	4,650	1,150	3,630
15	470	364	430	180	492	698	*1,640	3,500	16,200	4,390	1,280	3,380
16	462	338	320	310	646	588	1,590	3,380	14,800	4,260	1,170	3,260
17	458	515	260	230	496	*700	1,560	3,380	19,900	3,630	1,500	3,000
18	474	*323	230	170	*482	720	1,340	3,040	22,100	3,380	2,080	2,080
19	461	387	300	250	432	620	1,420	2,610	13,900	3,140	1,660	2,710
20	470	380	370	310	650	776	2,830	*2,480	9,810	3,020	*1,660	2,610
21	*430	451	480	*290	612	712	2,360	2,160	7,810	*2,880	1,500	2,410
22	440	513	200	130	396	510	1,960	2,180	9,930	2,780	1,600	*2,300
23	442	384	270	140	658	746	1,480	1,920	18,200	2,390	2,640	2,090
24	452	508	400	240	656	2,010	1,580	2,050	21,000	2,570	9,310	2,100
25	358	502	340	150	681	*4,000	1,310	1,760	25,800	2,300	15,800	1,980
26	425	596	340	160	673	3,140	3,180	1,880	30,300	2,170	18,200	1,940
27	346	593	420	150	958	2,570	11,000	1,910	39,900	2,020	23,100	1,850
28	335	500	460	190	774	2,120	7,810	1,740	53,000	1,880	24,300	1,790
29	*394	550	380	160	.....	2,150	5,820	2,090	60,300	1,900	22,400	1,840
30	364	540	340	200	.....	1,920	4,390	2,530	57,100	1,760	22,100	1,710
31	363	.....	320	220	.....	1,940	.....	4,260	.....	1,640	23,900	.....
1954-55												
1	1,710	5,560	2,410	1,300	780	8,940	3,380	10,700	3,050	1,510	846	356
2	2,100	5,300	2,400	900	820	6,860	3,440	9,520	3,080	1,250	836	358
3	2,100	5,040	2,140	1,150	690	5,690	3,900	8,370	2,840	1,340	756	346
4	3,330	4,910	2,360	1,490	750	7,460	4,780	7,810	2,420	1,250	796	301
5	6,080	4,650	2,230	5,900	740	7,810	5,300	7,250	2,370	1,310	744	342
6	8,370	4,390	2,160	5,880	730	8,370	5,170	6,600	2,160	1,360	702	336
7	8,940	4,130	2,200	2,950	670	7,250	5,040	6,470	2,860	2,170	676	265
8	8,650	4,010	2,110	2,650	720	6,210	5,170	5,820	4,650	4,130	826	331
9	7,530	3,880	2,050	2,240	710	5,430	4,780	5,430	4,650	3,380	746	186
10	12,700	3,760	1,950	2,000	750	4,910	4,490	5,040	4,650	6,530	600	334
11	12,100	3,690	1,850	1,790	760	5,040	4,530	5,430	4,780	9,160	598	354
12	8,650	3,540	1,860	1,580	730	5,430	4,440	5,950	4,650	12,900	588	204
13	7,810	3,420	1,660	1,380	680	5,560	*5,890	10,100	4,350	13,500	600	160
14	8,090	3,320	1,960	1,200	660	5,690	8,850	8,040	4,220	11,600	503	282
15	8,650	3,310	1,900	1,040	750	*7,120	6,080	6,470	3,790	9,230	465	*297
16	9,810	3,220	1,790	1,140	790	7,530	5,430	*5,040	3,490	7,120	500	274
17	12,000	3,170	1,760	1,060	850	*6,990	5,040	4,520	2,910	5,430	482	197
18	*12,300	*3,050	1,920	1,100	1,000	6,860	4,520	3,490	2,600	*4,390	468	188
19	11,300	3,030	1,950	800	3,000	6,340	4,030	3,590	2,420	3,510	*446	286
20	9,810	3,020	1,850	780	6,400	5,950	3,690	3,160	2,740	2,650	507	212
21	8,650	2,030	1,990	850	9,200	5,300	3,570	2,970	*2,130	2,670	429	428
22	7,810	2,920	1,960	910	11,600	4,650	*3,220	3,050	1,980	2,380	1,970	351
23	7,120	2,850	1,700	970	*9,520	4,650	4,260	2,700	*1,900	2,230	1,160	230
24	6,730	2,710	1,920	880	7,810	4,780	15,900	*2,720	1,830	3,150	336	440
25	6,600	2,610	1,700	830	6,000	4,260	8,320	2,510	1,690	1,720	*494	318
26	6,470	2,640	1,950	770	6,700	3,680	7,950	2,320	1,660	*1,440	478	*484
27	6,210	2,540	1,990	*720	9,230	3,150	12,600	3,530	1,490	1,300	364	255
28	5,950	2,400	2,010	830	9,810	2,940	12,000	3,300	1,390	1,290	360	308
29	5,560	2,530	1,720	760	.....	2,770	12,300	3,150	1,600	1,090	404	339
30	5,690	2,350	1,450	680	.....	2,760	12,300	3,390	2,000	937	408	1,450
31	5,560	.....	1,200	750	.....	2,970	.....	4,020	.....	922	393	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 28, 29, Dec. 15-31, 1953; Jan. 1 to Feb. 14, Mar. 2-7, Dec. 29-31, 1954; Jan. 1-3, Jan. 12 to Feb. 21, Feb. 25, 26, 1955.

Des Moines River at Keosauqua, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	1,154	533	347	271	2,945	7,132	34,440	26,670	23,480	18,160	8,563	7,721
1951-52.....	5,032	4,034	2,566	3,105	6,086	16,740	19,870	9,685	11,900	12,000	4,289	1,650
1952-53.....	687	2,034	1,199	1,024	6,052	8,421	9,912	8,788	12,380	5,861	3,072	799
1953-54.....	466	426	443	232	458	1,162	2,727	4,120	18,770	7,085	6,294	6,430
1954-55.....	7,561	3,466	1,926	1,525	3,316	5,502	6,346	5,284	2,909	3,063	629	340

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.083	0.038	0.025	0.019	0.212	0.513	2.48	1.92	1.69	1.31	0.616	0.555
1951-52.....	.362	.290	.185	.223	.481	1.20	1.43	.697	.863	.863	.309	.119
1952-53.....	.049	.146	.086	.074	.435	.606	.713	.630	.891	.422	.221	.057
1953-54.....	.034	.031	.032	.017	.033	.084	.196	.296	1.35	.510	.453	.463
1954-55.....	.544	.252	.139	.110	.239	.402	.457	.379	.209	.285	.045	.024

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.10	0.04	0.03	0.02	0.22	0.59	2.76	2.21	1.88	1.51	0.71	0.62
1951-52.....	.42	.32	.21	.26	.52	1.39	1.59	.80	.96	1.00	.36	.13
1952-53.....	.06	.16	.10	.08	.45	.70	.80	.73	.99	.49	.25	.06
1953-54.....	.04	.03	.04	.02	.03	.10	.22	.34	1.51	.59	.52	.52
1954-55.....	.63	.28	.10	.13	.25	.46	.51	.44	.23	.33	.05	.03

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950.....								4,025	3.93
1951.....	May 10, 1951.	16.45	63,500	160	10,960	0.788	10.69	11,760	11.47
1952.....	June 24, 1952.	12.45	42,900	686	8,132	.585	7.96	7,484	7.33
1953.....	Apr. 1, 1953	9.95	31,600	380	4,994	.359	4.87	4,779	4.66
1954.....	June 29, 1954.	16.14	60,800	130	4,047	.291	3.96	5,028	4.92
1955.....	Oct. 10, 1954.	(1)7.57	22,100	160	3,578	.257	3.50	.....	.....

(1) Maximum gage height, 8.05 ft. Feb. 20, 1955 (backwatetr from ice).

Peak Discharge (base 19,000 cfs)

1951: Apr. 4 (8 p.m.) 53,000 cfs (14.38 ft.); Apr. 28 (4 a.m.) 32,200 cfs (10.07 ft.); May 10 (about 12 p.m.) 63,500 cfs (16.45 ft.); May 28 (7 a.m.) 34,900 cfs (10.72 ft.); June 8 (9 a.m.) 42,400 cfs (12.26 ft.); June 22 (5 a.m.) 32,200 cfs (10.07 ft.); July 5 (1 a.m.) 41,400 cfs (12.14 ft.); July 22 (9 a.m.) 21,900 cfs (7.60 ft.); Aug. 25 (12:30 p.m.) 20,000 cfs (7.13 ft.).

1952: Mar. 13 (3 p.m.) 39,000 cfs (11.57 ft.); Mar. 20 (9 p.m.) 26,200 cfs (8.69 ft.); Apr. 6 (2 a.m.) 30,000 cfs (9.63 ft.); Apr. 16 (2:30 a.m.) 20,800 cfs (7.28 ft.); Apr. 23 (10 p.m.) 24,200 cfs (8.15 ft.); May 25 (3 a.m.) 22,300 cfs (7.70 ft.); June 24 (6 a.m.) 42,900 cfs (12.45 ft.); June 30 (12 M.) 24,600 cfs (8.28 ft.); July 15 (4 a.m.) 21,500 cfs (7.49 ft.).

1953: Feb. 21 (10 p.m.) 23,100 cfs (7.94 ft.); Apr. 1 (8 p.m.) 31,600 cfs (9.95 ft.); June 15 (10 a.m.) 30,300 cfs (9.71 ft.).

1954: June 3 (12:30 a.m.) 20,300 cfs (7.14 ft.); June 18 (6 a.m.) 23,100 cfs (7.91 ft.); June 29 (2 p.m.) 60,800 cfs (16.14 ft.); Aug. 28 (2 a.m.) 24,700 cfs (8.42 ft.); Sept. 2 (1 p.m.) 25,800 cfs (8.66 ft.); Oct. 10 (8 p.m.) 22,100 cfs (7.57 ft.).

1955: Apr. 24 (11 a.m.) 20,300 cfs (7.08 ft.).

Fox River at Cantril, Iowa

LOCATION.—Lat. 40°39'20", long. 92°03'30", in SW¼ sec. 30, T. 68 N., R. 10 W., on left bank 5 ft. downstream from bridge on State Highway 2, a quarter of a mile upstream from Bone Run, and 1 mile northeast of Cantril.

DRAINAGE AREA.—161 square miles.

RECORDS AVAILABLE.—August 1940 to September 1951 (discontinued).

GAGE.—Water-stage recorder. Datum of gage is 657.98 ft. above mean sea level, datum of 1929. Prior to Nov. 8, 1940, wire-weight gage on downstream handrail of bridge at same site and datum.

AVERAGE DISCHARGE.—11 years, 97.7 cfs.

EXTREMES.—1940-51: Maximum discharge, 16,500 cfs June 18, 1946 (gage height, 18.94 ft.); no flow Aug. 9-16, Aug. 31 to Sept. 3, 1941.

REMARKS.—Records fair except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	1.5	1.5	1.4	0.9	0.8	23	199	68	22	49	19	21
2	1.4	1.5	1.8	1.1	.8	24	165	118	21	34	20	21
3	1.2	1.5	1.5	1.3	.8	60	120	111	21	30	21	21
4	1.2	1.5	1.3	1.3	.8	30	153	65	19	28	10	20
5	1.2	1.5	1.1	1.1	.8	23	80	41	17	23	14	18
6	1.4	*1.5	1.1	1.0	1.0	18	749	34	17	20	11	18
7	1.9	1.7	1.0	.9	70	10	1,520	32	53	18	9.4	18
8	2.0	2.4	*1.0	*.9	62	16	342	30	251	17	9.2	17
9	*2.0	2.8	.9	.8	56	15	141	31	58	16	5.6	22
10	2.0	3.3	.9	.8	52	14	92	2,300	26	15	13	*27
11	1.9	2.8	.9	.8	150	16	77	828	21	18	6.4	20
12	1.5	2.0	.9	.8	70	18	618	258	25	23	12	19
13	1.5	1.9	.9	1.0	56	17	828	114	28	15	21	16
14	1.7	1.7	.9	1.3	52	17	202	*72	21	14	23	15
15	1.5	1.7	.9	1.6	51	16	127	55	25	12	99	14
16	1.4	1.9	.9	2.2	260	17	*81	47	28	*12	77	14
17	1.5	2.8	.9	1.7	582	17	65	40	18	14	61	13
18	1.5	2.0	.8	1.4	1,310	17	57	38	15	12	56	11
19	1.4	1.7	.8	1.2	1,700	*16	48	40	*15	436	51	11
20	1.5	1.7	.9	1.2	455	16	42	45	11	1,590	*264	11
21	1.2	1.5	.9	1.1	189	16	45	38	530	1,260	380	10
22	1.0	1.7	.9	1.0	138	16	54	35	740	3,420	65	11
23	1.4	2.0	.9	1.0	103	22	45	34	318	547	35	12
24	1.2	1.7	1.0	1.0	80	26	45	30	582	111	30	10
25	1.4	3.2	1.1	.9	65	37	52	29	1,410	95	1,190	10
26	1.0	3.0	1.2	.9	42	82	63	86	2,080	84	1,750	10
27	1.2	1.9	1.4	.9	28	330	53	36	736	84	275	9.2
28	1.2	1.2	1.2	.9	26	308	65	26	372	84	80	8.9
29	1.2	1.0	.9	.8	.....	565	80	23	250	80	42	8.9
30	1.4	1.0	.7	.8	.....	322	54	20	86	32	33	9.2
31	1.5	.....	.7	.8	.....	197	.....	23	.....	24	26	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 2-31, 1950; Jan. 1 to Feb. 16, Mar. 10-14, 23, 24, 1951. Discharge computed from gage reading or graph based on gage readings Apr. 12, 13, July 17, 18, July 21 to Aug. 19, 1951.

Fox River at Cantril, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	1.45	1.92	1.02	1.08	200	75.1	212	153	281	265	152	14.9

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.0090	0.012	0.0063	0.0067	1.24	0.466	1.32	0.950	1.75	1.65	0.944	0.093

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.01	0.01	0.007	0.008	1.29	0.54	1.47	1.09	1.94	1.90	1.09	0.10

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950....	.....	.....	.....	.....	.....	.....	.....	77.7	6.55
1951....	July 20, 1951.	15.82	6,500	0.7	112	0.696	9.46	.....	.....

Peak Discharge (base, 4,000 cfs)

1951: June 25 (11 p.m.) 5,780 cfs (14.93 ft.); July 20 (9:30 p.m.) 6,500 cfs (15.82 ft.); July 22 (5:30 a.m.) 5,160 cfs (14.28 ft.).

MISSOURI RIVER BASIN

Rock River near Rock Valley, Iowa

LOCATION.—Lat. 43°11'55", long. 96°20'10", in NE¼ sec. 25, T. 97 N., R. 47 W., on downstream side of bridge on U. S. Highway 18, 1.8 miles west of Rock Valley, and 17 miles upstream from mouth.

DRAINAGE AREA.—1,630 sq. mi. approximately.

RECORDS AVAILABLE.—June 1948 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,216.00 ft. above mean sea level (Iowa Highway Commission benchmark). Prior to Aug. 13, 1952, wire-weight gage (June 4, 1949, to Aug. 12, 1952, supplementary water-stage recorder operating above 6.23 ft. gage height) at same site and datum.

AVERAGE DISCHARGE.—7 years, 374 cfs (270,800 acre-ft. per year).

EXTREMES.—1948-55: Maximum discharge, 19,200 cfs June 21, 1954; maximum recorded gage height, 15.99 ft. June 8, 1953; minimum daily discharge, 1 cfs Mar. 16-26, 1951. Flood of 1897 reached a stage of 17.0 ft. (discharge not determined), from information by Iowa Highway Commission.

REMARKS.—Records good except those for periods of ice effect or no gage height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	a40	a19	18	5	2	20	3,860	1,300	615	1,730	a350	289
2.....	a150	a19	18	5	2	15	3,980	1,930	740	1,260	a420	a260
3.....	111	a19	17	5	2	10	*7,030	1,440	a860	2,550	a410	a230
4.....	a70	28	17	4	2	5	10,700	1,140	1,060	2,050	a390	a210
5.....	a55	a27	16	4	2	2	*13,300	930	930	1,400	a370	a200
6.....	45	a27	16	4	2	2	*13,300	740	a800	1,200	a340	227
7.....	a42	26	15	4	2	2	*10,400	a660	635	1,030	320	203
8.....	a40	a25	15	4	2	2	7,430	595	808	1,520	*283	a190
9.....	38	19	13	3	2	2	4,470	a750	762	2,320	a250	a170
10.....	a37	a25	13	3	2	2	2,450	*1,140	a680	1,590	294	955
11.....	a30	31	12	3	2	2	1,930	1,730	595	1,730	a260	1,000
12.....	a35	a30	12	3	2	2	1,730	1,300	555	2,140	a240	*980
13.....	a34	28	11	3	2	2	1,330	980	500	1,610	a220	1,140
14.....	a33	27	11	2	2	2	1,080	785	465	1,260	a400	1,260
15.....	a32	26	11	2	*2	2	1,260	695	a420	1,000	905	980
16.....	a31	26	10	*2	2	1	1,360	785	a390	*830	1,030	740
17.....	30	25	10	2	2	1	1,030	830	a350	718	1,060	595
18.....	23	25	10	2	2	1	905	1,330	500	a600	740	a520
19.....	a26	24	*10	2	2	1	830	1,810	*955	765	575	a450
20.....	29	24	9	2	2	1	a800	1,610	1,200	1,170	a500	a400
21.....	a32	23	9	2	2	1	785	a1,400	1,060	a1,600	448	a360
22.....	a31	23	8	2	2	1	808	a1,150	855	a1,200	a400	320
23.....	a29	22	8	2	2	*1	830	a950	740	880	a350	a300
24.....	a28	22	8	2	2	1	785	a800	855	a650	a310	a280
25.....	*26	21	7	2	20	1	718	675	1,140	500	289	a600
26.....	23	21	7	2	50	1	675	785	2,750	a400	a270	a530
27.....	23	*20	7	2	100	100	675	a680	3,290	a340	1,440	454
28.....	23	20	6	2	40	1,000	740	a600	4,340	a280	830	a400
29.....	a22	19	6	2	.....	2,500	785	500	4,470	a240	575	a360
30.....	20	19	6	2	.....	*4,430	930	a450	3,400	500	392	a330
31.....	a19	.....	6	2	.....	4,600	.....	a520	.....	402	a350	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 13 to Dec. 31, 1950; Jan. 1 to Mar. 28, 1951 (no gage height record on many days).

Rock River near Rock Valley, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	308	a180	176	90	65	390	12,500	a454	a175	a500	a69	185
2.....	a280	a160	a180	90	65	340	9,000	a425	165	a600	69	167
3.....	268	139	201	90	65	280	6,580	399	a180	a550	a69	157
4.....	286	a80	a225	90	65	250	5,000	a380	a190	a400	70	131
5.....	a350	54	252	90	65	230	4,450	a360	194	265	a68	110
6.....	a340	a60	a300	90	65	230	3,240	a340	a190	438	66	95
7.....	a320	a100	323	90	65	230	2,220	320	180	462	a64	87
8.....	308	182	a300	85	70	240	1,890	a365	a200	396	a62	77
9.....	291	*189	a250	85	100	250	2,080	a410	a250	a300	61	*71
10.....	a280	217	182	85	150	260	2,210	456	a200	a250	a63	66
11.....	*260	a220	175	80	600	260	*1,500	a425	a170	206	66	62
12.....	a250	222	170	80	800	260	1,200	a390	a150	a190	a68	61
13.....	242	222	160	80	1,500	250	1,200	356	135	a175	*69	57
14.....	a260	a220	140	74	2,000	250	1,120	a345	143	167	66	62
15.....	a310	a210	140	*74	1,540	270	1,030	a335	344	a160	63	61
16.....	a250	205	140	74	1,140	341	965	332	765	a158	61	56
17.....	a230	119	135	72	855	506	900	a305	1,500	*155	57	53
18.....	230	a140	130	72	695	2,810	855	a280	1,500	a150	55	52
19.....	234	157	*130	72	518	3,870	830	257	*890	a140	55	51
20.....	252	a150	130	72	460	*5,200	810	252	575	a130	66	50
21.....	a300	a140	125	70	430	3,860	815	*252	445	a120	58	49
22.....	a400	a135	125	70	390	2,080	975	a249	428	a110	53	49
23.....	a500	130	120	70	360	935	1,320	246	428	a105	51	50
24.....	a450	123	115	68	340	663	1,300	a245	535	a100	49	49
25.....	377	a130	115	68	320	651	980	a244	555	a90	48	48
26.....	a330	a130	110	68	300	667	815	243	555	82	48	46
27.....	302	a135	110	66	295	671	695	a225	498	a78	50	44
28.....	a290	a135	105	66	*290	911	611	213	a470	a76	136	44
29.....	a270	145	100	66	290	4,340	551	196	a440	74	90	43
30.....	247	a160	95	65	.....	11,600	476	a190	a420	a72	129	42
31.....	a220	.....	95	65	.....	*15,900	.....	182	.....	a70	206	.....
1952-53												
1.....	42	42	34	18	23	80	329	515	484	915	238	131
2.....	42	41	34	18	23	80	317	610	386	655	226	127
3.....	42	40	34	18	24	80	326	790	344	515	1,610	*133
4.....	41	40	34	18	24	80	329	805	300	445	2,400	137
5.....	40	41	34	18	25	70	326	711	273	396	2,200	131
6.....	40	40	33	16	25	70	326	603	260	396	3,310	120
7.....	40	39	33	16	25	70	320	498	1,530	515	1,460	115
8.....	41	39	33	16	25	70	320	428	*13,400	428	865	11
9.....	42	40	33	16	25	70	344	371	8,740	353	615	107
10.....	42	41	33	16	25	150	359	450	3,600	309	480	103
11.....	41	41	32	16	25	1,040	347	700	1,760	281	634	100
12.....	41	42	32	16	25	2,350	317	550	1,250	268	1,070	95
13.....	41	*43	32	16	25	2,900	289	480	1,000	284	1,070	91
14.....	41	43	32	16	26	3,950	265	430	830	462	815	7
15.....	*41	43	32	16	27	2,800	281	396	687	*353	615	8
16.....	39	44	*32	16	*28	1,740	292	320	599	309	498	82
17.....	38	43	32	16	28	*1,280	317	280	504	329	428	80
18.....	39	44	32	16	28	1,280	314	260	452	320	368	76
19.....	39	47	31	16	28	1,460	289	*249	402	257	323	74
20.....	39	50	30	*16	28	1,340	260	236	356	230	*295	74
21.....	40	50	30	18	28	990	*243	257	314	216	270	74
22.....	40	49	28	18	29	865	228	298	295	196	243	70
23.....	42	50	26	18	29	815	213	257	276	182	220	67
24.....	43	53	24	18	30	675	216	241	*254	169	199	69
25.....	43	43	22	18	31	515	270	238	236	161	178	67
26.....	43	40	20	20	32	462	347	412	223	155	161	66
27.....	42	35	18	20	35	445	462	2,830	436	155	141	66
28.....	40	35	18	21	50	390	515	1,500	2,050	151	125	63
29.....	39	35	18	21	.....	359	462	885	2,900	178	122	59
30	41	35	18	22	.....	344	428	679	1,520	268	157	58
31.....	42	.....	18	22	.....	338	.....	611	.....	281	145	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1951; Jan. 1 to Feb. 14, Feb. 20 to Mar. 14, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 10, 1953.

Rock River near Rock Valley, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	*57	56	58	26	28	353	428	320	233	453	201	105
2	56	56	61	26	31	292	398	398	216	409	159	89
3	53	56	64	26	35	240	344	462	223	394	134	84
4	52	55	66	26	40	210	270	415	233	350	118	79
5	52	55	60	25	49	180	338	400	230	330	107	79
6	52	52	64	25	65	170	341	368	223	300	100	79
7	52	52	69	25	110	170	323	323	199	275	96	74
8	52	53	74	25	*220	180	335	292	*176	252	94	*75
9	51	55	78	25	310	200	359	265	157	231	89	102
10	52	57	*81	25	390	210	332	246	157	213	86	146
11	52	56	82	*25	360	190	306	228	139	203	*82	175
12	52	56	73	25	340	170	*284	*216	127	186	82	150
13	51	56	58	25	320	160	270	203	120	*173	80	132
14	51	56	48	25	310	150	260	194	115	157	79	120
15	52	55	42	25	310	140	273	182	110	146	77	109
16	53	55	38	25	310	*170	359	174	107	138	79	105
17	58	*53	36	25	320	600	388	169	103	132	80	107
18	58	53	35	25	330	*3,000	350	161	412	130	177	118
19	58	58	34	25	380	4,080	320	157	5,500	124	231	126
20	59	74	33	25	535	*4,080	287	153	*13,200	120	186	122
21	59	91	32	25	740	4,080	268	147	*16,600	118	153	115
22	57	90	31	25	740	2,500	249	141	8,290	116	128	107
23	56	85	31	25	905	1,430	236	137	3,560	118	118	98
24	55	79	30	25	1,190	1,190	228	133	1,910	113	111	93
25	56	76	29	25	865	915	220	129	1,310	107	132	89
26	56	63	29	25	695	1,020	211	127	1,190	102	128	87
27	56	56	28	25	575	865	201	143	990	96	130	86
28	56	50	28	25	412	715	196	189	780	100	148	86
29	56	52	27	25	.....	595	187	187	*636	103	164	89
30	55	54	27	26	.....	498	226	314	517	153	130	89
31	55	.....	27	27	.....	462	.....	295	.....	252	111	.....
1954-55												
1	89	105	58	51	19	21	400	461	99	36	20	4.4
2	89	91	58	51	*18	*30	298	*361	88	38	16	4.9
3	91	84	59	51	18	400	244	304	77	48	*13	4.4
4	89	105	59	*51	18	420	256	259	71	36	13	4.0
5	89	107	60	50	18	330	*256	229	75	32	11	3.6
6	89	103	*60	48	17	260	271	199	79	*52	12	*3.6
7	87	102	60	47	17	190	250	178	*75	77	13	3.0
8	94	98	60	45	17	150	223	160	75	50	13	3.2
9	100	*94	60	44	16	200	205	152	77	38	14	3.2
10	109	94	60	42	16	520	184	144	77	34	14	3.2
11	118	89	60	40	16	1,600	172	134	79	34	13	2.8
12	*142	87	60	39	16	2,000	166	126	82	32	14	2.8
13	175	86	60	37	16	1,190	160	116	79	28	14	2.8
14	159	86	60	36	16	750	155	111	75	30	13	2.8
15	140	86	60	34	15	545	152	104	68	25	11	2.8
16	130	84	60	33	15	377	147	97	60	23	10	2.6
17	120	84	60	32	15	298	139	93	60	23	9.6	2.4
18	120	82	59	31	15	253	139	90	75	22	8.2	2.2
19	120	80	59	29	15	220	144	90	82	20	7.5	2.2
20	115	79	58	28	15	200	142	84	75	19	6.9	2.6
21	111	79	57	27	15	190	139	82	68	22	6.9	3.2
22	111	77	56	26	15	180	134	77	60	21	6.4	2.8
23	109	77	55	25	15	175	131	73	54	19	6.4	3.2
24	107	75	54	24	15	170	160	71	50	17	5.9	3.2
25	105	72	52	23	15	172	181	68	46	17	5.9	3.6
26	115	69	46	23	15	176	202	73	42	15	5.4	3.6
27	120	69	39	22	15	180	187	104	38	14	4.9	4.0
28	122	74	42	21	15	190	393	104	34	13	4.4	4.0
29	124	60	40	20	.....	220	*685	134	34	16	4.0	3.2
30	120	58	49	20	.....	289	625	160	34	21	4.0	2.8
31	111	.....	51	19	.....	425	.....	124	.....	23	4.0	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1953; Jan. 1 to Feb. 18, Mar. 8-17, Dec. 1-31, 1954; Jan. 1 to Mar. 11, Mar. 19-29, 1955 (no gage-height record Jan. 28-31, Feb. 1, 3, 4, 6-8, 10, 12-17, 19-24, 26-28, Mar. 1, 5, 6, 21-24, 26, 27, 1955).

Rock River near Rock Valley, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	39.1	23.7	11.0	2.77	9.20	410	3,230	1,000	1,224	1,154	484	498
1951-52.....	299	153	163	76.7	479	1,904	2,293	312	429	218	71.1	72.5
1952-53.....	40.8	43.3	28.8	17.6	27.7	876	322	577	1,522	327	693	90.6
1953-54.....	54.5	60.5	47.5	25.2	392	1,000	293	236	1,925	197	122	104
1954-55.....	114	84.5	56.0	34.5	16.0	397	232	147	66.3	28.9	9.82	3.26

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.024	0.015	0.0067	0.0017	0.0056	0.252	1.98	0.613	0.751	0.708	0.297	0.306
1951-52.....	.183	.094	.100	.047	.294	1.17	1.41	.191	.263	.134	.044	.044
1952-53.....	.025	.026	.018	.011	.017	.537	.198	.354	.931	.201	.425	.056
1953-54.....	.033	.037	.029	.015	.240	.613	.180	.145	1.18	.121	.075	.064
1954-55.....	.070	.052	.034	.021	.0098	.244	.142	.090	.041	.018	.0060	.0020

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.03	0.02	0.008	0.002	0.006	0.29	2.21	0.71	0.84	0.82	0.34	0.34
1951-52.....	.21	.10	.12	.05	.32	1.35	1.57	.22	.29	.15	.05	.05
1952-53.....	.03	.03	.02	.01	.02	.62	.22	.41	1.04	.23	.49	.06
1953-54.....	.04	.04	.03	.02	.25	.71	.20	.17	1.32	.14	.09	.07
1954-55.....	.08	.06	.04	.02	.01	.28	.16	.10	.05	.02	.007	.002

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	2,410	1,410	678	171	512	25,220	192,200	61,470	72,830	70,980	29,770	29,620
1951-52.....	18,360	9,100	10,040	4,710	27,570	117,100	136,400	19,160	25,530	13,430	4,370	4,310
1952-53.....	2,510	2,520	1,770	1,080	1,540	53,870	19,150	35,500	90,570	20,100	42,610	5,390
1953-54.....	3,350	3,600	2,920	1,550	21,770	61,520	17,420	14,490	114,600	12,090	7,520	6,180
1954-55.....	7,020	5,030	3,450	2,120	889	24,440	13,780	9,050	3,940	1,780	604	194

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									175	1.46	126,500
1951...	Apr. 5, 1951.	14.77	14,300	1	673	0.413	5.62	487,300	719	5.99	520,300
1952...	Mar. 31, 1952.	15.30	17,300	42	537	.329	4.48	390,100	495	4.13	359,400
1953...	June 8, 1953.	15.99	18,900	16	382	.234	3.18	276,600	386	3.21	279,700
1954...	June 21, 1954	15.86	19,200	25	369	.226	3.08	267,000	377	3.15	272,600
1955...	Mar. 12, 1955.	9.31	2,370	2.2	99.8	.061	.83	72,300			

Peak Discharge (base, 2,000 cfs)

1951: Mar. 30 (4 a.m.) 5,170 cfs (11.37 ft.); Apr. 5 (3 p.m.) 14,300 cfs (14.77 ft.); May 2 (11 a.m.) 2,050 cfs (8.65 ft.); June 30 (1:30 a.m.) 4,740 cfs (11.08 ft.); July 3 (6 a.m.) 3,180 cfs (9.81 ft.); July 9 (4:30 a.m.) 2,550 cfs (9.18 ft.); July 12 (4:30 a.m.) 2,320 cfs (8.93 ft.).

1952: Feb. 14 (12:30 p.m.) about 2,400 cfs (11.86 ft.); Mar. 20 (7 a.m.) 6,100 cfs (12.55 ft.); Mar. 31 (9 a.m.) 17,300 cfs (15.30 ft.).

1953: Mar. 14 (12 M.) 4,220 cfs (10.83 ft.); May 27 (5 p.m.) 3,520 cfs (10.27 ft.); June 8 (5:30 p.m.) 18,900 cfs (15.99 ft.); June 29 (9 a.m.) 3,150 cfs (9.95 ft.); Aug. 6 (5:30 a.m.) 4,220 cfs (10.83 ft.).

1954: Mar. 20 (1-3 p.m.) 5,300 cfs (12.11 ft.); June 21 (6 a.m.) 19,200 cfs (15.86 ft.).

1955: Mar. 12 (1:30 a.m.) 2,370 cfs (9.31 ft.).

Dry Creek at Hawarden, Iowa

LOCATION.—Lat. 42°59'30", long 96°28'10", in NE¼NE¼ sec. 2, T. 94 N., R. 48 W., on left bank 6 ft downstream from bridge on State Highway 10 at east edge of Hawarden and 1.7 miles upstream from mouth.

DRAINAGE AREA.—48 sq. mi., approximately.

RECORDS AVAILABLE.—June 1948 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,170.42 ft. above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to Oct. 30, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—7 years, 10.5 cfs (7,600 acre-ft. per year).

EXTREMES.—1948-55: Maximum discharge, 10,900 cfs June 7, 1953 (gage height 17.57 ft.), from rating curve extended above 860 cfs on basis of contracted-opening determination of peak flow; no flow at times.

Flood of September 1926 reached a stage of 18.0 ft. (discharge not determined) and flood of 1934 reached a stage of 15.8 ft. (discharge not determined), from information by Iowa Highway Commission.

REMARKS.—Records fair except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	0.9	0.4	0	0	0	0.5	42	20	59	7.1	2.7	5.3
2.....	3.3	.5	0	0	0	.5	*84	22	22	7.2	3.8	5.0
3.....	1.9	.5	0	0	0	0	222	13	17	488	3.6	4.7
4.....	.6	.4	0	0	0	0	120	10	14	237	3.8	4.4
5.....	.4	.4	0	0	0	0	48	9.4	12	33	3.4	4.4
6.....	.2	.4	0	0	0	0	*22	9.0	10	24	3.0	4.5
7.....	.3	.3	0	0	0	0	16	8.8	10	18	2.5	4.3
8.....	.3	.5	0	0	0	0	13	8.5	10	37	*2.4	6.4
9.....	.3	.5	0	0	0	0	11	18	16	40	1.8	127
10.....	.3	.7	0	0	0	0	10	*24	8.2	21	1.6	124
11.....	.3	.5	0	0	0	0	9.2	19	7.9	69	2.1	43
12.....	.3	.5	0	0	0	0	7.5	13	7.4	76	15	*31
13.....	.3	.5	0	0	0	0	9.0	11	6.3	38	11	43
14.....	.3	.6	0	0	0	0	11	10	5.8	23	12	23
15.....	.3	.6	0	0	*0	0	11	11	5.2	15	8.8	15
16.....	.4	.6	0	*0	0	0	9.7	14	4.8	*11	11	12
17.....	.3	.6	0	0	0	0	9.2	12	4.5	10	18	12
18.....	.4	.6	0	0	0	0	8.2	12	16	8.6	7.2	11
19.....	.4	.6	0	0	0	0	7.9	12	*15	8.1	4.3	11
20.....	.4	.6	*0	0	0	0	7.9	11	14	9.1	7.9	10
21.....	.3	.3	0	0	.5	0	8.8	11	8.4	15	8.2	10
22.....	.3	0	0	0	1	0	8.8	10	6.8	9.0	6.6	10
23.....	.4	0	0	0	3	*0	8.6	9.7	6.4	5.3	4.1	11
24.....	.4	0	0	0	2	5	8.6	9.1	11	4.7	3.4	19
25.....	*.4	0	0	0	2	10	9.0	9.0	51	4.1	3.4	20
26.....	.4	0	0	0	1	58	9.2	9.1	129	3.5	4.7	14
27.....	.4	*0	0	0	.5	*538	11	8.8	33	3.2	170	12
28.....	.5	0	0	0	.5	589	13	8.2	15	3.1	104	10
29.....	.4	0	0	0	.....	460	10	7.9	10	3.0	14	9.2
30.....	.4	0	0	0	.....	397	11	7.7	8.2	2.7	7.9	9.0
31.....	.4	0	0	0	.....	126	.....	19	.....	2.7	6.4	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Feb. 21 to Mar. 2, Mar. 24, 25, 29, 1951. Discharge computed from gage readings or graph based on gage readings Oct. 5 to Nov. 21, 1950; Mar. 26, Apr. 1-6, June 19, July 5, July 28 to Aug. 11, Aug. 25, Sept. 10-12, 1951.

Dry Creek at Hawarden, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951 52												
1.....	9.0	7.8	7.5	2.3	10	8.0	61	7.0	3.0	14	1.9	25
2.....	9.0	8.2	8.2	2.3	12	8.0	36	6.4	2.7	15	1.9	13
3.....	9.0	9.0	8.6	2.3	25	7.0	33	6.1	2.9	4.8	1.9	9.2
4.....	14	9.4	10	2.3	30	7.0	27	5.8	3.0	2.2	1.9	7.4
5.....	13	8.5	10	2.3	35	7.0	22	5.2	2.9	1.8	1.9	6.2
6.....	9.2	7.7	9.7	2.2	35	6.0	20	4.6	2.7	163	2.0	5.7
7.....	8.2	7.4	9.4	2.2	38	6.0	20	7.0	2.5	390	2.1	5.4
8.....	8.1	7.7	11	2.2	40	6.0	20	8.5	3.7	58	2.1	5.1
9.....	7.7	*7.8	9.0	2.2	35	6.0	21	10	3.5	25	2.1	*4.6
10.....	*7.5	7.7	9.0	2.1	98	67	18	11	2.6	17	1.9	4.4
11.....	7.4	7.7	8.6	2.1	*187	109	*18	9.1	2.3	12	2.3	4.1
12.....	7.2	7.9	8.0	2.1	175	80	17	7.4	2.1	9.1	2.7	3.9
13.....	7.1	8.6	7.0	2.1	114	64	18	7.0	2.1	8.1	2.2	3.7
14.....	8.8	8.5	6.0	2.1	68	60	18	6.3	1.9	7.0	*1.0	5.0
15.....	9.8	7.2	5.0	*2.1	43	83	17	5.6	1.8	5.9	1.8	4.6
16.....	7.0	6.7	4.0	2.1	32	91	16	6.4	1.5	4.7	1.8	4.3
17.....	6.1	7.9	3.5	2.1	28	118	15	5.9	1.3	*3.9	1.8	3.9
18.....	6.4	8.8	3.0	2.1	24	367	16	5.6	*1.6	3.7	1.7	3.6
19.....	8.1	7.9	2.8	2.0	17	130	19	5.1	1.5	3.4	1.6	3.0
20.....	9.1	7.4	*2.7	2.0	16	*113	17	5.0	1.6	3.2	1.7	2.8
21.....	9.7	7.0	2.6	2.0	15	44	22	4.3	1.7	3.1	2.4	2.6
22.....	11	6.7	2.5	2.0	14	30	32	*4.3	1.7	2.8	1.8	2.6
23.....	15	8.6	2.5	2.0	13	28	19	4.8	1.8	2.7	1.5	2.6
24.....	11	9.0	2.5	2.0	12	26	14	5.1	1.8	2.6	1.4	2.6
25.....	8.8	8.5	2.5	2.0	11	24	12	4.6	1.8	2.5	1.5	2.4
26.....	8.1	8.6	2.4	2.0	15	22	10	4.0	1.5	2.3	1.4	2.4
27.....	7.9	8.5	2.4	2.0	16	22	9.7	4.6	1.6	2.3	1.7	2.2
28.....	8.2	8.2	2.4	2.0	12	22	7.8	4.0	1.4	2.3	346	2.0
29.....	7.7	8.5	2.4	2.0	8.0	211	7.4	3.4	1.3	2.2	150	2.2
30.....	7.2	7.7	2.4	2.5	.....	600	7.2	3.2	1.2	2.1	55	2.2
31.....	7.8	.....	2.4	4.0	.....	148	.....	3.2	.....	2.1	41	.....
1952-53												
1.....	2.0	2.0	1.1	1.3	1.4	46	9.2	26	3.4	6.1	5.9	2.6
2.....	1.8	1.6	1.0	1.3	1.4	42	8.8	22	3.2	6.1	5.7	2.6
3.....	1.8	1.8	1.1	1.3	1.4	33	11	23	4.4	5.4	12	*3.9
4.....	1.8	1.6	1.3	1.3	1.4	27	10	22	3.7	a5.4	16	3.3
5.....	1.8	1.6	1.1	1.3	1.4	23	7.1	16	3.4	6.3	15	3.0
6.....	1.8	1.6	1.1	1.3	1.5	21	6.8	11	2.8	6.0	12	2.7
7.....	1.8	1.4	1.1	1.3	1.5	19	7.1	8.1	*2,050	5.8	7.9	2.6
8.....	2.0	1.8	1.3	1.3	1.5	19	7.8	7.8	*1,920	5.3	6.0	2.6
9.....	1.8	1.6	1.3	1.3	1.5	25	8.8	7.2	123	4.9	5.1	a2.6
10.....	1.8	1.6	1.3	1.3	1.5	25	7.4	14	42	4.6	4.8	a2.6
11.....	1.6	2.2	1.3	1.3	1.6	150	6.1	26	31	4.5	20	a2.5
12.....	1.6	1.8	1.3	1.3	1.6	80	5.1	18	24	5.9	24	a2.5
13.....	1.6	*2.4	1.3	1.3	1.6	33	4.5	14	21	7.8	15	a2.5
14.....	1.6	2.0	1.3	1.3	1.7	30	4.2	12	18	3.9	8.2	a2.5
15.....	*1.8	2.6	1.3	1.3	1.7	26	7.1	10	14	*4.2	6.4	a2.4
16.....	1.6	2.2	*1.3	1.3	*1.8	16	8.8	8.5	11	5.7	5.7	a2.4
17.....	1.6	2.6	1.3	1.3	1.8	18	9.2	8.4	11	4.3	5.4	a2.4
18.....	1.6	2.4	1.3	1.4	1.8	18	10	7.6	12	4.2	a5.2	a2.4
19.....	1.6	1.8	1.3	1.4	1.8	12	9.2	*8.2	11	4.2	a5.0	a2.3
20.....	1.6	1.8	1.3	1.4	1.9	10	7.8	15	10	4.2	* 4.6	a2.3
21.....	1.6	2.6	1.3	*1.4	2.0	11	*7.4	10	9.2	3.8	5.1	a2.3
22.....	1.6	2.4	1.3	1.4	2.1	11	7.0	11	8.1	3.7	4.1	a2.3
23.....	1.8	2.2	1.3	1.4	2.3	12	7.0	11	7.4	3.4	3.8	a2.2
24.....	1.8	1.8	1.3	1.4	2.5	11	8.0	9.7	*7.1	3.4	3.4	a2.2
25.....	1.8	1.6	1.3	1.4	3.0	10	15	14	7.4	a3.3	3.3	1.8
26.....	1.8	0	1.3	1.4	8.0	10	15	8.6	6.8	a3.2	3.0	1.4
27.....	1.8	.2	1.3	1.4	30	10	9.2	5.7	6.8	a3.1	2.8	1.3
28.....	1.6	1.8	1.3	1.4	52	10	6.4	5.8	8.4	a3.1	2.6	1.3
29.....	1.6	1.3	1.3	1.4	.....	8.8	7.1	5.2	7.9	12	2.6	1.3
30.....	2.0	3.3	1.3	1.4	.....	9.2	17	3.8	7.6	11	2.6	1.2
31.....	2.0	.....	1.3	1.4	.....	11	.....	3.1	.....	9.0	2.6	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Dec. 11-31, 1951; Jan. 1 to Feb. 9, Feb. 21 to Mar. 9, Dec. 10-31, 1952; Jan. 1 to Feb. 27, Mar. 9-12, 1953. Discharge computed from gage readings or graph based on gage readings Oct. 14-21, 23-27, 29, 30, Nov. 3-7, 1951; Feb. 10-17, Feb. 19, 20, Mar. 12, 14, 16-21, Apr. 1 to June 17, July 8, 9, Aug. 28, 29, 1952; Mar. 13-17, 25-27, May 28 toJune 7, June 14-17, July 1-3, 5-24, July 31 to Aug. 2, Aug. 7-10, 13-17, Aug. 20 to Sept. 8, 1953.

Dry Creek at Hawarden, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	*1.3	1.3	1.2	0.9	0.6	3.0	6.4	12	2.0	8.4	2.8	1.2
2	1.2	1.3	2.6	.9	3.0	18	6.8	11	2.8	8.1	2.6	1.1
3	1.1	1.3	2.8	.8	4.5	1.8	7.8	11	6.8	8.4	2.2	1.1
4	1.1	1.3	2.8	.8	5.0	1.9	7.8	8.8	9.6	8.1	2.2	1.0
5	1.2	1.3	3.0	.8	4.7	2.0	7.8	7.8	6.4	7.4	2.2	6.1
6	1.1	1.3	3.3	.8	4.5	10	6.1	6.8	5.1	7.4	2.0	3.9
7	1.1	1.4	3.3	.7	4.0	25	6.4	6.1	4.8	7.4	2.0	2.0
8	1.1	1.6	3.0	.7	*3.9	28	6.8	5.8	*3.3	6.4	2.2	*1.6
9	1.2	1.4	2.8	.7	5.0	30	6.4	5.1	3.0	5.5	2.0	2.6
10	1.2	2.0	*1.0	.7	8.8	35	5.8	4.8	*272	5.1	1.6	2.6
11	1.1	1.6	2.2	*.6	1.3	26	5.5	4.5	29	4.5	*2.0	3.0
12	1.1	1.6	2.2	.6	3.3	4.5	*5.1	*4.2	15	4.2	2.2	1.6
13	1.1	1.8	2.2	.6	3.3	3.0	4.8	3.6	12	*3.6	2.2	1.6
14	1.1	1.6	.5	.6	4.4	3.3	4.8	3.0	8.4	3.0	2.2	1.6
15	1.2	1.8	.7	.6	5.1	3.7	7.1	2.8	5.8	3.0	2.0	1.4
16	1.3	2.1	1.5	.6	1.2	*4.2	12	2.6	3.0	2.8	1.8	2.4
17	1.4	*1.8	1.3	.6	4.2	150	8.8	2.4	1.4	2.8	2.2	2.2
18	1.4	1.6	1.1	.6	5.2	201	7.1	2.6	36	3.0	2.6	2.0
19	1.3	2.2	1.0	.6	6.1	96	6.1	2.6	359	2.8	2.8	1.6
20	1.3	4.2	1.0	.5	6.1	*22	5.5	2.0	216	2.8	2.2	1.4
21	1.3	3.0	1.0	.5	12	14	5.5	1.8	*263	3.0	1.8	1.2
22	1.4	2.2	1.0	.5	20	10	4.5	1.6	88	2.8	1.8	1.2
23	1.3	1.8	1.0	.5	50	9.6	4.2	1.4	41	2.8	2.0	1.2
24	1.3	1.8	1.0	.5	60	8.4	4.5	1.4	30	2.6	1.6	1.1
25	1.4	2.2	1.0	.5	38	6.1	4.2	1.4	19	2.4	2.6	1.1
26	1.4	2.6	1.0	.5	9.6	11	3.6	1.8	17	2.2	2.6	1.1
27	1.4	2.8	1.0	.5	7.6	9.2	3.0	3.6	15	2.4	2.0	1.2
28	1.4	2.8	1.0	.5	6.1	9.3	2.8	3.3	13	3.0	2.4	1.2
29	1.4	2.2	.9	.5	.....	9.6	3.3	2.2	*10	2.8	1.6	1.3
30	1.4	1.4	.9	.5	.....	9.2	7.1	1.6	8.8	2.8	1.3	1.3
31	1.3	.....	.9	.5	.....	9.6	.....	2.4	.....	3.3	1.3	.....
1954-55												
1	1.6	0.9	1.2	1.1	0.3	1.0	a5.7	2.3	0.6	0.6	0.1	0
2	1.8	.1	1.2	1.1	*.3	*15	3.3	*2.2	.5	.4	0	0
3	2.0	.5	1.2	1.0	.3	35	a3.0	1.9	.4	.4	*0	0
4	2.0	1.6	1.2	*1.0	.3	19	19	1.7	.5	.3	0	0
5	2.0	1.6	1.2	1.0	.3	9.6	*2.6	1.6	1.1	.3	0	0
6	2.0	1.4	*1.2	.9	.3	5.2	4.4	1.5	1.2	*.3	.1	0
7	2.0	1.3	1.2	.9	.3	3.0	5.5	1.3	*.9	.2	0	0
8	2.0	1.3	1.2	.9	.3	25	2.4	1.3	.6	2	0	0
9	2.4	*1.4	1.2	.8	.3	74	2.1	1.4	.5	.2	0	0
10	2.4	1.6	1.2	.8	.3	34	2.1	1.4	.7	.3	0	0
11	2.4	1.8	1.2	.8	.3	a19	2.1	1.2	1.0	.3	0	0
12	*2.0	1.8	1.2	.7	.3	a12	2.0	1.2	1.3	.2	0	0
13	2.0	1.8	1.2	.7	.3	8.4	2.0	1.1	1.0	.4	0	0
14	2.0	1.8	1.2	.7	.3	a6.2	2.0	1.0	.6	.4	0	0
15	2.4	1.8	1.2	.7	.4	a4.6	1.9	1.0	.5	.4	0	0
16	2.2	1.8	1.2	.6	4.0	a3.5	1.9	1.0	.4	.3	0	0
17	2.0	1.8	1.1	.6	5.0	a2.6	1.9	.9	.7	.3	0	0
18	2.0	1.8	1.1	.6	4.5	1.9	1.9	.9	2.8	.2	0	0
19	1.8	1.8	1.1	.6	4.0	a1.5	1.9	.9	1.7	.2	0	0
20	1.8	1.8	1.1	.5	2.8	a1.2	1.8	.9	1.1	.4	0	0
21	1.8	1.8	1.1	.5	1.2	.9	1.7	.8	.7	.4	0	0
22	1.8	1.8	1.1	.5	.6	.7	1.7	.7	.9	.4	0	0
23	1.6	1.8	1.1	.5	.5	.6	1.8	.6	.6	.6	0	0
24	1.6	1.4	1.1	.5	.5	.5	3.0	.6	.5	.4	0	0
25	1.6	1.3	1.1	.4	.4	.5	2.3	.5	.5	.3	0	0
26	2.6	1.3	1.1	.4	.4	.5	2.0	.9	.4	.2	0	.3
27	2.8	1.2	1.0	.4	.4	.5	2.0	1.8	.3	.1	0	.4
28	1.8	1.2	1.1	.4	.4	.5	2.5	1.6	.3	.1	0	.3
29	1.6	1.2	1.1	.4	.....	.6	8.8	1.1	.3	.1	0	.2
30	1.4	1.2	1.1	.4	.....	5.1	2.8	.8	.6	.1	0	0
31	1.4	.....	1.1	.4	.....	9.2	.....	.7	.....	.1	0	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1953; Jan. 1 to Feb. 9, Feb. 22-24, Mar. 4-10, 13-15, 17, Nov. 27 to Dec. 31, 1954; Jan. 1 to Mar. 8, Mar. 22-29, 1955. Discharge computed from gage readings or graph based on gage readings Nov. 23 to Dec. 9, 1953; Feb. 10-21, Feb. 25 to Mar. 3, Mar. 11, 12, 16, Mar. 20 to Apr. 9, 1954; Mar. 10, 13, 18, 21, 30, 31, Apr. 2, 4-8, May 22-26, May 30 to June 4, June 24-29, July 2-5, 1955.

Dry Creek at Hawarden, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.52	0.34	0	0	0.38	71.1	25.9	12.2	18.1	39.9	14.8	20.8
1951-52	8.84	8.06	5.48	2.18	40.6	80.5	19.7	5.86	2.10	25.1	20.7	4.96
1952-53	1.74	1.85	1.26	1.35	4.78	25.4	8.50	12.0	147	5.30	7.27	2.33
1953-54	1.25	1.01	1.04	.62	10.3	25.0	5.92	4.26	50.2	4.35	2.10	1.76
1954-55	2.00	1.47	1.15	.67	1.05	9.72	3.27	1.19	.77	.29	.006	.04

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.011	0.0071	0	0	0.0079	1.48	0.540	0.254	0.377	0.831	0.308	0.433
1951-52	.184	.168	.114	.045	.840	1.68	.410	.122	.044	.523	.431	.103
1952-53	.036	.039	.026	.028	.100	.520	.177	.250	3.06	.110	.151	.049
1953-54	.026	.040	.034	.013	.215	.521	.123	.089	1.05	.091	.044	.037
1954-55	.042	.031	.024	.014	.022	.202	.068	.025	.016	.006	.00012	.00083

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.01	0.008	0	0	0.008	1.71	0.60	0.29	0.42	0.96	0.36	0.48
1951-52	.21	.19	.13	.05	.91	1.93	.46	.14	.05	.60	.50	.12
1952-53	.04	.04	.03	.03	.10	.61	.20	.29	3.41	.13	.17	.05
1953-54	.03	.04	.04	.01	.22	.60	.14	.10	1.17	.10	.05	.04
1954-55	.05	.03	.03	.02	.02	.23	.08	.03	.02	.007	.0002	.0009

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	32	21	0	0	21	4,370	1,540	748	1,080	2,450	910	1,240
1951-52	544	479	337	134	2,340	4,950	1,170	360	125	1,540	1,280	295
1952-53	107	110	77	83	265	1,560	506	739	8,720	326	447	139
1953-54	77	114	101	38	570	1,540	352	262	2,900	267	129	105
1954-55	123	87	71	41	58	598	195	73	46	18	.4	2.4

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950									3.56	1.00	2,580
1951	Mar. 27, 1951	13.83	950	0	17.1	0.356	4.85	12,410	19.0	5.36	13,720
1952	Mar. 30, 1952	14.14	1,020	1.2	18.7	.390	5.29	13,550	17.2	4.87	12,490
1953	June 7, 1953	17.57	10,900	0	18.1	.377	5.10	13,080	18.1	5.10	13,080
1954	June 19, 1954	12.14	630	.5	9.03	.188	2.54	6,540	9.02	2.54	6,530
1955	Mar. 9, 1955	(1)6.96	81	0	1.81	.038	.52	1,310			

(1) Maximum gage-height, 8.68 ft. Mar. 2, 1955 (backwater from ice).

Peak Discharge (base 300 cfs)

1951: Mar. 27 (8 p.m.) 950 cfs (13.83 ft.); Mar. 29 (1:30 p.m.) discharge unknown, (13.28 ft.); Apr. 3 (6 a.m.) 319 cfs (9.92 ft.); June 25 (11 p.m.) 509 cfs (11.41 ft.); July 3 (6 p.m.) 850 cfs (13.28 ft.).

1952: Mar. 18 (3 p.m.) 451 cfs (11.0 ft.); Mar. 30 (5 a.m.) 1,020 cfs (14.14 ft.); July 7 (8 a.m.) 714 cfs (12.59 ft.); Aug. 28 (8 p.m.) 556 cfs (11.74 ft.).

1953: June 7 (9:30 p.m.) 10,900 cfs (17.57 ft.).

1954: Mar. 18 (3 a.m.) 479 cfs (11.24 ft.); June 10 (5:30 a.m.) 566 cfs (11.76 ft.); June 19 (7 a.m.) 630 cfs (12.14 ft.).

1955: No peak above base.

Big Sioux River at Akron, Iowa

LOCATION.—Lat. 42°49'40", long. 96°33'50", in W½ sec. 31, T. 93 N., R. 48 W., on left bank 300 ft. downstream from highway bridge in Akron and 2¾ miles upstream from Union Creek.

DRAINAGE AREA.—9,030 sq. mi. approximately, of which about 1,970 sq. mi. is probably non-contributing. Prior to 1955 published as 8,851 sq. mi.

RECORDS AVAILABLE.—October 1928 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,118.90 ft. above mean sea level, datum of 1929. Prior to Dec. 3, 1934, chain gage at bridge 300 ft. upstream at same datum.

AVERAGE DISCHARGE.—27 years, 877 cfs (634,900 acre-ft. per year).

EXTREMES.—1928-55: Maximum discharge, 33,000 cfs Apr. 1, 1952, from rating curve extended above 20,000 cfs on basis of velocity-area study; maximum gage height, 19.95 ft. June 22, 1954; minimum daily discharge, 7 cfs Feb. 26-28, 1936.

REMARKS.—Records good except those for period of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	215	185	135	60	35	*340	13,400	2,620	1,600	*8,220	1,160	1,270
2.....	281	177	135	60	35	300	11,400	3,000	1,640	*5,670	1,160	1,160
3.....	248	181	130	60	40	250	11,100	3,280	1,920	4,740	1,160	1,130
4.....	262	181	125	55	35	200	*13,400	*2,840	2,460	7,290	1,090	1,090
5.....	303	181	120	55	35	150	18,800	2,560	2,460	6,060	1,060	1,060
6.....	408	177	110	50	40	140	*27,600	2,310	1,960	3,850	1,020	1,130
7.....	433	172	105	45	35	130	*25,300	2,110	1,780	3,500	955	1,160
8.....	433	177	95	45	45	130	22,200	1,920	1,690	3,330	923	1,350
9.....	420	170	90	45	50	120	20,400	1,960	1,870	3,670	890	2,050
10.....	396	150	90	45	50	110	*16,800	2,110	1,780	3,970	858	2,110
11.....	383	135	90	45	60	100	13,000	2,720	1,690	3,610	858	2,210
12.....	358	150	90	45	55	100	*10,500	3,000	1,600	3,780	923	2,210
13.....	334	145	*80	50	50	100	9,380	2,620	1,470	*3,850	1,690	2,260
14.....	322	170	90	50	50	80	7,880	2,260	1,350	3,280	1,470	2,210
15.....	298	180	85	50	50	70	6,090	2,110	1,270	2,780	1,350	2,160
16.....	291	185	85	50	50	60	4,660	1,960	1,240	2,410	1,730	1,870
17.....	274	170	80	50	50	60	4,030	2,010	1,310	2,110	2,460	1,600
18.....	*202	165	80	50	55	60	*3,500	2,160	2,000	1,870	2,010	1,470
19.....	257	165	75	50	55	60	3,110	2,940	1,780	*1,780	1,600	1,350
20.....	243	150	70	50	60	50	2,890	3,280	2,460	1,960	1,520	*1,270
21.....	236	155	70	50	60	50	2,840	3,000	2,670	2,560	1,430	1,200
22.....	224	*170	70	50	70	50	2,720	2,720	2,310	2,360	1,390	1,130
23.....	222	155	70	50	80	60	2,620	2,410	2,060	2,160	1,430	1,090
24.....	222	155	70	50	100	70	2,620	2,210	1,920	1,730	1,390	1,130
25.....	206	155	75	45	125	150	2,560	2,010	2,010	1,510	1,390	1,160
26.....	210	145	70	45	160	750	2,510	1,920	4,480	*1,390	1,390	1,200
27.....	206	140	65	40	175	4,000	2,460	1,870	5,260	1,310	1,800	1,160
28.....	197	140	*65	40	260	*6,340	2,460	1,780	*5,860	1,270	2,500	1,130
29.....	190	140	65	40	.....	*6,470	2,460	1,600	*6,730	1,390	2,000	1,060
30.....	183	135	65	40	.....	9,820	2,510	*1,470	*7,890	1,430	*1,600	989
31.....	*185	.....	65	*35	.....	12,000	.....	1,470	.....	1,270	1,350	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 9 to Dec. 31, 1950; Jan. 1 to Mar. 27, 1951.

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951–52												
1	963	*816	654	360	280	816	31,300	4,200	1,340	1,930	*744	870
2	926	762	672	360	380	848	29,500	3,870	1,310	*1,820	708	816
3	926	672	708	350	620	766	23,000	3,600	1,270	1,720	672	726
4	1,000	468	708	330	510	670	*17,000	3,350	1,230	1,070	654	654
5	963	432	708	330	650	650	15,400	3,130	1,270	1,620	618	566
6	963	584	744	330	550	650	13,600	2,930	1,230	2,370	601	515
7	963	654	780	330	510	630	11,900	2,810	1,230	7,040	584	465
8	926	690	852	330	580	600	11,100	2,700	1,310	3,450	566	432
9	908	726	852	320	650	604	13,000	2,650	1,270	2,160	549	400
10	870	744	816	310	950	741	10,200	2,700	1,230	1,870	515	369
11	852	726	549	310	1,700	1,330	15,600	2,710	1,150	1,570	532	*348
12	*834	744	465	310	2,600	1,400	*13,700	2,660	1,120	1,300	515	327
13	816	744	432	300	3,500	1,010	12,100	2,550	1,080	1,270	498	313
14	816	762	410	300	3,950	*1,330	11,500	2,420	1,040	1,190	498	310
15	852	744	390	300	3,850	1,240	11,400	2,290	1,000	1,150	532	299
16	834	726	370	300	*3,800	1,570	10,600	*2,210	1,390	1,150	498	290
17	798	601	360	300	3,250	1,740	9,530	2,130	2,100	1,080	465	285
18	780	482	360	300	2,330	*3,140	8,510	2,010	*3,510	1,000	465	274
19	798	448	360	330	1,820	*5,660	7,490	1,910	3,710	963	448	264
20	816	*515	360	330	1,270	6,200	*6,750	1,820	3,190	926	448	259
21	834	690	360	310	1,080	*7,550	6,230	1,780	2,560	889	465	269
22	852	708	360	290	1,040	9,340	5,930	1,740	2,220	834	432	261
23	852	532	370	250	1,000	6,360	5,630	1,740	1,990	889	416	254
24	908	448	370	*250	963	4,520	5,980	1,710	1,930	1,120	394	*261
25	963	448	350	250	930	4,030	6,200	1,650	2,280	1,150	400	256
26	963	566	360	250	920	3,100	5,900	1,630	2,160	1,150	369	246
27	908	690	380	250	920	1,960	5,430	1,610	2,160	1,120	357	238
28	889	654	*380	250	1,000	1,860	5,090	*1,550	1,870	1,080	864	229
29	852	654	370	250	889	3,190	4,850	1,480	1,720	963	*1,430	214
30	834	654	370	250	.....	9,370	*4,560	1,430	1,620	870	889	209
31	816	.....	370	260	.....	19,500	.....	1,390	.....	816	908	.....
1952–53												
1	205	191	*135	135	115	320	1,530	1,810	1,040	*3,740	773	708
2	202	189	130	135	115	500	1,460	*2,000	*1,430	2,520	769	665
3	198	186	135	135	115	500	*1,430	2,250	1,330	2,080	1,040	697
4	202	186	150	135	120	380	1,400	2,530	1,250	1,840	*2,200	719
5	196	*189	155	135	125	310	1,370	2,630	1,150	1,720	3,150	758
6	196	184	150	135	125	310	1,330	2,630	1,090	1,600	3,360	704
7	196	182	160	135	130	310	1,320	2,560	2,340	1,500	5,070	658
8	198	180	160	135	130	330	1,320	*2,470	16,100	1,550	4,390	626
9	200	186	150	135	135	400	1,330	2,330	*13,400	1,440	2,700	590
10	*200	180	150	135	140	780	1,330	2,260	13,700	1,290	2,220	*580
11	207	186	150	135	135	1,200	*1,320	2,320	9,520	1,170	2,210	566
12	207	186	135	135	130	*2,900	1,310	2,340	*4,530	1,110	2,220	542
13	198	186	135	140	125	*4,460	1,270	2,520	3,100	1,140	2,550	525
14	196	186	125	140	130	5,040	1,250	2,550	2,610	1,080	2,620	505
15	198	184	135	140	130	6,380	1,260	2,350	*2,290	*1,130	2,220	491
16	198	186	140	135	120	6,260	1,230	2,220	2,030	1,040	1,860	472
17	200	184	130	125	115	4,590	1,210	2,110	1,810	985	1,660	455
18	198	191	125	120	120	*3,900	1,180	2,060	1,650	959	1,530	442
19	205	*189	125	120	115	3,800	1,140	1,950	1,510	919	1,430	430
20	200	184	120	110	90	3,710	1,070	1,820	1,400	845	1,330	413
21	198	186	135	110	80	3,230	1,000	*1,640	1,290	780	1,240	391
22	198	184	140	115	85	2,940	*956	1,540	1,210	744	1,160	388
23	198	184	140	120	90	2,950	915	1,480	1,160	697	1,090	384
24	198	182	140	120	90	*2,730	919	1,380	1,130	661	998	*381
25	196	175	140	115	95	2,560	1,040	1,330	1,090	632	926	397
26	191	145	135	120	100	2,330	1,220	1,270	1,050	612	*870	375
27	196	140	140	120	150	2,260	1,400	1,920	*1,110	584	820	366
28	196	140	135	115	*270	*2,230	1,550	4,740	2,140	587	780	369
29	191	140	135	120	.....	2,060	1,590	3,570	4,780	704	740	366
30	189	130	*125	*120	.....	1,810	1,600	2,430	5,430	744	760	351
31	189	.....	130	120	.....	1,620	.....	1,930	.....	730	755	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Feb. 16, Feb. 25, 26, Mar. 5-8, Nov. 25 to Dec. 31, 1952; Jan. 1 to Mar. 12, 1953.

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	*336	248	*259	180	*90	1,190	*2,520	941	1,140	1,490	942	572
2.....	327	251	256	*180	130	*1,060	2,200	1,080	*1,120	1,360	790	*495
3.....	322	251	304	170	200	748	1,960	1,190	1,080	*1,270	643	439
4.....	307	*241	339	170	300	440	1,720	1,290	1,080	1,200	540	393
5.....	302	241	260	170	300	450	1,540	1,310	1,090	1,130	487	407
6.....	282	246	180	170	400	550	1,500	1,300	1,010	*1,090	447	363
7.....	*277	246	200	170	800	900	1,500	1,260	1,010	1,040	431	334
8.....	279	241	250	160	1,200	1,230	1,430	1,230	1,010	973	417	310
9.....	277	236	350	150	1,000	1,250	1,390	1,190	1,090	923	393	*321
10.....	279	241	400	140	1,000	*1,350	1,400	1,150	*1,950	874	374	393
11.....	269	236	420	130	1,000	1,450	1,380	1,120	1,040	833	360	535
12.....	266	238	320	120	900	1,400	1,400	1,070	1,150	*805	361	546
13.....	256	238	320	110	800	1,100	1,400	*1,020	1,020	762	353	520
14.....	254	241	280	100	800	730	1,380	970	919	725	339	*478
15.....	254	238	220	100	800	750	1,360	922	889	691	334	430
16.....	254	244	180	100	900	900	1,340	882	878	658	321	436
17.....	256	244	200	90	900	1,500	1,350	841	*848	631	313	420
18.....	272	246	*240	*90	900	*5,370	1,310	809	1,580	619	*326	393
19.....	256	*277	250	90	1,000	*6,180	1,250	780	6,750	598	520	412
20.....	254	316	240	90	1,000	*7,100	1,170	748	*9,760	578	572	420
21.....	*248	330	230	80	1,190	*9,690	1,120	730	*17,000	561	503	409
22.....	259	345	170	80	1,570	*14,600	1,060	722	20,100	566	461	393
23.....	259	351	180	80	2,310	*12,000	1,000	708	*12,800	578	423	374
24.....	256	333	200	80	*3,260	*7,880	978	*694	*7,730	543	401	374
25.....	256	316	200	80	*3,070	6,070	930	665	*3,900	520	*420	350
26.....	251	307	200	80	*2,540	*4,580	904	643	2,820	492	447	339
27.....	248	282	200	80	1,820	4,570	863	697	*2,570	475	456	321
28.....	248	269	190	80	1,410	4,440	830	762	2,190	478	428	*313
29.....	246	259	190	80	.....	*4,340	823	867	1,880	*459	401	297
30.....	248	254	180	80	.....	3,520	*863	870	1,640	478	584	295
31.....	248	.....	180	90	.....	2,900	.....	1,140	.....	607	637	.....
1954-55												
1.....	302	*338	226	210	100	115	848	944	*282	230	126	44
2.....	297	315	215	210	100	200	856	*794	254	266	111	42
3.....	295	289	179	*215	100	550	773	682	232	175	93	42
4.....	291	291	175	215	95	600	937	614	222	150	84	41
5.....	282	311	170	210	95	650	827	578	226	146	79	40
6.....	276	311	165	200	95	650	809	532	230	140	84	40
7.....	274	308	160	200	90	500	762	495	210	132	85	40
8.....	282	304	160	200	90	500	723	448	*206	175	81	*40
9.....	282	289	160	200	90	700	678	418	197	172	*80	40
10.....	285	287	160	190	85	750	645	390	206	170	80	38
11.....	285	282	160	185	80	2,350	626	362	219	143	75	38
12.....	282	276	160	180	75	4,520	602	*336	230	130	77	38
13.....	311	282	160	170	70	*3,890	*581	326	234	*133	80	43
14.....	*370	278	160	170	65	2,910	561	306	*244	138	78	*41
15.....	352	276	165	165	60	*2,360	543	295	240	130	75	39
16.....	326	272	170	165	65	1,850	529	285	217	120	73	36
17.....	322	262	175	160	*65	*1,550	512	272	215	133	*68	35
18.....	308	258	175	160	70	1,500	495	*262	254	124	66	35
19.....	308	254	175	150	75	1,450	495	254	289	120	64	37
20.....	306	248	175	145	80	1,300	501	236	276	*127	63	38
21.....	297	246	180	140	85	900	509	222	345	127	61	*42
22.....	289	244	185	140	85	820	517	211	*317	115	59	43
23.....	289	*254	190	135	85	600	512	*208	260	116	58	41
24.....	287	246	190	130	85	650	578	202	238	106	*54	30
25.....	287	240	200	120	85	750	596	195	222	102	51	40
26.....	306	240	210	110	95	800	*602	228	202	114	49	45
27.....	320	244	200	105	100	820	599	440	190	101	48	49
28.....	333	250	190	100	*105	800	617	315	184	*95	48	48
29.....	345	236	200	100	.....	760	751	322	*181	95	48	*45
30.....	343	232	200	100	.....	*776	948	324	175	98	48	43
31.....	343	.....	205	*100	.....	773	.....	315	.....	94	*46	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1953; Jan. 1 to Feb. 19, Mar. 4-17, Dec. 4-31, 1954; Jan. 1 to Mar. 11, Mar. 18-29, 1955.

Big Sioux River at Akron, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	281	162	87.7	48.2	70.2	1,367	9,040	2,330	2,551	3,101	1,405	1,446
1951–52.....	880	636	505	300	1,466	3,322	11,530	2,336	1,750	1,555	582	374
1952–53.....	198	178	138	127	122	2,387	1,275	2,224	3,476	1,201	1,789	510
1953–54.....	269	267	245	115	1,128	3,550	1,320	955	3,655	776	468	403
1954–55.....	309	272	180	161	84.0	1,200	651	381	234	136	70.7	40.7

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.032	0.018	0.0099	0.0054	0.0079	0.154	1.02	0.263	0.288	0.350	0.159	0.163
1951–52.....	.099	.072	.057	.034	.166	.375	1.30	.264	.198	.176	.066	.042
1952–53.....	.022	.020	.016	.014	.014	.270	.144	.251	.393	.136	.202	.058
1953–54.....	.030	.030	.028	.013	.127	.402	.150	.108	.413	.088	.053	.046
1954–55.....	.035	.031	.020	.018	.010	.136	.074	.043	.026	.015	.0080	.0046

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	0.04	0.02	0.01	0.006	0.008	0.18	1.14	0.30	0.32	0.40	0.18	0.18
1951–52.....	.11	.08	.07	.04	.18	.43	1.45	.30	.22	.20	.08	.05
1952–53.....	.03	.02	.02	.02	.01	.31	.16	.29	.44	.16	.23	.06
1953–54.....	.04	.03	.03	.02	.13	.46	.17	.12	.46	.10	.06	.05
1954–55.....	.04	.03	.02	.02	.01	.16	.08	.05	.03	.02	.009	.005

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950–51.....	17,260	9,630	5,400	2,970	3,999	84,040	537,900	143,300	151,800	190,700	86,400	86,040
1951–52.....	54,100	37,850	31,020	18,430	84,310	204,300	685,800	143,600	104,100	95,640	35,770	22,260
1952–53.....	12,170	10,580	8,510	7,820	6,780	146,800	75,870	136,700	206,800	73,830	110,000	30,370
1953–54.....	16,550	15,880	15,050	7,080	62,660	218,700	79,100	58,710	217,500	47,740	28,760	23,980
1954–55.....	18,790	16,190	11,100	9,880	4,700	74,170	38,740	23,430	13,900	8,380	4,350	2,420

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...	.....	.....	.....	.....	.....	.....	.....	.....	542	0.84	392,700
1951...	Apr. 6, 1951.	19.66	28,800	35	1,822	0.206	2.78	1,319,000	1,948	2.97	1,410,000
1952...	Apr. 1, 1952.	19.75	33,000	209	2,090	.236	3.21	1,517,000	1,964	3.02	1,425,000
1953...	June 8, 1953.	19.33	21,800	80	1,141	.129	1.75	826,200	1,164	1.78	842,400
1954...	June 22, 1954.	19.95	21,700	80	1,093	.123	1.67	791,700	1,092	1.67	790,300
1955...	Mar. 11, 1955.	12.25	4,940	35	312	.035	.48	226,000	.....	.....	.....

Peak Discharge (base, 3,500 cfs)

1951: Apr. 1 (12:30 p.m.) 13,800 cfs (17.79 ft.); Apr. 6 (1:30 p.m.) 28,800 cfs (19.66 ft.); July 1 (12:30 p.m.) 8,390 cfs (16.08 ft.); July 4 (6 p.m.) 7,580 cfs (15.54 ft.).

1952: Feb. 15 (7 a.m.) about 4,300 cfs (11.81 ft.); Mar. 22 (7 p.m.) 9,650 cfs (16.10 ft.); Apr. 1 (5-6 p.m.) 33,000 cfs (19.75 ft); Apr. 10 (3-10 p.m.) 16,500 cfs (17.71 ft); June 19 (2-4 a.m.) 3,840 cfs (10.92 ft.); July 7 (1-2 p.m.) 8,180 cfs (15.36 ft.).

1953: Mar. 16 (1 a.m.) 6,780 cfs (14.22 ft.); May 28 (6 p.m.) 5,090 cfs (12.71 ft.); June 8 (10 a.m.) 21,800 cfs (19.33 ft.); June 30 (6:30 p.m.) 5,560 cfs (13.31 ft.); Aug. 7 (11:30 p.m.) 5,340 cfs (13.04 ft.).

1954: Mar. 22 (4-8 p.m.) 15,600 cfs (18.11 ft.); June 22 (4 a.m.) 21,700 cfs (19.95 ft.).

1955: Mar. 11 (9 p.m.) 4,940 cfs (12.25 ft.).

Missouri River at Sioux City, Iowa

LOCATION.—Lat. 42°29', long. 96°25', in sec. 17, T. 29 N., R. 9 E. sixth principal meridian, on right bank on upstream side of bridge on U. S. Highway 77 at Sioux City, 2.5 miles downstream from Big Sioux River.

DRAINAGE AREA.—314,600 sq. mi. approximately.

RECORDS AVAILABLE.—October 1897 to September 1955 in reports of Geological Survey (October 1897 to September 1928 and October 1931 to September 1938, monthly discharge only, based on record for station at Williston, N. D., in Circular 108). January 1879 to December 1890 (monthly discharges only) in House Document 238, 73rd Congrss, 2d session. Gage-height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U. S. Weather Bureau.

GAGE.—Water-stage recorder. Datum of gage is 1,076.96 ft. above mean sea level, datum of 1929. Sept. 2, 1878, to Dec. 31, 1905, staffs, cable and chain gages at various locations within 1.7 miles of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, chain gage at present site and datum.

AVERAGE DISCHARGE.—20 years (1928-31, 1938-55), 30,370 cfs (21,990,000 acre-ft. per year).

EXTREMES.—1928-31, 1938-55: Maximum discharge, 441,000 cfs Apr. 14, 1952; maximum gage height, 24.28 ft. Apr. 14, 1952; minimum discharge, 2,500 cfs Dec. 29, 1941; minimum gage height observed, -3.34 ft. Dec. 27, 1946.

REMARKS.—Records good except those for period of ice effect, which are fair. Flow partly regulated by upstream main stem reservoirs. Discharge measurements generally made six times a month, three times a month during winter.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	36,700	37,800	8,500	15,600	14,700	16,800	45,100	39,800	42,400	65,700	37,800	45,100
2	39,800	37,400	7,600	15,700	14,300	18,100	67,400	39,000	46,000	65,700	39,800	44,200
3	40,700	37,000	7,200	15,900	13,900	15,700	69,000	39,800	63,000	72,300	39,000	43,300
4	36,300	36,700	6,300	17,000	13,800	14,300	67,900	38,200	63,000	73,400	39,400	42,000
5	34,100	37,400	5,000	17,600	13,900	13,500	73,400	35,500	67,900	69,000	37,800	47,400
6	32,700	38,200	4,000	18,100	14,100	15,000	75,100	33,400	61,400	68,500	37,800	60,300
7	32,000	39,000	4,200	18,400	15,400	16,100	141,000	32,700	57,200	62,400	38,200	59,800
8	31,600	40,200	4,500	18,400	15,600	17,000	149,000	33,400	60,800	57,200	38,200	56,100
9	32,300	39,800	4,800	18,300	16,100	16,500	144,000	34,100	71,200	54,600	36,700	63,500
10	33,400	39,400	5,200	18,100	16,100	15,700	138,000	35,900	70,100	51,600	36,300	72,900
11	33,700	40,200	5,800	17,900	16,300	14,700	111,000	37,500	75,100	50,700	34,400	67,900
12	34,800	42,000	6,300	17,900	16,300	13,000	120,000	41,500	64,600	48,300	35,500	63,000
13	35,900	42,400	7,000	17,900	16,800	14,000	117,000	42,500	57,700	47,800	39,400	60,800
14	36,700	40,700	7,400	17,700	16,300	15,000	92,300	44,600	54,100	49,300	50,700	60,300
15	35,900	39,400	7,700	17,400	15,400	17,000	83,400	45,100	50,200	48,300	55,600	56,100
16	34,800	36,300	8,000	17,400	14,900	18,400	81,100	44,200	48,300	46,000	51,600	50,700
17	34,400	34,400	8,400	17,000	14,700	19,300	75,600	47,800	44,600	43,300	49,200	46,900
18	34,400	32,300	8,500	16,600	14,500	19,500	78,400	45,100	54,100	42,400	45,800	44,200
19	33,400	31,300	10,200	16,600	14,500	19,500	60,300	45,100	70,700	43,300	42,800	42,800
20	33,000	30,600	12,800	16,600	14,700	18,400	50,700	47,800	74,500	46,000	48,300	42,000
21	33,700	29,000	14,000	16,600	14,700	17,500	49,200	43,300	60,300	50,200	56,100	42,000
22	33,000	25,000	16,000	16,700	14,800	16,500	50,200	41,500	50,200	46,900	58,700	42,000
23	33,000	22,000	18,000	16,200	14,800	19,200	47,800	39,800	46,900	43,300	53,600	42,000
24	33,400	14,000	20,000	15,800	15,600	19,700	44,600	39,800	49,200	42,400	50,200	42,000
25	33,400	7,000	20,000	15,100	16,300	24,400	43,300	40,700	50,700	42,400	46,400	43,300
26	34,100	8,200	19,500	14,100	16,500	47,400	42,000	39,800	56,600	43,300	45,800	42,800
27	35,500	9,400	19,000	14,100	16,500	65,700	42,000	38,200	85,700	43,300	49,200	40,700
28	37,400	10,200	18,000	14,600	16,600	64,100	41,100	38,200	85,200	41,500	56,600	40,200
29	38,200	9,800	16,400	15,000	.....	61,400	39,800	39,000	77,300	39,500	54,600	39,400
30	39,700	9,300	15,900	14,900	.....	46,400	40,200	39,000	70,100	38,200	48,300	38,600
31	37,400	.....	15,600	14,800	.....	43,700	.....	39,800	.....	37,400	46,900	.....

Note—Stage-discharge relation affected by ice Nov. 21 to Dec. 31, 1950; Jan. 1 to Mar. 25, 1951.

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	38,600	44,200	19,900	7,000	19,000	25,900	110,000	77,200	45,300	48,000	29,100	31,800
2	39,400	44,200	18,400	8,000	19,000	25,000	102,000	73,100	43,500	59,000	29,500	31,000
3	41,100	g44,200	g17,400	9,000	20,000	24,300	g108,000	71,000	47,600	60,000	29,100	29,800
4	47,400	g44,200	g16,500	9,400	20,000	23,600	152,000	66,800	58,000	51,200	27,600	29,800
5	50,700	g44,200	18,600	9,700	21,000	24,400	159,000	62,000	58,000	45,800	25,300	30,200
6	48,800	g43,300	60,800	10,000	21,600	25,300	178,000	59,500	54,500	45,300	24,600	30,600
7	46,900	g46,000	41,100	10,200	22,000	25,000	203,000	58,300	53,000	53,000	24,600	30,600
8	50,200	g46,400	29,900	10,300	23,000	25,600	222,000	57,100	55,500	47,100	24,600	30,600
9	48,300	g44,600	24,700	10,400	23,000	24,400	237,000	56,800	55,500	44,000	25,000	30,600
10	42,800	g42,400	21,000	10,500	24,000	25,300	255,000	58,600	55,000	40,000	26,400	31,000
11	40,700	g43,300	19,000	10,700	25,000	26,500	265,000	66,000	g53,500	39,600	27,900	31,000
12	41,100	g45,100	17,000	11,000	26,000	26,800	326,000	71,600	52,000	39,200	27,600	30,200
13	43,700	g45,100	14,500	11,500	27,000	29,000	402,000	67,300	49,800	39,600	29,100	30,200
14	44,200	45,100	10,500	12,200	28,000	24,400	438,000	62,100	45,800	37,900	29,500	30,200
15	45,100	42,400	9,000	12,600	30,000	23,600	428,000	60,500	44,400	37,100	29,800	29,800
16	45,100	39,400	7,600	13,000	32,000	24,700	369,000	63,400	47,600	37,100	31,000	29,500
17	44,200	38,200	7,400	13,000	35,000	26,800	282,000	68,600	g55,000	36,200	31,800	28,700
18	44,200	37,800	7,200	13,700	41,700	30,600	186,000	67,900	g65,800	35,000	32,200	27,900
19	44,200	37,400	7,200	14,000	37,000	34,800	139,000	62,100	74,000	33,800	33,000	28,700
20	46,000	38,200	7,200	15,000	32,000	36,700	121,000	58,000	70,800	32,600	33,800	29,100
21	48,800	37,400	7,000	15,000	30,000	35,900	112,000	54,700	62,500	31,000	35,400	29,800
22	50,200	36,700	7,000	16,000	29,000	33,000	104,000	53,000	60,000	29,800	35,000	30,200
23	49,200	37,000	7,000	17,000	28,600	29,900	98,400	51,500	58,000	29,100	34,200	29,800
24	47,400	34,400	6,800	g17,500	27,700	27,700	91,600	49,400	55,500	27,900	33,800	29,500
25	48,800	33,000	6,800	g18,000	27,000	28,600	87,000	47,100	53,500	26,800	33,800	29,500
26	48,300	30,300	6,800	g18,000	27,000	30,300	84,700	45,400	51,600	25,000	33,800	29,100
27	46,400	29,300	7,000	g18,000	26,800	31,300	86,500	53,000	51,600	23,900	31,800	29,100
28	43,300	28,000	7,000	g18,000	26,800	33,600	90,000	52,500	49,800	22,800	31,800	28,700
29	42,000	24,100	7,000	18,000	25,900	43,300	88,700	51,800	48,400	22,400	33,400	28,700
30	44,200	20,900	7,000	18,000	.....	g78,100	g83,100	g51,300	46,600	23,900	33,800	29,500
31	44,200	.....	7,000	18,300	.....	111,000	.....	49,200	.....	26,800	32,600	.....
1952-53												
1	29,800	31,400	9,000	13,500	15,500	14,200	35,000	28,800	28,400	79,000	33,900	32,900
2	29,500	31,000	9,000	14,500	16,500	14,100	33,000	42,100	27,700	66,500	32,600	32,600
3	29,500	30,200	9,200	15,500	17,500	14,100	37,800	49,900	27,100	60,300	33,200	33,600
4	29,100	29,100	9,200	15,500	18,000	14,000	47,100	79,600	27,200	54,400	33,200	33,900
5	28,700	28,300	9,200	15,000	17,800	14,000	40,500	94,100	28,700	49,100	35,200	34,200
6	28,700	27,600	9,200	14,500	17,500	14,100	33,400	88,100	31,700	42,700	39,200	34,200
7	27,800	27,600	9,400	14,500	17,300	14,200	29,100	71,400	39,600	40,300	33,200	34,200
8	27,900	27,600	9,500	13,800	17,000	14,500	29,800	62,300	49,100	38,800	32,600	34,200
9	27,900	27,600	10,500	13,000	16,800	14,500	36,600	55,900	55,200	39,200	30,100	34,200
10	27,900	28,700	11,600	12,500	16,600	14,600	26,800	49,100	48,500	40,600	28,600	34,200
11	29,100	28,700	11,900	12,000	16,500	19,000	29,100	45,600	50,100	39,500	31,900	34,200
12	29,100	28,700	11,000	11,500	16,400	24,000	37,100	44,800	60,400	38,900	32,200	35,200
13	29,500	29,500	10,500	11,400	17,500	35,000	36,200	42,900	69,500	40,300	33,900	35,600
14	29,800	30,200	9,400	11,300	16,800	36,200	40,900	42,300	70,000	38,400	33,900	34,900
15	29,800	29,800	8,000	11,400	15,800	45,300	41,800	40,600	62,800	37,700	33,200	34,900
16	29,800	29,500	8,000	11,800	15,800	62,000	35,400	35,000	60,000	36,300	32,600	34,900
17	29,800	29,100	8,000	12,000	15,700	54,500	32,200	32,100	53,900	34,200	32,600	34,600
18	30,200	27,900	8,000	11,400	15,700	55,000	26,100	31,900	57,200	32,900	32,600	34,200
19	30,200	27,200	7,800	10,200	14,900	58,500	25,300	31,200	90,900	32,900	32,200	34,200
20	30,200	25,700	7,400	9,400	14,800	53,500	24,200	30,700	92,700	32,600	32,600	33,900
21	30,200	23,500	7,400	10,400	14,500	47,100	22,800	31,600	90,400	32,200	32,600	34,200
22	29,800	22,100	7,800	11,000	14,000	52,500	23,100	30,800	85,500	31,300	32,200	33,900
23	29,100	21,300	7,800	12,000	14,300	65,200	22,100	29,700	87,600	31,000	32,600	33,600
24	29,500	20,600	7,800	12,500	14,300	68,600	21,300	28,700	92,600	30,700	34,200	32,900
25	29,800	19,900	7,800	13,000	13,700	66,400	21,700	28,000	105,000	30,700	34,200	31,900
26	30,600	17,200	7,000	14,000	13,900	62,500	23,500	27,700	104,000	31,300	33,600	31,600
27	31,000	13,000	7,000	15,000	14,300	53,500	25,700	27,200	93,800	31,600	33,600	31,600
28	31,000	10,000	8,000	16,300	14,200	51,600	18,900	27,900	87,800	31,900	32,600	31,600
29	31,800	9,400	10,500	17,200	.....	48,900	20,600	29,600	90,000	33,200	32,200	31,600
30	31,800	9,200	11,500	17,200	.....	46,200	26,400	29,500	84,600	36,000	32,200	30,700
31	31,400	.....	13,000	16,200	.....	39,200	.....	27,800	.....	35,600	33,200	.....

g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 10-31, 1951; Jan. 1 to Mar. 19, Nov. 27 to Dec. 9, Dec. 14-31, 1952; Jan. 1 to Mar. 13, 1953.

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	31,300	31,300	18,500	9,300	12,100	30,100	32,200	31,300	31,000	25,400	33,200	28,600
2.....	31,300	29,800	18,500	9,600	12,200	27,400	30,700	31,900	33,600	27,100	34,300	28,600
3.....	31,900	28,900	18,300	10,000	12,300	23,800	29,200	29,800	34,000	27,100	35,000	30,100
4.....	32,600	27,700	18,500	10,500	12,400	18,100	28,000	28,900	32,200	28,300	34,300	30,100
5.....	33,200	26,600	18,300	11,000	12,400	15,600	26,900	28,000	32,600	29,500	33,600	30,700
6.....	33,200	25,300	18,100	11,400	12,400	14,800	25,800	28,000	30,400	29,800	33,600	30,100
7.....	33,600	24,000	20,100	11,700	12,400	14,200	25,600	28,600	29,200	29,200	35,000	31,600
8.....	33,200	22,800	19,600	12,000	12,400	13,600	24,800	29,500	32,200	28,900	35,700	31,600
9.....	33,600	22,100	19,200	11,500	12,400	14,200	25,000	29,200	34,300	29,500	33,200	32,200
10.....	33,200	21,200	18,300	11,000	12,400	17,500	24,800	28,900	30,700	29,200	29,200	34,300
11.....	33,200	20,300	16,700	10,500	12,400	22,800	21,700	28,000	31,600	29,200	29,500	36,400
12.....	33,600	19,400	15,000	10,000	12,400	26,400	23,400	27,400	28,300	29,800	30,100	32,200
13.....	33,600	18,500	13,600	9,600	12,400	22,800	25,200	26,500	24,400	29,500	30,700	31,800
14.....	33,200	17,500	12,500	9,000	12,400	19,000	26,200	25,700	23,700	28,900	30,700	32,600
15.....	32,900	16,900	12,200	8,500	12,400	16,200	27,400	25,700	24,400	28,600	30,100	32,600
16.....	33,200	16,500	12,100	8,200	15,000	14,800	26,200	26,800	25,000	29,800	29,800	32,900
17.....	33,900	16,500	12,000	8,000	19,000	15,800	26,000	27,700	25,200	33,200	29,500	32,200
18.....	33,600	16,500	11,600	8,000	21,000	20,300	26,200	28,000	27,100	34,600	30,400	31,900
19.....	33,200	15,300	11,300	9,000	21,000	25,300	27,100	28,000	38,800	33,600	30,100	31,300
20.....	33,600	13,800	12,000	10,000	16,000	29,500	27,100	28,000	48,300	32,900	29,500	31,900
21.....	33,900	12,800	11,000	10,500	15,800	31,000	27,700	27,700	49,500	32,900	28,300	31,900
22.....	33,200	11,800	10,500	11,000	16,000	32,600	28,000	27,400	45,900	33,600	28,600	31,600
23.....	32,600	10,800	9,800	11,500	17,700	34,200	28,600	27,700	45,900	33,600	30,700	31,300
24.....	32,200	10,800	9,200	12,000	18,800	36,000	28,600	28,300	42,300	34,000	31,000	30,400
25.....	32,200	11,000	8,800	12,000	21,000	34,900	28,300	29,200	38,800	34,300	28,300	29,800
26.....	31,900	12,100	8,200	12,000	24,600	32,900	28,300	29,500	34,000	33,200	26,500	29,800
27.....	31,900	13,700	8,000	12,000	28,000	31,900	28,300	30,400	27,700	32,600	26,500	30,400
28.....	31,300	15,100	8,000	12,000	30,100	33,200	28,300	29,500	26,500	34,000	27,100	29,500
29.....	30,700	17,300	8,400	12,000	.....	34,200	28,900	30,400	26,000	33,600	31,300	30,400
30.....	30,700	18,100	8,600	12,000	.....	33,200	30,400	30,100	25,000	33,200	29,500	29,500
31.....	31,300	.....	9,000	12,000	.....	32,600	.....	32,900	.....	33,600	28,000	.....
1954-55												
1.....	30,200	16,100	10,500	11,300	9,200	10,400	25,100	25,700	29,500	27,500	9,900	33,000
2.....	32,000	13,500	11,500	10,500	9,400	11,000	24,500	25,400	30,900	26,600	7,800	34,800
3.....	31,200	12,900	12,500	10,400	9,600	12,000	23,600	25,400	30,600	27,200	9,000	36,500
4.....	32,000	14,500	12,500	10,400	10,000	13,000	23,000	25,700	31,200	27,800	13,500	36,500
5.....	32,300	14,300	12,100	10,500	10,300	15,000	23,000	26,300	31,200	28,800	21,800	35,400
6.....	31,600	13,900	11,900	10,700	10,600	16,000	23,300	26,300	29,500	27,800	27,800	34,400
7.....	29,600	13,900	11,700	10,900	11,000	17,000	23,600	27,200	29,200	28,100	35,100	32,300
8.....	28,100	13,900	10,500	11,100	11,000	18,000	23,900	28,400	28,400	29,200	35,800	32,000
9.....	27,500	13,500	10,900	10,500	10,300	19,000	24,500	31,200	26,900	28,800	34,000	33,000
10.....	28,400	12,700	11,700	10,000	9,600	20,000	25,400	31,200	27,500	34,800	33,400	33,700
11.....	29,800	13,100	11,900	10,000	9,000	21,000	25,700	30,600	29,800	31,200	33,000	33,700
12.....	31,200	12,300	11,900	9,600	8,600	30,000	25,400	29,800	30,600	29,200	32,600	33,700
13.....	31,200	12,100	12,100	9,000	8,200	32,600	25,700	30,200	31,200	29,800	32,000	33,400
14.....	32,300	11,900	11,900	8,000	7,800	29,800	26,900	30,200	30,600	32,000	32,000	33,000
15.....	32,000	11,700	10,400	6,200	8,200	24,500	27,800	29,500	28,800	28,800	32,000	33,400
16.....	31,200	11,700	12,100	6,200	8,800	20,800	27,200	29,200	28,100	28,400	31,600	33,400
17.....	28,800	10,500	12,500	6,400	9,200	19,200	26,900	29,500	28,800	28,800	31,600	33,400
18.....	29,800	11,500	12,500	6,600	10,000	17,200	27,200	29,800	31,200	29,200	31,600	32,600
19.....	30,600	11,500	12,900	7,000	10,700	17,200	26,800	30,200	30,200	28,400	32,300	32,600
20.....	31,200	11,500	12,900	7,200	10,500	16,800	26,900	30,600	30,600	30,200	32,300	33,000
21.....	30,200	11,700	12,100	7,400	9,000	15,500	26,900	29,200	30,200	31,600	32,300	33,000
22.....	30,600	11,700	10,700	7,600	8,000	14,700	26,300	28,400	29,800	29,800	32,000	34,000
23.....	30,900	11,500	11,500	7,800	6,900	15,100	25,700	28,400	28,100	30,200	31,200	34,000
24.....	30,600	10,200	12,300	8,000	7,200	17,000	26,000	28,800	27,800	28,800	31,200	30,600
25.....	30,600	11,100	12,500	8,200	7,600	17,000	27,200	29,200	27,800	30,200	32,600	30,900
26.....	30,900	11,100	12,500	8,400	8,000	15,100	27,800	31,200	28,100	31,600	35,100	32,000
27.....	29,500	11,300	12,500	8,600	8,600	17,200	25,700	32,600	28,800	32,600	36,200	32,600
28.....	28,100	11,300	10,700	8,600	9,400	23,000	25,400	33,400	27,500	33,600	34,800	32,300
29.....	26,000	11,500	9,750	8,600	.....	25,100	25,700	33,400	27,800	20,000	33,700	31,200
30.....	24,200	11,500	10,700	8,800	.....	24,800	26,000	32,300	28,100	13,900	32,600	31,200
31.....	19,500	.....	11,300	8,900	.....	20,300	.....	29,800	.....	12,900	32,300	.....

Note—Stage-discharge relation affected by ice Dec. 20-31, 1953; Jan. 1 to Feb. 19, 1954; Jan. 13 to Mar. 12, Mar. 27, 1955.

Missouri River at Sioux City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	34,920	29,880	10,720	16,590	15,290	24,310	75,830	40,090	60,970	50,750	45,160	49,410
1951-52	45,340	38,890	14,560	13,320	26,730	32,780	186,900	59,570	54,070	37,130	30,350	29,840
1952-53	29,690	24,720	9,077	13,210	15,850	38,200	30,120	42,480	65,070	39,710	32,990	33,610
1953-54	32,680	18,810	13,420	10,570	16,050	24,800	27,160	28,700	32,620	31,050	30,750	31,280
1954-55	29,740	12,330	11,720	8,820	9,160	19,090	25,640	29,330	29,290	28,300	29,450	33,160

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1950-51	2,147,000	1,778,000	659,300	1,020,000	849,100	1,495,000
1951-52	2,788,000	2,314,000	895,100	819,200	1,537,000	2,016,000
1952-53	1,826,000	1,471,000	558,100	812,200	880,100	2,354,000
1953-54	2,009,000	1,119,000	824,900	650,200	891,400	1,525,000
1954-55	1,829,000	733,700	720,900	542,300	503,800	1,174,000

Water year	Apr.	May	June	July	Aug.	Sept.
1950-51	4,512,000	2,465,000	3,628,000	3,120,000	2,777,000	2,940,000
1951-52	11,120,000	3,663,000	3,217,000	2,283,000	1,866,000	1,776,000
1952-53	1,792,000	2,612,000	3,872,000	2,442,000	2,028,000	2,000,000
1953-54	1,616,000	1,764,000	1,941,000	1,909,000	1,891,000	1,861,000
1954-55	1,526,000	1,803,000	1,743,000	1,740,000	1,811,000	1,975,000

Yearly Discharge in Cubic Feet per Secona

Water year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Runoff in acre feet	Mean	Runoff in acre feet
	Date	Gage height in feet	Discharge					
1950							37,780	27,350,000
1951	Apr. 8, 1951.	13.04	152,000	4,000	37,830	27,390,000	39,790	28,800,000
1952	Apr. 14, 1952.	(1)24.27	441,000	6,800	47,250	34,290,000	44,290	32,150,000
1953	June 25, 1953.	(2)9.16	109,000	7,000	31,280	22,650,000	31,420	22,750,000
1954	June 21, 1954.	6.83	51,300	8,000	24,870	18,000,000	23,940	17,330,000
1955	Mar. 12, 1955.	(3)5.79	56,200	6,200	22,250	16,110,000		

(1) Maximum gage-height, 24.28 ft. Apr. 14, 1952.
(2) Maximum gage-height, 9.19 ft. June 19, 1953.
(3) Maximum gage-height, 6.19 ft. July 10, 1955.

Peak Discharge (base, 80,000 cfs)

1951: Apr. 8 (12:30 p.m.) 152,000 cfs (13.04 ft.); June 27 (6 to 11 p.m.) 89,300 cfs (9.90 ft.).

1952: Apr. 14 (6 p.m.) 441,000 cfs (24.27 ft.).

1953: May 5 (10 a.m. to 2 p.m.) 94,800 cfs (7.30 ft.); June 25 (7 p.m.) 109,000 cfs (9.16 ft.).

1954: No peak above base.

1955: No peak above base.

Perry Creek at 38th Street, Sioux City, Iowa

LOCATION.—Lat. 42°32', long. 96°25', in SW¼ sec. 9, T. 89 N., R. 47 W., on right upstream abutment of bridge on 38th Street in Sioux City, 3.6 miles upstream from mouth.

DRAINAGE AREA.—60 sq. mi. approximately.

RECORDS AVAILABLE.—October 1945 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,117.04 ft. above mean sea level, (city of Sioux City benchmark). Prior to May 20, 1954, wire-weight gage with supplementary high-water recorder operating above 5.0 ft. gage height, both at same site and datum.

AVERAGE DISCHARGE.—10 years, 21.5 cfs. (15,570 acre-ft. per year.)

EXTREMES.—1945-55: Maximum discharge, 7,780 cfs Sept. 10, 1949 (gage height, 21.80 ft.), from rating curve extended above 1,700 cfs on basis of slope-area determination of peak flow; no flow July 14, 20, Aug. 30 to Sept. 2, 1946.

Flood of July 7, 1944, reached a stage of above 25.5 ft., from flood-marks (discharge, 9,600 cfs, by contracted-opening method, by Corps of Engineers).

REMARKS.—Records fair except those for periods of ice effect, doubtful or no gage-height record, and backwater from debris, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	8.1	a3.5	2.9	2.0	1.0	4.0	65	29	16	69	6.1	18
2.....	22	a3.8	2.8	2.0	1.0	10	51	15	14	148	42	17
3.....	12	a4.2	2.8	2.0	.9	38	33	16	44	101	18	15
4.....	8.5	*4.7	2.7	2.0	.9	46	24	15	16	41	16	15
5.....	7.7	4.7	2.7	2.0	*.9	*92	21	14	12	18	10	15
6.....	6.4	4.7	2.6	2.0	.9	54	20	13	13	16	9.0	15
7.....	6.2	5.0	2.6	2.0	.9	54	25	15	13	15	8.4	16
8.....	a5.4	4.5	2.5	2.0	1.0	51	26	15	13	15	*7.4	17
9.....	*4.7	3.3	2.5	2.0	2.0	45	26	50	13	16	5.8	1,080
10.....	a4.7	3.5	2.5	2.0	4.0	40	21	37	14	15	10	230
11.....	a4.6	3.7	2.7	2.0	3.0	35	18	*26	12	14	9.4	*49
12.....	a4.5	4.0	3.0	2.0	2.5	30	18	15	15	14	178	*133
13.....	a4.5	4.4	*3.5	2.2	2.0	30	18	14	15	13	507	42
14.....	a4.4	4.7	3.5	2.2	2.0	30	*21	15	14	13	367	35
15.....	a4.3	*5.0	3.4	*2.2	2.0	30	15	20	16	12	253	18
16.....	a4.3	4.7	3.3	2.2	2.0	30	10	14	17	10	55	15
17.....	a4.2	4.8	3.1	2.2	2.0	30	8.4	66	15	*9.0	172	16
18.....	a4.2	4.4	3.0	2.2	2.0	30	7.7	25	*215	7.4	16	13
19.....	a4.1	4.3	2.8	2.2	2.0	30	6.1	35	1,190	7.1	16	12
20.....	a4.0	3.7	2.6	2.2	2.0	30	10	20	320	6.8	354	15
21.....	a3.9	3.8	2.4	2.1	2.0	40	12	18	112	6.8	77	13
22.....	a3.9	3.6	2.3	2.1	3.0	*246	10	19	45	7.4	20	12
23.....	a3.8	a3.5	2.2	2.0	4.0	261	10	12	123	7.1	16	22
24.....	*3.8	3.4	2.2	2.0	5.0	254	15	12	152	7.7	16	52
25.....	a3.7	3.4	2.1	1.8	6.0	540	14	11	114	*7.4	21	40
26.....	a3.7	3.3	2.1	1.7	7.0	*832	12	12	71	6.4	26	38
27.....	a3.6	3.2	2.1	1.6	7.0	1,040	11	12	32	8.0	275	29
28.....	a3.6	3.1	2.1	1.4	6.0	219	10	*9.0	*19	7.1	66	*21
29.....	a3.5	3.1	*2.1	1.3	.....	45	37	9.4	17	6.2	32	23
30.....	a3.5	3.0	2.0	1.2	.....	a37	*50	9.4	17	6.1	*22	21
31.....	a3.5	.....	2.0	1.1	.....	a41	.....	9.8	.....	5.8	20	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 8-12, Dec. 1-31, 1950; Jan. 1 to Mar. 2, Mar. 9-21, 1951.

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	20	16	18	8.5	20	19	57	a19	a12	65	8.8	7.2
2	17	16	20	8.0	30	19	54	a19	a12	27	8.8	6.6
3	17	15	16	*8.0	40	18	*40	a18	a12	21	9.0	6.6
4	32	15	15	7.5	40	18	37	a18	a11	17	9.4	6.8
5	22	15	16	7.0	40	19	37	a17	*11	15	9.2	6.6
6	18	15	*15	7.0	40	21	37	a17	15	1,100	9.4	7.0
7	16	16	13	7.0	40	27	35	a17	14	1,380	9.9	7.2
8	16	16	7.4	7.0	40	38	37	a30	601	64	9.2	*7.4
9	16	16	4.5	7.0	40	223	33	a26	61	*30	9.4	7.4
10	*15	16	4.5	7.0	50	670	31	a23	25	28	10	7.2
11	16	16	4.0	7.0	*155	471	30	21	21	27	9.9	6.6
12	16	15	3.6	7.0	100	422	30	a19	17	24	10	7.2
13	16	16	3.4	7.0	80	318	30	a18	16	24	9.9	7.5
14	17	*15	3.4	7.0	60	41	31	a17	13	23	9.9	19
15	16	15	3.1	7.0	50	32	28	a16	13	22	*9.4	9.4
16	16	14	3.0	7.0	45	51	27	a15	13	21	9.4	7.4
17	16	13	3.0	7.0	40	50	26	a15	13	17	9.4	6.8
18	16	11	3.0	7.0	35	90	*25	a14	*12	16	9.7	7.5
19	16	8.7	3.0	665	32	65	24	a14	12	16	9.4	6.8
20	16	8.0	3.0	324	28	51	24	*13	23	15	9.4	7.0
21	15	7.1	3.0	114	26	40	31	25	22	15	9.2	9.4
22	16	6.1	3.0	60	24	30	29	27	20	*14	7.5	6.6
23	15	5.6	3.0	40	23	20	26	25	17	13	9.0	6.5
24	15	5.1	3.0	25	22	*17	24	22	13	13	8.6	7.4
25	14	4.2	3.0	20	*21	15	21	20	12	12	9.4	*7.2
26	14	3.4	3.0	18	20	14	22	16	13	11	8.8	6.1
27	14	3.0	4.0	17	20	14	21	a16	19	11	*8.3	6.1
28	14	3.4	5.0	*16	19	57	22	a15	14	11	8.3	4.7
29	*14	9.4	6.0	15	19	454	21	a14	15	9.7	7.9	5.8
30	15	14	7.0	15	.....	502	20	a14	21	9.4	8.6	4.7
31	16	.....	8.0	15	.....	70	.....	a13	.....	9.4	7.9	.....
1952-53												
1	5.0	6.4	7.0	7.4	8.8	10	*16	43	15	16	8.0	8.1
2	5.4	6.5	*7.0	7.6	9.0	10	14	38	15	15	8.0	8.0
3	5.8	*6.5	7.0	7.8	9.3	11	15	33	16	14	16	15
4	6.0	6.8	7.0	8.0	*9.7	*22	13	*34	14	13	42	*7.8
5	6.0	6.8	7.0	8.0	9.8	35	13	20	13	13	16	5.1
6	6.3	7.0	7.0	8.0	9.8	50	12	19	13	13	15	4.8
7	6.8	7.2	7.0	7.8	9.8	70	14	17	916	12	12	4.7
8	6.5	7.4	7.0	*7.7	9.8	100	11	17	*1,120	11	14	5.0
9	6.6	7.2	7.0	7.6	9.6	115	11	15	*54	11	11	4.7
10	*6.8	7.7	7.0	7.4	9.6	137	10	53	29	11	11	4.7
11	7.0	7.7	7.0	7.2	9.8	190	9.4	40	25	10	26	5.1
12	6.9	7.5	7.0	7.2	10	190	9.4	28	22	18	16	5.3
13	6.8	7.9	7.0	7.0	10	193	12	24	22	16	15	5.6
14	6.8	8.3	7.0	7.0	10	130	9.8	22	23	*12	15	5.5
15	7.2	7.9	7.0	6.8	9.6	130	12	20	23	9.8	13	6.8
16	6.6	8.6	7.0	6.8	9.4	31	14	20	22	9.6	11	7.0
17	7.0	7.4	*7.0	6.8	*9.1	29	27	20	22	8.5	9.6	7.0
18	7.0	7.4	7.0	6.6	9.1	*27	16	*20	20	7.8	8.5	6.7
19	7.0	7.4	7.0	6.6	9.2	24	19	18	19	7.8	8.1	6.2
20	7.0	7.4	7.0	*6.6	9.4	20	*17	17	18	8.7	8.0	6.0
21	7.0	7.4	7.0	6.6	9.6	17	15	199	18	9.6	*8.0	5.6
22	7.0	7.4	7.0	6.8	9.8	16	15	*84	17	9.4	8.0	5.3
23	7.0	7.4	7.0	7.0	10	15	13	82	*19	8.1	8.0	*4.3
24	6.8	*7.4	7.2	7.2	10	14	15	60	32	8.1	8.0	4.3
25	6.8	7.2	7.2	7.4	10	15	21	33	24	8.0	8.1	4.2
26	6.6	7.0	7.2	7.6	10	14	21	26	23	8.3	8.0	4.8
27	6.3	7.0	7.2	7.8	10	13	19	23	22	8.1	7.8	4.5
28	6.4	7.0	7.2	8.0	10	14	17	20	20	*8.5	8.3	4.7
29	6.4	7.0	7.2	8.2	.....	16	46	19	18	8.5	8.0	4.8
30	6.4	7.0	*7.2	8.4	.....	130	132	18	16	8.1	8.1	5.0
31	6.4	.....	7.2	8.6	.....	20	.....	17	.....	8.1	8.0	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 16-31, 1951; Jan. 1-18, Jan. 22 to Mar. 6, Mar. 21-27, Nov. 18 to Dec. 31, 1952; Jan. 1 to Mar. 8, 1953.

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	4.5	5.6	*7.6	7.0	10	25	13	11	g*13	13	7.2	5.1
2	5.5	5.5	8.0	7.0	11	23	*13	11	g177	11	6.7	4.8
3	5.0	5.5	58	7.0	12	20	12	11	g49	10	5.8	5.3
4	6.0	5.3	40	7.0	12	15	13	11	g17	9.6	5.5	4.8
5	7.6	5.3	14	7.0	11	15	13	10	g15	9.6	5.5	23
6	8.9	5.5	12	7.0	10	30	12	11	g13	9.6	5.3	8.1
7	9.4	5.5	11	6.0	8.0	36	17	*11	g12	9.8	6.7	5.1
8	8.7	6.0	10	4.0	6.0	43	14	11	11	8.9	7.8	*4.7
9	7.0	6.2	9.5	3.0	*5.2	d30	12	10	10	8.3	6.0	7.2
10	d8.0	6.3	*9.4	2.0	5.0	d20	11	10	10	8.1	5.1	6.5
11	d8.5	6.3	9.0	2.0	5.0	15	10	9.8	9.6	7.8	6.8	4.8
12	d9.0	6.7	9.0	*1.9	5.0	13	10	9.8	9.4	7.6	*6.7	4.7
13	d9.5	6.7	9.0	1.8	7.0	11	9.8	9.6	9.1	*7.0	6.3	5.0
14	d10	6.7	9.0	1.7	10	9.0	*10	9.4	9.1	6.7	6.5	4.8
15	*11	6.8	8.0	1.5	15	10	26	9.1	9.4	6.5	6.2	4.8
16	d12	6.3	7.0	2.0	20	24	18	8.7	9.4	6.5	5.6	5.5
17	d12	*6.5	7.0	2.0	30	162	15	8.7	8.9	6.8	5.3	5.8
18	d12	23	7.0	2.0	33	*47	11	*8.3	*9.6	6.8	10	5.3
19	12	50	7.0	2.0	52	48	*11	8.1	*082	6.8	7.8	4.5
20	11	93	7.0	3.0	160	17	10	7.4	78	6.5	5.8	3.7
21	11	14	*6.7	4.0	54	14	11	7.4	106	6.5	5.6	3.2
22	10	12	6.5	*5.0	33	13	10	7.6	26	6.5	28	*2.5
23	8.7	9.1	6.0	5.0	30	13	11	7.4	g14	6.5	19	2.5
24	8.3	7.2	6.0	5.0	*31	13	11	g7.4	g14	5.8	9.0	3.7
25	7.8	6.5	7.0	5.0	28	16	11	g8.0	g13	5.3	7.6	4.3
26	7.4	6.7	7.0	6.0	23	13	11	g94	g13	5.1	9.6	4.0
27	6.7	6.8	7.0	6.0	23	13	10	g325	g12	5.1	*7.6	4.0
28	6.2	11	7.0	6.0	23	18	*9.8	g23	*12	*6.0	6.3	4.0
29	*5.5	7.6	7.0	7.0	.....	14	11	g14	12	7.0	5.8	3.7
30	5.6	7.8	7.0	8.0	.....	13	12	g15	11	8.1	5.5	4.5
31	5.8	.....	7.0	9.0	.....	13	.....	g200	.....	8.9	5.8	.....
1954-55												
1	4.5	6.2	5.4	5.0	3.6	*34	11	6.0	4.7	2.5	*1.1	0.0
2	35	5.5	5.2	5.1	3.6	147	10	5.7	4.6	2.2	1.0	.6
3	6.2	6.3	5.0	*5.2	*3.6	96	12	5.0	4.7	1.9	.9	.7
4	5.3	7.0	4.8	5.2	3.6	25	*92	4.5	4.7	1.7	1.1	.6
5	7.0	6.7	4.6	5.3	3.6	6.8	13	4.2	8.0	1.7	1.1	.5
6	*6.0	6.7	4.6	5.3	3.6	6.0	9.9	4.3	*10	1.7	1.0	*.6
7	5.8	6.5	*4.5	5.2	3.6	23	8.6	3.8	4.7	1.7	1.3	.6
8	7.4	6.5	4.5	5.2	3.6	103	8.6	3.6	3.5	1.7	1.0	.4
9	6.3	6.3	4.6	5.1	3.7	176	7.8	*4.6	3.5	183	1.5	.4
10	10	*5.8	4.6	5.0	3.7	58	7.8	4.7	3.8	*483	1.4	.4
11	8.1	6.0	4.7	4.9	3.7	31	7.8	4.3	3.9	*6.7	.7	.5
12	5.1	5.6	4.7	4.8	3.7	18	8.0	4.0	4.1	4.0	.6	.6
13	5.3	5.6	4.8	4.6	3.7	12	7.8	3.9	3.9	66	.6	.5
14	7.6	5.5	4.9	4.5	3.8	11	*6.9	3.9	3.6	7.6	.5	.3
15	6.2	5.5	5.0	4.3	*3.8	11	6.0	3.4	3.1	2.7	*.7	.3
16	5.6	5.6	5.1	4.2	3.9	7.2	5.0	3.3	2.9	2.2	.6	.2
17	6.5	6.0	5.2	4.1	3.9	6.4	4.7	3.4	3.5	2.0	.4	.3
18	5.3	5.6	5.4	4.0	3.9	*7.4	5.0	3.3	4.5	2.1	.4	.6
19	6.2	*5.6	5.5	4.0	4.0	8.4	5.8	*3.2	3.9	3.5	.4	*1.5
20	7.8	5.8	5.6	3.9	4.0	6.6	5.0	3.1	2.9	11	.3	.9
21	*7.6	5.8	5.8	3.8	4.0	5.3	4.6	3.2	2.5	8.4	.5	1.1
22	6.3	5.9	*5.9	3.8	4.1	4.5	5.1	3.0	2.7	4.2	.5	.6
23	6.3	6.0	5.9	3.8	4.1	4.1	6.4	3.8	2.5	2.3	.6	.5
24	6.2	6.0	5.9	3.8	4.2	4.0	13	3.3	*2.7	1.9	.6	.4
25	6.3	6.0	5.8	3.7	4.2	4.0	9.0	3.1	2.5	*1.8	.6	.7
26	10	5.9	5.5	3.7	4.3	4.1	6.4	185	2.3	1.7	.5	1.3
27	8.7	5.8	5.2	3.7	4.3	4.8	9.0	149	2.2	1.7	.4	.7
28	7.4	5.7	5.0	3.7	4.4	9.4	*42	7.0	2.5	1.5	.3	.6
29	6.5	5.6	4.8	3.6	.....	*18	10	5.7	2.9	1.6	.5	1.2
30	6.5	5.5	4.8	3.6	.....	21	7.0	5.7	3.0	1.4	*.5	1.2
31	6.7	.....	4.9	3.6	.....	14	.....	5.1	.....	1.2	.4	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.
g Computed from gage readings or graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1953; Jan. 1 to Feb. 16, Mar. 3-6, 12-15, Nov. 26 to Dec. 31, 1954; Jan. 1 to Mar. 8, Mar. 17-28, 1955.

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	5.46	3.97	2.62	1.93	2.68	139	20.8	19.4	90.0	20.5	85.5	68.9
1951-52.....	16.5	11.6	6.77	47.5	41.3	126	30.3	18.5	36.4	99.6	9.13	7.32
1952-53.....	6.56	7.29	7.05	7.40	9.65	58.3	19.6	35.5	87.7	10.6	12.0	5.89
1953-54.....	8.41	11.9	10.7	4.61	24.0	24.7	12.3	20.2	56.5	7.67	7.98	5.33
1954-55.....	7.60	5.95	5.10	4.38	3.86	28.6	11.8	14.7	3.81	26.3	.73	.65

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.091	0.066	0.044	0.032	0.045	2.32	0.347	0.323	1.50	0.342	1.42	1.15
1951-52.....	.275	.193	.113	.792	.688	2.10	.505	.308	.607	1.66	.152	.122
1952-53.....	.109	.121	.117	.123	.161	.972	.327	.592	1.46	.177	.200	.098
1953-54.....	.140	.198	.178	.077	.400	.412	.205	.487	.942	.128	.133	.089
1954-55.....	.127	.099	.085	.073	.064	.477	.197	.245	.064	.438	.012	.011

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.10	0.07	0.05	0.04	0.05	2.66	0.39	0.37	1.67	0.39	1.64	1.28
1951-52.....	.32	.22	.13	.91	.74	2.42	.56	.36	.68	1.91	.18	.14
1952-53.....	.13	.14	.14	.14	.17	1.12	.36	.68	1.63	.20	.23	.11
1953-54.....	.16	.22	.21	.09	.42	.47	.23	.56	1.05	.15	.15	.10
1954-55.....	.15	.11	.10	.08	.07	.55	.22	.28	.07	.51	.01	.01

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	336	236	161	119	149	8,520	1,240	1,200	5,350	1,260	5,260	4,100
1951-52.....	1,020	692	416	2,920	2,380	7,750	1,800	1,140	2,170	6,120	561	436
1952-53.....	403	434	434	455	536	3,590	1,170	2,180	5,220	655	741	350
1953-54.....	517	709	660	283	1,330	1,520	731	1,790	3,360	471	491	317
1954-55.....	468	354	314	269	215	1,660	705	905	227	1,620	45	38

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									24.7	5.59	17,920
1951...	June 19, 1951.	17.38	5,480	0.9	38.6	0.043	8.71	27,930	40.5	9.16	29,330
1952...	July 7, 1952.	17.40	5,480	3.0	37.7	.628	8.57	27,400	36.6	8.31	26,550
1953...	June 7, 1953.	12.56	3,470	4.2	22.3	.372	5.05	16,170	23.2	5.23	16,780
1954...	June 19, 1954.	13.75	4,010	1.5	16.8	.280	3.81	12,180	15.8	3.58	11,430
1955...	July 9, 1955.	15.40	4,880	.2	9.56	.159	2.16	6,920			

Peak Discharge (base, 400 cfs)

1951: Mar. 22 (6:30 p.m.) 750 cfs (6.79 ft.); Mar. 25 (10:30 p.m.) 962 cfs (7.62 ft.); Mar. 27 (2:30 a.m.) 2,050 cfs (10.97 ft.); June 19 (1 p.m.) 5,480 cfs (17.38 ft.); June 23 (5 p.m.) 673 cfs (5.35 ft.); Aug. 12 8 p.m. 1,340 cfs (7.53 ft.); Aug. 14 (9 p.m.) 844 cfs (5.96 ft.); Aug. 17 (5 a.m.) 1,110 cfs (6.75 ft.); Aug. 20 (7 a.m.) 984 cfs (6.43 ft.); Aug. 27 (12:30 a.m.) 1,340 cfs (7.54 ft.); Sept. 9 (9 a.m.) 2,310 cfs (10.21 ft.); Sept. 12 (8:30 a.m.) 549 cfs (4.90 ft.).

1952: Jan. 19 (11 a.m.) 1,430 cfs (7.75 ft.); Mar. 12 (about 9 p.m.) 1,620 cfs (8.33 ft.); Mar. 30 (2 a.m.) 1,200 cfs (7.08 ft.); June 8 (2:30 p.m.) 1,610 cfs (8.32 ft.); July 7 (1 a.m.) 5,480 cfs (17.40 ft).

1953: Mar. 30 (about 2 a.m.) 470 cfs (about 4.0 ft.); Apr. 30 (about 10 a.m.) 470 cfs (about 4.0 ft.); May 21 (about 10 a.m.) 590 cfs (4.35 ft.); June 7 (9:30 p.m.) 3,470 cfs (12.56 ft.).

1954: Feb. 20 (5 p.m.) 485 cfs (3.99 ft.); May 26 (12 p.m.) 1,080 cfs (5.55 ft.); May 31 (1:30 a.m.) 1,300 cfs (6.30 ft.); June 2 (8 p.m.) 881 cfs (4.97 ft.); June 19 (3:30 a.m.) 4,010 cfs (13.75 ft.).

1955: Mar. 2, about 700 cfs; Mar. 8 (8:30 p.m.) 665 cfs (4.61 ft.); May 26 (10:30 p.m.) 1,580 cfs (6.98 ft.); July 9 (11:30 p.m.) 4,880 cfs (15.40 ft.); July 13 (6 p.m.) 606 cfs (4.05 ft.).

Floyd River at James, Iowa

LOCATION.—Lat. 42°34'40", long. 96°18'40", in NW¼NW¼ sec. 32, T. 90 N., R. 46 W., on right bank on downstream side of highway bridge at James, 9.5 miles upstream from mouth, and 14 miles downstream from West Floyd River.

DRAINAGE AREA.—918 sq. mi.

RECORDS AVAILABLE.—December 1934 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,102.59 ft. above mean sea level, datum of 1929. Prior to Sept. 11, 1938, and June 9, 1953 to Nov. 15, 1953, wire-weight gage; and Sept. 11, 1938, to June 8, 1953, water-stage recorder, both at same site and datum.

AVERAGE DISCHARGE.—20 years (1935-55), 207 cfs (149,900 acre-ft. per year).

EXTREMES.—1934-55: Maximum discharge, 71,500 cfs June 8, 1953 (gage height, 25.3 ft.) from rating curve extended above 15,600 cfs on basis of contracted-opening, flow over embankment determination of peak flow; minimum daily, 1 cfs Aug. 20, 27, 1936.

REMARKS.—Records good except those for periods of ice effect or no gage-height record which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	100	35	30	16	15	80	4,840	1,240	632	570	174	483
2.....	200	35	45	16	14	70	*2,620	2,490	1,310	511	232	420
3.....	140	39	24	16	14	60	2,120	3,040	1,660	497	364	403
4.....	100	42	18	16	14	100	4,050	986	890	1,600	313	390
5.....	80	45	18	16	14	150	5,020	615	555	5,030	250	377
6.....	70	44	18	16	14	300	4,360	540	455	4,220	189	364
7.....	65	43	18	16	14	50	3,160	455	403	1,420	*170	351
8.....	64	42	18	16	14	25	2,120	390	390	710	156	390
9.....	62	41	18	16	14	25	990	403	915	776	148	1,390
10.....	60	40	18	16	14	25	710	585	670	1,460	231	3,020
11.....	58	39	18	16	13	50	540	*1,130	469	1,600	295	*5,580
12.....	56	39	18	16	13	20	455	940	511	990	455	5,780
13.....	55	38	18	16	13	20	364	570	540	1,600	1,110	4,840
14.....	54	37	18	16	13	20	351	455	390	2,020	2,720	3,800
15.....	52	30	19	16	13	20	455	442	350	1,100	4,680	2,820
16.....	51	25	19	*16	*12	20	469	511	313	690	4,220	1,100
17.....	50	34	19	16	13	20	351	511	277	*585	3,800	840
18.....	48	37	19	16	15	20	313	570	325	511	2,920	730
19.....	47	25	*10	16	15	20	283	1,680	1,730	540	1,200	630
20.....	46	15	19	16	17	20	265	1,940	1,480	730	1,320	585
21.....	45	27	19	16	17	19	271	1,720	730	1,230	1,310	555
22.....	44	37	19	16	20	*19	301	874	540	1,270	1,020	525
23.....	42	20	19	16	20	100	338	600	463	690	670	497
24.....	*41	24	19	16	25	200	325	511	525	455	555	511
25.....	40	24	19	16	35	400	364	442	1,200	351	511	710
26.....	39	28	19	15	50	800	377	377	2,020	301	469	650
27.....	38	27	19	15	80	*3,800	416	390	2,120	259	859	555
28.....	37	28	19	15	200	*7,480	429	313	2,720	248	1,860	497
29.....	36	36	18	15	.....	6,400	429	289	2,820	232	1,940	469
30.....	36	28	17	15	.....	*5,780	497	265	840	215	884	429
31.....	35	.....	16	15	.....	5,980	.....	301	.....	199	570	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 4-31, 1950; Jan. 1 to Mar. 26, 1951. No gage-height record Oct. 1-23, Oct. 25 to Nov. 3, Nov. 5-8, 10-13, 15, 23, 1950; June 15, July 29, 30, Aug. 5, 1951; discharge estimated on basis of weather records and records for nearby stations. Discharge computed from gage readings or graph based on gage readings Oct. 24, Nov. 4, 9, 14, 16-22, Nov. 24 to Dec. 3, 1950; Apr. 18, 25-30, May 8-18, 26-31, June 2, 4-12, 14, 16-19, 30, July 1, 2, 15, 22-28, July 31 to Aug. 4, Aug. 6-13, 19-27, Aug. 30 to Sept. 9, Sept. 29, 30, 1951.

Floyd River at James, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	429	338	253	140	160	562	*4,970	322	200	242	109	349
2	416	301	277	140	170	528	2,330	312	182	364	108	206
3	403	248	283	140	200	454	1,520	302	177	334	111	150
4	442	253	325	140	230	274	1,220	292	172	248	120	122
5	750	300	338	140	370	286	1,040	270	166	200	114	113
6	650	325	*338	140	350	313	897	236	177	761	94	106
7	511	325	325	140	300	288	816	268	177	*4,300	94	95
8	455	313	351	140	330	278	789	308	924	3,200	107	94
9	442	*313	301	140	400	283	798	312	454	2,600	98	86
10	416	313	253	140	800	386	798	364	268	1,100	93	*83
11	*390	338	236	140	1,800	998	729	362	230	650	93	78
12	377	469	242	140	2,800	1,560	740	318	218	463	92	71
13	377	429	199	135	3,600	3,020	761	289	188	430	88	67
14	364	351	190	135	3,900	1,690	*784	266	188	356	*88	79
15	429	313	180	*135	3,000	1,120	752	261	194	326	105	73
16	403	289	180	135	1,750	1,260	679	277	268	*296	177	77
17	377	236	170	135	995	1,470	*631	277	248	261	120	72
18	388	220	170	135	761	1,800	606	266	*224	242	94	68
19	388	253	170	500	692	3,120	602	267	166	230	91	66
20	364	265	170	500	570	4,700	598	268	282	200	87	65
21	390	271	160	400	500	*3,050	596	*258	188	188	85	63
22	416	265	160	300	436	1,120	650	324	177	177	82	66
23	555	231	160	250	454	352	750	288	172	160	77	66
24	555	194	160	200	427	310	646	300	172	145	75	60
25	483	214	160	190	400	375	522	292	177	145	87	59
26	442	226	150	180	472	356	472	254	177	135	92	54
27	403	231	150	170	*528	402	445	241	200	130	79	51
28	403	231	150	160	876	540	395	235	177	120	102	51
29	390	248	150	155	761	1,080	358	226	177	118	188	51
30	364	236	150	150	.....	4,320	346	214	166	118	499	51
31	364	.....	150	150	.....	*11,900	.....	206	.....	109	400	.....
1952-53												
1	50	54	26	40	35	72	271	446	245	258	258	101
2	49	53	26	40	34	72	264	467	232	*233	210	*95
3	50	52	27	40	34	65	264	477	221	216	285	108
4	50	51	33	40	34	57	264	499	210	210	524	105
5	50	50	43	40	35	55	264	460	201	216	506	98
6	50	49	44	40	35	54	245	402	194	204	360	93
7	51	48	44	39	35	52	233	348	751	194	970	89
8	52	43	44	38	35	50	233	308	*32,400	184	914	84
9	53	46	44	37	35	70	239	279	*15,000	169	385	80
10	53	46	49	36	35	100	239	326	*4,070	169	271	77
11	51	46	51	36	35	150	233	508	2,250	159	326	71
12	53	49	49	36	36	300	221	462	1,310	149	506	70
13	52	*49	56	36	37	1,000	210	339	1,030	174	560	70
14	54	49	53	36	37	1,840	204	288	870	*154	326	71
15	54	46	47	36	36	1,400	252	267	815	144	258	70
16	*53	44	46	36	35	870	285	252	760	134	221	68
17	54	44	*46	36	*44	720	285	237	596	139	204	62
18	56	45	46	36	50	*640	334	*233	520	134	189	60
19	57	45	45	36	45	560	317	255	467	129	174	54
20	56	44	46	*36	30	488	*271	232	405	132	*164	62
21	55	44	42	36	25	436	245	1,040	363	126	149	53
22	54	46	46	37	32	394	239	*1,510	324	129	139	60
23	54	44	46	38	36	370	227	789	300	112	139	54
24	55	44	46	37	38	360	221	533	315	111	129	62
25	54	49	46	36	40	317	285	419	297	102	125	62
26	54	27	45	36	45	285	351	351	288	97	115	61
27	53	15	44	36	55	271	351	524	288	95	112	61
28	53	14	43	36	70	258	334	590	288	119	105	60
29	52	16	42	36	.....	245	292	410	298	134	100	58
30	54	21	41	36	.....	271	326	317	300	417	102	57
31	54	.....	40	36	.....	264	.....	271	.....	470	105	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Feb. 11, Dec. 26-31, 1952; Jan. 1 to Mar. 13, 1953. No gage-height record May 24, May 26 to June 4, June 6, July 18, 20, Sept. 12, 1953; discharge estimated on basis of weather records and records for nearby stations. Discharge computed from gage readings or graph based on gage readings Oct. 1 to Nov. 4, Nov. 6 to Dec. 13, 1951; Feb. 12-14, 17, Feb. 22 to Mar. 10, Mar. 14-18, 22-29, Apr. 25 to May 4, May 6-18, 20, 21, June 2-7, June 9 to July 6, July 10 to Aug. 8, Sept. 3-18, Nov. 26-30, 1952; Mar. 19-22, Apr. 15-17, 19, Apr. 25 to May 2, May 23, 25, June 5, June 7 to July 17, July 19, July 21 to Sept. 11, Sept. 13-30, 1953.

Floyd River at James, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	57	58	71	51	31	159	210	159	174	351	112	87
2	57	58	74	53	30	139	204	204	246	326	106	81
3	56	56	80	51	32	82	184	221	274	300	95	76
4	56	54	123	50	36	114	160	239	237	285	92	75
5	55	50	93	51	44	139	174	227	214	285	88	113
6	54	52	123	50	45	130	184	210	183	264	84	87
7	56	50	129	45	65	169	184	189	188	245	83	75
8	58	51	117	39	56	258	179	170	*160	233	84	72
9	58	52	88	35	*56	368	174	169	120	216	89	*75
10	58	56	*68	31	65	470	169	159	184	204	82	74
11	58	59	89	30	61	894	164	149	*1,770	194	*82	70
12	58	58	90	*29	59	506	159	144	978	184	82	67
13	58	58	87	29	53	164	*149	*134	421	*174	77	66
14	58	59	66	29	58	128	149	126	274	164	78	65
15	*57	58	55	30	63	139	169	119	234	154	82	64
16	58	59	78	31	58	164	199	113	209	149	75	66
17	65	58	68	32	64	*720	258	104	189	139	73	72
18	66	*59	59	34	66	*2,700	252	100	186	144	80	76
19	63	78	59	36	87	4,210	210	98	*2,350	139	84	73
20	60	110	60	30	640	2,070	189	93	*4,910	134	84	67
21	60	110	60	34	1,240	700	179	89	*5,500	134	82	61
22	58	103	48	30	720	410	169	84	*6,040	129	117	59
23	57	94	53	33	1,340	326	159	83	3,880	128	125	58
24	56	84	49	30	976	278	154	81	1,580	122	110	57
25	59	80	51	31	410	376	149	78	886	115	92	56
26	58	71	55	34	199	640	144	77	710	108	94	53
27	58	72	58	30	189	524	134	439	602	104	174	52
28	58	71	56	29	169	368	128	202	*501	104	179	54
29	58	68	56	30	.....	271	125	252	446	103	154	54
30	58	73	51	30	.....	227	139	189	388	107	118	55
31	58	.....	50	30	.....	221	.....	292	.....	112	98	.....
1954-55												
1	61	70	45	49	26	33	268	315	56	35	18	10
2	74	51	44	50	26	88	178	246	55	77	18	10
3	68	56	44	50	*25	*250	140	*220	54	57	17	11
4	67	70	43	50	25	206	145	190	53	43	*16	8.4
5	65	70	42	*50	25	168	166	172	58	*36	16	8.7
6	65	60	41	50	24	132	*160	155	*61	61	23	9.4
7	64	68	*40	49	24	106	135	140	56	43	44	11
8	68	65	39	48	24	220	121	129	52	40	28	8.4
9	70	*62	38	46	24	*520	110	123	48	52	19	8.4
10	79	61	38	45	24	700	106	120	47	579	45	9.9
11	96	60	37	44	24	618	102	116	47	38	34	8.4
12	*155	59	37	43	24	366	101	111	49	28	26	8.4
13	100	58	36	41	24	238	100	103	46	115	20	9.9
14	99	65	37	40	24	184	98	103	46	75	18	10
15	150	58	38	39	24	145	95	98	43	54	18	9.9
16	112	59	39	38	24	118	90	94	41	44	17	9.6
17	98	59	40	37	24	104	86	91	41	37	17	9.9
18	90	58	40	36	24	92	82	85	45	30	17	12
19	84	56	41	35	24	81	82	80	47	24	11	9.0
20	81	54	42	35	24	69	79	74	93	23	10	12
21	80	56	43	34	23	61	76	69	78	33	8.4	10
22	76	56	44	33	23	55	74	64	60	42	8.4	9.9
23	72	57	45	32	23	52	74	60	51	26	9.0	10
24	71	55	46	31	23	50	96	58	46	22	12	11
25	70	54	47	31	23	50	127	58	43	24	9.9	14
26	76	53	46	30	23	51	202	59	40	22	9.6	13
27	84	54	44	29	23	53	204	104	38	20	9.9	15
28	78	54	40	28	23	59	*707	75	36	20	10	13
29	73	47	44	28	.....	71	882	64	37	20	11	14
30	70	46	46	27	.....	140	534	60	35	18	9.9	13
31	71	.....	48	27	.....	280	.....	58	.....	17	10	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 9 to Feb. 19, Nov. 29 to Dec. 31, 1954; Jan. 1 to Mar. 10, Mar. 19-29, 1955. No gage-height record May 12-16, 18-23, 29, 30, Sept. 1, 6, 14, 30, 1955; discharge estimated on basis of weather records and records for nearby stations. Discharge computed from gage readings or graph based on gage readings Nov. 16, 1953; Feb. 25, 26, May 27, May 31 to June 17, June 19, 24, 25, July 25-30, Aug. 3-26, 1954; May 9-11, 17, 24-28, 31, July 11 to Aug. 3, Aug. 9, 18-31, Sept. 2-5, 7-13, 15-29, 1955.

Floyd River at James, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	61.0	33.7	19.8	15.8	25.9	1,035	1,254	825	942	1,053	1,151	1,353
1951-52.....	437	285	215	187	970	1,558	908	280	230	592	124	89.7
1952-53.....	52.9	42.4	43.4	37.1	38.3	390	267	446	2,187	175	288	72.5
1953-54.....	58.2	67.3	73.4	35.7	247	594	173	164	1,138	179	98.5	68.7
1954-55.....	82.8	58.7	41.7	38.9	24.0	173	181	113	50.1	56.6	17.4	10.6

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.066	0.037	0.022	0.017	0.028	1.13	1.37	0.899	1.03	1.15	1.25	1.47
1951-52.....	.476	.310	.234	.204	1.06	1.70	.989	.305	.251	.645	.135	.098
1952-53.....	.058	.046	.047	.040	.042	.425	.291	.486	2.38	.191	.314	.079
1953-54.....	.063	.073	.080	.039	.269	.036	.188	.179	1.24	.195	.107	.075
1954-55.....	.090	.064	.045	.042	.026	.188	.197	.123	.055	.062	.019	.012

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.08	0.04	0.02	0.02	0.03	1.30	1.52	1.04	1.14	1.32	1.45	1.64
1951-52.....	.55	.35	.27	.23	1.14	1.96	1.10	.35	.28	.74	.16	.11
1952-53.....	.07	.05	.05	.05	.04	.49	.32	.56	2.66	.22	.36	.09
1953-54.....	.07	.08	.09	.04	.28	.73	.21	.21	1.38	.22	.12	.08
1954-55.....	.10	.07	.05	.05	.03	.22	.22	.14	.06	.07	.02	.01

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	3,750	2,000	1,220	972	1,440	63,660	74,600	50,730	56,060	64,740	70,780	80,530
1951-52.....	26,850	16,940	13,190	11,480	55,800	95,770	54,030	17,220	13,660	36,400	7,630	5,340
1952-53.....	3,250	2,520	2,670	2,280	2,130	23,980	15,870	27,450	130,100	10,740	17,710	4,320
1953-54.....	3,580	4,000	4,510	2,200	13,720	35,890	10,310	10,100	67,700	11,010	6,060	4,090
1954-55.....	5,090	3,490	2,570	2,390	1,330	10,630	10,750	6,900	2,980	3,480	1,070	620

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...	.....	.....	.....	.....	.....	.....	.....	.....	154	2.27	111,200
1951...	Mar. 28, 1951.	(1) 19.94	8,320	12	650	0.708	9.60	470,500	719	10.63	520,500
1952...	Mar. 31, 1952.	20.32	13,900	51	488	.532	7.24	354,300	421	6.24	305,800
1953...	June 8, 1953.	25.3	71,500	14	336	.366	4.96	243,000	341	5.03	246,700
1954...	June 22, 1954.	19.88	6,250	29	239	.260	3.51	173,200	238	3.49	172,200
1955...	July 10, 1955.	16.25	2,260	8.4	70.9	.077	1.04	51,370	.....	.....	.....

(1) Maximum gage height, 19.98 ft. Sept. 12, 1951.

Peak Discharge (base, 1,300 cfs)

1951: Mar. 28 (1:30 p.m.) 8,320 cfs (19.94 ft.); Apr. 5 (1 a.m.) 5,380 cfs (18.55 ft.); May 3 (4 a.m.) 3,520 cfs (17.37 ft.); May 20 (7 a.m.) 2,520 cfs (17.10 ft.); June 3 (11:30 a.m.) 1,860 cfs (16.17 ft.); June 19 (3 p.m.) 3,040 cfs (17.65 ft.); June 29 (5 a.m.) 3,160 cfs (17.76 ft.); July 5 (12:30 p.m.) 5,980 cfs (19.95 ft.); July 11 (6 a.m.) 1,860 cfs (16.17 ft.); July 14 (5 p.m.) 2,120 cfs (16.54 ft.); July 21 (11:30 p.m.) 1,490 cfs (15.43 ft.); Aug. 15 (3 p.m.) 5,020 cfs (19.35 ft.); Aug. 20 (12:30 p.m.) 1,600 cfs (15.67 ft.); Aug. 29 (2 p.m.) 2,020 cfs (16.45 ft.); Sept. 12 (3 a.m. and 7:30 a.m.) 6,180 cfs (19.98 ft.).

1952: Feb. 14 (2 a.m.) 4,300 cfs (18.15 ft.); Mar. 13 (6 p.m.) 3,290 cfs (17.49 ft.); Mar. 20 (2-3 p.m.) 5,240 cfs (18.58 ft.); Mar. 31 (3-4 a.m.) 13,900 cfs (20.32 ft.); June 8 (1 p.m.) 1,820 cfs (15.35 ft.); July 7 (10:30 a.m.) 4,700 cfs (19.12 ft.).

1953: Mar. 14 (9-11 a.m.) 1,990 cfs (15.70 ft.); May 22 (11 a.m.) 1,720 cfs (15.40 ft.); June 8 (12:30 p.m.) 71,500 cfs (25.30 ft.); Aug. 7 (9 a.m.) 1,370 cfs (14.0 ft.).

1954: Feb. 23 (3 p.m.) 1,640 cfs (14.87 ft.); Mar. 19 (3 a.m.) 4,800 cfs (18.61 ft.); June 11 (8 p.m.) 2,300 cfs (16.42 ft.); June 22 (2-6 a.m.) 6,250 cfs (19.88 ft.).

1955: July 10 (2 a.m.) 2,260 cfs (16.25 ft.).

Spirit Lake near Orleans, Iowa

LOCATION.—Lat. 43°28', long. 95°07', in NW¼ sec. 20, T. 100 N., R. 36 W., 2.8 miles northwest of Orleans.

RECORDS AVAILABLE.—May 1933 to September 1955 (fragmentary prior to 1951). Prior to October 1949, published as "at Orleans."

GAGE.—Water-stage recorder. Datum of gage is 1,387.25 ft. above mean sea level, datum of 1929 and 90.0 ft. above Iowa Lake Survey datum. Prior to July 6, 1950, staff or float gage or water-stage recorder at various sites near lake outlet, all at present datum.

EXTREMES.—1933-55: Maximum gage height observed, 15.74 ft. June 19, 1944; minimum observed, 6.75 ft. Oct. 20, 1935.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	12.47	12.23	12.06	12.08	12.09	12.34	.....	.....	14.60	.....	.....	14.67
2	12.53	12.22	12.05	12.08	12.09	12.34	.....	.....	14.62	.....	.....	14.66
3	12.52	12.20	12.05	12.09	12.09	12.34	.....	14.69	14.60	.....	.....	14.65
4	12.51	12.18	12.05	12.10	12.09	12.34	.....	14.70	14.60	.....	.....	14.63
5	12.49	12.16	12.06	12.10	12.09	12.34	.....	14.70	14.58	.....	14.80	14.62
6	12.48	12.14	12.06	12.11	12.09	.....	.....	14.70	14.57	.....	.....	14.61
7	12.46	12.15	12.06	12.11	12.09	.....	.....	14.69	14.56	.....	.....	14.59
8	12.47	12.12	12.06	12.11	12.09	.....	.....	14.69	14.56	.....	.....	14.58
9	12.46	12.10	12.06	12.11	12.09	.....	.....	14.70	14.56	.....	.....	14.63
10	12.46	12.10	12.06	12.10	12.09	.....	12.85	14.71	14.55	.....	.....	14.67
11	12.44	12.10	12.06	12.10	12.09	.....	13.07	14.70	14.55	.....	.....	14.68
12	12.43	12.10	12.06	12.10	12.09	.....	13.16	14.68	14.55	15.22	.....	14.62
13	12.43	12.09	12.06	12.10	12.09	.....	13.24	14.67	14.54	15.23	.....	14.65
14	12.42	12.08	12.06	12.10	12.08	.....	13.30	14.66	14.52	15.21	.....	14.64
15	12.42	12.08	12.06	12.10	12.08	.....	13.40	14.67	14.51	15.20	.....	14.64
16	12.41	12.09	12.06	12.10	12.08	.....	13.50	14.70	14.50	15.18	.....	14.63
17	12.41	12.09	12.06	12.10	12.08	.....	13.60	14.70	14.53	15.16	.....	14.62
18	12.39	12.09	12.06	12.10	12.08	.....	13.67	14.70	14.56	15.14	.....	14.60
19	12.39	12.08	12.06	12.09	12.08	.....	13.73	14.71	14.57	15.12	.....	14.79
20	12.38	12.07	12.06	12.09	12.08	.....	13.77	14.72	.....	15.08	.....	14.78
21	12.37	12.06	12.06	12.09	12.08	.....	13.85	14.72	.....	15.06	14.83	14.78
22	12.36	12.06	12.06	12.10	12.08	.....	13.90	14.71	.....	15.05	14.83	14.78
23	12.33	12.05	12.07	12.10	12.08	.....	13.92	14.69	.....	15.03	14.83	14.78
24	12.32	12.05	12.07	12.09	12.08	.....	13.97	14.66	.....	14.96	14.82	14.79
25	12.31	12.05	12.07	12.09	12.08	.....	14.07	14.65	.....	14.93	14.76	14.79
26	12.28	12.05	12.08	12.09	12.12	.....	.....	14.62	.....	14.93	14.72	14.75
27	12.26	12.05	12.08	12.09	12.10	.....	.....	14.58	.....	14.93	14.69	14.72
28	12.25	12.06	12.08	12.09	12.27	.....	.....	14.56	.....	14.93	14.72	14.72
29	12.24	12.06	12.08	12.09	.....	.....	.....	14.55	.....	14.90	14.71	14.71
30	12.24	12.06	12.08	12.09	.....	.....	.....	14.53	.....	14.88	14.71	14.69
31	12.24	.....	12.09	12.09	.....	.....	.....	14.55	.....	14.85	14.69	.....

Spirit Lake near Orleans, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	.....	14.57	14.48	14.57	.....	14.89	.....	15.14	14.63	14.78	14.37	14.15
2	.....	14.55	14.49	14.57	.....	14.89	.....	15.12	14.62	14.75	14.38	14.13
3	.....	14.52	14.49	14.57	.....	14.90	.....	15.10	14.61	14.73	14.37	14.10
4	.....	14.53	14.50	14.57	.....	14.91	.....	15.07	14.63	14.70	14.37	14.08
5	.....	14.53	14.50	14.57	.....	14.90	.....	15.05	14.62	14.65	14.35	14.07
6	.....	14.53	14.51	14.57	.....	14.90	.....	15.01	14.61	14.64	14.33	14.06
7	.....	14.53	14.51	14.57	.....	14.90	.....	15.02	14.60	14.75	14.32	14.03
8	.....	14.52	14.52	14.57	.....	14.91	.....	15.01	14.62	14.75	14.36	14.01
9	.....	14.52	14.51	14.57	.....	14.91	.....	15.00	14.62	14.73	14.36	14.00
10	.....	14.52	14.50	14.57	.....	14.91	.....	14.98	14.60	14.73	14.35	13.99
11	.....	14.52	14.51	14.57	.....	14.92	.....	14.93	14.58	14.73	14.35	13.98
12	.....	14.52	14.50	14.57	.....	14.95	.....	14.91	14.57	14.71	14.33	13.97
13	.....	14.52	14.50	14.57	.....	15.00	.....	14.88	14.57	14.70	14.31	13.97
14	.....	14.48	14.51	14.60	.....	15.01	.....	14.86	14.60	14.71	14.30	13.98
15	.....	14.50	14.51	14.62	14.75	15.02	.....	14.85	14.82	14.70	14.30	13.95
16	.....	14.50	14.51	14.62	14.76	15.02	.....	14.84	14.85	14.67	14.30	13.94
17	14.62	14.49	14.52	14.63	14.77	15.03	.....	14.82	14.83	14.66	14.29	13.93
18	14.61	14.48	14.53	.....	14.77	15.07	.....	14.80	14.80	14.66	14.28	13.91
19	14.60	14.48	14.52	.....	14.80	15.12	.....	14.78	14.78	14.65	14.27	13.89
20	14.60	14.47	14.52	.....	14.83	15.17	.....	14.76	14.76	14.64	1..26	13.87
21	14.61	14.47	14.54	.....	14.84	15.21	.....	14.75	14.73	14.63	14.25	13.85
22	14.66	14.48	14.54	.....	14.85	15.31	.....	14.75	14.71	14.60	14.22	13.83
23	14.66	14.47	14.54	.....	14.86	15.36	.....	14.75	14.70	14.57	14.20	13.81
24	14.65	14.46	14.54	.....	14.87	.....	.....	14.74	14.72	14.53	14.17	13.80
25	14.64	14.48	14.54	.....	14.87	.....	.....	14.73	14.80	14.50	14.14	13.79
26	14.64	14.48	14.56	.....	14.87	.....	.....	14.72	14.80	14.50	14.14	13.78
27	14.62	14.48	14.56	.....	14.88	.....	.....	14.72	14.82	14.48	14.14	13.76
28	14.62	14.48	14.56	.....	14.88	.....	.....	14.69	14.81	14.46	14.19	13.75
29	14.62	14.48	14.56	.....	14.88	.....	.....	14.67	14.80	14.41	14.21	13.74
30	14.60	14.48	14.56	.....	.....	.....	.....	14.65	14.79	14.40	14.20	13.73
31	14.59	.....	14.57	.....	.....	.....	.....	14.65	.....	14.37	14.19	.....
1952-53												
1	13.71	13.30	13.20	13.17	13.23	13.28	13.69	14.04	14.21	15.10	14.67	14.42
2	13.68	13.29	13.20	13.18	13.22	13.31	13.70	14.08	14.21	15.08	14.83	14.40
3	13.65	13.28	.....	13.19	13.22	13.31	13.71	14.11	14.23	15.04	14.93	14.39
4	13.62	13.27	.....	13.19	13.22	13.31	13.73	14.12	14.23	15.03	14.94	14.36
5	13.60	13.25	.....	13.19	13.22	13.32	13.74	14.14	14.21	15.04	14.91	14.32
6	13.58	13.24	.....	13.20	13.22	13.32	13.74	14.15	14.22	15.03	14.89	14.30
7	13.58	13.23	.....	13.20	13.22	13.34	13.75	14.16	14.64	15.01	14.85	14.28
8	13.57	13.22	.....	13.20	13.22	13.34	13.75	14.17	14.84	14.97	14.83	14.26
9	13.56	13.21	.....	13.20	13.22	13.34	13.76	14.16	14.98	14.94	14.81	14.24
10	13.54	13.20	.....	13.21	13.24	13.35	13.75	14.17	15.06	14.91	14.79	14.23
11	13.53	13.20	.....	13.21	13.24	13.36	13.77	14.18	15.14	14.87	14.82	14.22
12	13.52	13.19	.....	13.21	13.24	13.39	13.77	14.18	15.20	14.85	14.84	14.19
13	13.50	13.19	.....	13.21	13.24	13.40	13.76	14.17	15.24	14.84	14.81	14.17
14	13.50	13.19	.....	13.21	13.24	13.50	13.76	14.16	15.27	14.82	14.79	14.15
15	13.46	13.19	.....	13.22	13.24	13.51	13.80	14.15	15.26	14.80	14.76	14.13
16	13.47	13.18	.....	13.23	13.23	13.53	13.80	14.15	15.27	14.77	14.73	14.12
17	13.45	13.19	.....	13.23	13.23	13.55	13.80	14.14	15.26	14.76	14.72	14.10
18	13.44	13.17	.....	13.23	13.23	13.57	13.78	14.14	15.26	14.76	14.69	14.08
19	13.43	13.17	13.16	13.23	13.25	13.57	13.79	14.12	15.25	14.74	14.67	14.06
20	13.41	13.17	13.17	13.23	13.28	13.58	13.79	14.12	15.22	14.74	14.65	14.07
21	13.38	13.16	13.17	13.23	13.29	13.61	13.78	14.15	15.22	14.75	14.62	14.05
22	13.38	13.16	13.17	13.23	13.29	13.63	13.78	14.17	15.21	14.72	14.60	14.03
23	13.38	13.14	13.18	13.23	13.29	13.64	13.78	14.17	15.18	14.70	14.57	14.00
24	13.38	13.14	13.19	13.23	13.29	13.64	13.82	14.17	15.13	14.65	14.56	13.99
25	13.37	13.17	13.19	13.23	13.29	13.64	33.90	14.18	15.11	14.63	14.53	13.99
26	13.37	13.18	13.19	13.23	13.29	13.65	13.92	14.18	15.08	14.63	14.51	13.97
27	13.35	13.20	13.19	13.23	13.28	13.65	13.92	14.18	15.15	14.62	14.49	13.96
28	13.34	13.21	13.18	13.23	13.28	13.65	13.94	14.20	14.17	14.60	14.46	13.95
29	13.32	13.21	13.17	13.23	.....	13.66	13.96	14.22	15.15	14.71	14.44	13.94
30	13.31	13.20	13.17	13.23	.....	13.67	14.00	14.22	15.12	14.70	14.45	13.93
31	13.30	.....	13.17	13.23	.....	13.68	.....	14.21	.....	14.68	14.43	.....

Spirit Lake near Orleans, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	13.91	13.59	13.53	13.58	13.54	13.71	14.02	14.15	14.04	14.78	14.49	14.32
2	13.88	13.59	13.55	13.58	13.54	13.72	14.03	14.18	14.04	14.77	14.47	14.31
3	13.86	13.58	13.60	13.54	13.54	13.71	14.02	14.17	14.05	14.82	14.46	14.30
4	13.85	13.58	.....	13.57	13.53	13.70	14.01	14.17	14.05	14.82	14.43	14.29
5	13.83	13.55	.....	13.57	13.52	13.70	14.01	14.16	14.03	14.82	14.40	14.29
6	13.82	13.53	.....	13.57	13.52	13.70	14.02	14.16	14.02	14.80	14.38	14.27
7	13.79	13.52	.....	13.56	13.52	13.70	14.03	14.15	14.00	14.80	14.37	14.26
8	13.77	13.52	.....	13.56	13.52	13.69	14.04	14.13	13.99	14.77	14.36	14.23
9	13.77	13.51	.....	13.56	13.52	13.69	14.02	14.13	13.98	14.76	14.35	14.27
10	13.76	13.50	.....	13.55	13.52	13.69	14.03	14.13	14.00	14.72	14.33	14.26
11	13.76	13.50	13.61	13.55	13.52	13.70	14.02	14.13	13.99	14.71	14.31	14.25
12	13.75	13.49	13.60	13.55	13.53	13.70	14.02	14.12	13.98	14.70	14.28	14.22
13	13.73	13.49	13.60	13.56	13.53	13.78	14.01	14.11	13.98	14.67	14.27	14.22
14	13.72	13.49	13.59	13.56	13.53	13.77	14.01	14.10	13.96	14.65	14.26	14.22
15	13.72	13.48	13.59	13.56	13.53	13.77	14.00	14.10	13.96	14.62	14.25	14.21
16	13.72	13.48	13.59	13.55	13.53	13.77	14.07	14.10	13.95	14.60	14.26	14.24
17	13.74	13.48	13.58	13.55	13.53	13.78	14.06	14.09	13.97	14.59	14.24	14.25
18	13.75	13.48	13.58	13.54	13.53	13.82	14.00	14.09	14.22	14.58	14.28	14.26
19	13.75	13.55	13.58	13.54	13.55	13.89	14.05	14.07	14.39	14.56	14.28	14.25
20	13.74	13.56	13.58	13.55	13.67	13.91	14.05	14.04	14.56	14.55	14.27	14.24
21	13.73	13.57	13.59	13.55	13.70	13.92	14.05	14.02	14.64	14.54	14.25	14.20
22	13.72	13.57	13.59	13.55	13.71	13.92	14.04	14.02	14.66	14.53	14.26	14.18
23	13.70	13.55	13.59	13.54	13.71	13.93	14.03	14.03	14.68	14.52	14.28	14.16
24	13.69	13.55	13.59	13.54	13.71	13.95	14.04	14.04	14.69	14.49	14.27	14.15
25	13.68	13.54	13.59	13.54	13.72	13.97	14.04	14.04	14.70	14.47	14.33	14.14
26	13.67	13.54	13.59	13.54	13.72	13.99	14.04	14.04	14.77	14.45	14.35	14.14
27	13.66	13.54	13.58	13.55	13.72	14.00	14.05	14.05	14.79	14.44	14.37	14.13
28	13.65	13.54	13.58	13.54	13.71	14.02	14.05	14.04	14.78	14.52	14.37	14.15
29	13.63	13.55	13.58	13.55	.....	14.01	14.06	14.03	14.79	14.50	14.38	14.20
30	13.62	13.54	13.58	13.55	.....	14.01	14.14	14.01	14.78	14.52	14.37	14.21
31	13.61	.....	13.58	13.54	.....	14.00	.....	14.04	.....	14.50	14.35	.....
1954-55												
1	14.21	14.18	14.11	14.05	14.03	14.10	14.35	14.53	14.17	14.09	13.69	13.20
2	14.21	14.16	14.10	14.04	14.03	14.09	14.36	14.53	14.18	14.06	13.66	13.16
3	14.21	14.15	14.09	14.04	14.02	14.09	14.39	14.52	14.18	14.05	13.64	13.14
4	14.21	14.15	14.09	14.04	14.04	14.09	14.43	14.50	14.19	14.05	13.62	13.11
5	14.21	14.14	14.09	14.04	14.06	14.09	14.44	14.48	14.20	14.07	13.60	13.09
6	14.20	14.15	14.09	14.04	14.06	14.10	14.45	14.46	14.22	14.06	13.58	13.07
7	14.18	14.15	14.09	14.04	14.05	14.10	14.46	14.41	14.24	14.05	13.55	13.05
8	14.21	14.15	14.08	14.04	14.05	14.10	14.46	14.41	14.21	14.04	13.52	13.02
9	14.22	14.16	14.07	14.04	14.04	14.11	14.45	14.41	14.20	14.02	13.49	13.00
10	14.24	14.15	14.07	14.03	14.05	14.15	14.46	14.41	14.22	14.02	13.50	12.97
11	14.26	14.15	14.07	14.03	14.04	14.15	14.46	14.40	14.24	14.00	13.48	12.94
12	14.25	14.16	14.07	14.03	14.04	14.19	14.46	14.39	14.23	13.97	13.46	12.91
13	14.27	14.15	14.07	14.03	14.05	14.20	14.47	14.38	14.21	13.95	13.43	12.88
14	14.26	14.15	14.07	14.03	14.05	14.20	14.46	14.37	14.20	13.93	13.40	12.88
15	14.20	14.14	14.07	14.03	14.04	14.21	14.45	14.34	14.19	13.91	13.39	12.86
16	14.26	14.15	14.07	14.03	14.04	14.21	14.44	14.33	14.18	13.89	13.37	12.84
17	14.25	14.15	14.07	14.03	14.04	14.22	14.43	14.32	14.18	13.87	13.35	12.83
18	14.24	14.15	14.07	14.03	14.05	14.23	14.44	14.31	14.21	13.86	13.33	12.82
19	14.23	14.14	14.07	14.02	14.08	14.24	14.46	14.30	14.20	13.85	13.31	12.82
20	14.22	14.14	14.07	14.02	14.10	14.25	14.47	14.29	14.20	13.82	13.29	12.82
21	14.22	14.13	14.06	14.03	14.11	14.29	14.46	14.27	14.19	13.81	13.27	12.84
22	14.22	14.13	14.06	14.03	14.11	14.30	14.45	14.26	14.18	13.81	13.25	12.84
23	14.22	14.10	14.06	14.03	14.11	14.30	14.50	14.25	14.15	13.82	13.23	12.82
24	14.22	14.10	14.06	14.03	14.11	14.30	14.59	14.22	14.14	13.78	13.32	12.79
25	14.22	14.09	14.06	14.03	14.11	14.31	14.58	14.21	14.12	13.75	13.34	12.78
26	14.25	14.08	14.06	14.03	14.10	14.31	14.58	14.22	14.10	13.74	13.31	12.78
27	14.24	14.08	14.06	14.03	14.10	14.31	14.56	14.22	14.07	13.73	13.31	12.77
28	14.22	14.08	14.05	14.03	14.10	14.32	14.58	14.22	14.05	13.71	13.30	12.76
29	14.21	14.07	14.05	14.03	.....	14.33	14.57	14.20	14.05	13.70	13.30	12.75
30	14.20	14.09	14.05	14.03	.....	14.34	14.55	14.19	14.05	13.71	13.26	12.73
31	14.19	.....	14.05	14.03	.....	14.35	.....	14.16	.....	13.70	13.23	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa

LOCATION.—Lat. 43°22'40", long. 95°10'40", in W½ sec. 23, T. 99 N., R. 37 W., at pumping station of Lakeside Laboratory on west shore, 4 miles northwest of Milford.

RECORDS AVAILABLE.—May 1933 to September 1955. Prior to October 1937, published as "at Arnolds Park."

GAGE.—Water-stage recorder. Datum of gage is 1,391.76 ft. above mean sea level, datum of 1929, and 94.51 ft. above Iowa Lake Survey datum. Prior to June 17, 1938, staff gage at State pier at Arnolds Park at same datum.

EXTREMES.—1933-55: Maximum gage height, 5.42 ft. June 15, 1945; minimum observed, 1.38 ft. Nov. 17, 19, 24, 25, 1934, Jan. 27, 1935.

Daily Gage Height, in Feet, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	3.07	2.84	2.57	2.59	2.60	2.93	3.51	4.84	4.61	5.07	4.80	4.49
2	3.07	2.83	2.59	2.61	2.61	2.95	3.56	4.92	4.62	5.07	4.84	4.48
3	3.07	2.82	2.59	2.61	2.60	3.02	3.65	4.93	4.61	5.08	4.83	4.47
4	3.07	2.79	2.58	2.61	2.60	3.03	3.81	4.92	4.59	5.08	4.78	4.45
5	3.07	2.78	2.59	2.62	2.61	3.03	3.95	4.91	4.58	5.04	4.77	4.44
6	3.07	2.76	2.60	2.62	2.61	3.03	4.10	4.88	4.50	5.02	4.75	4.43
7	3.07	2.74	2.62	2.62	2.61	3.03	4.21	4.86	4.56	5.01	4.73	4.41
8	3.12	2.73	2.62	2.62	2.62	3.03	4.28	4.85	4.56	5.17	4.72	4.42
9	3.10	2.71	2.61	2.62	2.63	3.02	4.35	4.87	4.55	5.25	4.70	4.49
10	3.08	2.70	2.60	2.62	2.62	3.05	4.39	4.88	4.53	5.27	4.72	4.52
11	3.00	2.69	2.61	2.61	2.62	3.10	4.44	4.86	4.53	5.33	4.70	4.53
12	3.04	2.67	2.61	2.61	2.62	3.16	4.48	4.85	4.52	5.33	4.67	4.73
13	3.02	2.67	2.60	2.61	2.61	3.16	4.50	4.82	4.51	5.33	4.71	4.78
14	3.01	2.66	2.60	2.61	2.61	3.16	4.52	4.81	4.50	5.30	4.70	4.78
15	3.00	2.66	2.60	2.60	2.60	3.16	4.54	4.81	4.50	5.28	4.71	4.75
16	2.99	2.67	2.60	2.61	2.60	3.16	4.54	4.80	4.51	5.28	4.69	4.74
17	2.98	2.67	2.60	2.61	2.60	3.16	4.54	4.80	4.55	5.23	4.67	4.73
18	2.98	2.67	2.60	2.61	2.60	3.19	4.55	4.79	4.58	5.21	4.64	4.72
19	2.98	2.67	2.60	2.60	2.60	3.20	4.54	4.78	4.58	5.18	4.62	4.71
20	2.94	2.64	2.60	2.60	2.60	3.20	4.54	4.78	4.57	5.15	4.61	4.70
21	2.93	2.64	2.60	2.60	2.60	3.20	4.58	4.76	4.59	5.15	4.58	4.69
22	2.92	2.63	2.60	2.60	2.61	3.20	4.58	4.74	4.54	5.11	4.56	4.68
23	2.91	2.60	2.60	2.61	2.61	3.22	4.57	4.72	4.57	5.08	4.53	4.67
24	2.90	2.59	2.60	2.60	2.63	3.23	4.58	4.68	4.74	5.04	4.51	4.70
25	2.88	2.59	2.60	2.60	2.65	3.23	4.59	4.67	4.80	5.01	4.49	4.68
26	2.87	2.59	2.60	2.59	2.74	3.24	4.59	4.63	5.02	4.98	4.48	4.65
27	2.87	2.58	2.60	2.60	2.74	3.26	4.62	4.58	5.08	5.03	4.53	4.62
28	2.86	2.57	2.60	2.60	2.85	3.30	4.62	4.55	5.12	4.98	4.54	4.60
29	2.85	2.57	2.60	2.60	.....	3.36	4.64	4.53	5.11	4.93	4.54	4.58
30	2.85	2.56	2.60	2.60	.....	3.42	4.69	4.52	5.09	4.88	4.53	4.58
31	2.84	.....	2.60	2.60	.....	3.48	.....	4.55	.....	4.85	4.52	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4.57	4.44	4.39	4.49	4.52	4.62	5.31	5.15	4.53	4.70	4.25	4.21
2	4.57	4.42	4.40	4.49	4.52	4.63	5.36	5.16	4.51	4.68	4.25	4.18
3	4.57	4.40	4.40	4.49	4.51	4.63	5.40	5.15	4.49	4.66	4.24	4.15
4	4.58	4.40	4.40	4.49	4.51	4.62	5.41	5.10	4.48	4.62	4.24	4.13
5	4.59	4.40	4.41	4.49	4.51	4.61	5.41	5.08	4.46	4.58	4.23	4.12
6	4.59	4.39	4.41	4.49	4.50	4.61	5.41	5.06	4.45	4.58	4.20	4.11
7	4.57	4.39	4.42	4.49	4.50	4.60	5.40	5.04	4.45	4.72	4.20	4.08
8	4.55	4.39	4.42	4.49	4.50	4.60	5.39	5.04	4.47	4.72	4.23	4.07
9	4.54	4.38	4.41	4.48	4.50	4.60	5.41	5.03	4.46	4.69	4.23	4.06
10	4.54	4.38	4.41	4.48	4.50	4.60	5.40	5.01	4.45	4.67	4.22	4.05
11	4.53	4.38	4.42	4.48	4.52	4.61	5.39	4.97	4.42	4.66	4.22	4.04
12	4.52	4.39	4.43	4.48	4.54	4.61	5.39	4.94	4.41	4.63	4.20	4.03
13	4.51	4.40	4.45	4.48	4.56	4.65	5.39	4.91	4.42	4.61	4.18	4.04
14	4.51	4.38	4.46	4.50	4.58	4.64	5.37	4.89	4.56	4.61	4.18	4.05
15	4.51	4.36	4.46	4.52	4.61	4.62	5.35	4.88	4.74	4.60	4.23	4.03
16	4.50	4.37	4.46	4.51	4.61	4.59	5.34	4.87	4.79	4.55	4.28	4.01
17	4.49	4.38	4.47	4.51	4.62	4.58	5.32	4.81	4.77	4.54	4.27	4.00
18	4.48	4.38	4.48	4.50	4.61	4.62	5.30	4.76	4.76	4.53	4.26	3.98
19	4.47	4.37	4.47	4.52	4.62	4.68	5.29	4.74	4.72	4.52	4.25	3.96
20	4.46	4.37	4.48	4.52	4.65	4.73	5.28	4.73	4.72	4.51	4.28	3.95
21	4.45	4.36	4.48	4.52	4.64	4.75	5.30	4.71	4.69	4.50	4.28	3.93
22	4.52	4.36	4.48	4.55	4.64	4.82	5.31	4.70	4.67	4.48	4.25	3.92
23	4.51	4.36	4.48	4.55	4.64	4.85	5.28	4.70	4.67	4.45	4.23	3.90
24	4.51	4.36	4.48	4.55	4.63	4.85	5.26	4.69	4.68	4.42	4.20	3.89
25	4.50	4.37	4.50	4.54	4.63	4.86	5.25	4.66	4.73	4.38	4.18	3.88
26	4.50	4.38	4.50	4.53	4.62	4.88	5.24	4.64	4.71	4.37	4.20	3.86
27	4.48	4.39	4.49	4.53	4.62	4.89	5.26	4.65	4.72	4.36	4.21	3.85
28	4.48	4.39	4.49	4.53	4.63	4.92	5.25	4.61	4.72	4.35	4.24	3.85
29	4.46	4.39	4.49	4.53	4.63	4.97	5.21	4.58	4.72	4.30	4.26	3.83
30	4.48	4.39	4.49	4.53	.....	5.15	5.18	4.57	4.69	4.28	4.25	3.82
31	4.46	.....	4.49	4.52	.....	5.25	.....	4.55	.....	4.27	4.24	.....
1952-53												
1	3.81	3.33	3.20	3.22	3.30	3.38	3.05	4.32	4.35	5.04	4.55	4.23
2	3.78	3.32	3.20	3.23	3.30	3.42	3.96	4.35	4.33	5.01	4.52	4.21
3	3.74	3.30	3.21	3.23	3.30	3.43	3.98	4.36	4.36	4.97	4.63	4.20
4	3.71	3.30	3.20	3.23	3.30	3.43	3.99	4.36	4.36	4.95	4.65	4.17
5	3.68	3.28	3.20	3.24	3.30	3.43	3.99	4.37	4.34	4.96	4.65	4.15
6	3.66	3.27	3.20	3.24	3.30	3.44	3.99	4.37	4.32	4.96	4.67	4.13
7	3.65	3.26	3.20	3.24	3.30	3.46	4.00	4.36	4.44	4.94	4.67	4.10
8	3.63	3.25	3.20	3.24	3.30	3.46	4.02	4.36	4.99	4.91	4.66	4.08
9	3.62	3.24	3.20	3.24	3.30	3.46	4.02	4.35	5.08	4.88	4.63	4.06
10	3.60	3.22	3.20	3.24	3.32	3.47	4.02	4.38	5.10	4.84	4.60	4.05
11	3.59	3.21	3.19	3.24	3.33	3.50	4.02	4.37	5.13	4.80	4.59	4.04
12	3.57	3.21	3.18	3.24	3.33	3.54	4.02	4.38	5.14	4.77	4.59	4.02
13	3.56	3.21	3.18	3.25	3.33	3.56	4.01	4.36	5.15	4.76	4.60	3.98
14	3.56	3.21	3.18	3.26	3.33	3.60	4.02	4.35	5.15	4.74	4.60	3.96
15	3.54	3.20	3.18	3.28	3.33	3.70	4.07	4.34	5.14	4.71	4.59	3.95
16	3.52	3.20	3.17	3.28	3.33	3.72	4.06	4.34	5.12	4.68	4.58	3.93
17	3.50	3.20	3.17	3.29	3.33	3.74	4.06	4.33	5.10	4.66	4.57	3.92
18	3.48	3.18	3.17	3.29	3.33	3.78	4.04	4.32	5.08	4.65	4.55	3.90
19	3.48	3.18	3.18	3.29	3.34	3.79	4.04	4.30	5.08	4.63	4.54	3.87
20	3.46	3.18	3.19	3.30	3.39	3.80	4.03	4.31	5.04	4.63	4.52	3.89
21	3.42	3.18	3.19	3.30	3.40	3.83	4.03	4.32	5.01	4.63	4.49	3.87
22	3.41	3.18	3.20	3.30	3.40	3.87	4.04	4.34	4.98	4.60	4.46	3.85
23	3.41	3.17	3.21	3.30	3.40	3.88	4.04	4.33	4.95	4.57	4.44	3.82
24	3.41	3.16	3.21	3.30	3.40	3.89	4.09	4.33	4.92	4.53	4.41	3.82
25	3.41	3.20	3.21	3.30	3.40	3.89	4.18	4.35	4.94	4.50	4.38	3.82
26	3.41	3.22	3.21	3.30	3.40	3.90	4.20	4.33	4.91	4.49	4.36	3.80
27	3.39	3.22	3.21	3.30	3.40	3.90	4.20	4.32	5.04	4.48	4.34	3.78
28	3.38	3.22	3.21	3.30	3.40	3.90	4.22	4.35	5.09	4.49	4.31	3.78
29	3.35	3.22	3.22	3.30	.....	3.90	4.24	4.37	5.07	4.56	4.29	3.76
30	3.34	3.21	3.22	3.30	.....	3.92	4.29	4.37	5.05	4.57	4.26	3.74
31	3.33	.....	3.21	3.30	.....	3.94	.....	4.35	.....	4.59	4.25	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	3.72	3.42	3.35	3.38	3.39	3.65	4.06	4.20	4.10	4.70	4.35	4.23
2	3.70	3.41	3.35	3.38	3.39	3.65	4.09	4.23	4.11	4.69	4.35	4.22
3	3.69	3.39	3.42	3.38	3.39	3.65	4.07	4.22	4.15	4.71	4.32	4.20
4	3.67	3.39	3.43	3.38	3.39	3.65	4.06	4.20	4.13	4.70	4.30	4.18
5	3.65	3.36	3.45	3.38	3.39	3.65	4.06	4.20	4.13	4.68	4.27	4.21
6	3.64	3.34	3.44	3.37	3.39	3.65	4.06	4.20	4.12	4.65	4.24	4.18
7	3.61	3.32	3.43	3.38	3.40	3.65	4.07	4.18	4.10	4.64	4.23	4.16
8	3.59	3.31	3.43	3.38	3.40	3.65	4.07	4.17	4.10	4.60	4.22	4.14
9	3.58	3.30	3.43	3.38	3.40	3.65	4.06	4.16	4.10	4.60	4.21	4.16
10	3.57	3.30	3.42	3.38	3.40	3.65	4.07	4.16	4.10	4.58	4.19	4.15
11	3.56	3.30	3.42	3.38	3.40	3.66	4.05	4.16	4.10	4.56	4.17	4.15
12	3.54	3.28	3.42	3.38	3.40	3.70	4.05	4.15	4.10	4.55	4.15	4.12
13	3.53	3.28	3.41	3.38	3.40	3.74	4.04	4.15	4.10	4.51	4.13	4.12
14	3.52	3.28	3.41	3.38	3.40	3.73	4.05	4.14	4.09	4.50	4.12	4.11
15	3.52	3.27	3.40	3.38	3.40	3.73	4.09	4.14	4.09	4.46	4.11	4.10
16	3.53	3.28	3.39	3.38	3.40	3.74	4.11	4.13	4.08	4.44	4.14	4.15
17	3.57	3.27	3.38	3.38	3.39	3.78	4.09	4.12	4.10	4.42	4.12	4.15
18	3.56	3.28	3.38	3.38	3.39	3.86	4.10	4.11	4.40	4.40	4.17	4.14
19	3.56	3.36	3.38	3.38	3.41	3.95	4.10	4.10	4.64	4.38	4.16	4.13
20	3.56	3.41	3.38	3.39	3.56	3.98	4.09	4.08	4.77	4.38	4.15	4.12
21	3.55	3.38	3.40	3.38	3.60	4.00	4.09	4.07	4.84	4.38	4.13	4.08
22	3.53	3.39	3.40	3.38	3.60	4.00	4.08	4.05	4.88	4.35	4.15	4.07
23	3.51	3.38	3.40	3.38	3.61	4.02	4.07	4.06	4.86	4.35	4.18	4.04
24	3.51	3.37	3.39	3.38	3.61	4.03	4.09	4.08	4.85	4.33	4.18	4.03
25	3.50	3.37	3.39	3.38	3.63	4.05	4.09	4.08	4.84	4.32	4.23	4.02
26	3.49	3.36	3.39	3.38	3.63	4.06	4.09	4.09	4.84	4.30	4.23	4.02
27	3.47	3.35	3.39	3.40	3.64	4.07	4.10	4.08	4.80	4.29	4.29	4.01
28	3.47	3.35	3.39	3.40	3.64	4.08	4.10	4.08	4.78	4.36	4.31	4.04
29	3.45	3.35	3.39	3.40	.....	4.07	4.11	4.08	4.75	4.37	4.30	4.10
30	3.45	3.35	3.38	3.39	.....	4.06	4.19	4.07	4.72	4.40	4.28	4.10
31	3.44	.....	3.38	3.39	.....	4.06	.....	4.11	.....	4.38	4.25	.....
1954-55												
1	4.10	4.01	3.89	3.82	3.83	3.94	4.24	4.55	4.27	4.16	3.83	3.38
2	4.10	3.98	3.88	3.82	3.83	3.94	4.25	4.55	4.28	4.14	3.81	3.36
3	4.10	3.96	3.88	3.82	3.83	3.94	4.26	4.54	4.28	4.13	3.79	3.32
4	.....	3.96	3.88	3.82	3.86	3.94	4.30	4.52	4.29	4.13	3.76	3.30
5	.....	3.95	3.88	3.82	3.88	3.94	4.30	4.51	4.31	4.14	3.74	3.28
6	.....	3.96	3.87	3.82	3.88	3.94	4.31	4.49	4.32	4.13	3.73	3.26
7	.....	3.95	3.87	3.82	3.88	3.95	4.31	4.47	4.32	4.12	3.70	3.24
8	4.07	3.96	3.86	3.82	3.88	3.96	4.31	4.46	4.30	4.12	3.67	3.21
9	4.08	3.95	3.85	3.82	3.88	4.01	4.31	4.46	4.28	4.11	3.67	3.18
10	4.11	3.94	3.85	3.82	3.87	4.07	4.31	4.45	4.28	4.12	3.74	3.16
11	4.12	3.95	3.85	3.82	3.87	4.11	4.31	4.44	4.30	4.10	3.72	3.12
12	4.10	3.94	3.85	3.82	3.87	4.13	4.32	4.43	4.28	4.07	3.69	3.09
13	4.13	3.95	3.85	3.82	3.87	4.14	4.32	4.42	4.26	4.05	3.66	3.07
14	4.12	3.94	3.85	3.82	3.87	4.15	4.31	4.41	4.25	4.03	3.63	3.05
15	4.10	3.92	3.85	3.82	3.87	4.15	4.30	4.38	4.24	4.02	3.61	3.04
16	4.09	3.93	3.85	3.81	3.87	4.15	4.31	4.37	4.22	4.00	3.60	3.02
17	4.08	3.93	3.85	3.81	3.87	4.16	4.31	4.36	4.22	3.98	3.58	3.01
18	4.07	3.93	3.84	3.81	3.89	4.17	4.33	4.35	4.24	3.97	3.57	3.00
19	4.05	3.92	3.84	3.81	3.92	4.17	4.35	4.34	4.24	3.96	3.55	2.99
20	4.05	3.91	3.84	3.81	3.94	4.19	4.37	4.33	4.24	3.95	3.53	2.99
21	4.05	3.92	3.84	3.82	3.94	4.22	4.37	4.32	4.22	3.93	3.52	3.03
22	4.05	3.92	3.84	3.82	3.94	4.22	4.36	4.30	4.21	3.95	3.49	3.03
23	4.04	3.90	3.83	3.82	3.94	4.21	4.42	4.29	4.19	3.97	3.47	3.01
24	4.05	3.90	3.84	3.83	3.94	4.21	4.55	4.26	4.17	3.93	3.51	2.98
25	4.05	3.88	3.84	3.83	3.94	4.20	4.55	4.25	4.16	3.91	3.53	2.97
26	4.07	3.86	3.84	3.83	3.94	4.20	4.55	4.27	4.14	3.89	3.51	2.97
27	4.07	3.80	3.83	3.83	3.94	4.20	4.55	4.28	4.11	3.89	3.50	2.96
28	4.06	3.86	3.83	3.83	3.94	4.20	4.57	4.29	4.09	3.87	3.49	2.96
29	4.04	3.85	3.82	3.83	.....	4.21	4.56	4.28	4.08	3.87	3.48	2.94
30	4.02	3.88	3.82	3.83	.....	4.22	4.55	4.26	4.09	3.86	3.44	2.92
31	4.01	.....	3.82	3.83	.....	4.23	.....	4.24	.....	3.85	3.42	.....

Little Sioux River at Correctionville, Iowa

LOCATION.—Lat. 42°28′, long. 95°47′, in N½ sec. 1, T. 88 N., R. 43 W., on right bank 10 ft. upstream from bridge on U. S. Highway 20, 0.2 mile upstream from Bacon Creek, 0.5 mile west of Correctionville, and 0.8 mile downstream from Pierson Creek.

DRAINAGE AREA.—2,450 sq. mi. approximately.

RECORDS AVAILABLE.—May 1918 to July 1925, October 1928 to July 1932, June 1936 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,096.49 ft. above mean sea level, datum of 1929. Prior to July 16, 1929, chain gage at site 0.2 mile downstream at datum 1.25 ft. lower. July 16, 1929, to Nov. 7, 1938, chain or wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—23 years (1918-20, 1929-31, 1936-55), 764 cfs (553,100 acre-ft. per year).

EXTREMES.—1918-25, 1928-32, 1936-55: Maximum discharge, 20,900 cfs June 21, 1954 (gage height, 23.36 ft.); minimum daily, 2.6 cfs July 17, 1936, caused by construction dam above gage.

Flood of June 23 or 24, 1891, reached a stage of 29.34 ft., present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

REMARKS.—Records good except those for period of ice effect, which are poor. Records of water temperatures and sediment loads are given in Inowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	178	98	67	44	28	800	6,480	4,920	1,400	2,850	1,120	1,760
2.....	336	97	*68	44	27	580	5,600	5,100	2,350	3,000	*1,670	1,540
3.....	268	102	67	42	27	445	5,200	5,400	2,700	*3,430	1,440	1,400
4.....	219	97	66	42	27	347	*6,360	5,400	2,850	3,790	1,280	1,320
5.....	226	96	66	40	27	300	8,540	5,400	3,000	4,440	1,280	*1,240
6.....	253	95	64	40	*27	*578	*12,400	5,700	3,100	5,100	1,200	1,160
7.....	253	94	62	38	27	400	*17,000	5,200	3,370	3,990	1,120	1,080
8.....	236	95	62	38	27	264	16,600	4,360	3,550	3,610	1,120	1,040
9.....	215	90	60	38	27	240	12,800	*3,850	3,000	3,490	1,080	1,400
10.....	201	81	60	37	27	210	10,200	3,790	2,400	3,490	1,120	1,670
11.....	*183	77	58	37	30	200	8,160	3,490	2,080	2,750	1,040	2,850
12.....	166	79	58	*37	35	190	7,120	3,050	1,900	2,500	1,040	4,520
13.....	158	92	56	37	40	180	6,360	2,800	1,720	3,000	1,850	4,360
14.....	148	*94	56	37	35	170	5,800	2,700	1,540	3,100	5,400	4,520
15.....	140	103	54	37	32	165	5,200	2,450	*1,490	3,050	5,600	4,130
16.....	134	100	54	37	30	160	4,680	2,160	1,400	2,950	4,600	3,790
17.....	130	94	52	37	28	157	4,060	2,120	1,400	3,000	5,600	3,850
18.....	127	98	52	37	27	157	3,070	1,890	1,670	3,100	3,790	3,920
19.....	121	99	50	37	30	160	3,310	1,760	2,320	2,850	3,250	3,920
20.....	117	79	50	37	35	145	2,900	1,720	2,300	2,050	3,490	3,430
21.....	115	77	50	36	40	130	2,850	1,720	1,900	2,750	2,750	2,450
22.....	112	94	50	34	50	128	2,750	1,760	1,900	2,900	2,210	2,030
23.....	111	75	50	34	60	197	2,600	1,720	1,940	2,850	1,940	1,800
24.....	109	85	50	32	70	371	2,850	1,580	2,120	2,050	1,720	1,720
25.....	109	67	50	32	100	340	2,600	1,440	2,030	2,650	1,620	1,670
26.....	109	66	48	30	200	2,500	2,600	1,360	2,300	2,550	1,490	1,670
27.....	109	69	48	30	395	6,990	2,550	1,240	2,650	1,980	2,030	1,580
28.....	105	68	46	30	1,200	*7,680	2,500	1,120	2,850	1,580	2,800	1,580
29.....	104	67	46	28	.....	7,680	2,600	1,080	2,750	1,440	2,500	1,490
30.....	102	67	45	28	.....	7,250	3,460	1,000	2,750	1,320	2,300	1,400
31.....	102	.....	45	28	.....	7,120	.....	1,080	.....	1,240	2,030	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1950; Jan. 1 to Feb. 26, Mar. 5-7, 9-16, 26, 1951.

Little Sioux River at Correctionville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	1,300	980	722	430	580	1,430	7,380	1,460	688	*1,060	383	556
2.....	*1,220	920	820	420	660	1,230	*9,480	1,380	638	1,340	428	*401
3.....	1,220	860	860	410	740	1,100	7,830	1,340	605	1,140	475	380
4.....	1,500	640	840	400	830	980	*10,100	1,300	556	980	345	315
5.....	1,340	470	*860	385	780	900	8,760	1,220	*572	860	320	271
6.....	1,380	560	860	380	660	860	7,250	1,180	550	628	*312	241
7.....	1,340	*660	840	380	*500	1,420	6,480	1,140	539	*4,840	310	225
8.....	1,340	800	820	380	640	1,260	5,800	*1,140	749	4,280	305	209
9.....	1,260	860	800	*375	730	1,060	5,200	1,100	638	2,750	295	194
10.....	1,180	860	740	370	940	*820	4,580	1,140	572	2,450	292	180
11.....	1,140	820	705	370	1,760	900	4,120	1,140	539	2,050	266	174
12.....	1,100	840	654	370	2,500	2,300	3,820	1,100	507	1,800	262	168
13.....	1,060	860	413	370	3,000	4,060	3,760	1,100	507	1,500	266	162
14.....	1,060	840	227	370	3,700	1,850	3,540	1,060	608	1,340	275	178
15.....	1,000	800	398	370	3,300	2,100	3,260	1,020	588	1,180	273	168
16.....	980	760	459	370	3,000	2,200	3,050	1,020	588	1,060	418	162
17.....	940	705	523	375	2,600	2,550	2,900	980	622	1,000	350	150
18.....	920	622	560	375	2,400	3,150	2,800	940	820	940	318	154
19.....	900	540	570	540	2,150	4,580	2,650	900	1,020	900	276	140
20.....	900	560	570	1,800	2,000	5,000	2,500	860	1,390	820	273	146
21.....	920	600	560	1,040	1,800	4,240	2,400	840	1,180	780	247	141
22.....	1,000	620	550	800	1,500	3,540	2,350	840	1,020	705	225	145
23.....	1,060	480	530	690	1,370	3,000	2,300	960	940	671	213	142
24.....	1,100	420	510	580	1,200	2,700	2,200	960	860	622	204	138
25.....	1,140	360	500	530	1,100	2,400	2,100	920	860	588	192	138
26.....	1,180	430	480	500	1,000	2,100	2,050	880	820	539	188	136
27.....	1,180	520	470	470	1,100	1,900	1,950	880	920	507	183	131
28.....	1,140	570	460	460	1,200	2,300	1,800	860	900	491	365	129
29.....	1,100	620	460	440	1,250	3,760	1,660	800	980	459	507	125
30.....	1,060	670	450	430	.....	5,800	1,580	760	980	428	491	124
31.....	1,020	.....	440	490	.....	6,480	.....	705	.....	413	507	.....
1952-53												
1.....	120	118	75	80	105	170	1,070	1,220	587	2,390	720	337
2.....	115	117	75	82	105	210	*1,070	1,380	*566	2,840	910	324
3.....	117	114	*75	82	105	220	1,110	1,550	550	*3,240	1,400	312
4.....	113	*117	76	84	105	210	1,070	1,660	552	3,140	*1,500	*303
5.....	111	118	78	84	*105	*203	1,030	*1,730	545	2,590	1,500	285
6.....	111	117	80	86	105	190	1,010	1,740	552	2,140	2,240	271
7.....	*113	112	82	86	105	180	970	1,660	560	1,840	2,390	257
8.....	118	117	84	*88	105	160	950	1,550	4,500	1,640	2,140	247
9.....	119	119	86	88	105	200	910	1,420	7,780	1,600	1,990	234
10.....	120	117	88	90	105	300	870	1,320	*9,940	1,550	1,550	225
11.....	119	119	90	90	105	450	830	1,210	6,750	1,370	1,420	213
12.....	121	119	88	90	105	800	790	1,090	13,600	1,240	1,260	201
13.....	123	121	86	92	105	1,240	755	1,010	13,400	1,150	1,150	192
14.....	121	121	82	92	105	1,990	720	902	9,350	1,070	1,150	186
15.....	119	121	80	94	105	2,140	772	918	7,790	1,010	1,240	182
16.....	119	121	78	94	105	1,700	850	890	7,000	950	1,190	174
17.....	120	124	76	96	105	1,740	850	834	6,090	890	1,030	167
18.....	119	124	73	96	105	2,090	810	822	5,170	850	930	160
19.....	119	123	70	96	105	2,490	790	772	4,110	790	850	155
20.....	119	121	70	99	105	*2,340	755	727	3,440	755	772	148
21.....	119	124	72	*99	105	2,140	738	700	2,960	738	720	141
22.....	119	124	72	99	105	2,090	702	734	2,900	720	650	138
23.....	118	124	72	100	105	2,090	668	724	2,300	685	615	135
24.....	119	124	74	100	105	1,740	685	762	2,020	650	562	134
25.....	119	126	74	100	105	1,500	755	822	4,240	615	528	133
26.....	119	84	72	105	110	1,320	755	776	3,190	598	494	131
27.....	117	80	76	105	120	1,190	810	720	2,200	598	462	128
28.....	114	78	76	105	150	1,070	930	682	2,530	562	431	127
29.....	115	76	78	105	.....	990	1,030	654	2,300	650	388	125
30.....	119	75	78	105	.....	1,110	1,150	629	2,250	1,010	375	123
31.....	119	.....	80	105	.....	1,110	.....	594	.....	910	362	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 4-17, 19-30, Dec. 18-31, 1951; Jan. 1 to Mar. 6, Mar. 23-27, Nov. 27 to Dec. 31, 1952; Jan. 1 to Mar. 12, 1953.

Little Sioux River at Correctionville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	120	117	139	97	40	628	*795	501	1,820	4,120	456	848
2	118	117	*141	95	40	*548	744	564	1,070	*3,680	442	710
3	116	117	174	94	*40	300	694	727	1,300	3,070	442	628
4	113	*116	213	92	42	220	644	956	*1,180	2,620	*414	564
5	111	111	203	91	44	250	612	*1,150	1,080	2,220	394	516
6	109	105	169	*90	46	300	564	1,180	1,000	1,990	360	548
7	*108	110	160	83	48	350	621	1,110	913	1,810	356	486
8	110	116	182	78	52	400	704	994	816	1,630	350	442
9	112	122	*120	74	55	501	628	902	734	1,500	348	*428
10	114	130	132	70	60	568	596	795	1,370	1,380	321	428
11	117	*131	140	66	66	736	564	727	*3,550	1,260	308	400
12	119	131	145	*62	72	724	532	660	2,820	1,150	287	380
13	122	134	150	59	84	520	*516	612	2,960	1,070	271	372
14	125	136	140	56	100	370	501	533	1,940	994	263	*367
15	128	137	130	54	115	397	516	505	1,290	920	256	356
16	*132	136	128	54	*145	*556	532	486	1,070	866	*263	350
17	133	135	127	52	150	1,030	596	*442	1,000	830	306	358
18	130	134	122	50	160	1,810	612	414	1,400	778	313	372
19	122	144	120	48	190	2,100	628	400	*9,210	727	375	367
20	118	179	120	46	560	1,940	612	383	*12,800	677	400	367
21	117	182	118	45	761	1,900	596	358	*17,500	*644	372	375
22	116	176	116	44	952	1,990	564	337	12,400	628	394	378
23	116	166	114	43	866	2,170	516	329	*12,600	596	389	369
24	116	165	112	42	826	2,140	501	342	13,200	564	389	348
25	117	164	110	42	1,060	1,580	488	380	11,700	548	353	323
26	118	156	108	41	872	1,300	486	350	9,430	516	630	308
27	118	150	107	40	795	1,220	456	442	7,590	486	994	295
28	118	142	106	40	761	1,110	428	710	6,480	471	1,150	282
29	118	136	103	40	.....	1,070	428	620	5,570	471	1,160	274
30	118	139	102	40	.....	956	471	583	*4,720	471	1,070	276
31	117	.....	100	40	.....	866	.....	1,820	.....	456	994	.....
1954-55												
1	310	486	246	184	93	60	1,340	1,220	240	112	66	20
2	382	442	250	189	*92	108	1,260	1,260	228	112	63	20
3	400	414	178	185	91	490	1,110	1,070	*218	99	57	19
4	388	*400	210	178	88	450	1,410	956	242	97	*53	18
5	376	376	238	175	86	300	1,260	*866	268	1,270	48	17
6	376	388	224	166	84	228	*1,110	778	268	557	69	22
7	376	428	208	164	82	180	1,030	710	289	*184	63	*18
8	*388	428	226	162	79	500	994	644	278	153	45	16
9	400	414	220	164	77	1,500	920	612	264	182	48	14
10	556	388	214	162	75	2,500	812	580	264	1,660	140	12
11	596	388	218	151	73	2,650	744	548	268	310	80	11
12	580	365	238	148	71	2,100	694	532	278	193	59	11
13	612	365	238	146	69	1,720	644	486	262	157	48	11
14	660	354	*234	136	67	2,110	612	456	246	192	41	12
15	710	343	230	130	*65	1,850	564	414	228	246	38	*12
16	710	*343	214	132	64	1,340	532	376	*216	148	*37	9.6
17	761	343	200	126	63	*1,150	501	354	208	130	37	9.8
18	727	332	195	*122	62	994	*456	*332	208	118	37	7.5
19	677	321	200	127	61	884	442	310	202	*108	35	14
20	*628	321	202	122	61	830	414	289	240	148	32	14
21	596	310	198	110	60	550	400	278	254	118	30	17
22	564	310	204	106	60	480	388	260	220	116	29	17
23	548	300	197	103	60	400	414	252	216	203	26	19
24	532	300	198	100	60	340	612	236	198	133	25	15
25	516	289	206	99	60	300	778	228	173	115	24	14
26	516	278	193	99	60	332	1,150	220	153	93	24	17
27	532	278	185	100	60	428	1,340	218	136	92	24	20
28	516	278	146	99	60	516	1,420	220	124	89	22	22
29	501	264	191	96	.....	596	1,380	244	114	78	20	35
30	501	250	184	95	.....	934	1,340	240	108	69	21	38
31	501	.....	189	95	.....	1,380	.....	246	.....	68	21	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1953; Jan. 1 to Feb. 19, Mar. 3-8, 1954; Feb. 4 to Mar. 10, Mar. 22-25, 1955.

Little Sioux River at Correctionville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	161	86.4	55.2	36.0	96.7	1,491	5,983	2,847	2,291	2,905	2,312	2,343
1951-52	1,128	675	602	505	1,554	2,518	4,089	1,030	759	1,272	315	201
1952-53	118	113	77.9	94.1	107	1,145	874	1,041	4,324	1,316	1,063	196
1953-54	119	138	134	60.3	322	985	571	655	5,017	1,203	478	417
1954-55	530	350	209	135	70.8	910	869	498	220	237	44.9	16.6

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.066	0.035	0.023	0.015	0.039	0.609	2.44	1.16	0.935	1.19	0.944	0.956
1951-52	.460	.276	.246	.206	.634	1.03	1.67	.420	.310	.519	.129	.082
1952-53	.048	.046	.032	.038	.044	.467	.357	.425	1.76	.537	.434	.080
1953-54	.049	.056	.055	.025	.131	.402	.233	.267	2.05	.516	.195	.170
1954-55	.216	.143	.085	.055	.029	.371	.355	.203	.090	.097	.018	.0068

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.08	0.04	0.03	0.02	0.04	0.70	2.72	1.34	1.04	1.37	1.09	1.07
1951-52	.53	.31	.28	.24	.68	1.19	1.86	.48	.35	.60	.15	.09
1952-53	.06	.05	.04	.04	.05	.54	.40	.49	1.97	.62	.50	.09
1953-54	.06	.06	.06	.03	.14	.46	.26	.31	2.28	.59	.23	.19
1954-55	.25	.16	.10	.06	.03	.43	.40	.23	.10	.11	.02	.008

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	9,910	5,140	3,390	2,210	5,370	91,700	356,000	175,100	136,300	178,600	142,200	139,400
1951-52	69,380	40,160	36,990	31,080	89,410	154,800	243,300	63,320	45,150	78,190	19,370	11,960
1952-53	7,250	6,730	4,790	5,790	5,960	70,380	51,950	64,000	257,300	80,890	65,330	11,680
1953-54	7,290	8,200	8,250	3,710	17,860	60,600	34,000	40,290	298,500	77,640	29,410	24,820
1954-55	32,600	20,820	12,840	8,280	3,930	55,930	51,710	30,630	13,110	14,580	2,760	990

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									354	1.96	256,400
1951...	Apr. 7, 1951.	22.58	17,900	27	1,720	0.702	9.54	1,245,000	1,897	10.51	1,373,000
1952...	Apr. 4, 1952.	20.37	10,400	124	1,217	.497	6.76	883,100	1,041	5.79	755,400
1953...	June 12, 1953.	22.09	17,500	70	873	.356	4.85	632,100	880	4.88	637,000
1954...	June 21, 1954.	23.36	20,900	40	843	.344	4.67	610,600	902	5.00	653,100
1955...	July 10, 1955.	15.60	4,280	6.8	343	.140	1.90	248,200			

Peak Discharge (base, 2,500 cfs)

1951: Mar. 29 (3 a.m.) 7,990 cfs (19.47 ft.); Apr. 7 (11 p.m.) 17,900 cfs (22.58 ft.); May 6 (7 a.m.) 5,700 cfs (17.74 ft.); June 7 (9 p.m.) 3,730 cfs (15.27 ft.); June 19 (7 p.m.) 3,490 cfs (14.90 ft.); July 6 (1 to 3 p.m.) 5,200 cfs (17.21 ft.); July 18 (5 a.m.) 3,200 cfs (14.45 ft.); Aug. 14 (9:30 p.m.) 6,480 cfs (18.36 ft); Aug. 17 (6 a.m.) 6,600 cfs (18.51 ft.); Aug. 20 (about 11:30 a.m.) 4,060 cfs (15.84 ft.); Aug. 28 (3 a.m.) 2,950 cfs (13.94 ft.); Sept. 12 (1 p.m.) 4,920 cfs (16.89 ft.).

1952: Feb. 13 (10:30 p.m.) about 3,300 cfs (16.57 ft.); Mar. 13 (1 a.m.) 5,100 cfs (17.07 ft.); Mar. 20 (6 p.m.) 5,100 cfs (17.06 ft.); Mar. 25 (3 a.m.) about 2,900 cfs (17.00 ft.); Apr. 1 (8 a.m.) 7,680 cfs (19.30 ft.); Apr. 4 (10 a.m.) 10,400 cfs (20.37 ft.); July 7 (10 a.m.) 5,700 cfs (17.66 ft.).

1953: June 12 (6 p.m.) 17,500 cfs (22.09 ft.); June 25 (12 p.m.) 5,260 cfs (16.95 ft.); July 3 (10-12 p.m.) 3,290 cfs (13.85 ft.); Aug. 6 (3 p.m.) 2,590 cfs (12.18 ft.).

1954: May 31 (11 p.m.) 2,770 cfs (12.80 ft.); June 11 (2 p.m.) 3,960 cfs (14.57 ft.); June 21 (1:30 a.m.) 20,900 cfs (23.36 ft.).

1955: Mar. 11 (9:30 p.m.) 2,820 cfs (12.93 ft.); July 10 (2 a.m.) 4,280 cfs (15.60 ft.).

Little Sioux River near Kennebec, Iowa

LOCATION.—Lat. 42°05', long. 96°00', in S. ½ sec. 18, T. 84 N., R. 44 W., on left bank 15 ft. downstream from highway bridge, 1.3 miles south of Kennebec, 5.5 miles northeast of Onawa, and 6.5 miles upstream from Maple River.

DRAINAGE AREA.—2,730 sq. mi. approximately.

RECORDS AVAILABLE.—April 1939 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,027.89 ft. above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to May 24, 1950, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—16 years, 879 cfs (636,400 acre-ft. per year).

EXTREMES.—1939-55: Maximum discharge, 13,500 cfs June 22, 1954; maximum gage height, 26.63 ft. June 21, 1954 (before levees broke in vicinity of gage); minimum daily discharge, 24 cfs Jan. 25-31, 1940, Sept. 16-18, 1955.

REMARKS.—Records good except those for periods of ice effect, which are poor. Records of water temperatures and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	228	127	93	60	40	1,800	6,550	5,090	1,380	2,660	1,260	2,200
2	650	127	*92	60	40	964	5,920	5,170	2,150	*2,880	*1,240	1,800
3	415	129	90	60	40	665	*5,410	5,250	3,220	5,170	2,060	1,640
4	304	133	88	60	40	592	5,090	5,250	3,480	3,940	1,480	1,520
5	271	134	86	60	38	680	6,190	5,010	3,600	4,080	1,380	1,450
6	282	131	84	60	38	1,390	7,900	5,090	3,740	4,500	1,380	*1,380
7	304	129	82	60	*38	834	*9,340	5,090	3,940	4,570	1,240	1,310
8	304	129	80	60	38	550	*11,000	4,780	4,570	3,800	1,240	1,200
9	282	126	80	58	38	453	*11,900	*4,290	4,150	3,670	1,140	1,800
10	*260	113	78	58	38	400	11,600	4,290	3,340	3,600	1,170	1,720
11	247	120	76	*57	40	350	12,000	4,010	2,760	3,280	1,110	2,300
12	230	124	76	57	45	300	11,600	3,740	2,400	2,600	1,080	5,330
13	215	*113	74	56	50	270	10,300	3,280	*2,100	2,820	1,480	6,100
14	203	120	72	56	45	250	8,440	3,100	1,840	3,150	3,700	5,920
15	199	130	70	56	40	230	7,100	3,040	1,720	3,100	*6,000	5,170
16	188	130	70	55	39	210	6,280	2,660	1,560	3,040	5,700	4,640
17	180	131	70	55	38	200	5,650	2,660	1,770	3,040	6,500	4,430
18	173	127	68	55	38	190	5,090	2,350	2,220	3,150	6,550	4,430
19	164	127	68	54	38	180	4,710	2,150	2,990	2,980	4,430	4,430
20	158	125	68	54	40	175	4,290	2,100	3,540	2,820	4,500	4,290
21	155	134	66	54	48	*175	3,940	2,010	2,350	2,600	4,430	3,480
22	149	122	66	54	54	170	3,800	2,100	2,010	2,710	3,150	2,710
23	149	120	66	52	60	250	3,600	2,010	2,200	2,930	2,600	2,250
24	147	115	64	52	80	500	3,340	1,960	2,880	2,760	2,200	2,010
25	144	110	64	52	100	1,000	3,340	1,800	2,150	2,710	1,960	1,860
26	141	105	64	51	500	3,590	3,340	1,640	2,880	2,710	1,800	1,860
27	141	105	62	50	802	*8,000	3,280	1,480	2,400	2,500	2,710	1,720
28	137	100	62	48	1,890	7,600	3,150	1,340	2,710	1,920	3,340	1,640
29	136	96	62	46	.....	6,550	3,150	1,240	2,710	1,720	3,280	1,480
30	133	94	62	45	.....	6,820	3,740	1,170	2,600	1,520	2,880	1,340
31	130	.....	60	43	.....	6,010	.....	1,200	.....	1,420	2,500	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1950; Jan. 1 to Feb. 26, Mar. 8-25, 1951.

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	1,240	1,050	810	460	730	1,530	7,150	1,740	842	*1,320	428	605
2.....	*1,170	990	840	450	840	1,400	*7,350	1,630	790	1,380	402	650
3.....	1,200	840	930	440	960	1,200	6,550	1,560	*738	1,600	590	560
4.....	1,800	700	*930	435	1,060	1,080	*7,850	1,490	702	1,320	545	*442
5.....	1,600	610	930	430	1,000	940	8,050	1,420	668	1,100	*415	374
6.....	1,480	*536	960	425	820	1,080	9,060	1,350	668	965	415	324
7.....	1,480	676	960	420	710	1,560	7,060	1,320	650	3,920	402	280
8.....	1,480	780	930	*415	640	1,240	6,670	*1,320	620	6,220	402	260
9.....	1,450	870	930	405	780	1,040	5,870	1,280	965	4,750	388	260
10.....	1,380	960	870	400	950	1,000	5,150	1,280	738	3,060	374	201
11.....	1,310	930	840	400	1,400	1,040	4,590	1,240	620	2,500	361	208
12.....	1,240	900	740	400	*2,450	*1,410	4,350	1,240	560	2,180	336	210
13.....	1,170	900	640	400	3,300	5,220	4,280	1,240	530	1,980	324	208
14.....	1,140	900	380	400	4,000	3,370	4,140	1,210	515	1,880	336	208
15.....	1,110	900	430	400	3,600	2,180	3,930	1,210	790	1,630	336	216
16.....	1,050	870	490	410	3,100	2,460	3,720	1,180	515	1,420	388	208
17.....	1,020	840	560	410	2,750	2,610	3,480	1,140	530	1,280	485	201
18.....	990	750	580	410	2,500	3,180	3,300	1,070	605	1,150	402	176
19.....	960	662	590	800	2,350	4,830	3,120	1,000	930	1,100	374	160
20.....	990	600	600	2,000	2,100	4,990	2,880	1,000	1,240	1,000	388	182
21.....	990	620	590	1,300	1,700	4,670	2,710	1,070	1,800	930	324	176
22.....	1,020	640	580	960	1,540	3,660	2,660	1,040	1,240	860	301	176
23.....	1,080	570	570	760	1,390	3,060	2,610	1,240	1,100	790	280	176
24.....	1,140	510	550	680	1,280	2,500	2,510	1,140	1,040	720	260	170
25.....	1,170	460	530	620	1,200	2,000	2,360	1,070	965	668	260	170
26.....	1,200	400	515	580	1,100	2,100	2,310	1,040	1,000	620	242	170
27.....	1,280	520	500	540	1,280	2,150	2,220	1,070	*2,000	575	251	165
28.....	1,240	620	490	520	1,450	2,360	2,100	1,070	1,320	530	324	165
29.....	1,170	705	480	500	1,600	3,120	1,940	1,040	1,140	500	456	160
30.....	1,140	750	475	480	.....	6,490	1,840	965	1,180	470	590	155
31.....	1,110	.....	470	630	.....	6,850	.....	895	.....	442	560	.....
1952-53												
1.....	150	150	125	115	138	350	1,210	1,260	*710	*2,380	872	*373
2.....	145	150	130	115	138	330	1,180	1,300	713	2,580	802	340
3.....	140	150	130	115	*138	320	*1,240	1,590	674	3,010	1,060	335
4.....	140	150	*132	115	138	310	1,210	1,700	660	3,210	1,620	316
5.....	145	150	135	115	138	300	1,140	1,770	644	2,860	*1,540	302
6.....	145	155	135	*110	140	*298	1,140	1,820	644	2,420	1,060	284
7.....	145	150	140	120	140	300	1,100	*1,810	705	2,100	2,420	274
8.....	145	150	140	120	140	320	1,070	1,760	2,350	1,820	2,220	261
9.....	*150	150	140	120	140	361	1,040	1,650	5,510	1,700	2,140	245
10.....	150	150	140	120	140	402	1,000	1,550	*8,360	1,700	1,940	236
11.....	150	150	140	120	140	470	965	1,450	9,070	1,540	1,580	224
12.....	145	150	140	120	140	808	895	1,320	7,150	1,360	1,540	216
13.....	155	150	135	120	140	1,240	878	1,220	9,840	1,280	1,310	212
14.....	155	*155	135	120	140	1,630	825	1,150	11,200	1,200	1,200	203
15.....	150	155	130	120	130	2,180	790	1,110	10,800	1,030	1,280	195
16.....	150	160	125	125	120	2,060	895	1,080	9,300	960	1,360	191
17.....	150	165	120	125	130	1,880	930	1,040	7,070	908	1,240	188
18.....	150	150	115	125	130	1,980	930	976	5,790	855	1,060	178
19.....	150	150	110	125	130	2,310	878	948	4,790	802	960	173
20.....	150	150	110	125	130	*2,510	878	909	3,800	755	872	169
21.....	150	155	110	130	120	2,260	842	888	3,150	725	802	166
22.....	150	155	110	130	130	2,180	790	808	2,760	695	740	166
23.....	150	155	110	130	135	2,160	738	892	2,480	680	650	167
24.....	155	155	110	130	140	2,020	738	888	2,250	620	635	165
25.....	150	155	110	130	170	1,770	790	954	3,190	575	590	170
26.....	155	140	115	135	200	1,600	808	951	4,080	560	560	167
27.....	150	135	115	135	350	1,420	825	902	2,460	545	515	164
28.....	150	130	115	135	400	1,240	930	864	2,460	530	470	163
29.....	150	125	115	135	.....	1,140	1,070	818	2,470	470	441	157
30.....	150	120	115	135	.....	1,140	1,210	772	2,350	695	414	157
31.....	155	.....	115	135	.....	1,240	.....	730	.....	1,140	386	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 3-5, 20-27, Dec. 12-31, 1951; Jan. 1 to Mar. 6, Mar. 24-27, Nov. 27 to Dec. 31, 1952; Jan. 1 to Mar. 8, 1953. Discharge computed from gage readings or graph based on gage readings Mar. 17, 18, 31, Apr. 1, 9-19, Apr. 30 to May 2, May 5 to Nov. 26, 1952; Aug. 24, 25, 1953.

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	158	144	167	120	50	770	*928	528	*2,450	4,760	515	1,140
2	151	144	170	120	*50	605	856	620	1,520	*4,220	515	960
3	148	*144	*199	120	50	400	788	686	*1,440	3,050	*515	820
4	148	143	242	120	50	250	720	*839	1,470	3,180	485	715
5	148	143	258	*118	50	*199	669	1,040	1,310	2,730	470	640
6	*140	142	238	115	52	250	636	1,160	1,190	2,450	440	620
7	140	135	203	110	54	404	542	1,200	1,060	2,180	426	620
8	148	138	190	105	58	416	721	1,080	935	2,000	426	582
9	147	141	178	100	60	430	737	964	822	1,820	426	550
10	148	*142	170	100	70	542	652	892	784	1,660	399	*485
11	151	144	160	*95	80	652	636	788	*2,400	1,500	386	470
12	148	145	160	92	90	897	620	737	3,420	1,380	386	440
13	148	144	160	88	100	644	*604	686	3,050	1,260	360	412
14	146	148	160	85	110	416	572	636	2,930	1,140	334	386
15	148	150	150	82	120	302	572	556	1,770	1,030	321	*373
16	*153	150	140	80	*130	*357	588	528	1,300	960	*313	373
17	150	149	130	77	150	595	588	*500	1,130	890	347	373
18	151	148	120	75	174	1,500	652	472	1,030	855	412	386
19	156	155	120	72	190	2,110	652	444	4,750	802	412	386
20	148	188	120	70	367	2,330	686	416	*6,650	*768	485	373
21	145	199	110	68	616	2,180	720	404	*11,800	715	515	360
22	141	196	110	66	834	2,130	636	380	*13,100	680	485	399
23	142	190	110	65	1,030	2,380	588	368	*13,100	665	545	426
24	142	180	120	64	908	2,530	528	368	*13,000	635	500	386
25	144	178	140	62	960	2,260	528	368	*12,600	605	500	360
26	146	178	140	60	1,140	1,690	487	392	*12,700	575	455	347
27	145	172	140	58	872	1,440	472	*1,050	*11,400	530	957	329
28	147	168	140	56	872	1,320	444	771	*8,910	500	1,160	351
29	146	165	130	54	.....	1,280	430	754	6,740	485	1,490	340
30	146	155	130	53	.....	1,200	472	620	*5,680	485	1,340	296
31	144	.....	130	52	.....	1,040	.....	790	.....	500	1,300	.....
1954-55												
1	308	545	272	208	112	100	1,420	1,500	301	204	87	36
2	830	530	291	208	*111	295	1,340	1,460	*282	148	87	34
3	509	*472	262	208	110	1,180	1,260	1,380	260	140	*80	34
4	426	292	227	207	108	1,010	1,100	*1,140	255	126	77	34
5	420	470	243	207	107	700	*1,380	995	289	153	75	36
6	412	399	246	*205	105	500	1,030	890	296	*1,370	77	39
7	412	483	248	205	103	450	925	768	280	426	89	*35
8	*426	500	240	199	102	600	890	732	289	205	88	32
9	440	440	250	191	101	*1,170	890	680	282	182	77	29
10	1,050	426	250	187	99	2,100	820	635	277	1,080	136	31
11	684	412	250	182	97	3,170	768	605	279	1,450	99	30
12	560	426	250	176	95	2,580	698	575	286	360	71	29
13	575	399	252	170	94	2,040	665	545	291	232	54	28
14	605	386	252	166	93	2,000	635	500	279	214	51	26
15	665	386	252	160	92	2,360	605	455	258	229	51	27
16	718	*373	253	153	*92	*1,700	560	426	243	236	51	*24
17	768	373	253	*146	91	1,420	545	*399	*236	160	*53	24
18	802	360	254	142	90	1,140	*515	373	234	*148	51	24
19	*768	347	254	138	88	960	485	347	236	158	46	28
20	732	347	255	133	87	855	455	331	216	167	44	30
21	680	347	*255	132	86	660	426	311	258	183	44	40
22	638	347	250	131	86	600	412	294	260	128	43	30
23	605	318	243	129	85	510	412	284	225	128	43	29
24	590	306	236	125	84	455	530	270	234	169	41	30
25	560	318	228	122	83	390	650	260	214	136	41	31
26	575	313	218	120	82	340	960	255	193	120	42	32
27	560	301	210	119	82	340	1,380	250	178	109	39	35
28	560	290	209	117	82	450	1,620	246	172	99	38	33
29	545	294	209	115	.....	590	1,620	258	153	99	43	32
30	560	294	208	114	.....	732	1,560	286	144	97	40	34
31	560	.....	208	113	.....	1,150	.....	301	.....	87	38	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 10-31, 1953; Jan. 1 to Feb. 17, Mar. 3-6, Dec. 6-31, 1954; Jan. 1 to Mar. 10, Mar. 22-28, 1955. Discharge computed from gage readings or graph based on gage readings Aug. 18-25, 27, 28, Aug. 30 to Sept. 1, Sept. 8, 4, 1955.

Little Sioux River near Kennebec, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	220	121	73.0	54.8	155	1,688	6,368	3,108	2,712	3,044	2,758	2,782
1951-52	1,219	735	668	577	1,675	2,655	4,455	1,212	900	1,579	385	254
1952-53	149	149	124	124	156	1,244	964	1,199	4,249	1,346	1,127	219
1953-54	148	157	156	83.9	332	1,081	624	679	5,115	1,471	569	491
1954-55	599	383	243	159	94.5	1,051	886	573	247	301	61.2	31.2

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.081	0.044	0.027	0.020	0.057	0.618	2.33	1.14	0.993	1.12	1.01	1.02
1951-52	.447	.269	.245	.211	.614	.973	1.63	.444	.330	.578	.141	.093
1952-53	.055	.055	.045	.045	.057	.456	.353	.438	1.56	.493	.413	.080
1953-54	.054	.058	.057	.031	.122	.396	.229	.249	1.87	.539	.208	.180
1954-55	.219	.140	.089	.058	.035	.385	.325	.210	.090	.110	.022	.011

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.09	0.05	0.03	0.02	0.06	0.71	2.60	1.31	1.11	1.29	1.16	1.14
1951-52	.51	.30	.28	.24	.66	1.12	1.82	.51	.37	.67	.16	.10
1952-53	.06	.06	.05	.05	.06	.53	.39	.50	1.74	.57	.48	.09
1953-54	.06	.06	.07	.04	.13	.46	.26	.29	2.09	.62	.24	.20
1954-55	.25	.16	.10	.07	.04	.44	.36	.24	.10	.13	.03	.01

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	13,530	7,190	4,490	3,370	8,600	103,800	378,900	191,100	161,400	187,100	169,600	165,500
1951-52	74,980	43,750	41,060	35,460	96,360	163,300	265,100	74,500	53,560	97,090	23,680	15,120
1952-53	9,170	8,860	7,630	7,650	8,660	76,460	57,390	73,530	252,800	82,760	69,280	13,020
1953-54	9,080	9,360	9,590	5,160	18,420	66,470	37,140	41,730	304,300	90,470	34,990	29,190
1954-55	36,810	22,810	14,950	9,770	5,250	64,600	52,710	35,210	14,700	18,530	3,760	1,860

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950									449	2.24	324,800
1951	Apr. 11, 1951.	(1) 24.33	12,000	38	1,920	0.705	9.57	1,395,000	2,112	10.49	1,529,000
1952	Apr. 5, 1952.	21.67	9,170	155	1,355	.496	6.74	984,000	1,171	5.82	849,800
1953	June 14, 1953.	23.97	11,500	110	922	.338	4.58	667,200	925	4.60	669,600
1954	June 22, 1954.	(2) 26.18	13,500	50	906	.332	4.52	655,900	970	4.84	702,400
1955	Mar. 11, 1955.	14.15	3,430	24	389	.142	1.93	281,000			

(1) Maximum gage height, 24.86 ft. Mar. 28, 1951 (backwater from Maple River).
(2) Maximum gage height, 26.68 ft. June 21, 1954 (prior to levee failure).

Peak Discharge (base, 4,000 cfs)

1951: Mar. 28 (about 5 a.m.) about 8,400 cfs (24.86 ft.); Apr. 11 (11 p.m.) 12,000 cfs (24.33 ft.); May 1 (2:30 a.m.) 5,330 cfs (18.92 ft.); June 8 (10:30 a.m.) 4,640 cfs (17.22 ft.); June 19 (9:30 p.m.) 4,570 cfs (17.12 ft.); July 3 (9 a.m.) 7,000 cfs (21.30 ft.); Aug. 15 (8 a.m.) about 6,500 cfs (22.30 ft.); Aug. 17 (12:30 p.m.) about 7,800 cfs (22.15 ft.); Aug. 21 (12:30 a.m.) 5,090 cfs (17.81 ft.); Sept. 12 (4-7 p.m.) 6,460 cfs (19.43 ft.).
1952: Feb. 13 (8 p.m.) about 4,500 cfs (17.73 ft.); Mar. 13 (3 p.m.) 5,710 cfs (18.15 ft.); Mar. 20 (1 a.m.) 5,070 cfs (17.35 ft.); Apr. 2 (5 a.m.) 7,650 cfs (20.32 ft.); Apr. 5 (10 p.m.) 9,170 cfs (21.67 ft.); July 7 (4 p.m.) 7,150 cfs (19.77 ft.).
1953: June 14 (7 p.m.) 11,500 cfs (23.97 ft.); June 26 (1 p.m.) 4,660 cfs (16.88 ft.).
1954: June 22 (12 M.) 13,500 cfs (26.18 ft.).
1955: No peak above base.

Maple River at Mapleton, Iowa

LOCATION.—Lat. 42°09', long. 95°48', in SE¼ sec. 23, T. 85 N., R. 43 W., near center of span on upstream handrail of bridge on State Highway 175, 80 ft. downstream from Chicago & North Western Railway bridge, 0.8 mile southwest of Mapleton, 12.5 miles northeast of Turin, and 16 miles upstram from mouth.

DRAINAGE AREA.—661 sq. mi.

RECORDS AVAILABLE.—October 1941 to September 1955.

GAGE.—Wire-weight gage read once daily. Datum of gage is 1,085.86 ft. above mean sea level, datum of 1929. Prior to Aug. 20, 1952, wire-weight gage (June 8, 1949, to Aug. 19, 1952, supplementary water-stage recorder operating above 9.5 ft.), and Aug. 20, 1952, to June 20, 1954, water-stage recorder all at this site (destroyed by flood). June 21, 1954, to Sept. 6, 1955, wire-weight gage at site 1.4 miles upstream at datum 4.05 ft. higher.

AVERAGE DISCHARGE.—14 years, 260 cfs (188,200 acre-ft. per year).

EXTREMES.—1941-55: Maximum discharge, 15,600 cfs June 20, 1954; maximum gage height, 22.1 ft. June 12, 1950, site and datum then in use; no flow Sept. 21, 22, 1945, caused by temporary dam above gage.

REMARKS.—Records fair except those for periods of ice effect, or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	44	42	31	24	14	1,150	1,140	4,020	1,100	873	295	720
2	400	45	31	23	14	920	*786	3,240	1,100	668	313	701
3	87	49	31	23	14	311	1,000	1,540	492	*3,380	699	660
4	82	47	31	22	14	239	1,140	1,060	470	2,450	400	630
5	76	47	31	22	14	211	980	856	507	1,310	370	600
6	73	47	31	21	*14	207	943	701	700	1,100	360	*569
7	68	40	31	21	14	*270	856	684	1,140	1,020	*354	550
8	64	37	31	20	14	192	838	618	873	873	350	635
9	60	35	31	20	14	150	803	*618	421	803	350	1,790
10	*55	32	31	*19	14	110	769	1,020	635	701	450	1,440
11	54	40	30	18	20	95	735	943	652	635	350	932
12	50	45	30	18	30	83	652	856	602	602	318	2,100
13	49	*44	30	17	25	74	538	684	522	538	282	3,350
14	47	61	*30	17	20	68	538	618	478	538	2,260	2,440
15	45	58	30	16	19	62	602	602	605	538	5,610	1,590
16	43	50	30	16	18	58	652	586	394	522	*4,010	1,220
17	41	50	30	16	18	55	635	700	808	520	4,200	1,100
18	40	42	29	16	18	53	684	1,000	*684	1,500	1,790	932
19	40	40	29	15	30	51	838	750	1,090	800	950	900
20	39	40	29	15	28	50	856	750	1,740	600	1,740	820
21	39	40	28	15	26	*48	856	600	1,020	520	1,790	735
22	40	38	28	15	25	100	856	538	700	478	600	735
23	41	37	28	14	24	250	880	530	1,180	470	560	735
24	42	35	27	14	23	500	908	522	684	464	540	750
25	43	34	27	14	23	1,040	926	507	602	449	520	769
26	44	34	26	14	23	3,840	902	522	993	435	500	735
27	45	33	26	14	223	*8,510	943	507	569	420	1,090	701
28	45	33	25	14	1,420	9,280	920	492	560	408	2,040	701
29	44	32	25	14	.....	7,410	1,560	507	569	380	2,270	701
30	42	31	24	14	.....	3,100	2,050	600	580	340	800	701
31	40	.....	24	14	.....	1,990	.....	992	.....	321	750	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affectted by ice Nov. 23 to Dec. 31, 1950; Jan. 1 to Feb. 26, Mar. 9-24, 1951.

Maple River at Mapleton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	700	215	310	170	350	330	1,260	375	375	856	254	229
2.....	700	185	320	170	800	290	955	378	375	1,210	248	197
3.....	750	165	320	170	1,020	250	*784	368	362	980	335	*175
4.....	1,280	150	*330	170	900	180	670	181	*329	808	297	173
5.....	*926	260	330	170	780	160	606	332	329	437	264	165
6.....	720	*354	330	170	*692	200	550	314	320	751	*267	157
7.....	550	367	320	170	481	230	533	338	294	*3,870	254	149
8.....	460	350	310	170	606	273	516	550	283	3,730	270	149
9.....	390	390	290	*170	648	283	606	437	297	3,100	264	141
10.....	340	385	240	170	808	267	648	420	308	1,700	246	134
11.....	310	380	190	165	1,000	*283	808	400	286	856	240	134
12.....	285	430	150	165	1,340	888	761	359	267	648	221	131
13.....	265	450	110	165	1,280	4,090	600	344	251	587	221	131
14.....	260	320	140	160	2,220	1,940	481	338	344	1,440	210	165
15.....	285	280	160	160	1,490	1,180	692	856	338	715	283	167
16.....	320	230	180	160	1,030	1,080	606	407	267	568	417	147
17.....	285	185	190	160	612	627	550	*394	251	516	235	130
18.....	265	155	200	180	550	1,330	550	347	235	464	243	131
19.....	250	130	200	2,100	550	2,710	533	326	224	433	227	123
20.....	300	185	200	1,300	444	1,520	498	317	343	481	221	128
21.....	470	210	200	350	283	738	498	533	1,560	420	184	128
22.....	390	250	200	260	250	450	520	533	407	370	175	123
23.....	340	220	200	210	230	250	550	1,460	332	350	170	123
24.....	300	190	190	200	215	147	533	715	300	326	165	123
25.....	270	160	190	190	210	267	498	550	289	308	165	123
26.....	260	190	180	180	240	335	464	516	273	292	165	121
27.....	300	225	180	175	410	400	444	587	*3,900	283	162	118
28.....	330	250	170	170	450	574	420	606	761	278	314	115
29.....	290	280	170	165	400	2,110	404	481	427	250	302	110
30.....	260	305	170	160	.....	3,550	384	450	384	246	317	110
31.....	240	.....	170	160	.....	2,360	.....	410	.....	248	275	.....
1952-53												
1.....	108	98	90	70	86	300	404	404	200	246	251	64
2.....	106	96	90	70	88	250	*344	644	*189	*205	157	64
3.....	81	92	88	70	90	220	368	619	186	175	*1,110	66
4.....	106	*96	*87	70	92	210	362	598	189	160	475	66
5.....	110	96	87	70	93	208	320	526	178	144	*443	64
6.....	117	92	87	70	*93	*208	207	461	162	137	255	64
7.....	*126	90	88	72	94	208	273	404	207	123	245	62
8.....	126	96	88	72	94	240	267	365	991	110	214	61
9.....	130	96	86	72	96	300	262	338	1,830	99	175	*59
10.....	132	94	88	72	96	761	275	335	1,540	85	159	59
11.....	135	96	88	72	98	761	264	*323	593	81	165	59
12.....	126	94	88	72	98	715	243	294	424	79	163	56
13.....	123	96	86	72	100	832	229	273	347	76	207	54
14.....	126	96	84	74	100	1,000	221	259	302	78	169	56
15.....	130	94	82	74	90	832	240	259	275	78	143	56
16.....	121	94	82	74	70	627	365	281	619	76	137	54
17.....	119	106	80	74	90	516	464	314	359	64	131	52
18.....	117	108	80	76	90	498	365	278	259	78	127	52
19.....	113	98	78	76	86	447	305	278	221	64	125	52
20.....	106	92	78	76	80	391	278	262	192	62	121	51
21.....	108	98	78	76	100	353	278	278	170	72	119	47
22.....	106	96	78	*76	120	341	273	320	154	74	112	47
23.....	106	92	78	78	110	317	248	329	141	60	108	46
24.....	106	90	78	78	150	286	264	323	239	54	102	47
25.....	106	106	76	78	200	262	332	400	2,810	50	99	52
26.....	104	46	74	78	300	251	332	308	825	61	85	49
27.....	102	70	72	78	600	240	305	275	820	108	80	47
28.....	98	80	70	78	600	227	278	254	425	90	74	47
29.....	98	85	70	80	.....	219	275	240	470	66	71	46
30.....	102	88	70	82	.....	275	329	232	317	61	68	44
31.....	100	.....	70	84	.....	362	.....	210	.....	104	68	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 1 to Feb. 5, Feb. 22 to Mar. 7, Nov. 27 to Dec. 31, 1952; Jan. 1 to Mar. 9, 1953. No gage-height record Oct. 1-3, Oct. 6 to Nov. 5, Nov. 8 to Dec. 31, 1951; Feb. 11, Mar. 22, 23, Apr. 13, 22, 23, May 25, July 22, 29, 1952; discharge estimated on basis of weather records and records for nearby stations.

Maple River at Mapleton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	44	49	51	32	18	92	80	131	*1,790	378	164	152
2	44	49	52	32	18	50	85	223	706	378	147	132
3	44	47	*86	32	*19	*7	74	218	1,460	357	137	120
4	44	*47	85	32	21	6	64	205	829	342	124	122
5	42	47	69	32	35	30	71	163	545	318	122	124
6	42	46	64	*32	47	73	*83	153	425	309	122	120
7	*42	46	59	32	52	90	86	141	356	291	122	118
8	42	47	61	32	55	86	80	127	308	267	122	113
9	42	47	51	32	57	*83	88	119	275	248	124	110
10	44	51	39	32	60	85	83	114	303	235	115	120
11	44	51	40	32	61	81	76	108	478	222	105	100
12	46	49	39	32	64	83	71	102	365	214	130	107
13	47	47	37	32	68	73	68	93	298	202	110	110
14	47	47	35	32	74	50	66	86	250	194	105	*86
15	54	47	35	32	92	62	106	83	238	182	103	88
16	54	46	35	30	106	83	104	81	*298	184	*93	98
17	56	46	35	30	68	102	93	74	245	184	144	98
18	56	46	35	30	78	183	88	74	218	184	177	98
19	56	74	35	30	97	180	78	*74	5,710	180	151	98
20	54	114	35	30	502	121	76	71	*12,400	177	127	91
21	51	88	34	25	364	104	284	68	8,460	*182	117	79
22	51	73	34	25	214	88	205	66	4,420	180	103	84
23	49	66	34	25	177	80	145	115	*1,760	172	147	91
24	49	59	34	25	143	85	127	295	965	172	134	84
25	52	57	34	25	127	108	131	195	725	166	120	70
26	52	54	33	20	112	99	112	133	628	160	115	70
27	51	51	33	20	106	99	101	1,640	568	164	300	76
28	57	49	33	20	97	102	92	998	496	155	482	95
29	51	49	33	20	.....	86	90	492	468	147	315	100
30	49	51	33	20	.....	76	119	250	465	160	243	95
31	47	.....	33	20	.....	85	.....	1,010	.....	182	164	.....
1954-55												
1	80	130	90	83	37	35	431	92	50	62	59	23
2	*1,030	111	104	82	37	500	270	90	47	46	57	23
3	419	106	90	80	37	600	226	82	44	39	54	22
4	179	127	98	78	36	250	784	80	48	35	54	23
5	148	127	93	77	36	140	423	78	51	650	50	23
6	130	124	88	74	36	115	295	82	71	1,000	55	24
7	117	124	82	72	36	110	203	76	74	250	56	23
8	145	117	80	70	36	150	98	78	60	120	58	22
9	142	113	81	67	35	*1,500	170	80	52	100	53	23
10	960	111	82	65	35	1,440	104	84	50	3,400	118	21
11	760	109	84	63	35	1,040	150	76	50	1,020	57	22
12	435	109	85	61	35	590	142	73	50	277	48	22
13	271	109	87	59	35	347	145	70	51	168	43	22
14	248	109	*89	56	35	299	132	71	48	130	41	22
15	226	109	89	54	35	219	127	66	46	111	40	*20
16	213	*109	86	51	*35	176	115	63	*45	131	*37	19
17	185	102	83	49	35	*159	102	60	52	118	39	20
18	173	102	78	*47	35	137	100	*59	54	113	43	22
19	162	102	72	46	35	103	*98	55	59	*105	36	23
20	*162	115	96	44	35	80	94	62	47	113	36	25
21	150	104	92	43	35	62	78	55	46	103	34	50
22	145	106	100	43	35	51	76	54	42	87	32	26
23	140	106	98	42	35	45	73	55	37	85	32	24
24	135	104	92	41	35	42	162	56	42	135	30	22
25	132	96	92	40	35	40	182	51	40	97	28	22
26	180	92	100	40	35	42	176	56	38	97	27	26
27	107	98	86	39	35	48	162	63	36	82	26	28
28	145	104	86	39	35	72	156	60	39	76	25	27
29	137	92	86	38	.....	115	122	55	40	67	28	28
30	135	84	86	38	.....	242	106	51	39	62	25	25
31	124	.....	85	38	.....	710	.....	50	.....	59	23	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1953; Jan. 1 to Feb. 13, Mar. 2-5, Dec. 8-20, 28-31, 1954; Jan. 1 to Mar. 9, Mar. 19-28, 1955. No gage-height record July 17, 25, 28, Aug. 10, Sept. 6-10, 18, 22, 24, 30, Oct. 6, 14, 24, 26, 30, Nov. 25, Dec. 5, 6, 25, 1954; June 2, 10, July 5-10, 14, Aug. 17, Sept. 18-21, 1955; discharge estimated on basis of weather records and records for nearby stations.

Maple River at Mapleton, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	62.0	41.3	28.0	17.3	76.9	1,306	895	908	768	705	1,230	1,034
1951-52	426	264	221	279	701	945	597	473	490	888	246	142
1952-53	113	92.4	81.3	74.6	143	409	302	345	521	97.5	192	54.8
1953-54	48.5	54.7	43.4	28.2	105	85.2	101	278	1,550	222	154	102
1954-55	251	108	88.0	55.5	35.4	305	180	67.2	48.5	308	43.5	24.1

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.094	0.062	0.044	0.026	0.116	1.98	1.35	1.37	1.16	1.20	1.86	1.56
1951-52	.644	.399	.334	.422	1.06	1.43	.903	.716	.741	1.34	.372	.215
1952-53	.171	.140	.123	.113	.216	.617	.457	.522	.788	.148	.290	.083
1953-54	.073	.083	.066	.043	.159	.129	.153	.421	2.34	.336	.233	.154
1954-55	.380	.163	.134	.084	.054	.461	.281	.102	.073	.466	.066	.036

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.11	0.07	0.05	0.03	0.12	2.28	1.51	1.58	1.30	1.39	2.15	1.75
1951-52	.74	.45	.38	.49	1.14	1.65	1.01	.82	.83	1.55	.43	.24
1952-53	.20	.16	.14	.13	.23	.71	.51	.60	.88	.17	.34	.09
1953-54	.08	.09	.08	.05	.16	.15	.17	.49	2.62	.39	.27	.17
1954-55	.44	.18	.15	.10	.06	.53	.31	.12	.08	.54	.08	.04

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	3,810	2,460	1,780	1,060	4,270	80,280	53,260	55,800	45,700	48,900	75,650	61,550
1951-52	26,200	15,720	13,570	17,130	40,300	58,100	35,550	29,060	29,180	54,590	15,110	8,440
1952-53	6,930	5,500	5,000	4,590	7,940	25,120	17,990	21,180	31,000	6,000	11,820	5,260
1953-54	2,980	3,250	2,670	1,740	5,820	5,240	6,000	17,100	92,260	13,660	9,490	6,080
1954-55	15,420	6,440	5,450	3,410	1,970	18,760	11,050	4,130	2,880	18,920	2,680	1,430

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950									193	3.97	139,900
1951	Mar. 27, 1951	20.1	10,800	14	666	0.909	12.34	434,500	666	13.68	482,000
1952	June 27, 1952	19.05	13,400	110	472	.714	9.73	343,000	420	8.66	304,900
1953	June 25, 1953	17.66	11,500	44	202	.306	4.16	146,300	190	3.91	137,800
1954	June 20, 1954	20.4	15,600	6	230	.348	4.72	166,300	255	5.24	184,700
1955	July 10, 1955	13.0	6,800	19	128	.194	2.63	92,540			

Peak Discharge (base, 4,000 cfs)

1951: Mar. 27 (6:30 p.m.) 10,800 cfs (20.1 ft.); May 1 (9 p.m.) 4,790 cfs (14.27 ft.); June 19 (3:30 p.m.) 6,800 cfs (16.50 ft.); June 23 (9 p.m.) 5,040 cfs (14.60 ft.); July 3 (2 a.m.) 4,100 cfs (13.45 ft.); Aug. 15 (1 a.m.) 7,630 cfs (17.27 ft.).

1952: Mar. 13 (3:30 p.m.) 4,360 cfs (11.95 ft.); June 21 (1 a.m.) 7,060 cfs (14.68 ft.); June 27 (2 a.m.) 13,400 cfs (19.05 ft.); July 7 (8 a.m.) 6,700 cfs (14.25 ft.).

1953: June 25 (1:30 a.m.) 11,500 cfs (17.66 ft.).

1954: May 27 (5:30 a.m.) 6,460 cfs (14.00 ft.); June 20 (6 a.m.) 15,600 cfs (20.4 ft.).

1955: July 10 (time unknown) about 6,800 cfs (about 13.0 ft.).

Little Sioux River near Turin, Iowa

LOCATION.—Lat. 41°58', long. 95°58', on line between secs. 28 and 33, T. 83 N., R. 44 W., near center of span on downstream side of bridge on Brown's grade, 1 mile east of gaging station on Monona-Harrison ditch near Turin, 2.4 miles downstream from equalizer ditch connecting Little Sioux River and Monona-Harrison ditch, 3.5 miles downstream from Maple River. 3.8 miles south of Turin, 6.5 miles northeast of Blencoe, and 16.5 miles upstream from mouth.

DRAINAGE AREA.—4,460 sq. mi. approximately (combined area above this station and above station on Monona-Harrison ditch, 1 mile west).

RECORDS AVAILABLE.—April 1939 to September 1955. Prior to May 1942, published as "near Blencoe."

GAGE.—Wire-weight gage read once daily. Datum of gage is 1,020.00 ft. above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to May 7, 1942, wire-weight gage at site 5.8 miles downstream at datum 9.74 ft. lower.

AVERAGE DISCHARGE.—16 years, 310 cfs (224,400 acre-ft. per year).

EXTREMES.—1939-55: Maximum discharge, 7,920 cfs June 22, 1954 (gage height, about 24.2 ft., includes flow over Brown's grade by-passing gage); maximum gage height, 26.0 ft. from floodmark, Mar. 4, 1940 (ice jam); no flow at times during period September 1939 to October 1940, and for several months each year 1948-52, when all of flow was carried by Monona-Harrison ditch.

REMARKS.—Records poor. Part or all of flow is diverted above station into Monona-Harrison ditch (see p. 339), which is a dredged channel paralleling Little Sioux River from a point several miles above station to mouth. Diversion is regulated by changing height of an obstruction composed of earth and rock in equalizer ditch connecting the two channels.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	260	0	0	0	0	282	2,090	1,400	99	24	0	2.8
2	60	.9	0	0	0	177	1,750	1,750	178	170	0	0
3	a30	a3.0	0	0	0	14	*1,220	1,600	228	1,400	0	0
4	.6	1.4	0	0	0	a10	934	1,260	173	797	0	0
5	a.6	a1.0	0	0	0	a8.0	898	970	157	*228	0	0
6	a.5	a.7	0	0	0	a7.0	1,110	802	157	240	0	0
7	a.4	a.4	0	0	*0	6.0	1,370	790	230	267	0	*0
8	a.3	.1	0	0	0	6.0	1,750	631	434	137	0	0
9	*.2	.4	0	*0	0	5.0	2,010	*514	292	102	0	136
10	a.1	a.4	0	0	20	4.0	*2,170	547	178	88	0	116
11	0	a.3	0	0	16	4.0	2,170	466	95	76	0	13
12	0	*.3	*0	0	a14	4.0	2,130	272	63	34	0	778
13	0	.5	0	0	a11	4.0	2,010	153	41	26	10	1,520
14	0	.6	0	0	10	3.0	1,710	126	34	42	*777	1,450
15	0	.5	0	0	a10	3.0	1,300	77	34	36	*2,010	620
16	0	a.4	0	0	a10	3.0	826	51	34	29	1,820	296
17	0	a.3	0	0	10	3.0	419	28	151	24	1,820	197
18	0	a.2	0	0	20	3.0	197	32	515	32	1,450	169
19	0	a.1	0	0	20	2.0	87	25	439	22	754	160
20	0	0	0	0	a18	2.0	43	11	637	11	399	137
21	0	0	0	0	14	20	27	2.7	*115	7.9	580	30
22	0	0	0	0	10	50	a20	2.7	33	7.9	171	3.3
23	0	0	0	0	25	100	13	2.5	17	10	26	.1
24	0	0	0	0	45	250	7.9	1.9	366	5.5	.5	0
25	0	0	0	0	150	518	19	1.3	79	3.2	.5	0
26	0	0	0	0	587	1,320	a16	1.3	434	1.5	.4	0
27	0	0	0	0	780	*2,770	14	1.3	211	.3	26	0
28	0	0	0	0	990	2,580	a10	1.3	50	.1	404	0
29	0	0	0	0	.....	2,510	a7.5	1.3	43	0	362	0
30	0	0	0	0	.....	2,320	284	1.3	27	0	112	0
31	0	.....	0	0	.....	2,170	.....	93	.....	0	17	.....

* Discharge measurement or observation of no flow made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note—Stage-discharge relation affected by ice Feb. 10-25, Mar. 7-24, 1951.

Little Sioux River near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	0	0	1.0	0	0.3	2.0	1,410	9.0	2.0	0.3	1.8	0.4
2	0	0	2.0	0	.3	2.0	*934	8.0	1.5	.3	1.8	.4
3	63	0	*2.5	0	.5	2.0	*648	7.0	*1.2	4.4	1.7	.3
4	*110	0	2.0	0	1.0	2.0	698	6.0	1.2	7.9	1.7	.2
5	15	*0	1.5	0	*1.6	2.0	698	6.0	1.2	5.5	*1.7	.2
6	2.1	0	1.0	0	1.6	2.0	898	5.0	1.0	4.9	1.7	.2
7	0	0	.5	0	1.6	2.0	826	4.0	1.0	746	1.6	.2
8	0	0	0	*0	1.6	2.0	666	4.0	1.0	*1,150	1.6	.2
9	0	0	0	0	1.6	2.0	498	4.0	.8	713	1.5	.2
10	0	0	0	0	2.0	2.0	376	*3.6	.8	120	1.5	*.2
11	0	0	0	0	3.0	4.0	280	4.0	.8	4.0	1.4	.2
12	0	0	0	0	10	367	217	3.0	.6	.7	1.4	.2
13	0	0	0	0	706	*1,080	238	3.0	.6	.5	1.3	.2
14	0	0	0	1.0	2,010	524	260	3.0	.6	8.3	1.3	.1
15	0	0	0	10	1,150	15	284	3.0	.4	0.9	1.2	.1
16	0	0	0	20	466	15	322	3.0	.4	4.2	1.2	.1
17	0	0	0	1.4	72	47	*335	3.0	.3	4.2	1.2	.1
18	0	0	0	0	34	179	272	3.0	.2	4.0	1.2	0
19	0	0	0	55	15	269	197	3.0	.3	4.0	1.2	0
20	0	0	0	90	7.5	76	127	3.0	15	4.3	1.2	0
21	0	0	0	25	7.0	66	66	3.0	85	1.7	.8	0
22	0	0	0	10	6.0	16	49	12	5.6	1.4	.5	0
23	0	0	0	6.0	5.0	13	31	40	3.0	1.3	.3	0
24	0	0	0	4.0	4.0	13	26	27	17	1.1	.2	0
25	0	0	0	3.0	3.0	13	22	22	37	1.2	.1	0
26	0	0	0	2.0	2.0	13	19	17	144	1.3	0	0
27	0	0	0	1.0	2.0	13	15	12	*740	1.4	0	0
28	0	0	0	.8	2.0	20	15	9.0	7.9	1.5	.6	0
29	0	0	0	.5	2.0	90	12	6.0	3.0	1.6	.5	0
30	0	0	0	.3	.....	1,370	10	5.0	.8	1.7	.4	0
31	0	.....	0	.3	.....	1,560	.....	3.0	.....	1.8	.4	.....
1952-53												
1	0.1	0.8	0.8	0.6	0.6	1.5	1.7	4.3	1.0	*0.4	2.0	0.2
2	.2	.8	.8	.6	.6	1.0	1.7	4.3	1.2	.3	2.0	.2
3	.3	.8	.8	.6	.6	1.0	1.2	4.2	*1.3	.2	2.0	.2
4	.4	.8	.8	.6	.8	1.0	1.3	3.3	1.2	.3	2.0	.2
5	.4	.8	.8	.6	1.0	1.0	1.2	4.0	1.4	.3	3.0	.2
6	.4	.8	.8	.6	*1.1	1.0	1.2	2.4	1.2	.3	*6.3	.2
7	.4	.8	.8	.6	1.1	2.0	1.2	2.4	1.2	.2	0.4	.2
8	*.4	.8	.8	.6	1.1	3.0	*1.4	2.7	1.6	.2	4.5	.2
9	.4	.8	.8	.6	1.1	4.0	1.2	3.3	207	.2	3.5	*.2
10	.4	.8	*.8	.6	1.1	5.0	1.3	2.9	650	.2	3.1	.2
11	.4	.8	.8	.6	1.1	*7.8	1.4	*2.8	*515	.2	7.7	.2
12	.4	.8	.8	.6	1.1	2.0	1.4	2.7	156	.2	3.0	.2
13	.6	.8	.8	.6	1.1	2.2	1.4	2.9	448	.2	1.0	.2
14	.6	.8	.8	.6	1.1	2.4	1.2	2.8	*726	.2	.6	.2
15	.6	.8	.8	.6	1.1	1.6	1.2	2.8	730	.2	.6	.2
16	.6	.8	.8	.6	1.1	2.1	1.2	2.8	527	.2	.6	.2
17	.6	.8	.8	.6	1.1	1.7	1.3	2.8	150	.2	.6	.2
18	.6	.8	.8	.6	1.1	1.4	1.3	2.7	9.1	.2	.6	.2
19	.6	.8	.8	.6	1.1	1.2	1.4	2.7	.2	.2	.4	.2
20	.6	.8	.6	.6	1.1	1.2	1.4	2.7	.2	.2	.4	.2
21	.6	.6	.6	.6	1.1	1.1	1.4	2.6	.2	.2	.4	.2
22	.6	.8	.6	*.6	1.1	1.2	1.4	2.5	.2	.2	.4	.2
23	.6	.8	.6	.6	1.1	1.3	1.4	2.4	.2	.2	.4	.2
24	.6	.8	.6	.6	1.2	1.2	1.5	12	.2	.2	.4	.2
25	.6	.8	.6	.6	1.4	1.0	2.0	1.6	12	.3	.2	.2
26	.6	.8	.6	.6	1.6	1.0	1.8	1.4	.2	17	.2	.1
27	.6	.8	.6	.6	1.5	1.1	1.8	1.8	.0	2.8	.2	.1
28	.6	.8	.6	.6	2.0	1.1	1.8	2.4	.7	1.0	.2	.1
29	.6	.8	.6	.6	.....	1.2	2.8	2.4	.4	.2	.2	.1
30	.6	.8	.6	.6	.....	1.3	4.2	2.4	.4	.2	.2	.1
31	.6	.....	.6	.6	.....	1.6	.....	1.2	.....	1.0	.2	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 13-22, Feb. 3-12, Feb. 21 to Mar. 11, Nov. 24 to Dec. 31, 1952; Jan. 1 to Mar. 10, 1953. Doubtful or no gage-height record Dec. 1, 2, 4-8, 1951; Jan. 23 to Feb. 2, Mar. 22-29, Apr. 11-16, Apr. 18 to May 9, May 11-16, May 18 to June 2, June 4-17, July 25 to Aug. 14, Aug. 24 to Sept. 9, Sept. 11-20, Oct. 1-7, Oct. 9 to Nov. 13, Nov. 15-23, 1952; Apr. 7, May 21, 11, June 7, 8, July 13, 14, 22, July 28 to Aug. 5, Aug. 8, 9, Aug. 12 to Sept. 8, Sept. 10-30, 1953; discharge estimated on basis of weather records and records for nearby stations.

Little Sioux River near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	0.1	0.2	0.2	0.2	0.1	3.0	2.0	2.8	12	145	2.0	0.6
2	.1	.2	2.6	.2	*.1	2.9	2.0	4.0	9.4	*71	.9	.4
3	.1	*.2	*5.7	.2	.1	2.0	2.0	7.6	5.5	40	.4	.4
4	.1	.2	3.5	.2	.1	2.0	2.1	4.0	4.0	21	.4	.3
5	.1	.2	3.3	*.2	.1	2.0	2.1	1.9	2.5	13	.4	.3
6	*.1	.2	3.0	.2	.1	2.0	*2.2	1.8	2.0	8.0	.4	.3
7	.1	.2	2.9	.2	.1	2.8	2.3	1.7	2.0	5.6	.4	.2
8	.1	.2	2.0	.2	.1	2.8	2.2	1.7	2.0	4.0	.4	.2
9	.1	.2	1.5	.2	.1	*2.7	2.2	1.6	1.8	2.7	.4	.2
10	.1	.2	1.0	.2	.1	2.6	2.1	1.6	4.0	2.0	.4	.2
11	.1	.2	.9	.2	.1	2.5	2.1	1.5	2.5	1.3	.4	.2
12	.1	.2	.8	.2	.1	2.5	2.1	1.5	2.0	1.0	.4	.2
13	.1	.2	.7	.2	.1	2.4	2.0	1.4	2.0	.8	.4	.2
14	.1	.2	.6	.2	.1	2.4	2.0	1.4	1.8	.7	.4	.2
15	.1	.2	.5	.2	.1	2.3	2.0	1.3	1.7	.6	.4	*.2
16	.1	.2	.4	.2	.2	2.3	2.1	1.3	*1.0	.5	.4	.2
17	.1	.2	.2	.2	.2	2.2	2.1	1.2	1.4	.4	3.0	.6
18	.1	.2	.2	.2	.5	3.4	2.0	1.1	1.2	.4	*2.3	.6
19	.1	.8	.2	.2	5.5	3.6	2.0	*1.0	191	.3	1.7	1.0
20	.1	.8	.2	.2	39	3.6	2.0	1.0	*865	*.3	1.3	.8
21	.1	.8	.2	.1	21	3.4	2.5	1.0	*1,040	.3	1.0	.6
22	.1	.4	.2	.1	4.3	3.4	2.1	1.0	*5,220	.3	.8	.6
23	.1	.2	.2	.1	3.0	3.5	2.1	1.0	*5,170	.3	.7	.5
24	.1	.2	.2	.1	2.8	3.4	2.0	3.5	3,170	.3	.6	.4
25	.1	.2	.2	.1	3.0	2.0	2.0	1.6	1,970	.3	.5	.3
26	.2	.2	.2	.1	3.3	2.1	2.0	.8	1,330	.3	.5	.2
27	.2	.2	.2	.1	3.2	2.1	2.1	*24	900	.3	10	.2
28	.2	.2	.2	.1	3.2	2.1	2.1	5.5	*570	.3	7.0	1.8
29	.2	.2	.2	.1	.....	2.1	5.7	1.2	345	.3	4.0	1.2
30	.2	.2	.2	.1	.....	2.1	8.6	.8	210	1.0	2.0	.6
31	.2	.....	.2	.1	.....	2.1	.....	7.6	.....	3.0	1.0	.....
1954-55												
1	2.0	0.4	0.5	0.3	0.2	1.6	1.5	1.5	1.4	0.8	0.2	0.2
2	.4	.4	.5	.3	.2	18	1.5	1.4	1.4	.7	.2	.1
3	.4	.4	.5	.3	.2	51	1.5	1.3	2.0	.6	.2	.1
4	.4	.4	.5	.3	.2	10	1.5	1.2	4.0	.6	.2	.1
5	.4	.4	.5	.3	.2	11	1.5	1.1	2.3	.5	.2	.1
6	.4	.4	.5	.3	.2	11	1.5	1.0	2.0	2.0	.2	.1
7	.5	.4	.5	.3	.2	21	1.5	.9	1.8	1.0	.2	.2
8	.5	.4	.5	.3	.2	300	1.5	.8	1.3	.4	.2	.2
9	.4	.4	.5	.3	.2	182	1.5	1.2	.9	50	.2	.2
10	1.5	.4	.5	.3	.2	*8.0	1.4	1.1	.6	10	1.2	.2
11	.4	.3	.5	.3	.2	4.2	1.4	1.0	.5	6.0	.6	.2
12	.4	.3	.5	.3	.2	4.4	1.3	.9	.5	3.0	.4	.2
13	.4	.4	.5	.2	.2	4.1	1.2	.8	.4	10	.2	.2
14	.4	.4	.5	.2	.2	4.6	1.1	.7	.4	4.0	.2	.2
15	.4	.5	*.5	.2	.2	4.4	*1.0	.6	.4	2.0	.2	.2
16	.4	.5	.5	.2	*.2	*4.5	1.0	.5	.3	1.0	.2	*.2
17	1.0	*1.0	.5	*.2	.2	1.8	1.0	*.4	*.3	.5	*.2	.2
18	.8	.7	.5	.2	.2	1.0	.9	.4	1.0	*.2	.5	.2
19	*.5	.6	.5	.2	.2	.9	.8	.4	.8	.2	1.0	.3
20	.4	.5	.5	.2	.2	.8	.8	.4	.6	.2	.7	.4
21	.4	.5	.5	.2	.2	.7	.8	.4	.4	.2	.5	.4
22	.4	.5	.5	.2	.2	.7	.7	.4	.3	.2	.3	.4
23	.4	.5	.5	.2	.2	.6	.7	.8	.3	.2	.2	.3
24	.4	.5	.5	.2	.2	.5	11	.6	.8	.5	.3	.3
25	.4	.5	.5	.2	.2	.5	6.6	.6	.8	.3	.2	.4
26	2.0	.5	.5	.2	.2	.5	4.6	.8	.6	.2	.2	.5
27	.6	.5	.4	.2	.3	1.0	11	5.0	.6	.2	.2	.5
28	.5	.5	.4	.2	.5	8.9	14	2.0	.5	.2	.2	.4
29	.5	.5	.4	.2	.....	2.1	1.7	1.5	.4	.2	.2	.4
30	.5	.5	.4	.2	.....	1.5	1.5	1.5	.4	.2	.2	.4
31	.5	.....	.4	.2	.....	.8	.....	1.5	.....	.2	.2	.....

* Discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1953; Jan. 1 to Feb. 18, Mar. 3-6, Nov. 1-4, Nov. 20 to Dec. 31, 1954; Jan. 1 to Mar. 10, Mar. 16-27, 1955. Doubtful or no gage-height record Oct. 1-5, Oct. 7 to Nov. 2, Nov. 4-18, Nov. 22 to Dec. 1, Dec. 8, 1953; May 2, June 5-13, June 15, 29, 30, July 3-19, July 21 to Aug. 17, Aug. 19 to Sept. 14, Sept. 16, Oct. 17, Nov. 14, Dec. 5-7, 9-14, 16-31, 1954; Jan. 1-13, 15, 16, Jan. 18 to Feb. 15, Feb. 17-28, Mar. 21-26, Apr. 3, 12-14, 16-23, May 2-16, May 18 to June 4, June 19, 28, July 4, 6, 7, 9-17, July 19 to Aug. 9, Aug. 18-20, 28, Sept. 4, 8, 11-15, 17, 18, 30, 1955; discharge estimated on basis of weather records and records for nearby stations.

Little Sioux River near Turin, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	11.4	0.38	0	0	98.0	489	887	377	185	123	346	188
1951-52	6.13	0	.34	7.43	150	187	361	7.86	35.8	90.6	1.06	.12
1952-53	.50	.80	.72	.60	1.12	1.84	1.56	3.04	138	.90	1.72	.18
1953-54	.12	.27	1.05	.16	3.24	2.61	2.43	2.88	701	10.5	1.45	.46
1954-55	.60	.47	.48	.24	.21	21.4	2.60	1.05	.93	3.11	.32	.26

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	700	23	0	0	5,470	30,070	52,780	23,160	11,000	7,560	21,280	11,100
1951-52	377	0	21	457	9,140	11,470	21,480	483	2,130	5,570	65	6.9
1952-53	31	48	44	37	62	113	93	187	8,220	55	106	11
1953-54	73	16	65	10	180	160	144	177	41,730	645	89	27
1954-55	37	28	30	15	12	1,310	155	65	56	191	20	15

Yearly Discharge in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Runoff in acre feet	Mean	Runoff in acre feet
	Date	Gage height in feet	Discharge					
1950							33.4	24,150
1951	Mar. 27, 1951	24.0	2,850	0	225	163,200	225	162,900
1952	Feb. 14, 1952	20.84	2,200	0	70.5	51,200	70.2	50,920
1953	June 14, 1953	18.35	778	.1	12.4	9,010	12.4	8,970
1954	June 22, 1954	(1)24.2	7,920	.1	59.7	43,250	59.8	43,260
1955	Mar. 8, 1955	20.3	900	.1	2.67	1,940		

(1) Maximum gage height, 25.5 ft. June 22, 1954 (prior to levee failure).

Little Sioux River near Turin, Iowa—Continued

Adjusted for Diversion Around Station by Monona-Harrison Ditch

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	354	204	146	103	407	3,970	8,203	5,165	4,872	4,543	5,324	4,509
1951-52	2,260	1,197	1,072	1,108	4,010	5,023	6,269	2,109	2,103	3,584	866	554
1952-53	372	352	298	271	345	1,942	1,553	1,794	5,209	1,575	1,433	396
1953-54	260	312	301	116	657	1,511	951	1,257	7,912	1,823	811	676
1954-55	986	602	409	312	173	1,654	1,235	719	351	835	162	76.0

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.070	0.046	0.033	0.023	0.091	0.890	1.86	1.16	1.09	1.02	1.19	1.01
1951-52	.507	.268	.240	.248	.899	1.13	1.41	.486	.492	.804	.194	.124
1952-53	.083	.079	.067	.061	.077	.435	.348	.402	1.17	.353	.321	.089
1953-54	.058	.070	.067	.026	.147	.339	.213	.282	1.77	.409	.182	.152
1954-55	.221	.135	.092	.070	.039	.371	.277	.161	.079	.187	.036	.017

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.09	0.05	0.04	0.03	0.10	1.03	2.07	1.34	1.22	1.17	1.38	1.13
1951-52	.58	.30	.28	.29	.97	1.30	1.57	.56	.55	.93	.22	.14
1952-53	.10	.09	.08	.07	.08	.50	.39	.46	1.30	.41	.37	.10
1953-54	.07	.08	.08	.03	.15	.39	.24	.33	1.98	.47	.21	.17
1954-55	.25	.15	.11	.08	.04	.43	.31	.19	.09	.22	.04	.02

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	21,760	12,120	9,000	6,310	22,020	244,100	493,500	317,600	289,900	279,400	327,400	268,300
1951-52	139,000	71,230	66,130	68,150	230,600	308,800	373,000	133,400	130,500	220,400	53,280	32,980
1952-53	22,840	20,940	18,330	16,650	18,140	119,400	92,420	110,300	309,800	96,830	88,090	23,560
1953-54	15,980	18,580	18,510	7,110	36,460	92,870	56,600	77,320	470,800	112,100	49,840	40,200
1954-55	60,630	35,830	25,120	19,160	9,580	101,700	73,470	44,230	20,870	51,370	9,990	4,520

Yearly Discharge in Cubic Feet per Second

Water year	Water year ending September 30				Calendar year		
	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
1950	.....	.....	.....	.....	860	2.63	622,300
1951	3,166	0.710	9.65	2,292,000	3,488	10.63	2,525,000
1952	2,517	.564	7.69	1,827,000	2,222	6.80	1,613,000
1953	1,296	.291	3.95	938,200	1,284	3.91	929,200
1954	1,376	.309	4.20	996,200	1,471	4.48	1,065,000
1955	631	.141	1.93	456,500	.....	.....	.....

West Fork Ditch at Holly Springs, Iowa

LOCATION.—Lat. 42°16', long. 96°05', on line between secs. 9 and 16, T. 86 N., R. 45 W., near center of span on upstream side of bridge on State Highway 141 at west edge of Holly Springs, 12 miles upstream from Wolf Creek, 16.5 miles north of Onawa, and 22 miles southeast of Sioux City.

DRAINAGE AREA.—395 sq. mi.

RECORDS AVAILABLE.—April 1939 to September 1955.

GAGE.—Wire-weight gage read once daily. Datum of gage is 1,052.82 ft. above mean sea level, datum of 1939 (Corps of Engineers benchmark).

AVERAGE DISCHARGE.—16 years, 107 cfs (77,460 acre-ft. per year).

EXTREMES.—1939-55: Maximum discharge, 7,860 cfs June 20, 1954 (gage height, 22.91 ft.); minimum daily, 1 cfs Sept. 6, 1941, Dec. 14-16, 1943, Jan. 7-9, 11-13, Feb. 17, 18, 1944.

REMARKS.—Records fair except those for period of ice effect, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs and carries it 5.5 miles south, thence southeast 6.5 miles to a point 1.5 miles west of Kennebec, where Wolf Creek enters from left. From this point, ditch roughly parallels Little Sioux River to point 3 miles southwest of Turin where an equalizer ditch connects it with Little Sioux River. From this point, ditch is known as Monona-Harrison ditch.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	59	16	15	11	8.0	451	451	1,840	175	232	71	218
2	83	17	15	11	8.0	270	*260	2,290	265	324	158	202
3	71	19	15	11	8.0	165	342	1,100	215	*809	530	192
4	66	19	15	11	7.6	134	702	638	170	330	322	186
5	65	20	15	10	7.6	170	464	342	152	530	188	*183
6	57	19	15	10	*7.6	*450	320	298	147	398	142	176
7	64	18	15	10	7.6	200	298	270	150	308	*112	156
8	28	19	15	10	7.6	140	276	250	320	240	92	150
9	27	17	15	10	7.6	100	255	*575	225	210	105	803
10	*26	16	14	10	7.6	80	220	686	208	202	382	1,230
11	26	16	14	*10	14	70	160	*492	205	195	368	1,000
12	25	17	14	10	20	60	138	331	152	308	240	1,300
13	24	19	14	10	20	55	109	276	142	278	1,080	1,450
14	24	*20	*14	10	20	50	175	250	134	202	1,160	1,250
15	22	22	14	10	20	45	175	255	*120	188	1,590	570
16	23	20	14	10	20	42	160	265	116	170	1,990	414
17	22	17	14	10	20	40	152	510	220	150	1,400	338
18	21	17	14	10	23	38	134	1,120	*342	491	1,420	322
19	21	18	13	10	27	35	116	670	991	978	934	278
20	20	24	13	10	30	33	116	623	982	630	1,150	262
21	20	17	13	10	30	32	142	638	482	650	890	240
22	19	15	13	10	34	32	152	320	375	352	790	225
23	19	15	13	9.0	38	467	160	240	825	248	390	225
24	19	15	12	9.0	44	845	170	220	590	192	285	218
25	19	15	12	9.0	50	1,630	245	170	448	170	414	210
26	19	15	12	9.0	100	2,290	260	160	430	132	368	210
27	19	15	12	9.0	276	2,570	250	185	430	122	330	218
28	19	15	12	8.0	654	*5,520	320	165	382	112	850	178
29	20	15	12	8.0	.....	3,650	638	138	278	112	405	124
30	18	15	11	8.0	.....	2,000	872	142	240	117	300	88
31	17	.....	11	8.0	.....	1,430	.....	170	.....	80	255	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1950; Jan. 1 to Feb. 26, Mar. 8-22, 1951.

West Fork Ditch at Holly Springs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	47	108	140	64	210	300	*1,220	136	100	97	79	82
2	36	80	141	64	240	210	495	126	87	*415	78	69
3	232	37	146	63	400	170	330	122	70	236	130	*62
4	784	46	154	63	450	135	348	110	*80	181	124	60
5	*350	74	146	63	480	110	330	100	94	114	101	57
6	248	140	135	62	*490	140	294	96	95	198	*98	55
7	240	*123	*120	63	400	160	268	105	122	*1,860	88	51
8	174	117	84	64	310	190	321	128	763	*4,010	90	49
9	171	128	62	*62	280	180	312	101	1,110	3,270	87	46
10	154	122	40	60	300	175	330	228	329	821	84	47
11	150	123	45	57	580	*191	348	160	244	358	80	46
12	146	147	50	56	1,400	471	321	121	161	425	72	46
13	138	164	56	58	1,120	1,520	286	112	136	405	69	44
14	130	129	62	60	920	1,020	268	99	124	551	67	47
15	150	106	70	60	720	543	260	89	339	247	286	51
16	178	82	78	62	540	658	230	112	142	210	84	47
17	142	60	80	63	360	415	206	*110	125	180	89	44
18	124	35	80	64	280	435	213	124	110	170	102	38
19	130	46	76	400	240	1,180	213	98	99	160	87	36
20	141	118	74	800	200	682	213	94	474	150	81	41
21	142	100	74	600	170	405	213	108	358	144	70	39
22	308	90	72	300	150	300	220	113	213	136	65	39
23	262	84	72	90	135	190	236	277	144	102	64	40
24	172	78	70	78	125	45	220	208	110	118	63	38
25	154	75	70	75	105	70	191	213	101	109	62	39
26	165	88	68	72	95	110	173	160	89	99	60	38
27	232	102	67	68	220	180	160	150	382	96	55	38
28	135	117	66	66	260	260	152	138	164	93	107	37
29	134	130	66	68	280	504	136	131	100	84	277	36
30	130	138	66	66	.....	2,100	125	125	70	85	128	32
31	123	.....	64	160	.....	3,280	.....	109	.....	81	96	.....
1952-53												
1	35	37	30	26	32	39	101	210	*74	112	137	*36
2	34	38	27	26	32	40	171	233	70	*102	108	38
3	32	37	*24	27	*32	40	*101	292	75	106	157	39
4	34	*38	23	27	33	40	152	238	69	100	*149	48
5	33	37	23	27	33	40	144	*194	67	89	228	37
6	32	38	23	27	33	40	115	174	70	86	268	36
7	*30	36	22	27	34	41	110	156	203	76	312	35
8	42	35	22	27	34	60	115	148	1,450	75	252	32
9	38	36	22	*28	34	100	121	143	4,020	72	165	32
10	34	36	22	28	35	*183	122	136	1,640	69	86	32
11	32	37	23	28	35	350	126	132	422	67	84	30
12	34	38	23	28	35	888	102	124	373	74	73	27
13	33	37	23	28	35	545	101	118	299	69	68	27
14	33	36	23	29	36	635	96	109	272	64	66	27
15	32	38	23	29	36	525	138	119	191	62	66	26
16	35	37	23	29	36	465	184	124	174	58	66	26
17	36	36	24	29	36	312	184	95	161	54	63	24
18	34	37	24	30	36	228	191	106	153	52	60	24
19	37	38	24	30	37	220	176	99	148	50	56	25
20	36	38	24	30	37	213	167	102	143	46	54	25
21	34	37	24	30	37	191	162	101	128	44	51	24
22	35	37	24	30	37	183	153	109	124	45	48	24
23	37	37	25	31	38	176	148	136	124	43	45	23
24	36	36	25	31	38	171	191	162	120	41	45	23
25	38	38	25	31	38	158	268	158	116	41	43	24
26	36	39	25	31	38	148	198	118	161	39	43	24
27	37	37	25	31	39	126	180	108	188	44	42	23
28	36	35	25	32	39	128	161	93	146	47	41	22
29	37	33	26	32	.....	136	158	87	143	50	40	21
30	36	31	26	32	.....	170	148	76	125	84	38	21
31	38	.....	26	32	.....	252	.....	85	.....	160	37	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 2-6, 17-19, 22-29, Dec. 11-31, 1951; Jan. 1 to Mar. 10, Mar. 22-27, Nov. 27 to Dec. 31, 1952; Jan. 1 to Mar. 11, 1953.

West Fork Ditch at Holly Springs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	21	24	34	20	10	73	d90	79	*391	197	60	41
2	20	24	*33	19	10	*60	d77	103	231	174	58	37
3	20	*23	38	19	*10	50	d70	132	636	163	56	37
4	21	25	40	18	10	54	d65	125	510	160	51	34
5	21	24	47	18	10	60	*65	103	380	154	49	35
6	20	24	46	*18	9	76	63	88	334	143	45	36
7	*20	25	45	17	9	90	68	84	142	126	42	36
8	20	24	45	17	9	79	66	79	125	118	52	36
9	21	24	44	16	9	85	66	74	107	112	51	33
10	21	25	43	16	9	88	65	72	212	107	49	35
11	22	25	40	16	9	86	62	69	*949	102	44	38
12	22	24	40	15	9	80	61	68	422	92	44	33
13	22	24	39	15	9	85	61	60	202	80	44	27
14	22	24	37	14	9	83	60	58	152	79	45	*28
15	23	24	36	14	9	80	62	49	132	74	43	26
16	24	24	36	13	9	81	185	51	124	72	42	28
17	24	23	34	13	9	79	172	*44	112	72	*40	32
18	24	24	33	12	10	85	120	42	107	66	45	30
19	24	25	33	12	100	350	79	40	*745	72	42	29
20	24	32	28	12	110	220	77	37	*5,440	*66	41	28
21	23	34	27	11	120	212	74	38	*5,910	67	41	26
22	24	37	26	11	130	212	72	36	2,790	63	40	5
23	24	38	25	10	150	212	68	41	875	62	42	24
24	24	36	24	10	200	220	65	46	406	62	42	24
25	24	36	24	10	236	220	62	45	366	59	45	23
26	24	36	23	10	197	278	60	54	276	56	48	22
27	24	34	22	10	65	270	62	124	236	54	48	22
28	24	34	22	10	71	d240	54	106	220	54	47	23
29	24	32	21	10	.....	d200	58	102	210	52	49	26
30	24	34	21	10	.....	d150	61	93	204	58	47	25
31	24	.....	20	10	.....	d110	.....	154	.....	60	44	.....
1954–55												
1	39	25	23	23	10	20	119	98	25	14	18	11
2	*165	21	26	23	10	200	94	64	28	14	16	11
3	101	24	26	22	10	350	98	61	30	13	17	10
4	40	28	22	22	10	300	85	46	46	14	15	9.2
5	39	32	20	22	10	180	71	34	60	46	15	9.2
6	39	37	20	21	10	110	72	31	61	825	16	8.9
7	42	33	19	21	10	100	64	33	65	134	16	8.6
8	40	32	18	20	10	150	57	31	59	55	16	8.6
9	40	33	17	19	10	*825	52	30	20	45	15	8.2
10	107	32	18	18	10	1,000	46	29	16	788	15	8.2
11	115	30	19	17	10	444	42	31	18	314	57	8.6
12	89	30	20	16	10	252	42	30	18	103	20	7.8
13	74	31	*20	15	11	140	40	28	19	40	18	7.8
14	69	30	21	14	11	85	40	28	18	164	16	8.2
15	60	*31	21	13	*12	74	37	27	*18	180	16	8.6
16	49	31	22	12	11	64	43	26	19	98	*16	7.8
17	34	30	22	11	11	*60	35	26	53	81	15	8.2
18	33	30	22	*11	10	62	29	*25	59	77	15	8.2
19	31	30	22	10	10	62	*30	23	46	*47	14	9.6
20	*30	30	23	10	10	50	28	22	30	38	13	9.2
21	30	28	23	10	10	40	27	22	24	30	12	9.6
22	31	28	23	10	9	30	26	20	23	28	12	8.9
23	31	26	23	10	9	25	27	20	20	29	13	10
24	31	26	24	10	9	23	37	22	17	29	14	9.6
25	31	26	24	10	9	22	41	21	16	25	13	11
26	30	24	24	10	9	21	68	20	16	25	12	11
27	30	23	24	10	9	25	70	23	16	23	12	10
28	29	23	23	10	9	30	429	23	16	20	12	10
29	27	20	23	10	.....	40	205	23	15	20	13	9.6
30	26	20	23	10	.....	58	98	23	16	19	12	10
31	25	.....	23	10	.....	194	.....	25	.....	18	12	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Dec. 21-31, 1953; Jan. 1 to Feb. 24, Mar. 2-7, Dec. 4-31, 1954; Jan. 1 to Mar. 10, Mar. 20-29, 1955.

West Fork Ditch at Holly Springs, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	31.4	17.4	13.5	9.71	54.2	746	274	504	334	307	605	422
1951-52	188	99.6	83.9	127	399	546	288	137	218	490	99.5	46.5
1952-53	35.0	36.7	24.1	29.1	35.5	221	155	139	382	68.7	96.5	28.5
1953-54	22.5	28.1	33.1	13.7	55.2	138	76.0	74.1	765	93.1	46.3	30.0
1954-55	50.2	28.2	21.9	14.5	10.0	162	71.7	31.1	29.6	108	16.0	9.22

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.079	0.044	0.034	0.025	0.137	1.89	0.694	1.28	0.846	0.777	1.53	1.07
1951-52	.476	.252	.212	.322	1.01	1.38	.729	.347	.552	1.24	.252	.118
1952-53	.089	.093	.061	.084	.090	.559	.392	.352	.967	.174	.244	.072
1953-54	.057	.071	.084	.035	.140	.349	.192	.188	1.94	.236	.117	.076
1954-55	.127	.071	.055	.037	.025	.410	.182	.079	.075	.273	.041	.023

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.09	0.05	0.04	0.03	0.14	2.18	0.77	1.47	0.94	0.90	1.76	1.19
1951-52	.55	.28	.24	.37	1.09	1.59	.81	.40	.62	1.43	.29	.13
1952-53	.10	.10	.07	.09	.09	.64	.44	.40	1.08	.20	.28	.08
1953-54	.07	.08	.10	.04	.15	.40	.21	.22	2.16	.27	.14	.08
1954-55	.15	.08	.06	.04	.03	.47	.20	.09	.08	.32	.05	.03

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	1,930	1,040	833	597	3,010	45,860	16,330	31,000	19,900	18,860	37,170	25,080
1951-52	11,550	5,920	5,160	7,830	22,930	33,590	17,130	8,450	12,980	30,160	6,120	2,760
1952-53	2,150	2,180	1,480	1,790	1,970	13,570	9,200	8,520	22,710	4,220	5,930	1,700
1953-54	1,390	1,670	2,040	845	3,070	8,480	4,520	4,550	45,520	5,720	2,850	1,750
1954-55	3,090	1,680	1,340	893	553	9,990	4,270	1,910	1,760	6,660	984	549

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950									101	3.46	72,940
1951	Mar. 28, 1951	22.28	6,450	7.6	279	0.706	9.56	201,600	304	10.45	220,500
1952	July 8, 1952	18.75	5,000	32	227	.575	7.80	164,600	204	7.00	147,800
1953	June 9, 1953	18.89	5,050	21	104	.263	3.57	75,420	103	3.55	74,710
1954	June 20, 1954	22.91	7,860	9	114	.289	3.92	82,440	115	3.96	83,440
1955	July 10, 1955	(1) 11.30	1,640	7.8	46.5	.118	1.60	33,680			

(1) Maximum gage height, 12.8 ft. Mar. 9, 1955 (ice jam).

Peak Discharge (base, 900 cfs)

1951: Mar. 28 (10 a.m.) 6,450 cfs (22.28 ft.); May 2 (1 p.m.) 2,580 cfs (17.8 ft.); May 9 (4 p.m.) 1,060 cfs (13.3 ft.); May 18 (5 a.m.) 1,290 cfs (14.3 ft.); June 19 (7 p.m.) 2,140 cfs (16.2 ft.); June 23 (4 p.m.) 1,400 cfs (13.15 ft.); July 3 (8 a.m.) 1,160 cfs (12.2 ft.); July 19 (3 a.m.) 1,160 cfs (12.25 ft.); Aug. 16 (4 a.m.) 2,100 cfs (16.0 ft.); Sept. 10 (1 a.m.) 1,740 cfs (14.55 ft.); Oct. 4 (4 p.m.) 1,180 cfs (12.30 ft.).

1952: Feb. 12 (12 M) about 2,000 cfs (16.10 ft.); Mar. 14 (2 a.m.) 2,060 cfs (13.40 ft.); Mar. 19 (11 a.m.) 1,330 cfs (11.30 ft.); Mar. 31 (7 a.m.) 3,440 cfs (16.35 ft.); June 9 (7 a.m.) 1,370 cfs (11.25 ft.); July 8 (6:30 p.m.) 5,000 cfs (18.75 ft.).

1953: Mar. 12 (about 7 a.m.) 1,120 cfs (10:35 ft.); June 9 (about 3 p.m.) 5,050 cfs (18.89 ft.).

1954: June 1 (9 a.m.) 985 cfs (9.50 ft.); June 11 (8 a.m.) 1,190 cfs (10.39 ft.); June 20 (12 p.m.) 7,860 cfs (22.91 ft.)

1955: Mar. 9, about 1,000 cfs; July 6 (about 5 a.m.) 1,390 cfs (10.60 ft.); July 10 (about 10 a.m.) 1,640 cfs (11.30 ft.).

Monona-Harrison Ditch near Turin, Iowa

LOCATION.—Lat. 41°58′, long. 95°59′, on line between secs. 29 and 32, T. 83 N., R. 44 W., on right pier at downstream side of bridge of Brown's grade, 1 mile west of gaging station on Little Sioux River near Turin, 1.5 miles downstream from equalizer ditch connecting Little Sioux River and Monona-Harrison ditch, 4 miles southwest of Turin, 5.5 miles northeast of Blencoe, and 13 miles upstream from mouth.

DRAINAGE AREA.—4,460 sq. mi. approximately (combined area above this station and above station on Little Sioux River, 1 mile east).

RECORDS AVAILABLE.—April 1939 to September 1955. Prior to May 1942, published as "near Blencoe."

GAGE.—Water-stage recorder. Datum of gage is 1,020.00 ft. above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to May 7, 1942, wire-weight gage at site 4.8 miles downstream at datum 10.40 ft. lower. May 7, 1942, to Oct. 13, 1953, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—16 years, 1,061 cfs (768,100 acre-ft. per year).

EXTREMES.—1939-1955: Maximum discharge, 21,000 cfs June 20, 1954 (gage height, 23.40 ft.); maximum gage height, 25.6 ft. from floodmarks, Mar. 4, 1949 (ice jam); minimum daily discharge, 3 cfs Sept. 8, 1941.

REMARKS.—Records good except those for periods of ice effect, doubtful or no gage-height record, which are poor. Monona-Harrison ditch is a dredged channel and is a continuation of West Fork ditch, paralleling Little Sioux River into which it empties a quarter of a mile above mouth of the Little Sioux River. At times part or all of flow of Little Sioux River (see p. 330) is diverted into Monona-Harrison ditch through an equalizer ditch which connects the two channels 1.5 miles above station. The diversion is regulated by changing the height of an obstruction composed of earth and rock in the equalizer ditch.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	778	209	180	110	80	5,320	11,800	8,560	3,260	3,930	1,760	3,580
2	850	202	180	110	84	4,280	10,500	10,400	4,600	5,830	1,700	3,060
3	640	254	180	110	82	4,060	*9,160	9,800	5,050	10,000	2,260	2,630
4	550	230	170	110	80	a2,000	8,500	8,700	4,600	7,800	2,690	2,570
5	520	230	170	110	78	a1,500	8,200	7,800	4,450	*6,010	2,150	2,390
6	495	216	170	110	76	1,330	8,400	7,150	4,450	6,260	*1,020	2,270
7	470	209	170	110	*74	1,210	9,000	6,790	4,900	5,930	1,760	*2,150
8	403	202	170	105	*74	1,170	9,700	6,340	5,850	5,210	1,650	1,950
9	*382	202	160	105	72	900	10,400	*5,930	5,370	4,900	1,760	4,280
10	350	190	160	*105	72	800	*10,600	6,010	4,600	4,680	1,870	5,690
11	320	190	160	105	82	700	a10,900	5,690	4,000	4,450	1,820	4,600
12	300	*184	*160	105	82	650	a10,600	5,050	3,580	3,860	1,600	7,630
13	290	190	160	105	82	600	10,300	4,520	3,190	3,930	3,150	10,500
14	280	184	150	105	84	550	9,500	4,300	2,870	4,300	*8,520	10,100
15	271	216	150	105	86	520	8,400	4,150	2,690	4,220	*13,900	7,600
16	300	190	150	105	90	500	7,150	3,860	2,630	4,080	12,800	6,090
17	254	190	150	105	95	470	6,340	3,720	3,400	4,000	12,500	5,530
18	246	184	140	105	100	450	5,690	4,300	5,520	4,600	10,300	5,530
19	240	190	140	100	105	450	5,050	4,000	6,900	4,450	6,790	5,370
20	230	202	130	100	110	450	4,680	3,450	7,600	4,080	6,700	5,210
21	a228	223	130	100	120	450	4,450	3,450	*5,010	3,780	8,100	4,450
22	a226	220	130	100	130	450	4,600	3,190	4,450	4,000	5,690	3,780
23	223	220	125	100	150	600	4,380	3,000	3,860	4,030	4,450	3,380
24	223	210	125	100	250	1,200	4,150	2,030	6,300	3,780	3,860	3,060
25	209	210	120	100	500	2,500	4,380	2,750	5,370	3,690	3,450	2,930
26	223	200	120	98	1,000	6,200	a4,500	2,450	6,810	3,450	3,320	2,930
27	230	190	120	96	1,300	*15,100	4,750	2,210	5,210	3,190	5,290	2,750
28	223	190	120	94	3,500	a13,800	a4,900	1,920	4,750	2,510	7,330	2,630
29	223	190	115	92	.....	a13,500	a5,100	1,870	4,600	2,270	6,520	2,510
30	216	180	115	90	.....	a13,200	6,170	1,820	4,150	1,980	4,820	2,450
31	216	.....	115	88	.....	a13,000	.....	2,330	.....	1,870	3,860	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1950; Jan. 1 to Feb. 27, Mar. 9-25, 1951.

Monona-Harrison Ditch near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	2,330	1,760	1,290	790	1,440	2,200	12,700	2,450	1,450	2,300	930	1,250
2.....	1,950	1,540	1,390	780	1,750	1,900	*10,100	2,400	1,400	2,700	895	1,300
3.....	1,900	1,390	*1,540	770	2,150	1,700	*8,590	2,300	1,300	3,680	960	1,000
4.....	*4,950	1,300	1,540	760	2,800	1,600	9 310	2,250	*1,350	3,390	1,050	808
5.....	4,150	*1,250	1,540	740	*2,650	2,050	10,500	2,170	1,250	2,580	*980	700
6.....	3,120	1,200	1,540	730	2,500	2,400	11,500	2,200	1,200	2,300	860	700
7.....	2,690	1,270	1,440	720	2,350	2,700	10,200	2,100	1,200	10,900	810	650
8.....	2,570	1,340	1,440	*710	2,050	2,400	9,200	2,040	1,200	*12,400	760	620
9.....	2,510	1,340	1,340	700	1,900	2,150	8,400	2,130	1,970	10,100	800	570
10.....	2,270	1,540	1,190	700	2,500	2,000	*7,750	*2,000	1,950	8,470	760	*535
11.....	2,000	1,540	1,050	700	5,000	1,800	7,000	2,070	1,400	5,200	710	510
12.....	2,090	1,490	950	700	8,000	5,580	6,500	2,000	1,300	4,480	680	480
13.....	2,000	1,490	830	690	10,000	*10,500	6,000	1,920	1,200	4,400	670	470
14.....	1,950	1,490	700	680	11,500	8,230	5,500	1,800	1,160	5,040	660	500
15.....	1,980	1,390	810	740	10,300	4,160	5,100	1,900	2,120	4,960	1,250	510
16.....	1,870	1,340	880	700	8,400	3,020	4,500	2,000	1,700	3,110	1,160	490
17.....	1,700	1,120	940	670	6,250	3,840	*4,100	1,850	1,350	2,640	1,080	450
18.....	1,700	1,100	1,000	650	4,320	5,650	3,800	1,700	1,080	2,400	965	420
19.....	1,700	1,060	1,030	1,700	3,600	8,830	3,750	1,620	1,200	2,050	878	400
20.....	1,700	1,000	1,040	5,000	2,800	8,710	3,600	1,550	1,580	1,850	790	410
21.....	1,820	940	1,030	3,300	2,500	8,710	3,450	1,700	5,620	1,800	760	400
22.....	1,980	900	1,000	1,800	2,300	7,530	3,300	2,520	2,300	1,550	715	400
23.....	2,000	860	970	1,400	2,150	3,840	3,200	3,600	2,100	1,400	670	390
24.....	2,020	810	940	1,220	2,030	3,200	3,050	3,250	1,850	1,250	625	390
25.....	2,090	760	900	1,100	1,900	3,000	2,950	2,520	1,550	1,200	610	390
26.....	2,200	730	850	1,000	1,800	3,300	2,800	2,350	3,650	1,160	610	380
27.....	2,300	700	830	920	2,050	3,750	2,700	2,460	*9,970	1,120	610	370
28.....	2,200	1,010	820	900	2,200	4,080	2,650	2,250	4,030	1,040	1,090	360
29.....	2,060	1,080	810	900	2,450	5,200	2,550	2,000	2,640	965	1,100	350
30.....	1,950	1,170	800	910	.....	11,600	2,500	1,950	2,610	930	1,250	350
31.....	1,800	.....	800	1,020	.....	13,400	.....	1,850	.....	930	1,200	.....
1952-53												
1.....	350	360	250	255	260	900	2,000	2,080	948	*2,040	1,500	580
2.....	355	360	250	255	*297	700	1,850	2,400	965	3,110	1,600	550
3.....	360	360	250	255	300	640	2,050	2,610	*934	3,380	2,050	535
4.....	360	360	260	255	300	600	2,000	2,820	912	3,180	2,300	535
5.....	360	360	270	255	300	560	1,800	2,720	860	3,180	2,100	520
6.....	360	360	280	260	300	560	1,700	2,660	870	2,760	*2,050	476
7.....	360	372	300	260	300	580	1,650	2,620	965	2,300	2,640	476
8.....	*385	372	320	260	310	600	*1,600	2,510	3,830	1,950	2,640	476
9.....	360	372	340	260	310	700	1,550	2,360	9,060	1,950	2,400	*450
10.....	360	372	*360	260	310	1,200	1,450	2,120	11,700	1,950	2,300	463
11.....	360	372	360	260	310	*1,750	1,450	*2,160	*9,870	1,800	1,850	423
12.....	372	372	360	260	310	2,350	1,400	2,000	8,260	1,650	1,800	410
13.....	372	372	360	260	310	2,700	1,350	1,780	9,730	1,450	1,650	398
14.....	372	*372	360	270	310	2,970	1,250	1,680	*10,900	1,350	1,450	385
15.....	372	372	360	270	310	3,390	1,450	1,570	11,000	1,250	1,500	385
16.....	372	372	360	270	300	3,110	1,450	1,560	9,880	1,160	1,550	372
17.....	372	372	360	270	280	2,700	1,700	1,560	8,040	1,120	1,200	372
18.....	372	372	350	270	270	2,700	1,700	1,460	6,600	1,040	1,250	348
19.....	385	372	330	270	270	2,900	1,450	1,420	5,450	1,040	1,160	335
20.....	385	372	310	270	270	3,110	1,400	1,280	4,610	930	1,040	324
21.....	385	372	290	280	270	2,970	1,400	1,310	3,840	930	1,000	324
22.....	385	372	270	*280	270	2,830	1,400	1,350	3,310	930	930	312
23.....	385	360	260	280	270	2,700	1,250	1,400	2,930	878	878	312
24.....	385	348	250	280	300	2,580	1,200	1,380	2,710	860	825	312
25.....	385	335	250	280	450	3,110	1,400	1,560	4,950	808	775	324
26.....	385	310	250	280	600	2,150	1,450	1,390	5,730	760	745	312
27.....	372	290	250	290	700	1,900	1,450	1,240	3,660	775	700	312
28.....	372	270	250	290	800	1,750	1,400	1,220	3,220	842	660	300
29.....	372	260	250	290	.....	1,650	1,600	1,160	3,190	745	625	280
30.....	372	250	255	290	.....	1,750	1,750	1,090	3,100	715	595	270
31.....	360	.....	255	290	.....	2,050	.....	1,020	.....	1,350	595	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 4-7, 20-27, Dec. 11-31, 1951; Jan. 1 to Feb. 16, Feb. 20 to Mar. 10, Mar. 24-27, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 9, 1953. Doubtful or no gage-height record Oct. 23-31, 1951; Apr. 5 to May 21, Aug. 8-14, Aug. 29 to Sept. 3, Sept. 6-9, 1952; discharge estimated on basis of weather records and records for nearby stations.

Monona-Harrison Ditch near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	270	265	320	220	80	1,150	1,300	900	*5,500	5,490	760	1,320
2	268	268	323	220	*85	942	1,200	1,280	3,220	*4,680	740	1,120
3	250	*258	*404	210	90	900	1,100	1,400	4,500	4,100	722	1,000
4	242	250	560	210	95	870	1,010	1,450	3,830	3,630	705	900
5	238	250	560	*200	100	840	942	1,550	2,820	3,260	670	820
6	*235	245	460	190	105	800	*988	1,670	2,410	2,880	652	760
7	235	232	422	180	115	760	860	1,610	2,120	2,600	635	800
8	235	225	392	170	120	800	1,080	1,500	1,850	2,420	635	760
9	240	242	338	160	140	*800	1,100	1,380	1,630	2,240	635	780
10	255	260	260	150	150	860	942	1,280	1,490	2,060	618	705
11	258	272	240	140	160	900	880	1,150	3,060	1,880	600	670
12	255	278	230	120	180	1,120	820	1,080	4,660	1,700	600	652
13	252	276	220	110	200	880	800	1,010	3,810	1,590	584	618
14	250	278	220	100	220	680	760	942	3,010	1,440	552	584
15	250	285	220	95	240	540	800	840	2,290	1,340	552	*568
16	258	282	230	85	270	580	900	800	*1,750	*1,240	536	568
17	268	285	240	80	320	1,030	920	760	1,610	1,160	635	508
18	270	282	260	75	390	2,270	942	720	1,520	1,100	*670	584
19	350	320	280	70	492	2,810	920	*980	8,670	1,080	705	584
20	299	520	299	70	1,270	2,960	942	660	*18,900	1,010	722	508
21	272	540	290	65	2,600	2,670	1,400	610	*18,700	1,020	740	536
22	250	464	280	60	1,850	2,530	1,150	600	*18,900	980	705	552
23	240	413	270	60	1,790	2,600	988	720	*16,900	940	820	568
24	245	383	270	60	1,670	2,810	900	860	*15,400	900	760	536
25	258	359	260	60	1,480	2,810	900	780	*14,300	860	740	521
26	262	344	260	60	1,610	2,330	840	700	13,800	820	688	506
27	265	335	250	65	1,280	2,030	780	*3,420	12,700	760	1,210	476
28	268	314	240	70	1,220	1,850	760	2,390	*11,100	722	1,590	552
29	270	323	240	70	.....	1,670	740	2,090	8,100	722	1,820	600
30	272	314	230	75	.....	1,550	800	1,320	6,560	740	1,590	476
31	265	.....	230	80	.....	1,400	.....	2,710	.....	780	1,490	.....
1954-55												
1	460	740	460	370	205	200	2,110	1,630	400	402	143	75
2	1,780	720	475	403	202	500	1,810	1,580	364	275	140	72
3	1,650	680	475	415	200	1,500	1,630	1,480	349	232	133	73
4	780	475	400	415	196	1,400	1,820	1,280	346	211	127	71
5	700	740	430	385	192	1,100	1,870	1,130	400	255	120	65
6	660	660	430	364	189	800	1,480	1,040	430	3,020	136	65
7	640	700	445	355	187	700	1,260	940	445	1,180	168	66
8	680	760	*415	385	183	900	1,130	880	415	582	185	66
9	680	680	445	385	180	1,860	1,100	860	385	430	140	65
10	1,770	660	420	361	179	*5,710	1,080	820	370	3,530	900	62
11	1,790	640	400	379	176	5,580	1,000	800	367	5,960	533	59
12	1,160	660	395	370	174	3,960	950	740	379	1,530	235	61
13	1,040	640	390	352	172	3,050	920	720	385	1,000	162	65
14	1,020	600	385	335	170	2,700	880	660	367	1,000	145	62
15	1,080	600	380	322	168	2,980	*840	620	346	960	133	64
16	1,080	600	380	312	*166	*2,110	780	582	328	740	127	*62
17	1,080	*600	385	302	164	1,750	760	*505	*325	505	*120	61
18	1,100	582	390	295	162	1,430	720	535	415	*385	120	62
19	*1,060	565	400	*284	161	1,230	700	505	385	334	115	82
20	1,020	565	475	273	160	1,080	640	475	349	316	111	79
21	980	550	*490	266	159	1,090	600	460	349	430	116	147
22	920	550	445	258	158	1,160	582	445	358	280	116	92
23	880	535	490	260	156	880	582	415	316	329	100	82
24	840	520	460	246	155	760	760	400	331	448	92	75
25	800	520	445	240	154	680	920	385	307	275	94	82
26	900	520	430	232	153	590	1,130	400	278	240	86	94
27	860	505	358	228	152	570	1,480	382	262	202	85	102
28	820	505	260	222	152	660	3,340	373	258	180	76	94
29	780	490	272	218	.....	780	2,270	367	248	176	97	85
30	780	490	300	213	.....	1,100	1,810	400	238	160	93	82
31	760	.....	325	209	.....	1,810	.....	400	.....	147	76	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 11-31, 1953; Jan. 1 to Feb. 18, Mar. 3-6, Dec. 10-18, 29-31, 1954; Jan. 1, 2, Jan. 12 to Mar. 9, Mar. 25-28, 1955.

Monona-Harrison Ditch near Turin, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	343	203	140	103	309	3,481	7,400	4,798	4,087	4,420	4,978	4,321
1951-52	2,254	1,197	1,072	1,101	3,851	4,836	5,908	2,161	2,157	3,493	865	554
1952-53	371	351	297	270	343	1,941	1,552	1,791	5,067	1,574	1,431	396
1953-54	260	312	300	115	653	1,508	946	1,255	7,210	1,812	809	675
1954-55	985	602	408	311	172	1,633	1,232	718	350	832	102	75.7

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	21,060	12,090	9,000	6,310	17,150	214,000	440,700	294,400	278,900	271,800	306,100	257,100
1951-52	138,600	71,230	65,910	67,700	221,500	297,400	351,600	132,900	128,400	214,800	53,210	32,970
1952-53	22,810	20,900	18,290	16,610	19,080	119,300	92,330	110,100	301,500	96,780	87,980	23,550
1953-54	15,960	18,570	18,440	7,100	36,280	92,710	56,260	77,140	429,000	111,400	49,750	40,170
1954-55	60,600	35,810	25,090	19,150	9,570	100,400	73,320	44,170	20,820	51,180	9,970	4,510

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Runoff in acre feet	Mean	Runoff in acre feet
	Date	Gage height in feet	Discharge					
1950							826	598,200
1951	Mar. 27, 1951.	24.25	17,000	72	2,940	2,129,000	3,263	2,362,000
1952	July 7, 1952.	(1)20.32	14,900	350	2,447	1,776,000	2,152	1,562,000
1953	June 10, 1953.	18.47	12,200	250	1,284	929,200	1,271	920,200
1954	June 20, 1954.	23.40	21,000	60	1,316	953,000	1,411	1,022,000
1955	July 11, 1955.	15.16	9,340	59	628	454,600		

(1) Maximum gage height, 21.24 ft. Feb. 14, 1952 (backwater from ice).

Soldier River at Pisgah, Iowa

LOCATION.—Lat. 41°50', long. 95°56', in NW ¼ sec. 14, T. 81 N., R. 44 W., on left bank on downstream side of highway bridge at west edge of Pisgah, 2.5 miles downstream from Stowe Creek, and 13 miles upstream from mouth.

DRAINAGE AREA.—417 square miles.

RECORDS AVAILABLE.—March 1940 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,036.53 feet above mean sea level, datum of 1929. Prior to Oct. 11, 1954, wire-weight gage at present site and datum with supplementary water-stage recorder operating above 8.2 foot gage height from Mar. 2, 1946, to Sept. 24, 1953.

AVERAGE DISCHARGE.—15 years, 141 cfs (102,100 acre-feet per year).

EXTREMES.—1940-55: Maximum discharge, 22,500 cfs June 12, 1950 (gage height, 28.17 ft.); minimum daily, 2 cfs Jan. 2-10, 1945.

REMARKS.—Records fair except those for period of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	44	19	17	15	10	496	148	4,090	2,120	133	103	169
2	718	18	17	15	10	189	*227	656	2,050	1,260	120	166
3	177	20	17	15	10	165	586	419	356	4,640	341	169
4	61	29	17	15	10	153	623	208	285	520	133	169
5	45	26	17	15	10	281	381	234	260	*403	131	176
6	44	22	17	15	10	300	430	197	259	289	*136	169
7	47	20	17	15	10	141	238	163	574	242	126	*157
8	34	20	17	15	8	89	200	157	514	200	128	166
9	*33	18	17	*15	*8	70	186	176	317	169	128	2,280
10	32	11	17	15	8	66	208	*361	263	154	200	538
11	29	17	*17	15	20	62	136	157	259	151	145	208
12	29	*20	17	15	25	60	103	128	263	154	126	2,070
13	26	23	17	15	20	58	120	118	230	200	747	562
14	26	23	17	15	18	50	326	197	*215	139	3,260	381
15	24	42	16	15	16	54	193	223	215	118	2,740	312
16	24	30	16	15	14	52	109	133	246	108	280	259
17	24	20	16	15	14	52	126	131	1,770	101	2,600	263
18	23	23	16	15	500	50	131	123	*4,040	371	403	246
19	20	24	16	15	1,270	50	110	110	1,770	108	280	227
20	19	24	16	15	624	50	106	151	556	133	2,000	227
21	20	23	16	15	689	50	308	99	242	103	580	219
22	20	22	16	15	832	271	160	95	219	99	326	230
23	20	22	16	14	444	476	123	88	570	101	298	211
24	22	21	16	13	287	644	154	83	700	101	263	215
25	23	20	16	12	304	1,170	336	97	234	103	267	227
26	23	18	16	11	1,040	6,140	180	88	1,120	108	219	219
27	25	17	16	11	189	6,150	246	75	259	113	425	183
28	25	17	15	10	1,580	*5,720	230	75	176	123	276	176
29	22	17	15	10	.....	1,360	1,660	83	145	113	197	183
30	22	17	15	10	.....	526	1,780	77	151	113	200	197
31	22	.....	15	10	.....	238	.....	1,200	.....	108	186	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 20 to Dec. 31, 1950; Jan. 1 to Feb. 18, Mar. 9-21, 1951.

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	197	115	110	90	500	64	326	215	190	272	180	99
2	197	92	145	60	540	70	276	197	*223	215	136	92
3	529	90	*154	62	540	75	219	197	208	656	219	88
4	*2,120	84	126	64	*359	80	200	186	193	154	*169	88
5	*276	*80	123	66	320	85	180	*160	180	142	145	97
6	180	90	126	68	300	90	173	148	173	912	166	90
7	163	100	123	*69	270	95	*186	255	166	*2,620	151	90
8	148	200	110	75	250	100	176	346	157	460	351	97
9	130	190	101	80	220	110	366	234	160	289	157	97
10	131	180	90	80	200	120	215	197	154	255	142	*92
11	126	160	80	80	180	160	346	180	148	223	133	86
12	123	157	70	80	166	1,210	308	166	148	200	123	86
13	110	131	65	100	688	1,280	289	160	142	223	131	84
14	103	120	80	500	786	148	267	160	385	990	230	259
15	108	106	90	700	744	118	246	160	460	381	387	123
16	106	106	100	600	154	173	208	272	173	230	139	84
17	99	105	100	520	123	115	242	223	136	223	115	83
18	103	110	100	500	115	1,370	246	163	133	200	110	86
19	118	120	100	3,440	110	940	238	160	133	272	321	86
20	115	140	90	740	110	502	227	157	591	806	163	95
21	510	130	90	620	150	197	263	386	3,270	211	157	88
22	242	120	90	580	280	436	336	641	460	180	103	92
23	157	106	90	540	133	263	381	1,150	308	173	103	88
24	148	103	90	520	126	425	255	392	238	148	101	88
25	139	110	90	500	101	193	242	259	341	154	120	84
26	133	193	80	470	97	*230	223	251	230	145	115	83
27	151	371	80	460	123	200	215	454	5,630	139	106	83
28	139	754	80	440	106	289	208	223	610	142	166	81
29	136	163	85	420	92	1,290	197	215	326	133	272	75
30	139	136	90	400	.....	850	200	211	259	131	133	75
31	118	.....	95	450	.....	623	.....	211	.....	145	113	.....
1952-53												
1	74	72	70	59	62	223	192	210	99	106	32	33
2	68	70	78	59	*62	204	192	198	99	106	707	33
3	74	64	80	59	62	207	256	252	104	97	2,080	45
4	74	62	81	59	64	148	170	207	104	97	383	51
5	74	*72	*81	*59	66	164	148	186	97	91	405	41
6	74	64	81	59	70	170	153	178	104	88	1,420	39
7	84	59	81	59	80	140	151	172	118	82	173	36
8	*84	64	81	59	90	138	*151	170	95	74	126	35
9	82	64	84	59	100	232	170	161	108	*70	92	*34
10	84	64	88	59	110	414	175	219	768	68	81	33
11	84	68	90	59	120	*318	148	164	183	68	139	35
12	86	68	86	59	110	252	143	*146	88	74	95	32
13	86	70	82	59	100	210	143	143	82	74	62	34
14	86	68	78	59	90	342	143	143	70	74	*55	34
15	88	68	74	59	80	270	178	146	62	78	55	33
16	86	68	72	59	75	195	161	195	145	61	62	31
17	86	111	72	59	75	204	216	156	93	57	56	32
18	86	123	72	60	80	232	148	164	*97	59	54	28
19	86	102	72	60	90	175	148	143	82	61	54	28
20	84	82	70	60	100	175	140	143	84	50	54	28
21	86	93	68	62	95	175	159	156	88	57	56	25
22	86	95	66	62	90	189	104	207	84	50	51	28
23	84	95	64	62	100	186	140	153	70	47	47	29
24	86	93	62	62	250	148	159	404	84	41	48	28
25	82	91	60	62	1,430	156	229	207	2,410	41	47	36
26	82	97	59	62	500	153	148	133	310	168	41	38
27	82	78	59	62	800	148	138	133	186	307	39	28
28	74	74	59	62	620	146	133	128	164	72	37	30
29	70	74	59	62	.....	138	153	123	146	60	37	30
30	80	74	59	62	.....	366	262	128	120	49	36	28
31	82	.....	59	62	.....	204	.....	99	.....	37	35	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 3-9, 17-20, Dec. 11-31, 1951; Jan. 1-18, Jan. 21 to Feb. 11, Feb. 19-21, Mar. 2-8, Nov. 28 to Dec. 31, 1952; Jan. 1 to Feb. 24, 1953. Discharge computed from gage readings or graph based on graph readings Oct. 3, 4, 21, Nov. 28, 1951; Jan. 19, 20, Feb. 13, 14, Mar. 12, 13, 18-20, 29-31, May 21-24, 27, June 14, 15, 20-22, 25-28, July 6-8, 14, 15, 19, 20, 1952.

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	27	30	33	31	*7	60	55	88	610	90	75	41
2	26	*31	43	30	7	44	62	670	317	592	58	41
3	26	28	40	29	20	40	50	211	694	108	54	40
4	25	27	*81	*28	30	40	43	101	100	80	46	39
5	*25	28	70	28	50	40	*53	81	133	84	99	37
6	26	28	47	27	70	56	67	77	131	84	51	37
7	27	38	75	27	80	83	60	72	113	79	55	36
8	29	28	77	26	80	75	47	70	103	74	70	36
9	29	28	54	26	68	66	45	67	108	72	54	77
10	30	33	52	25	60	*66	48	64	103	68	49	64
11	31	41	50	25	60	60	40	64	123	67	56	47
12	31	40	49	24	60	56	39	61	95	66	72	41
13	29	38	47	24	60	33	38	58	92	66	62	*43
14	29	36	47	23	60	56	39	55	95	62	60	43
15	31	36	47	23	60	42	53	53	*95	60	51	40
16	31	36	47	22	81	67	70	53	110	60	49	55
17	32	37	47	22	75	68	47	48	97	61	259	56
18	45	38	47	21	90	66	41	50	88	62	151	45
19	36	240	46	21	128	84	43	55	5,880	61	68	42
20	29	336	45	20	1,040	60	48	*50	404	62	47	41
21	28	88	44	18	204	49	*1,860	47	2,910	67	44	38
22	27	51	43	16	110	51	154	47	331	*66	176	37
23	28	50	42	14	131	49	70	289	197	64	*341	40
24	27	49	41	12	81	62	58	263	*163	60	83	39
25	29	36	40	10	90	79	50	77	136	58	61	37
26	33	24	39	10	90	60	45	72	128	55	55	40
27	31	40	38	10	90	55	49	2,040	120	53	361	38
28	32	23	36	8	66	79	43	356	103	55	79	223
29	34	48	35	8	.....	42	44	120	108	56	53	640
30	32	43	34	8	.....	61	229	95	90	55	47	60
31	29	.....	32	8	.....	61	.....	562	.....	110	43	.....
1954-55												
1	40	53	49	35	21	100	118	40	30	166	88	9.6
2	40	29	53	36	21	1,200	93	41	30	36	13	9.6
3	142	35	53	37	21	*1,500	81	39	31	18	9.2	10
4	55	58	42	38	21	400	184	39	36	15	8.3	9.6
5	53	45	38	40	22	150	100	36	69	16	8.3	9.6
6	48	48	36	39	22	90	71	38	53	18	8.3	10
7	47	48	35	37	22	70	61	33	*41	24	8.9	*10
8	64	*47	35	35	23	900	57	31	34	22	10	10
9	61	45	35	32	23	831	53	37	31	18	10	9.6
10	88	45	35	30	24	432	50	40	31	81	128	11
11	216	45	35	28	25	284	49	38	33	272	24	9.2
12	*62	45	35	26	26	187	50	36	35	42	13	9.6
13	50	45	35	24	27	129	56	36	34	*29	9.2	11
14	56	44	35	22	28	133	51	34	31	27	8.9	11
15	50	44	*35	22	29	*163	*46	33	28	24	8.9	10
16	44	45	35	21	30	91	44	*33	28	20	9.2	9.6
17	45	45	37	*20	*31	78	44	33	31	20	8.9	8.3
18	44	44	42	19	31	75	44	34	58	20	8.6	8.3
19	45	43	49	18	32	82	44	33	53	21	8.9	25
20	79	42	61	18	32	75	45	32	36	20	8.3	24
21	55	44	55	18	33	89	44	31	30	27	12	122
22	49	48	61	18	34	79	48	31	27	78	42	35
23	48	47	56	18	34	103	118	31	26	221	17	18
24	47	44	39	18	34	91	184	36	38	27	* 11	13
85	47	42	49	19	35	150	81	32	36	16	9.6	12
26	163	41	60	19	35	100	53	38	28	14	8.6	14
27	88	47	50	19	35	110	46	39	25	11	8.0	19
28	55	50	42	20	37	120	81	36	26	10	7.7	18
29	49	42	38	20	.....	127	48	34	26	9.6	20	14
30	49	43	35	20	.....	270	42	32	27	8.3	11	13
31	47	.....	34	20	.....	204	.....	31	.....	7.7	11	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 10-31, 1953; Jan. 1 to Feb. 15, Mar. 3-5, Dec. 5-18, 29-31, 1954; Jan. 1 to Mar. 8, Mar. 25-28, 1955. Discharge computed from gage readings or graph based on gage readings Mar. 11, 12, Apr. 5-14, 24, 25, Apr. 29 to May 9, July 22, 23, July 26 to Sept. 18, Sept. 23-30, 1955.

Soldier River at Pisgah, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	55.6	21.8	16.3	13.9	287	814	329	332	700	348	502	366
1951-52	233	159	98.2	431	272	384	248	209	531	308	166	94.7
1952-53	81.4	78.2	72.7	60.2	199	207	167	173	212	79.5	234	33.2
1953-54	29.8	54.5	47.4	20.1	130	58.6	120	194	462	86.0	89.7	69.8
1954-55	66.3	44.8	42.9	25.4	28.1	271	69.5	35.1	34.7	43.4	18.0	16.8

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.133	0.052	0.039	0.033	0.688	1.95	0.789	0.796	1.68	0.835	1.35	0.878
1951-52	.559	.381	.235	1.03	.652	.921	.595	.045	1.27	.882	.398	.227
1952-53	.195	.188	.174	.144	.477	.496	.400	.415	.508	.191	.561	.080
1953-54	.071	.131	.114	.048	.312	.141	.288	.465	1.11	.206	.215	.167
1954-55	.159	.107	.103	.061	.067	.650	.167	.084	.083	.104	.043	.040

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.15	0.06	0.05	0.04	0.72	2.25	0.88	0.92	1.87	0.96	1.55	0.98
1951-52	.64	.42	.27	1.19	.70	1.06	.66	.74	1.42	1.02	.46	.25
1952-53	.23	.21	.20	.17	.50	.57	.45	.48	.57	.22	.65	.09
1953-54	.08	.15	.13	.06	.33	.16	.32	.54	1.24	.24	.25	.19
1954-55	.18	.12	.12	.07	.07	.75	.19	.10	.09	.12	.05	.04

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	3,420	1,300	1,000	855	15,950	50,060	19,560	20,390	41,650	21,380	34,560	21,770
1951-52	14,300	9,440	6,040	26,530	15,640	23,610	14,780	16,520	31,590	22,600	10,230	5,640
1952-53	5,010	4,660	4,470	3,700	11,070	12,740	9,940	10,650	12,600	4,890	14,400	1,970
1953-54	1,830	3,240	2,910	1,240	7,240	3,600	7,120	11,940	27,510	5,290	5,520	4,150
1954-55	4,080	2,660	2,640	1,560	1,560	16,690	1,140	2,160	2,070	2,670	1,110	998

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950									169	5.47	122,000
1951	June 17, 1951	27.46	20,400	8	320	0.767	10.43	231,900	354	11.50	256,000
1952	June 27, 1952	25.18	17,500	60	271	.650	8.83	196,900	250	8.14	181,300
1953	June 25, 1953	16.40	7,860	25	133	.319	4.34	96,100	124	406	89,940
1954	June 19, 1954	23.35	15,200	7	113	.271	3.69	81,590	115	3.75	82,910
1955	Mar. 8, 1955	(1) 11.79	3,890	7.7	58.5	.140	1.90	42,340			

(1) Maximum gage height, 12.45 ft. Mar. 2, 1955 (backwater from ice).

Peak Discharge (base, 5,000 cfs)

1951: Mar. 26 (9 p.m.) 17,000 cfs (24.85 ft.); May 1 (8:30 a.m.) 10,000 cfs (18.55 ft.); June 2 (1 a.m.) 7,860 cfs (16.35 ft.); June 17 (11 p.m.) 20,400 cfs (27.46 ft.); July 3 (4:30 a.m.) 15,400 cfs (23.52 ft.); Aug. 14 (7 a.m.) 9,000 cfs (17.56 ft.); Aug. 17 (9 a.m.) 7,050 cfs (15.48 ft.); Aug. 20 (1 p.m.) 5,380 cfs (13.65 ft.); Sept. 9 (12 M.) 6,240 cfs (14.60 ft.); Sept. 12 (12 M.) 5,720 cfs (14.05 ft.); Oct. 4 (2:30 a.m.) 5,380 cfs (13.55 ft.).

1952: Jan. 19 (12 M.) 8,800 cfs (17.35 ft.); Mar. 12 (10 p.m.) 5,210 cfs (13.45 ft.); June 21 (4 a.m.) 9,200 cfs (17.85 ft.); June 27 (6 a.m.) 17,500 cfs (25.18 ft.); July 6 (11 p.m.) 8,220 cfs (16.80 ft.).

1953: June 25 (5:30 a.m.) 7,860 cfs (16.40 ft.); Aug. 3 (2:30 a.m.) 7,680 cfs (16.24 ft.); Aug. 6 (2:30 a.m.) 5,550 cfs (13.80 ft.).

1954: Apr. 21 (4:30 a.m.) 9,000 cfs (17.6 ft.); May 27 (10 a.m.) 9,100 cfs (17.68 ft.); June 19 (6 a.m.) 15,200 cfs (23.35 ft.); June 21 (2:30 a.m.) 11,400 cfs (20.0 ft.).

1955: No peak above base.

Boyer River at Logan, Iowa

LOCATION.—Lat. 41°38'40", long. 95°47'00", in NW¼ sec. 19, T. 79 N., R. 42 W., on downstream handrail of bridge on U. S. Highway 30, 100 feet upstream from Illinois Central Railroad bridge at Logan, 10.5 miles upstream from Willow Creek and 16 miles upstream from mouth.

DRAINAGE AREA.—810 square miles.

RECORDS AVAILABLE.—May 1918 to July 1925, November 1937 to September 1955.

GAGE.—Wire-weight gage read once daily. Supplementary water-stage recorder operating above 4.5 ft. gage height since Oct. 22, 1946. Datum of gage is 1,009.38 ft. above mean sea level (Chicago and North Western Railway benchmark). May 25, 1918, to Apr. 16, 1925, chain gage, and Nov. 4, 1937 to Mar. 16, 1952, wire-weight gage, at bridge 400 ft. downstream at present datum. Apr. 17 to July 1, 1925, chain gage at site 700 ft. downstream at present datum.

AVERAGE DISCHARGE.—20 years (1918-20, 1922-23, 1938-55), 326 cfs (236,000 acre-ft. per year).

EXTREMES.—1918-25, 1937-55: Maximum discharge, 23,000 cfs, Mar. 28, 1951 (gage height, 20.03 ft.); maximum gage height, 20.7 ft. Mar. 3, 1949 (backwater from ice); minimum daily discharge, 1.5 cfs, July 16, 1938.

REMARKS.—Records fair except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	74	46	49	25	14	984	680	10,700	5,550	640	342	680
2	937	48	48	25	14	188	*700	2,980	4,320	1,980	330	660
3	264	50	48	24	14	230	1,020	2,030	1,710	11,700	1,260	640
4	116	61	48	23	14	392	1,090	1,530	1,360	2,170	700	560
5	96	53	48	23	13	385	990	1,300	1,090	1,380	560	560
6	94	46	47	22	13	830	922	1,120	968	1,060	*508	542
7	93	46	46	22	13	322	832	922	2,050	900	560	*469
8	82	47	45	21	13	86	620	878	1,710	742	366	455
9	*66	43	44	*20	*13	80	483	922	1,330	*620	372	3,220
10	62	40	43	20	13	80	469	*1,060	1,140	580	430	1,360
11	62	32	*43	20	14	57	472	1,020	1,040	560	434	1,060
12	58	*42	42	20	100	50	405	810	1,020	580	430	2,180
13	59	32	41	20	500	50	318	680	*700	720	1,040	1,190
14	55	32	40	20	100	50	390	810	640	788	*6,750	1,190
15	53	37	39	19	90	50	480	1,090	765	525	5,230	680
16	51	40	38	19	80	50	420	810	810	490	2,900	640
17	50	46	37	19	70	50	348	640	1,560	472	5,920	640
18	48	47	36	19	100	50	342	620	6,180	846	1,960	640
19	45	49	35	19	500	60	324	560	3,510	508	1,410	580
20	43	50	34	18	480	60	312	525	3,160	640	5,320	560
21	46	50	33	18	470	70	427	525	1,770	1,120	2,750	542
22	50	51	33	18	450	80	360	490	1,360	742	1,650	525
23	49	43	32	17	430	100	408	469	1,160	680	1,140	525
24	50	45	31	17	400	200	452	441	1,770	469	968	480
25	49	44	30	17	1,000	1,070	1,090	434	1,040	438	855	490
26	48	39	30	16	2,760	6,240	*832	434	1,530	424	810	486
27	47	39	29	16	650	14,400	855	390	1,220	417	788	444
28	47	40	28	16	912	17,000	922	354	990	405	990	427
29	46	40	27	15	.....	7,780	1,260	366	810	399	1,390	411
30	46	47	27	15	.....	2,530	*5,420	360	660	369	1,140	414
31	45	.....	26	15	.....	1,120	.....	4,340	.....	354	810	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 4-31, 1950; Jan. 1 to Feb. 25, Mar. 12-24, 1951.

Boyer River at Logan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	*411	348	360	140	600	337	1,040	483	466	466	292	304
2	408	345	327	140	700	373	830	450	*576	940	289	252
3	854	351	324	140	800	358	730	557	466	1,060	419	245
4	2,290	448	318	140	700	349	690	434	390	652	*378	222
5	1,120	427	315	140	600	352	633	*395	384	519	350	199
6	788	472	283	140	500	370	557	404	375	1,100	350	194
7	720	420	*277	*140	450	390	*557	450	369	*4,290	292	190
8	620	369	283	140	430	410	538	500	361	2,000	557	192
9	580	480	231	140	430	430	519	710	355	2,350	390	188
10	542	345	210	140	430	460	730	633	325	1,930	320	178
11	525	366	190	140	700	490	810	483	317	940	299	*176
12	525	369	170	140	1,410	578	810	450	310	710	274	163
13	490	*357	150	140	1,510	1,920	780	392	368	730	257	158
14	483	327	160	250	*1,260	835	790	419	1,420	1,300	450	500
15	476	333	170	1,000	835	525	810	652	576	890	450	254
16	458	266	170	900	650	490	730	538	450	690	466	188
17	448	260	170	700	525	560	671	500	419	595	339	181
18	424	258	180	600	475	*1,990	652	419	361	557	323	169
19	441	303	190	7,010	650	2,050	614	395	353	1,170	355	161
20	448	312	200	1,900	490	1,510	576	384	1,020	870	331	158
21	2,810	324	200	1,000	445	483	576	378	*7,410	750	304	158
22	968	327	200	700	400	342	633	706	983	466	240	158
23	660	324	200	600	475	390	810	1,090	614	483	234	156
24	600	250	200	650	460	684	710	750	595	466	231	154
25	560	250	200	700	397	519	614	633	614	302	234	161
26	508	350	200	600	400	334	576	500	679	297	234	161
27	486	600	180	540	460	500	538	614	9,300	289	222	158
28	455	500	160	500	430	690	519	514	1,420	284	316	154
29	384	400	150	470	415	1,740	500	595	750	282	1,140	148
30	384	370	140	450	.....	3,200	483	557	576	276	361	152
31	342	.....	140	450	.....	1,810	.....	434	.....	302	297	.....
1952-53												
1	150	125	150	100	100	718	530	550	262	200	a75	44
2	148	110	150	100	100	790	590	530	262	187	a70	44
3	148	110	160	100	100	512	610	550	262	183	89	49
4	137	106	160	100	100	334	457	550	254	174	419	46
5	154	*120	*161	100	120	353	457	570	246	165	512	44
6	152	104	165	100	150	331	450	550	238	174	642	43
7	150	112	170	100	200	292	366	530	252	144	388	41
8	150	122	170	100	250	304	362	530	630	142	382	41
9	*152	122	170	100	*329	415	*366	530	570	*136	378	41
10	144	122	170	100	400	865	375	a461	3,240	126	350	*42
11	146	125	170	100	400	815	366	395	790	124	146	34
12	146	127	160	100	400	*790	331	*382	590	130	a134	37
13	144	129	160	100	300	610	325	378	570	362	a122	38
14	139	133	150	100	300	610	301	382	512	331	*100	38
15	141	131	140	97	300	718	366	366	561	140	95	37
16	141	135	140	97	250	512	395	385	1,100	128	86	37
17	139	192	130	97	200	475	512	385	283	113	80	37
18	139	294	130	97	250	530	a457	391	*271	116	88	36
19	141	174	120	97	350	408	402	372	210	120	91	36
20	139	163	120	97	500	412	350	337	200	103	91	36
21	137	144	120	97	800	366	372	422	194	100	80	36
22	139	141	120	97	700	366	356	497	165	105	71	37
23	139	141	110	*97	600	372	356	550	159	105	65	36
24	135	139	100	97	2,000	313	350	530	157	95	59	36
25	135	144	100	97	1,500	301	512	457	1,160	78	65	36
26	135	139	100	100	890	289	493	440	865	78	47	37
27	133	140	100	100	1,330	289	457	362	446	540	a45	36
28	131	140	100	100	940	265	356	334	289	a130	a44	35
29	131	145	100	100	.....	268	388	325	241	a100	43	34
30	129	145	100	100	.....	550	630	319	225	a90	43	31
31	129	.....	100	100	.....	436	.....	319	.....	a80	43	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Nov. 24-30, Dec. 10-31, 1951; Jan. 1-18, Jan. 21 to Feb. 11, Mar. 6-10, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 25, 1953.

Boyer River at Logan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	30	a43	54	39	*7	a140	a90	178	*2,030	221	90	116
2.....	30	*41	54	38	8	a130	a100	935	1,810	202	88	109
3.....	29	40	97	37	9	a80	a99	530	1,220	190	82	102
4.....	28	40	*110	*35	15	a80	a70	371	812	188	80	95
5.....	*34	40	95	34	25	a80	*79	239	510	180	74	90
6.....	28	41	84	32	40	a110	d100	208	382	154	73	85
7.....	29	41	78	30	60	a150	d110	190	374	141	90	80
8.....	28	43	71	28	80	a130	d92	170	262	128	87	68
9.....	30	44	54	25	90	a120	86	150	248	120	98	86
10.....	30	44	60	24	100	*110	83	141	252	115	75	116
11.....	36	43	60	23	120	95	83	139	663	110	85	88
12.....	36	44	74	22	130	91	80	132	298	103	88	83
13.....	36	44	80	21	130	89	67	128	343	101	85	78
14.....	37	44	77	20	120	94	58	111	239	97	81	81
15.....	39	43	74	19	113	103	62	110	*218	94	75	82
16.....	39	43	70	18	107	103	92	113	221	97	*67	82
17.....	40	44	66	17	97	117	84	107	215	98	79	82
18.....	39	45	64	16	100	122	71	105	180	100	174	79
19.....	38	47	62	15	100	122	67	110	402	102	105	73
20.....	38	48	60	14	1,460	109	74	*111	3,320	103	83	68
21.....	39	49	58	13	d350	94	*5,070	123	8,560	102	460	a68
22.....	39	55	56	12	d245	85	550	145	3,360	*105	*1,810	68
23.....	40	54	54	11	d190	83	329	195	2,530	106	*490	65
24.....	41	53	52	10	d190	85	227	200	*1,060	98	218	60
25.....	a43	51	50	10	d280	84	215	102	752	97	212	63
26.....	a45	51	48	9	d215	82	210	102	472	94	176	63
27.....	a46	47	47	9	d170	80	208	720	388	90	706	63
28.....	a48	43	45	8	a150	82	202	1,330	301	83	670	*72
29.....	a50	40	44	8	.....	82	190	298	242	81	650	533
30.....	a47	51	42	8	.....	82	186	250	230	88	202	396
31.....	a45	.....	40	8	.....	83	.....	224	.....	93	143	.....
1954-55												
1.....	139	122	87	92	44	150	385	118	63	855	595	13
2.....	762	118	95	91	44	800	215	116	46	79	103	13
3.....	570	117	103	90	43	3,300	180	120	49	44	37	16
4.....	294	130	89	92	43	1,050	622	96	75	41	27	14
5.....	294	132	98	100	42	650	392	95	113	46	21	14
6.....	180	128	95	94	42	600	195	86	a98	322	21	14
7.....	160	120	94	87	42	700	a175	83	*84	84	20	*14
8.....	130	120	94	80	41	1,000	a155	94	a70	68	19	14
9.....	136	116	94	73	41	2,490	a140	92	a64	103	21	15
10.....	168	112	94	70	40	1,460	a130	100	a62	3,920	56	11
11.....	276	111	94	65	40	775	a125	90	a65	1,980	43	12
12.....	332	111	94	62	40	630	a130	80	a70	670	32	15
13.....	210	107	94	60	40	690	a150	79	a70	*217	19	14
14.....	208	106	95	*57	39	670	a140	73	a63	116	18	15
15.....	259	100	96	55	39	*308	a123	71	a58	97	17	14
16.....	301	102	*97	54	39	a240	a115	*69	a56	116	15	14
17.....	280	*103	101	53	*38	a177	a110	71	73	112	16	13
18.....	224	105	107	52	38	a165	a108	69	91	93	15	45
19.....	158	102	115	52	38	a165	105	65	124	63	15	108
20.....	152	101	124	51	37	a170	*102	66	84	60	15	67
21.....	150	102	128	51	37	a176	97	65	73	54	14	710
22.....	148	104	145	50	36	a183	93	64	69	49	217	71
23.....	145	94	152	50	36	a193	446	63	57	433	84	29
24.....	116	96	145	49	36	a205	982	62	71	99	*33	26
25.....	227	97	132	48	37	220	290	62	73	47	26	29
26.....	*180	97	126	48	38	240	154	74	54	39	11	27
27.....	195	95	115	47	42	265	141	86	55	29	13	27
28.....	145	105	110	46	50	310	208	76	52	30	13	26
29.....	134	96	102	46	.....	402	132	75	59	29	32	26
30.....	141	90	98	45	.....	202	124	76	52	29	15	24
31.....	128	.....	95	45	.....	385	.....	63	.....	27	14	.....

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Dec. 10-31, 1953; Jan. 1 to Feb. 14, Dec. 6-18, 28-31, 1954; Jan 1 to Mar 8, Mar. 6-8, 25-28, 1955.

Boyer River at Logan, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	94.5	44.2	35.0	19.3	330	1,784	788	1,278	1,764	1,088	1,636	775
1951-52	684	362	214	672	622	822	668	533	1,087	921	355	194
1952-53	141	139	135	98.9	495	471	421	441	507	155	160	38.5
1953-54	37.3	45.5	64.3	19.8	168	99.9	301	258	1,064	119	244	107
1954-55	224	108	107	63.1	40.1	614	215	80.6	69.8	321	51.5	48.3

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.117	0.055	0.047	0.024	0.407	2.20	0.973	1.58	2.18	1.34	2.02	0.957
1951-52	.844	.447	.264	.830	.768	1.01	.825	.658	1.34	1.14	.438	.240
1952-53	.174	.172	.167	.122	.611	.581	.520	.544	.626	.191	.198	.048
1953-54	.046	.056	.079	.024	.207	.123	.372	.319	1.31	.147	.301	.132
1954-55	.277	.133	.132	.078	.050	.758	.265	.100	.086	.396	.064	.060

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	0.13	0.06	0.05	0.03	0.42	2.54	1.09	1.82	2.43	1.55	2.33	1.07
1951-52	.97	.50	.31	.96	.83	1.17	.92	.76	1.50	1.31	.50	.27
1952-53	.20	.19	.19	.14	.64	.67	.58	.63	.70	.22	.23	.05
1953-54	.05	.06	.09	.03	.22	.14	.41	.37	1.47	.17	.35	.15
1954-55	.32	.15	.15	.09	.05	.87	.30	.11	.10	.46	.07	.07

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	5,810	2,630	2,330	1,190	18,330	109,700	46,900	78,570	105,000	66,880	100,600	46,120
1951-52	42,070	21,520	13,190	41,340	35,760	50,520	39,740	32,760	64,670	56,640	21,810	11,570
1952-53	8,670	8,290	8,320	6,080	27,490	28,980	25,080	27,130	30,160	9,520	9,830	2,290
1953-54	2,290	2,710	3,950	1,220	9,320	6,140	17,900	15,860	63,320	7,300	14,990	6,350
1954-55	13,790	6,440	6,560	3,880	2,230	37,770	12,820	4,960	4,150	19,740	3,170	2,880

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950									312	5.22	225,900
1951	Mar. 28, 1951	20.12	23,000	13	807	0.996	13.52	584,100	898	15.06	650,160
1952	June 21, 1952	19.50	19,000	140	594	.733	10.00	431,600	524	8.80	380,100
1953	June 10, 1953	15.30	11,300	31	265	.327	4.44	191,800	242	4.06	175,500
1954	June 21, 1954	18.80	17,700	7	209	.258	3.51	151,400	234	3.93	169,200
1955	July 10, 1955	(1) 12.52	8,450	11	163	.201	2.74	118,400			

(1) Maximum gage height, 14.48 ft. Mar. 2, 1955 (backwater from ice).

Peak Discharge (base, 4,000 cfs)

1951: Feb. 26, (4 a.m.) 4,400 cfs (9.98 ft.); Mar. 28 (4 p.m.) 23,000 cfs (20.03 ft.); May 1 (7:30 a.m.) 22,500 cfs (19.76 ft.); June 1 (1 a.m.) 14,400 cfs (16.16 ft.); June 18 (3 a.m.) 19,200 cfs (18.53 ft.); July 3 (4 a.m.) 23,000 cfs (20.00 ft.); Aug. 14 (8 a.m.) 13,500 cfs (15.7 ft.); Aug. 17 (10 a.m.) 10,500 cfs (14.0 ft.); Aug. 20 (5 a.m.) 6,930 cfs (11.6 ft.); Sept. 9 (4 p.m.) 10,800 cfs (14.2 ft); Sept. 12 (about 12 M.) 6,200 cfs (about 11.0 ft.); Oct. 3 (about 12 p.m.) 4,100 cfs (about 9.0 ft.); Oct. 21 (about 5 a.m.) 6,200 cfs (about 11.0 ft.).

1952: Jan. 19 (about 2 p.m.) 16,000 cfs (about 17.0 ft.); Mar. 18 (8 p.m.) 5,500 cfs (10.90 ft.); Mar. 30 (1 a.m.) 5,190 cfs (10.69 ft.); June 21 (7 a.m.) 19,000 cfs (19.50 ft.); June 27 (9:30 a.m.) 18,000 cfs (19.00 ft.); July 3 (1:30 a.m.) 4,000 cfs (9.50 ft.); July 7 (1:30 a.m.) 9,900 cfs (14.20 ft.).

1953: June 10 (6:30 a.m.) 11,300 cfs (15.30 ft.); June 16 (12:30 a.m.) 5,100 cfs (10.60 ft.).

1954: Apr. 21 (6:30 a.m.) 12,300 cfs (15.18 ft.); June 21 (2:30 a.m.) 17,700 cfs (18.80 ft.); Aug. 22 (12:30 a.m.) 6,360 cfs (10.82 ft.).

1955: Mar. 2, about 5,400 cfs; Mar. 8, about 6,000 cfs; July 10 (1 p.m.) 8,450 cfs (12.52 ft.).

Missouri River at Omaha, Nebraska

LOCATION.—Lat. 41°15'40", long. 95°55'15", in sec. 23, T. 15 N., R. 13 E., on right bank, left side of concrete flood wall, beneath Ak-Sar-Ben Bridge in Omaha.

DRAINAGE AREA.—322,800 square miles, approximately.

RECORDS AVAILABLE.—September 1928 to September 1955. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875 (gage heights only) in reports of the U. S. Weather Bureau.

GAGE.—Water-stage recorder. Datum of gage is 958.24 ft. above mean sea level, datum of 1929. Sept. 1, 1928, to Nov. 30, 1929, chain gage attached to Illinois Central Railroad bridge 2 miles upstream at datum 2.97 ft. higher. Dec. 1, 1929, to May 26, 1930, chain gage and May 27, 1930, to Oct. 18, 1931, wire-weight gage, at present site and datum. Oct. 19, 1931, to Sept. 30, 1936, water-stage recorder 0.4 mile downstream at present datum.

AVERAGE DISCHARGE.—27 years, 29,420 cfs (21,300,000 acre-ft. per year).

EXTREMES.—1928-55: Maximum discharge, 396,000 cfs Apr. 18, 1952; maximum gage height, 30.20 ft. Apr. 18, 1952; minimum discharge, about 2,200 cfs Jan. 6, 1937; minimum gage height observed, –1.7 ft. Dec. 27, 1949.

REMARKS.—Records good. Flow partly regulated by upstream main stem reservoirs. Discharge measurements generally made six times a month, three times a month during winter.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	36,800	37,200	9,280	19,900	14,800	30,900	67,100	87,000	55,000	70,200	38,200	49,400
2	40,700	37,900	g8,480	18,300	14,800	21,100	68,900	68,400	60,400	68,900	38,200	47,800
3	41,800	39,300	7,480	17,900	14,600	19,900	90,800	63,500	58,200	101,000	39,600	46,000
4	g40,400	38,600	7,480	17,600	14,800	19,800	86,000	59,400	68,000	85,500	40,400	45,600
5	g36,500	37,000	7,370	18,100	14,600	18,300	83,000	54,600	67,100	82,500	38,200	44,600
6	g32,700	38,200	g6,000	18,600	14,600	19,700	84,000	49,800	69,400	78,500	37,600	48,200
7	g33,400	37,600	g5,030	19,500	14,400	19,200	86,600	44,900	64,400	76,600	36,800	58,600
8	33,400	38,600	g4,740	19,900	14,800	17,600	113,000	42,800	63,500	70,200	36,800	57,800
9	33,000	39,600	g4,840	20,200	15,600	16,400	130,000	42,400	66,600	63,000	36,800	60,400
10	33,400	39,000	g5,320	20,400	15,800	16,600	140,000	45,200	73,000	61,700	35,400	69,400
11	33,700	38,600	g5,800	20,600	15,800	17,000	148,000	43,800	75,200	59,900	34,800	75,600
12	34,400	40,000	g5,900	20,800	15,800	15,200	149,000	43,200	80,000	58,600	34,400	77,000
13	35,400	42,100	6,300	20,400	16,400	13,200	145,000	44,200	72,000	57,400	43,800	78,000
14	36,500	42,400	6,930	20,200	17,000	13,600	141,000	46,300	65,300	57,000	63,500	74,800
15	36,800	42,100	7,700	19,700	17,200	15,400	129,000	47,000	58,600	57,000	84,500	73,400
16	36,800	42,100	8,220	19,700	16,200	16,400	108,000	47,800	56,600	55,800	85,000	66,600
17	35,400	39,600	8,870	19,500	15,400	17,400	97,400	47,400	54,200	52,600	84,000	59,400
18	34,400	37,200	9,420	19,200	15,200	18,600	86,600	49,800	62,600	52,200	77,000	53,800
19	34,800	34,400	10,100	18,600	16,000	18,800	77,500	49,000	62,200	49,000	65,300	50,200
20	33,700	32,400	11,400	18,100	16,800	19,500	64,000	48,200	82,500	47,400	68,900	48,600
21	33,700	30,900	13,800	18,100	16,600	19,700	57,400	48,600	83,500	49,400	66,600	47,800
22	34,400	30,000	16,400	18,600	16,600	19,700	54,600	46,600	68,400	51,800	68,000	46,300
23	33,400	g28,500	18,300	18,100	17,200	20,400	53,800	44,600	57,800	49,400	67,100	45,600
24	33,400	g14,000	19,500	18,100	17,900	21,300	52,600	43,500	62,200	45,600	59,400	45,600
25	33,700	g7,040	20,600	17,900	19,900	25,200	52,600	44,900	57,800	43,800	55,000	45,200
26	33,700	g7,590	21,300	17,200	24,200	35,400	52,600	45,600	60,800	43,200	50,600	45,600
27	34,800	9,280	21,800	16,400	21,500	96,900	53,400	44,600	67,600	43,500	49,000	44,600
28	35,400	10,400	21,800	g15,400	24,800	113,000	56,600	42,800	87,000	43,500	55,400	41,000
29	36,200	10,100	21,100	14,800	.....	107,000	59,900	41,400	86,600	41,800	62,200	39,300
30	36,500	9,560	20,400	14,600	.....	88,600	67,100	41,800	79,500	40,400	75,200	38,600
31	36,200	.....	19,700	14,800	.....	71,600	.....	48,600	.....	39,300	50,600	.....

g Computed from gage readings or graph based on gage readings.
Note.—Stage-discharge relation affected by ice Feb. 7-20, 1951.

Missouri River at Omaha, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	37,600	45,200	25,200	6,780	21,200	30,800	g114,000	85,300	47,400	48,500	27,000	33,800
2.....	37,600	45,200	23,000	7,050	22,400	30,000	118,000	78,200	45,200	60,600	28,800	33,100
3.....	40,700	44,000	21,300	g7,240	23,200	29,600	112,000	73,000	41,600	58,700	30,800	32,900
4.....	48,200	45,600	19,700	g7,330	23,700	27,700	110,000	69,900	44,600	60,600	30,500	31,900
5.....	50,200	43,800	18,300	7,810	g23,700	26,500	128,000	67,400	54,600	53,100	29,500	31,000
6.....	52,200	42,800	23,600	8,710	g24,000	25,800	140,000	64,200	50,400	48,500	28,300	31,000
7.....	51,400	42,100	60,200	9,720	g25,000	26,200	153,000	62,400	54,300	63,100	26,700	31,000
8.....	50,600	43,800	43,500	10,900	26,500	26,500	163,000	63,300	53,400	66,800	26,500	31,200
9.....	53,400	46,000	32,100	11,600	26,500	25,400	171,000	62,600	55,500	60,000	26,300	31,000
10.....	51,400	45,200	25,000	12,700	26,200	23,800	179,000	62,400	57,700	55,500	26,000	30,500
11.....	46,300	42,800	21,500	13,300	27,600	23,400	196,000	63,000	56,100	47,900	26,700	30,700
12.....	44,200	42,400	20,200	13,400	31,500	24,600	223,000	67,700	56,100	43,800	27,900	31,200
13.....	43,200	42,400	16,400	13,600	30,900	g38,500	258,000	70,700	55,200	42,400	28,300	31,000
14.....	44,900	42,800	11,500	g13,700	39,000	36,700	287,000	67,200	53,100	44,900	29,000	31,200
15.....	43,800	42,800	7,000	g14,400	39,000	29,600	311,000	63,600	51,600	43,800	30,200	30,700
16.....	45,200	41,000	7,500	15,400	39,000	26,600	332,000	63,000	49,300	39,800	30,500	30,200
17.....	44,900	38,600	7,700	15,700	40,700	27,100	370,000	63,600	50,400	37,800	30,700	29,800
18.....	42,800	37,600	g7,800	16,200	44,000	33,000	384,000	64,400	g55,200	36,600	31,400	28,600
19.....	41,800	37,600	g7,800	16,900	47,400	43,400	339,000	62,200	g65,000	35,600	33,400	27,400
20.....	41,000	37,600	g7,800	20,000	42,400	49,100	274,000	57,300	73,400	35,100	33,800	37,600
21.....	45,000	37,000	g7,800	20,000	37,200	49,200	214,000	53,700	78,500	33,400	34,100	28,100
22.....	46,000	37,000	g7,800	19,200	34,800	48,000	172,000	53,000	64,000	31,200	34,100	28,600
23.....	47,000	37,600	8,000	17,900	33,700	40,100	150,000	57,200	57,000	30,500	34,100	29,500
24.....	46,000	37,000	8,000	18,300	33,000	34,900	138,000	58,300	55,500	29,500	33,600	29,500
25.....	45,200	35,800	7,700	18,800	32,400	32,000	120,000	51,200	54,600	28,600	33,000	29,500
26.....	46,600	35,100	7,500	19,600	31,800	31,300	108,000	49,000	52,500	27,900	33,600	29,500
27.....	47,800	33,400	7,400	20,300	31,500	32,400	101,000	48,100	72,200	27,600	33,100	29,500
28.....	47,400	32,400	7,400	20,500	30,900	33,500	100,000	52,900	60,600	26,000	32,400	29,300
29.....	45,600	31,200	7,400	20,500	31,800	37,000	102,000	53,800	52,800	25,600	33,800	29,500
30.....	45,200	28,500	7,400	20,500	.....	60,900	96,200	52,700	51,000	24,700	32,600	29,500
31.....	45,600	.....	7,400	20,500	.....	g95,000	.....	50,200	.....	25,100	33,000	.....
1952-53												
1.....	29,600	31,100	10,000	10,600	17,000	17,600	44,000	31,900	29,900	88,800	38,200	32,300
2.....	29,600	30,500	10,000	12,200	16,600	17,400	40,200	34,200	29,100	86,000	37,100	32,000
3.....	29,900	29,600	10,200	12,900	16,000	17,600	38,800	40,500	29,600	72,800	36,400	32,600
4.....	29,600	28,700	10,500	15,000	16,400	17,800	41,600	49,800	29,400	64,800	38,200	33,200
5.....	29,600	27,800	10,600	15,600	16,600	18,000	49,600	81,700	29,200	58,000	37,100	33,800
6.....	29,300	28,400	10,600	15,400	17,200	18,000	43,600	95,200	31,300	52,400	36,800	34,700
7.....	29,000	29,000	11,000	14,200	17,400	18,200	37,100	84,000	34,700	44,800	43,000	34,400
8.....	29,600	29,900	11,200	13,200	17,800	18,000	34,100	67,800	56,200	42,400	38,200	33,800
9.....	29,300	30,200	12,000	12,400	18,200	18,200	33,800	59,300	70,400	41,300	36,400	33,500
10.....	28,700	30,200	12,900	12,300	19,500	19,800	39,600	54,400	84,100	41,000	34,700	33,800
11.....	29,000	29,600	13,800	12,200	20,000	20,500	34,100	47,300	71,000	42,000	32,900	34,700
12.....	29,600	29,300	14,400	12,300	19,200	26,000	32,300	44,900	66,500	42,400	33,200	35,000
13.....	30,200	28,700	14,200	12,600	19,200	32,900	38,800	45,900	70,500	42,800	34,400	35,000
14.....	29,900	28,700	12,400	12,300	19,500	43,600	38,800	43,000	85,700	44,000	34,400	36,000
15.....	29,000	29,300	9,600	11,800	19,800	43,600	42,400	41,600	82,600	42,400	35,400	35,700
16.....	29,900	30,200	9,000	8,800	19,200	52,800	42,000	40,800	72,900	42,000	34,700	34,700
17.....	29,900	31,700	8,500	10,600	18,200	63,000	37,100	36,000	66,300	41,600	34,400	34,700
18.....	29,900	29,900	8,700	12,000	17,800	57,600	34,400	32,700	56,900	39,900	33,800	35,000
19.....	30,600	29,300	8,600	12,400	18,200	58,900	29,000	32,100	59,800	37,400	33,500	34,700
20.....	30,800	28,400	8,400	11,800	18,800	60,700	28,400	31,900	94,200	36,000	32,900	34,700
21.....	31,100	27,800	8,300	11,000	15,600	55,200	27,800	32,600	101,000	34,700	32,600	35,000
22.....	31,700	26,600	8,200	10,600	14,600	48,800	26,300	34,000	97,100	33,800	32,600	34,700
23.....	31,700	25,400	8,500	11,000	14,600	55,200	25,700	33,700	85,300	31,700	32,600	34,100
24.....	31,100	24,800	8,600	12,200	14,800	65,200	25,700	33,300	86,400	31,700	32,600	34,400
25.....	30,800	24,500	8,600	13,400	15,400	67,400	25,400	32,400	99,500	30,800	33,200	33,500
26.....	31,100	25,100	8,400	14,400	15,600	66,100	25,400	31,900	107,000	31,100	33,200	32,600
27.....	31,400	20,800	8,300	15,000	17,200	62,000	25,400	31,000	111,000	32,000	32,600	32,300
28.....	31,700	14,400	8,000	15,400	18,000	53,600	26,900	30,200	101,000	32,000	32,000	32,000
29.....	32,000	11,200	7,700	16,400	.....	52,800	25,100	30,000	95,800	31,700	32,000	31,700
30.....	32,000	10,000	8,100	17,200	.....	51,600	23,300	31,500	94,100	32,600	31,700	31,700
31.....	31,700	.....	9,100	17,200	.....	49,600	.....	31,900	.....	35,700	32,000	.....

g Computed from gage readings or graph based on gage readings.

Note.—Stage-discharge relation affected by ice Dec. 15-31, 1951; Jan 1 to Feb. 7, 1952.

Missouri River at Omaha, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	31,100	31,100	19,200	9,000	10,300	32,600	34,400	33,900	38,400	34,600	35,300	31,400
2	30,800	31,500	19,200	9,400	10,800	32,300	32,900	38,100	36,000	33,200	35,300	30,000
3	31,100	30,500	20,000	9,800	11,400	30,200	30,200	37,400	35,600	33,200	35,300	30,000
4	31,100	29,600	19,800	9,800	11,800	26,000	29,300	35,300	37,400	33,200	36,000	30,400
5	31,400	28,700	19,500	10,000	12,000	20,500	28,100	32,500	33,200	32,500	35,300	30,800
6	32,600	28,400	19,000	10,200	12,200	16,400	27,500	31,100	32,500	32,800	33,900	31,100
7	33,200	27,500	18,200	10,200	12,400	16,000	26,600	29,400	31,400	33,200	33,200	30,800
8	32,900	26,000	19,200	10,400	12,600	15,800	25,600	29,400	31,100	32,200	33,200	30,000
9	33,500	24,500	20,800	10,600	12,800	15,400	25,600	30,000	32,200	31,100	34,200	31,400
10	33,200	23,300	20,200	11,000	13,000	15,400	26,300	30,400	36,400	31,100	33,900	32,500
11	32,900	22,800	20,200	10,000	13,300	17,000	26,000	29,400	33,900	31,100	31,100	33,200
12	32,900	22,000	19,000	8,000	13,600	23,300	23,200	27,800	35,000	31,100	30,000	35,600
13	32,900	21,200	17,000	6,500	14,000	27,500	21,900	27,500	34,200	31,100	30,800	36,000
14	32,900	20,500	15,400	6,200	14,000	23,300	25,200	27,200	29,400	31,800	31,400	33,600
15	32,600	19,200	13,400	6,000	16,000	18,500	27,200	26,300	28,400	31,800	31,100	33,600
16	32,600	18,000	12,800	5,800	13,800	16,400	28,700	26,000	27,200	31,800	31,100	34,200
17	32,600	17,200	12,600	5,800	15,200	15,000	27,500	26,600	27,500	32,500	30,800	34,200
18	33,200	17,200	12,000	5,800	19,200	16,600	26,900	27,500	28,100	35,000	31,400	33,600
19	32,900	18,200	12,000	7,000	26,000	23,600	27,200	27,500	37,400	37,000	31,100	32,800
20	33,200	18,800	12,000	9,000	24,500	30,800	28,100	27,200	60,500	37,000	31,100	32,500
21	33,200	17,000	11,800	9,500	19,200	33,800	36,400	26,900	82,400	35,300	31,800	32,200
22	33,500	15,000	10,000	9,000	17,400	35,700	30,800	27,200	80,000	34,600	32,500	31,800
23	33,200	13,200	9,400	10,000	17,400	37,100	30,400	27,800	72,400	34,200	31,800	31,400
24	32,600	12,400	7,500	11,000	19,000	37,800	30,400	29,400	65,800	33,900	31,400	31,100
25	32,000	11,800	6,000	11,500	21,500	39,600	30,400	28,400	59,000	34,200	31,800	30,400
26	32,600	11,700	6,000	11,000	22,500	38,200	30,400	28,400	56,000	34,200	31,400	29,700
27	32,600	12,200	7,000	10,300	26,000	35,700	30,400	32,200	53,000	33,900	29,700	29,400
28	32,300	13,200	7,700	10,000	30,800	35,000	29,700	35,000	44,800	33,200	30,400	30,800
29	31,700	15,200	8,100	10,000	.....	36,400	29,400	30,000	39,500	34,600	30,000	34,600
30	30,800	17,200	8,500	10,000	.....	37,400	31,800	29,400	37,000	35,300	31,400	34,200
31	31,100	.....	8,800	10,000	.....	36,800	.....	30,400	.....	36,000	33,900	.....
1954-55												
1	33,600	22,900	12,600	11,100	9,820	11,200	28,400	28,700	30,000	30,000	17,300	34,200
2	34,000	19,400	12,600	11,700	9,820	12,400	27,800	27,800	29,000	30,800	15,300	33,900
3	38,800	16,500	12,300	12,200	9,700	15,700	26,900	27,200	30,000	29,000	11,800	34,200
4	37,000	15,100	12,400	11,800	10,500	15,500	27,200	26,900	31,800	29,000	9,900	35,400
5	36,000	15,300	12,900	11,400	10,800	16,100	27,800	26,600	33,200	30,000	9,600	36,000
6	34,200	16,300	13,200	11,200	11,200	15,100	27,500	26,600	32,800	31,400	13,000	35,400
7	33,600	16,300	13,000	11,000	11,700	15,700	27,200	27,500	32,500	34,200	21,000	33,900
8	31,800	16,100	12,900	11,000	11,700	17,500	27,200	27,800	31,100	32,500	26,600	32,700
9	30,800	15,900	12,800	11,200	10,500	23,200	27,200	28,700	30,400	32,800	30,400	32,400
10	29,700	15,500	12,200	11,400	9,950	31,400	26,900	30,400	29,700	33,600	32,400	33,300
11	31,100	14,900	12,200	11,200	9,950	24,400	27,800	31,400	28,700	41,900	33,600	34,500
12	30,800	14,100	12,400	10,500	9,950	29,400	28,700	31,400	29,700	37,800	33,900	34,800
13	31,800	14,100	12,900	8,200	9,550	41,900	28,700	30,800	30,400	32,200	33,300	34,500
14	32,800	13,800	13,000	6,520	9,950	40,700	28,700	30,800	30,800	31,400	33,000	34,500
15	33,200	13,800	13,200	6,320	10,200	33,900	29,700	31,400	30,400	32,500	33,000	34,200
16	33,200	13,600	13,200	6,520	9,450	28,700	30,800	31,400	29,700	32,500	32,700	34,500
17	32,500	13,600	12,400	7,340	9,200	22,900	30,400	30,800	28,700	30,000	32,700	34,800
18	31,100	13,500	12,800	7,610	9,950	21,800	29,700	30,800	29,000	30,000	32,700	35,100
19	30,800	12,900	13,000	7,800	10,800	19,900	29,700	30,800	30,400	30,800	32,700	35,700
20	32,200	13,200	13,400	8,500	12,000	19,600	29,400	30,400	31,400	30,800	32,700	35,400
21	32,500	13,400	13,500	7,700	12,300	18,300	29,400	30,400	31,100	31,100	32,400	36,000
22	32,200	13,400	13,500	7,340	12,200	16,500	29,400	30,400	31,100	32,500	32,700	36,000
23	31,800	13,200	13,200	7,520	11,800	16,100	30,800	30,000	30,800	32,800	32,700	35,400
24	31,800	13,200	12,300	7,700	11,400	16,100	31,800	30,000	31,100	32,200	32,100	35,700
25	32,200	12,900	12,300	7,610	9,820	15,900	29,400	30,400	30,400	31,400	31,800	34,500
26	32,800	12,300	12,800	7,900	8,400	16,100	29,700	31,400	28,700	31,100	32,400	33,000
27	33,600	12,400	13,000	8,300	8,820	14,700	31,800	31,800	28,700	31,800	33,900	32,700
28	32,200	12,400	12,800	7,900	10,100	15,100	34,200	33,600	29,400	31,800	35,700	33,000
29	30,400	12,600	12,400	7,610	.....	23,200	32,800	33,200	29,400	31,400	36,900	33,000
30	27,800	12,600	11,800	7,900	.....	29,400	29,700	32,200	28,400	28,100	35,700	32,400
31	25,600	.....	11,100	9,080	.....	27,200	.....	31,400	.....	26,600	34,500	.....

Note.—Stage-discharge relation affected by ice Dec. 22-31, 1953; Jan. 1 to Feb. 13, 1954.

Missouri River at Omaha, Nebraska—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	35,340	31,070	11,660	18,430	16,760	31,710	88,520	48,960	67,560	57,960	54,140	54,180
1951-52	45,790	39,920	15,840	14,790	31,790	35,470	188,800	61,660	55,830	41,700	30,660	30,280
1952-53	30,330	26,700	9,948	13,050	17,460	40,890	33,890	43,470	71,450	43,850	34,690	33,910
1953-54	32,430	20,500	13,950	9,123	16,520	26,990	28,620	29,860	42,520	33,440	32,310	32,110
1954-55	32,340	14,510	12,710	9,067	10,410	21,470	29,220	30,100	30,290	31,550	28,660	34,400

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1950-51	2,173,000	1,849,000	716,700	1,133,000	930,800	1,950,000
1951-52	2,815,000	2,375,000	973,700	900,500	1,829,000	2,181,000
1952-53	1,865,000	1,589,000	611,700	802,500	969,900	2,514,000
1953-54	1,994,000	1,220,000	857,500	560,900	917,800	1,980,000
1954-55	1,988,000	863,200	781,700	557,500	578,300	1,320,000

Water year	Apr.	May.	June	July	Aug.	Sept.
1950-51	5,267,000	3,010,000	4,020,000	3,564,000	3,329,000	3,224,000
1951-52	11,230,000	3,791,000	3,322,000	2,564,000	1,895,000	1,802,000
1952-53	2,017,000	2,673,000	4,252,000	2,698,000	2,133,000	2,018,000
1953-54	1,703,000	1,836,000	2,530,000	2,056,000	1,987,000	1,911,000
1954-55	1,739,000	1,851,000	1,803,000	1,940,000	1,762,000	2,047,000

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Runoff in acre feet	Mean	Runoff in acre feet
	Date	Gage height in feet	Discharge					
1950	.....	.....	.....	.....	.....	.....	39,130	28,330,000
1951	Apr. 11, 1951.	18.20	152,000	4,740	43,050	31,170,000	45,020	32,590,000
1952	Apr. 18, 1952.	(1)30.16	396,000	6,780	49,150	35,580,000	46,260	33,580,000
1953	June 26, 1953.	13.69	112,000	7,700	33,350	24,140,000	33,350	24,150,000
1954	June 21, 1954.	11.12	87,400	5,800	26,560	19,230,000	25,950	18,790,000
1955	Mar. 13, 1955.	(2)6.33	51,500	6,320	23,800	17,230,000	.....	.....

(1) Maximum gage height, 30.20 ft. Apr. 18, 1952.
(2) Maximum gage height, 7.36 ft. July 11, 1955.

Peak Discharge (base, 95,000 cfs)

1951: Mar. 28 (7 p.m.) 116,000 cfs (15.67 ft.); Apr. 11 (9 p.m.) 152,000 cfs (18.20 ft.); May 1 (1 p.m.) 96,900 cfs (11.90 ft.); July 3 (12 M.) 113,000 cfs (14.78 ft.).

1952: Apr. 18 (1-2 a.m.) 396,000 cfs (30.16 ft.).

1953: May 6 (1 p.m.) 97,600 cfs (11.72 ft.); June 26 (7:30 p.m.) 112,000 cfs (13.69 ft.).

1954: No peak above base.

1955: No peak above base.

Indian Creek at Council Bluffs, Iowa

LOCATION.—Lat. 41°17'40", long. 95°49'55", in SW¼ sec. 18, T. 75 N., R. 43 W., on downstream side of left pile bent of bridge on Mud Hollow Road at north edge of Council Bluffs, and 8.2 miles upstream from mouth.

DRAINAGE AREA.—7.99 square miles.

RECORDS AVAILABLE.—July 1954 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,038.86 ft. above mean sea level (city of Council Bluffs benchmark). Prior to Apr. 12, 1955, wire-weight gage at site a quarter of a mile downstream at different datum.

EXTREMES.—1954-55: Maximum discharge, 600 cfs Aug. 21, 1954 (gage height, 44.00 ft., site and datum then in use), from rating curve extended above 1.0 cfs on basis of rating at site 0.5 mile downstream; no flow for many days.

REMARKS.—Records poor.

Daily Discharge, in Cubic Feet per Second, for Period July to September, 1954

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	0	0	0.1	16	0	*5.4	0.7
2	.2	0	.2	17	0	4.4	.1
3	.1	0	.1	18	0	1.1	0
4	0	0	0	19	0	.2	0
5	0	0	0	20	0	0	0
6	0	0	0	21	0	*42	0
7	0	0	0	22	0	2.3	0
8	0	.2	0	23	0	3.0	0
9	0	0	0	24	0	.3	0
10	0	0	0	25	0	.2	0
11	0	0	0	26	0	.2	0
12	0	0	0	27	0	.4	0
13	0	0	0	28	0	.2	2.0
14	0	*.4	0	29	0	.1	.8
15	0	.2	0	30	0	.1	.2
				31	0	.1	.....

* Discharge measurement made on this day.

Indian Creek at Council Bluffs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	0.2	0.2	0.3	0.1	10	0.5	0.3	0.1	0.1	0	0
2	.3	.2	.2	.5	.1	100	.5	.3	*.1	0	0	0
3	.2	.2	.2	.4	.1	10	.6	.3	*2.4	0	0	0
4	4.4	.3	.2	.2	.1	3.0	1.0	.3	7.6	0	0	0
5	7.6	.2	.2	.2	0	1.0	.7	.3	*8.1	0	0	0
6	3.5	.2	.2	.3	0	.7	.6	.2	*.2	.1	0	*0
7	2.1	.2	.2	.2	0	2.0	.5	.2	.2	0	0	0
8	1.1	.2	.1	.2	0	2.5	.4	.2	.1	17	0	0
9	.8	.2	.1	.2	.2	11	.4	.5	.2	25	0	0
10	.6	.2	.1	.2	.1	100	.4	.3	.2	.1	0	0
11	.4	.2	.2	.2	.1	10	.5	.3	.2	0	0	0
12	.4	.2	.2	.2	.1	2.0	.5	*.3	.2	*0	0	0
13	.3	.2	.2	.2	.1	1.0	.4	.2	.2	0	0	0
14	.3	.2	.2	.3	.1	.1	*.3	.2	.1	0	0	0
15	.2	.2	.2	.5	.2	.7	.3	.2	.1	0	0	0
16	.2	.2	.2	.3	.2	.7	.3	.2	.1	0	0	0
17	.2	.2	.2	.2	.2	.8	.2	.2	.1	0	0	0
18	.2	.2	.2	.1	.5	.8	.3	.2	.1	0	0	0
19	.3	*.2	.2	.1	.4	.8	.3	.2	.1	6.9	0	0
20	3.0	.2	.2	.1	.3	.7	.2	.1	.1	1.4	0	*28
21	1.0	.2	.2	.1	.2	.5	.2	.1	*.1	.2	0	*1.8
22	.4	.2	.2	.1	.2	.4	.2	.1	.1	0	*0	0
23	0	.2	.2	.1	.2	.3	*6.7	.1	0	0	0	0
24	0	.2	.2	.1	.2	.2	.6	.1	1.8	0	0	0
25	0	.2	.2	0	.1	.2	.3	.1	.3	0	0	0
26	1.5	.2	.2	0	.5	.2	.3	.5	.1	*0	0	0
27	.5	.2	.2	0	.5	.2	.3	.1	.1	0	0	0
28	.3	.2	.2	0	.5	.7	.6	.2	.1	0	0	0
29	.2	.2	.2	0	.....	.8	.3	.1	.1	0	0	0
30	.2	.3	.2	0	.....	.5	.3	.1	.1	0	0	0
31	.2	.....	.2	.1	.....	.6	.....	.1	.....	0	0	.....

* Discharge measurement or observation of no flow made on this day.

Note.—Stage-discharge relation affected by ice Dec. 8-18, 22-31, 1954; Jan. 1-4, Jan. 6 to Mar. 13, Mar. 21-28, 1955.

Indian Creek at Council Bluffs, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.01	1.98	0.14
1954-55.....	1.05	0.21	0.19	0.17	0.19	8.46	0.62	0.21	0.78	1.64	0	.99

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.0013	0.245	0.018
1954-55.....	0.131	0.026	0.024	0.021	0.024	1.06	0.078	0.026	0.098	.205	0	.124

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.001	0.28	0.02
1954-55.....	0.15	0.03	0.03	0.03	0.02	1.22	0.09	0.03	0.11	.24	0	.14

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.6	121	8.3
1954-55.....	64	12	12	11	11	520	37	13	46	101	0	59

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1954(1)	Aug. 21, 1954.	44.00	600	.....	.....	.....	.....	.....	.....	.....	.....
1955...	July 8, 1955	9.10	543	0	1.22	0.153	2.09	886	.....	.....	.....

(1) Period July 1 to Sept. 30.

Peak Discharge (base, 300 cfs)

July to Dec. 1954: Aug. 21 (3:15 p.m.) 600 cfs (44.00 ft.).

1955: Mar. 2, about 300 cfs; July 8 (11:30 p.m.) 543 cfs (9.16 ft.); Sept. 20 (9 p.m.) 519 cfs (8.95 ft.).

Waubonsie Creek near Bartlett, Iowa

LOCATION.—Lat. 40°53', long. 95°45', in NE¼ sec. 11, T. 70 N., R. 43 W., on left pier on downstream side of highway bridge, 2.5 miles east of Bartlett, and 4.5 miles west of Tabor.

DRAINAGE AREA.—30 sq. mi., approximately.

RECORDS AVAILABLE.—January 1946 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 936.96 ft. above mean sea level, datum of 1929. Prior to June 16, 1951, wire-weight gage and Jan. 10, 1946, to May 8, 1950, supplementary high-stage water-stage recorder, at same site and datum.

AVERAGE DISCHARGE.—9 years 13.0 cfs (9,410 acre-ft. per year).

EXTREMES.—1946-55: Maximum discharge, 14,500 cfs May 8, 1950 (gage height, 37.8 ft. from floodmark), from rating curve extended above 800 cfs on basis of slope-area determinations at gage heights 32.8 and 37.8 ft.; no flow on many days in 1954 and 1955.

REMARKS.—Records good except those for period of ice effect, no gage-height record, or backwater from Missouri River, which are fair.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	72	4.8	a4.4	a4.0	a1.0	a20	15	46	*63	8.8	6.6	6.2
2.....	43	a5.0	4.3	a4.0	a1.0	a40	a12	a15	a15	8.8	6.8	7.4
3.....	a20	a5.0	4.3	a4.0	1.0	a14	a10	a10	9.5	*269	6.2	6.6
4.....	a13	4.8	a4.2	*4.0	2.0	13	a9.0	a8.0	a9.0	7.9	6.0	6.0
5.....	a10	a4.7	a4.2	a4.0	a3.0	a12	a15	7.7	a8.0	g96	6.0	8.5
6.....	a25	4.6	a4.1	4.0	a3.0	a11	a14	6.8	*21	g20	5.9	*8.1
7.....	6.4	*4.6	a4.1	4.0	a3.0	a10	a13	a6.0	a50	g10	*5.5	7.2
8.....	5.9	a8.0	a4.0	a4.0	a3.0	a10	a14	a5.0	a20	9.8	5.9	7.4
9.....	a5.4	a7.0	*4.0	a4.0	3.0	13	a10	44	18	9.8	6.8	11
10.....	a5.0	a6.6	a4.0	a4.0	a4.0	a10	a9.0	a15	10	10	6.4	7.2
11.....	*4.6	6.4	a4.0	a4.0	8.0	a8.0	a7.0	a9.0	a18	*g11	6.4	6.4
12.....	a4.6	6.0	4.0	4.0	a7.0	a7.0	8.1	8.3	a17	a10	5.9	127
13.....	4.6	a5.7	a4.0	a4.0	a6.0	a6.0	a7.0	8.1	a16	a10	13	14
14.....	a4.4	a5.4	a4.0	4.0	a5.0	6.0	a6.0	a9.0	a15	11	100	11
15.....	4.2	a5.0	a3.5	a4.0	a5.0	a6.0	a6.0	a15	a30	11	122	9.2
16.....	a4.2	a4.7	3.0	a4.5	a5.0	a6.0	6.0	a50	16	10	10	8.5
17.....	a4.2	4.5	2.8	*5.0	5.0	a6.0	*7.4	a10	16	9.8	9.2	8.1
18.....	a4.1	a4.2	a2.0	5.0	5.0	a6.0	a7.0	6.8	20	87	7.7	7.7
19.....	a4.1	4.0	*1.8	a5.0	a5.0	a6.0	6.6	a6.6	16	13	7.2	7.0
20.....	4.0	a5.0	a1.8	a4.5	a5.0	*6.3	a11	6.4	13	11	55	*6.4
21.....	a4.2	a5.0	a2.0	a3.0	a10	a20	11	a20	g31	9.0	7.7	6.0
22.....	a4.3	a5.0	a2.5	a2.0	a15	130	8.3	a10	*g24	10	*6.4	6.0
23.....	4.4	a5.0	3.0	1.0	a20	a30	a8.0	a9.0	g42	*7.4	6.6	5.9
24.....	a4.4	5.0	2.5	a1.0	136	a20	a20	a8.0	17	6.4	98	6.6
25.....	a4.4	a4.8	a2.2	a1.0	115	a17	a15	122	11	6.0	9.8	6.0
26.....	a4.4	4.6	a2.0	a1.0	a30	17	11	*11	g142	5.9	8.3	5.7
27.....	a4.4	a4.5	a2.0	1.0	a20	a80	35	a9.0	11	6.0	7.2	4.6
28.....	4.4	a4.5	a2.0	a1.0	a40	93	15	8.8	9.2	6.0	7.4	4.6
29.....	a4.5	a4.4	a2.5	a1.0	.....	a30	13	a8.0	9.0	6.2	6.8	4.6
30.....	4.6	*4.4	3.0	1.0	.....	a20	a60	a8.0	9.0	6.4	6.4	4.8
31.....	a4.7	.....	3.5	a1.0	.....	14	.....	7.2	.....	6.4	6.4	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
g Computed from gage readings or graph based on gage readings.

Note.—Stage-discharge relation affected by ice Nov. 24, 26, 30, Dec. 2, 3, 9, 12, 16, 17, 19, 23, 24, 30, 31, 1950; Jan. 4, 6, 7, 12, 14, 17, 18, 23, 27, 30, Feb. 3, 4, 9, 11, 17, 18, Mar. 14, 20, 1951.

Waubonsie Creek near Bartlett, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4.8	5.3	8.1	6.6	14	7.7	17	12	6.0	6.4	31	6.5
2	4.6	5.5	8.5	6.6	15	8.3	15	13	5.9	6.0	5.2	5.8
3	74	7.2	7.9	6.6	13	13	14	*13	6.2	5.5	62	5.2
4	125	7.2	7.4	6.6	12	10	13	11	7.0	5.3	5.4	4.8
5	7.7	7.2	8.5	6.6	11	12	13	10	6.8	5.3	6.5	4.6
6	10	7.2	8.1	6.8	10	18	13	9.8	6.2	5.1	4.6	4.5
7	7.7	8.1	7.7	7.0	9.0	13	13	11	6.0	11	5.0	4.6
8	6.6	8.1	7.4	7.4	*8.4	18	12	9.8	5.7	5.9	286	4.6
9	6.4	7.4	7.2	8.0	7.8	28	27	10	5.3	4.8	12	4.6
10	*6.6	6.6	7.2	9.0	7.4	54	18	9.5	*5.0	4.6	11	*4.6
11	6.8	8.3	7.2	13	7.2	21	15	9.0	4.8	4.5	*6.7	4.5
12	6.6	*13	7.0	35	7.0	37	18	*8.3	4.6	5.0	5.8	4.5
13	6.4	8.1	7.0	50	6.7	17	27	8.3	4.6	8.3	55	15
14	6.2	7.0	7.0	40	6.4	11	c32	7.9	4.4	*34	44	20
15	6.2	6.8	7.0	12	6.0	9.5	c27	7.9	4.4	6.5	4.0	5.2
16	6.4	6.4	6.8	*11	6.0	9.2	c27	25	4.4	5.6	2.7	5.6
17	6.2	6.4	6.8	10	6.0	11	c26	10	4.4	5.0	13	4.6
18	8.1	6.4	6.8	9.0	6.0	*38	c25	8.5	55	4.6	2.8	4.0
19	6.4	8.0	*6.8	8.5	6.0	15	c24	8.3	7.0	4.8	30	4.3
20	6.6	8.4	6.8	8.0	6.0	12	22	8.3	7.0	4.0	5.6	5.0
21	6.6	7.0	6.6	7.4	6.0	12	30	9.8	8.8	3.8	5.0	4.8
22	*5.7	6.4	6.6	7.0	6.0	12	42	*69	86	3.8	4.2	5.0
23	5.5	7.0	6.6	7.0	6.0	37	16	19	8.1	3.5	3.8	4.8
24	5.3	7.0	6.6	7.0	8.0	25	14	12	*6.4	3.4	3.8	4.6
25	5.1	9.0	6.6	7.0	10	19	13	10	6.0	3.5	6.3	4.6
26	5.5	8.0	6.6	7.0	11	16	13	*9.8	9.8	3.4	*5.4	*4.3
27	6.4	*7.8	6.6	7.0	9.2	16	12	17	69	3.5	4.3	4.3
28	5.7	7.8	6.6	7.0	*7.2	17	12	8.3	8.8	3.7	4.0	4.0
29	5.5	7.7	6.6	7.0	7.2	19	11	7.4	7.2	4.0	83	3.8
30	5.5	7.7	6.6	10	.....	20	11	7.2	7.2	*4.0	14	3.8
31	5.1	.....	6.6	13	.....	20	.....	7.0	.....	3.8	8.6	.....
1952-53												
1	3.5	4.0	8.0	6.4	8.7	7.0	8.0	7.7	4.2	4.6	1.8	*0.8
2	3.7	3.8	8.0	6.4	8.7	6.8	7.7	7.7	4.2	4.3	1.8	.8
3	4.0	4.0	8.0	6.4	8.7	6.8	11	7.7	4.2	15	3.5	4.2
4	4.2	4.5	8.0	6.4	8.6	6.8	8.3	6.3	4.3	5.8	2.7	2.8
5	4.3	4.5	8.0	6.4	8.6	7.2	7.3	6.5	7.0	4.0	2.2	2.1
6	4.5	4.6	7.8	6.2	8.4	7.8	*7.0	7.7	4.8	3.5	20	2.0
7	4.6	4.8	7.6	6.2	8.2	8.4	6.7	6.5	14	3.5	28	1.8
8	*4.6	5.2	7.6	6.2	8.0	9.3	6.5	6.3	21	*3.4	4.5	1.7
9	4.5	5.2	7.4	6.2	7.8	9.9	8.0	6.1	84	3.4	3.8	1.5
10	4.5	5.2	7.4	6.2	7.6	9.9	7.7	6.3	6.3	3.1	3.5	1.4
11	4.5	5.6	7.3	5.9	*7.6	8.9	7.0	6.3	5.0	3.1	*3.2	1.5
12	4.3	*5.6	*7.3	5.9	7.4	8.0	6.5	6.3	5.0	3.2	2.8	1.4
13	4.3	5.2	7.3	*5.9	7.2	7.3	6.3	6.5	4.6	24	2.5	1.5
14	4.5	4.8	7.3	5.5	7.2	15	7.0	6.5	4.2	5.4	2.2	1.6
15	4.5	4.8	7.3	5.2	7.0	*9.0	7.7	6.3	4.0	4.8	1.9	*1.4
16	4.3	4.8	7.2	5.0	7.0	7.7	7.0	6.7	4.2	4.3	2.0	1.4
17	4.3	14	7.2	5.0	7.0	8.9	6.5	8.9	3.7	3.5	1.9	1.4
18	4.3	6.3	7.2	5.0	7.0	13	6.3	*7.7	3.2	3.4	1.7	1.3
19	4.3	5.8	7.2	6.0	7.0	7.7	6.3	6.7	3.1	3.1	1.6	1.4
20	4.2	5.8	7.2	7.0	7.0	7.3	5.8	6.5	3.0	63	1.7	1.4
21	4.2	5.8	7.0	8.0	7.0	7.7	5.4	6.1	3.5	10	1.6	1.2
22	4.3	5.6	7.0	9.0	7.0	8.0	4.8	5.6	3.5	5.2	1.5	1.3
23	4.3	5.2	7.0	9.0	8.0	7.7	4.5	5.6	*3.2	4.3	1.3	1.4
24	4.2	5.6	7.0	9.0	9.0	6.7	*21	5.6	17	3.8	1.3	1.2
25	4.0	6.0	7.0	9.0	9.9	6.7	6.7	5.4	9.3	3.5	1.3	1.6
26	3.8	6.3	6.7	8.8	9.3	6.5	6.5	5.2	4.5	3.2	1.2	1.3
27	3.8	6.6	6.7	8.8	*8.3	6.5	*5.9	*7.3	156	2.8	1.1	1.1
28	3.5	7.0	6.7	8.8	8.6	6.3	5.6	5.6	20	2.7	.9	1.2
29	*4.0	7.5	6.7	8.7	.....	6.7	6.7	5.4	0.1	2.2	.9	1.1
30	4.0	8.0	6.7	*8.7	.....	13	11	4.5	4.8	*2.0	.8	.8
31	3.8	.....	6.7	8.7	.....	8.3	.....	4.3	.....	1.9	.8	.....

* Discharge measurement made on this day.
c Backwater from Missouri River.

Note.—Stage-discharge relations affected by ice Nov. 4-6, 17-28, Dec. 9-31, 1951; Jan. 1 to Feb. 26, Nov. 25 to Dec. 31, 1952; Jan. 1 to Feb. 24, Mar. 2-7, 1953.

Waubonsie Creek near Bartlett, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	1.0	2.2	4.3	4.0	4.0	4.0	4.0	7.0	90	*1.6	1.2	4.2
2.....	1.1	2.5	4.8	4.0	5.0	4.0	3.8	41	*13	1.6	1.8	3.5
3.....	1.0	2.2	*8.6	4.0	5.2	3.5	3.7	8.9	6.5	1.7	2.1	3.1
4.....	1.0	2.4	7.7	4.0	5.4	3.0	3.8	5.9	5.6	2.0	2.2	2.8
5.....	1.2	2.5	5.6	4.0	*5.6	3.0	4.0	*5.0	5.0	1.6	1.9	2.6
6.....	1.3	2.5	5.4	*4.1	5.6	4.0	*4.3	4.5	4.5	1.4	2.1	2.4
7.....	1.6	2.8	5.0	4.0	5.6	4.5	3.7	4.3	4.3	1.4	28	2.6
8.....	1.8	2.8	4.8	4.0	5.8	*4.6	3.7	4.2	4.3	1.3	4.0	2.5
9.....	1.8	2.8	4.5	3.0	5.8	5.0	3.5	4.2	8.0	1.0	2.2	4.3
10.....	1.9	2.8	4.0	2.0	6.0	4.0	5.0	4.3	4.5	1.2	2.0	*3.0
11.....	1.8	2.8	4.0	1.0	6.0	4.5	4.0	3.8	3.8	1.0	1.9	2.7
12.....	1.7	2.8	4.0	.8	7.0	4.0	3.8	3.7	14	.8	*2.7	2.4
13.....	1.7	*2.8	3.5	.6	8.0	3.0	3.8	3.5	4.3	.6	2.2	2.2
14.....	*1.8	2.8	2.0	.6	9.0	3.0	3.8	3.4	4.0	*.4	3.1	2.1
15.....	1.7	2.8	1.4	.6	10	5.4	3.8	3.5	*48	.4	2.0	2.2
16.....	1.7	3.0	1.0	.5	15	4.0	3.7	4.0	8.0	.4	6.7	4.0
17.....	5.4	3.1	*1.7	.5	20	4.0	3.5	4.0	5.8	.4	2.4	2.7
18.....	2.5	3.0	2.0	*.5	28	4.6	3.5	3.8	3.8	.4	2.2	2.0
19.....	1.9	6.5	2.5	.5	30	4.8	*4.3	4.3	3.5	.3	2.1	1.6
20.....	1.9	6.1	3.0	.5	26	3.7	4.3	*3.5	3.4	0	1.5	*1.6
21.....	1.8	4.0	2.5	.5	6.3	3.5	9.6	3.4	135	.2	479	1.4
22.....	2.4	3.7	2.5	.5	5.8	3.2	4.8	3.4	9.6	.8	100	1.7
23.....	2.1	3.4	2.0	.5	5.2	*3.7	4.5	3.1	5.2	.6	768	1.8
24.....	2.0	3.4	2.5	.5	5.0	4.0	4.3	3.4	4.2	.6	86	1.7
25.....	2.6	3.2	3.0	.5	5.2	4.3	4.0	3.2	3.4	.1	0.6	2.0
26.....	2.4	3.7	3.5	.5	*5.4	3.7	3.8	3.8	2.7	0	*4.3	2.0
27.....	2.4	3.4	4.0	.5	5.4	3.4	4.2	3.7	2.2	0	77	2.1
28.....	*2.5	3.7	4.0	.5	4.3	3.7	4.2	125	2.0	.2	7.3	5.4
29.....	2.4	3.5	4.0	1.0	.....	3.5	4.3	4.3	1.8	.1	5.4	4.5
30.....	2.5	*3.8	4.0	2.0	.....	5.6	11	4.0	1.6	*0	4.8	34
31.....	2.5	.....	4.0	3.0	.....	4.0	.....	313	.....	0	4.0	.....
1954-55												
1.....	4.5	1.9	3.4	3.1	2.6	150	4.4	3.1	1.7	2.7	0	0
2.....	3.9	2.4	3.4	3.3	2.6	*300	4.4	2.7	1.5	1.1	0	0
3.....	3.2	*2.6	3.3	3.5	2.6	86	3.9	2.7	*1.5	.6	0	0
4.....	*3.5	2.5	3.3	3.8	2.6	22	5.8	3.1	3.2	.6	0	0
5.....	33	2.4	3.3	4.2	2.5	10	*4.4	2.7	13	.4	0	0
6.....	4.2	2.5	*3.2	5.0	2.5	11	3.4	2.3	3.1	.4	0	0
7.....	3.1	2.5	3.2	*4.0	2.5	7.8	3.6	2.2	1.8	.4	0	*0
8.....	3.2	2.4	3.1	3.5	2.5	*11	3.6	2.2	1.4	.5	*0	0
9.....	3.0	2.4	3.1	3.5	2.5	10	3.6	*6.1	1.5	.6	0	0
10.....	2.8	2.5	3.1	3.4	2.5	6.8	3.2	8.2	1.5	.3	1.7	0
11.....	2.8	2.5	3.1	3.3	2.5	8.9	*3.2	5.8	2.0	.2	.4	0
12.....	2.7	2.5	3.1	3.3	2.5	8.2	3.6	4.4	2.2	.2	.1	0
13.....	2.2	2.7	3.1	3.3	2.5	5.0	4.4	3.4	*1.6	*.1	0	0
14.....	2.2	2.7	3.1	4.5	*2.5	5.8	4.7	3.2	1.1	.1	0	0
15.....	2.1	3.0	3.1	4.0	2.5	*5.3	4.2	2.7	.9	.1	0	0
16.....	2.2	3.0	3.2	3.0	2.5	3.6	3.4	2.5	.9	.1	0	0
17.....	2.5	3.0	3.3	3.4	2.5	3.9	3.1	2.3	1.0	.1	0	0
18.....	2.5	*3.0	3.4	3.1	20	4.2	2.7	1.8	1.4	.2	0	0
19.....	*2.4	3.1	3.5	3.1	17	3.9	2.7	1.7	1.1	.2	0	0
20.....	3.1	3.2	3.5	3.0	8.0	5.8	*2.7	1.6	.7	.1	0	66
21.....	2.7	3.2	3.5	3.0	6.0	13	2.2	1.6	.7	.1	0	*135
22.....	2.4	3.2	3.5	3.0	4.5	12	2.2	1.6	.8	0	0	0
23.....	2.1	3.2	3.5	2.9	4.0	6.8	2.5	*1.7	.6	0	*0	0
24.....	2.0	3.0	3.5	2.9	3.8	6.8	3.6	2.0	21	0	0	0
25.....	1.9	3.0	3.4	2.9	*3.5	8.0	3.2	1.8	12	0	0	0
26.....	3.7	3.2	3.2	2.7	5.0	10	2.9	15	4.2	*0	0	0
27.....	2.4	3.5	3.1	2.7	4.5	8.0	3.1	3.1	2.2	0	0	0
28.....	2.1	3.5	3.0	2.7	4.5	8.2	11	4.2	*31	0	0	28
29.....	2.0	3.7	3.0	2.7	.....	8.2	3.6	3.1	9.9	0	0	431
30.....	1.9	3.4	3.0	2.6	.....	*6.4	3.1	2.2	1.6	0	0	7.7
31.....	2.0	.....	3.0	2.6	.....	5.3	.....	2.2	.....	0	0	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 9-31, 1953; Jan. 1 to Feb. 17, Mar. 3-7, 12-16, Dec. 2-31, 1954; Jan. 1 to Mar. 2, 1955.

Waubonsie Creek near Bartlett, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	9.59	5.11	3.21	3.16	16.6	22.2	13.0	16.6	23.8	22.9	16.4	11.2
1951-52.....	12.3	7.47	7.09	11.4	8.33	18.9	19.1	12.5	12.6	5.89	23.9	5.75
1952-53.....	4.19	5.74	7.27	6.96	7.92	8.31	7.42	6.38	14.1	6.77	3.42	1.52
1953-54.....	1.08	3.23	3.75	1.72	0.34	4.01	4.42	19.3	13.7	.71	52.2	3.70
1954-55.....	3.69	2.86	3.24	3.31	4.42	24.6	3.75	3.33	4.24	.29	.07	22.3

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.320	0.170	0.107	0.105	0.553	0.740	0.433	0.553	0.793	0.763	0.613	0.373
1951-52.....	.410	.249	.236	.380	.278	.630	.637	.417	.420	.196	.707	.192
1952-53.....	.140	.191	.242	.232	.264	.277	.247	.213	.470	.226	.114	.051
1953-54.....	.036	.108	.125	.057	.311	.134	.147	.643	.457	.024	1.74	.123
1954-55.....	.123	.095	.108	.110	.147	.820	.125	.111	.141	.0097	.0023	.743

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.37	0.19	0.12	0.12	0.58	0.85	0.48	0.64	0.89	0.88	0.71	0.42
1951-52.....	.47	.28	.27	.44	.30	.72	.71	.48	.47	.23	.92	.21
1952-53.....	.16	.21	.28	.27	.27	.32	.28	.25	.52	.26	.13	.06
1953-54.....	.03	.12	.14	.07	.32	.15	.16	.74	.51	.03	2.01	.14
1954-55.....	.14	.11	.12	.13	.15	.95	.14	.13	.16	.01	.003	.83

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	590	304	197	194	924	1,360	774	1,020	1,420	1,410	1,130	666
1951-52.....	756	444	436	702	479	1,160	1,130	768	750	362	1,470	342
1952-53.....	257	341	447	428	440	511	442	392	837	417	210	90
1953-54.....	122	192	231	106	519	247	263	1,180	817	44	3,210	220
1954-55.....	227	170	199	204	245	1,510	223	205	252	18	4.4	1,320

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...	.....	.....	.....	.....	.....	.....	.....	.....	27.3	12.37	19,770
1951...	July 3, 1951.	20.03	2,840	1.0	13.8	0.460	6.25	9,990	14.5	6.59	10,530
1952...	Aug. 8, 1952.	18.37	2,200	2.7	12.1	.403	5.50	8,800	11.3	5.13	8,210
1953...	June 27, 1953.	15.82	1,270	.8	6.65	.222	3.01	4,810	5.99	2.70	4,310
1954...	Aug. 23, 1954.	21.6	3,560	0	9.89	.330	4.47	7,150	9.96	4.50	7,200
1955...	Sept. 29, 1955.	(1) 17.54	1,860	0	6.33	.211	2.87	4,580	.....	.....	.....

(1) Maximum gage height, 19.42 ft. Mar. 2, 1955 (backwater from ice). Oct. to Dec.

Peak Discharge (base, 500 cfs).

1950: Oct. 1 (about 5 p.m.) 522 cfs (13.0 ft.).

1951: Mar. 22 (about 4 p.m.) 556 cfs (13.14 ft.); May 25 (about 7 p.m.) 1,020 cfs (15.0 ft.); June 1 (about 6 p.m.) 755 cfs (13.95 ft.); June 26 (about 2 a.m.) 890 cfs (14.5 ft.); July 3 (4 a.m.) 2,840 cfs (20.03 ft.); July 18 (2 a.m.) 755 cfs (14.02 ft.); Aug. 14 (11:30 p.m.) 1,140 cfs (15.40 ft.); Aug. 24 (about 7 a.m.) 522 cfs (12.98 ft.); Sept. 12 (about 6:30 a.m.) 809 cfs (14.2 ft.); Oct. 4 (12:30 a.m.) 1,240 cfs (15.68 ft.).

1952: June 27 (12:30 a.m.) 534 cfs (13.07 ft.); Aug. 8 (6:30 a.m.) 2,200 cfs (18.37) ft.); Aug. 13 (9:30 p.m.) 705 cfs (13.77 ft.); Aug. 29 (4:30 a.m.) 555 cfs (13.18 ft.).

1953: June 27 (6 p.m.) 1,270 cfs (15.82 ft.).

1954: May 28 (1:30 a.m.) 917 cfs (14.63 ft.); May 31 (10 p.m.) 1,360 cfs (16.10 ft.); June 21 (2:30 p.m.) 705 cfs (13.8 ft.); Aug. 7 (11 a.m.) 755 cfs (14.0 ft.); Aug. 21 (5 p.m.) 2,000 cfs (17.9 ft.); Aug. 23 (8 p.m.) 3,560 cfs (21.6 ft.).

1955: Mar. 2, about 1,000 cfs; Sept. 20 (11:30 p.m.) 966 cfs (14.77 ft.); Sept. 29 (1 a.m.) 1,860 cfs (17.54 ft.).

Missouri River at Nebraska City, Nebraska

LOCATION.—Lat. 40°40'35", long. 95°50'10", in SW¼ sec. 10, T. 8 N., R. 14 E., on downstream side of pier near center of Waubonsie highway bridge at Nebraska City.

DRAINAGE AREA.—414,400 sq. mi. approximately.

RECORDS AVAILABLE.—August 1929 to September 1955. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

GAGE.—Water-stage recorder. Datum of gage is 903.94 ft. above mean sea level, datum of 1929. Aug. 12, 1929, to June 27, 1930, chain gage on railroad bridge and June 27, 1930, to Oct. 22, 1931, wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—26 years, 34,970 cfs (25,320,000 acre-ft. per year).

EXTREMES.—1929-55: Maximum discharge, 414,000 cfs Apr. 19, 1952, maximum gage height, 27.66 ft. Apr. 18, 1952; minimum discharge, 1,600 cfs Dec. 31, 1946 (discharge measurement); minimum gage height observed, 1.2 ft. Jan. 1, 1940.

REMARKS.—Records good except for those periods of ice effect, which are fair. Flow partly regulated by upstream main stem reservoirs. Discharge measurements generally made six times a month, three times a month during winter.

Records of chemical analysis are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	43,000	39,800	12,500	22,600	12,000	54,000	88,200	114,000	116,000	89,400	42,200	54,400
2.....	50,000	41,000	15,500	22,000	11,000	41,800	82,200	92,200	151,000	85,000	41,400	52,200
3.....	49,500	41,000	13,800	21,700	14,400	35,400	92,200	78,400	124,000	120,000	42,600	50,400
4.....	48,200	41,800	12,800	21,400	17,000	33,000	94,600	71,800	102,000	108,000	45,000	50,400
5.....	46,400	41,000	12,000	21,100	18,000	30,000	91,000	66,800	91,600	111,000	43,400	50,000
6.....	43,000	41,400	10,000	21,400	17,000	29,700	97,000	61,500	91,600	115,000	42,600	51,800
7.....	43,400	41,800	7,000	21,700	16,000	30,400	98,800	57,600	91,600	105,000	41,800	62,000
8.....	40,600	43,000	5,800	21,700	16,000	28,300	120,000	54,000	96,400	91,600	41,000	67,400
9.....	39,000	44,200	6,000	21,700	15,000	25,900	134,000	52,600	89,400	78,900	41,000	68,400
10.....	38,600	44,600	6,800	22,600	15,500	22,600	143,000	56,700	91,600	70,600	41,800	81,100
11.....	39,400	43,400	7,600	22,900	18,000	21,100	148,000	56,700	96,400	67,900	41,000	88,200
12.....	38,600	41,800	8,600	23,200	20,000	19,300	150,000	53,100	100,000	66,800	41,000	88,800
13.....	38,200	43,400	9,400	23,500	19,000	17,000	149,000	51,800	90,400	65,700	43,800	92,200
14.....	39,000	45,000	9,700	23,200	17,000	15,000	150,000	54,000	76,700	66,200	67,900	91,600
15.....	38,600	43,400	10,200	23,200	16,000	16,000	141,000	61,500	71,800	66,800	106,000	86,600
16.....	38,600	43,000	10,000	23,500	18,000	18,500	124,000	59,000	68,400	65,700	107,000	78,900
17.....	37,800	41,400	10,400	23,800	21,000	19,900	111,000	57,200	63,000	61,000	97,000	70,600
18.....	37,000	38,600	10,800	23,500	22,000	23,500	101,000	58,500	70,600	63,500	88,800	67,400
19.....	37,400	35,800	11,000	22,900	22,000	26,200	93,400	64,000	82,800	58,000	76,700	62,000
20.....	38,200	34,200	12,000	21,700	22,000	26,900	78,900	65,700	98,800	57,200	76,700	50,000
21.....	37,800	33,200	15,000	20,500	22,000	27,600	67,900	70,100	97,000	57,600	83,300	56,700
22.....	37,400	32,200	18,000	20,800	21,000	28,600	65,700	72,300	88,200	61,000	87,200	54,000
23.....	37,000	30,400	21,000	20,800	22,000	33,200	65,700	70,100	72,800	61,000	83,800	53,100
24.....	34,600	25,300	25,000	20,200	24,000	30,000	63,000	66,200	71,200	55,400	77,200	53,100
25.....	35,000	13,000	22,000	19,900	28,600	51,800	65,200	65,200	70,100	52,600	69,600	53,600
26.....	35,000	9,520	22,900	19,900	55,800	70,600	65,700	67,900	69,600	51,300	64,000	54,000
27.....	36,200	9,750	23,500	17,800	42,200	125,000	61,000	60,500	76,700	50,400	58,500	53,100
28.....	37,000	12,200	23,500	16,000	37,800	169,000	58,500	55,800	94,000	51,300	64,600	50,800
29.....	37,400	13,500	22,600	15,000	.....	158,000	66,200	52,200	99,400	48,600	72,300	47,700
30.....	38,600	12,500	22,600	14,000	.....	127,000	78,400	50,400	94,000	45,000	71,800	46,400
31.....	39,000	.....	22,900	13,000	.....	104,000	.....	59,500	.....	43,000	59,500	.....

Note.—Stage-discharge relation affected by ice Dec. 6-25, 1950; Jan. 28 to Feb. 25, 1951

Missouri River at Nebraska City, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	45,900	50,000	33,900	10,700	28,500	39,400	128,000	100,000	68,400	56,200	28,500	39,900
2.....	46,400	50,000	31,400	10,200	29,000	37,800	135,000	95,200	64,500	52,700	31,300	39,900
3.....	49,000	49,000	31,100	11,000	31,000	39,400	133,000	89,800	59,000	59,000	34,200	37,600
4.....	56,200	50,800	31,100	12,500	29,000	37,000	122,000	85,200	55,200	72,200	35,100	36,400
5.....	61,500	47,700	30,800	14,100	29,000	34,600	130,000	81,300	66,700	64,500	33,400	35,100
6.....	63,500	48,600	31,100	15,200	30,000	29,000	141,000	77,300	73,800	53,200	31,300	34,600
7.....	61,000	47,200	56,700	16,800	31,000	28,800	150,000	74,100	70,000	64,000	30,100	35,100
8.....	57,600	49,000	56,700	17,000	31,500	30,600	158,000	73,100	64,000	87,200	33,800	35,100
9.....	59,000	51,800	44,600	18,000	33,000	31,900	168,000	72,500	63,400	77,700	33,000	34,600
10.....	60,000	54,400	38,200	19,000	35,000	32,900	177,000	71,500	67,800	69,400	31,300	34,200
11.....	54,000	52,200	33,900	20,000	39,900	36,900	190,000	71,200	66,200	57,900	33,000	34,200
12.....	51,300	50,000	31,400	20,500	46,700	39,600	211,000	75,100	64,500	50,200	33,000	34,200
13.....	49,000	50,800	27,600	21,000	46,700	58,200	211,000	80,800	63,400	48,200	33,800	34,200
14.....	49,000	52,200	15,000	21,500	52,700	72,100	229,000	78,400	61,200	52,200	38,100	35,500
15.....	51,300	53,600	9,500	22,000	64,500	56,800	263,000	72,300	59,000	60,100	39,000	34,600
16.....	52,600	51,300	7,500	22,400	64,000	44,500	297,000	70,600	56,800	51,700	37,200	33,000
17.....	54,000	49,000	8,500	24,000	65,000	42,800	334,000	74,400	55,700	44,700	35,900	33,000
18.....	52,600	46,400	8,700	24,000	66,700	46,300	336,000	75,700	60,100	43,700	35,500	32,100
19.....	50,000	45,000	9,000	25,000	69,400	63,300	309,000	75,400	65,600	41,300	36,800	30,900
20.....	48,200	45,900	9,000	26,000	66,200	65,500	345,000	71,400	73,800	41,300	38,100	30,500
21.....	52,600	47,700	9,200	27,000	55,700	65,900	290,000	66,600	97,600	39,400	39,000	30,900
22.....	55,800	49,000	9,500	27,000	50,700	65,500	242,000	67,100	83,900	36,400	39,400	31,700
23.....	57,200	48,600	9,800	25,000	46,700	55,900	206,000	73,300	68,400	35,100	39,400	33,000
24.....	54,900	46,400	10,500	25,000	42,800	44,300	185,000	92,500	66,700	34,200	38,600	34,200
25.....	54,000	43,800	11,000	25,000	41,800	39,200	168,000	77,300	65,600	33,000	38,100	34,200
26.....	55,400	42,200	12,000	27,000	41,800	38,100	154,000	67,800	62,800	32,100	40,400	33,400
27.....	56,200	38,600	11,700	27,000	41,800	42,600	140,000	63,100	90,400	31,300	43,200	31,700
28.....	55,800	37,800	11,500	27,000	40,400	52,000	127,000	67,000	113,000	30,100	39,000	30,500
29.....	53,100	39,400	11,400	27,000	39,900	55,100	118,000	71,600	78,300	28,900	44,700	30,900
30.....	51,300	38,200	11,300	27,500	.....	71,400	110,000	73,300	62,800	28,100	40,400	32,100
31.....	51,300	.....	11,300	28,000	.....	119,000	.....	73,100	.....	27,800	39,400	.....
1952-53												
1.....	31,700	35,500	12,300	14,800	24,500	30,100	49,700	36,400	38,100	96,200	39,400	33,000
2.....	32,500	34,200	13,400	17,100	24,500	30,900	46,200	43,700	35,900	96,900	39,900	33,800
3.....	33,000	33,000	13,400	18,800	24,500	30,500	43,700	45,700	35,900	82,600	38,600	34,600
4.....	33,000	33,000	13,400	20,000	24,800	27,000	45,200	55,700	36,400	76,600	39,000	34,600
5.....	33,000	32,500	14,100	21,300	25,700	26,400	55,700	88,400	35,500	65,000	39,900	34,600
6.....	33,000	33,000	15,000	22,700	25,400	26,400	50,800	112,000	35,900	60,000	40,800	35,100
7.....	32,500	33,800	15,400	22,100	26,000	26,400	48,700	107,000	37,200	54,200	40,700	35,500
8.....	32,100	33,400	16,600	21,000	26,700	29,300	41,800	88,400	49,700	50,200	47,700	34,600
9.....	32,500	33,400	18,300	20,600	28,500	28,900	39,400	75,500	94,300	44,700	41,800	33,800
10.....	32,100	33,000	19,800	20,000	30,500	28,500	46,200	68,400	107,000	42,800	38,100	34,200
11.....	32,100	32,100	20,600	20,300	30,900	30,500	47,200	62,800	90,400	43,200	35,100	35,500
12.....	33,000	32,100	20,800	20,000	28,100	35,500	39,900	70,000	78,900	44,700	33,000	36,400
13.....	33,500	32,500	20,600	20,000	27,000	39,900	45,700	66,700	83,200	45,200	35,100	36,800
14.....	34,200	31,300	19,300	20,000	27,000	67,900	48,700	58,400	96,200	47,200	35,500	37,200
15.....	34,200	32,100	17,100	18,300	27,000	59,600	49,200	54,200	95,600	47,200	36,400	37,200
16.....	35,100	33,000	14,800	16,900	27,400	58,400	55,700	52,200	85,800	46,200	37,200	37,200
17.....	35,900	36,400	14,600	15,000	26,000	72,800	47,200	48,700	87,200	45,200	36,400	36,400
18.....	35,900	35,500	15,000	16,600	24,200	69,400	44,700	43,700	68,400	44,200	35,100	35,900
19.....	36,400	33,400	15,000	17,600	24,500	67,800	39,000	41,300	59,000	42,300	34,200	35,500
20.....	35,900	32,100	15,000	17,600	25,700	72,800	36,400	39,900	92,400	41,300	34,200	35,500
21.....	34,200	30,900	13,400	15,700	23,000	68,900	34,600	40,400	110,000	40,400	34,200	35,500
22.....	34,600	29,700	13,000	15,000	19,800	59,600	33,000	41,300	110,000	39,000	33,800	35,100
23.....	35,500	28,500	13,400	15,000	20,300	61,800	31,300	42,800	98,800	38,600	33,400	34,600
24.....	35,900	27,000	13,600	15,700	21,300	75,500	30,500	42,300	95,600	35,900	33,400	35,100
25.....	35,500	26,000	13,200	17,600	21,600	78,900	30,900	42,300	102,000	34,600	34,200	35,500
26.....	35,100	25,400	12,800	19,000	21,800	75,000	31,300	39,900	117,000	33,400	36,800	33,800
27.....	35,100	26,000	12,500	20,000	22,400	73,300	31,700	38,600	119,000	33,400	35,900	33,800
28.....	36,400	20,600	12,100	20,800	25,400	63,400	33,800	37,200	110,000	34,200	35,100	33,000
29.....	36,400	15,400	11,700	22,100	.....	60,600	35,100	35,900	99,500	33,400	33,800	33,400
30.....	36,400	13,000	11,700	24,500	.....	59,000	32,100	37,200	100,000	33,400	33,400	33,800
31.....	36,400	.....	13,000	25,100	.....	55,700	.....	40,800	.....	35,100	33,000	.....

Note.—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1 to Feb. 10, 1952.

Missouri River at Nebraska City, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	33,400	34,600	22,400	13,000	12,200	37,800	42,000	38,200	37,800	41,000	36,800	33,800
2.....	33,400	35,100	24,200	15,200	12,700	38,800	40,200	43,000	46,200	38,800	36,100	31,800
3.....	33,800	34,600	25,700	16,900	13,500	37,800	37,400	49,200	41,600	38,200	36,800	31,800
4.....	34,200	33,800	27,400	15,200	14,600	34,800	35,100	48,400	51,600	38,500	37,400	31,800
5.....	33,800	32,500	28,100	15,200	15,800	28,400	34,400	45,200	47,600	35,400	38,200	32,200
6.....	34,200	30,900	26,400	16,200	17,000	23,000	34,100	42,700	44,400	34,800	36,400	33,200
7.....	35,100	30,100	24,800	16,900	18,600	22,000	33,500	41,000	41,600	34,400	35,800	33,200
8.....	35,500	28,900	23,900	16,900	19,400	21,400	32,500	39,200	39,900	34,400	37,100	33,200
9.....	35,500	27,800	23,900	16,900	20,800	22,200	31,800	38,800	37,400	32,500	36,800	33,500
10.....	35,900	26,700	23,600	15,700	24,200	24,200	32,200	38,800	40,600	33,200	39,600	34,800
11.....	35,900	26,400	22,700	15,400	27,200	24,700	32,500	38,500	42,700	33,500	44,100	35,100
12.....	35,900	25,700	23,900	12,600	25,000	27,200	31,200	37,100	41,300	33,500	33,500	36,400
13.....	35,100	25,100	23,900	10,200	23,200	38,200	28,100	35,800	42,700	33,200	31,200	37,400
14.....	34,000	23,600	21,600	7,800	22,200	37,400	29,900	34,800	38,500	34,400	31,800	35,800
15.....	33,800	22,700	20,600	7,200	23,200	30,600	33,200	33,800	35,100	35,400	32,800	34,400
16.....	33,400	21,600	18,000	6,800	23,000	25,700	35,800	38,800	34,400	35,100	33,500	35,400
17.....	33,800	21,000	16,900	6,600	22,400	23,200	35,400	33,500	46,000	33,200	32,800	36,100
18.....	35,100	20,300	17,800	6,800	28,400	22,700	34,400	33,500	46,800	32,500	33,500	35,800
19.....	35,900	21,600	17,100	7,000	35,800	25,200	34,100	34,100	47,600	34,800	33,800	35,800
20.....	35,500	23,600	16,200	8,300	37,800	35,100	34,800	34,400	74,000	36,400	33,500	35,100
21.....	35,100	23,600	16,600	10,300	35,100	40,200	42,000	33,800	105,000	35,100	33,800	34,100
22.....	35,100	21,600	17,600	10,700	27,200	41,300	43,400	32,500	103,000	34,400	39,200	33,800
23.....	36,400	19,300	15,900	10,300	25,400	42,700	37,100	31,800	91,700	33,200	45,600	34,100
24.....	35,900	18,800	11,000	11,400	26,300	43,400	36,800	35,400	80,500	34,400	47,600	34,100
25.....	35,500	17,800	9,020	12,400	28,700	44,400	38,500	35,100	69,500	34,400	37,800	34,100
26.....	35,500	16,900	9,240	12,800	30,200	46,000	37,400	31,800	62,700	34,800	35,100	33,200
27.....	35,900	16,900	10,300	12,300	31,200	43,400	36,400	32,200	60,200	35,100	32,800	32,500
28.....	35,500	18,000	10,600	11,700	34,800	41,600	34,800	43,400	62,800	34,800	32,800	32,500
29.....	35,100	19,300	11,400	11,600	.....	42,400	34,800	38,500	48,000	34,800	31,200	34,100
30.....	34,600	20,300	11,900	11,800	.....	43,400	36,100	35,100	43,400	35,100	31,800	35,400
31.....	34,200	.....	11,200	12,000	.....	43,000	.....	35,100	.....	35,400	33,500	.....
1954-55												
1.....	34,100	30,600	16,400	14,200	12,500	17,000	34,400	31,500	34,800	32,700	20,200	34,400
2.....	33,500	25,700	16,400	15,200	13,000	20,000	35,800	31,200	32,700	34,400	19,200	33,400
3.....	35,800	22,000	16,700	15,600	13,400	23,000	34,400	30,900	32,100	33,400	16,400	33,000
4.....	38,200	20,200	15,800	16,000	14,000	26,100	34,000	30,000	33,700	31,200	13,200	34,400
5.....	39,600	19,200	16,400	15,800	14,400	25,500	34,000	29,700	36,800	30,900	11,200	35,800
6.....	38,200	19,700	17,400	16,000	15,000	24,600	33,400	29,400	38,600	31,800	11,200	36,500
7.....	37,400	20,400	17,400	15,400	15,400	23,000	32,400	29,700	38,600	33,000	17,200	35,400
8.....	36,400	20,000	16,400	15,600	15,800	24,000	32,100	29,400	37,200	34,000	24,900	34,400
9.....	35,100	20,000	16,400	15,200	16,200	30,300	30,900	29,700	36,500	36,500	31,200	33,000
10.....	34,100	19,200	16,200	15,000	15,000	36,200	30,300	31,500	35,100	33,700	35,400	33,400
11.....	33,800	19,200	15,600	14,400	14,000	48,400	30,600	32,400	32,700	39,600	35,400	34,400
12.....	35,400	19,200	15,400	13,800	13,500	45,600	30,900	32,700	32,100	46,000	35,400	35,400
13.....	35,100	19,000	15,600	13,800	13,500	47,200	30,900	32,700	33,400	36,200	34,400	35,400
14.....	35,800	18,700	15,600	10,200	13,500	59,000	31,200	32,400	34,400	32,700	34,400	34,800
15.....	36,100	18,200	15,600	8,880	14,000	46,800	31,200	33,000	34,000	33,700	34,000	34,000
16.....	36,400	18,200	15,600	8,250	14,400	41,600	32,400	33,400	33,000	38,200	33,700	33,400
17.....	36,400	18,000	15,600	8,620	14,800	35,100	33,400	33,000	32,100	36,200	33,700	34,000
18.....	35,800	18,000	15,400	9,600	15,400	31,200	32,100	33,000	32,100	34,400	33,400	34,000
19.....	34,800	17,700	15,600	10,000	16,000	29,100	31,500	32,700	33,000	32,700	33,700	35,100
20.....	36,400	17,400	15,800	10,000	16,500	28,200	30,900	32,400	37,600	33,000	34,000	35,800
21.....	38,200	17,200	16,400	10,200	17,000	27,000	31,200	32,100	38,200	31,800	34,000	39,000
22.....	38,200	17,200	17,200	10,200	17,000	23,800	30,000	32,700	37,200	32,700	35,100	40,400
23.....	36,800	17,200	17,700	9,900	16,500	22,000	30,900	33,400	37,200	34,400	35,400	38,200
24.....	36,100	17,000	17,400	10,400	16,000	20,800	37,200	33,000	38,600	34,400	34,400	38,200
25.....	36,400	16,400	17,400	10,800	15,200	20,800	33,400	32,400	51,200	33,000	34,000	38,200
26.....	36,100	16,200	17,700	10,500	14,000	20,200	31,200	32,700	43,200	32,100	33,400	36,200
27.....	36,800	16,200	18,000	10,200	13,500	20,200	32,100	33,000	38,600	32,100	33,700	36,800
28.....	36,400	16,000	18,200	10,200	15,000	21,500	34,000	34,400	35,800	32,400	35,100	37,600
29.....	35,800	16,000	17,400	10,400	.....	22,500	35,400	36,800	34,800	32,100	36,800	37,600
30.....	35,400	16,400	11,400	11,000	.....	33,700	33,400	38,600	32,700	32,100	36,800	37,600
31.....	33,800	.....	14,200	12,000	.....	32,700	.....	36,800	.....	26,400	35,100	.....

Note.—Stage-discharge relation affected by ice Jan. 11 to Feb. 9, 1954; Jan. 29 to Mar. 3, 1955. Discharge computed from gage readings or graph based on gage readings Dec. 16, 17, 20, 24-26, 30, 1953; May 24, 28, 29, June 1-4, 6-10, 13-25, July 7-24, July 31 to Aug. 25, 1954; Jan. 15-23, 26-28, June 11, July 7, Aug. 4-7, 1955.

Missouri River at Nebraska City, Nebraska—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51	39,660	34,040	14,220	20,880	21,440	47,070	98,150	63,780	89,920	70,660	63,270	63,200
1951-52	53,860	47,550	21,450	21,400	44,520	48,960	199,600	76,060	68,950	48,510	36,260	33,910
1952-53	34,300	30,260	15,000	19,090	25,160	50,980	41,710	51,770	80,160	48,640	36,910	35,030
1953-54	34,020	24,640	18,830	12,070	24,140	33,940	35,330	37,530	53,090	34,090	35,890	34,150
1954-55	36,090	18,880	16,400	12,170	14,800	29,950	32,540	32,470	35,930	33,800	29,870	35,660

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1950-51	2,439,000	2,025,000	874,500	1,284,000	1,191,000	2,894,000
1951-52	3,312,000	2,830,000	1,319,000	1,316,000	2,561,000	3,011,000
1952-53	2,109,000	1,801,000	922,100	1,174,000	1,397,000	3,135,000
1953-54	2,147,000	1,466,000	1,158,000	742,000	1,341,000	2,078,000
1954-55	2,218,000	1,123,000	1,008,000	748,500	822,100	1,842,000

Water year	Apr.	May	June	July	Aug.	Sept.
1950-51	5,841,000	3,922,000	5,351,000	4,345,000	3,890,000	3,760,000
1951-52	11,880,000	4,677,000	4,103,000	2,983,000	2,229,000	2,018,000
1952-53	2,482,000	3,368,000	4,770,000	2,991,000	2,269,000	2,085,000
1953-54	2,102,000	2,308,000	3,159,000	2,151,000	2,207,000	2,032,000
1954-55	1,936,000	1,997,000	2,138,000	2,078,000	1,837,000	2,122,000

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Momentary maximum			Minimum day	Mean	Runoff in acre feet	Mean	Runoff in acre feet
	Date	Gage height in feet	Discharge					
1950							45,940	33,260,000
1951	Mar. 29, 1951.	(1)17.17	163,000	5,800	52,230	37,820,000	55,170	39,940,000
1952	Apr. 19, 1952.	(2)24.48	414,000	7,500	58,180	42,240,000	54,560	39,610,000
1953	June 27, 1953.	15.91	121,000	11,700	39,370	28,500,000	39,290	28,440,000
1954	June 21, 1954.	16.83	123,000	6,000	31,630	22,900,000	31,050	22,480,000
1955	Mar. 14, 1955.	(3)11.60	65,000	8,250	27,450	19,870,000		

(1) Maximum gage height, 18.52 ft. June 2, 1951.
(2) Maximum gage height, 27.66 ft. Apr. 18, 1952.
(3) Maximum gage height 12.98 ft. Mar. 3, 1955 (backwater from ice).

Peak Discharge (base, 100,000 cfs).

1951: Mar. 29 (1:30 a.m.) 163,000 cfs (17.17 ft.); Apr. 14 (11 a.m.) 152,000 cfs (17.15 ft.); May 1 (3 p.m.) 128,000 cfs (17.55 ft.); June 2 (11:30 a.m.) 159,000 cfs (18.52 ft.); June 20 (4 p.m.) 102,000 cfs (15.28 ft.); June 28 (11:30 p.m.) 104,000 cfs (15.26 ft.); July 3 (3 p.m.) 139,000 cfs (17.58 ft.); July 6 (7 a.m.) 118,000 cfs (15.48 ft.); Aug. 15 (2 p.m.) 113,000 cfs (15.84 ft.).

1952: Apr. 19 (8 a.m.) 414,000 cfs (24.48 ft.); June 21 (4:30 p.m.) 116,000 (16.12 ft.); June 28 (12:30 a.m.) 135,000 cfs (16.50 ft.).

1953: May 6 (1 p.m.) 114,000 cfs (14.47 ft.); June 9 (11 p.m.) 108,000 cfs (14.70 ft.); June 27 (4:30 p.m.) 121,000 cfs (15.91 ft.).

1954: June 21 (5 p.m.) 123,000 cfs (16.83 ft.).

1955: No peak above base.

Mule Creek near Malvern, Iowa

LOCATION.—Lat. 40°57′, long. 95°35′, in NW¼NW¼ sec. 20, T. 71 N., R. 41 W., on left bank 10 ft. downstream from highway bridge, 1.8 miles upstream from mouth, and 4.4 miles south of Malvern.

DRAINAGE AREA.—10.6 sq. mi.

RECORDS AVAILABLE.—June 1954 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 974.20 ft. above mean sea level (levels by Soil Conservation Service).

EXTREMES.—1954-55: Maximum discharge 1,990 cfs Aug. 21, 1954 (gage height, 15.84 ft.); minimum daily, 0.1 cfs many days in July, August and September, 1955.

REMARKS.—Records good except those for periods of ice effect, backwater from debris on control, or doubtful gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, Period June to September 1954

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	.....	0.9	1.3	2.1	16	1.7	0.7	d2.7	2.3
2	.....	.9	*.9	1.9	17	1.7	.8	1.3	2.1
3	.....	.9	.8	1.7	18	1.3	.9	1.4	1.9
4	.....	.9	.8	1.7	19	1.1	.7	1.3	2.1
5	.....	.9	1.0	1.7	20	1.0	.7	1.1	2.3
6	.....	.8	1.7	1.7	21	11	.8	236	2.1
7	.....	.8	d4.7	1.7	22	2.3	.9	9.3	1.7
8	.....	.8	2.3	*1.7	23	2.1	.9	*130	1.7
9	.....	.8	1.6	2.1	24	1.6	.8	7.0	1.7
10	2.1	.8	1.3	1.9	25	1.3	.8	3.4	1.7
11	3.3	.8	1.4	1.9	26	1.0	.8	2.8	1.6
12	2.8	.8	1.4	1.7	27	1.1	.8	7.9	1.7
13	1.4	.8	1.1	1.9	28	1.0	.8	2.6	2.3
14	1.6	.7	1.4	1.9	29	.9	.7	2.5	1.9
15	5.3	.7	1.1	1.7	30	*.9	.7	2.5	4.6
					31	.....	.7	2.1	.....

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of weather records and records for nearby stations.

Mule Creek near Malvern, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	2.1	2.0	1.1	1.1	*0.8	*70	2.5	1.1	*0.7	0.4	0.1	0.3
2	2.1	2.0	1.0	1.1	.8	*55	2.5	1.1	.7	.4	*.1	.2
3	1.9	2.0	1.2	1.1	.8	8.2	2.5	*1.1	.9	.3	.1	.2
4	2.4	1.9	1.4	1.1	.8	3.9	2.8	1.0	1.0	.3	.1	.2
5	4.7	*1.9	1.3	1.1	.8	3.6	*2.3	1.0	1.6	*.3	.1	.1
6	*2.1	1.9	1.3	*1.1	.8	3.5	2.1	.7	1.0	.3	.1	*.1
7	1.9	1.9	*1.2	1.1	.8	3.3	2.1	.9	.9	.3	.1	.1
8	2.1	1.9	1.3	1.1	.8	3.1	2.3	.8	.9	.3	.1	.1
9	1.9	1.9	1.3	1.1	.8	3.0	2.3	4.8	.9	.1	.1	.1
10	1.9	1.9	1.3	1.1	.8	2.9	2.3	1.4	.9	.1	.6	.1
11	2.1	1.9	1.3	1.1	.8	2.8	2.3	1.3	1.0	.1	.1	.1
12	2.1	1.9	1.4	1.1	.8	2.7	2.3	1.3	1.0	.1	.1	.1
13	2.1	1.9	1.3	.9	.9	2.6	2.3	1.1	1.0	.1	.1	.1
14	2.3	1.9	1.3	.9	1.1	2.8	2.1	1.1	.8	.1	.1	.1
15	2.3	1.9	1.2	.9	2.5	2.8	1.9	1.0	.8	.1	.1	.1
16	2.3	1.9	1.1	.9	1.6	*2.5	1.3	1.0	.8	.1	.1	.1
17	2.3	1.9	1.1	.9	1.5	2.3	1.3	1.0	.8	.1	.1	.1
18	2.3	1.6	1.1	.9	10	2.5	1.3	1.0	.9	.1	.1	.1
19	2.3	1.6	1.1	.9	20	2.5	1.1	.9	.8	.1	.1	.1
20	2.6	1.7	1.1	.8	7.0	2.6	1.1	.9	.8	.1	.1	2.6
21	2.1	1.6	1.1	.8	4.4	4.0	1.1	1.0	.8	.1	.1	8.3
22	2.1	1.6	1.1	.8	3.9	3.0	1.3	.9	.8	.1	.1	.3
23	2.1	2.3	1.2	.8	3.9	2.4	1.6	1.1	.8	.1	.1	.3
24	1.9	2.5	1.4	.8	4.2	2.0	1.9	1.0	2.3	.1	.1	.7
25	2.1	1.8	1.1	.8	6.2	1.7	1.3	1.1	1.6	.1	.1	.4
26	2.6	1.5	1.1	.8	9.0	1.6	1.3	1.7	.8	.1	.1	1.3
27	2.5	1.4	1.1	.8	5.0	1.8	1.4	1.0	.6	.1	.1	.9
28	2.2	1.3	1.1	.8	3.4	2.1	2.1	1.6	.9	.1	.1	1.5
29	2.2	1.2	1.1	.8	.....	2.3	1.3	1.1	1.1	.1	.1	11
30	2.1	1.2	1.1	.8	.....	2.5	1.1	.7	.6	.1	.1	.7
31	2.0	.....	1.2	.8	.....	2.3	.....	.8	.....	.1	.1	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 4-15, 17-21, 23, 24, 26-31, 1954; Jan. 1 to Mar. 2, Mar. 6-12, 21-29, 1955. Backwater from debris on control Oct. 28 to Nov. 6, Nov. 10-13, 15, Nov. 24 to Dec. 3, 1954.

Mule Creek near Malvern, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										0.80	14.3	1.97
1954-55	2.25	1.80	1.19	0.94	3.36	6.72	1.84	1.17	0.95	.16	.11	1.01

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										0.075	1.35	0.186
1954-55	0.212	0.170	0.112	0.089	0.317	0.634	0.174	0.110	0.090	.015	.010	.095

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										0.09	1.55	0.21
1954-55	0.24	0.19	0.13	0.10	0.33	0.73	0.19	0.13	0.10	.02	.01	.11

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										49	878	117
1954-55	138	107	73	58	187	413	109	72	57	9.7	6.9	60

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1954(1)	Aug. 21, 1954.	15.84	1,990								
1955	Mar. 1, 1955.	7.51	361	0.1	1.78	0.168	2.28	1,200			

(1) Period June 10 to Sept. 30, 1954.

Peak Discharge (base, 100 cfs)

June to Sept. 1954: June 21 (3:30 p.m.) 148 cfs (5.54 ft.); Aug. 21 (5:30 p.m.) 1,990 cfs (15.84 ft.); Aug. 23 (1 a.m.) 221 cfs (6.30 ft.); Aug. 23 (8:30 p.m.) 1,610 cfs (14.19 ft.).

1955: Mar. 1 (4:30 p.m.) 361 cfs (7.51 ft.); Mar. 2 (3:30 p.m.) 282 cfs (6.83 ft.).

West Nishnabotna River at Randolph, Iowa

LOCATION.—Lat. 40°52', long. 95°35', in NE¼ sec. 17, T. 70 N., R. 41 W., on downstream side of bridge on State Highway 184, 0.3 mile downstream from Deer Creek, 0.5 mile west of Randolph, and about 17 miles upstream from confluence with East Nishnabotna River.

DRAINAGE AREA.—1,310 sq. mi. approximately.

RECORDS AVAILABLE.—June 1948 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 932.99 ft. above mean sea level, unadjusted. Prior to Aug. 26, 1955, wire-weight gage and since June 30, 1949 supplementary water-stage recorder operating above gage height 8.4 ft. at same site and datum.

AVERAGE DISCHARGE.—7 years, 560 cfs (405,400 acre-ft. per year).

EXTREMES.—1948-55: Maximum discharge, 29,600 cfs May 9, 1950 (gage height, 21.93 ft.); maximum gage height, 24.8 ft. Mar. 5, 1949, from graph based on gage readings (ice jam); minimum daily discharge, 11 cfs Sept. 18, 1955. Flood of June 1947 reached a stage of about 24 ft. from information by local residents (discharge not determined).

REMARKS.—Records good except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	648	135	159	80	80	*512	985	*22,400	*7,520	790	440	520
2.....	1,870	137	157	80	90	496	764	7,380	*23,700	700	425	520
3.....	562	144	130	80	90	528	714	*4,340	6,870	22,600	406	510
4.....	295	162	110	85	90	463	803	3,230	3,300	7,400	445	520
5.....	241	164	100	90	100	364	932	2,630	2,560	3,800	402	520
6.....	213	149	90	80	100	364	899	2,250	2,250	4,010	380	535
7.....	431	157	80	80	110	334	807	1,960	6,460	1,790	362	500
8.....	278	164	70	75	110	496	836	1,790	7,100	1,350	339	475
9.....	210	153	70	70	110	350	758	2,560	2,890	1,040	352	550
10.....	183	142	70	80	110	350	686	4,600	2,130	*911	344	1,640
11.....	172	135	70	80	140	350	645	2,440	2,250	822	366	985
12.....	164	140	70	80	170	350	655	1,960	*1,080	796	339	1,250
13.....	162	167	60	80	200	350	630	1,570	1,400	918	450	1,160
14.....	159	167	60	80	170	400	670	1,400	1,160	848	1,980	803
15.....	144	164	70	80	150	350	803	2,370	1,560	803	5,920	565
16.....	*152	147	70	80	150	200	665	2,310	1,680	764	1,740	530
17.....	159	144	70	80	150	150	560	1,900	1,080	751	2,080	520
18.....	164	140	70	80	200	120	*580	1,570	1,250	1,460	2,500	505
19.....	144	137	*70	80	300	100	545	1,570	2,150	1,050	985	*475
20.....	144	91	70	80	400	*149	545	1,020	4,140	770	5,190	460
21.....	144	*115	75	82	400	310	803	1,730	2,440	681	3,870	450
22.....	144	128	80	*82	300	425	1,200	1,840	1,020	650	1,020	445
23.....	144	130	85	82	250	1,080	1,120	1,250	1,520	620	*1,060	460
24.....	152	130	90	80	250	496	897	1,120	1,460	570	2,500	470
25.....	157	140	100	80	700	990	3,300	1,520	1,060	550	1,180	460
26.....	159	150	90	80	2,420	2,140	3,020	1,790	2,250	530	876	480
27.....	154	172	80	80	902	7,550	4,020	1,030	1,200	520	725	445
28.....	152	154	75	75	528	10,600	3,020	925	955	485	630	435
29.....	149	152	75	70	.....	*6,080	3,180	925	869	470	630	411
30.....	149	147	75	75	.....	2,130	*9,720	897	829	470	570	420
31.....	152	.....	80	80	.....	1,400	.....	1,460	.....	445	550	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 24-26, Dec. 3-31, 1950; Jan. 1 to Feb. 25, Mar. 9-19, 1951.

West Nishnabotna River at Randolph, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	435	388	357	120	290	411	1,960	883	630	1,020	505	1,680
2	430	398	384	120	700	350	1,300	890	933	1,060	520	1,400
3	480	362	375	120	700	300	1,070	*848	744	*1,030	904	1,200
4	1,680	295	302	120	600	250	970	810	998	1,160	970	970
5	1,120	280	352	120	550	290	904	751	925	803	869	911
6	630	290	286	120	500	380	862	714	575	681	570	822
7	560	310	308	120	450	393	855	720	510	1,160	595	738
8	480	330	309	120	450	545	822	703	460	3,090	2,140	614
9	460	360	262	120	450	495	962	758	450	1,350	2,310	758
10	450	440	250	120	450	1,060	1,020	1,020	*450	904	925	655
11	445	393	*266	120	450	3,020	1,000	925	460	796	*660	620
12	445	515	246	120	600	1,350	1,160	*784	425	720	570	595
13	435	*470	238	120	1,100	4,180	1,350	744	402	744	530	560
14	398	455	226	250	1,000	1,900	1,460	725	425	1,250	720	777
15	*393	375	200	500	*840	955	1,250	725	585	2,130	1,090	940
16	380	330	170	800	800	732	1,160	962	655	902	2,630	*665
17	375	304	160	1,000	670	732	1,070	1,460	411	751	1,160	560
18	402	380	150	1,000	620	869	1,120	1,020	362	708	692	545
19	398	326	140	900	595	*1,920	1,080	810	380	725	670	545
20	402	330	130	800	520	1,000	1,020	764	919	3,770	620	555
21	632	398	130	700	334	897	1,200	744	10,100	1,400	595	540
22	1,840	375	130	600	375	570	2,070	1,480	11,600	992	645	525
23	692	308	130	500	505	330	1,620	3,080	3,520	703	520	510
24	520	352	130	450	555	393	1,570	1,350	2,010	708	495	505
25	485	290	120	400	505	655	1,250	962	1,300	545	485	480
26	470	286	120	350	480	758	1,160	770	925	570	520	470
27	470	308	120	330	495	890	1,070	790	*10,100	525	505	465
28	450	339	120	300	470	1,050	1,010	714	4,120	570	470	430
29	460	375	120	290	470	1,200	948	686	1,900	510	10,400	440
30	430	352	120	290	.....	3,670	890	645	1,300	515	6,230	425
31	411	.....	120	290	.....	3,450	.....	630	.....	485	2,560	.....
1952-53												
1	430	290	250	200	370	986	834	1,280	485	464	240	91
2	406	278	270	200	400	684	882	1,140	459	1,140	219	91
3	384	270	300	210	430	684	930	1,020	490	512	233	148
4	362	254	310	210	470	747	1,120	1,030	528	557	270	135
5	380	242	320	210	595	664	898	962	557	416	278	138
6	366	230	330	210	726	810	810	938	898	402	290	128
7	357	234	340	210	686	834	782	890	534	380	599	125
8	375	240	350	220	640	905	740	882	902	372	384	125
9	380	230	350	220	703	593	705	850	2,040	350	259	118
10	370	250	*332	220	1,080	631	740	800	670	330	*237	111
11	366	250	310	230	*1,600	850	818	747	2,100	330	215	111
12	362	254	280	230	1,140	810	698	*712	946	317	215	104
13	*362	254	250	*235	587	789	670	691	650	490	204	99
14	352	254	250	240	780	842	664	684	581	670	197	*94
15	344	250	250	240	705	1,070	677	691	551	407	197	78
16	339	240	240	240	464	*1,080	705	698	691	334	186	84
17	321	299	240	250	402	842	705	726	1,030	325	183	68
18	339	600	230	250	523	970	618	740	657	309	180	68
19	330	*490	220	260	691	820	605	691	587	297	169	87
20	330	348	210	260	902	789	*581	657	464	384	166	81
21	326	308	210	270	1,540	712	569	1,910	449	*330	166	84
22	321	308	200	270	691	810	557	810	*464	309	162	74
23	321	295	200	280	712	754	545	664	449	297	155	78
24	321	282	200	280	1,180	605	618	775	763	290	152	64
25	312	270	200	290	1,600	624	1,130	1,650	803	282	152	64
26	308	260	200	300	1,330	593	922	818	657	266	148	78
27	304	240	200	300	1,180	593	705	624	1,120	266	142	81
28	274	210	200	310	1,480	557	624	605	2,970	317	114	71
29	278	210	200	320	.....	569	618	599	644	334	128	84
30	270	230	200	340	.....	782	834	670	518	274	118	68
31	286	.....	200	350	.....	890	.....	490	.....	259	91	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 5-9, Dec. 15-31, 1951; Jan. 1 to Feb. 16, Mar. 2-4, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 3, 1953.

West Nishnabotna River at Randolph, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953–54												
1	54	94	104	35	50	197	128	204	1,560	145	31	270
2	71	94	114	35	55	194	128	480	434	121	54	255
3	68	87	121	35	60	159	114	557	402	142	44	240
4	64	87	131	35	70	150	108	372	421	121	21	197
5	61	91	169	35	80	150	104	263	290	94	51	162
6	64	91	159	30	90	150	750	301	166	104	44	152
7	68	87	138	30	100	180	282	211	201	114	114	145
8	74	87	152	30	120	180	152	159	197	91	204	138
9	78	84	152	30	250	183	125	155	197	87	91	148
10	74	87	74	30	*140	155	128	152	180	87	58	142
11	78	94	114	30	130	142	121	142	197	71	*41	152
12	*81	94	28	30	110	130	111	*131	204	68	169	152
13	84	101	135	29	145	120	125	128	162	61	78	121
14	78	97	128	29	201	100	111	118	135	*58	84	125
15	81	97	100	29	166	114	74	106	138	44	81	125
16	81	94	70	29	166	111	78	94	*215	48	152	135
17	128	97	*54	29	183	118	78	135	190	51	501	135
18	135	*94	52	*29	176	152	74	114	186	48	152	155
19	111	101	50	29	423	148	*84	101	162	28	135	145
20	128	244	50	30	858	155	104	91	279	35	135	121
21	111	290	50	30	636	152	68	38	1,640	81	1,310	108
22	94	199	45	30	354	121	439	44	1,850	54	*5,580	*101
23	94	166	45	30	259	*111	248	78	548	87	*8,790	104
24	78	138	45	30	237	121	208	94	309	68	*2,630	97
25	94	135	45	30	222	118	169	101	219	51	740	94
26	94	121	40	30	201	121	142	108	197	44	439	91
27	94	108	40	30	194	118	155	94	176	48	411	84
28	94	94	40	30	194	145	131	263	167	44	551	97
29	91	111	40	35	.....	148	162	266	148	35	726	131
30	87	111	40	40	.....	131	169	389	142	38	376	*787
31	91	.....	40	45	.....	131	.....	1,680	.....	38	290	.....
1954–55												
1	445	128	98	180	64	570	344	208	72	112	37	22
2	390	125	96	145	70	*2,000	318	174	40	92	38	18
3	275	128	96	125	70	7,370	282	174	52	566	38	17
4	208	132	110	140	66	3,780	258	165	163	105	62	17
5	666	130	100	145	62	1,500	240	218	899	54	41	16
6	536	130	96	130	60	668	286	171	637	63	37	16
7	375	130	92	110	60	*318	204	162	*380	*70	31	15
8	274	130	86	91	60	910	201	150	187	85	*29	15
9	226	*130	*80	80	60	1,800	187	162	130	*7,170	32	14
10	243	130	200	*74	60	1,400	184	278	120	1,690	29	14
11	229	118	334	110	58	770	162	*165	125	430	102	13
12	190	118	110	130	58	626	184	165	118	270	74	13
13	184	120	110	150	*58	910	190	162	118	201	46	13
14	174	113	140	150	58	430	*190	240	92	194	24	13
15	171	105	145	138	59	330	171	102	68	171	24	13
16	208	102	132	100	59	318	153	92	74	156	21	12
17	171	105	89	90	59	254	145	83	65	180	22	12
18	159	102	102	80	80	236	138	90	50	118	17	11
19	159	105	98	74	350	232	108	87	72	130	22	14
20	180	105	100	69	600	230	318	85	74	100	17	15
21	*156	105	125	66	800	208	190	79	68	90	17	*70
22	150	102	120	66	700	208	145	74	52	92	19	89
23	140	105	115	64	620	243	128	67	54	92	20	232
24	142	102	120	64	580	159	*3,110	90	118	92	14	105
25	140	102	120	64	560	63	1,020	90	198	74	16	76
26	159	102	120	62	540	70	560	130	138	72	19	56
27	156	102	112	62	530	150	362	165	85	65	17	58
28	156	102	120	62	520	194	159	112	68	60	16	52
29	150	100	190	60	.....	282	334	100	422	51	18	140
30	148	100	209	60	.....	302	266	65	215	48	15	68
31	138	.....	208	60	.....	344	.....	72	.....	42	20	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 15-31, 1953; Jan. 1 to Feb. 12, Mar. 4-6, 12-14, Dec. 8-10, 13, 14, 1954; Jan. 6-12, Jan. 17 to Mar. 2, Mar. 26, 27, 1955.

West Nishnabotna River at Randolph, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	263	145	84.5	79.5	313	1,309	1,495	2,785	3,244	1,918	1,279	601
1951-52.....	570	357	211	305	570	1,129	1,173	931	1,952	1,043	1,390	701
1952-53.....	341	280	253	253	846	761	743	853	822	387	208	94.3
1953-54.....	86.5	116	82.7	31.5	210	142	162	230	377	71.2	777	104
1954-55.....	229	114	128	90.8	247	867	351	135	105	411	30.1	41.0

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.201	0.111	0.065	0.061	0.239	0.999	1.14	2.13	2.48	1.46	0.976	0.459
1951-52.....	.435	.273	.161	.279	.435	.862	.895	.711	1.49	.796	1.06	.535
1952-53.....	.260	.214	.193	.193	.646	.581	.567	.651	.627	.295	.159	.072
1953-54.....	.066	.089	.063	.024	.160	.108	.124	.176	.288	.054	.593	.125
1954-55.....	.175	.087	.098	.074	.189	.662	.268	.103	.126	.314	.023	.031

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.23	0.12	0.07	0.07	0.25	1.15	1.27	2.45	2.76	1.69	1.13	0.51
1951-52.....	.50	.30	.19	.32	.47	.99	1.00	.82	1.66	.92	1.22	.60
1952-53.....	.30	.24	.22	.22	.67	.67	.63	.75	.70	.34	.18	.08
1953-54.....	.08	.10	.07	.03	.17	.13	.14	.20	.32	.06	.68	.14
1954-55.....	.20	.10	.11	.09	.20	.76	.30	.12	.14	.36	.03	.03

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	16,170	8,640	5,200	4,890	17,400	80,480	88,940	171,200	193,100	117,900	78,660	35,740
1951-52.....	35,020	21,270	12,950	22,430	32,770	69,410	69,780	57,260	116,200	64,140	85,440	41,710
1952-53.....	20,980	16,640	15,550	15,580	46,950	46,800	44,240	52,450	48,910	23,820	12,790	5,610
1953-54.....	5,320	6,870	5,090	1,940	11,640	8,740	9,660	14,160	22,440	4,380	47,770	9,740
1954-55.....	14,090	6,760	7,880	5,950	13,730	53,320	20,900	8,280	9,830	25,200	1,850	2,440

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									476	4.93	345,000
1951...	July 3, 1951.	21.77	29,400	60	1,130	0.863	11.70	818,300	1,185	12.27	857,600
1952...	June 22, 1952.	20.50	25,500	120	866	.661	8.99	628,400	843	8.76	612,300
1953...	June 28, 1953.	11.77	4,980	64	484	.369	5.00	350,300	434	4.49	314,400
1954...	Aug. 23, 1954.	17.15	13,400	21	204	.156	2.12	147,800	220	2.28	159,200
1955...	July 9, 1955.	16.18	13,900	11	235	.179	2.44	170,300			

Peak Discharge (base, 6,500 cfs)

1951: Mar. 28 (8:30 p.m.) 15,100 cfs (17.77 ft.); Apr. 27 (2 p.m.) 7,050 cfs (12.95 ft.); May 1 (11 a.m.) 28,200 cfs (21.35 ft.); May 10 (3 a.m.) 7,050 cfs (13.02 ft.); June 2 (11:30 a.m.) 29,100 cfs (21.66 ft.); June 7 (9 p.m.) 15,600 cfs (16.90 ft.); June 20 (12:30 a.m.) 11,200 cfs (14.96 ft.); July 3 (12 M.) 29,400 cfs (21.77 ft.); Aug. 15 (1:30 p.m.) 7,450 cfs (13.19 ft.); Aug. 17 (8:30 p.m.) 6,510 cfs (12.72 ft.); Aug. 20 (6:30 p.m.) 13,400 cfs (15.86. ft.).

1952: June 22 (11:30 a.m.) 25,500 cfs (20.50 ft.); June 27 (3 p.m.) 19,500 cfs (18.37 ft.); Aug. 29 (7:30 p.m.) 20,600 cfs (18.80 ft.).

1953: No peak above base.

1954: Aug. 23 (6 a.m.) 13,400 cfs (17.15 ft.).

1955: Mar. 2 (12 p.m.) 10,500 cfs (14.69 ft.); July 9 (6:30 a.m.) 13,900 cfs (16.18 ft.).

Davids Creek near Hamlin, Iowa

LOCATION.—Lat. 41°40'25", long. 94°48'20", in NE¼NE¼ sec. 9, T. 79 N., R. 34 W., on left bank 20 ft. downstream from bridge on State Highway 64, 5.2 miles east of Hamlin, Iowa, and 8 miles upstream from mouth and East Nishnabotna River.

DRAINAGE AREA.—26.1 sq. mi.

RECORDS AVAILABLE.—June 1952 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,266.54 ft. (revised) above mean sea level, datum of 1929.

EXTREMES.—1952-55: Maximum discharge, 860 cfs Aug. 15, 1952 (gage height, 13.07 ft.); maximum gage height, 14.26 ft. Mar. 2, 1955; no flow at times most years. Flood mark of 18.0 ft. pointed out by local resident, date unknown.

REMARKS.—Records fair except those for periods of ice effect or no gage-height record, which are poor. Records of water temperatures and sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet per Second, for Period June to Sept. 1952

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1952									
1	.....	*23	9.1	27	16	.....	18	27	11
2	.....	30	8.2	23	17	.....	17	19	11
3	.....	103	17	20	18	.....	17	16	10
4	.....	22	12	19	19	.....	17	14	9.5
5	.....	19	*10	*17	20	19	15	16	10
6	.....	24	9.5	15	21	*195	14	17	10
7	.....	328	8.7	15	22	*25	12	12	10
8	.....	50	39	14	23	19	12	11	9.5
9	.....	32	14	12	24	17	11	10	8.7
10	.....	28	10	12	25	12	10	10	8.7
11	.....	23	9.1	11	26	122	9.1	9.5	8.2
12	.....	20	8.2	11	27	413	8.7	8.7	7.8
13	.....	20	7.8	10	28	39	8.2	35	7.4
14	.....	22	20	16	29	25	8.2	320	7.0
15	.....	20	*239	12	30	25	7.8	45	7.0
					31	.....	8.2	31	.....

* Discharge measurement made on this day.

Davids Creek near Hamlin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	6.6	4.4	55	7.4	4.5	16	29	27	8.2	6.6	1.8	0
2	6.1	4.4	27	3.5	3.8	19	23	23	8.2	11	1.6	0
3	*6.1	4.1	12	3.1	3.5	20	34	21	8.2	7.0	1.8	0
4	6.1	4.4	9.1	2.9	7.0	12	22	20	112	7.0	2.1	0
5	6.1	4.4	7.4	2.7	20	12	20	18	47	6.6	2.3	0
6	6.1	3.8	6.6	2.7	16	14	20	17	20	6.6	8.0	0
7	6.1	4.1	5.7	2.9	23	15	19	17	24	5.7	2.9	0
8	6.6	*4.1	6.6	3.1	18	17	18	*15	60	5.0	2.1	0
9	6.6	3.8	5.7	3.1	20	18	19	14	13	4.7	1.8	0
10	6.1	3.8	7.0	3.4	106	20	18	13	178	4.4	1.8	0
11	6.1	3.8	6.1	3.1	53	22	15	12	25	4.1	1.6	0
12	5.7	3.8	*7.0	3.6	g44	20	15	12	*19	4.7	1.6	0
13	5.7	3.8	5.7	*3.8	g34	19	14	12	18	5.3	1.4	0
14	5.7	3.8	5.0	3.8	g25	37	15	12	15	6.1	1.2	0
15	5.7	3.6	4.7	3.0	g20	32	18	11	15	5.0	1.2	.1
16	5.3	3.8	5.3	2.5	17	23	14	11	13	4.4	1.2	0
17	5.3	17	5.0	2.9	14	21	12	11	12	4.3	1.0	0
18	5.3	7.0	4.4	3.0	11	21	12	12	11	4.2	1.0	0
19	5.3	5.3	4.4	4.4	g101	18	11	12	9.5	3.4	.9	0
20	5.3	4.7	4.4	3.1	g149	18	11	13	8.7	*3.4	.9	0
21	5.3	4.7	4.4	3.1	g46	16	11	12	9.1	12	.8	.1
22	5.3	4.4	4.4	3.1	g21	15	11	11	8.7	4.1	.7	.1
23	4.7	4.1	4.4	3.1	g37	15	10	9.5	7.8	3.4	.7	0
24	5.3	4.4	4.4	3.1	g34	13	20	40	8.7	3.1	.7	.1
25	5.3	3.8	4.1	2.9	g23	12	19	17	13	2.7	*.0	.1
26	5.3	.2	3.7	2.9	g18	12	14	14	8.2	2.5	.5	.1
27	5.0	.6	3.4	2.9	g15	12	14	12	8.2	2.7	.3	.1
28	4.4	1.0	3.1	2.9	g*19	*11	12	11	7.8	2.3	.2	.1
29	4.7	2.7	3.8	2.9	.....	11	18	11	7.4	2.5	.3	.1
30	4.7	29	4.4	3.2	.....	35	36	9.1	6.6	2.3	.2	.1
31	4.7	.....	6.6	5.0	.....	27	.....	8.7	.....	2.0	.4	.....
1953-54												
1	0.1	0.2	0.4	0.2	0.2	0.8	1.3	3.6	2.4	0.5	0.1	1.3
2	.2	.2	.6	.2	.2	.6	1.4	10	*1.6	.3	.1	1.0
3	.1	.2	1.0	.2	.2	.4	.7	6.1	3.4	.4	.1	.9
4	.1	.2	1.0	.2	.2	.3	.7	*3.1	1.8	.5	.1	.7
5	.2	.2	.6	.2	.3	.3	1.2	2.0	1.2	.4	.1	.6
6	.1	.2	.6	.2	.3	.4	2.5	1.8	.9	.3	.1	.4
7	.1	.2	.6	.2	.3	.6	1.5	1.5	.9	.2	.2	.4
8	.3	.2	*.5	.2	.3	.8	.8	1.2	.7	.3	.3	.5
9	.3	.2	.3	.1	.3	.8	.7	1.0	.7	.2	.3	.6
10	.2	*.2	.3	.1	.3	.8	.7	1.0	.7	.2	.3	.6
11	.2	.3	.3	.1	.3	.7	.6	1.3	.6	.2	.3	.4
12	.1	.5	.3	.1	.3	.6	*.6	1.2	.6	.1	.3	.3
13	.3	1.2	.3	.1	.4	.3	.5	.7	.6	.1	.3	.3
14	.2	.6	.2	0	.9	.2	.4	.7	.7	.1	.3	.4
15	*.3	.4	.2	.1	1.0	*.4	.6	.7	36	.2	.1	.7
16	.1	.5	.2	.1	.7	1.2	.7	.7	4.7	.2	.2	.5
17	.3	.4	.1	.1	.6	1.6	.4	.6	2.3	.1	.4	.6
18	.3	.4	.1	.1	.6	1.3	.4	.6	1.5	.1	.3	.5
19	.3	.8	.2	.1	1.2	1.3	.4	.7	1.2	.2	.3	.4
20	.3	1.4	.2	.1	3.8	.8	.6	.6	1.4	.2	.3	.5
21	.2	.9	.2	.1	1.2	.7	3.1	.6	50	.1	6.5	.3
22	.3	.6	.1	.1	.8	.8	1.3	.6	6.1	.1	22	.4
23	.3	.6	.1	.1	1.2	.7	.7	.6	2.3	.2	90	.3
24	.3	.6	.1	.1	.7	1.0	.7	.8	1.5	.1	19	.3
25	.3	.3	.2	.1	1.3	1.4	.8	.8	1.4	.1	4.7	.3
26	.4	.3	.2	.1	1.0	.8	.8	.6	.9	.1	0.2	.3
27	.6	.6	.2	.1	1.3	.8	.9	1.4	.7	.1	9.7	.3
28	.3	.3	.2	.1	.8	2.5	.7	2.1	.7	.1	5.3	.6
29	.3	.4	.2	.1	.....	.8	.6	1.3	.7	.1	2.7	.9
30	.3	.6	.2	.1	.....	1.3	2.6	.6	.6	.1	1.8	1.2
31	.2	.....	.2	.1	.....	1.4	.....	.8	.....	.1	2.1	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note.—Stage-discharge relation affected by ice Nov. 28, Dec. 14, 15, 25-30, 1952; Jan. 2-7, 15-17, Jan. 23 to Feb. 3, Feb. 7-9, 16-18, Mar. 7-10, Dec. 12-14, 16, 21, 22, 28-30, 1953; Jan. 5, 9, 10, 12, Jan. 16 to Feb. 14, Mar. 3, 1954.

Davids Creek near Hamlin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954–55												
1	1.3	3.7	0.7	0.4	0.3	30	3.6	4.4	0.9	0.4	0	0
2	1.8	1.1	.7	.4	*.3	200	3.1	3.8	*.9	.3	0	0
3	.9	1.2	.7	.5	.3	*155	2.9	3.8	7.0	.2	.1	0
4	1.1	1.3	.7	.7	.3	45	8.3	*3.6	14	.2	0	0
5	9.4	1.2	.6	.6	.3	20	3.8	3.1	7.5	.3	*.1	0
6	2.5	1.3	.5	.5	.3	10	3.1	3.6	2.5	.6	0	0
7	*1.4	1.2	*.4	*.4	.3	5.0	*2.5	2.9	1.8	.4	0	0
8	2.7	1.2	.4	.4	.3	16	2.5	2.5	1.4	.3	0	0
9	2.3	1.2	.4	.3	.3	40	2.3	13	4.5	*1.6	0	0
10	1.8	1.2	.4	.3	.3	14	2.1	4.4	3.5	21	.1	0
11	1.5	1.3	.4	.3	.3	10	2.3	3.4	2.0	1.6	.1	.1
12	1.4	1.2	.4	.3	.3	8.7	2.3	3.1	1.6	.6	0	0
13	8.0	1.2	.4	.3	.3	6.1	2.5	2.9	1.5	.4	0	0
14	14	1.2	.4	.3	.3	5.7	2.7	2.5	1.2	.3	0	.1
15	3.8	1.2	.4	.3	.3	4.7	2.1	2.3	1.0	.3	0	.1
16	2.5	1.2	.4	.3	.3	*4.1	1.8	2.3	.9	.3	0	.1
17	2.7	1.2	.4	.3	.3	3.6	1.5	2.1	.8	.3	0	a.1
18	1.8	1.0	.4	.3	20	3.6	1.5	2.1	.9	.3	0	a.1
19	1.8	1.0	.4	.3	50	3.6	36	2.1	.9	.3	0	a0
20	1.6	.9	.5	.3	15	2.3	5.7	2.0	.8	.2	0	a0
21	1.6	1.0	.5	.3	8.2	2.0	3.4	1.8	.8	.2	0	a0
22	1.8	1.0	.5	.3	6.8	3.0	2.9	1.5	.6	.2	0	a0
23	1.8	.9	.5	.3	6.0	4.0	106	1.4	.6	.1	0	a0
24	1.4	.7	.6	.3	5.4	2.0	39	1.4	.9	.1	0	0
25	1.5	.7	.6	.3	5.0	1.8	18	1.4	.9	.1	0	0
26	2.3	.7	.7	.3	10	1.7	12	2.1	.6	.1	0	.1
27	2.0	1.2	.5	.3	9.0	2.1	8.7	1.8	.5	.1	0	.1
28	1.6	1.3	.4	.3	7.0	3.5	7.4	1.4	.6	.1	0	0
29	1.5	.8	.4	.3	.....	7.0	5.3	1.3	.7	.1	.1	.1
30	1.4	.8	.3	.3	.....	6.1	5.0	1.2	.6	.1	0	0
31	1.3	.....	.3	.3	.....	4.1	.....	.9	.....	0	0	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated in basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Dec. 1-31, 1954; Jan. 1-13, 21-26, 30, Feb. 3-5, Feb. 13 to Mar. 11, Mar. 21-28, 1955.

Davids Creek near Hamlin, Iowa—Continued

Monthly Mean Discharge in Cubic Feet Per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52										30.9	33.3	12.3
1952-53	5.57	5.09	7.77	3.35	32.2	18.5	17.5	14.8	23.7	4.81	1.41	.03
1953-54	.25	.16	.32	.12	.74	.85	.96	1.59	4.29	.19	5.63	.55
1954-55	2.66	1.17	.48	.35	5.27	20.2	10.0	2.78	2.08	1.00	.02	.03

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52										1.18	1.28	0.471
1952-53	0.213	0.195	0.298	0.128	1.23	0.709	0.670	0.567	0.908	1.84	.054	.0013
1953-54	.0096	.018	.012	.0046	.028	.033	.037	.061	.164	.0073	.216	.021
1954-55	.102	.045	.018	.013	.202	.774	.383	.107	.080	.038	.00077	.0011

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52										1.36	1.47	0.53
1952-53	0.25	0.22	0.34	0.15	1.29	0.82	0.75	0.65	1.01	.21	.06	.001
1953-54	.01	.02	.01	.005	.03	.04	.04	.07	.18	.009	.25	.02
1954-55	.12	.05	.02	.02	.21	.89	.43	.12	.09	.04	.0007	.001

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52										1,900	2,050	733
1952-53	342	303	478	206	1,790	1,140	1,010	930	1,410	206	86	2.0
1953-54	15	27	20	7.5	41	52	57	98	255	12	346	33
1954-55	161	70	30	21	293	1,240	596	171	124	62	1.0	1.8

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1952(1)	Aug. 15, 1952	13.07	860								
1953	June 10, 1953	11.46	558	0	11.0	0.421	5.75	8,000	9.58	4.98	6,940
1954	Aug. 23, 1954	8.89	199	0	1.33	.051	.08	964	1.61	.83	1,170
1955	Apr. 23, 1955	(2) 10.27	378	0	3.83	.147	1.99	2,770			

(1) Period June 20 to Sept. 30, 1952.
(2) Maximum gage height, 14.26 ft. Mar. 2, 1955 (backwater from ice).

Peak Discharge (base, 400 cfs)

1952: June 21 (7:30 a.m.) 435 cfs (10.72 ft.); June 27 (11:30 p.m.) 760 cfs (12.55 ft.); July 7 (6:30 a.m.) 450 cfs (10.85 ft.); Aug. 15 (5:30 a.m.) 860 cfs (13.07 ft.); Aug. 29 (7:30 a.m.) 526 cfs (11.27 ft.).

1953: Feb. 19 (11 p.m.) 420 cfs (10.55 ft.); June 4 (10:30 p.m.) 510 cfs (11.18 ft.); June 10 (8 a.m.) 558 cfs (11.46 ft.).

1954: No peak above base.

1955: No peak above base.

East Nishnabotna River at Red Oak, Iowa

LOCATION.—Lat. 41°00'55", long. 95°14'30", in sec. 29, T. 72 N., R. 38 W., on right bank 10 ft. downstream from bridge on U. S. Highway 34, 0.5 mile west of Red Oak, 28 miles downstream from Indian Creek, and 49 miles upstream from confluence with West Nishnabotna River.

DRAINAGE AREA.—890 sq. mi. approximately.

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 1,010.45 ft. above mean sea level, unadjusted. Prior to July 5, 1925, chain gage, 0.5 mile downstream at datum 0.40 ft. lower. May 29, 1936, to July 29, 1939, wire-weight gage, at same site and datum.

AVERAGE DISCHARGE.—22 years (1918-20, 1921-22, 1936-55), 348 cfs (251,900 acre-ft. per year).

EXTREMES.—1918-25, 1936-55: Maximum discharge, 36,200 cfs June 13, 1947 (gage height, 23.23 ft.), from rating curve extended above 14,000 cfs on basis of an overflow profile and extended channel rating; minimum daily, 6 cfs (estimated) Aug. 18, 1936.

REMARKS.—Records good except those for periods of ice effect, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	48	33	36	25	20	240	675	*11,500	1,680	391	192	260
2	531	36	54	25	20	253	575	10,500	8,220	345	190	309
3	728	36	54	25	20	274	531	2,280	3,690	6,920	183	262
4	232	58	50	25	20	206	655	1,620	1,260	3,070	302	250
5	190	58	50	25	20	161	695	1,300	1,030	1,120	234	240
6	183	52	50	25	20	147	675	1,140	895	1,230	170	268
7	218	48	45	24	20	128	855	1,010	2,200	775	153	242
8	192	47	35	24	20	113	735	940	7,160	655	144	216
9	183	43	30	24	20	100	555	1,050	1,790	575	134	322
10	158	39	25	24	20	95	483	1,910	1,350	*555	155	1,890
11	103	36	25	24	30	90	459	1,560	1,210	483	170	695
12	65	39	25	*24	50	90	432	1,010	1,120	615	157	595
13	59	43	25	24	200	90	507	855	962	555	*153	1,460
14	48	*47	25	23	100	90	715	775	855	535	685	595
15	46	39	25	22	100	90	715	795	875	491	1,830	391
16	*37	39	30	21	100	67	*479	875	895	396	1,010	356
17	58	40	27	20	200	106	425	815	795	695	1,110	302
18	50	54	26	20	500	102	395	675	735	775	1,230	274
19	48	48	*26	20	1,950	95	335	655	875	635	499	259
20	50	46	25	20	*575	*68	283	635	985	391	2,020	*256
21	50	46	26	20	222	62	555	695	895	370	2,200	245
22	48	47	30	20	194	76	1,550	1,030	*755	322	835	222
23	48	47	30	20	161	170	835	975	695	290	555	222
24	46	46	27	20	153	170	655	507	715	271	675	214
25	46	46	25	20	355	548	2,610	491	655	245	615	204
26	43	46	22	20	1,320	2,360	1,780	1,400	735	234	527	265
27	39	46	23	20	555	7,380	1,320	635	655	227	428	229
28	32	33	25	20	268	7,890	1,680	384	511	219	283	204
29	29	32	30	20	.....	7,570	695	376	467	212	268	185
30	28	39	30	20	.....	1,400	5,150	356	391	209	376	183
31	39	.....	28	20	.....	835	.....	432	.....	199	302	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 24-26, Dec. 4-31, 1950; Jan. 1 to Feb. 18, Mar. 10-15, 1951.

East Nishnabotna River at Red Oak, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	178	140	197	80	165	210	2,030	575	397	705	211	905
2.....	174	129	183	80	350	200	1,240	555	555	638	420	728
3.....	183	106	183	80	500	180	988	495	407	2,260	495	615
4.....	603	100	202	80	450	160	850	478	460	1,070	443	535
5.....	675	100	181	80	400	190	750	460	555	615	356	495
6.....	222	110	157	80	350	200	682	426	300	535	318	460
7.....	247	130	166	80	320	200	638	407	260	2,080	308	430
8.....	212	160	161	80	300	210	*615	388	274	2,560	443	397
9.....	197	190	140	80	260	220	638	426	260	1,070	1,040	378
10.....	183	178	*101	80	280	2,520	800	900	*244	878	426	340
11.....	174	178	95	80	280	3,050	850	555	223	750	239	324
12.....	166	227	95	80	280	1,340	905	426	208	638	*239	306
13.....	161	224	90	80	350	3,990	1,040	*410	199	615	240	280
14.....	155	*220	90	80	450	1,100	1,150	394	185	615	234	340
15.....	*147	192	90	250	*510	575	1,040	372	1,210	*705	1,980	397
16.....	147	188	90	500	348	478	905	460	575	575	1,020	333
17.....	144	174	90	600	290	443	800	1,210	359	495	705	*274
18.....	153	170	90	600	271	460	825	615	271	478	460	266
19.....	146	180	90	550	259	1,420	825	478	252	460	407	252
20.....	140	212	90	500	259	*1,070	728	460	3,140	426	375	236
21.....	144	190	80	450	250	775	750	426	8,410	410	443	252
22.....	168	178	80	400	342	535	1,180	535	*11,100	388	400	235
23.....	219	161	80	300	296	407	1,240	2,240	2,080	343	291	221
24.....	196	147	80	250	290	321	1,120	932	1,680	330	274	216
25.....	147	197	80	200	245	478	905	575	1,460	303	236	218
26.....	151	188	80	180	240	615	775	515	660	266	213	218
27.....	146	178	80	170	234	615	705	460	6,220	244	179	218
28.....	146	183	80	165	265	800	660	515	4,070	230	172	211
29.....	163	178	80	165	220	1,260	615	443	1,150	236	5,000	211
30.....	146	178	80	165	.....	2,140	595	416	825	228	2,720	211
31.....	146	.....	80	*165	.....	4,200	.....	404	.....	218	1,210	.....
1952-53												
1.....	a205	160	150	125	180	277	675	960	251	188	85	41
2.....	a200	156	160	125	190	262	628	700	237	180	81	40
3.....	a195	152	170	125	200	452	750	675	234	273	88	46
4.....	a190	158	180	125	225	466	005	628	234	206	93	49
4.....	a185	148	185	125	250	484	605	605	1,180	168	88	49
6.....	a182	148	185	125	300	497	551	592	605	157	103	46
7.....	a178	148	180	125	350	401	520	556	321	149	202	44
8.....	a175	150	*175	125	400	325	484	506	961	138	133	41
9.....	a173	148	170	120	600	430	470	470	881	131	97	40
10.....	a172	148	160	120	900	542	492	434	965	126	*85	39
11.....	a171	147	150	120	1,660	605	484	413	1,310	120	80	39
12.....	a170	147	145	120	*850	542	421	*389	506	117	76	36
13.....	a169	148	140	120	551	497	401	361	385	136	76	36
14.....	*168	156	140	*120	605	605	397	349	325	394	72	*35
15.....	a170	160	150	120	700	1,200	425	357	301	659	68	36
16.....	a170	160	150	120	413	*800	474	357	434	230	64	36
17.....	174	183	140	122	417	551	421	353	313	177	63	35
18.....	166	*315	140	122	470	650	333	365	248	168	63	34
19.....	162	247	135	122	628	538	313	365	223	168	62	34
20.....	162	185	130	125	1,710	452	*341	349	269	152	60	34
21.....	162	172	130	130	1,160	434	349	413	237	*149	59	32
22.....	162	172	125	130	400	434	349	381	*220	138	56	31
23.....	158	170	120	135	825	434	333	313	216	141	55	31
24.....	170	168	115	135	960	417	389	520	240	126	52	31
25.....	164	190	115	140	1,020	357	592	1,180	258	109	49	32
26.....	162	170	115	140	750	341	497	492	262	107	48	32
27.....	162	160	120	145	825	341	381	365	383	109	46	34
28.....	145	150	130	150	750	321	361	341	1,040	168	46	34
29.....	154	140	130	155	.....	313	369	317	479	113	45	30
30.....	148	140	125	160	.....	582	932	305	234	101	44	30
31.....	160	.....	125	170	.....	1,070	.....	277	.....	97	42	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Nov. 4-8, 18, 19, Dec. 9-31, 1951; Jan. 1 to Feb. 15, Feb. 29 to Mar. 9, Nov. 26 to Dec. 31, 1952; Jan. 1 to Feb. 10, 1953. Discharge computed from gage readings or graph based on gage readings Oct. 14, Oct. 17 to Nov. 14, 1952; Feb. 12, 13, 16, 20-22, 24-26, 28, Mar. 1-4, 14-17, 31, Apr. 1, 2, 4, 18, 19, 30, May 1, 2, 7, 8, 22-26, June 5-15, 17-21, 1953.

East Nishnabotna River at Red Oak, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	29	41	50	28	24	68	52	113	434	45	17	117
2	29	41	48	28	26	64	50	143	331	46	17	109
3	29	41	55	27	28	62	46	360	385	52	17	103
4	30	41	62	27	30	60	45	209	168	46	14	57
5	29	41	66	25	32	58	44	111	101	44	17	48
6	29	41	63	25	34	56	171	83	70	40	32	40
7	30	40	56	24	38	62	313	68	57	39	34	49
8	31	39	53	23	40	60	97	57	48	36	36	49
9	31	42	52	22	45	59	70	53	53	34	36	49
10	34	46	52	21	50	59	59	50	57	34	26	46
11	34	48	50	20	*57	57	49	46	53	31	34	50
12	*35	48	45	19	62	56	46	46	62	30	*32	48
13	35	49	40	19	70	52	42	*44	62	29	28	50
14	35	48	35	18	80	44	42	40	56	*26	31	48
15	35	48	30	18	75	44	40	37	63	24	30	48
16	35	50	*27	18	75	45	41	226	726	23	34	45
17	48	49	26	18	74	50	42	80	*325	23	46	48
18	46	49	26	18	68	55	39	45	103	22	56	49
19	49	57	27	*18	*74	60	*39	40	83	21	49	45
20	42	*64	28	18	206	62	41	36	46	23	39	44
21	42	75	29	18	212	56	52	34	399	29	42	45
22	46	72	30	18	120	48	95	32	1,320	24	*6,470	*52
23	44	62	31	19	95	*46	99	31	359	24	9,660	52
24	42	55	31	19	85	49	69	36	149	25	*5,860	34
25	42	50	32	20	78	50	64	39	93	24	1,220	32
26	42	49	32	20	81	52	92	39	74	22	*551	52
27	42	45	33	21	78	50	72	37	60	20	461	52
28	45	46	33	21	74	48	75	74	50	20	524	59
29	42	48	32	21	.....	44	60	115	42	18	281	64
30	42	49	30	22	.....	50	63	70	40	16	165	600
31	41	.....	30	23	.....	52	.....	72	.....	16	133	.....
1954-55												
1	620	100	61	69	35	*360	135	135	38	70	34	28
2	354	100	59	66	36	2,000	122	128	33	57	33	25
3	263	96	58	64	37	5,560	111	128	52	50	34	24
4	190	96	58	59	35	2,380	111	247	1,420	42	33	24
5	502	100	61	72	34	955	165	422	1,100	36	33	23
6	700	94	61	59	33	394	138	111	444	66	34	23
7	323	92	54	50	32	*246	125	86	203	220	45	23
8	242	90	55	59	32	402	115	152	152	70	44	23
9	251	86	52	68	32	1,030	111	125	*118	2,060	35	23
10	236	79	*47	47	32	930	107	459	107	930	66	22
11	215	76	50	*56	32	626	105	*260	111	223	78	22
12	200	77	55	70	32	466	105	128	113	*170	53	22
13	175	76	61	83	32	330	*107	95	105	109	44	22
14	742	76	71	77	*32	264	111	80	95	87	38	23
15	533	76	76	69	32	264	115	74	87	80	35	23
16	239	74	69	61	32	209	120	71	82	73	33	22
17	198	72	64	55	32	162	125	66	76	68	32	22
18	178	71	58	50	40	145	132	63	74	66	*32	21
19	160	69	47	47	200	138	135	59	71	65	29	22
20	148	68	57	44	350	142	435	54	65	65	30	24
21	*148	68	61	41	500	130	214	50	62	63	26	60
22	145	*68	57	39	440	89	95	47	49	57	25	84
23	145	68	57	37	410	138	598	45	54	53	28	*70
24	130	66	51	36	390	142	*2,940	46	76	49	34	40
25	122	64	52	35	380	89	630	46	128	46	29	31
26	122	61	61	34	370	57	352	65	99	46	24	30
27	128	61	64	34	360	80	247	71	70	44	23	39
28	132	61	54	33	360	118	214	115	59	41	23	39
29	116	65	61	33	.....	145	203	62	187	39	24	80
30	103	61	74	33	.....	168	150	50	93	36	28	57
31	104	.....	71	33	.....	181	.....	44	.....	35	33	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 9-31, 1953; Jan. 1 to Feb. 14, Mar. 3-6, Dec. 11, 12, 1954; Jan. 11, 12, Jan. 18 to Mar. 2, Mar. 27, 1955. Discharge computed from gage readings or graph based on gage readings June 28 to July 1, Aug. 29 to Sept. 6, Sept. 20, 21, 24, 25, Oct. 4, 5, 1954; Mar. 5-7, Apr. 11-16, May 5-9, 13-23, 1955.

East Nishnabotna River at Red Oak, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	119	43.6	31.7	22.1	258	1,002	934	1,577	1,503	775	574	388
1951-52.....	199	170	112	217	313	999	895	581	1,600	709	713	350
1952-53.....	170	167	145	130	653	506	488	473	458	175	73.5	36.9
1953-54.....	37.6	49.1	39.8	21.2	71.8	54.1	70.3	79.9	195	20.2	838	72.8
1954-55.....	254	77.0	59.3	52.0	156	592	279	114	181	165	35.2	33.0

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.134	0.049	0.036	0.025	0.290	1.13	1.05	1.77	1.69	0.871	0.645	0.436
1951-52.....	.224	.191	.126	.244	.352	1.12	1.01	.653	1.80	.797	.801	.393
1952-53.....	.191	.188	.163	.146	.734	.569	.548	.531	.515	.197	.083	.041
1953-54.....	.042	.055	.045	.024	.081	.061	.079	.090	.219	.033	.942	.032
1954-55.....	.285	.087	.067	.058	.175	.665	.313	.128	.203	.185	.040	.037

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.15	0.05	0.04	0.03	0.30	1.30	1.17	2.04	1.88	1.00	0.74	0.49
1951-52.....	.26	.21	.14	.28	.38	1.29	1.12	.75	2.01	.92	.92	.44
1952-53.....	.22	.21	.19	.17	.76	.66	.61	.61	.57	.23	.10	.05
1953-54.....	.05	.06	.05	.03	.08	.07	.09	.10	.24	.04	1.09	.09
1954-55.....	.33	.10	.08	.07	.18	.77	.35	.15	.23	.21	.05	.04

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	7,290	2,600	1,950	1,360	14,350	61,630	55,560	96,950	89,410	47,640	35,280	23,080
1951-52.....	12,270	10,110	6,860	13,350	18,020	61,410	53,240	35,720	95,180	43,580	43,860	20,830
1952-53.....	10,480	9,910	8,900	8,020	36,280	31,100	29,020	29,110	27,280	10,760	4,520	2,200
1953-54.....	2,310	2,920	2,450	1,300	3,990	3,330	4,180	4,910	11,600	1,800	51,550	4,330
1954-55.....	15,610	4,580	3,640	3,200	8,650	36,380	16,610	6,990	10,780	10,160	2,170	1,970

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									229	3.49	165,700
1951...	May 1, 1951.	16.97	15,200	20	604	0.679	9.19	437,100	628	9.56	454,500
1952...	June 22, 1952.	15.53	12,600	80	571	.642	8.72	414,400	571	8.73	414,500
1953...	June 10, 1953.	7.77	3,250	30	287	.322	4.38	207,600	257	3.92	186,000
1954...	Aug. 23, 1954.	14.08	10,400	14	131	.147	1.99	94,670	153	2.34	110,800
1955...	Mar. 3, 1955.	13.58	9,640	21	167	.188	2.56	120,700			

Peak Discharge (base, 2,500 cfs)

1951: Feb. 19 (5:30 a.m.) 3,250 cfs (7.76 ft.); Mar. 29 (7 a.m.) 10,700 cfs (14.31 ft.); Apr. 25 (6 p.m.) 4,850 cfs (9.55 ft.); May 1 (11:30 p.m.) 15,200 cfs (16.97 ft.); June 2 (8 p.m.) 10,400 cfs (14.1 ft.); June 8 (7 a.m.) 9,920 cfs (13.7 ft.); July 3 (8 p.m.) 11,600 cfs (14.9 ft.); Aug. 17 (6:30 p.m.) 3,090 cfs (7.59 ft.); Aug. 20 (9 p.m.) 6,190 cfs (10.9 ft.); Sept. 10 (8:30 a.m.) 2,630 cfs (7.05 ft.).

1952: Mar. 11 (1 a.m.) 5,860 cfs (10.56 ft.); Mar. 31 (1 p.m.) 7,020 cfs (11.58 ft.); May 23 (4 a.m.) 3,410 cfs (7.98 ft.); June 22 (7 a.m.) 12,600 cfs (15.53 ft.); June 27 (10:30 p.m.) 9,500 cfs (13.54 ft.); July 3 (11 a.m.) 5,250 cfs (9.95 ft.); July 7 (11:30 p.m.) 6,660 cfs (11.28 ft.); Aug. 15 (4:30 p.m.) 5,450 cfs (10.22 ft.); Aug. 29 (9 p.m.) 8,280 cfs (12.58 ft.).

1953: Feb. 20 (4:30 p.m.) 3,010 cfs (7.48 ft.); June 10 (9:30 p.m.) 3,250 cfs (7.77 ft.).

1954: Aug. 23 (2 p.m.) 10,400 cfs (14.08 ft.).

1955: Mar 3 (3 a.m.) 9,640 cfs (13.58 ft.); Apr. 24 (4 a.m.) 5,450 cfs (10.19 ft.); July 9 (12:30 p.m.) 3,090 cfs (7.61 ft.).

Nishnabotna River above Hamburg, Iowa

LOCATION.—Lat. 40°38', long. 95°37', in SW¼SE¼ sec. 11, T. 67 N., R. 42 W., on left bank 1,000 ft. downstream from Chicago, Burlington & Quincy Railroad bridge, 1.5 miles downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, and 2 miles northeast of Hamburg.

DRAINAGE AREA.—2,800 sq. mi. approximately.

RECORDS AVAILABLE.—March 1922 to September 1923, October 1928 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 894.17 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1923, chain gage at site 6 miles downstream at different datum. Oct. 5, 1928, to Sept. 6, 1929, chain gage at site 1,000 ft. upstream at datum 0.42 ft. higher. Sept. 7, 1929, to Feb. 11, 1935, chain gage and Feb. 12, 1935, to June 5, 1947, wire-weight gage, at present site and datum. June 6 to July 22, 1947, staff gage at site 1,000 ft. upstream at different datum. July 23, 1947, to Nov. 16, 1950, staff gage at present site and datum.

AVERAGE DISCHARGE.—27 years (1928-55), 933 cfs (675,500 acre-ft. per year).

EXTREMES.—1922-23, 1928-55: Maximum discharge, 55,500 cfs June 24, 1947 (gage height, 26.03 ft. from floodmark); minimum daily, 4.5 cfs Aug. 30, 1934.

REMARKS.—Records poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	330	310	320	190	150	1,180	3,580	15,400	5,100	1,720	955	1,220
2.....	5,240	310	320	200	150	1,160	2,740	*22,000	17,300	1,670	920	1,180
3.....	2,320	330	246	160	150	1,260	2,270	18,600	*22,000	8,580	885	1,140
4.....	980	330	250	160	150	1,020	2,220	11,800	14,500	*14,700	885	1,110
5.....	650	330	250	150	150	860	2,220	6,580	8,390	12,900	920	1,140
6.....	535	330	250	150	150	725	2,160	4,620	5,460	10,400	832	1,220
7.....	1,380	310	220	150	160	770	2,100	4,410	5,300	5,220	800	1,180
8.....	800	320	200	150	170	605	2,220	3,990	12,300	3,850	*755	1,100
9.....	535	370	200	150	180	380	1,940	4,410	10,200	3,030	800	1,220
10.....	485	300	190	150	190	370	1,660	6,360	6,360	2,610	815	2,660
11.....	435	290	180	150	190	400	1,610	4,980	5,380	*2,550	755	3,030
12.....	422	280	190	160	190	400	1,560	4,130	4,340	2,130	800	2,970
13.....	410	320	200	160	190	400	1,500	3,290	3,780	2,310	885	2,490
14.....	400	*320	220	160	190	*450	1,450	3,030	3,220	2,020	1,450	2,070
15.....	380	330	200	160	190	430	1,500	3,030	4,270	1,870	6,920	1,420
16.....	*360	310	190	170	230	400	1,400	3,850	4,760	1,620	4,720	1,180
17.....	360	310	180	170	280	380	1,300	4,270	2,970	1,500	2,250	1,100
18.....	360	310	*170	170	350	370	*1,220	3,090	2,850	2,250	4,550	1,020
19.....	330	310	170	160	900	370	1,180	3,090	6,030	2,070	2,370	*1,020
20.....	320	280	170	160	1,500	498	1,220	2,730	7,460	2,070	3,590	955
21.....	350	280	180	170	1,560	448	1,830	3,220	4,830	1,500	7,280	920
22.....	350	310	190	*190	940	560	2,500	3,290	3,090	1,380	3,500	885
23.....	330	270	200	180	*695	1,660	2,810	2,850	3,220	1,340	2,130	868
24.....	330	212	210	170	980	1,140	1,940	2,130	2,670	1,300	3,420	885
25.....	340	230	220	160	2,000	1,610	4,210	2,870	2,490	1,220	3,220	920
26.....	330	250	200	150	3,820	3,420	5,550	3,990	3,780	1,180	2,250	920
27.....	310	270	170	150	2,320	12,200	4,300	3,030	3,030	1,180	1,720	868
28.....	310	300	150	150	1,350	15,300	4,220	2,130	*2,610	1,140	1,540	815
29.....	310	310	160	150	.....	16,200	3,820	1,870	2,020	1,060	1,420	755
30.....	320	310	170	150	.....	10,800	10,500	1,670	1,820	1,020	1,300	755
31.....	320	.....	180	150	.....	5,000	.....	2,070	.....	990	1,220	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 25-28, Dec. 4-31, 1950; Jan. 1 to Feb. 19, Mar. 10-18, 1951. Discharge computed from gage readings or graph based on gage readings Nov. 30, 31, 1950; Feb. 22 to Mar. 4, Mar. 7-9, 19, 20, 22-30, Apr. 20, 21, 24, 25, 27, 30, May 1, 5-8, 11-16, 19, 21, 23, May 25 to June 29, July 3, 4, 8, 21-26, 30, 31, Aug. 1, 15, 18, 20-22, 24, 25, Sept. 9-15, 1951.

Nishnabotna River above Hamburg, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	800	740	832	250	*650	725	5,500	*1,880	1,220	3,610	870	3,610
2	800	710	832	240	700	710	3,370	1,940	1,260	3,120	890	2,770
3	800	690	850	240	900	725	2,560	1,780	1,880	3,330	1,250	2,340
4	1,800	635	832	240	1,100	540	2,270	1,660	1,220	4,130	1,770	2,100
5	2,020	620	815	240	1,100	600	2,050	1,560	2,000	2,770	1,550	1,820
6	1,620	640	800	240	1,000	640	1,940	1,450	1,300	2,160	1,120	1,500
7	1,140	700	770	230	900	660	1,900	1,400	1,060	1,990	935	1,400
8	955	800	740	230	900	750	1,900	1,350	980	6,290	1,800	1,350
9	885	900	710	230	1,180	800	1,800	1,400	940	3,610	2,840	1,250
10	850	920	665	230	1,220	1,500	1,800	1,560	900	2,400	2,280	1,200
11	832	885	*470	230	1,180	6,580	1,800	2,000	*870	1,940	1,250	1,160
12	815	955	430	230	1,180	3,740	1,900	1,400	830	1,660	980	1,070
13	785	*990	410	230	1,180	7,170	2,100	1,300	772	2,220	890	1,000
14	755	955	390	400	1,160	4,460	2,300	1,260	734	3,260	1,020	1,300
15	755	850	380	700	1,970	2,560	2,660	1,220	697	*2,910	1,210	1,250
16	*740	800	370	1,600	1,540	2,000	2,500	1,400	1,840	2,040	4,580	*1,120
17	725	740	350	1,900	1,160	1,720	2,400	2,320	1,200	1,550	2,910	935
18	755	695	330	1,900	1,140	1,940	*2,350	2,380	890	1,400	1,660	830
19	755	868	320	1,700	1,140	*3,060	2,100	1,660	980	1,250	1,250	772
20	755	868	310	1,500	990	3,440	2,100	1,460	1,580	3,220	1,160	753
21	770	815	300	1,300	920	2,680	2,000	1,400	9,000	2,160	1,090	734
22	1,680	832	290	1,200	910	2,050	2,000	1,940	*11,600	1,820	1,020	716
23	1,380	785	280	1,100	900	1,350	2,600	4,540	11,800	1,350	980	697
24	955	785	270	1,000	900	1,140	2,800	3,580	8,460	1,250	850	697
25	850	760	270	900	920	1,400	2,800	2,220	6,410	1,160	810	678
26	815	760	270	800	850	1,830	2,600	1,780	4,580	1,050	830	660
27	850	800	260	750	850	2,000	2,200	1,720	8,890	980	810	642
28	815	820	260	700	868	2,100	2,100	1,660	11,800	912	772	624
29	815	832	250	680	868	2,320	1,900	*1,610	8,010	890	5,240	606
30	785	815	250	660	.....	3,900	1,800	1,350	4,740	870	9,600	588
31	755	.....	250	650	.....	6,080	.....	1,260	.....	830	5,260	.....
1952-53												
1	588	451	500	410	540	1,880	2,040	2,350	935	830	381	176
2	553	435	520	400	*560	1,200	1,660	2,520	890	1,100	350	168
3	536	435	570	400	560	1,160	1,940	1,990	870	*1,120	378	209
4	536	435	624	400	550	1,350	2,160	1,990	870	1,000	435	257
5	536	419	660	400	620	1,400	1,980	1,880	1,250	772	387	220
6	536	419	697	400	750	1,250	1,720	1,770	2,100	660	518	209
7	536	419	697	410	800	1,300	1,600	1,720	1,300	642	935	195
8	536	419	697	420	900	1,200	1,550	1,600	1,600	624	890	181
9	536	419	*678	430	1,200	1,160	1,500	1,500	3,080	606	501	170
10	536	419	660	440	1,600	1,300	1,500	1,400	1,770	570	403	170
11	536	419	660	450	2,500	1,600	1,550	1,350	2,450	553	*387	168
12	536	419	660	460	3,260	1,660	1,500	1,350	2,160	536	362	157
13	518	435	536	470	1,820	1,500	1,350	1,250	1,300	588	340	136
14	*518	419	419	480	1,300	1,600	1,300	1,200	1,090	734	328	136
15	501	419	400	490	1,300	*2,280	1,300	1,200	1,000	810	301	*146
16	501	451	390	520	1,350	3,120	1,300	1,200	980	980	289	141
17	484	998	380	520	1,160	1,880	1,350	1,250	1,350	678	280	138
18	484	958	380	520	1,050	1,820	1,300	1,300	1,120	553	278	133
19	484	*1,070	380	500	1,000	1,770	1,160	*1,200	850	606	272	131
20	484	697	380	490	1,350	1,550	*1,120	1,160	791	870	269	128
21	484	588	380	490	2,080	1,400	1,090	2,040	772	660	266	123
22	468	553	380	490	2,500	1,400	1,090	1,660	791	518	254	123
23	468	553	380	490	2,000	1,400	1,090	1,250	734	484	249	116
24	468	553	380	490	3,610	1,350	1,090	1,610	753	468	240	110
25	468	588	380	490	2,640	1,250	1,450	2,340	1,050	435	234	113
26	468	226	380	490	2,520	1,160	1,820	2,100	1,090	419	220	118
27	451	280	390	500	2,100	1,160	1,550	1,350	1,450	403	212	116
28	451	350	400	500	2,580	1,120	1,300	1,200	3,900	484	198	116
29	435	400	420	500	.....	1,090	1,250	1,160	1,820	588	192	113
30	435	450	420	500	.....	1,120	1,450	1,070	1,070	451	184	113
31	435	.....	420	520	.....	1,880	.....	1,020	.....	403	181	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 5-9, 25-28, Dec. 11-31, 1951; Jan. 1 to Feb. 8, Feb. 22-24, Mar. 1-10, Nov. 28 to Dec. 3, Dec. 15-31, 1952; Jan. 1 to Feb. 11, Feb. 22, 23, 1953. Discharge computed from gage readings or graph based on gage readings Oct. 4, 5, 1951; Mar. 12, 14, 15, 21, 30, 31, Apr. 2, May 16-18, 22-29, June 3, 5, 16, 19, 29, 30, July 3, 7, 11, 13-15, 20, 22, Aug. 4, 5, 16, 19, Sept. 1-10, 14, 15, Oct. 3-12, Nov. 17, 18, 1952; Feb. 12, 14-23, 26, 28, Mar. 1, 3-7, 10, 11, 14-18, 31, Apr. 1-5, 25-27, 30, May 1-3, 21, 22, 24-28, June 6-9, 11, 12, 17, 18, 24-27, July 4, 6, 13-16, 19-21, 28, 29, Aug. 3-8, Sept. 4, 13-30, 1953.

Nishnabotna River above Hamburg, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	110	154	187	80	90	286	231	347	2,400	240	149	702
2.....	110	157	176	80	110	263	217	558	1,220	226	108	672
3.....	110	154	243	70	120	138	198	1,050	1,050	217	77	637
4.....	108	151	263	70	130	150	181	830	1,000	226	58	570
5.....	108	151	272	70	150	165	187	606	588	215	52	490
6.....	108	149	275	65	200	180	663	435	419	195	86	460
7.....	101	154	252	65	200	231	588	356	353	187	187	445
8.....	91	154	226	65	210	257	501	307	344	173	463	415
9.....	86	154	178	60	220	254	307	272	*1,830	159	226	400
10.....	84	168	106	60	*300	237	301	243	501	151	136	386
11.....	103	170	90	60	250	226	246	229	403	144	*108	365
12.....	101	173	80	50	200	220	198	*220	435	133	266	330
13.....	*110	178	70	50	246	203	144	209	362	*120	201	307
14.....	113	181	70	50	325	154	170	195	307	108	151	293
15.....	116	178	50	55	337	154	170	184	340	96	144	282
16.....	118	178	*45	55	331	181	144	198	756	89	140	282
17.....	168	178	50	55	313	195	149	484	850	86	187	296
18.....	229	181	60	*60	295	234	149	289	570	81	220	293
19.....	217	*198	70	60	387	266	138	198	378	74	243	277
20.....	201	301	80	60	1,180	260	*189	168	298	74	257	254
21.....	187	419	90	60	1,070	249	234	168	1,400	79	203	*223
22.....	209	325	100	60	716	*226	484	162	3,340	103	*8,210	193
23.....	184	272	*105	65	468	209	624	157	1,850	100	*11,900	188
24.....	165	226	105	65	378	209	419	173	756	116	*10,500	179
25.....	165	198	105	65	340	223	316	187	501	98	*6,020	171
26.....	165	192	105	70	331	215	269	203	387	84	2,800	166
27.....	159	192	100	70	325	215	334	203	334	74	*1,770	164
28.....	162	187	90	70	316	203	280	301	292	70	1,540	170
29.....	159	187	90	70	.....	154	263	344	269	68	1,770	209
30.....	162	187	90	80	.....	168	301	484	249	56	1,140	782
31.....	157	.....	80	80	.....	223	.....	1,040	.....	54	*888	.....
1954-55												
1.....	1,420	293	231	198	120	1,000	700	505	224	320	88	58
2.....	708	279	223	207	125	*3,000	640	460	*195	247	88	61
3.....	460	277	218	240	130	5,000	580	430	220	211	86	55
4.....	460	279	221	263	120	5,930	550	445	1,620	234	97	52
5.....	1,240	291	229	279	110	*5,930	535	505	*2,120	186	101	49
6.....	1,400	296	212	240	105	5,380	550	535	1,380	166	101	48
7.....	852	296	207	177	105	3,510	505	392	771	180	95	47
8.....	586	293	194	237	105	2,010	460	308	405	*342	86	47
9.....	522	288	*151	209	100	*3,070	445	418	328	*5,860	92	45
10.....	490	277	148	*158	100	3,600	430	*610	302	4,780	115	44
11.....	460	268	209	171	100	3,240	418	740	306	1,260	150	44
12.....	445	260	240	223	100	2,280	430	445	311	550	175	44
13.....	415	251	158	203	100	1,660	*460	380	306	418	128	44
14.....	400	249	188	243	100	*1,260	520	355	291	342	100	43
15.....	832	*251	271	221	*100	1,080	460	330	266	282	86	41
16.....	586	257	291	212	100	960	430	311	249	240	79	43
17.....	445	257	257	201	100	880	405	297	232	215	*73	40
18.....	400	254	229	170	200	800	392	286	224	206	71	38
19.....	386	251	148	150	500	700	380	277	220	195	70	39
20.....	386	246	182	140	1,000	720	368	273	253	191	68	45
21.....	*386	249	235	130	1,500	700	680	269	207	177	64	153
22.....	371	243	257	125	1,400	580	445	260	195	175	62	*152
23.....	362	243	249	120	1,220	640	418	396	180	205	60	209
24.....	351	237	215	115	1,180	660	*5,140	342	311	346	56	222
25.....	339	226	212	115	1,050	475	2,590	280	580	147	58	148
26.....	351	223	232	110	1,000	368	*1,210	353	405	131	59	117
27.....	345	226	243	110	950	550	820	700	280	*123	54	123
28.....	342	229	148	110	900	625	720	405	236	117	52	108
29.....	339	226	143	110	.....	640	640	475	640	108	53	112
30.....	316	229	158	110	.....	660	595	308	490	98	59	175
31.....	302	.....	193	115	.....	660	.....	253	.....	92	52	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 11-31, 1953; Jan. 1 to Feb. 12, Mar. 4-6, 1954; Jan. 18 to Feb. 21, Feb. 26 to Mar. 3, 1955. Discharge computed from gage readings or graph based on gage readings Oct. 1-12, Nov. 20 to Dec. 2, Dec. 10, 1953; Feb. 20, 21, Apr. 6, 7, 18-19, May 2-5, 10, 11, 19-21, May 31 to June 3, June 21-25, Aug. 23-25, 30, Sept. 4-6, Sept. 30 to Oct. 12, Oct. 15, 1954; Mar. 4-9, Apr. 21-27, May 27, June 4, 5, 1955.

Nishnabotna River above Hamburg, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	660	301	205	162	696	2,009	2,624	5,286	6,079	3,174	2,124	1,301
1951-52.....	962	798	470	726	1,045	2,298	2,335	1,788	3,614	2,198	1,919	1,206
1952-53.....	500	503	491	467	1,612	1,494	1,469	1,533	1,393	652	346	151
1953-54.....	141	195	126	64.4	341	211	286	349	793	126	1,618	356
1954-55.....	539	258	208	177	455	1,918	704	402	459	588	83.2	81.0

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.238	0.107	0.073	0.058	0.249	0.931	0.937	1.89	2.17	1.13	0.759	0.465
1951-52.....	.344	.285	.168	.259	.373	.821	.834	.639	1.29	.785	.685	.431
1952-53.....	.179	.180	.175	.167	.576	.534	.525	.547	.498	.233	.124	.054
1953-54.....	.050	.070	.045	.023	.122	.075	.102	.125	.283	.045	.578	.127
1954-55.....	.192	.092	.074	.063	.162	.685	.273	.144	.164	.210	.030	.029

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.27	0.12	0.08	0.07	0.26	1.07	1.05	2.18	2.42	1.31	0.87	0.52
1951-52.....	.40	.32	.19	.30	.40	.95	.93	.74	1.44	.90	.79	.48
1952-53.....	.21	.20	.20	.19	.60	.62	.59	.63	.56	.27	.14	.06
1953-54.....	.06	.08	.05	.03	.13	.09	.11	.14	.32	.05	.67	.14
1954-55.....	.22	.10	.09	.07	.17	.79	.30	.17	.18	.24	.03	.03

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	40,920	17,930	12,590	9,960	38,630	160,200	156,200	325,100	361,700	195,100	130,600	77,390
1951-52.....	59,130	47,510	28,870	44,630	60,130	141,300	138,900	109,900	215,100	135,100	118,000	71,750
1952-53.....	30,760	29,940	30,180	28,700	89,510	91,850	87,410	94,270	82,880	40,080	21,260	8,990
1953-54.....	8,660	11,600	7,740	3,960	18,920	12,990	17,050	21,480	47,170	7,750	99,470	21,160
1954-55.....	33,120	15,360	12,810	10,870	25,250	118,000	45,450	24,720	27,280	36,170	5,110	4,860

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...	.....	.....	.....	.....	.....	.....	.....	.....	864	4.18	625,800
1951...	May 2, 1951.	24.51	23,800	150	2,103	0.753	10.22	1,526,000	2,197	10.66	1,590,000
1952...	June 23, 1952.	20.92	12,800	230	1,612	.576	7.84	1,170,000	1,551	7.54	1,126,000
1953...	Jun. 9, 28, 1953	14.65	5,440	110	878	.314	4.27	635,800	791	3.85	573,000
1954...	Aug. 23, 1954.	21.32	12,600	45	384	.137	1.87	278,000	430	2.09	311,200
1955...	Apr. 24, 1955.	(1) 18.80	12,000	38	466	.177	2.39	359,000	.....	.....	.....

(1) Maximum gage height, 20.98 ft. Mar. 3, 1955 (ice jam).

Peak Discharge (base, 7,000 cfs)

Oct. to Dec. 1950: Oct. 2 (10 a.m.) 7,920 cfs (16.83 ft.).

1951: Mar. 29 (about 10 a.m.) 16,200 cfs (21.46 ft.); May 2 (11:30 a.m.) 23,800 cfs (24.51 ft.); May 10 (about 7 a.m.) 7,640 cfs (16.7 ft.); June 3 (about 6 a.m.) 23,200 cfs (24.32 ft.); June 8 (about 5 p.m.) 14,500 cfs (21.0 ft.); July 4 (4:30 p.m.) 16,600 cfs (21.89 ft.); Aug. 15 (about 1 p.m.) 7,760 cfs (16.8 ft.); Aug. 21 (about 6 a.m.) 8,390 cfs (17.3 ft.).

1952: Mar. 13 (5 p.m.) 10,700 cfs (about 18.2 ft.); Mar. 31 (9:30 p.m.) 8,350 cfs (16.80 ft.); June 23 (2 a.m.) 12,800 cfs (20.92 ft.); June 28 (about 5 a.m.) 12,300 cfs (20.6 ft.); July 8 (about 4 p.m.) 7,240 cfs (16.4 ft.); Aug. 29 (7:30 p.m.) 11,800 cfs (20.20 ft.).

1953: No peak above base.

1954: Aug. 23 (11 a.m.) 12,600 cfs (21.32 ft.).

1955: Apr. 24 (12 M.) 12,000 cfs (18.8 ft.); July 9 (3 p.m.) 10,600 cfs (18.64 ft.).

Nodaway River at Clarinda, Iowa

LOCATION.—Lat. 40°44'10", long. 95°00'30", in NE¼ sec. 32, T. 69 N., R. 36 W., near center of span on downstream side of bridge on State Highway 2, 0.5 mile downstream from Neele Branch, 1.2 miles east of city square of Clarinda, and 7.5 miles upstream from East Nodaway River.

DRAINAGE AREA.—740 sq. mi. approximately.

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1955.

GAGE.—Wire-weight gage read once daily and more often during high water. Datum of gage is 960.36 ft. above mean sea level, datum of 1929. Prior to July 5, 1925, chain gage at same site and datum.

AVERAGE DISCHARGE.—21 years (1920-21, 1922-23, 1936-55), 276 cfs (199,800 acre-ft. per year).

EXTREMES.—1918-25, 1936-55: Maximum discharge, 31,100 cfs June 13, 1947 (gage height, 25.3 ft. from floodmark), from rating curve extended above 15,000 cfs on basis of an overflow profile and extended channel rating; minimum daily, 1cfs Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923. Maximum stage known, 25.4 ft. from floodmarks, in August 1903.

REMARKS.—Records fair except those for periods of ice effect or no gage-height record, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	a150	41	37	17	13	*710	a800	*13,500	1,000	a350	105	170
2.....	a2,000	37	31	a17	a13	a915	710	7,300	7,020	340	102	154
3.....	a1,050	39	31	a17	13	1,120	670	2,350	4,600	6,370	100	136
4.....	a400	37	29	17	13	a710	615	1,420	1,570	2,270	88	147
5.....	a170	41	26	18	15	300	632	1,230	a1,150	1,230	82	220
6.....	a150	42	24	18	40	220	a640	900	1,020	1,750	82	161
7.....	a300	46	22	18	a50	166	1,210	861	1,670	861	a81	147
8.....	a200	53	21	19	35	100	a1,080	822	1,420	629	a80	134
9.....	a130	47	20	19	a30	80	912	1,500	1,140	494	84	873
10.....	a100	45	19	18	25	a90	810	3,050	980	*435	a120	524
11.....	a90	44	19	17	a35	a250	a780	2,270	842	393	86	a160
12.....	a82	a44	19	*16	70	a250	750	a1,320	*692	393	a80	2,040
13.....	a75	a45	19	16	50	a240	1,140	1,000	726	435	92	1,990
14.....	a70	*46	19	16	a45	a200	1,200	744	554	370	124	689
15.....	a64	a48	19	15	40	a150	850	659	6,470	348	842	644
16.....	*60	44	19	15	a50	107	*497	861	2,370	284	569	393
17.....	a57	43	19	15	60	a90	a430	2,110	880	248	a400	*277
18.....	a54	44	*19	15	150	113	a400	1,370	692	313	318	274
19.....	a52	45	19	16	300	134	385	900	a700	300	294	244
20.....	a50	43	19	a17	400	*83	a370	900	900	253	494	224
21.....	a48	40	19	a17	300	a70	1,300	700	1,810	205	a1,000	199
22.....	a47	35	19	17	a250	a150	1,670	2,020	a3,000	199	a500	178
23.....	a46	28	a19	16	a200	1,220	1,420	1,630	a1,000	178	*226	172
24.....	a45	36	19	15	430	770	980	a1,150	659	164	584	164
25.....	a44	37	19	15	2,470	810	2,750	3,270	a670	a150	a1,500	239
26.....	a43	31	19	14	2,900	2,080	1,820	2,590	1,390	145	569	194
27.....	a43	28	18	14	750	7,500	1,880	1,630	1,750	136	a450	205
28.....	42	31	18	a14	650	8,500	a1,880	842	1,230	131	554	151
29.....	41	33	17	a13	.....	3,820	2,720	644	644	127	a400	a145
30.....	42	35	17	13	.....	1,520	3,500	584	407	122	a300	141
31.....	39	.....	17	13	.....	912	.....	842	.....	115	a220	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.
Note.—Stage-discharge relation affected by ice Dec. 3-31, 1950; Jan. 1 to Feb. 23, 1951.

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	141	a135	a140	60	*138	158	599	a480	272	407	110	150
2.....	138	a130	140	60	140	176	524	a430	272	379	158	138
3.....	134	a130	145	60	200	166	464	a370	365	407	421	a115
4.....	127	a130	138	60	360	158	435	a320	1,750	644	822	99
5.....	464	125	127	60	350	132	407	297	842	272	258	91
6.....	494	132	122	60	300	182	407	272	337	233	149	85
7.....	340	124	118	60	260	a200	407	270	237	292	131	72
8.....	284	138	a105	60	205	211	*393	274	248	709	127	69
9.....	213	153	92	60	213	209	379	323	a200	464	192	68
10.....	199	145	*68	60	216	3,200	650	464	*153	239	282	65
11.....	174	134	91	60	220	4,150	569	509	132	197	218	60
12.....	168	102	85	60	222	2,710	584	*310	117	172	*172	56
13.....	a160	297	62	60	210	3,120	584	262	104	235	134	54
14.....	149	*211	50	200	209	1,630	614	a250	98	*407	113	80
15.....	*140	143	50	1,060	*197	1,520	584	237	197	315	103	70
16.....	140	117	50	1,100	184	1,060	584	323	136	216	973	72
17.....	138	107	50	569	166	644	a580	659	96	203	584	*68
18.....	134	99	50	393	172	1,060	584	479	94	192	246	57
19.....	174	127	54	379	166	2,110	a600	302	80	180	170	58
20.....	166	124	60	337	a170	*1,370	569	277	80	164	160	62
21.....	a160	134	58	265	172	980	709	258	3,970	145	153	a62
22.....	a160	138	56	200	168	744	1,870	1,740	*9,280	132	a130	56
23.....	a155	140	54	160	168	599	1,870	2,980	1,870	120	120	53
24.....	a150	88	54	170	166	644	1,320	1,870	1,118	113	112	51
25.....	a150	102	54	190	166	861	1,020	802	1,690	107	110	52
26.....	a145	141	54	190	158	1,020	842	464	674	102	113	115
27.....	a145	138	54	170	156	880	644	421	1,320	90	104	52
28.....	a150	129	54	160	160	900	569	407	2,110	86	134	45
29.....	a140	127	56	140	168	822	524	379	1,100	84	554	38
30.....	a140	140	58	140	.....	822	494	310	614	a80	330	36
31.....	a140	.....	60	140	.....	674	.....	290	.....	79	170	.....
1952-53												
1.....	45	39	65	64	a150	271	a800	960	125	147	29	14
2.....	34	38	65	58	138	240	599	614	107	120	a27	13
3.....	35	36	62	58	122	215	554	509	96	103	44	20
4.....	a35	36	60	54	145	240	509	524	112	125	46	34
5.....	37	a36	65	54	154	a260	479	524	143	133	36	25
6.....	38	a37	70	50	450	238	421	421	135	143	51	23
7.....	40	a38	75	50	659	201	407	407	127	122	90	22
8.....	40	40	*90	50	599	248	393	a360	421	96	110	21
9.....	40	39	113	50	569	276	365	316	1,040	73	53	20
10.....	a40	36	a112	50	862	365	379	297	332	63	*41	a19
11.....	39	42	112	50	1,000	351	379	276	464	66	40	18
12.....	40	41	a100	56	*629	302	a330	*263	a300	73	33	17
13.....	44	a42	120	62	450	289	302	230	206	63	27	18
14.....	*40	43	a130	*65	435	479	*274	222	166	69	25	*18
15.....	a40	a47	120	90	324	629	351	222	682	63	23	19
16.....	a40	52	a110	70	a220	*450	365	a222	629	a60	22	10
17.....	a40	314	a95	64	185	351	321	225	258	57	20	10
18.....	40	*170	a85	90	263	584	a300	228	149	51	20	20
19.....	a40	107	a80	80	308	464	245	225	116	45	18	18
20.....	a40	a80	a76	70	555	340	238	203	110	49	17	18
21.....	a40	a70	a75	64	599	321	235	421	153	*77	17	18
22.....	a40	60	a75	78	479	321	232	292	*124	43	16	17
23.....	a40	56	a74	71	421	316	225	225	105	37	17	17
24.....	a40	56	72	a69	379	297	271	a220	218	35	17	17
25.....	a41	a56	a70	68	379	268	a400	213	220	32	17	17
26.....	42	56	a66	76	a365	238	421	a200	149	31	16	18
27.....	38	60	a65	82	351	230	308	185	a139	30	17	17
28.....	36	60	64	85	321	a250	292	157	771	163	16	15
29.....	37	65	63	88	.....	a280	313	161	494	72	15	15
30.....	38	65	64	99	.....	980	883	155	228	48	15	13
31.....	39	.....	63	a120	.....	1,120	.....	125	.....	31	14	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Dec. 14-31, 1951; Jan. 1-14, Jan. 22 to Feb. 6, Nov. 26 to Dec. 7, 1952; Jan. 1-20, 1953.

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	14	19	22	32	25	a30	23	129	150	25	15	67
2.....	15	a18	24	29	30	a25	21	184	393	23	15	58
3.....	14	18	34	22	35	22	20	333	218	23	12	47
4.....	14	a18	34	17	40	22	21	254	210	20	10	45
5.....	14	18	33	21	43	22	21	176	134	20	10	35
6.....	12	a18	29	19	45	46	27	85	167	18	10	32
7.....	a12	17	28	26	46	35	26	39	87	15	25	30
8.....	15	18	29	25	49	31	30	26	34	14	38	29
9.....	15	20	20	22	63	28	26	a24	262	14	24	34
10.....	a15	20	32	14	35	25	30	21	273	14	a28	30
11.....	a15	20	30	14	*17	a24	21	22	140	a14	*35	32
12.....	*19	20	36	16	30	22	19	*21	1,000	17	36	a30
13.....	15	20	33	18	35	22	21	22	593	a16	23	27
14.....	16	20	23	18	40	21	21	16	222	*13	a23	25
15.....	15	a20	20	12	45	a21	a20	20	248	12	25	24
16.....	17	20	*17	10	45	32	19	a73	*1,510	12	a30	24
17.....	16	22	18	10	39	25	18	192	*858	12	38	24
18.....	20	23	21	9	34	32	17	72	a218	12	126	24
19.....	21	*32	24	*9	51	34	18	45	a59	12	57	24
20.....	a20	159	28	8	105	25	*20	45	a36	10	27	18
21.....	17	42	20	8	57	a24	31	25	90	13	25	18
22.....	17	a35	15	8	48	24	29	23	211	84	1,910	*18
23.....	19	a32	12	8	43	*20	25	22	118	24	*3,570	18
24.....	20	a31	14	8	39	a23	21	21	80	18	*2,270	17
25.....	20	a30	16	8	39	25	72	20	64	0.5	508	17
26.....	19	a29	20	8	40	21	255	18	52	10	223	17
27.....	17	a28	22	8	40	25	92	a30	38	12	200	15
28.....	17	a28	24	8	36	21	63	44	31	13	264	21
29.....	a18	27	26	14	.....	25	52	150	28	13	220	24
30.....	20	21	28	18	.....	29	62	120	26	12	124	25
31.....	20	.....	29	22	.....	25	.....	66	.....	12	81	.....
1954-55												
1.....	32	32	19	13	9.0	575	89	41	48	76	16	10
2.....	36	43	19	15	9.0	1,730	80	42	42	46	19	10
3.....	42	25	19	18	9.0	2,080	71	39	34	30	12	9.5
4.....	67	*25	19	21	9.0	980	70	50	1,400	25	11	8.9
5.....	722	28	19	30	9.0	620	66	43	1,100	23	17	9.3
6.....	192	29	15	30	9.0	313	64	50	700	21	25	9.3
7.....	176	29	19	29	9.0	*175	63	a28	316	19	19	9.3
8.....	139	32	21	34	9.0	283	60	11	*100	91	16	8.1
9.....	66	32	14	28	9.0	310	57	13	76	3,650	13	8.1
10.....	64	a33	*10	23	9.0	430	55	231	a70	2,240	21	9.3
11.....	63	a34	11	*20	9.1	347	48	*96	66	928	19	9.3
12.....	59	32	12	17	9.2	247	55	45	63	*385	16	9.3
13.....	53	30	13	20	9.3	183	*60	41	53	148	13	9.3
14.....	45	27	15	21	9.6	a173	102	40	40	126	13	10
15.....	36	27	16	17	*12	165	116	37	36	116	14	8.9
16.....	36	28	16	17	20	a138	83	32	27	78	a13	8.5
17.....	33	30	14	21	60	116	57	29	26	66	*12	8.1
18.....	31	28	13	15	300	112	58	24	26	61	11	8.9
19.....	29	25	25	11	2,740	102	54	20	25	57	12	8.5
20.....	*31	25	21	9.6	1,340	100	51	21	21	47	11	8.9
21.....	a30	24	18	9.4	508	a111	45	a21	19	47	10	25
22.....	a30	22	16	9.2	424	122	42	a21	21	43	12	42
23.....	a29	20	15	9.1	403	116	54	22	a22	39	11	*40
24.....	a29	18	16	9.0	380	120	165	18	60	33	8.9	24
25.....	55	17	16	9.0	350	58	148	15	174	32	8.5	15
26.....	44	16	16	9.0	375	56	87	13	82	30	6.0	16
27.....	37	21	17	9.0	400	70	54	569	48	28	10	24
28.....	36	21	14	9.0	350	106	57	1,080	33	a26	8.9	14
29.....	37	21	10	9.0	.....	133	58	337	45	a24	12	53
30.....	32	21	11	9.0	.....	129	50	137	92	a22	14	400
31.....	34	.....	12	9.0	.....	110	.....	82	.....	20	8.9	.....

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Note.—Stage-discharge relation affected by ice Dec. 15-17, 21-30, 1953; Jan. 9 to Feb 4, Feb. 10-13, Dec. 9-14, 28-31, 1954; Jan. 1-2, Jan. 9 to Feb. 18, 24-28, Mar. 7, 26, 27, 1955.

Nodaway River at Clarinda, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	187	40.2	21.0	16.0	336	1,096	1,162	1,967	1,032	637	340	379
1951-52.....	184	138	78.0	218	197	1,068	680	549	988	241	244	71.8
1952-53.....	39.3	63.9	82.5	68.9	411	368	386	310	277	74.8	30.6	16.4
1953-54.....	16.9	28.1	24.8	15.1	42.6	26.0	38.0	75.6	252	17.3	323	28.3
1954-55.....	75.0	20.5	12.2	18.3	194	265	70.6	105	162	277	13.3	27.8

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.253	0.054	0.028	0.022	0.454	1.48	1.57	2.66	2.21	0.861	0.459	0.512
1951-52.....	.249	.186	.105	.295	.266	1.44	.919	.742	1.34	.326	.330	.097
1952-53.....	.053	.086	.111	.093	.555	.497	.522	.419	.374	.101	.041	.025
1953-54.....	.023	.038	.034	.020	.058	.035	.051	.102	.341	.023	.436	.038
1954-55.....	.102	.036	.016	.025	.262	.358	.095	.142	.219	.374	.018	.038

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.29	0.06	0.03	0.02	0.47	1.71	1.75	3.06	2.46	0.99	0.53	0.57
1951-52.....	.29	.21	.12	.34	.29	1.66	1.02	.86	1.49	.38	.38	.11
1952-53.....	.06	.10	.13	.11	.58	.57	.58	.48	.42	.12	.05	.03
1953-54.....	.03	.04	.04	.02	.06	.04	.06	.12	.38	.03	.50	.04
1954-55.....	.12	.04	.02	.03	.27	.41	.11	.16	.24	.43	.02	.04

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	11,470	2,390	1,290	986	18,640	67,400	69,150	120,900	97,100	39,170	20,900	22,540
1951-52.....	11,330	8,210	4,800	13,370	11,360	65,680	40,440	33,780	58,770	14,810	14,990	4,270
1952-53.....	2,420	3,800	5,070	4,230	22,830	22,640	22,990	19,050	16,500	4,600	1,880	1,100
1953-54.....	1,040	1,670	1,530	930	2,370	1,600	2,260	4,650	14,980	1,060	19,860	1,680
1954-55.....	4,650	1,580	750	1,130	10,750	16,300	4,200	6,450	9,650	17,010	820	1,650

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									188	3.43	136,000
1951...	May 1, 1951.	19.5	15,000	13	652	0.881	11.94	471,900	665	12.18	481,100
1952...	June 22, 1952.	17.15	13,400	36	388	.524	7.15	281,600	370	6.82	268,800
1953...	Apr. 30, 1953.	5.6	1,030	13	176	.238	3.23	127,100	166	3.05	120,100
1954...	Aug. 23, 1954.	10.13	3,930	8	74.1	.100	1.36	53,630	77.9	1.43	56,370
1955...	July 9, 1955.	13.50	7,100	0.0	104	.140	1.89	74,940			

Nodaway River at Clarinda, Iowa—Continued

Peak Discharge (base, 2,000 cfs)

Oct. to Dec. 1950: Oct. 2 (time and discharge unknown).

1951: Feb. 26 (about 3 a.m.) 4,180 cfs (9.0 ft.); Mar. 28 (about 4 p.m.) 10,400 cfs (15.5 ft.); Apr. 25 (about 9 a.m.) 4,420 cfs (9.38 ft.); May 1 (2 p.m.) 15,000 cfs (19.5 ft.); May 10 (about 4 p.m.) 3,260 cfs (8.2 ft.); May 17 (about 12 M.) 2,530 cfs (7.1 ft.); May 22 (about 1 p.m.) 3,120 cfs (8.0 ft.); May 25 (about 12 M.) 4,630 cfs (10.0 ft.); June 2 (about 8 a.m.) 8,740 cfs (14.4 ft.); June 15 (about 5 p.m.) 13,000 cfs (18.0 ft.); June 21 (time and discharge unknown); June 26 (about 2 p.m.) 2,410 cfs (6.9 ft.); July 3 (about 12 M.) 13,100 cfs (18.1 ft.); July 6 (about 5 a.m.) 2,770 cfs (7.5 ft.); Sept. 12 (about 9 p.m.) 3,540 cfs (8.6 ft.).

1952: Mar. 11 (about 3 a.m.) 5,130 cfs (10.0 ft.); Mar. 19 (about 12 M.) 2,350 cfs (6.4 ft.); Apr. 22 (about 10 p.m.) 2,350 cfs (6.4 ft.); May 22 (about 10 p.m.) 6,080 cfs (11.0 ft.); June 4 (about 6 a.m.) 2,530 cfs (6.7 ft.); June 22 (3 p.m.) 13,400 cfs (17.15 ft.); June 25 (about 2 a.m.) 2,230 cfs (6.2 ft.); June 28 (about 4 a.m.) 2,470 cfs (6.6 ft.).

1953: No peak above base.

1954: Aug. 23 (10:30 a.m.) 3,930 cfs (10.13 ft.); Oct. 5 (time unknown) 2,870 cfs (8.65 ft.).

1955: Feb. 19 (about 12 M.) 3,150 cfs (about 9.0 ft.); Mar. 3 (about 3 a.m.) 2,500 cfs (about 8.0 ft.); May 27 (about 11 p.m.) 2,030 cfs (7.20 ft.); June 4 (about 6 a.m.) 2,500 cfs (7.95 ft.); July 9 (1:30 p.m.) 7,100 cfs (13.50 ft.).

Thompson River at Davis City, Iowa

LOCATION.—Lat. 40°38'25", long. 93°48'20", in SE¼SE¼ sec. 35, T. 68 N., R. 26 W., on right bank 15 ft. downstream from bridge on U. S. Highway 69 at Davis City, 5¼ miles upstream from Iowa-Missouri State line, and 9 miles downstream from Elk Creek.

DRAINAGE AREA.—702 sq. mi.

RECORDS AVAILABLE.—May 1918 to July 1925 (no winter records 1922-25), July 1941 to September 1955.

GAGE.—Water-stage recorder. Datum of gage is 875.55 ft. above mean sea level, unadjusted (Corps of Engineers benchmark). Prior to July 3, 1925, chain gage, and July 14, 1941, to Feb. 24, 1942, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—17 years (1918-21, 1941-55), 362 cfs (262,100 acre-ft. per year).

EXTREMES.—1918-25, 1941-55: Maximum discharge, 21,300 cfs June 14, 1947 (gage height, 20.14 ft.), from rating curve extended above 15,000 cfs on basis of velocity area study; minimum daily, 0.8 cfs Oct. 25, 26, 1953, Sept. 16-18, 1955. Flood of Aug. 8, 1885, reached a stage of 22.8 ft from floodmark (discharge, 30,000 cfs), from rating curve extended above 15,000 cfs on basis of velocity-area study. Minimum flow known, 0.10 cfs Aug. 16, 1934, discharge measurement.

REMARKS.—Records good except those for periods of ice effect, no gage height record, or backwater for debris, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	39	12	11	4.4	2.6	292	688	11,400	688	392	26	59
2	15	13	9.0	4.6	2.7	352	520	14,400	736	300	24	50
3	11	13	7.4	4.8	2.8	2,470	424	10,900	2,330	860	70	48
4	11	13	7.0	4.6	3.0	1,360	348	3,470	2,600	4,260	26	42
5	13	13	6.6	4.2	3.3	370	317	990	1,280	4,620	19	42
6	14	12	6.4	3.9	3.5	225	438	706	700	920	18	88
7	46	*9.6	6.2	3.7	3.3	147	1,250	582	650	593	14	63
8	33	13	6.2	3.5	3.1	119	1,820	485	3,310	438	13	*50
9	24	15	*6.2	3.5	3.0	80	1,320	515	3,740	338	11	205
10	*18	13	6.3	*3.9	4.5	72	955	3,010	1,670	313	8.1	519
11	16	12	6.6	4.6	29	66	784	4,500	803	284	6.5	784
12	13	16	7.0	5.3	23	61	2,150	3,930	1,210	201	6.1	803
13	13	17	7.2	6.1	20	70	3,900	1,100	1,200	179	5.6	309
14	13	17	7.0	7.0	*22	80	2,760	694	682	164	11	147
15	12	17	6.4	8.0	40	80	1,280	*545	515	195	178	440
16	12	17	5.8	11	65	61	724	451	898	334	246	205
17	9.6	17	5.3	14	110	93	*495	410	626	*1,230	284	115
18	8.9	16	4.8	15	1,000	86	410	410	424	269	*167	88
19	8.9	16	4.3	14	3,000	67	356	460	356	137	76	72
20	7.0	16	3.9	12	2,400	*76	300	682	460	254	374	63
21	8.1	15	4.0	9.3	1,900	72	374	475	1,250	201	648	57
22	8.1	17	4.2	7.8	1,500	222	632	736	*1,700	314	406	54
23	9.6	15	4.4	7.5	1,100	1,480	754	810	1,520	115	288	46
24	8.9	7.0	4.6	7.2	1,300	1,100	550	648	955	80	129	42
25	9.6	11	4.2	6.6	2,000	760	2,610	415	688	65	81	44
26	8.9	8.9	3.8	5.4	3,000	990	4,020	5,600	1,470	55	1,490	42
27	8.9	8.9	3.3	4.1	2,220	1,360	2,440	7,830	2,360	48	659	42
28	8.9	7.4	3.3	3.4	*920	3,400	1,320	2,600	1,950	41	410	41
29	8.9	7.4	3.5	2.9	.....	4,860	829	648	1,060	41	185	42
30	9.6	12	3.8	2.7	.....	4,260	5,550	576	540	36	115	38
31	9.6	.....	4.1	2.6	.....	1,610	.....	626	.....	31	80	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 1, 2, 4-17, 20-31, 1950; Jan. 1 to Feb. 25, Mar. 11, 1951.

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1.....	36	79	184	59	115	163	362	216	202	*182	35	25
2.....	36	67	187	59	117	166	*342	200	194	152	40	35
3.....	36	60	194	59	126	159	316	187	566	202	43	31
4.....	36	49	182	58	152	71	287	175	478	323	40	28
5.....	36	48	*161	57	182	119	258	159	2,040	271	37	25
6.....	45	*44	143	56	182	139	236	143	604	192	*34	23
7.....	115	40	126	55	184	126	224	141	274	126	56	21
8.....	105	48	111	54	172	117	216	134	202	107	43	19
9.....	141	60	103	*53	172	203	210	145	175	212	36	18
10.....	*115	59	86	52	163	1,480	227	405	197	192	39	*17
11.....	77	61	70	51	168	3,300	255	410	182	128	92	16
12.....	58	3,200	54	50	170	4,090	208	239	134	95	190	15
13.....	48	3,800	40	50	192	5,750	388	190	115	84	79	14
14.....	43	1,140	30	150	216	4,860	515	159	101	84	130	14
15.....	39	555	34	1,100	200	2,450	490	*143	91	91	143	13
16.....	37	350	37	1,300	185	990	392	172	88	91	152	13
17.....	39	255	40	1,100	175	766	312	1,210	95	101	249	12
18.....	126	182	44	822	170	1,060	287	822	81	88	268	12
19.....	161	147	47	604	200	2,700	268	438	71	71	105	12
20.....	163	159	48	450	190	2,080	312	278	70	66	66	12
21.....	300	177	50	340	202	1,140	308	219	787	60	52	11
22.....	688	182	51	250	200	888	433	938	3,100	54	42	11
23.....	470	130	52	210	188	955	855	3,200	3,420	48	37	11
24.....	350	90	53	180	160	742	1,100	3,660	3,350	43	35	11
25.....	239	100	54	160	130	670	784	2,880	660	40	33	11
26.....	152	115	55	145	136	637	525	676	350	37	31	9.8
27.....	119	128	56	135	*159	540	379	442	374	35	29	9.0
28.....	115	136	57	125	170	470	319	342	712	34	28	8.6
29.....	109	156	57	118	177	428	271	281	397	32	27	8.2
30.....	105	166	58	114	.....	402	236	239	287	30	26	8.0
31.....	88	.....	58	113	.....	374	.....	216	.....	30	25	.....
1952-53												
1.....	9.0	12	45	26	64	140	2,920	1,210	74	110	14	4.2
2.....	9.0	11	45	25	67	100	1,820	682	66	100	13	3.6
3.....	8.5	10	*48	25	71	80	1,140	453	61	72	12	5.1
4.....	8.5	9.5	46	24	*78	*100	1,110	361	61	72	13	7.6
5.....	8.0	*9.0	44	23	90	150	693	385	62	57	12	6.8
6.....	7.5	12	50	22	160	180	488	441	168	71	13	6.4
7.....	*7.0	11	65	*22	450	170	405	463	170	77	36	6.4
8.....	6.5	12	80	22	800	160	357	369	290	91	23	5.1
9.....	7.0	13	100	21	700	242	341	291	1,100	72	26	4.8
10.....	7.3	12	110	21	600	704	337	246	1,430	47	29	4.8
11.....	7.6	13	89	21	520	1,110	349	235	*2,520	37	25	4.2
12.....	7.8	13	68	21	450	800	341	302	1,630	34	20	4.2
13.....	7.9	14	50	22	380	542	280	181	417	32	17	4.8
14.....	8.0	14	43	28	315	417	249	158	256	32	15	5.1
15.....	8.0	14	38	50	260	393	266	148	199	53	12	4.2
16.....	8.0	15	37	100	200	381	341	148	275	74	10	3.9
17.....	7.8	1,350	37	170	140	313	325	150	844	91	9.7	3.3
18.....	7.6	2,550	41	140	160	605	260	165	277	47	*8.4	3.3
19.....	7.4	580	46	120	150	622	211	*172	162	31	8.0	3.3
20.....	7.2	226	48	100	2,120	357	190	144	123	28	7.6	4.5
21.....	7.5	123	49	85	2,080	277	184	131	91	26	6.8	4.2
22.....	7.8	90	48	72	980	232	178	375	77	*23	6.4	*3.3
23.....	8.1	73	46	66	488	437	170	353	*80	22	6.0	2.7
24.....	8.4	65	44	61	329	595	211	168	79	20	5.7	2.4
25.....	8.4	68	40	59	300	*377	614	142	74	21	5.7	2.7
26.....	8.3	344	35	57	275	274	682	135	66	21	5.4	3.3
27.....	8.2	180	32	56	220	226	453	120	68	20	5.1	3.9
28.....	8.1	80	31	56	175	211	321	105	87	21	4.8	2.1
29.....	8.1	66	30	56	.....	193	274	96	155	24	4.8	1.8
30.....	8.1	56	28	58	.....	2,500	871	91	148	18	4.5	1.8
31.....	8.1	.....	27	60	.....	3,560	.....	83	.....	*15	4.8	...

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Nov. 28-26, Dec. 11-31, 1951; Jan. 1-17, Jan. 20 to Feb. 1, Feb. 15-17, 22-24, Nov. 27 to Dec. 31, 1952; Jan. 1 to Feb. 19, Feb. 25 to Mar. 8, 1953. No gage-height record July 30 to Aug. 4, Aug. 24 to Sept. 9, Sept. 11-23, 25, 26, 28-30, 1952; discharge estimated on basis of weather records and records or nearby stations. Backwater from debris Oct. 10 to Nov. 3, 1952.

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1....	1.5	2.4	1.5	3.3	1.5	12	10	95	1,910	34	4.8	24
2....	2.4	2.7	4.2	3.9	1.8	10	8.8	1,010	1,240	31	4.5	17
3....	6.4	2.7	5.1	3.3	1.8	5.1	7.6	580	1,110	29	3.6	13
4....	6.0	2.4	5.4	3.3	1.8	5.1	6.8	421	501	26	3.6	9.7
5....	3.3	2.4	4.8	3.0	2.1	5.1	6.8	252	284	24	3.6	7.2
6....	2.1	2.7	4.2	2.7	2.1	5.1	88	110	181	23	3.6	5.7
7....	2.1	3.0	3.6	3.0	2.4	6.8	17	62	114	21	4.5	4.5
8....	4.2	3.9	3.9	3.3	3.0	6.8	8.8	45	80	19	6.0	3.9
9....	7.2	3.0	*4.2	3.0	3.0	6.4	7.2	33	65	17	6.4	5.4
10....	5.1	4.2	3.6	2.1	3.3	6.4	13	27	53	16	4.5	5.1
11....	4.2	3.3	3.9	1.2	3.6	5.4	16	23	42	16	6.0	3.9
12....	5.7	3.9	2.7	1.2	3.6	5.7	17	19	58	15	9.7	3.0
13....	5.4	4.2	2.5	1.2	3.6	6.4	*13	17	845	14	7.6	2.4
14....	3.9	3.9	2.4	1.2	3.9	3.9	11	14	2,280	13	7.6	3.0
15....	3.0	4.8	2.2	1.2	4.2	4.5	11	14	*1,660	11	6.4	2.1
16....	2.7	4.2	2.1	1.2	4.5	5.1	9.7	12	830	11	5.7	1.8
17....	2.7	3.6	2.0	1.2	g*4.5	*4.5	11	11	1,140	9.2	*14	1.8
18....	2.4	*3.6	1.8	1.2	g6.8	4.8	12	11	880	8.8	8.4	1.8
19....	2.7	5.4	2.4	1.2	g11	9.7	9.7	*10	313	8.4	7.2	1.8
20....	*3.0	12	3.9	*1.2	g17	7.2	124	8.4	187	*8.0	6.0	1.8
21....	4.2	8.8	5.1	1.2	g16	5.4	66	7.2	142	13	5.1	1.5
22....	3.3	7.2	1.5	1.2	g14	5.4	30	6.8	116	9.7	131	*1.5
23....	3.0	5.7	1.5	1.2	g18	5.4	16	6.8	95	8.8	91	1.5
24....	2.7	7.6	1.0	1.2	g22	11	13	8.4	83	8.0	50	1.5
25....	.8	3.6	1.5	1.2	25	60	9.7	5.7	77	7.6	110	1.2
26....	.8	3.0	1.8	1.2	18	45	365	6.8	65	6.4	98	1.0
27....	1.0	2.1	2.4	1.2	17	20	220	7.6	57	5.7	265	1.0
28....	1.5	1.5	2.7	1.2	14	16	45	8.8	49	5.1	120	2.4
29....	1.5	5.1	3.3	1.2	.....	13	27	10	45	4.8	42	24
30....	1.8	2.4	2.4	1.2	.....	12	50	15	39	4.2	26	6.4
31....	2.1	.....	2.4	1.5	.....	12	.....	500	.....	4.5	32	.....
1954-55												
1....	2.4	5.2	5.5	11	6.5	880	88	44	35	111	15	2.1
2....	2.1	4.8	5.2	11	6.5	1,200	76	41	35	37	14	2.1
3....	2.1	4.4	5.2	11	6.5	1,650	70	39	36	18	14	2.0
4....	30	5.2	5.6	15	6.4	2,220	92	39	20	22	13	1.9
5....	1,090	5.2	5.6	60	6.4	1,210	79	34	16	16	11	1.9
6....	928	5.9	4.8	140	6.4	545	65	30	16	12	36	1.8
7....	141	5.6	5.9	110	6.4	251	53	30	44	19	41	1.7
8....	54	5.0	5.9	80	6.4	224	47	27	38	49	19	1.6
9....	29	4.4	6.3	61	6.4	287	44	29	30	1,230	13	1.5
10....	60	5.6	4.4	35	6.1	284	42	43	22	2,130	11	1.4
11....	700	5.9	7.2	27	5.7	284	44	49	19	850	9.7	1.2
12....	132	5.9	6.3	23	5.4	254	49	57	19	364	8.5	.9
13....	194	5.6	5.9	19	5.3	197	640	148	18	212	7.6	1.0
14....	1,360	5.2	*5.9	17	5.4	218	680	84	14	108	6.7	*1.0
15....	266	4.8	6.3	15	5.5	165	272	53	12	70	5.9	.9
16....	74	5.2	6.7	14	5.9	122	170	37	9.7	52	5.2	.8
17....	38	*5.2	7.6	12	6.3	103	134	30	8.5	79	*4.4	.8
18....	24	4.8	8.5	7.2	6.8	95	104	25	9.1	37	4.2	.8
19....	*18	4.4	8.5	8.2	100	88	84	22	12	*31	4.4	1.0
20....	14	4.8	8.5	8.4	1,000	85	76	19	22	41	5.2	1.4
21....	12	4.8	9.1	8.2	2,000	103	*59	18	22	29	5.2	3.4
22....	11	4.8	9.1	8.2	*1,280	119	52	*17	*10	24	4.8	3.6
23....	10	5.2	8.5	8.2	690	113	52	16	7.2	22	4.2	14
24....	8.5	5.2	7.2	8.1	712	103	176	15	13	23	4.2	25
25....	8.0	4.4	13	8.0	750	88	269	14	35	64	4.8	17
26....	10	4.2	13	*7.6	1,050	50	179	18	21	37	3.9	11
27....	9.7	4.4	15	7.5	1,500	55	103	19	17	29	3.0	11
28....	9.7	4.6	13	7.0	1,140	60	79	19	11	22	2.5	5.9
29....	8.0	5.2	12	6.6	.....	75	59	10	12	19	3.0	13
30....	5.9	5.8	12	6.4	.....	93	48	13	32	16	3.2	22
31....	5.6	.....	11	6.4	.....	93	.....	13	.....	15	2.2	.....

* Discharge measurement made on this day.
g Computed from gage readings or graph based on gage readings.

Note.—Stage-discharge relation affected by ice Dec. 13, 15-17, 1953; Nov. 28, 30, Dec. 1 29-31, 1954; Jan. 1-3, Jan. 5 to Feb. 21, Feb. 25-27, Mar. 2, 3, 21, 26-29, 1955. No gage-height record July 26-28, 30, 31, Aug. 8-12, 14-16, 1955; discharge estimated on basis of weather records and records for nearby stations.

Thompson River at Davis City, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	14.1	13.2	5.61	6.41	771	850	1,344	2,600	1,279	558	196	155
1951-52.....	136	396	81.4	262	171	1,247	381	617	643	106	72.3	15.8
1952-53.....	7.69	202	49.7	54.5	451	531	546	274	370	47.0	12.4	4.13
1953-54.....	3.18	4.20	2.97	1.82	8.20	10.7	42.0	108	482	13.9	35.3	5.36
1954-55.....	170	5.08	8.02	24.9	369	365	133	34.1	20.8	187	9.35	5.12

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.020	0.019	0.0080	0.0091	1.10	1.21	1.91	3.70	1.82	0.795	0.279	0.221
1951-52.....	.194	.564	.116	.373	.244	1.78	.543	.879	.916	.151	.103	.023
1952-53.....	.011	.288	.071	.078	.642	.756	.778	.390	.527	.067	.018	.0059
1953-54.....	.0045	.0060	.0042	.0026	.012	.015	.060	.154	.687	.020	.050	.0076
1954-55.....	.242	.0072	.011	.035	.526	.520	.189	.049	.029	.266	.013	.0073

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.02	0.02	0.009	0.01	1.14	1.40	2.14	4.27	2.03	0.92	0.32	0.25
1951-52.....	.22	.63	.13	.43	.26	2.05	.61	1.01	1.02	.17	.12	.03
1952-53.....	.01	.32	.08	.09	.67	.87	.87	.45	.59	.08	.02	.007
1953-54.....	.005	.007	.005	.003	.01	.02	.07	.18	.77	.02	.06	.009
1954-55.....	.28	.008	.01	.04	.55	.60	.21	.06	.03	.31	.02	.008

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	866	788	345	394	42,800	52,260	79,970	159,900	76,130	34,330	12,050	9,200
1951-52.....	8,350	23,570	5,000	16,120	9,820	76,700	22,680	37,920	38,270	6,550	4,450	939
1952-53.....	455	11,990	3,050	3,350	25,050	32,620	32,490	16,850	22,040	2,890	761	246
1953-54.....	196	250	182	112	455	657	2,500	6,660	28,670	857	2,170	319
1954-55.....	10,430	302	493	1,530	20,490	22,440	7,910	2,100	1,220	11,480	575	305

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									288	5.57	208,500
1951...	May 2, 1951.	13.75	15,200	2.6	648	0.923	12.53	469,000	696	13.46	504,000
1952...	Mar. 13, 1952.	7.79	6,140	8.0	345	.491	6.68	250,400	315	6.11	229,000
1953...	Mar. 30, 1953.	5.86	3,890	1.8	210	.299	4.06	151,800	189	3.66	136,900
1954...	June 15, 1954.	4.56	2,520	.8	59.4	.085	1.16	43,030	74.1	1.44	53,620
1955...	Mar. 3, 1955.	4.81	2,760	.8	110	.157	2.13	79,280			

Peak Discharge (base, 4,500 cfs)

1951: Mar. 29 (1:30 p.m.) 5,100 cfs (6.98 ft.); May 2 (11 a.m.) 15,200 cfs (13.75 ft.); May 12 (2:30 a.m.) 5,100 cfs (6.98 ft.); May 27 (5 a.m.) 8,900 cfs (9.82 ft.); July 5 (12:30 p.m.) 5,490 cfs (7.26 ft.); Nov. 13 (8:30 a.m.) 4,620 cfs (6.61 ft.).

1952: Mar. 13 (2 a.m.) 6,140 cfs (7.79 ft.).

1953: No peak above base.

1954: No peak above base.

1955: No peak above base.

Honey Creek near Russell, Iowa

LOCATION.—Lat. 40°55'25", long. 93°07'55", in SW¼NW¼ sec. 26, T. 71 N., R. 20 W., on left bank 15 ft. downstream from highway bridge, 5.5 miles southeast of Russell, and 0.7 mile upstream from Chariton River.

DRAINAGE AREA.—13.8 sq. mi.

RECORDS AVAILABLE.—June 1952 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 901.73 ft. above mean sea level, datum of 1929 (levels by Soil Conservation Service).

EXTREMES.—1952-55: Maximum discharge, 586 cfs June 21, 1952 (gage height, 9.86 ft.); no flow during several months of each year.

REMARKS.—Records good except those for periods of ice effect or backwater from Chariton River, which are poor. Records of sediment loads are given in Iowa Geological Survey Bulletin No. 5.

Daily Discharge, in Cubic Feet per Second, for Period June to Sept. 1952

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1952					1952				
1	.....	0.84	0	0.09	16	0.20	0.31	1.2	0.12
2	.....	.74	0	.13	17	.16	.22	.33	.06
3	.....	1.1	0	.10	18	.13	.39	.24	.03
4	.....	.62	*0	*.04	19	.15	.26	.18	.01
5	.....	.36	0	.02	20	102	.15	3.9	0
6	.74	.26	0	.01	21	372	.06	2.4	0
7	.70	.24	0	0	22	60	.02	.28	0
8	2.3	.41	0	0	23	20	0	.16	0
9	.74	.26	.21	0	24	10	0	.12	0
10	.54	.16	1.9	0	25	6.5	0	.09	0
11	.41	.10	62	0	26	4.6	0	.09	0
12	.36	.05	4.4	0	27	12	0	.06	0
13	.26	.07	.36	0	28	3.6	0	.04	0
14	.28	1.5	1.9	7.6	29	1.3	0	.03	0
15	.36	.54	14	.33	30	*.89	0	.02	0
					31	.....	0	.02	.....

* Discharge measurement made on this day.

Note.—Backwater from Chariton River June 22-25, 1952.

Honey Creek near Russell, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952–53												
1	0	0	1.3	1.0	2.0	1.3	92	12	0.7	0.4	0	0
2	*0	0	1.3	1.0	.8	1.3	14	5.8	.7	.8	0	0
3	0	0	1.2	.7	.9	1.5	10	5.9	.7	.2	0	0
4	0	0	1.2	.6	1.5	2.0	8.5	5.5	.7	.1	0	0
5	0	0	1.2	.5	30	1.8	7.4	5.3	.9	3.3	0	0
6	0	0	1.2	.4	40	1.8	5.9	10	.9	.4	0	0
7	0	0	1.3	.5	43	1.9	4.7	*6.4	.9	.1	0	0
8	0	0	1.7	.5	20	1.9	4.2	4.3	7.8	.1	0	0
9	0	0	2.0	.6	5.0	11	*4.3	3.4	20	0	0	0
10	0	0	2.0	.7	14	49	4.2	3.1	86	0	0	0
11	0	0	*2.0	.6	9.0	76	3.2	2.6	1.9	0	0	0
12	0	0	1.7	.8	4.0	34	3.1	2.4	.9	0	0	0
13	0	0	1.1	*6.5	2.5	16	2.4	2.2	.7	0	0	0
14	0	0	.7	11	3.0	79	3.4	2.4	.5	0	0	0
15	0	0	.8	14	1.3	58	12	2.4	.4	0	0	0
16	0	0	.8	4.0	.8	14	6.2	2.2	.4	0	0	0
17	0	95	.9	.8	1.1	10	2.8	2.4	.3	0	0	0
18	0	11	1.0	.9	1.3	37	2.0	2.7	.2	0	0	0
19	0	2.6	1.1	1.0	16	11	1.7	2.0	.2	0	0	0
20	0	1.8	3.0	1.0	122	8.1	1.7	1.9	.1	*0	0	0
21	0	1.3	2.4	1.1	12	14	1.3	2.4	.1	0	0	0
22	0	1.3	2.0	1.1	5.0	19	1.0	2.0	.1	0	0	0
23	0	1.1	1.6	1.1	3.7	97	.8	1.8	.1	0	0	0
24	0	1.2	1.4	1.0	3.3	14	*11	2.0	.1	0	0	0
25	0	4.6	1.2	.9	4.0	9.0	12	1.9	.1	0	*0	0
26	0	22	1.1	1.0	4.3	6.9	4.9	1.3	.1	0	0	0
27	0	2.7	1.0	.9	*4.2	*5.6	2.4	1.2	4.7	0	0	0
28	0	1.9	.9	2.0	2.2	4.0	1.6	1.2	5.5	0	0	0
29	0	1.6	.8	1.0	.....	11	2.2	1.1	.4	0	0	0
30	0	1.5	.9	1.4	.....	287	38	.9	.2	0	0	0
31	0	.....	1.0	4.0	.....	208	.....	.7	.....	0	0	.....
1953–54												
1	0	0	0	0	0	0	0	2.1	*7.8	0	0	0
2	0	0	0	0	0	0	0	11	6.3	0	*0	0
3	0	0	0	0	0	0	0	*4.7	7.1	0	0	0
4	0	0	0	0	0	0	0	2.3	4.6	0	0	0
5	0	0	0	0	0	0	0	1.5	2.2	0	0	0
6	0	0	0	0	0	0	0	1.2	1.4	0	0	0
7	0	0	*0	0	0	0	0	.8	.8	0	0	0
8	0	0	0	0	0	0	0	.5	.4	0	0	*0
9	0	*0	0	0	0	0	0	.4	.4	0	0	0
10	0	0	0	0	0	0	0	.4	.3	0	0	0
11	0	0	0	*0	0	0	0	.3	.2	0	0	0
12	0	0	0	0	0	0	*0	.2	1.0	0	0	0
13	*0	0	0	0	0	0	0	.2	.6	0	0	0
14	0	0	0	0	0	0	0	.1	.2	0	0	0
15	0	0	0	0	*0	*0	0		1.7	0	0	0
16	0	0	0	0	0	0	0	0	1.7	0	0	0
17	0	0	0	0	0	0	0	0	.9	0	0	0
18	0	0	0	0	0	0	0	0	.2	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	.3	0	.6	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	1.3	0	0	0	0	0
26	0	0	0	0	0	0	49	0	0	0	6.7	0
27	0	0	0	0	0	0	17	.2	0	0	3.2	0
28	0	0	0	0	0	0	2.7	.2	0	*0	.2	0
29	0	0	0	0	.....	0	1.5	.1	*0	0	0	0
30	0	0	0	0	.....	0	1.3	0	0	0	0	0
31	0	.....	0	0	.....	0	.....	2.3	.....	0	0	.....

* Discharge measurement or observation of no flow made on this day.

Note.—Stage-discharge relation affected by ice Dec. 13-20, 23-29, 1952; Jan. 3-6, 16-18, 23, 24, 30, 31, Feb. 1, 4-17, 21-25, 1953. Backwater from Chariton River Mar. 12, 13, Apr. 1-4, May 1, 2, June 10-14, 1953.

Honey Creek near Russell, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	0	0	0	0	0	*6.0	1.3	0.4	*0.1	0.1	0	0
2	0	0	0	0	0	4.5	1.1	*.4	1.1	0	0	0
3	0	0	0	0	0	3.6	1.0	.2	1.5	0	0	0
4	0	0	0	0	0	3.0	*.9	1.2	.2	0	0	0
5	31	0	0	*1.2	0	1.8	.8	.5	.2	.1	0	0
6	*1.5	0	0	2.8	0	1.1	.7	.3	.1	0	0	0
7	.9	0	0	1.0	0	1.0	.5	.3	.1	0	0	0
8	.2	0	0	.4	0	1.5	.5	.2	.2	0	0	0
9	0	0	0	.2	0	2.5	.5	.4	.1	23	0	0
10	8.8	0	0	.2	0	2.1	.5	3.2	.1	2.8	0	0
11	7.2	0	0	.1	0	1.9	1.2	1.4	.1	.5	0	0
12	1.5	0	0	.1	0	1.3	1.7	2.6	.1	.3	0	0
13	.6	0	0	0	0	1.0	16	23	0	5.6	0	0
14	1.5	0	0	0	0	1.9	5.4	3.9	0	2.1	0	0
15	.5	0	0	0	0	3.3	3.3	2.3	0	2.2	0	0
16	.2	0	0	0	0	1.9	2.6	1.3	0	1.1	0	0
17	.1	0	0	0	0	1.2	1.6	.9	0	.2	0	0
18	0	0	0	0	.8	1.2	1.5	.6	0	.1	0	0
19	0	0	0	0	64	1.1	1.3	.4	0	0	0	0
20	0	0	0	0	17	1.3	1.0	.4	0	0	0	0
21	0	0	0	0	12	3.5	.6	.2	0	0	0	0
22	0	0	0	0	8.4	2.8	.5	.2	0	0	0	0
23	0	0	0	0	6.0	2.1	1.3	.2	0	0	0	0
24	0	0	0	0	8.0	1.6	3.2	.2	0	0	0	0
25	0	0	0	0	12	1.2	2.3	.2	.1	0	0	0
26	0	0	0	0	30	1.0	1.3	.3	0	0	0	0
27	0	0	0	0	20	1.2	.9	.3	0	0	0	0
28	0	0	0	0	9.6	1.9	.6	4.5	0	0	0	0
29	0	0	0	0	.....	2.6	.4	1.0	1.0	0	0	0
30	0	0	0	0	.....	2.3	.4	.4	.7	0	0	0
31	.....	.....	0	0	.....	1.5	.....	.2	.....	0	0	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Feb. 20 to Mar. 8, Mar. 23-27, 1955. Backwater from Chariton River Oct. 5, 6, 1954; Apr. 13, 14, 1955.

Honey Creek near Russell, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.279	3.03	0.285
1952-53	0	4.09	1.35	2.02	12.7	35.2	8.06	3.27	4.54	.17	0	0
1953-54	0	0	0	0	0	0	2.43	.92	1.27	0	.35	0
1954-55	1.74	0	0	.19	6.71	2.09	1.83	1.66	.19	1.23	0	0

Monthly Discharge in Cubic Feet per Second per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.020	0.220	0.021
1952-53	0	0.362	0.098	0.146	0.920	2.55	0.640	0.237	0.329	.012	0	0
1953-54	0	0	0	0	0	0	.176	.067	.092	0	.025	0
1954-55	.126	0	0	.014	.486	.151	.133	.120	.014	.089	0	0

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.02	0.25	0.02
1952-53	0	0.40	0.11	0.17	0.96	2.94	0.72	0.27	0.37	.01	0	0
1953-54	0	0	0	0	0	0	.20	.08	.10	0	.03	0
1954-55	.15	0	0	.02	.51	.17	.15	.14	.02	.10	0	0

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	186	17
1952-53	0	297	83	124	708	2,170	533	201	270	11	0	0
1953-54	0	0	0	0	0	0	144	57	76	0	21	0
1954-55	107	0	0	12	372	129	109	102	11	76	0	0

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1951(1)	June 21, 1952.	9.86	586	.....	.....	.....	.....	.....	.....	.....	.....
1953	Mar. 30, 1953.	8.37	388	0	6.07	0.440	5.95	4,400	5.54	5.44	4,020
1954	Apr. 26, 1954.	7.10	245	0	.41	.030	.41	298	.56	.56	405
1955	Feb. 19, 1955.	6.27	170	0	1.27	.092	1.26	918	.....	.....	.....

(1) Period June 6 to Sept. 30, 1952.

Peak Discharge (base, 150 cfs)

June to Dec. 1952: June 21 (7 a.m.) 586 cfs (9.86 ft.); Aug. 11 (12 M.) 170 cfs (6.25 ft.); Nov. 17 (9:30 a.m.) 162 cfs (6.15 ft.).

1953: Feb. 20 (5 a.m.) 250 cfs (7.12 ft.); Mar. 15 (12:30 a.m.) 217 cfs (6.82 ft.); Mar. 23 (4:30 a.m.) 230 cfs (6.96 ft.); Mar. 30 (11:30 a.m.) 388 cfs (8.37 ft.); June 10 (5:30 a.m.) 265 cfs (7.32 ft.).

1954: Apr. 26 (6 p.m.) 245 cfs (7.10 ft.).

1955: Feb. 19 (11:30 p.m.) 170 cfs (6.27 ft.).

Chariton River near Centerville, Iowa

LOCATION.—Lat. 40°44'05", long. 92°48'25", in NW¼ sec. 34, T. 69 N., R. 17 W., on left bank 10 ft. downstream from bridge on State Highway 2, 2.5 miles downstream from Cooper Creek, and 3 miles east of Centerville.

DRAINAGE AREA.—727 sq. mi.

RECORDS AVAILABLE.—May 1938 to September 1955.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 825.68 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—17 years, 354 cfs (256,300 acre-ft. per year).

EXTREMES.—1938-55: Maximum discharge, 21,700 cfs June 20, 1946 (gage-height, 24.20 ft. from floodmark); minimum daily, 0.1 cfs Oct. 11, 1938, Sept. 30 to Oct. 3, 1940.

REMARKS.—Records good except those for periods of ice effect or below 50 cfs, which are poor.

Daily Discharge, in Cubic Feet per Second, for Water Year 1951

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	3.7	2.3	4.2	4.0	1.8	203	1,150	1,330	177	930	24	33
2.....	4.0	1.9	4.8	4.5	1.9	172	894	2,280	203	520	22	30
3.....	3.4	1.9	4.2	4.8	1.9	347	768	2,010	840	256	18	25
4.....	3.1	1.8	4.0	4.5	2.3	579	750	1,770	930	366	18	21
5.....	2.8	1.8	4.5	4.5	2.0	440	512	1,250	598	636	15	18
6.....	2.6	1.9	4.2	4.2	3.4	233	912	1,000	408	540	13	18
7.....	3.1	*2.0	4.2	3.4	2.8	177	3,090	498	362	516	13	15
8.....	2.6	3.4	4.2	2.8	2.3	152	2,320	230	1,150	362	12	13
9.....	2.3	7.2	*4.0	*2.8	1.9	97	1,930	195	1,220	174	11	*14
10.....	*2.3	4.8	4.0	2.8	2.3	70	1,250	3,210	804	124	10	16
11.....	2.3	3.4	4.0	2.6	6.7	44	768	4,050	617	102	9.5	15
12.....	2.3	3.4	4.0	2.3	46	33	930	4,780	486	92	9.5	25
13.....	2.3	3.1	4.0	2.8	*24	34	2,370	4,200	731	89	9.0	37
14.....	2.8	2.8	4.2	5.3	87	42	2,140	1,850	636	79	13	29
15.....	2.3	3.7	4.0	6.7	80	47	1,930	*636	432	76	46	22
16.....	1.9	2.6	3.7	7.6	87	39	1,490	362	315	73	43	17
17.....	2.6	2.6	3.1	11	208	55	*930	242	205	*86	32	13
18.....	2.6	5.3	2.8	14	1,450	58	486	197	167	120	38	10
19.....	2.3	5.3	2.6	12	3,220	*37	295	164	197	143	*34	9.5
20.....	1.9	4.5	2.3	11	2,680	43	216	187	242	89	212	10
21.....	1.9	4.2	2.3	8.6	2,010	43	187	155	915	70	482	9.5
22.....	1.9	4.0	2.8	6.7	2,100	53	187	146	*2,730	422	392	13
23.....	1.9	3.4	3.7	5.7	1,730	128	177	169	2,420	1,110	164	10
24.....	2.0	2.6	4.0	5.3	1,040	278	184	211	2,960	786	92	9.5
25.....	2.0	2.6	4.0	4.2	598	482	242	155	2,600	195	87	9.5
26.....	1.9	2.3	3.4	3.7	449	560	655	150	2,730	94	278	11
27.....	2.0	2.6	2.8	3.7	347	1,040	1,000	560	3,400	67	182	8.1
28.....	2.3	2.6	2.3	2.8	275	1,530	1,110	858	2,100	55	100	7.2
29.....	2.3	2.8	2.6	2.0	.....	1,930	1,070	786	1,810	48	87	6.2
30.....	1.9	2.8	2.3	1.8	.....	1,730	750	617	1,330	34	54	6.2
31.....	2.0	.....	3.4	1.8	.....	1,530	.....	388	.....	29	38	.....

* Discharge measurement made on this day.

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1952 and 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1951-52												
1	4.8	99	122	58	64	122	312	146	87	208	8.6	13
2	4.8	84	122	70	68	118	*272	128	1,500	141	8.6	16
3	4.5	72	118	76	79	128	227	117	3,220	99	10	16
4	4.2	60	115	74	160	94	203	109	1,090	76	9.5	13
5	4.5	47	109	70	174	90	197	97	693	62	8.6	10
6	12	50	*102	66	205	105	190	87	512	57	*8.6	13
7	37	*44	92	64	172	115	169	84	291	55	9.0	9.5
8	47	47	86	62	130	128	155	99	162	58	9.5	8.1
9	92	48	76	*62	113	152	146	124	242	44	15	7.6
10	*70	51	70	61	115	560	155	322	244	37	18	6.7
11	46	57	66	58	122	2,280	155	400	124	31	305	*6.2
12	31	84	54	55	132	3,180	157	305	92	26	840	5.7
13	22	434	44	51	157	3,750	184	214	68	26	630	4.8
14	16	912	31	72	300	3,550	495	*167	54	25	247	5.3
15	13	617	25	288	310	3,600	636	128	44	30	579	4.2
16	13	486	27	894	250	3,140	457	139	37	40	470	20
17	14	336	29	1,000	220	2,280	322	560	31	47	285	38
18	60	182	31	731	200	1,030	266	1,070	27	76	130	20
19	434	117	34	520	179	2,460	222	894	26	78	78	13
20	540	92	37	400	190	2,100	195	540	432	43	60	9.0
21	305	100	38	310	200	2,190	179	333	4,200	31	377	7.6
22	561	106	42	240	167	2,640	408	262	3,900	25	259	7.2
23	1,330	104	44	200	146	2,500	1,460	486	3,750	21	102	6.2
24	930	66	46	160	130	1,810	1,330	1,370	4,450	17	51	4.8
25	461	82	46	130	99	1,220	804	1,040	3,650	14	33	4.2
26	282	89	42	110	113	1,150	495	540	2,600	13	23	4.0
27	214	81	37	103	122	966	340	319	1,330	11	18	3.7
28	179	92	35	95	*126	712	256	200	840	10	16	4.0
29	152	100	35	89	117	560	203	148	428	9.5	13	3.4
30	132	120	38	82	.....	444	169	118	*347	9.0	12	4.0
31	115	.....	48	67	.....	362	.....	100	.....	8.6	10	.....
1952-53												
1	3.7	5.3	64	17	19	109	3,050	1,000	31	92	3.7	0.4
2	3.1	4.0	48	16	22	92	4,300	1,040	26	60	5.7	.2
3	2.8	2.0	*40	14	25	79	4,000	780	23	38	5.7	.3
4	2.8	1.5	31	13	29	*70	2,820	598	22	74	5.7	2.6
5	2.8	1.3	25	12	*57	95	1,890	385	22	120	5.7	2.3
6	2.8	*1.3	23	11	300	106	1,220	312	22	239	5.7	1.6
7	2.6	1.3	23	11	500	124	598	377	20	195	6.2	1.5
8	2.6	1.4	27	10	700	109	396	432	86	118	5.7	1.4
9	*3.1	5.3	29	9.5	630	100	288	303	111	67	4.2	1.2
10	3.1	2.0	38	10	560	200	250	227	336	42	3.4	.9
11	3.1	1.9	43	10	500	750	219	195	768	27	3.1	.8
12	3.1	2.0	47	10	430	1,370	200	177	966	20	3.1	.6
13	3.3	1.9	32	12	370	1,330	187	219	840	15	2.8	.6
14	3.7	1.9	31	18	300	1,040	177	160	804	13	2.6	.6
15	4.0	5.3	28	20	240	1,040	216	117	617	10	2.6	.6
16	4.0	4.2	25	26	200	960	315	100	216	12	2.0	.5
17	3.7	5.3	23	60	160	900	336	106	97	12	1.8	.8
18	2.8	11	22	76	130	1,080	272	120	66	18	1.5	.9
19	2.8	357	22	72	118	1,140	211	120	48	20	*1.2	1.0
20	4.0	424	34	57	247	720	177	*104	35	11	1.0	1.0
21	3.7	214	37	47	655	610	162	99	28	8.1	.8	.8
22	3.4	137	35	40	822	520	148	90	*22	*7.2	.7	.6
23	3.7	82	38	35	655	622	135	87	10	6.7	.5	*.4
24	3.7	51	38	33	520	1,110	132	78	17	4.5	.5	.4
25	3.1	40	35	29	366	768	233	74	17	4.0	.4	.6
26	2.0	42	33	27	227	*491	598	72	14	4.0	.6	.6
27	2.3	40	30	26	169	366	693	64	14	3.7	.7	.6
28	2.3	64	27	24	143	272	512	54	43	3.7	.7	.8
29	2.3	82	23	22	.....	214	358	48	89	3.4	.7	1.2
30	2.6	79	21	21	.....	2,100	474	44	111	3.7	.6	1.3
31	3.1	.....	18	20	.....	3,500	.....	37	.....	3.7	.6	.....

* Discharge measurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 14-18, 1951; Jan. 1-6, 19-28, Feb. 14-18, 21, Mar. 4-6, Dec. 14-17, 23-27, 1952; Jan 1-6, 16, 30, 31, Feb. 1, 6-18, 1953.

Chariton River near Centerville, Iowa—Continued

Daily Discharge in Cubic Feet per Second, for Water Years 1954 and 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1	1.4	1.4	1.8	1.6	1.4	1.6	5.7	130	55	9.0	0.6	51
2	1.4	1.4	1.9	1.9	1.6	1.9	4.2	200	574	7.2	.6	34
3	1.3	1.5	2.8	1.9	1.6	1.4	3.1	354	674	4.5	.6	19
4	1.8	1.8	2.6	1.8	1.8	1.4	2.8	358	876	2.6	.5	14
5	2.0	2.0	1.8	1.8	2.0	1.3	3.1	203	617	1.5	.5	10
6	2.0	2.6	2.8	1.6	2.0	1.2	77	124	308	3.1	.5	6.7
7	2.3	2.3	2.6	1.6	1.9	1.3	66	73	177	13	.5	3.4
8	2.3	1.8	2.6	1.8	1.9	1.0	35	54	104	10	.6	2.4
9	2.3	1.6	*2.6	1.6	1.9	1.2	24	47	72	7.2	7.2	1.6
10	2.6	1.8	2.6	1.6	1.9	1.0	18	34	47	4.8	4.0	1.3
11	2.3	1.5	2.8	1.3	1.9	1.0	14	28	33	3.1	1.0	1.0
12	2.6	1.5	2.6	1.0	1.8	1.0	8.0	22	26	1.8	4.0	.8
13	2.6	1.4	2.6	.8	1.6	1.4	*6.7	18	127	1.2	5.3	.7
14	2.3	1.2	2.6	.8	1.8	1.0	4.8	15	403	.9	2.8	.7
15	2.3	1.0	2.3	.9	2.8	1.0	5.7	12	*303	.8	.9	.7
16	2.3	.9	2.0	1.0	5.3	.9	6.2	11	244	.6	.6	.6
17	2.6	.9	1.6	.9	3.7	*1.2	4.5	10	137	.6	*4.2	.6
18	2.8	*.9	1.5	1.0	*3.1	1.2	4.2	8.6	94	.6	9.5	.6
19	2.8	1.2	1.4	1.0	3.1	2.6	5.3	7.6	79	.6	17	.5
20	3.4	1.9	1.8	1.4	3.1	2.0	62	*5.7	50	.6	9.0	.5
21	*3.1	1.8	2.6	*1.0	3.1	1.5	168	4.5	54	*1.4	5.3	.5
22	2.3	1.6	2.3	1.0	3.1	1.6	55	4.2	40	4.2	302	.5
23	1.9	1.5	1.9	1.0	2.8	2.6	44	4.0	29	4.0	65	.5
24	1.8	2.0	1.6	1.0	2.0	3.4	37	4.0	24	2.8	44	.5
25	1.8	2.3	1.5	1.2	2.3	37	29	38	22	1.6	86	.5
26	1.8	2.0	1.6	1.2	2.6	58	27	25	21	.9	177	.5
27	1.6	1.9	1.9	1.2	3.1	40	169	17	17	.7	164	.5
28	1.6	1.8	2.0	1.0	2.3	22	822	14	14	.6	169	.5
29	1.6	1.8	2.0	1.0	.....	14	420	38	11	.6	259	*6.6
30	1.5	1.9	1.9	1.2	.....	11	167	34	11	.6	120	5.7
31	1.4	.....	1.8	1.3	.....	8.6	.....	33	.....	.6	78	.....
1954-55												
1	5.3	2.9	2.8	6.8	8.2	1,410	115	50	34	18	3.0	1.5
2	4.3	2.0	2.8	6.8	8.2	1,110	95	44	26	25	1.9	1.2
3	4.1	2.0	2.8	8.3	8.2	894	81	37	22	16	1.3	1.1
4	4.2	1.7	2.8	13	8.2	768	73	34	127	11	1.1	.9
5	1,790	1.7	2.8	60	8.2	674	63	31	83	6.8	1.1	.8
6	1,560	1.4	2.7	150	8.2	579	56	29	40	3.9	6.1	.7
7	1,040	1.4	2.6	102	8.2	350	57	33	23	2.3	4.3	.7
8	617	1.4	2.6	92	8.2	200	63	39	16	1.6	2.0	.6
9	400	1.4	2.6	70	7.8	176	70	36	11	142	1.4	.5
10	634	1.4	2.6	35	7.4	157	63	34	10	275	1.3	.5
11	1,340	1.4	2.7	29	6.9	144	60	31	9.5	731	1.4	.4
12	540	1.4	2.9	25	6.3	129	99	47	14	598	6.4	.4
13	388	1.5	*2.9	22	6.0	111	491	278	11	560	8.6	.4
14	295	1.5	2.9	18	6.5	102	930	579	7.5	579	8.1	*.4
15	222	1.5	3.0	17	6.7	273	822	560	4.9	560	12	.4
16	222	1.4	3.0	15	7.1	712	560	278	3.3	208	10	.4
17	233	1.4	3.0	14	7.5	*285	398	*154	2.4	87	7.7	.3
18	242	*1.4	3.4	12	8.0	169	244	105	2.0	84	*5.2	.3
19	*146	1.3	3.4	11	200	120	153	74	2.0	*61	3.4	.4
20	70	1.4	3.4	10	2,000	102	110	55	2.5	26	2.4	.8
21	39	2.4	3.4	10	1,550	110	83	41	28	23	1.9	4.3
22	25	2.4	3.8	10	1,200	126	*61	34	42	22	2.5	5.6
23	18	2.4	4.4	9.9	*1,000	171	137	29	*18	16	2.5	3.8
24	14	2.1	4.4	9.8	860	236	240	24	13	10	2.0	2.3
25	11	2.0	4.4	9.7	920	210	146	21	12	7.0	1.6	1.5
26	11	2.0	5.0	*9.5	1,100	120	137	21	8.8	120	1.4	1.2
27	9.0	2.0	8.0	8.6	1,400	86	105	21	6.1	48	1.2	2.1
28	7.5	2.6	8.2	7.9	1,890	80	103	36	4.5	19	1.1	2.7
29	5.0	3.0	8.0	7.7	.....	98	81	77	17	11	1.2	3.0
30	3.0	2.9	7.5	7.6	.....	127	62	108	40	6.2	1.6	4.2
31	2.8	.....	7.2	7.6	.....	120	.....	57	.....	3.4	1.7	.....

* Discharge mensurement made on this day.

Note.—Stage-discharge relation affected by ice Dec. 27-31, 1954; Jan. 1 to Feb. 27, Mar. 7, 8, 26-29, 1955.

Chariton River near Centerville, Iowa—Continued

Monthly Mean Discharge in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	2.43	3.19	3.57	5.10	588	304	1,023	1,117	1,124	267	84.5	16.0
1951-52.....	198	162	59.4	204	157	1,433	356	343	1,160	40.1	150	9.61
1952-53.....	3.10	55.7	31.9	26.4	325	716	849	246	184	40.5	2.59	.91
1953-54.....	2.12	1.64	2.14	1.27	2.42	7.30	76.6	62.3	175	2.96	49.7	5.55
1954-55.....	319	1.84	3.94	26.3	438	322	192	96.7	21.4	138	3.46	1.45

Monthly Discharge in Second-Feet per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.0033	0.0044	0.0049	0.0071	0.809	0.542	1.41	1.54	1.55	0.367	0.116	0.022
1951-52.....	.272	.223	.082	.281	.216	1.97	.490	.472	1.59	.063	.206	.013
1952-53.....	.0043	.077	.044	.036	.447	.985	1.17	.338	.253	.056	.0036	.0012
1953-54.....	.0029	.0023	.0029	.0017	.0033	.010	.105	.086	.241	.0041	.068	.0076
1954-55.....	.439	.0025	.0054	.036	.602	.443	.264	.133	.029	.190	.0048	.0020

Monthly Runoff in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	0.004	0.005	0.006	0.008	0.84	0.62	1.57	1.77	1.72	0.42	0.13	0.02
1951-52.....	.31	.25	.09	.32	.23	2.27	.55	.54	1.78	.07	.24	.01
1952-53.....	.005	.09	.05	.04	.47	1.13	1.30	.39	.28	.06	.004	.001
1953-54.....	.003	.003	.003	.002	.003	.01	.12	.10	.27	.005	.08	.009
1954-55.....	.51	.003	.006	.04	.63	.51	.29	.15	.03	.22	.005	.002

Monthly Runoff in Acre Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51.....	149	190	210	317	32,660	24,210	60,880	68,700	66,870	16,450	5,190	953
1951-52.....	12,160	9,640	3,650	12,530	9,010	88,140	21,190	21,110	68,970	2,830	9,220	572
1952-53.....	191	3,310	1,960	1,620	18,040	44,010	50,510	15,140	10,970	2,490	159	54
1953-54.....	131	98	132	78	134	449	4,560	3,830	10,420	182	3,050	330
1954-55.....	19,640	110	242	1,620	24,310	19,770	11,420	5,400	1,270	8,460	213	86

Yearly Discharge in Cubic Feet per Second

Year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre feet	Mean	Runoff in inches	Runoff in acre feet
	Date	Gage height in feet	Discharge								
1950...									357	6.66	258,700
1951...	May 12, 1951.	15.27	5,160	1.8	382	0.525	7.11	276,800	414	7.70	299,800
1952...	June 21, 1952.	15.16	5,110	3.4	357	.491	6.66	259,100	330	6.16	239,300
1953...	Apr. 3, 1953.	13.99	4,450	.2	205	.282	3.82	148,500	198	3.68	143,400
1954...	June 4, 1954.	6.02	930	.5	32.3	.044	.61	23,390	59.4	1.12	43,020
1955...	Oct. 5, 1954.	(1) 10.03	2,550	.3	129	.177	2.40	93,110	.....	.....	.....

(1) Maximum gage height, 10.87 ft. Feb. 20, 1955 (ice jam).

Peak Discharge (base, 2,000 cfs)

1951: Feb. 19 (3 p.m.) 3,500 cfs (12.11 ft.); Apr. 7 (10:30 a.m.) 3,270 cfs (11.60 ft.); Apr. 13 (2 p.m.) 2,600 cfs (10.12 ft.); May 2 (4 a.m.) 2,500 cfs (9.89 ft.); May 12 (6 p.m.) 5,160 cfs (15.27 ft.); June 24 (3:30 p.m.) 3,180 cfs (11.41 ft.).

1952: Mar. 13 (1:30 p.m.) 3,850 cfs (12.80 ft.); Mar. 22 (9:30 p.m.) 3,000 cfs (11.04 ft.); June 3 (3 a.m.) 4,050 cfs (13.25 ft.); June 21 (12 M.) 5,110 cfs (15.16 ft.).

1953: Apr. 3 (about 4:30 p.m.) 4,450 cfs (13.99 ft.).

1954: Oct. 5 (5 p.m.) 2,550 cfs (10.03 ft.).

1955: Feb. 20, about 2,300 cfs.

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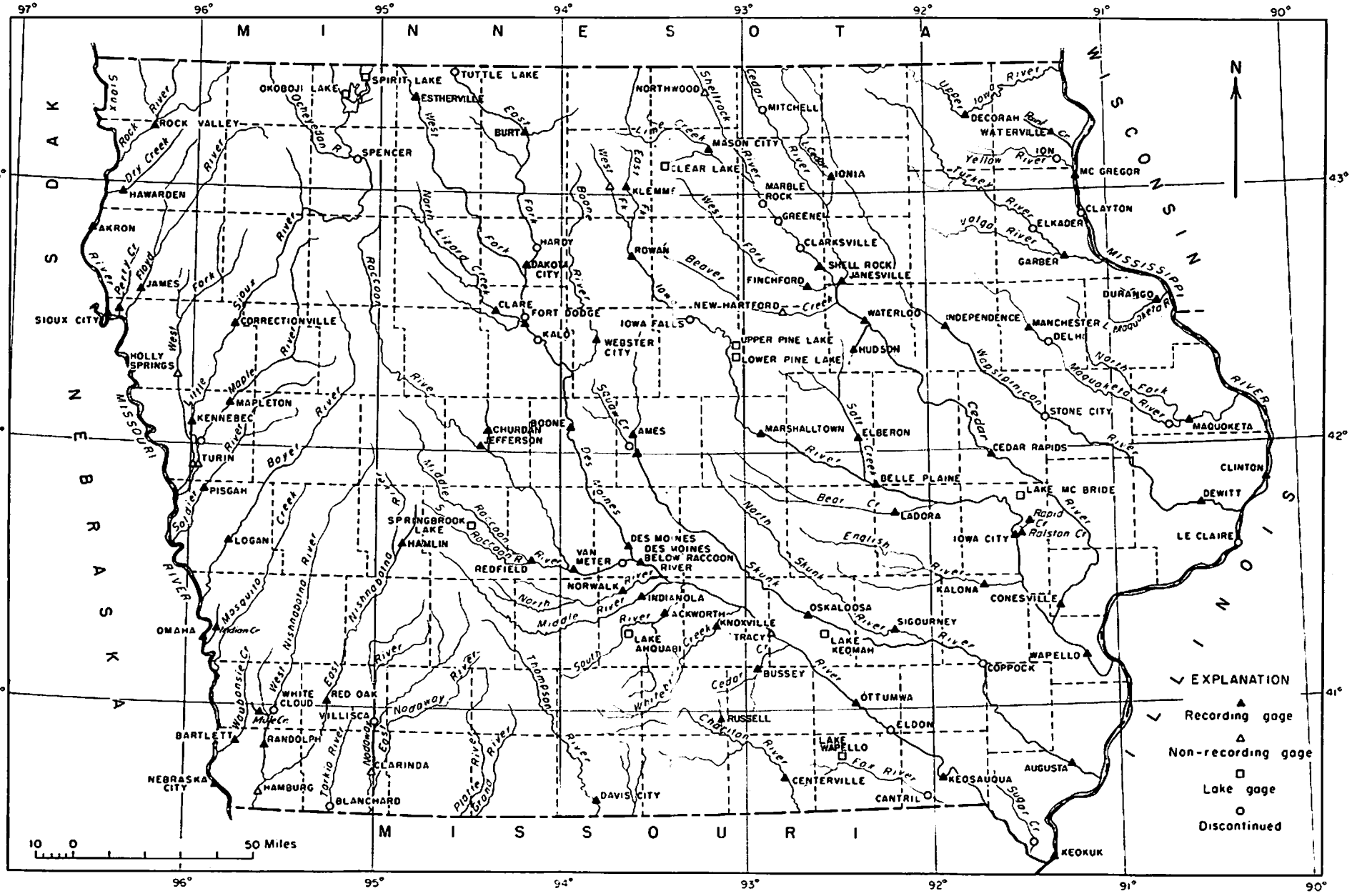

PLATE 5—MAP OF IOWA SHOWING LOCATION OF STREAM-GAGING STATIONS AND LAKE GAGES OPERATED BY THE U. S. GEOLOGICAL SURVEY IN COOPERATION WITH OTHER AGENCIES. OCTOBER, 1955.